

Correlation of Body Composition and Low Back Pain Severity in a Cross-Section of US Veterans

Casey S. Okamoto, DC,^a Andrew S. Dunn, DC, MEd,^{b,c} Bart N. Green, DC, MEd, PhD,^d Lance R. Formolo, DC, MS,^{b,c} and David Chicoine, DC^e

ABSTRACT

Objective: Back pain is more prevalent in the obese, but whether back pain severity is directly correlated to obesity in veterans is unknown. We sought to determine if there was a correlation between body composition and low back pain severity in a sample of veterans. The hypothesis was that veterans with higher body mass index values would report higher low back pain severity scores.

Methods: This study was a retrospective chart review of 1768 veterans presenting to a Veterans Affairs chiropractic clinic with a chief complaint of low back pain between January 1, 2009 and December 31, 2014. Spearman's rho was used to test for correlation between body composition as measured by body mass index and low back pain severity as measured by the Back Bournemouth Questionnaire.

Results: On average, the sample was predominantly male (91%), older than 50, and overweight (36.5%) or obese (48.9%). There was no correlation between body mass index and Back Bournemouth Questionnaire scores, $r = .088, p < .001$.

Conclusions: The majority of veterans with low back pain in this sample were either overweight or obese. There was no correlation between body composition and low back pain severity in this sample of veterans. (J Manipulative Physiol Ther 2017;40:358-364)

Key Indexing Terms: *Body Mass Index; Low Back Pain; Veterans; Obesity; Chiropractic*

INTRODUCTION

Low back pain (LBP) is a common condition,¹⁻³ with the Centers for Disease Control and Prevention recognizing spinal disorders as the fifth most common primary

diagnosis.³ The point prevalence of LBP has been estimated at 11.9%, the 1-month prevalence at 23.2% of the global population,⁴ and the lifetime prevalence at >80%.² The management of LBP represents a considerable expense to the health care system, and that expense continues to grow.⁵ In 2005, it was estimated that direct health care costs in the United States related to LBP, not including lost productivity, amounted to \$85.9 billion.⁶ The Global Burden of Disease 2010 ranked LBP as the number one contributor to years lived with disability. The same study ranked LBP as sixth out of 291 disorders in terms of overall disease burden.¹ Low back pain is also a common cause of disability among both active duty service members and veterans with LBP, representing the number one cause of separation from military service in the first quarter of 2009.⁷

Obesity, like LBP, is a substantial burden on society in terms of both disability and health care expenditure.⁸⁻¹¹ The prevalence of obesity among US adults was 34.9% between 2011 and 2012, with women (36.1%) more likely to be obese than men (33.5%). Adults were found to be heaviest between the ages 45 and 59, with an obesity prevalence of 39.5%. Obesity prevalence among children aged 2 to 19 years was measured at 16.9%.¹² Veterans carry a high illness burden when compared with the civilian population, especially with respect to obesity, dyslipidemia, coronary artery disease,

^a Minneapolis VA Medical Center, Rosemount, MN.

^b Western New York VA Healthcare System, Buffalo, NY.

^c New York Chiropractic College, Seneca Falls, NY

^d Qualcomm Health Center operated by Stanford Health Care National University of Health Sciences, San Diego, CA.

^e Department of Health Sciences, Kaplan University, South Portland, ME.

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Corresponding author: Casey S. Okamoto, DC, 14513 Cobalt Ave, Rosemount, MN, 55068. Tel.: +1 608 320 104. (e-mail: casey.okamoto@va.gov).

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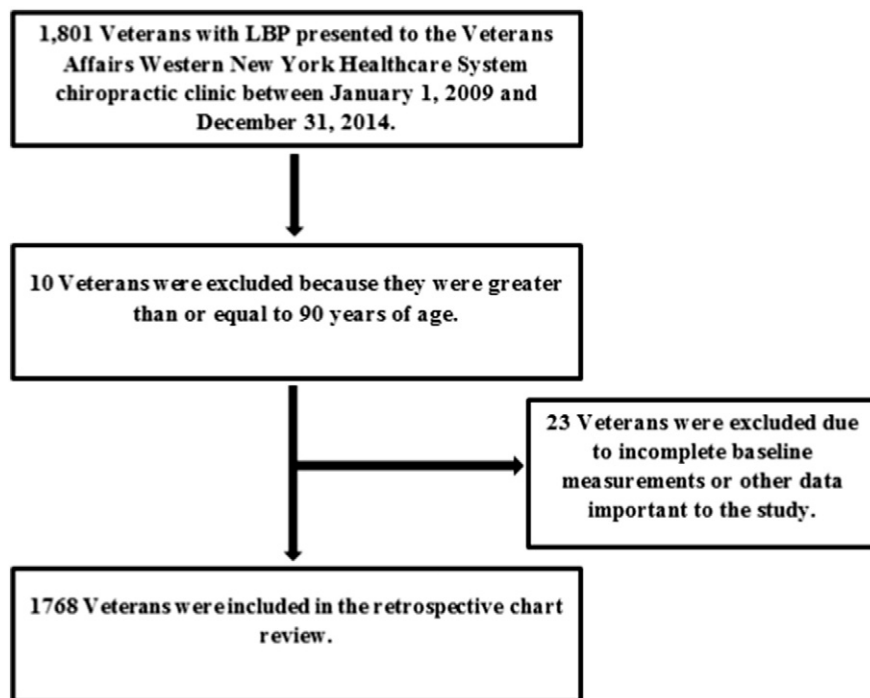


Fig 1. Selection of study sample.

arthritis, and diabetes.¹³ Comorbid conditions often related to obesity include type II diabetes, cardiovascular disease, asthma, gallbladder disease, cancer, and LBP.¹¹ Evidence suggests that LBP and obesity are endemic not only among the civilian population, but among veterans as well. It is estimated that 80% of male and 60% of female veterans are overweight or obese.^{12,14,15}

Much research has been directed at determining the etiology of nonspecific LBP.¹⁶⁻²⁶ Possible contributors include smoking,^{23,27} anxiety,²⁸ posture,²⁹ age,⁴ being female,⁴ genetics and early environment,^{16,24} inactivity,^{20,27} and obesity.^{25,27} Independently, both LBP and obesity are important factors in health; however, the relationship between the 2 remains unclear and perhaps controversial. Some studies report a clear association,^{25,27,30} whereas others question the strength of the association relative to other potential covariables.^{16,22} Still other researchers agree that an association exists, but add that inactivity, which often accompanies obesity, can be a substantial independent predictor of LBP.^{19,27} Though research has been done to explore a possible association between obesity and the presence or absence of back pain, less has been done to establish if there is a correlation between increasing body mass index (BMI) and the severity of LBP. An improved understanding of the potential relationship between these factors could better guide clinical management of either condition and inform research in this area of inquiry.

The aim of this study was to determine if there was a correlation between body composition and LBP severity in a

sample of veterans. The hypothesis was that veterans with higher BMI values would report higher pain severity scores.

METHODS

This study was a retrospective cross-sectional study of a quality assurance data set. The study proposal was approved by the institutional review board of the Department of Veterans Affairs Western New York Healthcare System (VAWNYHS). The setting of this study was the outpatient chiropractic clinic at VAWNYHS, which serves the veteran population of the western New York region. The participants were those patients whose initial consult visit was between January 1, 2009, and December 31, 2014. The sample was composed of veterans between 18 and 89 years of age seeking treatment for chronic LBP. Patient records with incomplete baseline outcome measures or missing data pertinent to the study were excluded (Fig 1).

At baseline, we collected demographic, pain severity, and anthropomorphic variables. Age and sex were collected from the electronic health record (EHR) at the time of initial consult. Age was recorded in years, and sex was determined to be either male or female as designated by the EHR. Body mass index was also collected at that time. Pain severity was determined by patient responses to the Back Bournemouth Questionnaire (BBQ), which is a biopsychosocial measure of LBP symptoms. Low back pain has been defined as "pain in the area on the posterior aspect of the body from the lower

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