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REVIEW ARTICLE

## Measuring Whole Person Health: A Scoping Review

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### Abstract

**Objective:** To review proposed Whole Person Health (WPH) domains and existing WPH measurement instruments.

**Introduction:** WPH clearly involves multiple domains (e.g., physical, mental, spiritual). To date, however, there is little consensus on which domains should be included in WPH, and WPH as an outcome is often conflated with WPH determinants (i.e., whole-person care). We conducted a scoping review of conceptual domains and existing WPH measurement instruments.

**Eligibility Criteria:** Peer-reviewed articles and gray literature published from January 2014 to December 2023 that included a theoretical model or empirical measure of self-reported “whole person health” were reviewed. Theoretical/conceptual sources and empirical studies with observational or intervention study designs, including adults 18 or older, were eligible for inclusion. Studies focusing on pediatric populations, educational and personality constructs, and whole health systems of care without mentioning WPH were excluded.

**Methods:** We searched five databases (PubMed, CINAHL, PsycINFO, ERIC, and Web of Science) and Google Scholar for peer-reviewed articles and gray literature published in English. Two research team members screened articles and extracted study characteristics. Results describe WPH conceptual domains, published self-report measures, and their psychometric properties.

**Results:** Our search identified 1143 unique sources, with 29 deemed eligible for review. Eleven conceptual articles mentioned four to six of seven total WPH domains each: biological/physical, behavioral/mental, social, environmental, spiritual, socioeconomic, and individual/other. Our search identified six WPH measures. All six WPH measures included assessments of the biological/physical, behavioral/mental, social, and spiritual domains, and all the conceptual WPH domains were assessed by at least one self-report measure. The self-report measures had a stronger emphasis on the assessment of spirituality and individual domains relative to the conceptual models and were less likely to include assessments of environmental and socioeconomic domains.

**Conclusions:** The results of this scoping review provide a greater understanding of the domains involved in WPH as a multidimensional construct. Although no existing WPH measures are suitable for broad use, their

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structural commonalities imply that WPH measure development efforts should consider the assessment of physical, mental, social, spiritual, and individual domains.

**Keywords:** whole person health, holistic, patient-reported outcomes, measurement

## Introduction

Whole Person Health (WPH) and Whole Health are similar concepts that have seen increased attention in recent years. For instance, the director of the National Center for Complementary and Integrative Health (NCCIH) has defined WPH as “the health and well-being of each person across multiple domains—biological, behavioral, social, and environmental” (p. 623).<sup>1</sup> Relatedly, Whole Health has been defined as “physical, behavioral, spiritual, and socioeconomic well-being as defined by individuals, families, and communities” (p. 36)<sup>2</sup> in a report by the National Academies of Sciences, Engineering and Medicine (NASEM). Given the similarity of these concepts, we use the term WPH throughout this article.

Despite the recent interest, the conceptualization of WPH as holistic, interconnected, and multidimensional is not new. The idea has existed in medicine for centuries<sup>3</sup> and has been advanced by modern theories such as Kreitzer’s well-being model and Engel’s biopsychosocial model.<sup>4,5</sup> In this view, holistic health and disease are determined by an interconnected set of factors within the mind and body, social relationships, and the physical environment.<sup>1</sup> Indeed, physical and mental health problems often co-occur and disproportionately affect disadvantaged communities.<sup>6</sup> In recent years, health care systems have recognized the need to address social determinants of health<sup>7,8</sup> and the multidimensional needs of individuals, families, and communities by implementing whole health approaches to care.<sup>6</sup> Perhaps the most well-known example is the Whole Health program at the Veteran’s Health Administration (VHA). The VHA is the largest system of health care in the United States, and the outcome of their Whole Health program has implications for health care nationally and abroad.<sup>2</sup>

One challenge in the pursuit of WPH is its measurement.<sup>2</sup> We propose that the measurement of WPH be patient-reported; patient-centered care is a foundational element of a whole-health approach and the evidence for this approach overwhelmingly depends on patient-reported outcome measures.<sup>1</sup> If improving WPH is the goal, reliable, and valid self-report measures of WPH as a multidimensional construct are needed to assess population health and effectiveness of clinical care, including whole health interventions. Accordingly, the NCCIH has identified development and testing of WPH measures as a priority for future research.<sup>1</sup> To date, however, a comprehensive understanding of the current state of WPH measurement as an outcome remains incomplete.

A recent review by Thomas et al.<sup>9</sup> summarized clinician-administered whole-person assessments used in general practice and their alignment with whole-person care, including fit across multidimensional domains. Assessments of domains and their level of detail varied across tools, particularly for spirituality and religious domains.<sup>9</sup> While this review helps advance clinician-administered

assessments in whole-person care, research on self- or patient-reported outcome measures is needed to understand WPH from the perspective of the individual.<sup>10</sup> Moreover, it has been suggested that WPH is an outcome that should be separated from its determinants (e.g., whole-person care).<sup>11</sup>

## Objective

Although several multidimensional self-report measures of health exist,<sup>12–14</sup> our appraisal of the literature suggests that a review of WPH measures—that is, self-report measurement instruments explicitly measuring WPH—has yet to be conducted. Given this literature gap, the current study’s objective was to conduct a scoping review of peer-reviewed publications and gray literature in this area. Following guidance from Peters et al.,<sup>15</sup> we chose to conduct a scoping review instead of a systematic review because we wanted to identify and review the range of WPH domains and measures published in a variety of sources to date. We hope that by identifying gaps in the literature, this scoping review may inform future WPH measures development.

Two research questions guided our scoping review:

- (1) What domains of WPH have been proposed that can inform the measurement of WPH outcomes?
- (2) What patient-reported measures of WPH have been developed and psychometrically evaluated?

## Methods

### Protocol and registration

We follow the Preferred Reporting Items for Systems Reviews and Meta-Analyses extension for Scoping Reviews.<sup>16</sup> Our scoping review protocol was registered in the Open Science Framework and can be found at <https://osf.io/3z2cg>.

### Inclusion criteria

As is common in scoping reviews,<sup>15,17</sup> our eligibility criteria were developed iteratively after a preliminary review of search results. Peer-reviewed publications and gray literature that specified a conceptual framework, measurement model, or empirical measure of WPH were eligible for inclusion. Articles must have included the phrase “whole person” or “whole person health” (see search terms below), described or measured more than one self-report health domain, and been published in English from January 1, 2014, to December 31, 2023. This period was chosen after a preliminary literature review revealed that “whole person health” measurement approaches (explicitly defined) were a novel development. Theoretical and empirical publications, commentaries, observational studies with quantitative or qualitative data, and WPH care interventions using WPH outcome measures were included.

### Exclusion criteria

Publications were excluded if they primarily described system-level measures of whole-person care (e.g., service use and health care expenditures) or process measures (e.g., the fidelity of delivering whole health care services) without measuring WPH as a patient-reported outcome. Furthermore, we excluded publications that were (a) limited to pediatric/adolescent populations under the age of 18, (b) focused exclusively on personality dimensions or educational constructs, and (c) conference presentations and papers that duplicated reports published in peer-reviewed journals.

### Search strategy

On February 26, 2024, we searched peer-reviewed and gray literature for publications related to the measurement of WPH in English published over the last 10 years (from January 1, 2014, to December 31, 2023). Our search strategy was developed in consultation with a research librarian who later conducted the search. Databases searched included PubMed, CINAHL, PsycINFO, ERIC, and Web of Science for peer-reviewed publications and a Google Scholar search using the Publish or Perish platform, limited to .gov, .org, and .edu domains for gray literature. The following search terms were used: “Whole Person\*” OR “Whole Health” OR (wholistic AND (health OR care OR healing OR illness)) OR Wholism OR (“integrative health” OR “integrative medicine” OR “integrative care”) AND whole) OR (“Holistic Health” AND whole). Full search terms for PubMed are provided as an example in Supplementary Appendix. Reference lists of relevant publications and review articles were also reviewed to identify additional publications not included in the search results.

### Evidence screening and selection

Search results were exported to EndNote and an Excel file. A screening form was developed and pilot-tested using an Excel file by five research team members. Eligibility criteria were refined and finalized through consensus. We first screened titles and abstracts, excluding those that did not meet eligibility criteria. We then screened the full texts of articles for inclusion. All titles, abstracts, and full-text files were screened by two team members, with any disagreements discussed among the remaining members until a consensus was reached about whether to include the article in our results.

### Synthesis of results

Two team members (A3 and A1) extracted relevant data from eligible articles and entered it into an Excel spreadsheet. Data were extracted for the following fields: Author/Year, type of publication (e.g., conceptual or WPH measurement study), study aim(s), study design, intervention description (if applicable), sample description (if applicable), WPH measurement(s) used, and WPH domains proposed or measured.

We used descriptive methods to characterize eligible sources. For theoretical and conceptual sources, we counted and described the number and content of the WPH domains described. In our analysis, we recategorized WPH domains

that appeared to be similar to one another to encapsulate the primary domains across all conceptual sources. For empirical studies that used WPH measures, we described the measures and their psychometric properties when available. Psychometric properties of WPH measures were summarized using two domains from the COSMIN Taxonomy of measurement properties.<sup>18,19</sup> This taxonomy was developed through expert consensus using the Delphi method,<sup>18</sup> and includes the four broad domains of reliability (e.g., internal consistency, reliability, and measurement error), validity (e.g., content/face validity, structural validity, construct validity, and criterion validity), responsiveness (the ability of a measure to detect change over time), and interpretability (the ability to assign qualitative meaning to quantitative scores). Due to the limited information available for responsiveness and the lack of clear objective metrics for evaluating interpretability, we elected to assess the reliability and validity of measures from among the published sources included in our final set. Therefore, the COSMIN taxonomy was primarily used to identify which measurement properties should be reported and was not used to conduct a critical appraisal of individual sources of evidence. Finally, we did a qualitative synthesis to examine concordance, or “fit” between conceptual WPH domains and empirical WPH domains found within quantitative WPH measures. Specifically, we examined the content of the factors and subscales contained within each WPH measure to match them with the WPH domains listed in the conceptual sources we identified. This analysis was conducted independently by three team members (A1, A8, and A2) until consensus was reached.

### Results

The search produced 1141 results from peer-reviewed and gray literature databases (see Fig. 1 for the flow diagram). An additional 10 sources were found by reviewing reference lists of relevant review articles, producing 1143 unduplicated sources. We excluded 1060 articles based on title and abstract review and reviewed the full texts of 83 articles. Of these, 52 were excluded for not including a conceptual model or measure of WPH, one source describing the Whole

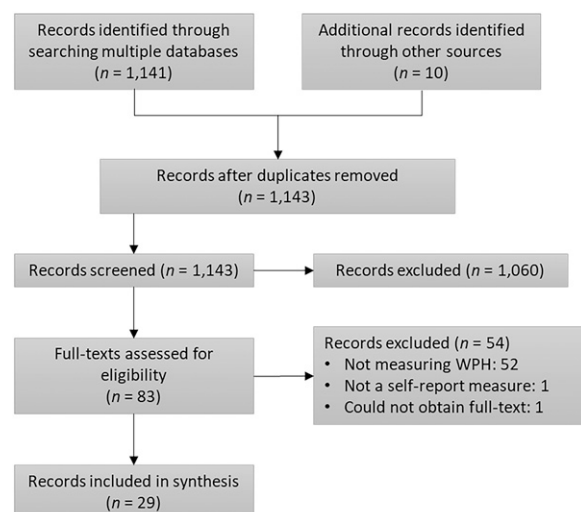


FIG. 1. Flow diagram showing selection of sources.

TABLE 1. SUMMARY OF INCLUDED SOURCES (N = 29)

<i>Author, year</i>	<i>Article type</i>	<i>Aim</i>	<i>Study design</i>	<i>Intervention description (if applicable)</i>	<i>Sample</i>	<i>WPH measure(s) used</i>	<i>WPH domains (Proposed/Measured)</i>
Austin et al., 2021 <sup>22</sup>	WPH Measurement Study	To describe My Strengths+MyHealth (MSMH), a mobile application designed to self-report whole-person health as strengths, challenges, and needs	N/A	N/A	N/A	MSMH, based on Omaha System health terminology measuring 42 concepts across four health domains	Environmental (My living), psychosocial (My mind and networks), Physiological (My body), and health-related behaviors (My self-care)
Austin et al., 2022 <sup>23</sup>	WPH Measurement Study	To apply exploratory data analysis to visualize whole person health patterns (strengths, challenges, and needs) in adults 65 and older	Cross-sectional survey	N/A	383 English-speaking adults 18 and older recruited from a large state fair. Analysis focused on adults aged 65 and older (n = 84)	Omaha System concepts assessed using the MSMH app	Environmental (My living), psychosocial (My mind and networks), Physiological (My body), and health-related behaviors (My self-care)
Austin et al., 2023 <sup>24</sup>	WPH Measurement Study	To examine social determinants of health and resilience (strengths) using the Omaha System MSMH app, and examine strengths, challenges, and needs for those with and without at least one income-related challenge	Observational, cross-sectional study with secondary data analysis	N/A	919 adults 18 years and older recruited from community outreach (Health Fair and a Midwestern State fair) and via social media from August 2020 to August 2021	19 strengths, 5 challenges, and 76 needs selected from 42 Omaha System concepts and assessed using the MSMH app	Environmental (My living), psychosocial (My mind and networks), Physiological (My body), and health-related behaviors (My self-care)
Barnhill et al., 2022 <sup>25</sup>	WPH Measurement Study	This pilot study evaluated whether the Whole Health model resonates with patients of a large public university rehabilitation clinic	Pilot single-group intervention study using mixed methods	Two introductory components of the VA Whole Health model: The Patient Health Interview (PHI) and the course "Taking Charge of My Life and Health," a weekly 10-week course that combines instruction, mindfulness, and development of personal health goals	30 adult patients receiving psychiatric and allied health staff support. 30 completed the PHI; 6 attended the course	PHI	Moving the body, surroundings, personal development, food and drink, recharge, relationships, spirit and soul, and power of the mind
Chan et al., 2016 <sup>26</sup>	WPH Measurement Study	To develop and evaluate the psychometric properties of a scale measuring holistic health among chronically ill individuals	Cross-sectional psychometric development and evaluation study	N/A	Three samples of Chinese people in Hong Kong: scale items developed among 15 stroke survivors; scale validated among two samples with chronic illnesses (n = 319, n = 303)	Holistic Health Status Questionnaire (HHSQ)	Psychological expression, changes in self and family, physical symptoms, social and family connectedness, fatalism, religion and faith, self-query, and coping style

(continued)

TABLE 1. (CONTINUED)

<i>Author, year</i>	<i>Article type</i>	<i>Aim</i>	<i>Study design</i>	<i>Intervention description (if applicable)</i>	<i>Sample</i>	<i>WPH measure(s) used</i>	<i>WPH domains (Proposed/Measured)</i>
Chu et al., 2023 <sup>27</sup>	WPH Measurement Study	To compare current and ideal Whole Health appraisals for Veterans across racial, ethnic, and gender groups	Cross-sectional survey	N/A	1106 Veterans who registered for VHA health care and were screened for health needs at the VA San Diego Healthcare System from April 2018 to February 2019	The 21-item Brief PHI	Whole health domains: Physical well-being, mental/emotional well-being, and day-to-day life. 9 building blocks of health: Body; recharge; food and drink; personal development; family, friends, and coworkers; spirit and soul; power of the mind; surroundings; and professional care.
Cornis-Pop & Reddy, 2019 <sup>28</sup>	WPH Measurement Study	To evaluate the Polytrauma Integrative Medicine Initiative (PIMI) pilot, part of the VA's Whole Health program at three VA polytrauma rehabilitation centers in the United States	A mixed-method evaluation of a pilot intervention study with a 3-month follow-up assessment including the PHI	The PIMI pilot was a 3-year study that used Health Coaching in the care of veterans with complex symptoms related to traumatic brain injury (TBI) and polytrauma	749 veterans participated in the PIMI pilot. 547 completed the PHI at baseline; 267 completed the PHI at 3-month follow-up	PHI	Domains assessed by the PHI: physical well-being, mental/emotional well-being, and a day-to-day life scale. Eight areas of self-care: Moving the body (exercise), surroundings (environment), personal development, food and drink (nutrition and substance use), recharge (sleep/rest); family, friends and coworkers (relationships); spirit and soul, and power of the mind. Biological, behavioral, social, and environmental
Deuster et al., 2023 <sup>29</sup>	Conceptual	Summary of a research breakout session which discussed barriers, challenges, and a research agenda for the Total Force Fitness (TFF) research program within the U.S. military	Theoretical/Description of an expert panel consensus	N/A	N/A	N/A	
Findley et al., 2023 <sup>30</sup>	Conceptual	To assess whether the eight most commonly used, publicly available national health datasets in the United States included variables associated with whole health	Machine-learning assisted review of peer-reviewed journal articles published from 2010 to 2021	N/A	N/A	Sleep hygiene (hours of sleep, daytime sleepiness, Pittsburgh Sleep Index), diet and/or nutrition (fruits per day, vegetables per day, other), physical activity (meeting the minimum of recommended exercise/week, body mass index, other), mental health (Kessler 6 Index, depression diagnosis, nervousness, hopelessness, restlessness, everything is an effort, worthlessness, other), and mind-body (use of complementary or alternative medicines, meditation, yoga, other)	Sleep hygiene, diet/nutrition, physical activity, mental health, and mind-body

(continued)

TABLE 1. (CONTINUED)

<i>Author, year</i>	<i>Article type</i>	<i>Aim</i>	<i>Study design</i>	<i>Intervention description (if applicable)</i>	<i>Sample</i>	<i>WPH measure(s) used</i>	<i>WPH domains (Proposed/Measured)</i>
Haun et al., 2023 <sup>31</sup>	Conceptual	To explore Veterans' lived experiences with the Whole Health system of care and examine if experiences align with dimensions of wellness proposed by the VA Whole Health circle of health model	Cross-sectional, qualitative, quality improvement study	VA Whole Health activities provided as standard practice at one VA medical center in the southeastern United States (alternative medicine, mindfulness, nutrition, whole health coaching)	Purposive sample of 50 Veterans participating in at least two Whole Health activities (e.g., WH coaching and yoga) at one VA medical center in the southeastern United States	Semi-structured qualitative interviews were conducted by phone and assessed participation in Whole Health activities and their perceived impact on dimensions of wellness	Environmental, financial, mental and emotional, physical, social, and spiritual wellness
Kemp & Fisher, 2022 <sup>32</sup>	Conceptual	Review theoretical foundations for a proposed theoretical model (the GENIAL framework) that links health to well-being, with implications for whole health	Narrative review		N/A	N/A	Individual (including a balanced mind and a healthy body), community (social connectedness), the environment (connection with nature), positive societal change and sociostructural factors
Khurana et al., 2022 <sup>33</sup>	WPH Measurement Study	Describe the development, implementation, and evaluation of the Whole PERSON Health Score (WPHS)	Cross-sectional measure development study	N/A	7926 patients completing WPHS assessment at Medical Center at a large health system in southern California.	WPHS	Physical health, emotional health, resource utilization, socioeconomic, ownership, and nutrition and lifestyle
Langevin, 2021 <sup>1</sup>	Conceptual	Describe a five-year plan to advance whole person health research at the National Center for Complementary and Integrative Health (NCCIH).	N/A	N/A	N/A	N/A	Biological, behavioral, social, and environmental
Langevin, 2022 <sup>34</sup>	Conceptual	Describes research agenda for studying Whole Person Health and measurement at the NCCIH	N/A	N/A	N/A	N/A	Whole person domains (physiological systems, behavior, social, environmental) and health domains (health restoration, resilience, and/or disease prevention)
Langevin et al., 2024 <sup>35</sup>	Conceptual	To outline a research strategy at the NCCIH to support multicomponent whole person interventions for healthy aging	N/A	N/A	N/A	N/A	Biological, behavioral/psychological, social, and environmental
National Academies of Sciences, Engineering, and Medicine, 2023 <sup>2</sup>	Conceptual	To examine the potential for improving health outcomes through a whole health care model; identify best practices and lessons learned from the VA and other whole health care systems; and consider how to disseminate whole person care to the entire U.S. population	Literature review; expert panel consensus	N/A	N/A	N/A	Physical, behavioral, spiritual, and socioeconomic well-being.

(continued)

TABLE 1. (CONTINUED)

<i>Author, year</i>	<i>Article type</i>	<i>Aim</i>	<i>Study design</i>	<i>Intervention description (if applicable)</i>	<i>Sample</i>	<i>WPH measure(s) used</i>	<i>WPH domains (Proposed/Measured)</i>
Monsen et al., 2014 <sup>36</sup>	WPH Measurement Study	To examine the feasibility of using the Omaha System to describe the strengths of older adults with chronic illness	Mixed-method, secondary data analysis of cross-sectional data from an intervention study	N/A	32 older adults with multiple chronic illnesses participating in a study comparing usual care to a strengths-based approach to care.	The Omaha System Problem Classification Scheme, Overall health (single item), Mental and physical health (EQ-5D)	Environmental, psychosocial, physiological, and health-related behaviors
Monsen et al., 2015 <sup>37</sup>	WPH Measurement Study	To examine potential alignment between the Wellbeing Model and the Omaha Health System and evaluate feasibility of describing strengths and needs with this assessment	Mixed-method, cross-sectional assessment and feasibility study	N/A	5 older adults living in a residential senior living community in the midwestern United States	Omaha System Problem Classification Scheme	Environmental, psychosocial, physiological, and health-related behaviors
Monsen et al., 2021a	WPH Measurement Study	To explore resilience in two samples before COVID-19 and one sample during COVID-19 using strengths indicators from the Omaha system and Simplified Omaha System concepts.	Secondary analysis of cross-sectional survey data	n/a	Pre-COVID-19 data from a community sample at a large state fair ( $n = 383$ ) and a clinical sample using routine health care documentation records ( $n = 50,509$ ). During-COVID-19 data from community sample collected virtually ( $n = 102$ ).	Community samples used My Strengths + My Health (MSMH) app; Clinical samples used data from the Omaha System Data Collaborative.	Environmental (My living), psychosocial (My mind and networks), and health-related behaviors (My self-care)
Monsen et al., 2021b	WPH Measurement Study	To describe a whole-person perspective in case studies with clinical reports (Aim 1), and provide an example of whole-person health patterns using data visualization (Aim 2)	Cross-sectional survey data using case studies	N/A	Case studies of 2 older adults with chronic health conditions obtained from a MSMH dataset collected at a state fair (Aim 1). Aim 2 analyses used full data set of adults 65 or older ( $n = 76$ )	The Omaha System using the MSMH app	Environmental, psychosocial, physiological, and health-related behaviors
Mori et al., 2019 <sup>38</sup>	WPH Measurement Study	Program evaluation of the acceptability of a Wellness Group for veterans with post-traumatic stress disorder (PTSD)	Pre-post single group intervention study using mixed-methods	A 12-week, 24-session Wellness Group using mindfulness and goal setting to improve eight VA Whole Health domains: sleep, exercise, food and drink, personal development, spirituality, surroundings, relationships, and power of the mind	9 male veterans with PTSD symptoms (average age = 64) recruited from an outpatient PTSD clinic	PHI and semi-structured qualitative interviews	Sleep, exercise, food and drink, personal development, spirituality, surroundings, relationships, and power of the mind

(continued)



TABLE 1. (CONTINUED)

<i>Author, year</i>	<i>Article type</i>	<i>Aim</i>	<i>Study design</i>	<i>Intervention description (if applicable)</i>	<i>Sample</i>	<i>WPH measure(s) used</i>	<i>WPH domains (Proposed/Measured)</i>
National Alliance of Health care Purchaser Coalitions & St. Louis Area Business Health Coalition, 2023 <sup>39</sup> National Center for Complementary and Integrative Health, 2021 <sup>40</sup>	Conceptual	Guide for employers on how to evaluate health providers and partners in their commitment to a whole person health approach	N/A	N/A	N/A	N/A	Individual, bio/physical, psychological health, social
	Conceptual	A research workshop involving nine NIH institutes, centers and offices to consider examples, areas of methodologies to move the whole person health research field forward	Executive summary of a research workshop	N/A	N/A	N/A	Biological, behavioral, social, environmental
Niemeyer, 2022 <sup>41</sup>	WPH Measurement Study	To identify and explore perceived meaningful changes in whole person quality of life, well-being, and subjective symptoms following a whole person integrative health (IH) approach for breast cancer	Retrospective, mixed-method analysis of an intervention study	Whole-person Integrative Health approach for breast cancer at a holistic health care center in the United States	33 patients diagnosed with breast cancer receiving integrative care from Mederi Center in Ashland, Oregon, USA	Self-Assessment of Change (SAC) questionnaire with five additional questions based on the Measure Yourself Medical Outcome Profile 2 (MYMOP2).	Cognitive, emotional, physical, spiritual, social, and whole person health
Pirsch et al., 2023 <sup>42</sup>	WPH Measurement Study	To characterize whole person health patterns of public health nurses	Cross-sectional survey	N/A	Online sample of 132 public health nurses in the United States	The Omaha System using the MSMH app	Environmental (My living), psychosocial (My mind and networks), Physiological (My body), and health-related behaviors (My self-care)
Rajamani et al., 2022 <sup>43</sup>	WPH Measurement Study	To understand whole-person health during the COVID-19 pandemic for people with and without self-reported emotional challenges	Cross-sectional survey	N/A	Adult attendees of a state fair in the midwestern United States in 2021 (N = 182)	The Omaha System using the MSMH app	Environmental (My living), psychosocial (My mind and networks), Physiological (My body), and health-related behaviors (My self-care)

*(continued)*

TABLE 1. (CONTINUED)

<i>Author, year</i>	<i>Article type</i>	<i>Aim</i>	<i>Study design</i>	<i>Intervention description (if applicable)</i>	<i>Sample</i>	<i>WPH measure(s) used</i>	<i>WPH domains (Proposed/Measured)</i>
Rosenbaum et al., 2023 <sup>44</sup>	WPH Measurement Study	To briefly describe the implementation of a whole person care model within 16 primary care practices in the United States	Single-group implementation study using a learning collaborative process. Surveys before, during, and after year-long implementation process	The HOPE Note Toolkit contains three whole-person assessment and care planning tools: The PHI, a Healing-Oriented Practices and Environments (HOPE) note, and a Personalized Healing Plan	16 primary care clinics employing more than 220 clinicians; Toolkit used with 942 patients	PHI; HOPE note (clinician completed)	Physical, environmental, lifestyle, emotional, mental, and spiritual
Schear et al., 2020 <sup>45</sup>	Conceptual	To describe the Cancer Life Reimagined (CaLM) model of whole-person cancer patient care and assessment at the Livestrong Cancer Institutes	Narrative describing intervention model and its development	The CaLM model is a comprehensive, clinical, and supportive ambulatory care model that provide wraparound care for patients and caregivers	N/A	Proposed PROMs used in the CALM model: Generalized Anxiety Disorder Screen (GAD-2), Patient Health Questionnaire (PHQ 2/9), Functional Assessment of Cancer Therapy (FACT-G), MG Anderson Symptom Inventory, Primary Care Post-Traumatic Stress Disorder Assessment	Sexual, cultural, values and preferences, physical, emotional, social and practical
Tao et al., 2023 <sup>46</sup>	WPH Measurement Study	To develop and test the CREATION Health Assessment Tool for Patients (CHAT-P)'s psychometric properties to measure the impact of education and behavior modification on improving overall health and longevity	Cross-sectional measure development and psychometric validation study using mixed-methods.	CHAT-P is a measure of whole-person health inspired by CREATION Health, a comprehensive, faith-based health and wellness program guided by eight whole-person health principles	599 patients 21 or older receiving inpatient care at a community hospital, with an index admission diagnosis of heart failure, chronic obstructive pulmonary disease, acute myocardial infarction, coronary artery bypass graft, pneumonia, total knee or hip replacement, or stroke	CHAT-P	Choice, rest, environment, activity, trust in god, interpersonal relationships, outlook, and nutrition

Health Index was excluded because it was determined this was not a self-report measure,<sup>20</sup> and one source describing the Evernorth Vitality Index was excluded because we could not obtain the full text of this proprietary measure.<sup>21</sup> In total, 29 sources were deemed eligible for inclusion and are presented in Table 1.

#### *Theoretical and conceptual sources describing WPH domains*

Eleven theoretical or conceptual articles proposed WPH domains with implications for WPH measurement. Three conceptual sources were commentaries,<sup>1,34,35</sup> two were literature reviews,<sup>30,32</sup> three involved expert panel consensus,<sup>2,29,40</sup> one was a phenomenological analysis of Veterans' lived experience with a VA whole health program,<sup>47</sup> one proposed WPH domains to be assessed in a whole-person cancer care model,<sup>45</sup> and another was a guide for employers on selecting employee health insurance plans that use a WPH approach.<sup>39</sup> WPH domains from conceptual sources are listed in Table 2. The number of domains in each source ranged from four to six. We recategorized these into seven overarching domains (from  $n =$  sources): biological/physical ( $n = 11$ ), behavioral/mental ( $n = 11$ ), social ( $n = 9$ ), environmental ( $n = 7$ ), spiritual ( $n = 2$ ), socioeconomic ( $n = 2$ ), and other ( $n = 2$ ). The "other" domain included an "individual" domain proposed for employers when considering health insurance plans,<sup>39</sup> as well as "sexual, cultural, values and preferences," which were three assessment domains proposed in the CALM whole-person cancer care model.<sup>45</sup>

#### *WPH measurement instruments*

The remaining 18 peer-reviewed publications described the development and use of six self-report WPH measurement instruments. One study described the development of the CREATION Health Assessment Tool for Patients (CHAT-P)<sup>46</sup>; one study described the development of the Holistic Health Status Questionnaire (HHSQ)<sup>26</sup>; nine studies described the development and use of the MyStrengths+MyHealth (MSMH) app<sup>22–24,36,37,42,43,48,49</sup>; five studies used the Personal Health Inventory (PHI) to assess the health status of Veterans, primary care patients, and measure outcomes of whole health interventions<sup>25,27,28,38,44</sup>; one study used the Self-Assessment of Change (SAC) questionnaire to assess change in whole health outcomes following a whole-person approach to cancer care<sup>41</sup>; and one study described the development of the Whole Person Health Score (WPHS) to assess WPH in a large patient population.<sup>33</sup> A summary of WPH measures and their psychometric properties (reliability and validity guided by the COSMIN taxonomy) is provided in Table 3 and described below.

**CREATION Health Assessment Tool for Patients.** The CHAT-P<sup>46</sup> assesses eight WPH principles proposed by the CREATION model,<sup>52</sup> a faith-based health and wellness program. These are Choice, Rest, Environment, Activity, Trust in God, Interpersonal relationships, Outlook, and Nutrition. Eighty-two agree–disagree Likert-type items were originally developed through a literature review and focus groups with a CREATION health governance council and subject matter experts. Items were administered to 599 patients receiving

care for various acute health conditions at an inpatient hospital. Items were reduced by examining interitem correlations and exploratory factor analysis, resulting in 40 items loading on seven factors. Items were further reduced with input from four content experts, resulting in the 28-item CHAT-P scale that uses 2–9 items to measure each domain. Subscale scores vary depending on the number of items, and a total score ranges from 28 to 140, with higher scores indicating better health. The CHAT-P has demonstrated varying levels of internal consistency for different subscales (Cronbach's alpha: 0.58–0.85),<sup>46</sup> as well as content and construct validity, although the published literature does not provide details about the validity evaluation.

**Holistic Health Status Questionnaire.** The HHSQ was developed to assess the holistic health of "chronically ill individuals" and was developed and evaluated in three samples of people of Chinese ancestry in Hong Kong: an initial sample of 15 hospital-based stroke survivors, and two independent samples receiving care for chronic illnesses ( $n = 319$  and  $n = 303$ ).<sup>26</sup> The resulting 45-item HHSQ assesses eight factors: psychological expression, change in self and family, physical symptoms, social and family connectedness, fatalism, religion and faith, self-query, and coping style. Items are scored on a 4-point scale ranging from "none of the time" to "all of the time." Factor scores and an overall summary score can be generated, with higher scores indicating greater holistic well-being. The HHSQ has demonstrated structural and convergent validity, although the internal consistency reliability of some subscales is below the standard threshold of 0.7 (Cronbach's alpha: 0.59–0.92 across subscales).<sup>26</sup>

**MyStrengths+MyHealth.** MSMH is a mobile health app that uses 42 concepts from the Omaha System<sup>3,50</sup> to assess strengths, challenges, and needs in four domains: environmental, psychosocial, physiological, and health-related behaviors. Each concept is rated on a 5-point scale from 1 "very bad" to 5 "very good." Strengths are defined as concepts rated 4 or above, and challenges are defined as specific symptoms associated with each concept and separately assessed within the app (users can select "yes," "no," or "does not apply"). Users can also indicate needs associated with each concept (i.e., need for counseling). The assessment results in a summary of strengths, needs, and challenges, which can help guide clinical interactions, self-tracking, and symptom management. Prior reports have examined relationships between strengths and needs in community-based samples,<sup>24,43,48,49</sup> nurses,<sup>42</sup> adults with chronic illnesses,<sup>36</sup> and other clinical samples.<sup>37</sup> Although it has been trialed in various populations, MSMH has undergone less formal psychometric evaluation than other scales (i.e., developers have only established content/face validity).<sup>37</sup> Prior development and validation of domains have been conducted on the Omaha System, which the MSMH is based on.<sup>50</sup>

**Personal Health Inventory.** The PHI was developed to assess whole health and guide self-care, professional care, and care planning within the VA Whole Health program. The PHI combines open-ended questions asking patients what matters most and brings them joy in life, as well as

TABLE 2. WHOLE PERSON HEALTH DOMAINS PRESENTED IN THEORETICAL/CONCEPTUAL SOURCES (N = 11)

<i>Author, year</i>	<i>Biological/ physical</i>	<i>Behavioral/ mental</i>	<i>Social</i>	<i>Environmental</i>	<i>Spiritual</i>	<i>Socioeconomic</i>	<i>Individual/other</i>
Deuster et al., 2023 <sup>29</sup> Findley et al., 2023 <sup>30</sup>	Biological Sleep hygiene, diet/nutrition, physical activity	Behavioral Mental health, mind–body	Social	Environmental	—	—	—
Huan et al., 2023	Physical	Mental and emotional	Social	Environmental	Spiritual	Financial	—
Kemp & Fisher, 2022 <sup>32</sup>	Healthy body	Balanced mind	Social social connectedness, change and sociocultural factors	Connection with nature	—	—	—
Langevin et al., 2024 <sup>35</sup>	Biological	Behavioral/ psychological	Social	Environmental	—	—	—
Langevin, 2021 <sup>1</sup> Langevin, 2022 <sup>34</sup>	Biological Physiological systems	Behavioral Behavior	Social Social	Environmental Environmental	— —	— —	— —
National Academies of Sciences, Engineering, and Medicine, 2023 <sup>2</sup>	Physical	Behavioral	—	—	Spiritual	Socioeconomic well-being	—
National Alliance of Health care Purchaser Coalitions & St. Louis Area Business Health Coalition, 2023 <sup>39</sup>	Bio/Physical	Psychological Health	Social	—	—	—	Individual
National Center for Complementary and Integrative Health, 2021 <sup>40</sup>	Biological	Behavioral	Social	Environmental	—	—	—
Schear et al., 2020 <sup>45</sup>	Physical	Emotional	Social and practical	—	—	—	Sexual, cultural, values and preferences

TABLE 3. WHOLE PERSON HEALTH MEASURES AND THEIR PSYCHOMETRIC PROPERTIES

<i>WPH measure</i>	<i>Description</i>	<i>Factors/item content</i>	<i>Scale/scoring</i>	<i>Reliability</i>	<i>Validity</i>
CREATION Health Assessment Tool for Patients (CHAT-P)	Assessment tool developed to measure the eight elements of the CREATION Health wellness program: Choice, Rest, Environment, Activity, Trust in God, Interpersonal Relationships, Outlook, and Nutrition. CHAT-P was developed through focus groups and factor analysis with an inpatient sample, resulting in a 28-item scale	Items are associated with seven factors: <ul style="list-style-type: none"> <li>• Trust (9 items)</li> <li>• Environment</li> <li>• Interpersonal-relationship (8 items)</li> <li>• Choice (7 items)</li> <li>• Nutrition (7 items)</li> <li>• Outlook (5 items)</li> <li>• Activity (2 items)</li> <li>• Rest (2 items)</li> </ul>	Item are scored from 1 (“strongly disagree”) to 5 (“strongly agree”). A total score ranges from 28–140, with higher scores indicating better health and well-being	Cronbach’s alpha for subscales: 0.58–0.84 <sup>46</sup>	<ul style="list-style-type: none"> <li>• Content validity</li> <li>• Structural validity (EFA, PCA, CFA)</li> <li>• Convergent validity</li> <li>• Discriminant validity</li> </ul>
Holistic Health Status Questionnaire (HHSQ)	The HHSQ is a 45-item, 8-factor scale developed and validated among three samples with chronic-illness in Hong Kong	Eight factors: <ul style="list-style-type: none"> <li>• Psychological expression (12 items)</li> <li>• Change in self and family (7 items)</li> <li>• Physical symptoms (10 items)</li> <li>• Social and family connectedness (3 items)</li> <li>• Fatalism (3 items)</li> <li>• Religion and faith (3 items)</li> <li>• Self-query (4 items)</li> <li>• Coping style (3 items)</li> </ul>	Items are scored on a 4-point scale from “none of the time” to “all of the time.” Higher summed scores indicate greater holistic well-being	Cronbach’s alpha for subscales: 0.59–0.92 <sup>26</sup>	<ul style="list-style-type: none"> <li>• Convergent validity</li> <li>• Structural validity (EFA)</li> </ul>
My Strengths My Health (MSMH) app <sup>22–24,36,37,42,43,48,49</sup>	The MSMH mobile health app asks users to rate their health for 42 health concepts from the Omaha System. Whole-person health is described as strengths, challenges, and needs	42 Omaha System concepts classified in four domains: <ul style="list-style-type: none"> <li>• Environmental/“My living” (4 concepts)</li> <li>• Psychosocial / “My mind and networks” (12 concepts)</li> <li>• Physiological / “My body” (18 concepts)</li> </ul>	Each concept is rated from 1 (“very bad”) to 5 (“very good”). Strengths are concepts with a status score of 4 or 5. Challenges are specific symptoms associated with each concept (yes, no, or not apply). Needs are problem-specific actions for each concept (e.g., counseling)	Not reported	<ul style="list-style-type: none"> <li>• Content validity (Face validity evaluated by subject matter experts)<sup>37</sup></li> <li>• Prior psychometric evaluation has been carried out for the Omaha System<sup>50</sup></li> </ul>

(continued)

TABLE 3. (CONTINUED)

<i>WPH measure</i>	<i>Description</i>	<i>Factors/item content</i>	<i>Scale/scoring</i>	<i>Reliability</i>	<i>Validity</i>
Personal Health Inventory (PHI) <sup>25,27,28,38,44</sup>	The PHI was developed to assess whole health and guide self-care, professional care and care planning within the VA Whole Health program. There is a 21-item brief version, and longer version with further instructions and space for open-ended reflections	<ul style="list-style-type: none"> <li>• Health-related behaviors/ “My self-care” (8 concepts)</li> <li>• “What REALLY matters to you in your life?” and “What brings you joy and happiness?” (text responses)</li> <li>• Self-ratings: <ul style="list-style-type: none"> <li>• Physical Well-Being</li> <li>• Mental/Emotional Well-Being</li> <li>• Life: How is it to live your day-to-day life</li> </ul> </li> <li>• Circle of Health / 8 building blocks for health and well-being: <ul style="list-style-type: none"> <li>• Moving the body</li> <li>• Recharge</li> <li>• Food and Drink</li> <li>• Personal Development</li> <li>• Family, Friends, and Coworkers</li> <li>• Spirit and Soul</li> <li>• Surroundings</li> <li>• Power of the mind.</li> </ul> </li> </ul> <p>Concludes by asking participants to reflect on their vision for their best possible health, how they might get there, and what might get in the way</p>	A summary of strengths, challenges, and needs are provided for personal and clinical use Physical well-being, mental/emotional well-being, and day-to-day life are rated from 1 (“not so good”) to 5 (“great”). Participants asked to rate “Where I am Now (1–5)”, and “Where I Want to Be (1–5)” for 8 Building Blocks of Health and Well-Being	Cronbach’s alpha = 0.91 <sup>27</sup>	<ul style="list-style-type: none"> <li>• Structural validity (CFA provided support for a bifactor model; RMSEA <math>\leq 0.02</math>)<sup>27</sup></li> </ul>

(continued)

TABLE 3. (CONTINUED)

<i>WPH measure</i>	<i>Description</i>	<i>Factors/item content</i>	<i>Scale/scoring</i>	<i>Reliability</i>	<i>Validity</i>
Self-Assessment of Change (SAC) <sup>41</sup>	The SAC is a person-centered, multidimensional measure of self-perceived change as a result of engagement in complementary and alternative medicine therapies.	Uses 16 word-pairs to assess change across six domains of wellness: <ul style="list-style-type: none"> <li>• Cognitive health (C)</li> <li>• Emotional health (E)</li> <li>• Physical health (P)</li> <li>• Spiritual health (Sp)</li> <li>• Social health (S)</li> <li>• Whole person health (WP)</li> </ul>	Responses are rated retrospectively “before” and “now” on a 100 mm line connecting each word pair. Perceived change is calculated as the difference between “before” and “now” ratings. Higher change scores reflect greater improvement; scores $\geq 10$ considered clinically meaningful	Not reported	<ul style="list-style-type: none"> <li>• Content validity via cognitive testing<sup>51</sup></li> </ul>
Whole Person Health Score (WPHS) <sup>33</sup>	The WPHS was developed, implemented and evaluated in a large University health system in Riverside, California to assess multidimensional patient needs and social determinants of health	28 questions (or elements) assess six domains of health: <ul style="list-style-type: none"> <li>• Physical health</li> <li>• Emotional health</li> <li>• Resource utilization</li> <li>• Socioeconomics</li> <li>• Ownership</li> <li>• Nutrition and Lifestyle</li> </ul>	The WPHS results in a letter grade ranging from A (the best) to Z (the worst) for each domain. Grades are calculated using the sum of scores from each item that are weighted according to their impact on life expectancy. Scores are displayed as red, yellow, or green in the electronic health system, indicating level of intervention needed	Not reported	Not reported

EFA, exploratory factor analysis; PCA, principal components analysis; CFA, confirmatory factor analysis.

three quantitative items assessing physical well-being, mental/emotional well-being, and day-to-day life (from 1 “not so good” to 5 “great”). Patients are also asked to rate “where they are now” and “where they would like to be” (from 1 “low” to 5 “high”) on eight dimensions from the VA Whole Health program’s Circle of Health.<sup>53</sup> These eight WPH domains include moving the body (exercise), surroundings (environment), personal development, food and drink (nutrition and substance use), recharge (sleep/rest); family, friends, and coworkers (relationships); spirit and soul, and power of the mind. The PHI ends with two open-ended questions that ask patients to reflect on their vision for their best possible health and how to get there. There has been relatively little psychometric evaluation of the PHI, but analysis by Chu and colleagues<sup>27</sup> suggests high internal consistency across items (Cronbach’s alpha = 0.91). Furthermore, factor analysis suggested that the PHI loads onto two factors, with the self-rated health items loading on one factor and the goal domains loading onto another.<sup>27</sup>

**Self-Assessment of Change.** The SAC is a patient-centered outcome measure to evaluate complementary and alternative medicine (CAM) therapies.<sup>41</sup> It contains 16 word pairs used to assess self-perceived change as a result of engagement in CAM across six domains: cognitive health, emotional health, physical health, spiritual health, social health, and WPH. The SAC uses retrospective self-report ratings of perceived change from “before” to “now” on a 100-unit line connecting each word pair. Perceived change is calculated as the difference between before and now, with higher scores reflecting greater improvement. Change scores greater or equal to 10 are considered clinically meaningful, although the developers do not provide any empirical data to support this threshold. SAC item content was developed by analyzing patient interviews describing the self-perceived change in symptoms in the above listed domains.<sup>54</sup> The instrument was pilot-tested through multiple cognitive interviews and refinements of the measure with 28 CAM users (providing support for content validity), resulting in a 16-word-pair item version that uses 1- to 7-word pairs to assess change in each of the six domains.<sup>51</sup>

**Whole Person Health Score.** The WPHS is a survey to assess the multidimensional health needs and social determinants of the health of patients.<sup>33</sup> It consists of 28 items selected by researchers through a literature review and feedback from patients and health care professionals. The 28 items in the WPHS assess six domains: physical health, emotional health, resource utilization, socioeconomic, ownership, and nutrition and lifestyle. Each domain contains four to six publicly available self-report items. Development of the WPHS, including item selection and scoring, stakeholder feedback, and initial data collection, has been described.<sup>33</sup> However, further psychometric evaluation has yet to be published.

#### *Concordance between conceptual and empirical WPH measurement domains*

Table 4 displays concordance between conceptual and empirical WPH domains. The first column displays the eight overarching domains of WPH we derived after reviewing

WPH domains listed in conceptual sources. The second column contains the original names of the WPH domains described in conceptual sources. The third column contains WPH domains contained within each WPH measure, nested within the appropriate overarching WPH domain from our conceptual review.

We highlight a few notable observations. First, all 11 conceptual sources and all 6 WPH measures included at least one representation of the biological/physical and behavioral/mental domains. Furthermore, the social domain was included in 9 of the 11 conceptual sources and is assessed in all 6 WPH measures. However, labeling of domains differed across measures. For instance, the “Rest” factor in the CHAT-P is similar to the “Recharge” domain in the PHI. Behavioral/Mental measurement domains were diverse, including not only psychological symptoms but also cognitive health (in the SAC) and coping styles (HHSQ, PHI).

Interestingly, while only 1 out of 11 conceptual sources described an “individual” domain, four of six WPH measures assessed factors that were most cleanly categorized in this domain. Items in the individual domain tended to assess one’s ability to make healthy choices (CHAT-P), possess health knowledge and self-efficacy (WPHS), make attributions to the cause of their chronic illness (HHSQ), and pursue personal development (i.e., “doing things that really matter to us or bring joy” in the PHI). Although 7 of 11 conceptual sources mentioned an environmental domain, only 3 of 6 WPH measures included this (“Environmental”-MSMH app, “Surroundings”-PHI, and “Environmental/Interpersonal Relationships”-CHAT-P). Environmental domain items from MSMH and PHI tended to assess satisfaction with their home and neighborhood safety, but this domain in the CHAT-P overlapped considerably with the social domain and is thus listed in both domains. The spiritual domain, although not mentioned frequently in the conceptual sources, was assessed in some fashion by all 6 WPH measures. Spiritual domain items tended to assess faith and the extent to which one not only is a “spiritual person” (CHAT-P) but also engagement in spiritual practices (e.g., prayer and meditation) that provide a sense of meaning (PHI). Only two WPH measures (the WPHS and MSMH app) included a socioeconomic domain, which tended to measure income and social determinants of health (WPHS). The WPHS and the SAC were two measures that contained “other” domain items (“resource utilization” and “whole person health,” respectively).

#### **Discussion**

In this scoping review, we sought to better understand the domains of WPH as described in conceptual, theoretical, and empirical sources in peer-reviewed publications and gray literature over the past 10 years. In addition, we identified self-report measures that have been specifically developed to assess WPH as a multidimensional construct.

Our scoping review identified 11 sources delineating conceptual domains of WPH. The most commonly occurring domains fit within the biological/physical, and behavioral/mental health domains. This was followed by social and environmental domains and, less frequently, spiritual and economic domains. These results parallel Thomas and colleagues’ systematic review of definitions of whole person



TABLE 4. CONCORDANCE BETWEEN CONCEPTUAL AND EMPIRICAL COMPONENTS OF WPH

<i>Domain</i>	<i>Conceptual components (11 conceptual sources total)</i>	<i>Measure components (6 WPH measures total)</i>
Biological / Physical	<b>11/11 sources</b> Biological Physical Bio/Physical Sleep hygiene, Diet/nutrition, Physical activity Healthy body Physiological systems	<b>6/6 Measures</b> CHAT-P: <ul style="list-style-type: none"> <li>• Rest</li> <li>• Activity</li> <li>• Nutrition</li> </ul> HHSQ: <ul style="list-style-type: none"> <li>• Physical symptoms</li> </ul> MSMH: <ul style="list-style-type: none"> <li>• Physiological</li> <li>• Health-related behaviors</li> </ul> PHI: <ul style="list-style-type: none"> <li>• Moving the body</li> <li>• Recharge</li> <li>• Food and drink</li> </ul> SAC: <ul style="list-style-type: none"> <li>• Physical health</li> </ul> WPHS: <ul style="list-style-type: none"> <li>• Physical health</li> <li>• Ownership</li> <li>• Nutrition and lifestyle</li> </ul>
Behavioral / Mental	<b>11/11 sources</b> Behavioral Mental health, mind–body Mental and emotional Balanced mind Behavioral/Psychological Psychological health Emotional	<b>6/6 Measures</b> CHAT-P: <ul style="list-style-type: none"> <li>• Outlook</li> </ul> HHSQ: <ul style="list-style-type: none"> <li>• Psychological expression</li> <li>• Coping style</li> </ul> MSMH: <ul style="list-style-type: none"> <li>• Psychosocial</li> </ul> PHI: <ul style="list-style-type: none"> <li>• Power of the mind</li> </ul> SAC: <ul style="list-style-type: none"> <li>• Cognitive health</li> <li>• Emotional health</li> </ul> WPHS: <ul style="list-style-type: none"> <li>• Emotional health</li> </ul>
Social	<b>9/11 sources</b> Social Social connectedness, Positive societal change, Sociocultural factors Social and practical	<b>6/6 Measures</b> CHAT-P: <ul style="list-style-type: none"> <li>• Environment/Interpersonal relationships</li> </ul> HHSQ: <ul style="list-style-type: none"> <li>• Change in self and family</li> <li>• Social and family connectedness</li> </ul> MSMH: <ul style="list-style-type: none"> <li>• Psychosocial</li> </ul> PHI: <ul style="list-style-type: none"> <li>• Family, friends, and coworkers</li> </ul> SAC: <ul style="list-style-type: none"> <li>• Social health</li> </ul> WPHS: <ul style="list-style-type: none"> <li>• Social support</li> </ul>
Environmental	<b>7/11 sources</b> Environmental Connection with nature	<b>3/6 Measures</b> CHAT-P: <ul style="list-style-type: none"> <li>• Environment/Interpersonal relationships</li> </ul> MSMH: <ul style="list-style-type: none"> <li>• Environmental</li> </ul> PHI: <ul style="list-style-type: none"> <li>• Surroundings</li> </ul>

(continued)

TABLE 4. (CONTINUED)

<i>Domain</i>	<i>Conceptual components (11 conceptual sources total)</i>	<i>Measure components (6 WPH measures total)</i>
Spiritual	<b>2/11 sources</b> Spiritual	<b>6/6 Measures</b> CHAT-P: <ul style="list-style-type: none"> <li>• Trust in God</li> </ul> HHSQ: <ul style="list-style-type: none"> <li>• Fatalism</li> <li>• Religion and faith</li> </ul> MSMH: <ul style="list-style-type: none"> <li>• Psychosocial/Spirituality or faith</li> </ul> PHI: <ul style="list-style-type: none"> <li>• Spirit and soul</li> </ul> SAC: <ul style="list-style-type: none"> <li>• Spiritual health</li> </ul> WPHS: <ul style="list-style-type: none"> <li>• Prayer/Meditation/Relaxation</li> </ul>
Socioeconomic	<b>2/11 sources</b> Financial Socioeconomic well-being	<b>2/6 Measures</b> MSMH: <ul style="list-style-type: none"> <li>• Environmental/Income</li> </ul> WPHS: <ul style="list-style-type: none"> <li>• Socioeconomics</li> </ul>
Individual	<b>1/11 sources</b> Individual	<b>4/6 Measures</b> CHAT-P: <ul style="list-style-type: none"> <li>• Choice</li> </ul> HHSQ: <ul style="list-style-type: none"> <li>• Self-query</li> </ul> PHI: <ul style="list-style-type: none"> <li>• Personal development</li> </ul> WPHS: <ul style="list-style-type: none"> <li>• Ownership and activation</li> </ul>
Other	<b>1/11 sources</b> Sexual, cultural, values, and preferences	<b>2/6 Measures</b> SAC: <ul style="list-style-type: none"> <li>• Whole person health</li> </ul> WPHS: <ul style="list-style-type: none"> <li>• Resource utilization</li> </ul>

CHAT-P, CREATION Health Assessment Tool for Patients; HHSQ, Holistic Health Status Questionnaire; MSMH, MyStrengths+MyHealth app; PHI, Personal Health Inventory; SAC, Self-Assessment of Change; WPHS, Whole Person Health Score.

care, which also concluded that a spiritual domain occurred less frequently than other domains.<sup>55</sup> The conceptual domains identified originate from a variety of credible sources, ranging from the director of the NCCIH,<sup>1,34,35</sup> expert panel consensus,<sup>2,29</sup> and views from patient stakeholders receiving care at the VA.<sup>47</sup> One unique exception was a machine-learning-assisted literature review to identify WPH measurement domains contained in publicly available datasets.<sup>30</sup> While this may differ from studies that derived WPH domains from theory or expert consensus, it illustrates which WPH constructs and measures have been deemed significant enough to include in large public health datasets.

Following this qualitative summary of conceptual WPH domains, we described six self-report measures of WPH and examined how well their measurement domains reflected the conceptual WPH domains. Like the conceptual sources, all six WPH measures included components assessing biological/physical and behavioral/mental health domains. However, contrary to conceptual sources, all six WPH measures contained components of the social and spiritual domains. This suggests

that these relatively novel WPH measures may place a high value on social and spiritual aspects of life that may contribute to WPH. Indeed, social support, relationship quality, faith, and belief in God or a higher power have been associated with better quality of life,<sup>56</sup> so there is an empirical rationale for including spirituality as a domain in multidimensional WPH measures. However, the importance of spirituality in subjective well-being measures may differ across individuals, groups, and cultures,<sup>57,58</sup> and therefore deserve further investigation as a component of WPH in the general population. Notably, at least one WPH measure (CHAT-P) was based on a markedly spiritual intervention framework, and all except one (MSMH) were developed in clinical samples. Spirituality, meaning, and faith may be somewhat more salient topics for clinical populations relative to the general population—particularly those with chronic health conditions.<sup>59,60</sup> This may help explain the ubiquity of spirituality constructs found in the six WPH measures identified.

Compared to theoretical conceptualizations of WPH, environmental and socioeconomic domains were not as common

among the WPH measures identified. Environmental or socioeconomic aspects of one's life (i.e., income) may be more challenging to measure or incorporate into multidimensional, self-report health measures. Housing, neighborhood safety, education, and gainful employment may also be viewed as objective measures of social determinants of health rather than self-perceptions of other WPH domains.<sup>61</sup> This is in line with conceptualizations that social determinants of health may be determinants of WPH and not actual measures of WPH.<sup>11</sup>

Other domains that did not necessarily "fit" within conceptual domains of WPH were labeled as "Individual" and "other." The individual domain was quite heterogeneous, including items assessing one's knowledge and self-efficacy to make healthy choices and personal development, or "doing things that really matter to us or bring us joy" in the PHI. Knowledge and self-efficacy are typically encapsulated as psychological variables within theories of health behavior,<sup>62</sup> but in our assessment, they were not appropriate for the Behavioral/Mental WPH domain. It could be argued that the "Personal Development" domain contained within the PHI may better fit within the Behavioral/Mental domain. However, in our view, self-report constructs such as meaning and purpose<sup>63,64</sup> are distinct from traditional assessments of mental health. In summary, some components of WPH measures may better fit within the WPH domains from conceptual sources. It will help WPH measures to have clear definitions of the boundaries for each WPH domain.

#### *Recommendations for future research and measurement of WPH*

There are major challenges inherent in developing reliable and valid measures of WPH. Deciding what assessment domains to include or exclude is a task that should ideally be informed by theory and psychometric methods. Results indicate that a broad measure of WPH should include assessment of physical, mental, social, and (probably) spiritual aspects of health. The emergence of an individual domain in this review, albeit with varied content across instruments, supports considering its inclusion in a broad WPH measure as well. Many recent studies evaluating the impact of whole person care interventions have taken to using a collection of several patient reported outcome measures to assess multiple WPH-related domains within a single study.<sup>31,65,66</sup> However, the development of a single measure for use in this context would offer a standardized approach to intervention evaluation and contribute significantly to advances in whole person care.

Following the 11 core principles for "superior whole health measures" outlined in the recent NASEM committee report on WPH,<sup>2</sup> any new development should have significant stakeholder involvement, should capitalize on existing successful measurement efforts, and should make a distinction between individuals' self-perceptions (WPH itself) and the social and cultural context (WPH determinants). Our recent work supporting a single higher-order dimension for several WPH-related domains using measures from the Patient Reported Outcomes Measurement Information System (PROMIS)<sup>67</sup> and elsewhere suggests that WPH could be measured efficiently with a single instrument.<sup>68</sup> Indeed, PROMIS, with its state of the science approach and inclusion of numerous health-related quality of life constructs (e.g.,

physical, mental, social)<sup>69</sup> provides an ideal starting point for developing a comprehensive patient reported measure of WPH.

#### *Limitations*

Readers should interpret the results of this scoping review with some limitations in mind. First, our search strategy and search terms used had a primary focus on models, constructs, and measures that included specific references to WPH. The conceptualization of WPH and whole person care has evolved along with corollary models, but we did not include search terms for similar, yet distinct concepts from the well-being model, or the biopsychosocial model, for example.<sup>30,55</sup> Second, contrary to COSMIN taxonomy recommendations,<sup>19</sup> we chose not to evaluate WPH measures based on their responsiveness to change, due to the limited information contained in the studies included in our review. The COSMIN taxonomy was useful in the present study insofar as to prioritize reporting the reliability and validity of the WPH measurement studies we identified. Third, our review was limited to sources published in the past 10 years because WPH is a relatively new term, and we wanted to capture publications reflecting the recent emergence of WPH. Our search may have missed important sources outside of this time frame. Finally, our analysis of the concordance between conceptual WPH domains and empirical WPH domains contained in WPH measures was subjective and may be biased. We attempted to limit any subjective bias by reaching group consensus when presenting our results.

#### **Conclusions**

Results of this scoping review further our understanding of WPH as a multidimensional, individual-level health construct and have implications for assessing WPH. The WPH measures included in this review utilized a variety of methods, but more evaluation of them is needed. Recommended psychometric properties were not uniformly reported, and if so, they may have limited generalizability. For example, more research is needed to validate the psychometric properties of these measures in diverse samples and to evaluate them alongside similar, competing measures. When considering the WPH measures identified, it is difficult to recommend a single ideal measure for broad use, because each has one or more critical limitations such as being very culturally or administratively specific, using nonstandard question formatting, conflating WPH with WPH determinants, and having low reliability and/or limited psychometric evidence. However, they all have components that could potentially be useful in developing a new instrument for broad use. This evidence, coupled with the information and recommendations reported in this scoping review, offer the essential building blocks for future research on the development and validation of WPH measurement.

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### Authors' Contributions

G.D.: Conceptualization, methodology, formal analysis, investigation, data curation, writing—original draft, visualization, and project administration. A.R.: Conceptualization, formal analysis, and writing—original draft. N.Q.: Formal analysis, investigation, data curation, and writing—original draft. C.Z.: Formal analysis and writing—review and editing. I.D.C.: Writing—review and editing. R.D.H.: Conceptualization and writing—review and editing. P.M.H.: Conceptualization, writing—review and editing, and funding acquisition. M.O.E.: Conceptualization, methodology, formal analysis, writing—original draft, visualization, and supervision.

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### Supplementary Material

Supplementary Appendix  
Supplementary Data

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