The Effect of Post-operative Vitamin C on Pain, Fatigue and Quality of Life

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Structured Abstract

LOCAL PROBLEM
Pain, fatigue, and subsequent reduction of quality of life following orthopedic surgical procedures are well-documented and may have a negative impact on an individual's rehabilitation effort. Therefore, adequate treatment of post-operative pain and fatigue is important. While standard of care, opioid monotherapy has potential for over-use or abuse, contributing to the ongoing opioid crisis. Vitamin C requirements in surgical patients are increased as a result of oxidative stress. Studies have reported potential benefit in pain and fatigue reduction due to the neuroprotective and antioxidant properties of vitamin C.

PROJECT PURPOSE
The purpose of this DNP project was to assess the effect of post-operative vitamin C administration on pain, fatigue, and quality of life scores in individuals undergoing an orthopedic surgery.

METHODOLOGY
This study was a clinical trial of supplemental vitamin C added to standard treatment following orthopedic surgery. A convenience sample was recruited from a private orthopedic practice in Alabama from June to August 2019. The intervention group received daily oral Vitamin C 1000 mg in addition to standard of care opioid treatment. The control group received no additional therapy. Participants completed the SF-12 (Quality of Life) survey pre-surgery and 2 weeks post operatively. A post-operative pain and fatigue record using a visual analog scale was completed daily for 7 days and collected at the 2-week post-operative visit.

RESULTS
A total of 34 participants were recruited. However, only 14 participants completed and submitted the pain and fatigue record (n=8 in intervention group and n=6 in control group). Only 13 participants completed the pre-operative and 2-week post-operative SF-12 survey (n=7 in the intervention group and n=6 in the control group). There was a reduction in the average mean pain scores in patients taking vitamin C supplementation on post-operative days 2-7 and at the 2-week post-operative visit compared to the control group. There was a reduction in average mean fatigue scores in patients taking vitamin C supplementation on post-operative days 1-7 and at the 2-week post-operative visit compared to the control group. There was no statistically significant difference (p>0.5) in FS12 scores (quality of life) at the 2-week post-operative visit in patients taking vitamin C supplementation compared to the control group. Limitations of the study included a small sample size due to non-completion of required reporting and follow-up and non-blinding to vitamin C.
IMPLICATIONS FOR PRACTICE
Continued scrutiny on the liberal use of opioid therapy, even in the post-operative period, necessitates identification of adjunctive therapies to improve pain and fatigue control to encourage adequate rehabilitation. A reduction in both pain and fatigue scores were noted in patients taking vitamin C supplementation in addition to opioid therapy compared to patients on opioid therapy alone. No adverse reactions were encountered, and vitamin C therapy is inexpensive. Further study with a larger sample size is warranted, but this study suggests that vitamin C can be a safe, low-cost adjunctive therapy to improve pain and fatigue control post-operatively. Quality of life may need to be evaluated at a longer interval post-operatively. Pain and fatigue may not be the only factors which impact quality of life post-operatively.

Keywords: orthopedic surgery, vitamin c, opioids, pain, fatigue

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