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Normal isn't normal: On the medicalization of health

Jeff Levin *, Matt Bradshaw

Baylor University, One Bear Place # 97236, Waco, TX 76798, USA

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ABSTRACT

Background: This study investigated the proportion of the U.S. population classified as healthy based on 10 common indicators, examined in two ways: (1) above or below (in the healthy direction) the sample median (termed "normal"), and (2) below diagnostic cut-off points for clinical caseness or high risk (termed "ideal").
Methods: Data are from the 2017-March 2020 round of the National Health and Nutrition Examination Survey (NHANES). Sample sizes ranged from 3,956 to 8,961 for respective health indicators, with a total of 3,102 respondents for two weighted multi-item measures described below. Measures included the Alameda 5 health behaviors (smoking, drinking exercising, sleeping, and body mass index) and five standard biomarkers (systolic and diastolic blood pressure, resting heart rate, fasting glucose, and total cholesterol). Besides point prevalences for the normal and ideal categories for each indicator, we also calculated the proportion healthy for *all* 10 indicators, again calculated both ways, termed "meta-normal" and "meta-ideal."
Results: The prevalence of meta-normality was 1.05%, suggesting that hardly any adult Americans are completely healthy according to population norms. Findings for meta-ideality showed that while most Americans are not clinical cases for any respective indicator, only 5.55% met the official criteria for being healthy according to all 10 indicators.
Conclusion: Most Americans appear healthy according to nearly all key health indicators and biomarkers, according to "normal" or "ideal" criteria. However, the proportion healthy according to all measures is extremely small. Relatively few U.S. adults are completely healthy according to clinical criteria (meta-ideal), and even fewer are completely healthy according to population norms (meta-normal). Results are interpreted through sociological writing on medicalization.

Introduction

In 2000, integrative medicine physician Bowen White published a book with the provocative thesis that "normal is not healthy"[1] (p. 11). The default way of living, or being, in the U.S. is to focus on things neither of ultimate importance nor in our best interest, thus condemning ourselves to being consumed with chronic stress until our immune system is overwhelmed and, eventually, we die. This depressing scenario is a "normal" or routine life course trajectory for so many in this fast-paced contemporary world. Even those who eat right, watch their weight, exercise, monitor their cholesterol and blood sugar, and so on, travel this same road. But who can do every one of these things and avoid falling prey to illness? To alter this trajectory must require something more than simply being normal. This something more has been given various names, including "high level wellness."[2] Yet, as White[1] (p. 79) laments,

> When I quit doing what's predictable, . . . other people who in the past have been able to manipulate me into predictable patterns of response are not going to support my new behaviors. In fact, they may say, "I think he's gone over the edge."
>
> That's the irony. We're doing something that's healthier, and people, even people in our own families, may say, "What's wrong with you?"

We can be in the normal or normative range, sociologically speaking, or the ideal range, clinically speaking, for various biomarkers—the latter termed "within normal limits," or WNL, according to medical lexicon—yet, overall, still be generally unhealthy and subject to morbidity and premature mortality. The same goes for health-promoting behavior: we may not smoke or abuse alcohol, yet still end up with chronic degenerative diseases that shorten our life. So even if WNL or moving toward high-level wellness, we might gain an edge to some extent, but it is no guarantee of a lengthy disease-free life. Yet we are so conditioned to see pursuit of normality as a medical get-out-of-jail-free

* Corresponding author.
E-mail address: jeff_levin@baylor.edu (J. Levin).

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card that one rarely ponders what it means to be normal with respect to the panoply of health risk factors. Is normal always good, is it a reasonable pursuit, does it always pay off in the end?

But White's provocative thesis begs an even more provocative question: is normal actually normal? Moreover, does it even exist, beyond a social or cultural construction?[3] This requires us to address another question: what does it mean to be normal? This was posed 80 years ago,[4] noting that in medicine at the time no single definition of "normal" dominated: the question of normality could be answered statistically or in terms of an absence of clinically observable pathology or in relation to an ideal disease-free state according to all indicators. At present, answering the question, "What is normal?," in the context of health, suggests a few possibilities such as normal function;[5] normal or optimal status, according to some biological markers;[6] or normal or preventive health-related behavior.[7] Numerically, the idea of normal, or normative, would seem to imply being at or above the median in the distribution of a respective indicator on the "healthy" side. This might signify healthiness, or may be insufficient—the optimal or ideal level on a respective indicator may be greater than merely normal or above average. Or, for certain indicators, perhaps the norm or median indicates pathology or risk; maybe most of us do a bad job on that one. It probably depends on the marker and population.

This begs yet another question: is "normal" even a clinically meaningful concept? Further, how many people are normal on everything across the board—what we might term meta-normal? Do such people even exist? Similarly, what about "ideal" and what could be called meta-ideal? What proportion of the population is at the ideal level on a respective indicator, or, better, according to all pertinent markers or behaviors? If meta-normal folks are few, are meta-ideal folks even fewer (or the other way around), or do they rarely exist in reality, only hypothetically? If so, would this imply that, as defined by medical norms or ideals, nobody is fully healthy? Everyone, in such a scenario, could be defined as filling what Parsons[8] famously termed the sick role, or the "social role of the sick person"[9] (p. 52) with associated obligations and entitlements. This cannot possibly be so, or can it?

Normality and ideality

To restate, we are distinguishing between normal and ideal, and between meta-normal and meta-ideal. The latter two terms are neologisms, but defined here for heuristic purposes—to enable estimates of the proportion of the adult population at or above the median points of the distribution (meta-normal) or below the clinically defined cut-off points for caseness or high risk (meta-ideal) according to 10 commonly used indicators (biomarkers and behavioral risk factors) of healthiness, physiological and behavioral.

What constitutes "health" or "healthy," as noted, is socially constructed in part,[10] as are other statuses that characterize parameters of human lives. These include not just healthiness according to particular indicators, but health in general, as well as particular diagnostic or nosological categories. Even the existence of certain presumed disease entities may be contested. For health, while there is an objective physical or physiological component,[11] categorization of respective individuals as healthy or not healthy also has political, economic, cultural, and psychological influences. What is considered ideal for a respective biomarker, health indicator, or risk factor may be a product of deliberations among government, pharmaceutical companies, physicians, hospital chains, patient advocacy groups, and the latest research studies, and may not reflect unanimous consent regarding an indisputable physical reality.

Another complication: when responding to a population-survey question soliciting a rating of overall health, people may interpret the question differently.[12] Respondents may have various incomparable understandings or definitions in mind when it comes to health and in assessing their own status. These referents include absence of health problems, physical functioning, general physical condition, energy, positive health behavior, health comparisons, and mental health, and they vary by age, education, and race. Further, they do not correlate well with closed-ended categorical self-ratings of global or overall health.[12]

For present purposes, we are focusing on 10 of the most commonly utilized behavioral and physiological indicators, including the well-known Alameda 5 health behaviors[13,14] and other measures. Each indicator is generally recognized by patients and physicians as a marker for a higher-order state labelled, by convention, health. Most of us probably know our own status or numbers on some of these indicators, and monitoring them may be a life-long pursuit or even obsession.[15] Indeed, this is increasingly encouraged by the medical and pharmaceutical sectors. Taken together, such indicators are a useful way to summarize overall health, and the presence of recent national population data provides a serendipitous opportunity to gauge how the health of the population maps out against standards currently endorsed by the medical profession.

Thresholds for caseness or heightened risk have shifted over time as scientific knowledge has advanced, but also due to medicalization of human life, social institutions, and the body. Powerful interests have weighed in, too, creating changes in diagnostic cut-off points designating clinical caseness for reasons driven in part by non-medical interests. This has skewed public perception of population data, engendering belief that certain salutary states or behaviors are declining and, concomitantly, that certain deleterious conditions are increasing and may even constitute a "crisis."[16] Some may be, but other presumed crises may be a function of the reconstruction of a particular biomarker level or behavioral category as designating risk for other reasons, medically justified or not.

Medicalization and overdiagnosis

The concept of medicalization has a more longstanding provenance than typically acknowledged. Usually meant as "defining a problem in medical terms, using medical language to describe a problem, adopting a medical framework to understand a problem, or using a medical intervention to 'treat' it"[17] (p. 11), the term became widely used in the 1970s,[18,19] notably within sociology.[20] Other definitions have been proposed,[21] mostly aligned with the above. Usage, however, dates back before the 1970s; the term "médicalisation" appears in a French journal in the 1950s[22] and, according to PubMed, there are over 7 million uses of "medicalization" dating to 1781, although the NLM search engine does not enable this to be verified. Critiques and counter-critiques have been offered,[23–26] including proposal of "overmedicalization."[27] The stridency of discourse here is indicated by denunciatory referents to agents of "medical social control,"[28] including accusations of "pathologizing" otherwise non-pathological conditions[29] or of "disease mongering," defined as "widening the boundaries of treatable illness in order to expand markets for those who sell and deliver treatments"[30] (p. 886).

The increasing power and authority of the medical sector in American society, including in defining normative behavior and serving as an agent of social control, has been observed for decades.[18] Entire institutions and sectors of society are said to have become medicalized, including criminal behavior,[31] political dissidence,[32] deviance from social norms,[33] and since the COVID-19 pandemic, it is claimed, "[v]irtually our entire existence"[34] (p. S-61). We suggest that health, too, as awkward as this may sound, is becoming medicalized. How health is defined, how it is "sold" to the public, and how we are told to achieve it is mostly dictated by the medical sector, by physicians and presumed biomedical experts whose recommendations lean mostly toward medication and medical and surgical interventions, instead of other therapies including behavioral interventions or social policies. Our findings, below, lend credence to this assertion.

A major force behind the medicalization of health is "overdiagnosis,"[35-37] evidenced by the malleability of diagnostic criteria over time, manifesting in three ways. The population may become overdiagnosed due to the medical establishment (a) altering cut-off points

defining clinical caseness for certain screening tests (e.g., for hypertension), potentially exacerbating the appearance of health disparities across particular population groups;[38] (b) inventing diagnostic categories that enlarge the scope of existing diseases (e.g., pre-diabetes, pre-hypertension), dramatically increasingly the apparent prevalence of pathology in the population;[39] and (c) and creating new diseases out of whole cloth by medicalizing unusual symptoms, signs, or behaviors not previously considered a medical condition (e.g., restless leg syndrome a.k.a. Willis-Ekborn Disease), reading additional people into a status of illness or sickness. This point is contentious, however, as many such new diagnoses (such as Willis-Ekborn) may involve real suffering and real pathophysiology, and perhaps Western medicine has only now come to recognize these conditions. Alternatively, some may be examples of what economists term rent-seeking behavior,[40,41] or "the socially costly pursuit of wealth transfers"[42] (p. 820).

Either way, this has served to enlarge the proportion of the population defined as a medical case and thus subject to treatment and medication, creating new markets for pharmaceutical companies, for good or bad. The gold standard for validation of a diagnostic category ought to be something solid, such as standardized mortality ratios or rates of hospitalization or sick days, but this is not typically so. This creates an illusion of precision in the determination of health risks, where, in reality, there may be much uncertainty.[43] Point "b," above, is especially concerning, as proliferation of invented "protodiseases"[44] (p 30) and "the semi-pathological pre-illness at-risk state"[45] (p. 401) may be a harbinger of what is ominously termed "surveillance medicine."[45] Another factor: online culture, social media, and advertising encourage and persuade consumers to treat a diagnosis as "a core plank of an individual's sense of self."[46]

Circling back to the questions posed earlier, the issue to be explored here is simple: is the prevalence rate of overall health substantial, by either reckoning, or, rather, barely above nil? That is, do multinormality and multi-ideality even exist? Have cut-off points designating what is and is not healthy been so skewed that, after counting up all the recommended biomarkers and behavioral risk factors, national data suggest that almost no one in the U.S. is completely healthy? Is that possible? Does the present social construction of this issue lead to such an unlikely result? It is being proposed that when it comes to defining "healthy," the ideal may not be normal and neither the ideal nor the normal may be real—that is, meaningfully grounded in reality. Or they may be, and there is indeed a health crisis among Americans. No matter, "normal" and "ideal" are partly social, political, and economic constructions and, while their interpretation is challenging, it would be worthwhile to examine how they map out in the population.

Methods

Study sample

Data are from the 2017–2020 National Health and Nutrition Examination Survey (NHANES), the most recent public round of a program of studies designed to assess the health and nutritional status of adults and children in the U.S. The NHANES has been conducted roughly annually by the National Center for Health Statistics since 1971, and surveys a nationally representative sample of about 5,000 people each year. Because of the COVID-19 pandemic, field operations for the 2019-2020 survey were suspended in March, 2020, and data collection for that cycle was not completed. Only 18 of 30 planned survey locations were used, and collected data were not nationally representative. Therefore, data collected from 2019 to March, 2020, were combined with data from the 2017–2018 cycle, using a special weighting process, to create a nationally representative sample of 2017-March, 2020, pre-pandemic data. This version is used here.

The NHANES uses a complex, four-stage sample design enabling estimates that would have been obtained if the entire sampling frame (the noninstitutionalized civilian U.S. population) had been surveyed. Data collection combines interviews and physical examinations, and the sample comprises individuals surveyed at home by trained interviewers using a Computer-Assisted Personal Interview (CAPI) system with built-in consistency checks to reduce data entry errors. For the most recent round, the total unweighted all-ages sample size of interviewed respondents is 15,500, for an unweighted response rate of 51.0%. In this paper, only adults aged 18 years and older were included in analyses. Of these, 51.33% are female, 65.23% are non-White, the mean age is 49.59, mean years of education is between a high school graduate/GED or equivalent and some college or associate's degree, and the average ratio of household/family income to poverty guidelines is 2.57.

Sample sizes for each variable ranged from 3,956 individuals for fasting plasma glucose to 8,961 for smoking. All available data were used when examining the point prevalence of each individual health indicator. Listwise deletion was used for the two multi-item measures described below, which resulted in a final N of 3,102 individuals with complete weighted data on all 10 health indicators. Most missing data were due to the glucose measure (collected only on a subsample of fasting respondents), so analyses were conducted with and without this indicator. The main findings were comparable.

Measures

The NHANES includes hundreds of demographic, socioeconomic, dietary, and health-related questions, assessed through interviews and an examination component consisting of medical, dental, and physiological measurements, as well as over 800 laboratory tests administered by medical personnel. In this paper, 10 variables were used in analyses, including measures of the Alameda 5 health behaviors[13-14] and five standard biomarkers. For the present analyses, response categories of certain items were reverse-coded or combined with other items in order to facilitate interpretation.

Alameda 5 variables are *smoking* (two items, "Do you now smoke cigarettes?," and, "Have you smoked at least 100 cigarettes in your entire life?"; combined and recoded as: 0 = not at all, 1 = some days or every day), *drinking* ("During the past 12 months, on those days that you drank alcoholic beverages, on the average, how many drinks did you have? By a drink, I mean a 12 oz. beer, a 5 oz. glass of wine, or one and a half ounces of liquor."; combines two items into a new variable coded: 0 = never in the last year, number of drinks from 1-14, 15 = 15 drinks or more), *exercising* ("In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational activities?"; coded: number of days from 0 to 7), *sleeping* (number of hours usually sleep on weekdays or workdays; derived from two other variables; coded: 2 = less than 3 hours, number of hours from 3 to 13.5, 14 = 14 hours or more), and *body mass index* (BMI) (coded: exact number in kg/m^2, from 14.2 to 92.3).

Biomarkers are *systolic blood pressure* (SBP) (coded: average of three oscillometric readings in mmHg, from 76.3 to 218.7), *diastolic blood pressure* (DBP) (coded: average of three oscillometric readings in mmHg, from 41.3 to 143.7), *resting pulse rate* (RPR) (coded: average of three oscillometric readings in bpm, from 36.7 to 141.3), *fasting plasma glucose* (FPG) (coded: exact number in mg/dL, from 47 to 451), and *serum total cholesterol* (STC) (coded: exact number in mg/dL, from 71 to 446).

The smoking, physical activity, and sleep questions were asked at home by trained interviewers using the CAPI system. The alcohol question was administered at the Mobile Examination Center (MEC) using CAPI. The body measures data were collected at the MEC by trained health technicians assisted by a recorder during the examination. Arm and leg measurements for BMI were made on the right side of the body. If a participant had an amputation, medical condition, or medical appliance, such as a cast, preventing such measurements, the technician took measurements on the left side. Glucose was measured in a fasting subsample of participants 12 years and older, but individuals under the age of 18 were not included in the analysis. Blood pressure and heart rate measurements were taken at the MEC. After resting quietly

and seated for five minutes, three consecutive measurements were taken 60 seconds apart using a digital upper-arm electronic measurement device, Omron HEM–907XL. Measurements were taken on the right arm unless specific conditions prohibited use of the right arm, or if participants reported any reason that the measurements should not be taken in the right arm. Serum total cholesterol levels were directly measured.

Data analysis

Analyses were conducted to determine the population point prevalence of each of the 10 health indicators in two distinct ways: one to determine *normality*, in the sociological sense, i.e., the population norm; the other to determine what we are calling *ideality*, i.e., according to clinical criteria. Note: as explained earlier, "normal" here does not imply WNL, as printed in medical laboratory reports. WNL would correspond more to what we are calling ideal.

First, we calculate the proportion (in %) of the population above (or below, as the case may be) the median or thereabouts of the distribution of a respective indicator depending upon the metric of response categories, in the healthy or health-promoting direction. This is what we are calling "normal." In each instance, it is expected that this should be either at 50% for the continuous variables, by definition—it is, literally, the median or mid-point of the distribution—or somewhat above or below that for the categorical variables, due to which category contains the median. We then calculate the proportion (in %) of the population in the healthy half for *all* 10 variables, termed "meta-normal." This number is expected to be lower than the prevalence for any individual indicator, as being in the healthy half of the distribution for everything is presumably less likely than being in the healthy half for any one indicator.

Second, the analysis is repeated, this time using recognized diagnostic cut-off points for clinical caseness or high-risk status for each indicator—what we are terming "ideal." The goal here is to identify the proportion of the population considered healthy according to predetermined official clinical criteria, as validated in the medical literature and/or endorsed by professional organizations (see Sources in the footnote to Table 1). Also calculated, again, is the proportion of the population in the ideal category for *all* 10 variables, termed "meta-ideal." As before, presumably this prevalence rate is lower than the prevalence for any individual indicator, as being at the ideal point or better for all of the indicators is a higher bar than being at the ideal point or better for any one indicator.

All analyses were conducted using Stata 15. Unless noted, results were estimated using sample weights designed to produce nationally representative estimates of the civilian, resident, non-institutionalized U.S. population from the 2017-March 2020 dataset. Additional details are available at www.cdc.gov/nchs/nhanes.

Results

In Table 1, the prevalence rates for being in the healthy half of the population for the 10 indicators (in the "normal" column), except for smoking, are all near 50%, which is not the take-home point—this is what it means to be "normal" or normative, in other words at or above the median. Rather, the takeaway here is the result for "meta-normal," for those respondents in the healthy half of the distribution for all 10 indicators. This point prevalence rate is 1.05%. In other words, as measured against population norms for these indicators hardly any adult Americans are truly healthy or not at risk.

Also in Table 1 are the prevalence rates for meeting the clinical criteria for being healthy (in the "ideal" column)—that is, for falling below the diagnostic cut-off point designating caseness or high risk. Here, the prevalences are even higher than for the "normal" analysis, indicating that most Americans are not clinical cases for any respective indicator. Interestingly, being in the healthy half of the distribution (normal) is actually a more stringent classification than merely being clinically healthy (ideal). But, again, regardless, the takeaway here is the result for "meta-ideal," for those respondents who meet official diagnostic criteria for healthiness for all 10 indicators. The point prevalence rate is 5.55% according to this criterion.

Table 1
Point prevalence rates (in %) of "normal" and "ideal" values for health indicators, in the 2017-March, 2020, NHANES.

Health indicator	For "normal values		For "ideal" values	
	Median value or response category	Prevalence in healthy half of distribution (%)	Clinical cut-off point designating caseness or high risk[a]	Prevalence below cut-off point for clinical caseness or high risk (%)
Smoking	0 cig's.	83.5	Any amount; no safe level	83.5
Drinking	1 drink	49.8	Unsafe at > 2 drinks/day in men, > 1 drink/day in women	61.3
Exercising	0 days	47.0	< 2 days/wk.	41.2
Sleeping	7.5 hrs.	59.0	< 7 hrs./night or > 9 hrs./night	66.3
BMI	25.8	50.4	Class 1 obesity = > 30	58.6
SBP	116.7	55.2	Stage 1 hypertension = > 130 mmHg	73.9
DBP	70.7	51.9	Stage 1 hypertension = > 80 mmHg	73.0
RPR	71	50.7	Tachycardia = > 100 bpm	98.9
FPG	102	51.9	Diabetes = > 126 mg/dL	88.6
STC	175	47.9	Hypercholesterolemia = > 200 mg/dL	65.8
Meta-normal		1.05[b]		
Metal-ideal				5.55[c]

Notes. For the "normal" analyses, the reported prevalence rate for each respective health indicator is for the percentage of respondents in the "healthy" half of the distribution, i.e., *at or above* the median. For the "ideal" analyses, the reported prevalence rate for each respective health indicator is for the percentage of respondents *below* the clinical cut-off point indicating caseness or high risk. The reported prevalence rates for the meta-normal and meta-ideal variables are for the percentage of respondents meeting the respective criteria for *all* of the health indicators—i.e., at or above the median for all 10 indicators ("normal" analysis) or below the clinical cut-off point designating caseness or high risk for all 10 indicators ("ideal" analysis).

[a] Sources: smoking (https://www.cancer.org/content/dam/CRC/PDF/Public/8345.00.pdf), drinking (https://www.dietaryguidelines.gov/sites/default/files/2021-03/Dietary_Guidelines_for_Americans-2020-2025.pdf), exercising (https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf), sleeping (https://aasm.org/advocacy/position-statements/adult-sleep-duration-health-advisory), BMI (https://www.cdc.gov/healthyweight/assessing/index.html), SBP and DBP (https://www.cdc.gov/bloodpressure/facts.htm), RPR (https://www.heart.org/en/health-topics/arrhythmia/about-arrhythmia/tachycardia-fast-heart-rate), FPG (https://diabetes.org/diabetes/a1c/diagnosis), STC (https://www.sciencedirect.com/topics/medicine-and-dentistry/hypercholesterolemia).

[b] 1.30 excluding FPG.

[c] 5.68 excluding FPG.

As noted above, glucose measurements were only collected on a subsample of respondents, so including this measure in the 10-item variable resulted in a substantial loss of sample size. To examine the effect on findings, we created nine-item measures for both meta-normal and meta-ideal excluding glucose, then re-estimated the meta-normal and meta-ideal prevalences (not presented in the table). There was little change. The results for meta-normal show that 1.30% of the population is healthy on all nine indicators compared with 1.05% when glucose is included. For meta-ideal, the prevalence is 5.68% without glucose compared with 5.55% when it is included. Thus, results are

comparable whether or not glucose is included.

Table 2 shows point prevalence rates for respondents healthy on all 10 indicators (both meta-normal and meta-ideal) stratified by sociodemographic characteristics. Both unweighted and weighted data are used, for comparison's sake. Based on chi-square tests, there are no statistically significant differences by gender or race/ethnicity. Individuals older than 50 years of age have lower prevalences than younger individuals for both meta-normal ($\chi2 = 22.36$, $p < .001$) and meta-ideal ($\chi2 = 27.81$, $p < .001$) states. Individuals with college degrees have considerably higher prevalence rates for both meta-normal ($\chi2 = 7.88$, $p < .05$) and meta-ideal ($\chi2 = 54.80$, $p < .001$) states than those who have less education. A similar pattern exists for income. Individuals in the top quartile of the distribution on a variable indicating the ratio of family income to poverty guidelines score higher on both meta-normal ($\chi2 = 12.28$, $p < .01$) and meta-ideal ($\chi2 = 22.66$, $p < .001$) states than those in the lower quartiles. For meta-normal, there is a somewhat non-linear relationship, with the highest prevalences occurring in the top and bottom quartiles. For meta-ideal, there is a roughly linear association, with prevalence rates generally increasing from the bottom to the top quartiles.

Discussion

Three conclusions can be drawn from these analyses. First, whether above the norm in a healthy direction or meeting the clinically ideal threshold, most adult Americans are healthy according to almost every important health indicator or biomarker. Second, despite this, the proportion healthy according to *all* such measures is exceedingly small. Third, interestingly, as noted, to be in the top (healthy) half of the distribution overall is actually rarer than to be in the meta-ideal category. No matter, these results suggest that while most adult Americans are not classifiable as clinical cases or at excess risk for any of these respective indicators or markers (with the exception of not getting the recommended level of exercise), and while the population norm for each measure is to be classified as healthy, or close to it, overall hardly any Americans can be considered completely healthy or not at risk.

Table 2
Demographic differences in "meta-normal" and "meta-ideal" point prevalence rates (in %) for health indicators, in the 2017-March, 2020, NHANES.

Demographic variable	Prevalence (%)	
	Meta-normal weighted (unweighted)	Meta-ideal weighted (unweighted)
Gender		
Male	0.94 (0.87)	6.32 (5.06)
Female	1.17 (1.10)	4.77 (4.34)
$\chi2$ (1 df)	0.42	0.93
Race/ethnicity		
White	1.14 (1.05)	5.94 (5.27)
Non-White	0.92 (0.95)	4.88 (4.39)
$\chi2$ (1 df)	0.08	1.30
Age		
< 25 years old	1.79 (2.50)	12.85 (10.00)
25-50 years old	1.78 (1.58)	5.21 (4.75)
> 50 years old	0.21 (0.24)	4.01 (3.52)
$\chi2$ (2 df)	22.36[c]	27.81[c]
Education		
< High school graduate	0.58 (0.53)	2.06 (2.13)
High school graduate	0.84 (0.80)	3.38 (3.60)
Some college	0.37 (0.39)	3.12 (2.47)
College graduate	1.64 (1.53)	9.95 (8.82)
$\chi2$ (3 df)	7.88[a]	54.80[c]
Ratio of family income to poverty		
Quartile 1	1.37 (1.33)	2.70 (2.66)
Quartile 2	0.66 (0.74)	4.26 (3.84)
Quartile 3	0.09 (0.13)	4.43 (3.84)
Quartile 4	1.94 (1.77)	7.80 (7.57)
$\chi2$ (3 df)	12.28[b]	22.66[c]

[a] $p < .05$
[b] $p < .01$
[c] $p < .001$.

Accordingly, to restate, by definitions applied here, relatively few U. S. adults are entirely healthy according to clinical criteria (meta-ideal), and almost no one is completely normal or normative, sociologically speaking (meta-normal). By either reckoning, almost the entirety of the adult population qualifies to be read into the sick role, close to 100%. Taken at face value, this implies that nearly everyone—or at least about 95% of the population—(a) is afflicted with *some* disease or illness or is at heightened risk; (b) is, as a result, a captive target audience for providers of medical care or pharmaceutical prescriptions; and (c) thus may qualify to be excused from participation in normal social role behaviors and expectations in keeping with the definition of the sick role concept.[47,48] If true, this would present challenging social and political implications, yet it cannot be based on any consequential pathophysiological reality unless we accept the likelihood that almost no adult Americans are fully healthy.

This raises a perplexing issue. Surely not almost every adult American is meaningfully categorizable as a clinical case or at heightened risk and in need of prophylaxis or medication or other medical therapy or intervention. Or are they? If not, then these findings would seem to exemplify the concept of overmedicalization, as well as underscoring the critique that some sociologists have aired regarding the utility of the sick role concept,[49] such as its reinforcement and positive sanction of a status (illness) that may in large part be socially constructed.

Continuing with this line of interpretation, this situation may have created an outbreak of worry over health-related concerns, some of which may not be of long-term consequence when assessed in relation to morbidity or longevity. Interestingly, how this medicalization of health affects the incidence and prevalence of the new DSM-V diagnostic category of illness anxiety disorder (formerly hypochondria) is not clear,[50] but, one would think, is likely impactful. Perhaps through altering diagnostic cut-off points designating clinical caseness and creating novel "pre-" categories for selected chronic diseases, we are conditioning the population to be in a constant state of illness anxiety. This is worthy of focused study in its own right.

The population is also bombarded by advertising ("Ask your doctor today about . . .") which defines almost every individual as a consumer and reads them into one or more diagnostic categories in need of medical intervention, preferably pharmaceutical products marketed for sale.[51] This risks fostering potentially detrimental states in vulnerable people, such as passivity, dependency, and anxiety about health, and encouraging dependence on the medical pronouncements of a nexus of Big Pharma and the medical establishment, insurance industry, corporate sector, and government. It reads almost the entire country into a status of pathology or high risk, reinforces ideations of individuals described as "worried well"[52] and "Generation Rx,"[53] and serves to recruit new medical over-consumers. According to recent national panel data, half of all Americans born since 2019 can expect to be on prescription medications for half their lives.[54] How to resolve this is less clear. As recently noted, "Getting people off drugs is unfamiliar terrain for modern health systems, which are mostly set up to put patients on them"[55] (p. 64). Perhaps with this in mind, the concept of medicalization has been expanded to include "pharmaceuticalization" as a malign force for "medical colonization."[56]

The phenomenon of medicalization also reinforces what has famously been termed the "tyranny of the normal"[57]—a meta-normal or meta-ideal that may not actually exist, as the present findings suggest—as an idealized state for everyone, sanctioned by social norms and even social policy and legislation. In some instances, this has entailed negative legal sanction or loss of the right to self-determination among people resisting the tacit definition of normal health such as by refusing prescribed or mandated prophylaxis, medication, or medical treatment.[58] Yet, as we are reminded, "It is especially important for us to realize that finally *there are no normals* at a moment when we are striving desperately . . . to normalize the world"[57] (p. 42).

Taking a more epidemiologic angle on these findings, as opposed to the sociological critique, a different conclusion might be drawn, as anticipated in the Introduction. The findings for "meta-normal" (i.e., respondents in the healthy half of the distribution for all 10 indicators) show a prevalence rate of only 1.05%. This does seem to suggest that hardly any adult Americans are completely healthy as measured against population norms; nearly 99% of adult Americans are apparently ill or at risk in some way. Prevalence rates for being in a "meta-ideal" state (i.e., meeting the clinical criteria for being healthy) show that, again, most Americans are not clinical cases for any respective indicator. But, as with the meta-normal analysis, this time only 5.55% meet the official criteria for being healthy on all 10 indicators; nearly 95% of adult Americans are ill or at risk. Not much better!

By either metric (normality or ideality), these findings could mean that while most Americans are healthy according to key indicators and biomarkers, the relative proportion of Americans who are healthy according to *all* such measures is indeed almost nil. In other words, this may not be a matter of medicalization, but of the sad truth that we are a mostly unhealthy people. Based on the definitions applied here, very few individuals are completely healthy according to clinical criteria (meta-ideal), and almost no one is completely "normal." Not to overstate, but if true, these are startling and concerning findings. But deciding which narrative is correct is beyond the scope of the present analyses.

These findings merit serious consideration by medical practitioners, policymakers, and patient groups. A notable strength of the present study is that these data come from the NHANES, a large, representative, national population survey which along with its companion, the National Health Interview Survey, is the primary source for the most comprehensive and accurate estimates of the health of adult Americans.

Future research might build on this work by examining the contribution to overall health of additional indicators such as depressive symptoms,[59] anxiety-related disorders,[60] dietary practices,[61] and measures of positive affect and overall well-being.[62] It might also investigate correlates (both risk and protective factors) of health, whether conceptualized as meta-normal or meta-ideal. The exploratory results in Table 2 point to at least some variations by age and socioeconomic status, so subsequent research might follow up these findings in detail. Other potential correlates such as social integration and support,[63] religious identity and participation,[64] and stressful conditions[65] could also be examined.

Another fruitful approach might be to explore this issue through alternate conceptualizations of what it means to be healthy or ill, besides summary counts of mostly low-prevalence medical statuses, as in the present study. Promising evidence-based approaches include consideration of constructs and measures found throughout the emerging literature on the multidimensional assessment of human flourishing.[66-67]

These findings have implications for clinical practice, the design of social and behavioral interventions, and public health policy and decision-making. As observed, most adult Americans appear healthy for any given health indicator or biomarker, but, taking these findings at face value, hardly any Americans are completely healthy when multiple indicators are taken into consideration. This suggests that multifactorial, holistic approaches that take the whole person into account, in keeping with the values espoused by this journal, may be necessary to promote population health.[68] Because these findings suggest *either* that almost all Americans have at least some health problem or problems that read them into clinical caseness or high-risk status *or* that most Americans are actually quite well but substantially medicalized, another follow-up would be to validate these finding against "hard" markers such as population-wide mortality rates to determine, for example, whether levels of morbidity identified here actually make a difference for longevity. Recent findings using earlier national data suggest some promise for this approach.[69]

The causes of poor health are diverse, ranging from genetic factors to environmental factors to macrolevel social, economic, and political conditions. Accordingly, as encouraged by the former U.S. Assistant Secretary of Health in the Obama Administration, solutions to population-health disparities must in turn be multifaceted.[70] Medical care is a necessary component, but social and behavioral therapies and programs are important, as are health-promoting social policies.[71,72] Still, the nagging question remains whether the findings presented here are indicative of a widespread population-health crisis, or, rather, exemplify what we have termed the medicalization of health, or, perhaps, something entirely different. We hope that this information will spark an ongoing conversation among medical care providers, social scientists, and experts in population health.

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