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The United States index of socioeconomic deprivation for individuals (USiDep)

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Abstract

Background: Individuals experiencing socioeconomic deprivation consistently demonstrate poorer physical and mental health. Income alone is inadequate as a measure of socioeconomic status (SES); a better measure for assessing the deprivation status of individuals is needed.

Methods: The New Zealand Index of Socioeconomic Deprivation for Individuals, a validated, eight-item measure of deprivation, was modified to create the United States Index of Socioeconomic Deprivation for Individuals (USiDep). The questionnaire was administered to patients with major depressive disorder participating in two clinical trials. Spearman's correlation coefficients evaluated associations between USiDep scores with income and other measures associated with deprivation.

Results: The USiDep was completed by 118 participants, demonstrating adequate internal consistency (Crohnbach's alpha = 0.766) and strong item-total correlations. USiDep scores were moderately correlated with past-year personal income (Spearman's rho = −0.362, p < .001) and several other measures related to deprivation, including body mass index, level of education, quality of life, severity of childhood traumatic events, self-reported physical health, and negative life events. Patients scoring 5 on the USiDep (the highest possible score, indicating greater deprivation) had significantly lower rates of remission after 12 weeks of treatment than those scoring ≤ 4 (1/12, 8.3% vs 40/98, 40.8%, respectively, p = .03), whereas the lowest income group showed no significant associations with outcomes.

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Conclusion: The USiDep is a valid, brief questionnaire for assessing SES that has utility for clinical research and may serve as a predictor of treatment outcomes in clinical trials. Validation of the USiDep in healthy controls and other medically and psychiatrically ill populations is warranted.

1.   Introduction

The social determinants of health refer to the circumstances in which people are born, grow up, live, work and age, and include factors related to education, economics, environment, community, and health access [1]. An individual's socioeconomic position is a significant contributor to their health status, including mental health [2,3]. Socioeconomic position also plays a significant role in the inter-generational transmission of inequalities in the areas of education and employment [4,5]. For individuals, the most widely employed measure of socioeconomic status in health research is personal or household income [6]. However, income alone has important limitations as a valid measure of socioeconomic position [7]. Specifically, the impact of reported household income depends upon the number of individuals dependent on that income, length of time at the index income level, possession of assets that affect the utility of the income, level of committed expenditures and debt, consumption patterns, and the degree of family and social economic support [6,8–11]. Moreover, an individual's reported income may exclude income earned through cash payments or other sources of funds, thereby misrepresenting the individual's actual economic status [7,10]. Occupation and educational attainment, which have also been used to assess socioeconomic position, also suffer from confounding influences [8] and essentially function as proxies for income level [11].

An alternative approach to income for assessing socioeconomic position is the concept of deprivation. Deprivation was first defined by Peter Townsend and colleagues as a demonstrable disadvantage experienced by an individual or family relative to their local community or wider society [12]. Townsend identified a distinction between poverty and deprivation, conceptualizing the former as stemming from reduced availability of resources whereas deprivation reflected the actual living conditions experienced, which may be more closely linked to health status. His team first studied socioeconomic deprivation using area-based (i.e., geographic) measures of relative socioeconomic position [12]. Since the development of the Townsend Deprivation Index, several nations have developed area-based measures, providing valuable information about regional socioeconomic disparities and their association with health measures [13–15]. Indeed, in the United Kingdom, one-third of premature deaths are attributable to SES inequalities, based on a residential area deprivation measure [16]. However, correlations between residential area deprivation measures and individual-level deprivation are relatively weak, which can result in misclassification errors at the individual level [17–19].

Efforts to develop a more valid tool to measure socioeconomic deprivation at the level of the individual are relatively recent, beginning with the New Zealand Index of Socioeconomic Deprivation for Individuals (NZiDep). This questionnaire emerged from multi-faceted research sponsored by the New Zealand government to assess the impact of governmental policies for improving social and economic conditions [11,20]. From 28 deprivation variables, factor analyses identified a coherent set of variables that were valid across all ethnic groups studied. Subsequent principal component analysis established the final set of 8 variables used to construct the questions comprising the NZiDep [11]. NZiDep scores correlate with many measures of socioeconomic deprivation, including education level, obesity, self-rated health, smoking status, psychiatric distress, significant life events, and biological measures of stress, such as morning cortisol [11,21,22].

A similar questionnaire for assessing individual-level socioeconomic deprivation for use in the United States has not yet been developed [23]. The current study examined the validity and clinical utility of the United States Index of Socioeconomic Deprivation for Individuals (USiDep), a tool which was closely modeled after the NZiDep and is reported here for the first time.

2. Material and Methods

USiDep data were collected as part of two clinical trials of adults with major depressive disorder (MDD) without psychotic features. Details of both studies have been published previously [24,25]. The first study, "Omega-3 fatty acids for MDD with high inflammation: a personalized approach," evaluated the clinical efficacy and anti-inflammatory effects of 1, 2, or 4 gm per day of fish oil-derived polyunsaturated fatty acids (PUFA) versus placebo, in a two-site, 12-week, randomized -controlled trial [24,26]. The PUFA trial (Clinicaltrials.gov: NCT02553915) was carried out at Emory University (Atlanta, GA) and the Massachusetts General Hospital (Boston, MA) and was approved by the Institutional Review Boards (IRBs) of both institutions. The second study, "Insula Assessed Needs for Depression" (ISLAND), was 12-week, trial that evaluated the clinical utility of a positron emission tomography (PET) biomarker for assigning treatment with cognitive behavior therapy (CBT) or a selective serotonin reuptake inhibitor (SSRI) [25]. The trial (Clinicaltrials.gov: NCT02137369) was performed at Emory University and was approved by the Emory IRB. All patients provided written informed consent for participation and the studies were conducted in accordance with the Helsinki Declaration of 1975 and its amendments.

2.1. Subjects

For both studies, patients with MDD of at least moderate severity were recruited from the institutions' psychiatric clinical research programs, clinical practices, and via community advertisements. Patients were compensated for each study visit attended. Both studies enrolled adults (aged 18–80 years in PUFA, 18–60 years in ISLAND) who were not currently taking, or could be tapered off, psychotropic medications (other than hypnotics) and who had a current primary diagnosis of MDD without psychotic features, confirmed by a clinical evaluation and a semi-structured interview (the Mini-International Neuropsychiatric Interview (MINI) v.7.0 [27] for PUFA; the Structural Clinical Interview

for DSM-IV Diagnoses [28] for ISLAND). Additional eligibility criteria for PUFA included screening visit body mass index (BMI) > 25 kg/m^2, a high-sensitivity plasma C-reactive protein concentration 3 mg/L [29], and a clinician-administered Inventory of Depressive Symptoms (IDS-C30) [30] score 25 at both the screening and baseline visits. ISLAND patients had to score 18 at screening and 15 at the baseline on the Hamilton Depression Rating Scale (HDRS) 17-item version [31].

Both studies excluded patients with a neurocognitive disorder, psychotic disorder, bipolar disorder, anorexia nervosa, bulimia nervosa; obsessive compulsive disorder, or those who met criteria in the 3 months (PUFA) or 12 months (ISLAND) prior to the screening visit for any substance use disorder (excluding nicotine or caffeine). Additional exclusion criteria for both studies included current serious suicidal or homicidal risk, presence of a serious or unstable medical illness, pregnancy, or breast-feeding. Regarding prior treatments, PUFA excluded patients who, in the current major depressive episode, had failed to respond to > 4 adequate antidepressant trials or who had taken a supplement of 1 g/day of omega-3 fatty acids for 6 weeks; patients in ongoing psychotherapy had to have started the therapy 90 days prior to screening. ISLAND excluded patients who could not safely undergo PET or magnetic resonance imaging or who reported a lifetime history of failure to respond to four or more sessions of CBT for depression or to 6 week trials of both escitalopram (10 mg/day) and sertraline (50 mg/day).

2.2. Assessments

The USiDep (see Appendix) was administered at the baseline visit in both studies. The USiDep is a self-report questionnaire derived from the NZiDep, comprised of 8 yes/no questions related to socioeconomic deprivation in the previous 12 months. The eight questions address the following areas: 1, Being forced to buy cheaper food; 2, Being on a means-tested benefit (i.e., a payment for individuals who demonstrate that their economic resources are below a specific threshold); 3, Feeling cold to save on heating costs; 4, Getting help obtaining food; 5, Wearing worn out shoes; 6, Often going without fresh fruit and vegetables; 7, Obtaining help from a community organization; 8, Unemployment. Scoring for the USiDep followed the NZiDep scoring, which is based on the number of "yes" answers. Zero "yes" answers equates to a score of "1"; one "yes" scores "2", two "yes" scores "3," three or four "yes" scores "4," and 5 or more "yes" answers scores "5."

Questions 1, 3, 5, 6, and 8 of the USiDep are worded identically to the NZiDep. The other three questions revised the corresponding NZiDep items to incorporate the specific support programs available in the US. Question 2 was revised by replacing the names of New Zealand government assistance programs to the US benefit programs (i.e., Temporary Assistance to Needy Families, Earned Income Tax Credit, and a housing assistance program). Question 4 was modified to list US specific food support programs (i.e., the Supplemental Nutrition Assistance Program, and the Women, Infants and Children). Question 7 was modified to include religious organizations as an example of a community group that provides clothing or financial support, in addition to the Salvation Army listed on the NZiDep. An additional change was moving Question 8 (Unemployment, which is Question 2 on the NZiDep) to the end of the USiDep because the question excludes people

65 years of age or who are full-time homemakers or unpaid caregivers. To improve clarity for question 8, the USiDep includes an instruction for those individuals to skip the question. As specified on the NZiDep, for these individuals the answer is required to be "No."

To evaluate the convergent validity of the USiDep for measuring deprivation, several self-report assessments were administered. Clinical and demographic characteristics and BMI were measured at the screening visit. Of the 118 patients, 115 reported past-year personal income, and 83 of those also reported past-year household income. Income reporting was divided into six levels: $20,000, $20,001–40,000, $40,001–60,000, $60,001–80,000, $80,001–100,000, and >$100,000. The primary convergent validity measure was past-year self-reported personal income, and sensitivity analyses were conducted using household income. Other convergent validity measures in both studies included: 1) quality of life, assessed with the Quality of Life, Enjoyment and Satisfaction Questionnaire (Q-LES-Q), which determines a life satisfaction score for the prior week ranging 0–100 based on responses to 14 items [32]; and 2) adverse childhood experiences assessed with the Childhood Trauma Questionnaire (CTQ), a 28-item self-report measure that assesses levels of physical, emotional, and sexual abuse as well as physical and emotional neglect [33], with a total score ranging from 25 to 125. The PUFA study collected two additional scales relevant to socioeconomic deprivation. The Physicians Health Questionnaire-15 (PHQ-15) [34] measures physical health by inquiring about the 15 somatic symptoms that account for 90% of the physical complaints (excluding upper respiratory tract symptoms) in outpatient settings [35]. The time frame for the PHQ-15 is the past four weeks and the score ranges from 0 to 30. Finally, negative life events in the three months prior to baseline were measured using the Life Experiences Survey (LES), a 43-item scale listing events that individuals may experience, with respondents indicating which events they have experienced, whether the event was positive or negative, and rating on a 7-point scale (−3 to + 3) the degree of impact these events have had on their lives [36]. A negative life events score is calculated from adding the scores for each negative event endorsed, with more negative scores indicating greater severity of negative events.

Divergent validity was assessed by examining associations of the USiDep with psychiatric measures, with the expectation that among a sample with active, moderate-to-severe MDD, USiDep scores should not significantly impact measures of depression, anxiety, or functioning. Depression severity was assessed in both trials using the 16-item total score from the Quick Inventory of Depressive Symptomatology (QIDS), which ranges from 0 to 27 [37]. In the PUFA study the QIDS score was derived from the clinician-rated version of the IDS-C30, which contains all the QIDS items plus an additional 14 questions. In the ISLAND trial, the QIDS-self report version was used [37]. Anxiety was measured with the Hamilton Anxiety Rating Scale (HAMA), a 14-item clinician-administered assessment of anxiety with scores ranging from 0 to 56 [38]. Role functioning was assessed with the Sheehan Disability Scale (SDS), a 3-item measure of work, social, and family functioning, each rated 0–10 on a visual analog scale, for a total score of 0–30 [39].

2.3. Statistical analysis

The distribution of the USiDep scores was strongly left skewed, so Spearman's rank correlation coefficients were used to assess the association of the other measures with USiDep scores. Chi-square analyses were used to evaluate categorical associations. The internal consistency of the USiDep was assessed with Crohnbach's alpha and item-total characteristics. The primary test of convergent validity was the correlation between USiDep score and past-year household income. To examine the scale's impact on treatment outcomes, USiDep scores were correlated with percent change in QIDS. Categorical depression treatment outcomes used the standard definitions of response (50% reduction from baseline QIDS score) and remission (QIDS score 5 at endpoint) [37]. Modified intent to treat analyses were used, including all subjects with at least one post-baseline QIDS score.

3. Results

There were 118 patients who completed the USiDep, 61 in the PUFA study, and 57 in ISLAND. Clinical and demographic characteristics of the separate and combined samples are presented in Table 1. The distribution of the USiDep scores did not significantly differ between the four treatment arms in the PUFA study ($X^2 = 14.31$, p = .28), nor between the patients treated with SSRI versus CBT in the ISLAND study ($X^2 = 1.03$, p = .79)

3.1. USiDep characteristics

The distributions of the number of USiDep items answered affirmatively and the resulting USiDep score are represented in Figs. 1a and 1b, respectively. Of the 118 patients, 39 (33.1%) scored 1, 25 (21.2%) scored 2, 21 (17.8%) scored 3, 21 (17.8%) scored 4, and 12 (10.2%) scored 5. Mean USiDep scores were significantly higher in the PUFA study than the ISLAND study (2.95 ± 1.45 vs 2.04 ± 1.05, respectively, p < .001).

The frequency of USiDep items endorsed, in decreasing order, were: item 1 (Cheaper food) 60 (50.8%); item 8 (Unemployed) 24 (28.8%); item 6 (Often going without fruits and vegetables) 30 (25.4%); item 3 (Feeling cold) 27 (22.9%); item 4 (Help obtaining food) 26 (22.0%); Items 2 and 5 (On government benefits and Wearing old shoes, respectively) 13 (11.0%); and item 7 (Help from a community help organization) 9 (7.8%).

3.2. Internal consistency of the USiDep

The internal consistency of the USiDep was acceptable, (Crohnbach's alpha = 0.766). The strongest correlations (with Pearson r value > 0.4) were for item 6 with items 1 (r = 0.56) and 5 (r = 0.52), item 7 with items 2 (r = 0.49), 3 (r = 0.44) and 6 (r = 0.42), and item 2 with item 4 (r = 0.42). The most weakly correlated items (r < 0.2) were for item 8 (Unemployment) with items 3 (r = 0.11), 5 (r = 0.12) and 6 (r = 0.18). Item 2 also demonstrated weak correlations with item 6 (r = 0.17) and item 3 (r = 0.19). The data in Table 2 show the item-total statistics, indicating no individual item substantially impacted Crohnbach's alpha for the scale.

3.3. Associations of USiDep scores with demographic characteristics

Age was not significantly associated with USiDep scores. In contrast, men reported significantly higher USiDep scores than women (2.94 ± 1.24 vs 2.35 ± 1.40, respectively, p = .038) and people living alone (single, separated, divorced, widowed) reported higher scores than those who were married or living with a partner (2.71 ± 1.41 vs 2.03 ± 1.18, respectively, p = .008). Although USiDep scores did not differ by race (minority vs white, p = .20), Hispanics reported higher average scores than non-Hispanics (3.23 ± 1.24 vs 2.42 ± 1.37, respectively, p = .044).

3.4. Convergent validity

Table 3 shows the distribution of USiDep scores with past-year personal income (reported in n = 115), which differed across the income groups (X^2 = 31.23, df = 20, p = .05) and showed a significant correlation (Spearman's rho = −0.362, p < .001). There was a clear clustering of the higher USiDep scores (i.e., 4 or 5) among individuals reporting $40,000 per year in income, and lower USiDep scores were predominant among those with higher incomes. However, the table also shows that many low-income earners have low USiDep scores, indicating that personal income alone can misclassify individuals regarding their level of socioeconomic deprivation.

The 83 subjects who reported past-year household income were evaluated as a sensitivity analysis for USiDep and income associations. Again, USiDep scores differed across the income groups (X^2 = 34.38, df = 20, p = .02) and showed a similar and significant correlation (Spearman's rho = −0.372, p < .001). Of the 32 patients without a reported household income, 15 had personal incomes <$20,000; 8 reported $20,001–40,000; 7 reported $40,001–60,000, one reported $60,001–80,000, and one reported >$100,000. Of the 15 subjects reporting a past-year personal income of <$20,000, only one was married/cohabitating, and only one was under 24 years of age, suggesting that the household income for those individuals was likely to be the same as their personal income. Consistent with this supposition, 12 of the 15 had USiDep scores 4.

Education level, severity of adverse childhood experiences, quality of life, negative life events and the physical health measures of BMI and PHQ-15 were all significantly correlated with USiDep scores, as shown in Table 4.

3.5. Discriminant validity

Table 4 lists the correlation coefficients of the USiDep with the psychiatric rating scales used in the studies. There was no significant correlation between USiDep score at baseline with QIDS, HAMA, or SDS scores.

Patients with recurrent MDD did not differ from single episode patients in mean USiDep scores (p = .40).

3.6. Effect of USiDep scores on treatment outcomes

There were no significant correlations between USiDep score and percent change in QIDS, SDS, or Q-LES-Q scores (all Spearman rho's < 0.14, all p's > 0.15). Inspection of the data

revealed differences in outcomes beginning with USiDep scores ≥ 4. Week 12 QIDS scores were significantly higher in patients with a USiDep score ≥ 4 compared to those with scores ≤ 3 (10.16 ± 5.66 vs 7.46 ± 5.04 respectively, p = .016). The mean percent change trended to be lower among those with a USiDep score than those ≥ 4 vs ≤ 3 (29.3 ± 39.2% vs 43.0 ± 36.6%, respectively, p = .085).

Rates of response and remission were lower in those with USiDep scores ≥ 4 than those ≤ 3, but these differences were not statistically significant (Response: 35.5% vs 44.3%, p = .40; Remission: 25.8% vs 41.8%, p = .12, respectively). Of the 12 patients with a USiDep score of 5, only 2 (16.7%) responded, compared to 44/98 (44.9%) of patients with USiDep scores < 5, (Fisher's Exact test p = .071). For this most socioeconomically deprived group, differences in remission rates were statistically significant (1/12, 8.3% vs 40/98, 40.8%, Fisher's Exact test p = .03).

3.7. Correlations of income with deprivation-related and clinical measures

As shown in Table 4, there were significant correlations of personal income grouping only with level of education and quality of life. The sensitivity analysis found that none of the variables in Table 4 were significantly correlated with past-year household income. On the clinical measures, there was no significant correlation with the baseline QIDS, HAMA, or SDS total scores. Comparing patients in the lowest personal income group (<$20,000/yr, n = 38) vs all other income groups (n = 70), did not find poorer treatment outcomes in the low-income group in rates of response ($X^2 = 0.79$, p = .37) or remission ($X^2 = 1.02$, p = .31). A sensitivity analysis using past-year household income <$20,000 vs all others also found no associations with outcomes.

4.   Discussion

The USiDep aims to fill the need for an easily administered and valid measure of socioeconomic deprivation at the level of the individual. The convergent validity of the USiDep for identifying socioeconomic deprivation was demonstrated through its significant correlation with self-reported past-year income, as well as several other measures related to deprivation, including BMI, level of education, quality of life, severity of childhood traumatic events, self-reported physical health, and negative life events. Conversely, USiDep scores were not significantly associated with clinical symptom measures of depression, anxiety, or functioning in this sample of moderate-to-severe MDD patients. Finally, patients who scored highest on the USiDep had lower response and remission rates after 12 weeks of treatment in a clinical trial than patients identified as being less deprived per the USiDep. In contrast, the lowest tier of income earners did not show differences in response or remission compared to the rest of the sample. Taken together, these analyses support the use of the USiDep as an individual-level measure of socioeconomic deprivation, which may have utility for clinical research

Although past-year personal income correlated with level of education and quality of life, these associations were not stronger than the USiDep associations. Moreover, income did not significantly correlate with BMI, childhood trauma, negative life events, or physical health, all of which were significantly correlated with USiDep score, indicating that the

USiDep is superior to income for identifying individuals in socially disadvantaged positions. This conclusion is consistent with the extensive analyses from New Zealand evaluating the NZiDep [11].

Major depressive episodes are well-established to result in lower quality of life and impaired role function [40,41]. In the current study greater socioeconomic deprivation as indicated by higher USiDep scores was associated with a further reduced quality of life among depressed patients but did not significantly impact level of functioning. Role functioning declines with cognitive impairment [42], reduced motivation [43], fatigue [44], and insomnia [45], all prominent depressive symptoms. In contrast, quality of life, as assessed by the Q-LES-Q and other scales, is a broader measure that incorporates features of physical health and wellness beyond psychic distress. Combined with the significant association of higher USiDep scores with worse PHQ-15 scores assessing physical symptoms, it appears the socioeconomic deprivation captured by the USiDep is related to poorer perceived physical health.

The finding that patients with the highest USiDep score experienced poorer treatment outcomes is also notable, considering the low power stemming from the limited size of the sample. Poorer mental health treatment outcomes have been found using area-level deprivation measures in community studies [46–48] clinical trials [49], and analyses of electronic medical records [50]. Household income did not predict outcomes in the current study, although larger trials have demonstrated low income to be one of the stronger predictors of eventual non-remission with treatment for MDD [51]. Although replication in larger samples is needed, these results suggest that the USiDep could be used to stratify patients in randomized controlled trials, in order to prevent confounding that may arise from unequal distributions of USiDep scores in treatment groups.

The primary limitation to this analysis is that the sample was limited to patients with current MDD. Thus, the performance of the USiDep in healthy populations, the medically ill, and individuals with psychiatric disorders other than MDD will require additional study. The use of the two different versions of the QIDS (clinician-rated vs self-report) in the two studies may be considered a limitation, though the level of agreement between the two versions of the scale has been found to be very high [52,53]. Because the inclusion criteria of the studies required at least a moderate level of depression severity for eligibility, it is possible that a significant association between USiDep scores and depression would emerge if a less truncated range of scores was examined, as others have reported [54]. We did not have household income on 27% of the participants, though this limitation was addressed using sensitivity analyses evaluating household income, which did not find any meaningful differences from the analyses conducted using personal income. A final limitation is that the USiDep only incorporates the individual's economic hardships, excluding consideration of environmental and neighborhood factors, whichare additional social determinants of health that contribute to mental health outcomes [55].

5. Conclusions

In conclusion, the USiDep assesses socioeconomic deprivation, showing meaningful advantages over measures of past-year personal or household income. The scale may also

have utility as a factor for use in interpreting treatment and clinical trial outcomes over a range of clinical conditions. In combination with other measures, the USiDep may also have utility for the emerging study of the biological consequences of socioeconomic deprivation [56].

Acknowledgments

Appendix

United States index of deprivation for individuals (USiDep)

The following few questions are designed to help us understand people who have had special financial needs **in the last 12 months.** These questions are for you **personally.**

1. [*Buying cheap food*]	**CIRCLE ONE**
In the <u>**last 12 months**</u> have you <u>**personally**</u> been forced to buy cheaper food so that you could pay for other things you needed?	
	YES/NO
2. [*Being on a means-tested benefit*]	
In the **last 12 months** did you <u>**yourself**</u> receive payments from any of these benefit programs: Temporary Assistance to Needy Families (TANF), Earned Income Tax Credit (EITC), or a Housing Assistance program, (e.g.,Section 8 Housing voucher)?	YES/NO
3. [*Feeling cold to save on heating costs*]	
In the <u>**last 12 months**</u> have you <u>**personally**</u> put up with feeling cold in order to save on heating costs?	YES/NO
4. [*Help obtaining* food]	
In the <u>**last 12 months**</u> have you <u>**personally**</u> made use of food banks or government food programs because you did not have enough money for food? For example, did you get benefits from the Supplemental Nutrition Assistance Program (SNAP/EBT/Food stamps), or the Women, Infants and Children (WIC) food programs?	YES/NO
5. [*Wearing worn-out shoes*]	
In the <u>**last 12 months**</u> have you <u>**personally**</u> continued wearing shoes with holes because you could not afford replacement?	YES/NO
6. [*Going without fresh fruit and vegetables*]	
In the <u>**last 12 months**</u> have you <u>**personally**</u> gone without fresh fruit and vegetables, often, so that you could pay for other things you needed?	
7. [*Help from community organizations*]	
In the <u>**last 12 months**</u> have you <u>**personally**</u> received help in the form of clothes or money from a community organization (like a religious group or the Salvation Army)?	YES/NO
8. [*Unemployment*]	
<u>NOTE:</u> If you are 65 years old or older <u>**or**</u> if you are a full-time care-giver or home-maker, you will skip this question. You are finished with this form. If you are less than 65 years old: <u>**In the last 12 months**</u>, have you beenout of paid work at any time for more than one month?	YES/NO

SCORING:

Step 1. Add the 'YES' responses (any missing data are counted as 'NO').

Step 2. Re-code the count of "YES" to the deprivation characteristics into the following five ordinal categories:

Number of 'YES' Answers	USiDep Score
0	1
1	2
2	3
3 or 4	4
5 or more	5

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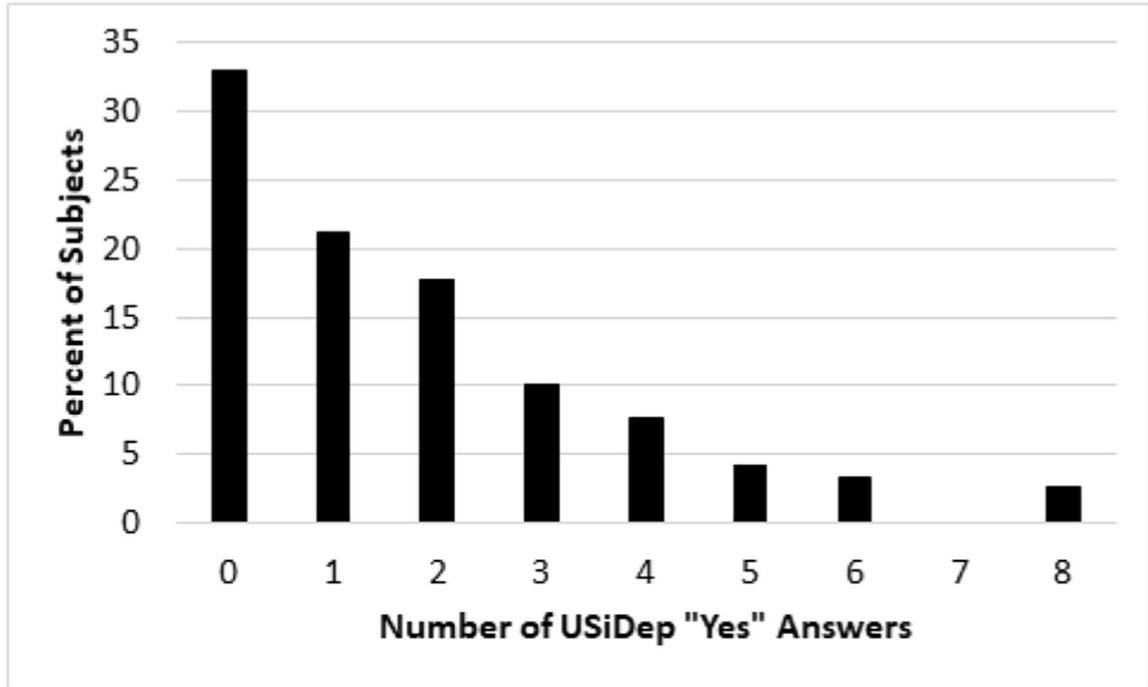
a.

Fig. 1a.

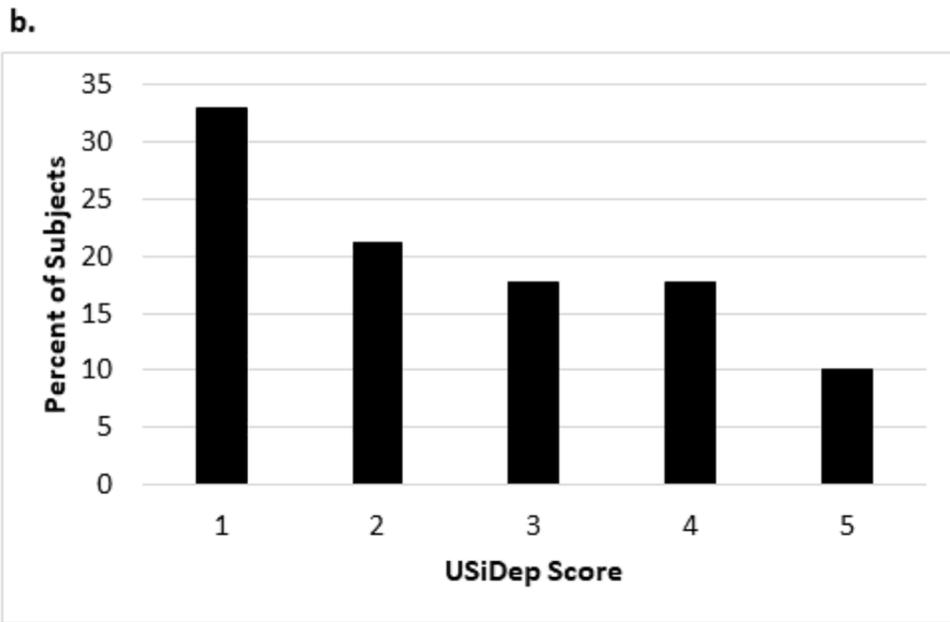Distribution of total number of "yes" answers on the USiDep.

b.

Fig. 1b.

Distribution of USiDep scores, derived from number of "yes" answers (see text).

Table 1

Clinical and demographic characteristics.

Variable	PUFA n = 61	ISLAND n = 57	Combined Sample N = 118
	n (%)	**n (%)**	**n (%)**
Gender (Female)	46 (75.4)	40 (70.2)	86 (72.9)
Race			
White	34 (55.7)	32 (56.1)	66 (55.9)
Black	21 (34.4)	14 (24.6)	35 (29.7)
Asian	1 (1.6)	1 (1.8)	2 (1.7)
More than one race	2 (3.3)	8 (14.0)	10 (8.5)
Not reported	3 (4.9)	2 (3.5)	5 (4.2)
Hispanic	8 (13.1)	5 (8.8)	13 (11.0)
Married/Living with Partner	14 (23.0)	21 (36.8)	35 (29.7)
Unemployed	9 (14.8)	4 (7.0)	12 (11.0)
Personal Income			
$20,000	22 (36.1)	20 (35.1)	42 (36.5)
$20,001– $40,000	18 (29.5)	13 (22.8)	31 (27.0)
$40,001–$60,000	14 (23.0)	10 (17.5)	24 (20.9)
$60,001– $80,000	3 (4.9)	7 (12.3)	10 (8.7)
$80,001–$100,000	1 (1.6)	2 (3.5)	3 (2.6)
> $100,000	2 (3.3)	3 (5.3)	5 (4.3)
Education			
High school or less	12 (19.7)	1 (1.8)	13 (11.0)
Some college or Bachelor's	36 (59.0)	35 (61.4)	71 (60.2)
Graduate degree	13 (21.3)	20 (35.1)	33 (28.0)
Recurrent Major Depression	36 (59.0)	40 (70.2)	76 (64.4)
Current Anxiety Disorder	19 (31.1)	37 (64.9)	56 (47.5)
	Mean (SD)	**Mean (SD)**	**Mean (SD)**
Age (yrs)	47.33 (13.79)	37.7 (11.51)	42.68 (13.57)
BMI (kg/m^2)	36.79 (6.65)	29.08 (7.37)	33.17 (8.00)
Q-LES-Q	43.59 (15.40)	41.37 (11.01)	42.55 (13.51)
CTQ Total	58.28 (16.12)	43.64 (15.17)	51.27 (17.25)
QIDS	14.33 (3.17)	13.45 (4.45)	13.91 (3.84)
HAMA	15.08 (5.54)	15.44 (4.87)	15.25 (5.21)
SDS	15.39 (7.91)	20.41 (4.62)	17.9 (6.92)

BMI: body mass index; CTQ: Childhood Trauma Questionnaire; HAMA: Hamilton Anxiety Rating Scale; QIDS: Quick Inventory of Depressive Symptomatology; Q-LES-Q: Quality of Life Enjoyment and Satisfaction Questionnaire; SDS: Sheehan Disability Scale.

Table 2

USiDep Item-Total Correlations.

USiDep Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1. Buy cheaper food	1.30	2.740	0.520	0.732
Q2. On benefit program	1.70	3.325	0.395	0.752
Q3. Feeling cold	1.58	3.095	0.398	0.753
Q4. Help obtaining food	1.59	2.905	0.556	0.724
Q5. Wear old shoes	1.68	3.162	0.503	0.737
Q6. Often no fruits/vegetables	1.56	2.852	0.563	0.722
Q7. Help from community org.	1.73	3.237	0.579	0.733
Q8. Unemployment	1.49	3.101	0.326	0.770

Table 3

Distributions of USiDep scores with reported past-year personal income.

USiDep Score	Less than $20,000	$20,001–$40,000	$40,001–$60,000	$60,001–$80,000	$80,001–$100,000	More than $100,000	Total
1	9	5	11	7	2	3	37
2	8	7	7	2	0	1	25
3	8	9	4	0	0	0	21
4	9	8	1	1	0	1	20
5	8	2	1	0	1	0	12
Total	42	31	24	10	3	5	115

Table 4

Convergent and discriminant validity of the USiDep and comparison with personal income level.

Scale	n	Correlation with USiDep Score (Spearman's rho)	p-value	Correlation with income level (Spearman's rho)	p-value
Deprivation-related measures					
Personal Income	116	−0.362	<0.001	–	
CTQ total	117	0.370	<0.001	−0.134	0.16
Education (3 group)	117	−0.312	0.001	0.255	0.006
BMI	115	0.361	<0.001	−0.102	0.28
Q-LES-Q	115	−0.199	0.03	0.202	0.03
Negative Life Events	61	0.314	0.01	0.152	0.24
PHQ-15	60	0.597	<0.001	−0.231	0.08
Psychiatric Measures					
QIDS	116	0.116	0.21	−0.110	0.25
HAMA	118	0.103	0.26	−0.112	0.23
SDS total	108	0.112	0.25	−0.175	0.07

BMI: body mass index; CTQ: Childhood Trauma Questionnaire; HAMA: Hamilton Anxiety Rating Scale; PHQ-15: Patient Health Questionnaire-15; QIDS: Quick Inventory of Depressive Symptomatology; Q-LES-Q: Quality of Life Enjoyment and Satisfaction Questionnaire; SDS: Sheehan Disability Scale.