Assessing Lifestyle Vital Signs: Development and Application of Six Brief Health Screeners

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Abstract

Background: Lifestyle behaviors such as diet, physical activity, sleep, stress management, social connection, and substance use are major determinants of chronic disease and overall well-being. Despite strong evidence supporting their role in health, practical tools to assess these behaviors efficiently and holistically are limited.

Objective: This paper describes the development and application of six brief health screeners referred to as lifestyle vital signs that address the core pillars of lifestyle medicine: food quality, physical activity, sleep quality, coping habits, social connections, and substance use.

Methods: Guided by public health guidelines, behavioral science frameworks, and plain language principles, each screener was designed to be completed in under three minutes. The tools support self-assessment, personalized feedback, and brief intervention across a range of settings. The development process emphasized clarity, accessibility, and alignment with theoretical models such as the Health Belief Model, Transtheoretical Model, Self-Determination Theory, and the Social Ecological Model.

Results: Each screener includes behaviorally specific items that reflect evidence-based recommendations and key health determinants. The tools were written at a readability level suitable for public-facing use and designed to facilitate health literacy and engagement. Applications include use in primary care, community outreach, health education, and digital platforms.

Conclusion: These brief, user-friendly screeners offer a scalable and accessible approach to embedding lifestyle medicine into public health practice. Their adoption can improve lifestyle risk assessment, guide behavior changes conversations, and support efforts to reduce health disparities and promote whole-person care. Future research will focus on validating these tools and evaluating their impact on individual and population health outcomes.

Keywords: Health screeners; Lifestyle vital signs; Health behavior assessment; Behavior change; Substance use; Health literacy; Health risk screening

Abbreviations: FQS: Food Quality Screener; AHEI: Alternative Healthy Eating Index; PAS: Physical Activity Screener; SQS: Sleep Quality Screener; CHS: Coping Habits Screener; SUS: Substance Use Screener; SCS: Social Connections Screener

Background and Introduction

The field of lifestyle medicine has grown significantly over the past two decades, evolving from a clinical niche into a global movement that uses of evidence-based behavioral interventions to prevent, treat, and even reverse chronic diseases. As Lippman et al. [1] noted, lifestyle medicine focuses on six core pillars: nutrition, physical activity, restorative sleep, stress management, social connection, and avoidance of risky substances. These pillars are supported by a growing evidence base, and an international infrastructure aimed at integrating lifestyle approaches into health systems worldwide.

The six-lifestyle medicine vital signs food quality, physical activity, sleep quality, coping habits, social connections, and substance use represent powerful, modifiable factors that shape health across the lifespan. Unlike traditional vital signs, such as heart rate or blood pressure, these behavioral indicators reflect everyday habits that are directly linked to the leading causes of chronic disease and premature mortality [2,3]. Substantial evidence shows that lifestyle-related behaviors account for a large

proportion of preventable mortality and chronic disease burden in the United States and globally [4,5].

Incorporating lifestyle vital signs into clinical, educational, and public health practice supports a proactive, whole-person approach to disease prevention and health promotion. Low diet quality, physical inactivity, and poor sleep quality are major contributors to obesity, type 2 diabetes, cardiovascular disease, and certain cancers [6,7]. Likewise, chronic stress, social isolation, and substance use are increasingly recognized as contributors to mental health disorders, substance-related harm, and increased healthcare costs [8,9]. Addressing these behavioral risk factors is essential to achieving health equity and reducing disparities.

Despite growing awareness of the six pillars, practical tools to assess these behaviors in an integrated, efficient, and accessible way remain limited. Existing screeners often focus on individual behaviors (e.g., physical activity or diet) and rarely account for the full range of lifestyle factors that influence chronic disease risk and overall well-being [3,2]. Even fewer tools are designed for rapid use in real-world settings, grounded in behavioral theory, or written in plain language to support health literacy.

To address this gap, we developed six brief lifestyle screeners guided by four key principles for effective lifestyle assessment tools:

1.   Tools should support both assessment and behavior change.

2.   Tools should be brief ideally under three minutes.

3.   Tools should be grounded in public health guidelines and behavioral theory.

4.   Tools should be written in plain language to enhance accessibility.

Without brief, user-friendly screeners, healthcare professionals and educators miss valuable opportunities to assess lifestyle behaviors holistically, engage in brief interventions, or track progress over time. Quick-to-complete tools can improve patient engagement, guide health goals, and support population-level surveillance of behavioral risks [10]. These tools also align with national goals like the Healthy People 2030 objective on organizational health literacy, which calls on systems to ensure that individuals can understand and use health information [11]. This paper describes the development and application of six brief lifestyle screeners aligned with lifestyle medicine principles. Each screener reflects public health priorities, incorporates behavioral theory, and is designed for real-world use. Together, they represent a scalable strategy to embed lifestyle medicine into clinical care, education, and community health practice.

Food Quality Screener

The Food Quality Screener (FQS) consists of 11 items mainly adapted from the Alternative Healthy Eating Index (AHEI) index categories; a validated dietary quality scoring system associated with lower risk of chronic disease and premature mortality (Table 1) [12]. Items 1-6 assess consumption of high-quality, nutrient-dense foods: vegetables (excluding potatoes), fruits (excluding juice), whole grains, nuts/seeds, legumes, and fish. These foods are emphasized in the AHEI and linked to reduced risk for cardiovascular disease, type 2 diabetes, and certain cancers due to their fiber, antioxidant, and healthy fat content [13,14].

Table 1: Food Quality Screener.

11 Items	Frequency Responses/Points		
In a typical week, how often do you:	**Never/ Rarely**	**Some- times**	**Often/ Always**
Eat 2 or more servings of vegetables a day (not including potatoes)	0	1	2
Eat 2 or more servings of fruit a day (not including fruit juice)	0	1	2
Eat 2 or more servings of whole grains a day	0	1	2
Eat 1 or more servings of nuts, seeds, or nut butters a day	0	1	2
Eat 1 or more servings of beans or lentils a day	0	1	2
Eat 2 or more servings of fish a week	0	1	2
Drink 1 or more servings of sugary drinks a day	2	1	0
Eat 1 or more servings of sugary snacks or sweets a day	2	1	0
Eat 1 or more servings of refined grains a day	2	1	0

Eat 1 or more servings of red or processed meat a day	2	1	0
Eat 1 or more servings of processed foods high in sodium a day	2	1	0

Items 7-11 assess consumption of lower-quality foods and-beverages, including sugary drinks (item 7), sugary snacks (item 8), and refined grains (item 9). Frequent intake of sugar-sweet-ened beverages, red/processed meats, and refined snacks has been associated with systemic inflammation, insulin resistance, and increased mortality risk [15,16]. Items 10 and 11 assess red or processed meat and processed foods high in salt, both of which are known contributors to hypertension, and overall dietary risk when consumed in excess [17,18]. Reverse scoring is used for lower quality items 7-11 to ensure that higher total scores reflect an unhealthy dietary pattern. Together, these 11 items provide a practical, behaviorally specific overview of diet quality, support-ing awareness, self-reflection, and brief nutritional counseling.

The FQS is concise and easy to complete in under three min-utes. It includes 11 plain language questions and uses a three-point response format. Clear examples (e.g., "oats, brown rice," "soda," "candy") help users recognize food choices in their every-day lives. This brief, user-friendly format allows for implementa-tion in primary care clinics and community settings [19,20]. The tool also draws on principles from the Transtheoretical Model, en-couraging users to consider readiness for change with questions like "Are you ready to change an eating habit in the next month?" [21]. Additionally, its emphasis on choice and small, incremental improvements aligns with Self-Determination Theory, promoting autonomy and confidence in making healthy food decisions [22]. Finally, the tool uses plain language to enhance health literacy and inclusivity. Questions are framed in accessible terms, and the feedback section offers supportive messages like "One change at a time" and "A small change can have a big impact on your health." It also acknowledges individual variability in dietary needs and preferences, reinforcing that there is no one-size-fits-all eating pattern an approach that supports both health equity and cultural relevance [23,24].

Physical Activity Screener

The Physical Activity Screener (PAS) includes seven items that assess the frequency, variety, and balance of movement behaviors aligned with national guidelines and evidence-based recommen-dations (Table 2). The first two items measure engagement in aer-obic activity (e.g., brisk walking, jogging) for at least 2½ hours per week (Item 1) and muscle-strengthening activities (e.g., squats, lifting weights) at least twice weekly (Item 2). These recommen-dations reflect the Physical Activity Guidelines for Americans, which emphasize the health benefits of both aerobic and resis-tance exercise for cardiovascular, metabolic, and musculoskeletal health [25]. Items 3 and 4 focus on flexibility and balance training, respectively often overlooked yet vital components of functional fitness, fall prevention, and injury reduction, especially for older adults [26]. Item 5 assesses participation in light-intensity phys-ical activity (e.g., housework, yardwork, standing tasks) for three or more hours per day, recognizing the cumulative health bene-fits of non-exercise movement throughout the day [27]. Items 6 and 7 address sedentary behavior, specifically sitting less than eight hours per day and breaking up sitting every 30 minutes with movement. These items reflect emerging evidence on the health risks of prolonged sedentary time, independent of moder-ate-to-vigorous physical activity [28]. By encompassing a range of intensities and movement domains, the screener provides a com-prehensive, behaviorally specific profile of physical activity and inactivity.

Table 2: Physical Activity Screener.

7 Items	Frequency Responses/Points		
In a typical week, how often do you do:	**Never/Rarely**	**Some-times**	**Often/Always**
Aerobic activity (moderate to vig-orous) 2 ½ hours or more a week	0	2	4
Muscle-strengthening activity 2 or more days a week	0	2	4
Flexibility and range of motion activity 2 or more days a week	0	1	2
Balance activity 2 or more days a week	0	1	2
Light activity 3 hours or more a day	0	1	2
Sit still less than 8 hours a day	0	1	2
Break up sitting still by moving every 30 minutes	0	1	2

The PAS can be completed in under three minutes. It uses a simple three-point response scale and includes concrete examples (e.g., "brisk walking," "stretching," "housework") to enhance usability across diverse literacy levels. The low burden makes it appropriate for clinics and community screenings [29]. The screener also reflects behavioral constructs from the Social Ecological Model, recognizing that movement is shaped by individual, environmental, and social contexts [30]. In addition, its emphasis on autonomy, variety, and enjoyment is consistent with Self-Determination Theory, which supports sustainable, self-directed behavior change [22]. Finally, the tool emphasizes plain language to improve accessibility and engagement. Terms like "sit still less," "move every 30 minutes," and "activities you enjoy" are clear, conversational, and motivating. The tool avoids technical jargon and uses an encouraging message "Moving Matters" to affirm that all movement counts and that small steps can make a meaningful impact on physical and mental well-being [20,11].

Sleep Quality Screener

The Sleep Quality Screener (SQS) includes eight items that assess essential components of healthy sleep behavior (Table 3). Items 1 and 2 focus on sleep onset and continuity specifically, falling asleep within 30 minutes and sleeping through the night without prolonged awakenings. These are fundamental indicators of sleep efficiency and are often used in clinical and research settings to evaluate sleep disorders and disturbances [31,32]. Item 3 assesses sleep duration, asking whether individuals typically get 7 to 9 hours of sleep per night, consistent with national sleep guidelines for adults [33,34]. Items 4 through 6 evaluate sleep hygiene practices, including maintaining a consistent sleep-wake schedule, limiting bed use to sleep and sex, and creating a quiet, dark sleep environment. These behaviors are associated with improved circadian regulation and reduced sleep latency [35]. Items 7 and 8 capture subjective sleep quality and daytime functioning, asking whether individuals feel rested upon waking and whether they feel alert and able to focus during the day. These items reflect restorative sleep and are closely linked to cognitive performance, mood, and overall health [36,32]. Collectively, the screener provides a concise, behaviorally anchored assessment of sleep quality that supports both self-awareness and brief intervention.

Table 3: Sleep Quality Screener.

8 Items	Frequency Responses/Points		
In a typical week, how often do you:	Never/Rarely	Some-times	Often/Always
Fall asleep within 30 minutes after going to bed	0	1	2
Sleep through the night without waking up for long periods	0	1	2
Sleep 7 to 9 hours each night	0	1	2
Go to bed and get up at the same time every day	0	1	2
Use your bed only for sleep and sex, not other activities	0	1	2
Sleep in a quiet, dark room	0	1	2
Wake up feeling rested	0	1	2
Feel alert and able to focus during the day	0	1	2

The SQS is quick and easy to administer. With only eight plain language questions and a simple scoring system, it can be completed in under three minutes. Its low burden makes it suitable for community health settings and clinic waiting rooms where time is limited and user engagement is critical [19]. The SQS is grounded in both public health guidance and behavioral theory. It reflects evidence-based sleep recommendations from the Centers for Disease Control and Prevention [37] and the American Academy of Sleep Medicine [33]. In addition, the design aligns with principles of the Health Belief Model by helping individuals assess perceived susceptibility and benefits and Self-Determination Theory, by promoting autonomy and internal motivation through self-assessment and personalized feedback [38,22]. Finally, the screener is intentionally written in plain language to enhance health literacy. Each item uses everyday terms (e.g., "fall asleep," "wake up rested," "quiet, dark room") to ensure broad accessibility. The instructions, scoring guide, and brief educational message ("Sleep Quality Matters") further support user understanding, empowering individuals to recognize the importance of sleep and consider manageable steps toward improvement [20,24].

Coping Habits Screener

The Coping Habits Screener (CHS) includes 13 items that assess a range of strategies individuals use to manage stress in everyday life (Table 4). The first ten items reflect adaptive coping behaviors that are commonly associated with improved

mental health and resilience. Items 1-3 assess cognitive coping, such as identifying stressors ("figure out what's making me feel stressed"), problem-solving ("solve problems step by step"), and learning from difficult experiences all of which are central to cognitive-behavioral models of stress management [39,40]. Items 4–6 represent emotion-focused coping strategies, including using humor, seeking social support, and engaging in calming activities like prayer or music, which are linked to improved mood and emotional regulation [41,42]. Items 7-10 emphasize self-care behaviors taking breaks, moving the body, eating healthy foods, and get-

ting adequate sleep that contribute to stress recovery and overall well-being [43,44]. In contrast, Items 11-13 reflect maladaptive coping patterns, such as self-blame, avoidance, and using substances to manage stress. These responses are reverse scored, as they are associated with negative outcomes including increased anxiety, depression, and substance misuse [45,46]. By including both adaptive and maladaptive strategies, the screener supports a balanced, behaviorally specific assessment of coping habits. It encourages reflection on which responses may be helpful, and which might signal a need for additional support or skill development.

Table 4: Coping Habits Screener.

13 Items	Frequency Responses/Points		
When you're stressed, how often do you try:	Never/Rarely	Some-times	Often/Always
I try to figure out what's making me feel stressed	0	1	2
I try to solve problems step by step	0	1	2
I try to learn from the situation	0	1	2
I try to laugh, use humor, or find something good in the situation	0	1	2
I try to talk to friends, family, or a counselor	0	1	2
I try to relax (like breathing slowly, listening to music, or praying)	0	1	2
I try to take a break and do something I enjoy	0	1	2
I try to move my body (like walking, stretching, or yoga)	0	1	2
I try to eat healthy foods	0	1	2
I try to get good sleep	0	1	2
I blame myself when I'm stressed	2	1	0
I avoid the problem when I'm stressed	2	1	0
I use alcohol or other substances to feel less stressed	2	1	0

The CHS is quick and easy to administer, taking approximately three minutes to complete. The 13 plain language items employ a simple three-point scale and user-friendly scoring instructions. This low-burden format makes the tool well-suited for use in health education, clinical settings, or community outreach programs, especially where time or literacy may be barriers [19,20]. The CHS is informed by public health guidelines and psychological theory. It draws upon validated principles from Cognitive Behavioral Therapy (CBT), which emphasizes identifying and modifying unhelpful coping patterns, and Lazarus and Folkman's Transactional Model of Stress and Coping, which highlights the importance of cognitive appraisal and adaptive responses [39,40]. It also aligns with Self-Determination Theory by encouraging users

to reflect on intrinsic motivation and autonomy in how they manage stress [22]. The inclusion of both approach-based strategies (e.g., problem solving, seeking support) and avoidant strategies (e.g., substance use, self-blame) enables a well-rounded reflection of coping habits. Finally, the screener prioritizes plain language and health literacy. Each item uses accessible vocabulary and relatable examples (e.g., "talk to friends," "move my body," "eat healthy foods"), and the brief explanatory message ("Coping Habits Matter") reinforces the importance of managing stress in a supportive tone. The screener avoids medical jargon and helps users recognize behaviors they can build on or modify to improve resilience and emotional health [24,11].

Social Connections Screener

The Social Connections Screener (SCS) includes eight core items that assess the presence, quality, and effects of social relationships in everyday life (Table 5). The first two items evaluate social engagement the frequency of contact with friends or family (Item 1) and participation in community activities such as volunteering or gatherings (Item 2). These behaviors reflect involvement in both personal and community-level networks, which are associated with stronger support systems and improved well-being [47,48]. Items 3 and 4 assess the quality of close relationships, asking whether individuals feel emotionally connected to others (Item 3) and whether they can trust the people closest to them (Item 4). These aspects are key indicators of perceived social support, a known protective factor for mental and physical health [49]. Items 5 and 6 address functional support, measuring wheth-

er individuals have someone to confide in during distress (Item 5) and someone who can provide instrumental assistance, such as help with errands or transportation (Item 6). These types of support emotional and tangible have been shown to buffer the effects of stress and reduce risk for depression and chronic disease [50]. Item 7 captures reciprocity, assessing whether the respondent helps others when needed. Giving support can enhance feelings of purpose and belonging, reinforcing mutual social bonds [51]. Finally, Items 8 and 9 identify negative social experiences, including feelings of loneliness or exclusion (Item 8) and social interactions that increase distress (Item 9). These items are reverse scored to capture social strain, which has been independently linked to poorer health outcomes [52]. Together, the items provide a brief yet comprehensive overview of both protective and risk-related dimensions of social connectedness.

Table 5: Social Connections Screener.

9 Items	Frequency Responses/Points		
In a typical week, how often do you:	Never/Rarely	Some-times	Often/Always
Spend time with family or friends (in person, by phone, or online)	0	1	2
Take part in community activities (like volunteering or gatherings)	0	1	2
Feel close or connected to people (like friends, family, or neighbors)	0	1	2
Feel you can trust people close to you (like friends or family)	0	1	2
Have someone to talk to when you feel upset or need support	0	1	2
Have someone who could help you (like with rides or errands)	0	1	2
Help others when they need support or a favor	0	1	2
Feel alone or left out by people you know (like friends or family)	2	1	0
Feel more stressed or down after spending time with others	2	1	0

The SCS is quick and simple to administer. It includes nine clearly worded questions, each using a three-point scale, and can be completed in under three minutes. Its ease of use allows for integration into brief clinical encounters, community screenings, or educational programs without imposing significant time burdens on users or facilitators [19]. The SCS is grounded in both public health priorities and theoretical frameworks. It draws upon the Social Ecological Model, recognizing that social support occurs at multiple levels individual, interpersonal, community, and societal [53]. It also reflects constructs from Self-Determination Theory, including relatedness, which emphasizes the fundamental human need to feel connected and valued by others [22]. The screener is consistent with the CDC's emphasis on social connectedness as a protective factor for mental health, chronic disease prevention, and longevity [54]. Finally, the tool is written in plain lan-

guage to enhance health literacy and accessibility. Each item uses everyday terms (e.g., "spend time," "help others," "feel left out") and avoids clinical jargon. The brief educational message "Social Connections Matter" reinforces the importance of relationships in a user-friendly tone. These strategies support understanding, reflection, and behavior change, especially among populations with varying literacy levels [23,24].

Substance Use Screener

The Substance Use Screener (SUS) consists of eight items that assess patterns and contexts of alcohol, nicotine, cannabis, and medication use (Table 6). Items 1-4 focus on the frequency and type of substance use, including drinking more than one alcoholic drink per day (Item 1), using tobacco or nicotine (Item 2), using marijuana in any form (Item 3), and using prescription medica-

tions in ways other than prescribed (Item 4). These behaviors reflect commonly misused substances and align with established risk indicators for substance-related harm [55,56]. Item 1's alcohol threshold also mirrors guidance from the National Institute on Alcohol Abuse and Alcoholism (NIAAA), which defines low-risk drinking limits based on daily and weekly intake [57]. Items 5-8 examine situational and functional use, including using substances to cope with stress (Item 5), before engaging in potentially dangerous activities like driving or working (Item 6), to manage negative emotions such as sadness or boredom (Item 7), or con-

tinuing use despite adverse consequences at home or work (Item 8). These questions capture behavioral patterns associated with problematic substance use and align with criteria found in validated screening tools such as the ASSIST and the AUDIT [58,59]. They also reflect core elements of the Transtheoretical Model, which emphasizes identifying risk behaviors and raising awareness as precursors to behavior change [21]. Collectively, the screener enables brief risk stratification across substance types and contexts, supporting early identification and referral using evidence-based models like SBIRT [60].

Table 6: Substance Use Screener.

8 Items	Frequency Responses/Points		
In a typical week, how often do you:	**Never/Rarely**	**Some-times**	**Often/Always**
Drink more than 1 alcoholic drink in a day	2	1	0
Use tobacco or nicotine (like cigarettes, vapes, or chewing tobacco)	2	1	0
Use marijuana or cannabis (smoked, vaped, or eaten)	2	1	0
Use medicine differently than your doctor said	2	1	0
Use alcohol, marijuana, or other substances to relax or manage stress	2	1	0
Use alcohol, marijuana, or other substances before driving or working	2	1	0
Use alcohol, marijuana, or other substances when feeling sad or bored	2	1	0
Keep using substances even when they cause problems at home or work	2	1	0

The SUS is brief and easy to complete in under three minutes. With eight yes-or-no-style questions framed on a three-point scale, the screener minimizes complexity and respondent burden. This makes it suitable for use in clinics, counseling centers, and community settings where time, stigma, and literacy may otherwise pose barriers to candid discussion [19,59]. The screener is informed by public health guidelines and behavior change theory. It aligns with principles from Screening, Brief Intervention, and Referral to Treatment (SBIRT), an evidence-based model for identifying and addressing risky substance use [61]. In addition, the structure and messaging reflect constructs from the Transtheoretical Model, encouraging individuals to move through contemplation and preparation stages toward behavior change [21]. The emphasis on awareness and non-judgmental self-assessment also supports Self-Determination Theory by encouraging autonomy and intrinsic motivation for change [22]. Finally, the screener uses plain language to enhance health literacy and reduce stigma. Questions avoid clinical or diagnostic terms and instead use ac-

cessible phrases like "use medicine differently than your doctor said" or "use substances to relax or manage stress." The message "Substance Use Matters" highlights the relevance of this topic to mental, physical, and relational well-being in a supportive tone. Together, these strategies promote honest self-reflection and readiness for change, particularly among individuals who may not otherwise engage with traditional screening tools [23,24].

Conclusion

As chronic disease rates continue to rise, there is an urgent need to prioritize prevention and promote health through modifiable lifestyle behaviors. This manuscript introduced six brief, theory-informed screeners centered on food quality, physical activity, sleep quality, coping habits, social connections, and substance use that reflect the core pillars of lifestyle medicine. These lifestyle vital signs offer a practical and scalable way to assess everyday behaviors that influence long-term health and well-being.

Each screener was developed using public health guidelines, behavioral science frameworks, and plain language principles to ensure accessibility, scientific rigor, and ease of use. Designed to be completed in under three minutes, these tools support brief intervention, personalized feedback, and integration into a wide range of clinical, educational, and community settings. By facilitating conversations around lifestyle habits, these screeners empower individuals to engage in their health and help organizations track population-level trends.

Widespread adoption of these tools could enhance efforts to address health disparities, improve health literacy, and support whole-person care. Our future research will focus on validating the screeners across diverse populations, integrating them into electronic health records, and exploring their impact on behavior change, clinical outcomes, and health system performance. Embedding lifestyle vital signs into routine practice represents a meaningful step toward a more proactive, equitable, and prevention-focused model of care.

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