Happiness, Habits, and Health

Measuring Mental Health with Health Risk Assessment Data
ABSTRACT

What lifestyle factors are associated with happiness and mental health?

In the first-ever published Wellsource® Annual Data Review, we examined self-reported health risk assessment (HRA) data from more than 270,000 individuals on the WellSuite® IV platform to see what influences mental health, specifically happiness.

Only the most recent HRA completed by a working adult age 18-85 years was considered. In this review, we look at the association of lifestyle habits to mental health and provide recommendations for population health professionals to consider to improve happiness and lessen psychological distress.* Lifestyle habits analyzed include:

- Diet
- Sleep
- Sitting
- Physical activity
- Alcohol
- Tobacco
- Mood-altering drugs

We refer to the subset of data as ‘Wellsource dataset’ or simply ‘dataset’ throughout this review for the purposes of clarity and consistency.

*What is psychological distress? The point on the mental health continuum where an individual’s feelings or emotions prevent them from achieving their full potential.
Mental Health: A Whole Picture

Health is more than freedom from illness or chronic condition. The World Health Organization (WHO) defines health as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.” Isn’t that what everyone wants? But achieving and maintaining health carries a hefty price tag. In 2018, the U.S. spent $3.65 trillion to promote health, treat illness, and extend life. Mental disorders were a top contributor to those expenses.1

Just like physical health, mental well-being requires more than the absence of mental disorders. The ideal mental health state is complete emotional, psychological, and social well-being. The absence of any one of these can result in psychological distress.

The various mental health states are on a continuum2 as related but distinct dimensions, influenced by many factors. A person’s location on the mental health spectrum impacts how they navigate life, such as their ability to handle stressors, make decisions, view themselves and others with compassion, and function effectively at work or in social settings. It even impacts physical health.3

An individual with good mental health “realizes his or her own abilities, can cope with the normal stresses of life, can work productively, and is able to make a contribution to her or his community.”4 Positive mental health is associated with productivity, improved immune system response, quicker recovery times, healthy habits, social connection, positive self-perception of health, life satisfaction, hopeful outlook on the future, and longevity.5 Happiness is strongly linked to both mental health and overall wellness. Psychological distress and mental illness, on the other hand, increase the risk of health conditions like heart disease,6 and are linked to shorter lifespan.7

WHO estimates that half of all Americans will be diagnosed with a mental illness or disorder at some point in their lifetime. For nearly 1 in 5 U.S. adults, mental illness is an integral part of their daily lives according to the National Institute of Mental Health.

Between 2013-2016, 8.1 percent of adults had depression.8 As many as half of those diagnosed with depression also suffer from anxiety as a comorbid condition and vice versa. An estimated 31 percent of U.S. adults will have an anxiety disorder during their lifetime,9 which is the most common mental disorder in adults.10 These conditions can be debilitating. About 80 percent of people with depression report it has negatively impacted their daily lives to some degree.8

Why do these statistics matter? Because mental health is strongly linked to physical health. It influences how a person perceives the world and functions in it. And, just like with any other medical condition, early detection and treatment can improve health, save lives, and prolong life.
Measuring Mental Health

It makes sense to check for mental health just as health and wellness professionals would check for high blood pressure or diabetes. But how is mental health measured? Doctors can’t diagnose anxiety or depression from a blood test yet. (But a blood test can help them rule out other conditions that could be causative or have similar symptoms.) Professionals must rely on self-reports and known risk factors to measure mental health and identify psychological distress.

Feelings of life satisfaction, social connectedness, hopefulness, and happiness are subjective – just like feelings of pain. Thanks to research by psychologist Ed Diener and others, it’s now known that “subjective well-being can be assessed by self-report with substantial reliability and validity.”

Common depression risk screening tools, including the Whooley question set and the Patient Health Questionnaire-2 (PHQ-2), rely on self-reported data. A systematic review and diagnostic meta-analysis found that the two-item Whooley question set had “high sensitivity” (0.95) and “modest specificity” (0.65), making it a valid tool for identifying the possibility of, but not diagnosing, depression.

The original Whooley study found that a person who answered “no” to both questions was very likely not depressed (likelihood ratio = 0.07).

The PHQ-2 asks similar questions but shortens the timeframe by 2 weeks. Kurt Kroenke et al. found the PHQ-2 to be valid as a first-step evaluation tool. Dr. Kroenke also found the PHQ-9 to be valid as a follow-up depression test using self-reported data in determining depression severity (sensitivity and specificity both = 0.88).

Other symptoms would need to be identified for depression diagnosis, such as energy level and sleep.

Wellness and population health professionals can confidently use self-assessment of mood and behaviors to determine an individual’s risk of psychological distress, including depression, and triage at-risk individuals into mental health care plans and interventions as appropriate. Administering an assessment that asks individuals about indicators of psychological distress is a good first step toward achieving positive mental health in your population. An HRA provides a confidential, effective way to gather this kind of information.

Whooley Question Set

1. During the past month, have you often been bothered by feeling down, depressed, or hopeless?
   - Yes
   - No

2. During the past month, have you often been bothered by little interest or pleasure in doing things?
   - Yes
   - No

Patient Health Questionnaire-2

During the past two weeks, how often have you been bothered by the following problems?

- Little interest or pleasure in doing things
- Feeling down, depressed, or hopeless

  - Not at all
  - Several days
  - More than half the days
  - Nearly every day
Mental Health by the Numbers

Nearly everyone will struggle with feeling sad or nervous at some point in life. Although not as severe or enduring as clinical depression or anxiety, even these short-term feelings can negatively impact sleep, relationships, work, and health. So what factors can contribute to an individual’s mental health or, in contrast, risk of psychological distress? Within the Wellsource dataset (n=272,819) that met inclusion criteria (Table 1):

- 38.1% were very satisfied with life
- 35.3% reported being very happy
- 23.1% rated their health as excellent
- 18.5% had high energy levels

In contrast, 16.7 percent felt down, depressed, or hopeless within the past four weeks of taking the HRA and 13.2 percent had little pleasure or interest in doing things. Of those, 27 percent indicated that their feelings negatively impacted their lives.

These percentages indicate that many people within the dataset might not be in the best mental health. In the Wellsource dataset, “feeling down, depressed, or hopeless” and often having “little interest or pleasure in doing things” were solid indicators of psychological distress. These questions align with the PHQ-2 and Whooley question set, two very well-validated and reliable tools to identify depression, and also with a small prospective study16 which identified “loss of interest/pleasure, depressed mood, fatigue, and concentration problems” to be the strongest predictors of depression.

Some other indicators associated with mental health or psychological distress include:17,18,19

Resilience
75.3 percent of the people in the Wellsource dataset were usually able to cope with life stressors.

Outlook on Future
8 in 10 of the dataset (84.6%) said they were hopeful about the future.

Social Support
Over half (57.6%) said they regularly participate in a faith group or social club.

“Eating the recommended daily intake of fruits and vegetables increased the odds of being happy.”
Happiness Habits

Aristotle, the ancient Greek philosopher, wrote, “Happiness is the meaning and the purpose of life, and the whole aim and end of human existence.” Perhaps he was right. There is a link between happiness, mental health, and physical health. Self-rated unhappiness is a strong indicator for psychological distress. Twenty-seven times more unhappy people reported feeling depressed within the month prior to taking the HRA than very happy people (83.6% vs. 3.1%).

Statistically significant differences in means and frequencies of the baseline demographics, markers for mental health, and healthy lifestyle behaviors were observed between the happiest (n=96,140) and unhappiest (n=7,644) groups (Table 2). Lifestyle behaviors associated with happiness in the graphic (right) were statistically significant (p<0.001, Table 3).

Sleep & Happiness

Sleep is highly associated with happiness. The Wellsouce dataset showed that the odds of an individual who does not sleep 7-8 hours being unhappy is three times higher compared to an individual who does sleep 7-8 hours.

“An adult who does not sleep 7-8 hours is three times more likely to be unhappy.”
Nutrition & Happiness

Looking at nutrition habits can also help identify happiness or unhappiness. In the Wellsource dataset, eating the recommended daily intake (RDI) of fruits and vegetables increased the odds of being happy (odds ratio [OR], 2.03 and 1.64, respectively) compared to individuals who did not meet the RDI.

The odds of being happy were also higher among people in the dataset meeting the RDI for whole grains, sweets, sugar-sweetened beverages, and saturated fats (Table 3). Longitudinal studies have found certain diets, such as the anti-inflammatory (i.e., vegetables like kale and squash, lentils, tofu, and whole grains like brown rice, millet, and oats) or Mediterranean (i.e., fruits, berries, vegetables like tomatoes, Greek yogurt, feta cheese, hummus, and healthy fats like fish, and olive oil) diets, may be associated with lower depression rates. Those in the dataset who met the recommended weekly intake of fish were 1.35 times more likely to be happy than those who did not.

Physical Activity & Happiness

Research has also shown that regular physical activity can help reduce depressive symptoms. In the Wellsource dataset, for every one-hour increase of physical activity per day, the odds of being happy increases by 22 percent. Sitting less also increases happiness. For every one-hour increase of sitting per day, the odds of being happy decreases by 11 percent (Table 3).
Genetics & Social Determinants

Some happiness factors can’t be modified, but should be noted. The 2017 Harris Poll Survey of American Happiness, for example, found that the happiest people were older adults aged 65 and up. The Wellsource dataset also showed that happiness increased, slightly, with each year of age. The odds of being unhappy were lower for males (OR, 0.95), but this was not statistically significantly different than females (Table 3).

**Psychological states** “are 40-50 percent heritable,” according to Laura Kubzansky, associate professor of society, human development, and health at Harvard School of Public Health. Identifying genes associated with psychological distress can lead to innovative treatments and advances in prevention efforts, including teaching social and emotional skills that result in resilience and social support.

**Environmental factors**, such as poverty, geographic location, or exposure to violence also influence mental health. In the Wellsource dataset, happiness varied slightly by region. Many societal issues must be tackled with large-scale community efforts, yet interventions to control social determinants of health must be carefully considered.

**Being in a committed relationship** may or may not be within an individual’s control. In the Wellsource dataset, the odds of being unhappy are 0.33 times lower for people who are married or living with a partner compared to single individuals (Table 3).

Other mental health indicators are within an individual’s control and are at least, if not more, impactful on psychological wellbeing than environment or genetics. One United Kingdom study found debt to be more highly associated with psychological distress than income, reporting that “[t]he more debts people had, the more likely they were to have some form of mental disorder, even after adjustment for income and other sociodemographic variables.”

Understanding and identifying indicators of psychological distress is only part of the solution. Population health and wellness managers must also identify and encourage protective behaviors associated with psychological wellbeing and happiness.
Promoting Happiness

Intervention strategies must align with change readiness and consider both therapeutic and behavioral interventions. The following modifiable behaviors are associated with mental health (Table 2).

The Right Amount of Sleep

The happiest people in the dataset slept 7-8 hours. Any more or any less increased the odds of being unhappy by more than 200 percent. Good sleep hygiene including having a comfortable mattress, turning off electronic devices before bed, and perhaps a 20-minute nap for sleep-deprived individuals can help many people sleep better.

Good Nutrition

Emphasize fruits and vegetables. Within the dataset, individuals who were the happiest were more likely to eat at least 2 servings of fruit and 3 servings of vegetables a day. Additionally, a higher percentage of the happiest individuals ate at least 3 servings of whole grains (37.9% vs. 22.7%) per day and 3 servings of fish per week (17.8% vs. 11.8%) compared to those who were the unhappiest.

Less Sitting

In the dataset, the happiest people sat, on average, 2 hours less per day than the unhappiest individuals. A recent meta-analysis found that people with major depressive disorder are more sedentary (i.e., sitting 8.5 hours a day or more and not meeting physical activity recommendations). A separate systematic review concluded that sitting time was linked to anxiety risk. Sitting less will improve mood.

Regular Exercise

Non-exercisers should aim for at least 1 hour per week to prevent depression. Regular exercise appears to be as effective in treating mild to moderate depression as is psychotherapy and antidepressant medications. A 13-year study found that exercising more than 300 minutes per week was associated with a 29 percent reduction in risk of depression. The dataset shows that the happiest people exercise an average of 1 hour and 42 minutes a day.

Addiction Cessation

In the dataset, 4 times as many unhappy people reported currently using tobacco compared to the happiest (13.2% vs. 3.2%). Smokers are more likely to have depression, anxiety, and other mood problems than non-smokers. In fact, research shows that those who quit smoking have lower anxiety, stress, and depression compared to those who continue to smoke. Furthermore, 72.9 percent of unhappy people reported drinking alcohol, and they were twice as likely to report binge drinking and heavier alcohol use overall than happy people.

Life Skills

Six times more unhappy people in the dataset reported taking mood-altering drugs to help them relax compared to the happiest (27.5% vs. 4.9%). Relaxation techniques may help mitigate stress and anger. Teaching life skills such as social skills, coping skills, relaxation techniques, critical thinking, decision making, and problem solving can give individuals essential tools for managing life and developing healthy social connection.
Counseling

More than 7 in 10 unhappy people in the dataset (73.1%) had little interest or pleasure in doing things. Compare that to just 3 percent of those who were very happy. Only a quarter (24.4%) of unhappy people were able to cope with stress (Table 2). Cognitive behavior therapy (CBT) has proven to be effective in the treatment of many psychological disorders, including depression and anxiety.

CBT seeks to improve feelings and behaviors by realigning an individual’s thoughts with reality. It encourages a person to identify dysfunctional thinking (e.g., “I never do anything right”); recognize the role negative thoughts play in self-destructive feelings, behaviors, and beliefs; and improve thought patterns to improve mood and behaviors.

Every dollar invested in treating depression and anxiety results in a significant return on investment in terms of healthy, productive lives. According to a study funded by WHO, the “monetized benefits of better health and labor force outcomes outweigh the costs of achieving them by 2.3–3.0 to 1 when economic benefits only are considered, and 3.3–5.7 to 1 when the value of health returns is also included.”40 WHO considered the effectiveness of psychotherapy for mild cases and both psychotherapy and antidepressants for moderate-to-severe cases.

Purpose and Meaning

As happiness author Emily Esfahani Smith notes in The Atlantic, psychologically healthy people have a sense of purpose and meaning, life satisfaction, and resilience. The WellsSource dataset shows that having purpose and meaning is strongly linked to happiness. This data review found that 96.9 percent of very happy people find life interesting and pleasurable and 91.6 percent are able to cope with stress. And nearly all very happy people (98.4%) are highly or mostly satisfied with life (Table 2).

The Sum of Happiness

Based on the WellsSource dataset used for this annual review, happy people have social support, cope well with stress, and are hopeful that the future holds good things. They eat a healthy diet, get the just-right amount of sleep, and exercise regularly. One could conclude that they have healthier hearts, and lower rates of diabetes and cancer. And that’s exactly what researchers are finding.28,42 Could it be that happiness itself is a factor in both physical and mental health?
Appendix

Methods
Research presented in this manuscript was conducted using de-identified data collected via the WellSuite® IV Health Risk Assessment (HRA) for the Workforce by Wellsource® and was conducted in accordance with Human Research Subjects regulations and Privacy laws. Individuals ages 18-85 years whose most recent HRA was completed between September 1, 2017 through August 31, 2018 were included. Statistical analyses were performed in IBM® SPSS® Statistics.

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No funding was received.

Author Affiliations:
Brittany U. Carter, DHSc, MPH, and Paula J. Wart, BS, are employed by Wellsource.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Statistic</th>
<th>Number*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean age (range)</td>
<td>42.6 (18.0-85.0)</td>
<td>272,819</td>
</tr>
<tr>
<td>Sex</td>
<td>Male: 102,010 (37.6%) Female: 169,510 (62.4%)</td>
<td>271,520</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td>White: 135,428 (69.2%) AI/AN: 870 (0.4%) Other: 3,570 (1.8%)</td>
<td>195,678</td>
</tr>
<tr>
<td></td>
<td>Hispanic: 14,984 (7.7%) Don’t know: 587 (0.3%) Don’t want to say: 13,241 (6.8%)</td>
<td></td>
</tr>
<tr>
<td>Social support</td>
<td>Married or living with partner: 209,100 (76.7%) Frequent contact with friends &amp; family: 260,045 (95.4%) Participate in faith group or social club: 156,954 (57.6%)</td>
<td>272,699</td>
</tr>
<tr>
<td><strong>Markers of mental health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-rated health</td>
<td>Excellent: 62,791 (23.1%) Good: 175,261 (64.3%) Fair: 31,779 (11.7%) Poor: 2,532 (0.9%)</td>
<td>272,363</td>
</tr>
<tr>
<td>Happiness</td>
<td>Very happy: 96,140 (35.3%) Pretty happy: 168,765 (61.9%) Unhappy: 7,644 (2.8%)</td>
<td>272,549</td>
</tr>
<tr>
<td>Energy level</td>
<td>High: 50,439 (18.5%) Adequate: 183,141 (67.2%) Often tired: 39,014 (14.3%)</td>
<td>272,594</td>
</tr>
<tr>
<td>Outlook</td>
<td>Hopeful about the future: 230,763 (84.6%) Not sure about the future: 39,948 (14.7%) Don’t look forward to the future: 1,921 (0.7%)</td>
<td>272,632</td>
</tr>
<tr>
<td>Satisfaction with life</td>
<td>Very satisfied: 103,897 (38.1%) Mostly satisfied: 155,002 (56.9%) Not very satisfied: 11,044 (4.1%) Very dissatisfied: 2,702 (1.0%)</td>
<td>272,645</td>
</tr>
<tr>
<td>Coping skills</td>
<td>Usually able to cope with stress: 205,438 (75.3%) Sometimes have trouble coping with stress: 61,443 (22.5%) Often have trouble coping with stress: 5,803 (2.1%)</td>
<td>272,684</td>
</tr>
<tr>
<td>Depressed in the past month</td>
<td>Yes: 45,526 (16.7%) No: 227,168 (83.3%)</td>
<td>272,694</td>
</tr>
<tr>
<td>Little interest or pleasure in the past month</td>
<td>Yes: 35,944 (13.2%) No: 236,760 (86.8%)</td>
<td>272,704</td>
</tr>
<tr>
<td>Impaired functioning due to feelings†</td>
<td>Yes: 15,051 (27.0%) No: 40,790 (73.0%)</td>
<td>55,841</td>
</tr>
</tbody>
</table>

*Total number of individuals with valid data for this statistic (the denominator)
†Among those who reported feeling depressed or little interest in past month
### TABLE 2. Differences Between Happiness Groups on Baseline Demographics, Markers for Mental Health, Nutrition, Lifestyle Behaviors, and Physical Activity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Very Happy (n=96,140)</th>
<th>Unhappy (n=7,644)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, mean (SD)</td>
<td>43.3 y.o. (12.4)</td>
<td>40.2 y.o. (11.7)</td>
</tr>
<tr>
<td>Male</td>
<td>40.0%</td>
<td>36.4%</td>
</tr>
<tr>
<td>Non-white</td>
<td>29.1%</td>
<td>39.7%</td>
</tr>
<tr>
<td>Married or living with partner</td>
<td>82.9%</td>
<td>53.8%</td>
</tr>
<tr>
<td><strong>Markers of mental health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highly or mostly satisfied with life</td>
<td>98.4%</td>
<td>35.1%</td>
</tr>
<tr>
<td>Hopeful about the future</td>
<td>97.7%</td>
<td>26.5%</td>
</tr>
<tr>
<td>Excellent or good self-rated health</td>
<td>96.4%</td>
<td>42.9%</td>
</tr>
<tr>
<td>Usually able to cope with stress</td>
<td>91.6%</td>
<td>24.4%</td>
</tr>
<tr>
<td>High energy level</td>
<td>37.7%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Impaired functioning due to feelings</td>
<td>14.4%</td>
<td>54.0%</td>
</tr>
<tr>
<td>Depressed</td>
<td>3.1%</td>
<td>83.6%</td>
</tr>
<tr>
<td>Little interest or pleasure</td>
<td>3.1%</td>
<td>73.1%</td>
</tr>
<tr>
<td><strong>Nutrition</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruits</td>
<td>73.5%</td>
<td>42.7%</td>
</tr>
<tr>
<td>Vegetables</td>
<td>57.7%</td>
<td>29.1%</td>
</tr>
<tr>
<td>Sugar-sweetened beverages</td>
<td>54.0%</td>
<td>34.1%</td>
</tr>
<tr>
<td>Whole grains</td>
<td>37.9%</td>
<td>22.7%</td>
</tr>
<tr>
<td>Sweets</td>
<td>25.0%</td>
<td>16.2%</td>
</tr>
<tr>
<td>Fish</td>
<td>17.8%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Saturated fats</td>
<td>16.1%</td>
<td>10.3%</td>
</tr>
</tbody>
</table>

*Meeting recommended daily intake
- Fruits (at least 2 servings)
- Vegetables (at least 3 servings)
- Sugar-sweetened beverages (0 servings)
- Whole grains (at least 3 servings)
- Sweets (0 servings)
- Fish (at least 3 servings / weekly)
- Saturated fats (0 servings)

### Lifestyle behaviors

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Very Happy (n=96,140)</th>
<th>Unhappy (n=7,644)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol use (drinks per week), mean (SD)†</td>
<td>3.9 (4.1)</td>
<td>5.7 (11.7)</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>66.1%</td>
<td>72.9%</td>
</tr>
<tr>
<td>Binge drinking†</td>
<td>18.7%</td>
<td>41.1%</td>
</tr>
<tr>
<td>Tobacco use‡</td>
<td>19.9%</td>
<td>33.9%</td>
</tr>
<tr>
<td>Take legal mood-altering drugs daily</td>
<td>4.9%</td>
<td>27.5%</td>
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</table>

### Physical activity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Hours per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sitting, mean (SD)</td>
<td>8.8 (3.3)</td>
</tr>
<tr>
<td>Sleep, mean (SD)</td>
<td>7.1 (0.9)</td>
</tr>
<tr>
<td>Physical activity, mean (SD)</td>
<td>1.7 (1.8)</td>
</tr>
</tbody>
</table>

† Reported among those who drink alcohol
‡ Includes current and former users
### TABLE 3. Associations: Demographic and Lifestyle Factors Associated with Unhappiness

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR (95% CI)*</th>
<th>p-value†</th>
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</thead>
<tbody>
<tr>
<td><strong>Demographic</strong></td>
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<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.98 (0.97-0.98)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Male</td>
<td>0.95 (0.89-1.02)</td>
<td>0.174</td>
</tr>
<tr>
<td>Non-White</td>
<td>1.15 (1.07-1.23)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Married</td>
<td>0.33 (0.30-0.35)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Nutrition‡</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruits</td>
<td>2.03 (1.89-2.18)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Vegetables</td>
<td>1.64 (1.52-1.76)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Whole grains</td>
<td>1.26 (1.16-1.36)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Fish</td>
<td>1.35 (1.21-1.49)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sweets</td>
<td>1.29 (1.18-1.41)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sugar-sweetened beverages</td>
<td>1.33 (1.24-1.43)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Saturated fats</td>
<td>1.20 (1.08-1.34)</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>Lifestyle / habits</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol use</td>
<td>0.87 (0.81-0.94)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Tobacco use</td>
<td>0.67 (0.63-0.72)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Use drugs to alter mood</td>
<td>0.19 (0.18-0.21)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sleeping 7-8 hours§</td>
<td>3.06 (2.87-3.27)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sitting, hours per day</td>
<td>1.12 (1.11-1.13)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Physical activity, hours per day</td>
<td>0.82 (0.80-0.84)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

* OR, Odds Ratio: a measure of association between exposure (e.g., sex, tobacco use) and an outcome (e.g., happiness)—these were calculated using multiple logistic regression;

CI, Confidence Interval: a range of values within which a true value is likely to fall with a certain level of confidence (e.g., 95%)

† p-value: a statistic used to accept or reject the null hypothesis (i.e., very happy and unhappy people are similar); the smaller the p-value the higher the likelihood of rejecting the null hypothesis

‡ Not meeting recommended daily intake for fruits (at least 2 servings), vegetables (at least 3 servings), whole grains (at least 3 servings), sweets and/or sugar-sweetened beverages (0 servings), and saturated fats (0 servings); or recommended weekly intake of fish (at least 3 servings)

§ Not getting 7-8 hours of sleep
References


About Wellsource

For four decades, Wellsource has been personalizing population health by designing innovative Health Risk Assessments that are grounded in modern evidence-based medicine. Wellsource uses the power of technology to drive informed decisions with actionable data for health plans, wellness organizations, and companies committed to improving wellness. Our WellSuite® IV Health Risk Assessments for the Workforce, for Medicare, and for Medicaid are NCQA certified and used for predicting health risks and reducing avoidable costs.

For more information about Wellsource products, please request a consultation.

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