


BRIEF REPORT

Well-being domains in U.S. military veterans: identifying modifiable factors to promote whole health

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ABSTRACT

The U.S. Department of Veterans Affairs is actively transitioning away from a disease-centric model of healthcare to one that prioritizes disease prevention and the promotion of overall health and well-being. Described as *Whole Health*, this initiative aims to provide personalized, values-centered care that optimizes physical, behavioral, spiritual, and socioeconomic well-being. To inform this initiative, we analyzed cross-sectional data from a nationally representative sample of primarily older U.S. military veterans to estimate levels of well-being across these domains, and identify sociodemographic, military, and potentially modifiable health and psychosocial correlates of them. Results revealed that, overall, veterans reported high domain-specific well-being (average scores ranging from 6.7 to 8.3 out of 10), with the highest levels in the socioeconomic domain and lowest in the physical domain. Several modifiable factors, including purpose in life, resilience, and social support, were strongly associated with the examined well-being domains. Interventions targeting these constructs may help promote well-being among U.S. veterans.

Key words: aging, mental health policy, U.S. veterans, whole health, epidemiology

Introduction

There are increasing calls to pivot from a disease-centered model of healthcare focused on identifying and ameliorating established pathology and dysfunction to one that prevents illness and disability and cultivates well-being (National Academies of Sciences *et al.*, 2023). For more than a decade, the U.S. Department of Veterans Affairs (VA) has been undergoing a nationwide transformation of its healthcare system in an attempt to facilitate this shift. This new model of care, described as *Whole Health* (Kligler *et al.*, 2022), prioritizes patients' individual health values and preferences for care with the goal of optimizing their overall health, functioning, and well-being. As described in a 2023 report by the National Academies of Sciences, Engineering, and Medicine

(NASEM) (National Academies of Sciences *et al.*, 2023), *Whole Health* refers to “physical, behavioral, spiritual, and socioeconomic well-being as defined by individuals, families, and communities” (p. 36).

Because efforts to transform a healthcare system take time, data on the effectiveness of the VA's *Whole Health* initiative are limited, and research has mainly focused on process measures (i.e., challenges and successes in implementation) (Kligler *et al.*, 2022) instead of outcome measures. We are unaware of any study that has examined how veterans rate themselves across all of the core well-being domains targeted by the *Whole Health* initiative, or the factors associated with such ratings. Research that quantifies these well-being domains in population-based samples of U.S. veterans may help advance the *Whole Health* initiative by identifying common and unique correlates and clarifying areas where well-being may be relatively low, ultimately informing resource allocation and the delivery of targeted interventions.

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Toward this end, we sought to build upon our previous work (Na *et al.*, 2023), which examined the overall level and correlates of self-rated well-being in a large, nationally representative, contemporary sample of primarily older U.S. veterans to: (1) estimate the level of well-being across physical, behavioral, spiritual, and socioeconomic well-being domains (National Academies of Sciences *et al.*, 2023); and (2) identify sociodemographic, military, health, and psychosocial correlates of well-being domains, with an emphasis on health and psychosocial factors that could be modified through prevention and treatment efforts. Based on previous research (Thomas *et al.*, 2016; VanderWeele, 2017), we hypothesized that well-being domains reflective of mental health would be higher than those reflecting perceptions of physical health. We further expected that positive psychosocial factors, such as purpose in life and social support, would be strongly associated with the assessed well-being domains.

Methods

Sample

A total of 2,435 veterans participated in the 2022 National Health and Resilience in Veterans Study (NHRVS), which surveyed a nationally representative sample of primarily older U.S. military veterans. Details about the methodology of the NHRVS can be found in the Supplemental material. Briefly, the sample was drawn from KnowledgePanel®, a survey panel of more than 50,000 U.S. households maintained by Ipsos, a survey research firm. KnowledgePanel® is a probability-based survey panel of a representative sample of U.S. adults that covers approximately 98% of U.S. households. To permit generalizability of results to the U.S. veteran population, post-stratification weights using benchmark distributions of U.S. military veterans from the most contemporaneous (2019) Veterans Supplement of the U.S. Census Bureau Current Population Survey were applied.

Measures

Well-being domains were assessed using the 12-item Flourishing measure (VanderWeele, 2017), a multidimensional assessment of well-being that includes six subscales: (1) happiness and life satisfaction; (2) mental and physical health; (3) meaning and purpose, (4) character and virtue; (5) close social relationships; and (6) financial and material stability. Items are rated from 0 to 10 (e.g., 0 = Poor, 10 = Excellent, for physical health), and scores are computed by averaging the two indicators within each domain. To increase the granularity and

clinical relevance of our findings, and to more closely assess the well-being domains proposed in the 2023 NASEM report on *Whole Health* (National Academies of Sciences *et al.*, 2023), we measured perceptions of mental and physical health separately. We considered the happiness and life satisfaction, mental health, and close social relationships domains to be broadly reflective of *behavioral* well-being. We considered the meaning and purpose and character and virtue domains to be broadly reflective of *spiritual* well-being. Finally, the physical health and financial and material stability domains were considered reflective of *physical* and *socioeconomic* well-being, respectively.

A broad range of sociodemographic (e.g., age, race/ethnicity), military (e.g., combat veteran status), physical health (e.g., number of medical conditions, frequency of exercise), psychiatric (e.g., adverse childhood experiences, substance use) and psychosocial (e.g., social connectedness, religion/spirituality) characteristics were examined as potential correlates of well-being domains. Supplemental Table 1 describes the measures used in this study.

Data analysis

First, descriptive statistics were computed to summarize the characteristics of the current sample and average domain-specific well-being levels. Second, multivariable linear regression models using simultaneous entry were conducted to identify unique correlates of well-being domains. Only variables associated with specific well-being domains at the bivariate level (Bonferroni correction $p < .001$) were included in these models. Third, post-hoc regression analyses were conducted to identify individual scales/items comprising significant multicomponent variables (e.g., protective psychosocial characteristics) with well-being domains ($p < .001$). Fourth, relative importance analyses were conducted to determine the proportional contribution of each independent variable to the explained variance in each well-being domain. Given the redundancy of including purpose in life as a correlate of the meaning and purpose domain of well-being, this measure was excluded from this analysis.

Results

The mean age of veterans in the sample was 63.3 years old ($SD = 13.9$); the majority were male (92.3%) and non-Hispanic White (79.5%). Correlations across well-being domain scores ranged from 0.27 to 0.74 (all p 's $< .001$), with the smallest association observed between the character and virtue and financial and material stability domains, and the largest occurring

Table 1. Sample characteristics and correlates of well-being domains in U.S. veterans

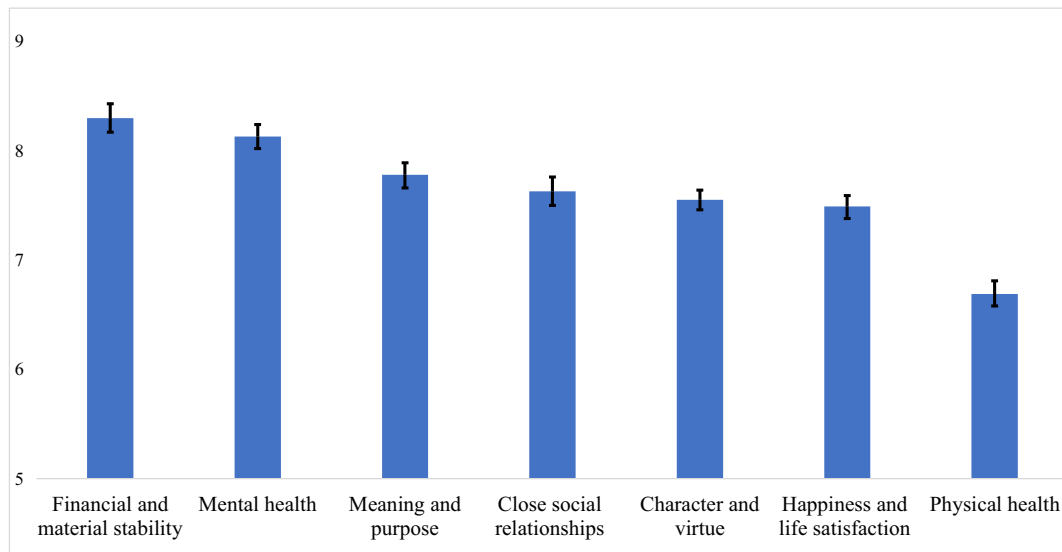
	WEIGHTED MEAN (SD) OR N (WEIGHTED %)	LINEAR REGRESSION (R ² = 0.39)	LINEAR REGRESSION (R ² = 0.39)	LINEAR REGRESSION (R ² = 0.45)	LINEAR REGRESSION (R ² = 0.42)	LINEAR REGRESSION (R ² = 0.29)	LINEAR REGRESSION (R ² = 0.34)	LINEAR REGRESSION (R ² = 0.22)
		HAPPINESS & LIFE SATISFACTION	PHYSICAL HEALTH	MENTAL HEALTH	MEANING & PURPOSE	CHARACTER & VIRTUE	CLOSE SOCIAL RELATIONSHIPS	FINANCIAL & MATERIAL STABILITY
		β	β	β	β	β	β	β
<i>Sociodemographics</i>								
Age	63.3 (13.9)	0.14***	0.08***	0.19***	0.08***	–	0.10***	0.14***
Male gender	2,177 (92.3%)	–	–	–	–	–	–	–
White, non-Hispanic race/ethnicity	2,027 (79.5%)	–	–	–	–	–	–	0.06**
College graduate or higher	1,139 (35.2%)	–	–	–	–	–	–	–
Married or partnered	1,768 (74.4%)	0.04*	–	–	–	–	0.05**	–
Retired	1,368 (46.0%)	–	–	–	–	–	–	0.12***
Household income \$60K +	1,501 (62.5%)	–	0.04*	–	–0.04*	–	–	0.14***
<i>Military characteristics</i>								
Enlisted/Commissioned vs. Drafted	2,134 (88.1%)	–	–	–	–	–	–	–
Combat veteran	843 (35.9%)	–	–	–	–	–	–	–
10+ years in military	913 (38.4%)	–	–	–	–	–	–	–
Rank/pay grade in military	E-5	–	–	–	–	–	–	–
Positive effect of military on life	2.1 (1.3)	–	0.06**	0.06***	0.08***	–0.06**	0.04*	–
<i>Health characteristics</i>								
Physical health difficulties	0 (1.0)	–0.10***	–0.39***	–0.10***	–	–0.08***	–	–0.13***
Physical exercise	1.2 (0.9)	–	0.11***	–	–	–	–	–
Lifetime nicotine use disorder	411 (15.8%)	–	–	–	–	–	–	–
ACEs	1.4 (1.9)	–	–	–0.05**	–	–	–	–
Cumulative trauma burden	8.8 (8.1)	–	–	–	–	–	–	–

Table 1. Continued

	WEIGHTED MEAN (SD) OR N (WEIGHTED %)	LINEAR REGRESSION (R ² = 0.39)	LINEAR REGRESSION (R ² = 0.39)	LINEAR REGRESSION (R ² = 0.45)	LINEAR REGRESSION (R ² = 0.42)	LINEAR REGRESSION (R ² = 0.29)	LINEAR REGRESSION (R ² = 0.34)	LINEAR REGRESSION (R ² = 0.22)
		HAPPINESS & LIFE SATISFACTION	PHYSICAL HEALTH	MENTAL HEALTH	MEANING & PURPOSE	CHARACTER & VIRTUE	CLOSE SOCIAL RELATIONSHIPS	FINANCIAL & MATERIAL STABILITY
		β	β	β	β	β	β	β
Military sexual trauma	162 (5.8%)	-0.05**	-	-0.06***	-	-	-	-
Current PTSD	102 (4.1%)	0.06**	0.08***	-	-	-	-	-
Current MDD	140 (6.8%)	-0.07**	-	-	-0.06*	-	-0.07**	-
Current GAD	113 (6.2%)	-0.05*	-	-0.13***	-	0.07**	-	-0.10***
Current suicidal ideation	153 (6.7%)	-0.08***	-	-0.08***	-0.08***	-	-	0.07**
Current AUD	207 (9.6%)	-	-	-0.03*	-	-	-	-
Current DUD	176 (7.8%)	-	-	-	-	-	-	-
Lifetime suicide attempt	74 (3.2%)	-	0.05**	-	-	-	-	-
Psychosocial factors								
Protective psychosocial characteristics	0 (1.0)	0.38***	0.25***	0.30***	0.45***	0.41***	0.31***	0.16***
Positive expectations about aging	7.3 (1.8)	0.05**	0.08***	0.05**	0.05**	-	-	-
Social connectedness	0 (1.0)	0.07**	-	0.10***	0.06**	-	0.21***	0.07*
Religiosity/spirituality	0 (1.0)	0.05*	-	-	0.06***	-	-0.04*	-
Altruism	0 (1.0)	-	-	-	-	0.14***	-	-

Note. β indicates standardized regression coefficient. ACES, adverse childhood experiences; PTSD, posttraumatic stress disorder; MDD, major depressive disorder; GAD, generalized anxiety disorder; AUD, alcohol use disorder; DUD, drug use disorder. *Physical health difficulties*: sum of medical conditions; endorsement of disability in activities or instrumental activities of daily living; and somatic symptoms. *Protective psychosocial characteristics*: a composite score of resilience; purpose in life; gratitude; curiosity/exploration; grit; and community integration. *Positive expectations about aging*: a composite score of beliefs related to physical, emotional, and cognitive aging. *Social connectedness*: a composite score of structural social support; perceived social support; and attachment style. *Religiosity/spirituality*: a composite score of frequency of religious attendance; frequency of private spiritual experiences; and intrinsic religiosity. *Altruism*: composite score of altruistic behavior and the provision of social support.

Significant association: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.



Note. Error bars represent 95% confidence intervals.

Figure 1. Domain-specific well-being scores in nationally representative samples of U.S. military veterans.

between the happiness and life satisfaction and meaning and purpose domains. (See Supplemental Table 2 for further details.) Figure 1 shows the average scores of each well-being domain.

Correlates of well-being domains

Table 1 shows sample characteristics and results of multivariable linear regression models. In all domains assessed, the protective psychosocial characteristics composite score manifested the largest association. Supplemental Figures 1–7 show the full results of relative importance analyses of unique associations.

The majority of explained variance ($R^2 = 0.39$) in *Happiness and life satisfaction* scores was accounted for by greater purpose in life (24.4% relative variance explained [RVE]), greater optimism (15.1% RVE), and greater received social support (11.7%).

The majority of explained variance ($R^2 = 0.39$) in *Physical health* scores was accounted for by fewer somatic symptoms (25.2%), fewer medical conditions (23.6%), and greater purpose in life (20.7%).

The majority of explained variance ($R^2 = 0.45$) in *Mental health* scores was accounted for by greater resilience (16.0%), greater purpose in life (14.0%), and older age (11.1%).

The majority of explained variance ($R^2 = 0.40$) in *Meaning and purpose* scores was accounted for by greater optimism (12.9%), greater resilience (12.4%), and greater grit (12.3%).

The majority of explained variance ($R^2 = 0.29$) in *Character and virtue* scores was accounted for by greater purpose in life (25.0% RVE), greater resilience (23.2%), and greater curiosity (20.0%).

The majority of explained variance ($R^2 = 0.34$) in *Close social relationships* scores was accounted for by greater social support received (25.4%), greater purpose in life (24.4%), and greater resilience (14.0%).

Finally, the majority of explained variance ($R^2 = 0.22$) in *Financial and material stability* scores was accounted for by older age (15.8%), annual household income \geq \$60,000 (13.7%), and greater purpose in life (12.4%).

Discussion

To our knowledge, this study is the first to examine ratings and correlates of multiple well-being domains in a nationally representative sample of U.S. veterans. The highest-rated domains were financial/material stability and overall mental health, followed by meaning and purpose in life, close social relationships, character and virtue, and happiness and life satisfaction, and, finally, physical health. These findings align with prior work, which has consistently demonstrated that, while physical health often declines with age, mental health and well-being tend to increase (Thomas *et al.*, 2016). Older individuals may become more “inoculated” (Knight *et al.*, 2000) to life stressors, which can help them better regulate emotional reactivity and cope with future stressors, even in the face of physical decline. Older adults may also possess different preferences and values than younger adults, such as a proclivity for reliable, rather than novel, social interactions, which may help sustain or promote well-being (Löckenhoff and Carstensen, 2004).

Nevertheless, it should be kept in mind that the physical health ratings in the current sample were still relatively high, exceeding a 6 out of 10 on average. Although further research is needed to replicate these findings and compare them to non-veterans matched on relevant sociodemographic characteristics, it is encouraging to note that, as a whole U.S. military veterans reported high levels of well-being across all of the assessed domains.

The present study also identified several modifiable factors, most notably purpose in life, resilience, and social support, that may help promote well-being in U.S. veterans. For example, purpose in life was associated with better overall mental and physical health, happiness and life satisfaction, close social relationships, perceptions of personal character and virtue, and greater financial and material stability. While it is not surprising to observe associations between similarly valenced constructs such as purpose in life and happiness/life satisfaction, purpose in life was also more strongly associated with perceptions of *physical* health than was older age, physical exercise, and functional disability. One interpretation of these findings, albeit tentative and requiring further research, is that a sense of mission and service experienced during military service may translate to a greater sense of purpose and broader well-being in civilian life (Trachik *et al.*, 2022).

The strong and consistent associations between purpose in life and well-being underscores the importance of targeting purpose in life (Manco and Hamby, 2021) as part of efforts to promote health and well-being in veterans. Indeed, collectively, these findings support the VA's *Whole Health* initiative (Kligler *et al.*, 2022) and the ongoing use of clinical assessments that can assist veterans in clarifying their purpose in life and other personally valued areas of health and well-being. For example, the *Personal Health Inventory* (Howe *et al.*, 2017), a self-report tool that veterans can complete and discuss with their providers, helps to identify what is most important to the veteran and the goals they want to achieve. Nevertheless, given the cross-sectional design of this study, it is possible that low purpose in life is a product of poorer health and lower well-being rather than a driver of well-being domains, or that directional associations vary across individuals. Additional longitudinal and intervention studies are needed to evaluate whether identified well-being correlates (e.g., purpose in life) lead to increases in well-being domains or vice versa, or both.

Limitations of this study include the cross-sectional design, use of self-report measures, and use of a readily available measure of multidimensional well-being,

which may not fully align with the behavioral, physical, spiritual, and socioeconomic domains of well-being specified in the NASEM report (National Academies of Sciences *et al.*, 2023). Additional work that operationalizes and validates these specific well-being domains is needed to help advance the *Whole Health* initiative.

Notwithstanding these limitations, results of this study characterize veterans' ratings on core well-being domains identified by VA's *Whole Health* and other federal healthcare initiatives. They also identify modifiable factors that can be targeted to help bolster these domains. Continued efforts to promote the fundamental principles of *Whole Health* are critical to helping ensure that veterans lead longer, healthier, and more fulfilling lives.

Conflicts of interest

Dr Na has received royalty from Wolters Kluwer. Drs. Fischer, Feldman, Krist, Kudler, Jeste, and Pietrzak report no conflicts of interest.

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Supplementary material

The supplementary material for this article can be found at <https://doi.org/10.1017/S1041610224000589>.

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