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Understanding and Measuring Health Care Insecurity

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Abstract

Purpose—To define the concept of “health care insecurity,” validate a new self-report measure, and examine the impact of beginning care at a free clinic on uninsured patients’ health care insecurity.

Methods—Consecutive new patients presenting at a free clinic completed 15 items assessing domains of health care insecurity (HCI) at their first visit and again four to eight weeks later. Psychometrics and change of the HCI measure were examined.

Results—The HCI measure was found to have high internal consistency ($\alpha=0.94$). Evidence of concurrent validity was indicated by negative correlation with VR-12 health-related quality of life physical and mental health components and positive correlation with the Perceived Stress Scale. Predictive validity was shown among the 83% of participants completing follow-up: HCI decreased after beginning care at a free clinic ($p<.001$).

Conclusion—Reliably assessing patient experience of health care insecurity is feasible and has potential to inform efforts to improve quality and access to care among underserved populations.

Keywords

Insecurity; inequality; disparities; health care; health services

Despite efforts to improve access and quality of care under the Affordable Care Act,^{1,2} significant numbers of Americans will continue to lack health insurance coverage. The Congressional Budget Office estimates that approximately 30 million nonelderly people in

the U.S. will lack health insurance coverage in 2016, and the same number will be uninsured in 2022.^{3,4} There has been a recent slowing of the rate of increase in health care expenditures nationally; however, overall health care costs and insurance premiums continue to increase.^{5–7} Despite the subsidies available through programs under the Affordable Care Act, health insurance continues to be unaffordable for many.^{8,9}

Much like *food insecurity*¹⁰ and *job insecurity*,¹¹ *health care insecurity* can denote uncertainty and anxiety about the ability to access and sustain needed health services. Although theories of access have evolved to acknowledge the importance of factors beyond the affordability and availability of health services (in particular, previous system interaction and health outcomes) and so-called *cognitive barriers* (or personal beliefs, knowledge, or awareness of disease, prevention, treatment, and health resources)^{12–14} studies have and seem to remain focused on use and non-use of services (typically due to cost) as indicators of access and unmet health care needs.^{15–21} Measuring health care insecurity may illuminate a more subtle vulnerability highlighted within the progressing understanding of access that permeates a broad, often transient segment of society.

We define health care insecurity as feeling uncertain, anxious, and vulnerable about the ability to obtain or sustain adequate health care services. This concept goes beyond traditional measures of health care access by assessing an individual's subjective sense of vulnerability, lack of control, and worry about getting the health care they need when they need it. A measure of health care insecurity is necessary to supplement current measures of access and patient experience of health care. Such a measure can focus energy on reducing this under-recognized source of suffering among the underserved, and can serve as an outcome measure for health care improvement efforts.

As a source of care that appears to offer benefits in preventive service delivery and decreased emergency room use among uninsured patients,^{22–25} free clinics are a useful setting in which to define and examine health care insecurity. We undertook this study to develop and evaluate a self-report measure of health care insecurity and assess if beginning care at a free clinic affects uninsured new patients' health care insecurity.

Methods

The Health Care Insecurity (HCI) measure

Based on literature review and the lead investigator's clinical experience caring for an uninsured and indigent patient population, 13 items were written to assess health care insecurity. Piloting on a convenience sample of 10 free clinic patients and three outside physicians with unique patient panels informed modifications in the phrasing of several items for clarity and the addition of two new items. Readability of the final 15-item set was assessed using the Flesch-Kincaid Grade Level test, which indicated items were comprehensible at a 5th grade reading level (score=4.8). Study participants rated each of the 15 items, which assess perception of ability and support to obtain various medical services and care for personal health, on a five-point scale, from *strongly agree* to *strongly disagree*, resulting in a numeric value with 0 representing low insecurity and 4 representing high insecurity. For participants who answered at least 12 items (80%), values for all items were

totaled to create an aggregate HCI score, with individual means substituted for items left blank. Total HCI scores can range from 0 to 60, with 60 representing the greatest health care insecurity.

Study design, setting, and participants

Consecutive new patients presenting for care at a free clinic in Northeast Ohio during a four-week enrollment period were screened for eligibility by clinic staff at check-in. All English-speaking patients aged 18 or older who met the clinic's requirements for care (uninsured and at 200% poverty level or less), except those severely ill and likely to be admitted to the emergency room, were invited to participate. Participants self-administered an initial (baseline) questionnaire, a paper survey, written in English, that included the Veterans RAND 12 Item Health Survey (VR-12),^{26–29} the 10-item Perceived Stress Scale (PSS),^{30,31} and the 15-item Health Care Insecurity (HCI) measure, in the clinic waiting room before receiving care. Age, sex, work status, and length of time without health insurance or a visit to a primary care doctor were also assessed. Participants completed the same questionnaire four to eight weeks later, either during a follow-up visit at the clinic or by mail.

A subset of patients (15) showing the most and least change on the HCI from baseline to follow-up were contacted for a brief debriefing interview for researchers to gain a better understanding of the impact of access to a free clinic on their sense of health care insecurity. The interviews were conducted by the lead investigator or a team research assistant following a semi-structured guide of open-ended questions.

The study protocol was approved by University Hospitals of Cleveland Institutional Review Board. All participants completed written informed consent.

Data analysis

Survey data were analyzed using SPSS³² and WINSTEPS³³ software. Psychometric properties of the HCI measure were assessed from baseline data: Exploratory principle axes factor analysis was conducted to confirm measure unidimensionality and Rasch modeling was conducted to compute item difficulty, person, and item separation distributions.^{34–36} Internal consistency was evaluated using Chronbach's alpha and item-total correlations. Concurrent validity was assessed by correlating HCI scores with VR-12 and PSS scores.

Chi-square and t-tests were used to compare participants completing follow-up to those lost to follow-up. Changes in VR-12, PSS, and HCI scores were examined using paired t-tests. Finally, HCI scores at follow-up were regressed on relevant patient characteristics and VR-12 and PSS change scores, controlling for baseline HCI, to assess characteristics associated with change in health care insecurity. All associations were evaluated at the $p < .05$ level.

Patient interviews were audio-recorded and transcribed *verbatim*. The multidisciplinary team, including family physicians, social scientists, and health services/public health researchers, individually reviewed the transcripts, then met to discuss emerging patterns. An immersion crystallization strategy³⁷ was used by team members to analyze the data further to corroborate and refine understandings and synthesize the findings.

Results

Sample

All 52 eligible patients (100%) agreed to participate and completed the baseline questionnaire; 43 (83%) completed follow-up. Participant characteristics are shown in Table 1; patients who completed follow-up were similar to those lost to follow-up in age, sex, and work status (all p-values >.05).

HCI measure properties

All items loaded >0.5 on a single dimension (eigenvalue of 8.13) explaining 54% of total variance. Table 2 shows the individual HCI items and how each contributes to the total score. The outfit mean square range and high item-total correlations provide further evidence that each HCI item contributes to the construct and fit a one-dimensional model. All 15 items were retained to compute the HCI score. Chronbach's alpha reliability was 0.94 and the person separation index³⁸ was 2.83, indicating a good spread of person scores. Item reliability was 0.89 indicating HCI items would likely have the same respective order in another sample of comparable participants. The item separation index was 2.78, indicating a spread of item difficulties adequate for differentiating people. Concurrent validity was indicated by moderate level negative correlations with VR-12 health-related quality of life physical and mental components ($r = -0.311$, $p = .028$ and $r = -0.436$, $p = .002$, respectively) and a large positive correlation with perceived stress ($r = 0.571$, $p < .001$).

HCI change

Table 3 shows how individual HCI items and HCI, PSS, and VR-12 summary scores changed from baseline to follow-up. Patient-reported health care insecurity significantly decreased ($p < .001$). No significant changes were seen in perceived stress or health-related quality of life, although patient ratings of general physical health status did show improvement at follow-up. Improvement in HCI was positively correlated with PSS improvement ($r = 0.33$, $p = .043$). Items on the HCI measure showing the greatest change were: 1) I feel like nobody is looking out for my health care needs, 2) I feel secure about how my health care needs are met, 3) I would be able to receive non-emergency medical care if needed, and 4) I can easily see a primary care doctor. Multivariate linear regression found no association of HCI change with patient characteristics.

Debriefing interviews conducted with six patients either in person at the clinic (3) or by phone (3) averaged eight minutes. These data confirmed that most participants felt better about their health and less anxious about their ability to access health care after establishment as a patient at the free clinic. Some of their remarks follow.

- I still got a couple issues that need to be addressed but overall I feel fantastic compared to when I first started coming.
- Things have changed way for the better, I don't feel so lost, I know where to go to get answers and help.
- I feel more secure now being able to know that I have health care.

Participants described feelings of greater access to treatment, reduced uncertainty about their ability to receive care when needed, and more control over their health. Some of their contributions on this topic follow.

- I know I have a place to come when I'm afraid that I have medical issues; I don't have to always just diagnose myself.
- It's just the ability to know that if I can tell something is wrong I can come down and we can address the situation.
- I'm not rich but at least know I'm taken care of medically and I have no worries.
- I'm comfortable with knowing that I'm going to be taken care of, whatever I need.
- I just feel better about being able to maintain my health.

Discussion

This study provides early evidence that the health care insecurity of an uninsured population can be reliably measured using a self-report instrument. Health care insecurity among these vulnerable patients appears to improve after access to health care provided by a free clinic.

The ability to measure this under-recognized source of suffering could provide invaluable insight to ongoing health care redesign efforts. It has been estimated that among the insured, 34% are “very worried” about losing their coverage,³⁹ while 17%–30% of the entire adult population actually experienced a period of uninsurance in the past year.^{19,40} Additionally, 28%–41% of Americans report difficulty paying for health care,^{40,41,42} while 10%–43% report postponing needed health care in the prior year.^{21,39,40} Individuals facing such situations may report different levels of health care insecurity. Reliably measuring health care insecurity, using the HCI measure, is an important first step to identifying and assessing those most in need of interventions. The HCI measure also could be useful in assuring that the many health care and payment reform initiatives currently underway do not have the unintended effect of increasing health care insecurity.

It is not surprising that no changes in health-related quality of life or perceived stress were observed. The VR-12 assesses physical and emotional functioning, unlikely to change in a short time period, and the population presenting to free clinics likely has many stressors beyond health care insecurity (e.g., joblessness, financial stress, food insecurity, housing insecurity). The lack of change in these measures in light of a change in the HCI measure indicates the specificity of the HCI measure.

The main limitation of this study is the small sample, recruited from a single safety-net clinic, with limited variability. Thus, further work is needed to test robustness across different samples and patients, including insured patients served by practices and systems undergoing changes. However, the high participation and follow-up rates are study strengths and provide evidence that the findings presented are representative of the free clinic population studied. Lack of a control group is an additional study limitation as regression to the mean is a possible alternative explanation for the HCI change observed. However, this

explanation is unlikely as neither VR-12 nor PSS scores, both well-established measures, showed change at follow-up. The rigorous evaluation of the instrument using modern psychometric techniques is an additional strength.

Health care insecurity has potential to become a key descriptor of the patient perspective of impending health care policy changes over the next few years as the Affordable Care Act and other system changes are implemented. As the forces of cost, access, and quality combine to provide more uniformity in care, it will be important to assess the impact of health care reform on the remaining un- and under-insured. The HCI measure, which shows promise as a reliable, valid, and responsive tool, could serve as an important barometer of the changing health care climate over the coming years.

Appendix A

**These questions are about how you feel about the medical care you receive.
Please answer every question by marking one box.**

<i>How strongly do you AGREE or DISAGREE with <u>each</u> of the following statements?</i>	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
I am able to get medical care whenever I need it	☐	☐	☐	☐	☐
I am worried that if I get sick, I won't get the care I need	☐	☐	☐	☐	☐
I can easily see a primary care doctor to discuss a problem or concern	☐	☐	☐	☐	☐
I have a way to get medical testing (labs, x-ray, etc.) if I need it	☐	☐	☐	☐	☐
I have a way to get screening tests (that is, preventive health care)	☐	☐	☐	☐	☐
I feel secure about receiving in-hospital care if I need it	☐	☐	☐	☐	☐
I don't have a way to get the medication that I need when I need it	☐	☐	☐	☐	☐
I feel secure about how my healthcare needs are met	☐	☐	☐	☐	☐
I feel like nobody is looking out for my healthcare needs	☐	☐	☐	☐	☐
I would be able to receive emergency medical care if I needed it	☐	☐	☐	☐	☐
I would be able to receive non-emergency medical care if I needed it	☐	☐	☐	☐	☐
I don't have a way to see a specialist doctor if I need one	☐	☐	☐	☐	☐
I have the things I need to maintain my health	☐	☐	☐	☐	☐
I have the things I need to improve my health	☐	☐	☐	☐	☐
I am in control of making my health better	☐	☐	☐	☐	☐

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Table 1

Baseline characteristics of the total and follow-up sample

Participant Characteristics*	Total (n=52)	Follow-up [†] (n=43)
Age in years, mean ± SD	39 ± 13	40 ± 12
Female	29 (56)	25 (58)
Employment Status		
Employed full-time	5 (10)	4 (10)
Employed part-time	9 (18)	6 (14)
Unemployed	36 (71)	31 (74)
Disabled	1 (2)	1 (2)
Time since had health insurance		
Less than 1 year	7 (15)	7 (18)
1–2 years	11 (23)	8 (20)
> 2–5 years	14 (29)	11 (28)
> 5–8 years	6 (13)	5 (13)
More than 8 years	10 (21)	9 (23)
Time since saw primary care doctor		
Less than 1 year	11 (22)	11 (28)
1–2 years	10 (20)	8 (20)
> 2–5 years	13 (27)	10 (25)
> 5–8 years	7 (14)	4 (10)
More than 8 years	8 (16)	7 (18)

* Frequency (%) reported unless otherwise noted.

[†] Exact chi-square statistics calculated, no significant differences between follow-up sample (n=43) and those lost to follow-up (n=9) (all p-values are > .05).

Table 2

Psychometric properties of Health Care Insecurity measure items

Health Care Insecurity measure items [¶]	Item order [†]	Theta measure [‡]	Infit MNSQ [§]	Outfit MNSQ	Item-total correlation
I am in control of making my health better	15	1.16	1.56	1.58	0.54
I would be able to receive emergency medical care if I needed it	10	0.89	1.37	1.23	0.65
I have the things I need to maintain my health	13	0.43	0.79	0.76	0.77
I have the things I need to improve my health	14	0.32	0.88	0.86	0.75
I feel secure about receiving in-hospital care if I need it	6	0.28	1.01	1.39	0.71
I am able to get medical care whenever I need it	1	0.18	1.06	1.62	0.66
I would be able to receive non-emergency medical care if I needed it	11	0.00	0.86	1.00	0.74
I have a way to get medical testing if I need it	4	-0.03	0.88	0.87	0.74
I don't have a way to get the medication that I need when I need it*	7	-0.19	1.64	1.73	0.60
I have a way to get screening tests	5	-0.35	0.78	0.70	0.78
I feel secure about how my health care needs are met	8	-0.42	0.46	0.41	0.84
I feel like nobody is looking out for my health care needs*	9	-0.46	1.26	1.13	0.66
I can easily see a primary care doctor to discuss a problem or concern	3	-0.47	0.71	0.70	0.76
I don't have a way to see a specialist doctor if I need one*	12	-0.48	1.20	1.17	0.69
I am worried that if I get sick, I won't get the care I need*	2	-0.87	1.05	0.88	0.72

Note: n = 52

* Items are reverse coded.

[†] Order of items as given to patients.[‡] Items ordered by Theta, which indicates the mean item difficulty level.[§] Infit MNSQ is an index used to identify redundant items; evaluation criteria of good fit: values between 0.6 and 1.4.⁴³^{||} Outfit MNSQ is an index used to identify outlier items; evaluation criteria of good fit: values between 0.6 and 1.4.⁴³[¶] Complete item stems shown; copy of full instrument available in Appendix A.

Table 3

Difference between mean baseline and follow-up scores

Health care Insecurity measure items*	Baseline	Follow-up	P[‡]	Effect size[§]
I feel like nobody is looking out for my health care needs [‡]	2.8	1.6	<.001	0.78
I feel secure about how my health care needs are met	2.9	1.7	<.001	0.77
I would be able to receive non-emergency medical care if I needed it	2.4	1.4	<.001	0.69
I can easily see a primary care doctor to discuss a problem or concern	2.9	1.9	<.001	0.67
I have a way to get screening tests	2.8	1.8	<.001	0.60
I am worried that if I get sick, I won't get the care I need [‡]	3.0	2.1	.001	0.56
I am able to get medical care whenever I need it	2.5	1.7	.002	0.50
I don't have a way to get the medication that I need when I need it [‡]	2.6	1.8	.004	0.47
I have a way to get medical testing if I need it	2.6	1.8	.006	0.44
I don't have a way to see a specialist doctor if I need one [‡]	3.0	2.3	.007	0.44
I have the things I need to improve my health	2.3	1.7	.02	0.39
I would be able to receive emergency medical care if I needed it	1.8	1.4	.04	0.32
I have the things I need to maintain my health	2.2	1.8	.05	0.30
I feel secure about receiving in-hospital care if I need it	2.2	1.8	.12	0.24
I am in control of making my health better	1.8	1.4	.14	0.23
Outcome measures	Baseline	Follow-up	P[‡]	Effect size[§]
Health care Insecurity measure (maximum 60)	37.7	26.2	<.001	0.68
Perceived Stress Scale (maximum 40) ^{//}	19.2	19.3	.91	0.02
Health-related quality of life [¶]				
VR-12 Physical score (t-score, mean 50)	38.0	40.2	.14	0.24
VR-12 Mental score (t-score, mean 50)	43.7	43.7	.96	0.01
General health status [#]				
Physical health rating (maximum 5)	3.6	3.2	.004	0.47
Mental health rating (maximum 5)	3.2	3.0	.16	0.22

Note: n = 43

* Mean values are calculated on a scale of 0–4, with 0 being not insecure and 4 being very insecure.

[‡] Items are reverse coded.[‡] P-values are based on paired t-tests.[§] Effect sizes greater than 0.5 are clinically important.⁴⁴^{//} Higher score indicates greater stress.[¶] Higher scores indicate higher quality of life.[#] Scaled 1–5, with higher ratings indicating worse health.

VR-12 = Veterans RAND 12 Item Health Survey