

Original Article

# Prevention of low back pain in the military cluster randomized trial: effects of brief psychosocial education on total and low back pain–related health care costs

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## Abstract

**BACKGROUND CONTEXT:** Effective strategies for preventing low back pain (LBP) have remained elusive, despite annual direct health care costs exceeding \$85 billion dollars annually. In our recently completed Prevention of Low Back Pain in the Military (POLM) trial, a brief psychosocial education program (PSEP) that reduced fear and threat of LBP reduced the incidence of health care–seeking for LBP.

**PURPOSE:** The purpose of this cost analysis was to determine if soldiers who received psychosocial education experienced lower health care costs compared with soldiers who did not receive psychosocial education.

**STUDY DESIGN/SETTING:** The POLM trial was a cluster randomized trial with four intervention arms and a 2-year follow-up. Consecutive subjects (n=4,295) entering a 16-week training program at Fort Sam Houston, TX, to become a combat medic in the U.S. Army were considered for participation.

**METHODS:** In addition to an assigned exercise program, soldiers were cluster randomized to receive or not receive a brief psychosocial education program delivered in a group setting. The Military Health System Management Analysis and Reporting Tool was used to extract total and LBP-related health care costs associated with LBP incidence over a 2-year follow-up period.

**RESULTS:** After adjusting for postrandomization differences between the groups, the median total LBP-related health care costs for soldiers who received PSEP and incurred LBP-related costs during the 2-year follow-up period were \$26 per soldier lower than for those who did not receive PSEP (\$60 vs. \$86, respectively, p=.034). The adjusted median total health care costs for soldiers who received PSEP and incurred at least some health care costs during the 2-year follow-up period were estimated at \$2 per soldier lower than for those who did not receive PSEP (\$2,439 vs. \$2,441,

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The disclosure key can be found on the Table of Contents and at [www.TheSpineJournalOnline.com](http://www.TheSpineJournalOnline.com).

Trial registration: NCT00373009 at [ClinicalTrials.gov](http://ClinicalTrials.gov) - <http://clinicaltrials.gov/>.

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respectively,  $p=.242$ ). The results from this analysis demonstrate that a brief psychosocial education program was only marginally effective in reducing LBP-related health care costs and was not effective in reducing total health care costs. Had the 1,995 soldiers in the PSEP group not received PSEP, we would estimate that 16.7% of them would incur an adjusted median LBP-related health care cost of \$517 compared with the current 15.0% soldiers incurring an adjusted median cost of \$399, which translates into an actual LBP-related health care cost savings of \$52,846 during the POLM trial. However, it is likely that the unaccounted for direct and indirect costs might erase even these small cost savings.

**CONCLUSION:** The results of this study will help to inform policy- and decision-making regarding the feasibility of implementing psychosocial education in military training environments across the services. It would be interesting to explore in future research whether cost savings from psychosocial education could be enhanced given a more individualized delivery method tailored to an individual's specific psychosocial risk factors. Published by Elsevier Inc.

*Keywords:*

Costs; Low back pain; Prevention; Biopsychosocial; Military

## Introduction

Next to the common cold, low back pain (LBP) is the most common reason for visiting a physician in the United States and elsewhere [1] and represents a common form of chronic pain [2] and significant cause of disability in society [3,4]. Annual direct health care costs in the United States for spine disorders has been estimated at more than \$85 billion in 2005, corresponding to a 65% increase from 1997 estimates [4]. Moreover, indirect costs from lost work productivity resulting from LBP in the United States are estimated to exceed \$7 billion annually [5]. LBP is also one of the most common forms of chronic pain in the military and has been associated with high rates of medical evacuation for service members participating in Operation Iraqi Freedom or Operation Enduring Freedom in Afghanistan, with return to duty being uncertain [6–8]. It is not surprising then that primary prevention of LBP is a significant research priority for both the general [9] and military populations, where it has been suggested that implementation of preventive measures for service members at highest risk of evacuation could reduce the effect of non-battle-related injuries and disease on military readiness [6]. However, effective strategies for preventing LBP have remained elusive, as highlighted by the European Guidelines for Prevention of Low Back Pain [10] and a recent systematic review on the topic [11].

In response, we recently completed the Prevention of Low Back Pain in the Military (POLM) trial, which was a cluster randomized study with four intervention arms and a 2-year follow-up [12–18]. Based on our primary outcome, there were no differences in low back incidence resulting in the seeking of health care between those receiving traditional versus core stabilization exercise. This negative finding for exercise was somewhat surprising because core stabilization has been advocated as preventive, yet offered no such benefit when compared with traditional military training in this trial [13]. In contrast, a brief psychosocial education program that reduced fear and threat

of LBP [14] reduced the incidence of health care-seeking for LBP regardless of the assigned exercise approach, resulting in a decrease over 2 years (numbers needed to treat=30.3, 95% confidence interval [CI]=18.2–90.9) [13].

A few studies have found that early access to exercise and education approaches during the acute phase of LBP reduces subsequent health care costs [19–21]. However, no studies we are aware of have examined the implications of psychosocial education on subsequent health care costs in a primary prevention model. It would be interesting to understand the economic implications of receiving psychosocial education given the low cost and feasibility of delivering a brief psychosocial education program combined with the fact that this arm of the trial was shown to reduce health care-seeking for LBP. Furthermore, increasing the recognition of pain as a significant public health problem in the United States and exploring population-based methods of delivering pain education were key premises behind the Institute of Medicine's recent report on managing pain in America [22]. The results of this analysis will help to inform whether a military cohort receiving psychosocial education also incurred lower health care costs for LBP, and positive findings could provide important information for future investigations. Therefore, the purpose of this analysis was to determine if soldiers who received psychosocial education experienced lower health care costs compared with soldiers who did not receive psychosocial education. We hypothesized that, consistent with the incidence data, soldiers who received psychosocial education would have lower total and LBP-related costs during the 2-year follow-up period.

## Methods

This study reports a planned secondary analysis in the Prevention of Low Back Pain in the Military clinical trial (NCT00373009), which has been registered at <http://clinicaltrials.gov> [12,13]. Consecutive subjects entering

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