

Relationship Between Joint Osteophytes and Fatigue-Management Nursing Interventions

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Citation: Zhang C. Relationship Between Joint Osteophytes and Fatigue-Management Nursing Interventions. *Medi Clin Case Rep J* 2025;3(3):1197-1199. DOI: doi.org/10.51219/MCCRJ/Chaoqun-Zhang/326

Received: 24 February, 2025; **Accepted:** 25 April, 2025; **Published:** 29 July, 2025

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ABSTRACT

This retrospective study explored the relationship between joint osteophyte severity and fatigue and evaluated fatigue-management nursing interventions in 30 patients with joint osteophytes. Patients were divided into intervention group (n=15) and control group (n=15). The control group received routine nursing care, while the intervention group received additional fatigue-management nursing interventions including energy conservation strategies, activity pacing training and sleep optimization. Primary outcomes included the correlation between osteophyte severity (Larsen grade) and fatigue level (Multidimensional Fatigue Inventory, MFI-20 score) and the change in MFI-20 score at 4 weeks. Secondary outcomes included Functional Assessment of Chronic Illness Therapy - Fatigue (FACIT-F) score, 6-Minute Walk Test (6MWT) distance and daily activity completion rate. Results showed a significant positive correlation between Larsen grade and initial MFI-20 score ($r=0.65$, $p<0.01$). At 4 weeks, the intervention group had a significantly greater reduction in MFI-20 score compared to the control group (14.2 ± 3.5 vs 6.8 ± 2.9 , $p<0.01$). The intervention group also showed better improvement in FACIT-F score, 6MWT distance and daily activity completion rate ($p<0.05$ for all). Fatigue-management nursing interventions effectively reduce fatigue in patients with joint osteophytes and improve their functional status.

Keywords: Osteophyte severity; Larsen grade; Functional assessment of chronic illness therapy – Fatigue

Introduction

Fatigue is a prevalent and underrecognized symptom in patients with joint osteophytes, with 40-50% reporting persistent fatigue that affects daily functioning¹. The mechanism linking osteophytes to fatigue involves chronic pain, sleep disruption and increased energy expenditure during movement due to joint instability². This study aims to explore the relationship between joint osteophytes and fatigue and evaluate the effect of fatigue-management nursing interventions, providing evidence for clinical nursing practice³.

Methods

Study design and participants

Retrospective analysis of 30 patients with radiographically confirmed joint osteophytes (knee: 23 cases, hip: 7 cases). Inclusion criteria: age 45-75 years; Larsen grade I-IV osteophytes; MFI-20 score ≥ 40 (indicating significant fatigue); no history of chronic fatigue syndrome or psychiatric disorders. Exclusion criteria: anemia, thyroid dysfunction and other medical conditions causing fatigue.

Grouping & interventions

Control group: Routine nursing care, including pain management, basic mobility advice and general health education.

Intervention group: On the basis of routine nursing, fatigue-management nursing interventions were added:

- **Energy conservation strategies:** Identifying energy-consuming activities and teaching simplified methods (e.g., using assistive devices for heavy lifting).
- **Activity pacing training:** Planning daily activities in cycles of activity and rest (e.g., 30 minutes of activity followed by 15 minutes of rest) to avoid fatigue exacerbation.
- **Sleep optimization:** Implementing sleep hygiene measures (consistent bedtime, avoiding caffeine before sleep) and pain management before bedtime to improve sleep quality.
- **Fatigue education:** Explaining the relationship between osteophytes and fatigue and teaching self-assessment of fatigue levels to adjust activities accordingly.

Outcome measures

- **Primary:** Correlation between Larsen grade and initial MFI-20 score; change in MFI-20 score (0-100, higher score indicates more severe fatigue) at 4 weeks.
- **Secondary:** FACIT-F score (0-52, higher score indicates better fatigue-related quality of life), 6MWT distance (m) and daily activity completion rate (%).

Statistical analysis

SPSS 26.0 software was used for statistical analysis. Pearson correlation analysis was used to explore the correlation between Larsen grade and MFI-20 score. Measurement data were expressed as mean ± standard deviation ($\bar{x}\pm s$) and independent sample t-test was used for comparison between groups. $P<0.05$ was considered statistically significant.

Results

Relationship Between Osteophyte Severity and Activity Limitation

There was a significant positive correlation between Larsen grade and initial MFI-20 score ($r=0.65$, $p<0.01$) (Figure 1).

Baseline characteristics

There were no significant differences in age, gender, affected joint, Larsen grade and baseline outcome measures between the two groups ($p>0.05$), which was comparable (Table 1).

Table 1: Comparison of baseline characteristics between the two groups.

Characteristics	Intervention Group (n=15)	Control Group (n=15)	p-value
Age (years, $\bar{x}\pm s$)	61.2±8.7	62.5±7.9	0.67
Male gender, n(%)	8(53.3)	9(60.0)	0.73
Affected joint (knee/hip)	13/2	10/5	0.15
Larsen grade ($\bar{x}\pm s$)	2.5±0.8	2.7±0.7	0.45
Initial MFI-20 score ($\bar{x}\pm s$)	58.6±9.2	59.3±8.7	0.82
Initial FACIT-F score ($\bar{x}\pm s$)	22.5±5.3	21.8±4.9	0.71
Initial 6MWT distance (m, $\bar{x}\pm s$)	275.3±42.6	268.5±39.8	0.64
Initial daily activity completion rate (% , $\bar{x}\pm s$)	62.3±10.5	60.8±9.7	0.68

Primary outcome

At 4 weeks, the MFI-20 score in the intervention group was significantly lower than that in the control group and the reduction amplitude was significantly larger ($p<0.01$) (Table 2).

Table 2: Comparison of MFI-20 scores between the two groups at different time points ($\bar{x}\pm s$, points).

Group	n	Baseline	2 weeks	4 weeks	Reduction at 4 weeks
Intervention Group	15	58.6±9.2	42.3±7.8	44.4±8.5	14.2±3.5
Control Group	15	59.3±8.7	50.2±7.5	52.5±8.1	6.8±2.9
p-value	-	0.82	0.003	<0.001	<0.001

Secondary outcomes

At 4 weeks, the intervention group showed significantly better performance in FACIT-F score, 6MWT distance and daily activity completion rate compared to the control group ($p<0.05$) (Table 3).

Table 3: Comparison of secondary outcomes between the two groups at 4 weeks ($\bar{x}\pm s$).

Outcome Indicators	Intervention Group (n=15)	Control Group (n=15)	p-value
FACIT-F score (points)	38.6±6.2	29.3±5.8	<0.001
6MWT distance (m)	368.5±52.3	312.6±48.5	<0.001
Daily activity completion rate (%)	85.6±8.7	70.2±7.5	<0.001

Discussion

This study found a significant positive correlation between joint osteophyte severity and fatigue level, which is consistent with previous studies⁴. The more severe the osteophytes, the greater the joint pain and movement resistance, leading to increased energy consumption during activities and reduced physical endurance, thereby resulting in more severe fatigue⁵.

The fatigue-management nursing interventions in this study achieved good results. Energy conservation strategies and activity pacing training can help patients use energy more efficiently, reduce unnecessary energy consumption and alleviate fatigue, which is supported by relevant research⁶. Sleep optimization can improve sleep quality, which is crucial for relieving fatigue, as poor sleep is a major contributor to fatigue in patients with joint osteophytes⁷.

Fatigue education helps patients correctly understand the relationship between osteophytes and fatigue and learn to adjust activities according to their fatigue level, which can improve their ability to manage fatigue independently and enhance their confidence in daily life⁸. The improvement in 6MWT distance and daily activity completion rate in the intervention group indicates that reducing fatigue can effectively improve patients' physical endurance and functional performance.

The limitations of this study include small sample size, single-centre retrospective design and lack of long-term follow-up. Future studies with larger samples and longer follow-up periods are needed to further verify the effectiveness of fatigue-management nursing interventions.

Conclusion

There is a significant positive correlation between joint osteophytes and fatigue. Fatigue-management nursing interventions can effectively reduce fatigue, improve physical

endurance and enhance daily activity completion rate in patients with joint osteophytes. It is worthy of clinical promotion and application.

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