



Contents lists available at ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Individual and contextual correlates of physical activity among a clinical sample of United States Veterans



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ARTICLE INFO

Article history:

Received 10 January 2015

Received in revised form

29 July 2015

Accepted 30 July 2015

Available online 3 August 2015

Keywords:

Veterans

Physical activity

Neighborhood

Social support

ABSTRACT

Rationale: Veterans, especially those using U.S. Department of Veterans Affairs (VA) healthcare, have poorer health than the general population. In addition, Veterans using VA services are more likely than non-VA users to be physically inactive. Little is known about physical activity correlates among Veterans. To identify targets for health promotion interventions, understanding barriers to and facilitators of physical activity in this population is critical.

Methods: This study examined individual-, social-, and perceived neighborhood-level associations of meeting weekly physical activity recommendations (150 min/week of combined leisure and transportation activity) based on the International Physical Activity Questionnaire (IPAQ) among $N = 717$ patients from VA Puget Sound, Seattle Division using a mailed survey sent 2012–2013 (response rate = 40%). Independent associations were identified with direct estimation of relative risks using generalized linear models (dichotomous outcome), and linear regression (continuous outcome), including variables associated in bivariate tests ($p < .05$).

Results: Most participants were male, Caucasian, and unemployed, and had an annual income $\leq \$40,000$. Over two-thirds (69.9%) reported meeting physical activity recommendations. Fewer days of limitations due to physical or mental health (Relative Risk (RR) = 0.99 per day; 95% Confidence Interval (CI) = 0.98, 0.99; $p = .01$), others doing physical activity with the Veteran (RR = 1.18; 95% CI = 1.04, 1.33; $p = .01$), receiving ideas from others regarding physical activity (RR = 1.14; 95% CI = 1.01, 1.29; $p = .03$) and better perceived neighborhood aesthetics (RR = 1.14; 95% CI = 1.06, 1.24; $p = .001$) were associated with meeting physical activity recommendations. Findings were comparable for total weekly physical activity, but lower depression symptom severity was also associated with increased physical activity.

Conclusion: This study identified individual and contextual correlates of physical activity among VA-using Veterans. Targeting these factors will be important in promoting physical activity in order to address the disproportionate disease burden facing U.S. Veterans. Existing VA interventions targeting physical activity may need to be adapted to account for the influence of contextual factors.

Published by Elsevier Ltd.

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1. Introduction

Veterans face disproportionate disease burden across a host of health indicators (Agha et al., 2000; Hoerster et al., 2012b; Lehavot

et al., 2012). This includes overweight/obesity, with only 28% of VA-using Veterans having normal weight compared with 43% in the general adult population (Nelson, 2006). A primary approach to addressing overweight/obesity is physical activity (Institute of Medicine, 2012). Veterans may have unique barriers to physical activity, including a high burden of mental health conditions (Hoerster et al., 2012b; Lehavot et al., 2012), which can affect physical activity engagement (Chwastiak et al., 2011). In order to better promote physical activity among Veterans, it is important to identify barriers and facilitators of physical activity.

Ecological models extend traditional behavioral models to acknowledge and address the impact of contextual factors on behavior, including health-related behaviors (Sallis et al., 2008). As specified in “The Ecological Model of Active Living” (Sallis et al., 2006), physical activity is thought to be affected by factors at multiple levels of influence, including intrapersonal, social-cultural environment, and perceived physical environment characteristics. Given the complex contributors to physical activity, comprehensive interventions to improve physical activity and related chronic diseases can maximize effectiveness by including complementary strategies at these multiple levels (Sallis et al., 2008). Evidence from observational studies of Veterans suggests that demographic characteristics, health status, psychiatric conditions, somatic symptoms, fatigue, and use of VA care are associated with lower physical activity (Bouldin and Reiber, 2012; Chasens et al., 2009; Chwastiak et al., 2011; Hoerster et al., 2012a; Littman et al., 2009). These prior studies of Veterans have focused on identifying important clinical correlates, but have not identified contextual factors that influence physical activity, which may differ from those in non-Veterans. To expand our understanding of Veterans’ physical activity facilitators and barriers, the current study examined individual and contextual correlates of physical activity among Veterans.

2. Methods

2.1. Sample

The present study used data from a survey mailed August–September of 2012 to 1997 Veterans from VA Puget Sound, Seattle Division. Veterans were identified based on administrative data and were randomly selected from two clinic populations (half from PTSD specialty care and half from primary care) based on having had at least one visit in fiscal year 2011 (10/2010–9/2011). Veterans were recruited from these two clinics to ensure adequate representation of Veterans with PTSD, a focus of the parent survey study. We sent reminder letters to those who did not return surveys as of October 2012 and re-mailed surveys to 1221 non-responders in March of 2013, followed by a reminder call. Veterans received \$10 in VA canteen coupons for completing the survey. All recruited Veterans had a residential address with a King County zip code.

A total of 193 Veterans were excluded from the study following the survey mailing because they were deceased, or had an erroneous or out-of-state mailing address, leaving 1804 possible respondents. We received surveys from 717 (response rate = 40%). The VA Puget Sound, Seattle Division Institutional Review Board approved this study and a waiver of consent.

2.2. Measures

Measure selection was guided by “The Ecological Model of Active Living” so that potential physical activity correlates were measured at the intrapersonal, social-cultural environment, and perceived physical environment levels of influence (Sallis et al., 2006).

2.2.1. Intrapersonal measures

The survey collected information on age, sex, race/ethnicity (non-Hispanic White, non-Hispanic Black, and Other), marital status, educational attainment, employment status, and annual household income. We measured past-week pain interference using a single item asking participants who endorsed experiencing chronic pain (yes vs. no pain that has persisted for more than 3 months) to rate its interference with daily activities on a scale from 0 to 10; those who denied chronic pain received a zero score for this measure. Days of functional limitations due to mental health or physical health concerns/problems was assessed by asking “During the past 31 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?” (Centers for Disease Control and Prevention (CDC), 2014a). Mental health symptoms were past-month post-traumatic stress disorder (PTSD) symptoms, assessed with the PTSD Checklist-Military Version (PCL-M; score range: 17–85) (National Center for PTSD, 2014), and depressive symptoms in the past two weeks, assessed with the Patient Health Questionnaire-8 (PHQ-8; score range: 0–24) (Kroenke et al., 2009). PCL-M and PHQ-8 symptom severity scores were summed; higher scores indicate worse symptoms.

2.2.2. Social-cultural environment measures

Overall social support was assessed with the ENRICH Social Support Instrument (ESSI) (Mitchell et al., 2003; Vaglio et al., 2004). Responses across items were summed; higher scores reflect greater perceived social support (range: 8–34). Neighborhood social cohesion and trust was assessed with a five-item scale (items averaged), where higher scores indicate better cohesion and trust (range: 1–5) (Sampson et al., 1997). Social support for physical activity was assessed using three variables that were created for this study, informed by prior work (Hoerster et al., 2011; Sallis et al., 1987). Participants were asked how much in the past 30 days, others: (1) did physical activity with them; (2) encouraged them to do physical activity; and/or (3) shared ideas on physical activity with them. Because participants were asked these questions separately for family, friends, another Veteran, and neighbors, their responses to each were recoded “often and very often” for any social support type (family, friends, another Veteran, and neighbors) versus “sometimes, rarely, and never,” yielding three dichotomous measures of social support for physical activity.

2.2.3. Perceived physical environment measures

Perceived neighborhood characteristics were assessed using items from some domains of the Neighborhood Environment Walkability Scale-Abbreviated (NEWS-A): infrastructure and safety for walking; aesthetics; traffic hazards; and crime (Cerin et al., 2006). Item scores were averaged within each domain (ranges: 1–4). Higher scores for infrastructure and safety for walking and aesthetics reflect better walkability. Higher scores for traffic hazards and crime reflect worse hazards and crime.

2.2.4. Physical activity

Total weekly physical activity was calculated by summing the total weekly minutes (based on the multiplicative of days and duration responses) of walking, moderate, and vigorous leisure and transportation physical activity as reported on the long form International Physical Activity Questionnaire (IPAQ), a widely used measure with acceptable reliability and validity (Craig et al., 2003). Standard IPAQ data cleaning procedures were used (International Physical Activity Questionnaire (IPAQ), 2005); as a result, physical activity values were truncated for 93 participants, and another 8 participants were excluded from analyses because their responses were considered invalid due to being extreme outliers. For the

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