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Chronic Pain in Adolescence and Internalizing Mental Health Disorders: A Nationally Representative Study

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Abstract

Chronic pain in childhood and adolescence has been shown to heighten risk for depressive and anxiety disorders in specific samples in adulthood; however, less is known about the association between a wider variety of chronic pains and internalizing mental health disorders. Using nationally representative data, the objectives of this study were to establish prevalence rates of internalizing mental health disorders (anxiety and depressive disorders) among cohorts with or without adolescent chronic pain, and to examine whether chronic pain in adolescence is associated with lifetime history of internalizing mental health disorders reported in adulthood. Data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) was used (N= 14,790). Individuals who had chronic pain in adolescence subsequently reported higher rates of lifetime anxiety disorders (21.1% vs. 12.4%) and depressive disorders (24.5% vs. 14.1%) in adulthood as compared to individuals without a history of adolescent chronic pain. Multivariate logistic regression confirmed that chronic pain in adolescence was associated with an increased likelihood of lifetime history of anxiety (odds ratio (OR): 1.33; 95% confidence interval (CI): 1.09-1.63, p=0.005) and depressive disorders (OR: 1.38; CI: 1.16-1.64, p<0.001) reported in adulthood. Future research is needed to examine neurobiological and psychological mechanisms underlying these co-morbidities.

Keywords

chronic pain; anxiety; depression; adolescence

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Pediatric chronic pain is prevalent [18], disabling [14], costly [12], and can carry considerable emotional burden for youth and their families [21]. Despite advances in our understanding of the lasting impact of pain in childhood on development across neurobiological [4; 33], psychological [34], and social [32] domains, epidemiological studies spanning adolescence to adulthood are rare. This dearth of research limits understanding of the mental health comorbidities associated with pediatric chronic pain, which has impeded efforts to effectively prevent and treat pain in these vulnerable youth.

Prior research has documented the negative impact that pediatric chronic pain has on the mental health of youth and their families. Indeed, there is a clear link between anxiety, depressive, and disruptive behavior symptoms and disorders and pediatric chronic pain [7; 17; 29; 30]. However, less is known about the relationship of chronic pain in adolescence and lifetime internalizing mental health disorders reported in adulthood. Early research using birth cohorts (i.e., from 1946 and 1958) from the United Kingdom demonstrated that children with abdominal pain and frequent headaches had greater rates of psychiatric disorders and symptoms in adulthood [9; 13], but did not find consistent patterns of adult chronic pain. However, assessment of childhood chronic and recurrent pain in these cohort studies was limited by failure to assess pain frequency.

In arguably the most well designed study on this topic, Shelby and colleagues [27] prospectively followed a cohort of pediatric patients with functional abdominal pain (FAP) and a control group without FAP into young adulthood. Findings showed that the current and lifetime risk of developing anxiety disorders (including PTSD) was significantly higher in individuals with a childhood history of FAP as compared to controls. Lifetime, but not current, risk of having depressive disorders was also significantly higher among individuals with childhood FAP. Risk of current anxiety disorders was higher than controls regardless of whether or not chronic pain persisted into adulthood, suggesting that chronic pain in adolescence heightens risk for psychopathology, even when pain resolves.

Using the National Longitudinal Study of Adolescent to Adult Health, this is the first nationally representative study to examine whether a variety of chronic pains in adolescence is associated with greater risk of lifetime anxiety and depressive disorders reported in adulthood. Our aims were to: 1) establish prevalence lifetime rates of these internalizing mental health disorders in individuals with or without chronic pain in adolescence, and 2) examine the relationship between adolescent chronic pain status and internalizing mental health diagnoses, controlling for sociodemographic factors and clinical covariates. We hypothesized that youth with chronic pain would subsequently report higher lifetime rates of internalizing mental health disorders as compared to youth without chronic pain. Because sleep, anxiety and depressive symptoms, and general health status are related to chronic pain and mental health diagnoses [3; 10; 16; 17; 24], we sought to control for the variance accounted for by these factors. We hypothesized that beyond these factors, adolescent chronic pain status would be linked to increased occurrence of lifetime anxiety and depressive disorders.

Method

Participants and Procedure

This is a secondary analysis of data from the National Longitudinal Study of Adolescent to Adult Health (Add Health). Add Health is a nationally representative longitudinal study conducted in the United States beginning in 1994-95 with adolescents in grades 7-12. Participants were selected by first randomly selecting 80 high schools from a frame (26,666 schools) sorted into 80 clusters based on region, urbanicity, school size, school type, percent white, percent black, grade span, and curriculum type (i.e., general, vocational, alternative). Students at each of the 80 schools (>90,000 students total) were first administered an in-school questionnaire. Students were then stratified based on grade and sex and approximately 17 students were selected from each stratum, leading to a core sample of approximately 200 students from each school (12,105 students total, not including oversamples) that subsequently proceeded with the Wave I in-home interview. In addition to the core sample, the cohort included oversamples of particular race/ethnic and ability groups (Black, Chinese, Cuban, Puerto Rican, and students with disabilities) along with two entire schools to ensure representativeness of the sample to the general population. This resulted in 20,745 adolescents being included in the initial cohort sample. The cohort was followed with 4 subsequent in-home interviews, the most recent of which was in 2008 when participants were between the ages of 24 and 32 years. The sample size used in this study was 14,790 (7866 females, M_{age} at Wave I = 16.0 years, SE = 0.12), which only includes individuals who completed all of the relevant waves and items. The data included in the present study were collected during Wave I (conducted in 1994-95, participants in grades 7-12), Wave II (1996, grades 8-12), and Wave IV (2008, ages 24-32) interviews. Information on the sociodemographic background of the cohorts is included in Table 1.

Measures

Classification of Pain Status—Pain variables were extracted from Wave I and II data from a self-report survey about adolescent general health. In these interviews, participants were asked to rate the frequency of each of the following types of pain occurring over the past 12 months: headache, stomachache, and aches, pain, or soreness in muscles or joints. These are the most common types of chronic pain in children and adolescents [11; 14; 18; 22]. The response options included: “never,” “just a few times,” “about once a week,” “almost every day,” “every day,” and “refused.” We dichotomized pain as “chronic” or “not chronic.” Adolescent chronic pain status was thus computed from pain presence at either Wave I and/or Wave II. To avoid overinflating rates and keeping consistent with definitions of “high frequency pain” used in previous literature [35], we used a conservative classification of chronic pain to include pain occurring “almost every day” or “every day.” This is a more conservative definition of chronic pain than definitions used by other researchers examining chronic pain in the Add Health cohort [31]. Moreover, prevalence rates of chronic pain within this dataset (21.9%) were similar to or even lower than those cited in previous epidemiological research [18], providing additional assurance that our categorization of chronic pain was conservative.

Internalizing Mental Health Diagnoses—Data on diagnosis of anxiety disorders reported in adulthood was extracted from a self-report survey of illness, medications, and physical disabilities administered at Wave IV. For comparability to previous research on this topic[27] as well as the version of the DSM that was most current at the time of data collection, anxiety disorders included diagnoses of PTSD. Participants were asked: "Has a doctor, nurse or other health care provider ever told you that you have or had post-traumatic stress disorder or PTSD?" They were also asked: "Has a doctor, nurse or other health care provider ever told you that you have or had anxiety or panic disorder?" A "yes" response to either of these items was required to endorse presence of an anxiety disorder.

Depressive disorders were similarly measured at Wave IV and classified. Participants were asked "Has a doctor, nurse or other health care provider ever told you that you have or had depression?" Previous research has also used this method in large-scale population health surveys to establish mental health diagnostic history. For example, self-report of past depression diagnosis from a provider has been found to have adequate concordance with later clinician-administered diagnostic interview [26].

Covariates: Adolescent-Reported Anxiety Symptoms, Depressive Symptoms, Insufficient Sleep, and General Health—Anxiety symptoms in adolescence were measured at Wave I using 5 items that constituted a physiological symptom-based measure of anxiety. This approach has been used in previous Add-health studies[15]. Specifically, participants were asked how often they experienced each of the following over the past 12 months: 1) felt hot all over suddenly, for no reason, 2) cold sweats, 3) chest pains, 4) fearfulness, and 5) trouble relaxing. Responses to each item were measured using a 5-point Likert scale (anchors: "never" and "every day"). Similar to previous published research using this variable in the Add Health database[15], total anxiety symptom scores were calculated as a sum of the 5 items, with a possible range from 0 (no anxiety symptoms) to 20 (most frequent/severe anxiety symptoms).

Depressive symptoms were measured using items based on the 20-item Center for Epidemiologic Studies-Depression Scale (CES-D) that adolescents completed at Wave I. Items were scored on the basis of the frequency with which depressive symptoms were experienced in the past week using a 4-point Likert scale (anchors: "never/rarely" and "most/all of the time"). Similar to previous published research using this variable in the Add Health database [25], total scores were calculated as a sum of the 20 items and could range from 0 (no depressive symptoms) to 60 (most frequent/severe depressive symptoms).

Insufficient sleep was assessed during Wave I using the following question: "Do you usually get enough sleep?" with response options including "yes" (coded as sufficient sleep) or "no" (coded as insufficient sleep).

General health was measured by the question: "In general, how is your health?" with 5 response options ranging from "excellent" to "poor." The general health variable was dichotomized as either "good" (responses included "excellent," "very good," or "good") or "poor" (responses included "fair" or "poor").

Sociodemographic Variables—We included four sociodemographic covariates: income (in $1000 increments); age (years); race/ethnicity (1 = white, non-Hispanic, 2 = Black, non-Hispanic, 3 = Hispanic, 4 = Other); gender. Data on age, race/ethnicity, and gender was collected during the Wave I in-home interviews. Data on household/family income was collected from the parent questionnaires that were administered to parents at Wave I.

Data analysis—We analyzed data with Stata version 12.1 (StataCorp College Station, TX). Two-tailed *P*-values of less than .05 were considered statistically significant. According to published recommendations [5], we adjusted for the complex sample design of Add Health by using sampling weights, regional stratification, and primary sampling unit information. Descriptive statistics are presented as means and standard errors or frequency and percentages, respectively. We first conducted bivariate analyses to compare characteristics between adolescents with and without chronic pain at Wave 1. Continuous variables were compared using adjusted Wald testing after the survey estimation. Categorical variables were compared using Pearson χ^2 analysis.

Our primary outcomes were self-reported lifetime history of internalizing mental health conditions (anxiety and depressive disorders) that were diagnosed by a healthcare provider, as reported in adulthood (Wave IV). Our primary approaches to the analysis were multivariate logistic regression modeling. Our models examined the association between chronic pain in adolescence and mental health reported in adulthood, while controlling for sociodemographic (age, sex, race/ethnicity, income) and clinical (anxiety symptoms, depressive symptoms, insufficient sleep, and general health in adolescence) covariates. Overall, models were judged to be statistically significant based on Likelihood ratio χ^2 tests of p <.0001. Results are presented as adjusted odds ratios with corresponding 95% confidence intervals.

Results

Description of the Sample

The sample included 14,790 participants, who after survey weighting represented 21.95 million individuals. Of the participants, 3,174 (21.9% of sample) endorsed having chronic pain in adolescence at Wave I and/or Wave II, whereas 11,610 (78.1% of sample) did not endorse having chronic pain. Sample characteristics are presented in Table 1. Females were more likely to report chronic pain than males (25.5% vs. 18.4%; χ^2 (128, N= 14,784) = 108.7, p < .0001). As expected, adolescents with chronic pain reported significantly higher concurrent anxiety symptoms (M_{pain} = 3.5; $M_{\text{no pain}}$ = 2.0; F(1, 128) = 528.9, p < .0001), depressive symptoms (M_{pain} = 14.9 on CES-D; $M_{\text{no pain}}$ = 10.4 on CES-D; F(1, 128) = 336.8, p < .0001), insufficient sleep (37.6% of chronic pain group reported insufficient sleep vs. 23.3% of no chronic pain group; F(1, 128) = 157.2, p<0.001), and poorer general health (chronic pain group = 12.1% rated general health as “fair to poor”; no chronic pain group = 5.6% rated general health as “fair to poor”; χ^2 (128, N= 14,781) = 167.5, p < .0001).

Prevalence of Lifetime History of Internalizing Mental Health Disorders Reported in Adulthood and their Association with Pain

Overall, across groups with and without chronic pain, 14.3% of participants at Wave IV reported that a health care provider had ever diagnosed them with an anxiety disorder. With respect to depressive disorders, across groups with and without chronic pain, 16.4% of participants reported being diagnosed with depression by a health care provider. As hypothesized, individuals with a history of chronic pain during adolescence reported higher lifetime rates of anxiety disorders (21.1%) in adulthood as compared to those without adolescent chronic pain (12.4%), χ^2 (128, N= 14,781) = 154.5, p < .0001 (See Table 1). Lifetime rates of depressive disorders were also significantly higher in individuals with chronic pain in adolescence (24.5%) as compared to individuals without chronic pain in adolescence (14.1%), χ^2 (128, N= 14,781) = 198.7, p < .0001.

Predictors of Lifetime History of Internalizing Mental Health Disorders Reported in Adulthood

Multivariate logistic regressions incorporating probability weights were used to examine the relationship between adolescent chronic pain status, covariates at Wave I (sociodemographic factors, anxiety symptoms, depressive symptoms, insufficient sleep, general health) and adult-reported lifetime diagnoses of internalizing mental health conditions. Two separate models were conducted with anxiety and depressive disorder diagnoses as outcomes. In each model, the dependent variable was the dichotomous coding for the presence or absence of the mental health diagnosis (0 = no anxiety or depressive disorders, respectively for each model, 1 = presence of diagnosis). As shown in Table 2, adolescent chronic pain status, female sex, white race/ethnic identity, and adolescent anxiety and depressive symptoms were significantly associated with increased likelihood of lifetime history of anxiety disorders reported in adulthood.

Chronic pain in adolescence was also associated with lifetime history of depressive disorders reported in adulthood (Table 3). In addition to chronic pain, several covariates were associated with increased likelihood of lifetime history of depressive disorders (female sex, white race/ethnic identity, adolescent anxiety and depressive symptoms, and general health).

Discussion

This is the first prospective study to establish nationally representative prevalence rates of internalizing mental health diagnoses (anxiety and depressive disorders) among individuals with a history of chronic pain in adolescence, and to examine the association between adolescent chronic pain and lifetime history of mental health disorders reported in adulthood. Findings revealed that adolescents with, versus without, chronic pain subsequently reported higher lifetime rates of anxiety disorders (21.1% vs. 12.4%) as well as depressive disorders (24.5% vs. 14.1%) in adulthood. Over and above important demographic and clinical covariates (age, sex, race/ethnicity, income, depressive and anxiety symptoms, insufficient sleep, general health), chronic pain status in adolescence was associated with an increase in risk for lifetime anxiety and depressive disorders.

Findings contribute to the limited evidence base on the association between pediatric chronic pain and psychopathology. It is the first nationally representative study spanning the pediatric and adult periods to examine prevalence rates of internalizing mental health disorders among individuals with a wide variety of adolescent chronic pains. These prevalence rates reflect those individuals who were reportedly willing and able to access a healthcare provider and receive a psychiatric diagnosis. Thus, it is possible that elevated symptomatology, versus formal mental health diagnoses, may be higher among individuals with a history of adolescent chronic pain. Moreover, it is possible that individuals were not aware of diagnoses of mental health disorders that were made earlier in childhood and adolescence when youth do not access healthcare independently from their parents. Therefore, based on the self-reported assessment of mental health disorders conducted in the Add Health study, these prevalence rates are likely to be conservative estimates. Findings are consistent with those of Shelby and colleagues [27] in individuals with FAP. In both studies, chronic pain in adolescence was related to greater lifetime history of anxiety and depressive disorders reported in adulthood. However, this research extends the work of Shelby and colleagues by demonstrating the link between lifetime internalizing mental health disorders and a wider variety of chronic pain types including headache and muscle or joint pain, in addition to stomachaches. Moreover, the present sample was not a treatment-seeking group of youth with chronic pain who had all been evaluated and diagnosed by a physician, but rather represents a larger, national, community sample. Hence, our findings may be more generalizable to youth with chronic pain living in the United States.

Having established that adolescent chronic pain is indeed linked to heightened risk of lifetime anxiety and depressive disorders reported in adulthood, research is needed to examine shared vulnerability and mutually maintaining factors that underlie these comorbidities. The high co-occurrence between anxiety disorders and chronic pain in adulthood has been explained by the presence of shared vulnerability or mutually maintaining psychological factors (e.g., anxiety sensitivity, attentional biases, lower threshold for alarm) that lead to the development and/or maintenance of both conditions[1]. Beyond psychological factors, neurobiological correlates and mechanisms also warrant future investigation. On an anatomical level, the amygdala is of particular interest, as activation in this structure is associated with both chronic pain and fear in pediatric patients[28]. Beyond the amygdala, neuroactive steroids acting agnostically with GABA, the opioid and endocannabinoid systems, immune factors, and second messenger systems have been tied to chronic pain, anxiety and depressive disorders [19]. While there are many possible neurobiological linkages between chronic pain and psychopathology, further research is needed to characterize these linkages and identify further commonalities.

Findings should be interpreted in light of study limitations. First, chronic pain in adulthood was not assessed in the Add Health study; therefore, we were unable to determine whether childhood chronic pain remitted or persisted over time. The research of Shelby and colleagues [27] suggests that lifetime anxiety and depressive disorders is highest in individuals whose functional abdominal pain persists into adulthood; however risk for these mental health disorders is still higher among individuals whose abdominal pain remits in adulthood as compared to controls. Longitudinal research on the link between specific chronic pains in childhood and adulthood has yielded mixed results concerning the

persistence of pain into adulthood[9; 13; 34], which could be the result of methodological differences in pain assessment across studies. Future longitudinal research is needed to understand the connection between childhood and adult chronic pains and co-occurring psychopathology. Second, the Add Health measurement plan did not include a validated assessment of chronic pain. Although pain frequency was assessed, which enabled us to apply a conservative approach to the categorization of chronic pain (i.e., daily or almost daily pain), optimal assessment of chronic pain should incorporate self-report measures of frequency, duration, and impairment and physician report of specific pain diagnoses. Third, it is unknown whether adolescents received treatment for their chronic pain and if so, what this treatment entailed. Existing systematic reviews and meta-analyses suggest that psychological interventions for pediatric chronic pain [6] do not lead to lasting reductions in anxiety and depressive symptoms; thus, childhood treatment of pain may not be effective in preventing future psychopathology. Future research is needed to determine what type of psychological treatment(s) (e.g., targeted towards anxiety and/or depressive symptoms in addition to chronic pain) can reduce pain and internalizing mental health symptoms/diagnoses.

Another limitation of our study is that internalizing mental health diagnoses were assessed using self-report of having ever received a diagnosis of anxiety or depressive disorders by a healthcare professional. Self-reported assessment of mental health diagnoses is not as reliable or valid as assessment using standardized semi-structured questionnaires and clinical interviews, as has previously been used in studies of FAP [27; 34]. Although such an approach is not considered feasible in large-scale epidemiological research such as the Add Health study, we encourage researchers to conduct formal assessment of mental health disorders in future studies in order to provide more accurate prevalence rates and to direct services toward identified needs in this population. Diagnostic status of lifetime anxiety and depressive disorders was based on retrospective report in adulthood; however, age of onset for chronic pain and mental health symptoms/disorders was either not formally or validly assessed. Therefore, we could not determine the directionality of the chronic pain-psychopathology relationship in this study. Recent epidemiological research has shown that onset of mental health disorders most often preceded onset of chronic pain in adolescence [30]; however, additional prospective research is needed to establish the temporal relationship between chronic pain and psychopathology.

In addition, youth with chronic pain are not a homogenous group as they were classified in this study. Rather, chronic pain in childhood and adolescence must be understood within the context of a multitude of biological, social, and psychological factors interacting to influence trajectories of functioning [20]. Walker and colleagues [34] demonstrated that youth with abdominal pain could be classified based on pain characteristics (pain severity), activity limitations, and psychological factors (pain threat appraisal, pain coping efficacy, catastrophizing, negative affect) and these classifications predicted different trajectories of pain and psychopathology into young adulthood. These constructs and variables were not assessed in the present study. Use of similar classifications to develop clinical phenotypes of children with chronic pain may provide valuable information about long-term risk into adulthood.

The current study examined specific internalizing mental health disorders known to co-occur with chronic pain in child and adult samples (i.e., anxiety and depressive disorders); however, there are other mental health disorders that warrant investigation. Recent research with adolescents found associations between chronic pain and affective as well as disruptive behavior disorders [30]. Additionally, in an epidemiological study spanning part of the childhood and adolescent period, Egger and colleagues [8] found gender differences in the relationships between pain and psychopathology. In particular, pain was associated with emotional disorders in girls whereas it was related to disruptive behavior disorders in boys. Future research should examine sex as a moderator of the relationship between chronic pain and a wider variety of mental health disorders. Finally, although these data are more recent than those used in previous nationally representative studies on pediatric chronic pain and psychopathology (initial data collection began in 1994/1995 versus 1946[13] and 1958[9]), more contemporary data may yield differing findings.

In conclusion, this is the first nationally representative study to examine whether a variety of chronic pains in adolescence are associated with greater risk of lifetime internalizing mental health disorders reported in adulthood. Our findings provide compelling evidence that indeed, pediatric chronic pain is associated with heightened risk for psychopathology. In particular, risk associated with lifetime anxiety and depressive disorders was significantly higher in individuals with, versus without, a history of adolescent chronic pain. Future research is needed to determine the temporal relationships between chronic pain and internalizing mental health disorders, to identify psychological and neurobiological mechanisms that may explain this co-occurrence, and to inform how interventions can optimally target these symptoms to alter pain and mental health trajectories.

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Table 1

Sample demographics

	Full sample (*N* = 14,790)	**Chronic pain (*N* = 3,174) 21.88%**	**No chronic pain (*N* = 11,610) 78.12%**	***p***
Estimated U.S. population size *	21,952,103	4,799,105	17,135,328	
Age at Wave 1 (*M* years, SE)	16.0 (0.12)	16.0 (0.12)	16.0 (0.12)	0.944
Age at Wave IV (*M* years, SE)	28.89 (0.12)	28.88 (0.11)	28.90 (0.12)	0.758
Sex (% female)	49.29	57.42	47.05	<.0001
Race and ethnicity (%)				0.248
White, non-Hispanic	65.63	67.54	65.18	
Black, non-Hispanic	15.51	15.47	15.49	
Hispanic	12.01	10.59	12.36	
Other	6.84	6.39	6.97	
Income (*M* $, SE)	45,665 (1691)	43,945 (1796)	46,182 (1789)	0.118
Depressive symptoms in adolescence (*M*, SE)	11.38 (0.14)	14.92 (0.25)	10.38 (0.14)	<.0001
Anxiety symptoms in adolescence (*M*, SE)	2.33 (0.03)	3.53 (0.07)	1.98 (0.03)	<.0001
General health reported in adolescence as fair/poor (%)	7.01	12.14	5.57	<.0001
Insufficient sleep in adolescence (%)	26.44	37.63	23.32	<.0001
Depressive disorder reported in adulthood (%)	16.38	24.51	14.13	<.0001
Anxiety Disorder reported in adulthood (%)	14.30	21.09	12.42	<.0001

* The complex sampling design of Add Health allows for estimation of the USA national population. N=number of participants in the survey. (%)=weighted % for the entire USA population. SE: Standard Error.

Table 2

Logistic Regression Examining Risk Factors for Lifetime History of Anxiety Disorders Among the Full Sample

Variable	OR	95% CI	*p*
Age	0.96	0.91-1.01	0.22
Female sex	2.20	1.89-2.57	<.0001
Race/Ethnicity			
White, non-Hispanic	(reference group)		
Black	0.31	0.25-0.38	<.0001
Hispanic	0.70	0.51-0.98	0.035
Other	0.63	0.44-0.90	0.012
Income	1.00	1.00-1.00	0.931
Depressive Symptoms	1.03	1.02-1.04	<.0001
Anxiety Symptoms	1.06	1.02-1.10	0.001
Insufficient Sleep	0.98	0.83-1.16	0.847
General Health	1.17	0.90-1.53	0.227
Chronic Pain	1.33	1.09-1.63	0.005

Table 3

Logistic Regression Examining Risk Factors for Lifetime History of Depressive Disorders Among the Full Sample

Variable	OR	95% CI	*p*
Age	0.95	0.91-0.98	0.012
Female sex	2.36	2.03-2.74	<.0001
Race/Ethnicity			
White, non-Hispanic	(reference group)		
Black	0.44	0.33-0.57	<.0001
Hispanic	0.62	0.47-0.83	0.001
Other	0.75	0.54-1.03	0.075
Income	1.00	1.00-1.00	0.334
Depressive Symptoms	1.03	1.02-1.04	<.0001
Anxiety Symptoms	1.06	1.02-1.10	0.001
Insufficient Sleep	0.99	0.82-1.20	0.945
General Health	1.35	1.05-1.73	0.018
Chronic Pain	1.38	1.16-1.64	<.0001