Published in final edited form as:

Hisp Health Care Int. 2018 September ; 16(3): 134–144. doi:10.1177/1540415318803947.

The Influence of Latino Symptom Experience on Participation in Usual Activities and Satisfaction with Participation in Social Roles

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Abstract

Introduction: Little is known about the Latino symptom experience and how symptoms influence participation in usual activities and satisfaction with participation in social roles.

Methods: Secondary analysis of survey data collected in community and clinic settings was conducted. Data were collected using Health-Related Quality of Life (HRQOL) 30-day items and Patient Reported Outcome Measurement System (PROMIS) symptom status scales. Descriptive statistics, univariate linear and multiple linear regression models were computed.

Results: Participants (N=2,974) were primarily female and Dominican. Most surveys were completed in Spanish and in the community setting; and the clinic sample had more symptoms. In the multiple linear regression for participation in usual activities, as the number of days with symptoms increased, the number of days that poor physical or mental health influenced participation in usual activities increased. In addition, for satisfaction with participation in social roles, as the number of days with pain and levels of depression and anxiety increased, and levels of satisfaction decreased. Spanish survey administration was associated with decreased levels of satisfaction; and recruitment setting was not a significant predictor.

Conclusion: The study addressed multiple knowledge gaps about the Latino symptom experience.

BACKGROUND

More than 56.8 million Latinos live in the United States (US) comprising 18% of the population. This percentage is projected to rise to 24% by 2065 (Flores, 2017). The proportion of Latino immigrants has decreased to 34.5%, so the Latino population is

increasingly US-born rather than foreign-born. However, the number of Latino households in which Spanish is spoken is at an all-time high of 37 million. At the same time, 35 million Latinos rate themselves as English-proficient with 15 million speaking only English at home.

Despite the size of the Latino population in the US, less is known about their symptom experience in general and across multiple disease states than that of non-Latino whites and how symptoms influence Latino functional status including participation in usual activities and satisfaction with participation in social roles. However, multiple studies and systematic reviews suggest that variations exist in the symptom experience among racial and ethnic groups. In a large survey of adults >50 years old, the trajectory of increasing insomnia over time was more pronounced for Latinos than non-Latino whites after adjusting for accumulated health conditions, body mass index, and number of depressive symptoms (Kaufmann et al., 2016). Pain has received considerable attention, particularly in cancer, with a systematic review suggesting a greater prevalence of pain in Latino and black as compared to white cancer patients possibly due to barriers in reporting and in accessing treatment (Kwok & Bhuvanakrishna, 2014). Among a multi-ethnic sample of breast cancer survivors, the most frequently reported symptom was fatigue (76%); Latinas were more likely than non-Latinas to report >10 symptoms and symptoms related to chemotherapy and pain (Fu et al., 2009). Similarly, in a Latina sample of breast cancer survivors, fatigue and pain were highly prevalent and although the women rated their stress levels as high, levels of depression and anxiety were rated as mild (Sanchez-Birkhead et al., 2017). During cancer treatment, at least one-third of Mexican-Americans reported feeling sluggish, depression, difficulty sleeping, and pain along with 13 other symptoms (Williams, Lantican, Bader, & Lerma, 2014). A systematic review of experimental pain studies found that as compared to non-Latino whites, Latinos, Asians, and blacks had lower pain tolerance and higher pain ratings (Kim et al., 2017).

The relationship between symptoms and function has also been studied in Latinos. In a study that examined cultural influence on mental health symptoms among those in a primary care intervention study for anxiety disorder, Latinos and non-Latino whites had similar levels of depression and anxiety severity and mental health functioning, but Latinos expressed greater somatization and impairment of physical function (Escovar et al., 2018). Velasco et al. discovered that pain intensity and anxiety sensitivity were synergistic in their effects on anxious arousal, social anxiety, and depressive symptoms in primarily Spanish-speaking (98.6%) Latinos in a community-based primary care setting (Velasco et al., 2016). In a sample of Latina breast cancer survivors with a high prevalence of fatigue and pain, almost half rated their physical health as fair or poor (Sanchez-Birkhead et al., 2017). In addition, excessive daytime sleepiness was associated with depression in a sample of Latinos (n=411); gender, age, income, education, health status, and acculturation did not moderate the relationship between the two symptoms (Nuyen, Fox, Malcarne, Wachsmann, & Sadler, 2016).

Multiple studies have examined the predictors of symptoms in Latino samples. For example, 26.9% of a sample (n=259) of formerly incarcerated Latino men reported depressive symptoms; significant predictors included low familism, living further away from family

members, low utilization of health and social services, high level of loneliness, and high lifetime and current frequency of alcohol use (Munoz-Laboy et al., 2014). Among Latinos receiving interventions for anxiety disorder, perceived discrimination, but no other cultural variables (e.g., nativity, age at immigration), predicted mental health symptoms (Escovar et al., 2018). Although several studies indicated that data were collected in the respondent's language of choice (English vs. Spanish) (Fu et al., 2009; Williams et al., 2014), only one study retrieved explicitly considered language spoken among Latinos as a predictor of symptoms; Spanish-speaking Latinas were less likely to report severe symptoms than other breast cancer survivors including English-speaking Latinas (Yoon et al., 2008).

The review of the literature reveals several knowledge gaps. First, most studies about the Latino symptom experience were conducted within the context of a particular disease such as cancer or anxiety disorder so little is known about the prevalence of symptoms in general or differences between community and clinic samples. Second, symptom-related outcomes most typically did not include participation in usual activities and satisfaction with participation in social roles, which may be particularly important for Latinos given the importance of the cultural values of personalism and familism. Third, there is limited literature on differences in symptom experience between Latinos who self-report symptom status in English versus Spanish. Fourth, Latinos are often considered as a homogeneous group without differentiating heritage.

Therefore, the primary purpose of this secondary analysis of a large, community-based survey was to examine associations between symptoms, specifically, pain, fatigue, depressed mood, anxiety, and sleep disturbance, and participation in usual activities as well as satisfaction with participation in social roles in urban, Latino adults of primarily Dominican heritage. Our secondary aim was to explore the effect of study setting (clinic vs. community) and survey administration language (English vs. Spanish) on levels of symptoms, participation in usual activities, and satisfaction with participation in social roles.

METHODS

This analysis utilized data from the 2012–2013 Washington Heights/Inwood Informatics Infrastructure for Comparative Effectiveness Research (WICER) follow-up Community Health Survey study (Lee, Boden-Albala, Larson, Wilcox, & Bakken, 2014; Masterson Creber et al., 2017; Sepulveda-Pacsi & Bakken, 2017). The WICER Community Health Survey collected comprehensive sociocultural information from a convenience sample of adults (≥ 18 years) residing within the Washington Heights/Inwood communities of northern Manhattan (zip codes 10031, 10032, 10033, 10034, and 10040). The main objective of the WICER study was to build a community-focused data infrastructure focused on improving the health of a Latino immigrant community at risk for health disparities. Both the parent study and the current analysis were approved by the Columbia University Medical Center Institutional Review Board.

Participants

Participants were recruited from two distinct settings, the community and ambulatory care clinics affiliated with New York Presbyterian Hospital. Participants in the community

sample were recruited by ringing doorbells within five targeted northern Manhattan zip codes using a probability sampling scheme followed by snowball sampling and convenience sampling in community locations including barber shops, beauty parlors, senior centers, and schools. Participants in the clinic sample were recruited from the waiting room.

Recruitment, informed consent, and survey administration were performed by trained bilingual community health workers. After completion of the survey, participants were compensated \$25.00 for their time in the form of two movie tickets, a transit metro-card, or a grocery store food voucher. This analysis was limited to participants who self-identified as Latino.

Measures

Participant could choose to complete the WICER Community Health Survey in either English or Spanish depending on their language preference. Measures included were selected based on established reliability and validity in both English and Spanish (Centers for Disease Control, 2018; U. S. Department of Health and Human Services, 2018).

Sociodemographic characteristics.—Participant age, gender, level of education, nativity, and marital status were collected. Level of education was coded as three categories: (1) some high school or less, (2) completed high school or GED, and (3) some college or more. Nativity was condensed into three categories: (1) Dominican Republic, (2) US, and (3) other countries. Marital status was coded as four categories: (1) single, never married, (2) married or living with a partner, (3) divorced or separated, and (4) widowed.

Symptoms.—Pain, fatigue, depressed mood, and anxiety were each evaluated using one item from the Centers for Disease Control and Prevention Health-Related Quality of Life (CDC HRQOL) Healthy Days Symptoms Module with a 30-day timeframe, e.g., “During the past 30 days, for about how many days did PAIN make it hard for you to do your usual activities, such as self-care, work, or recreation?” Number of days was used as the unit of analysis for the CDC HRQOL items. Depressed mood and anxiety were also assessed using the Patient-Reported Outcomes Measurement Information System (PROMIS) Emotional Distress-Depression v1.0 Short Form 4a and Emotional Distress-Anxiety v1.0 Short Form 4a, respectively. Sleep disturbance was measured using the PROMIS Sleep Disturbance v1.0 Short Form 4a alone. Responses to the PROMIS measures are summed and converted to a standardized T-score with Mean (M)=50 and standard deviation (SD)=10 (U. S. Department of Health and Human Services, 2018). Higher T-scores indicate more of the concept being measured. T-scores were further categorized into severity levels (i.e., *normal*, *mild*=0.5–1.0 SD worse than M, *moderate*=1.0–2.0 SDs worse than M, and *severe*=2.0 SDs+ worse than M). Both T-scores and severity categories were used as units of analysis for PROMIS symptom measures.

Participation in usual activities.—Participation in usual activities was a primary outcome of interest and evaluated using one item from the CDC HRQOL-4 Healthy Days Core Module: “During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?” Number of days was used as the unit of analysis.

Satisfaction with participation in social roles.—Satisfaction with participation in social roles was the second primary outcome of interest and measured using the PROMIS Satisfaction with Participation in Social Roles v1.0 Short Form 4a. Lower T-scores indicate greater dissatisfaction with participation in social roles. Both T-scores and severity categories were used as units of analysis.

Statistical analysis

Data were analyzed using R version 3.3.1. Descriptive statistics for all continuous and categorical predictor and outcome variables were computed. Chi-squared tests, Fisher exact tests, t-tests, or Wilcoxon rank-sum tests were used to compare demographic and symptom information by recruitment setting (community vs. clinic) and survey administration language as appropriate. Individual unadjusted linear regression (ULR) models were generated for symptom measures, recruitment setting, and survey administration language for both outcome variables. In order to determine the amount of variability that the demographic (i.e., age, gender, level of education, nativity, and marital status), recruitment setting, survey administration language, and symptom predictors accounted for collectively, multiple linear regression (MLR) models were created for each outcome variable with predictors primarily measured in the same way as the outcome variable whenever possible (i.e., CDC HRQOL measures for participation in usual activities and PROMIS measures for satisfaction with participation in social roles). Assumptions for statistical tests were assessed prior to analyses.

RESULTS

Participant characteristics

Participants (N=2,974) were an average of 53.07 ± 16.18 years of age, primarily female (74.8%), born in the Dominican Republic (79.8%), and had less than a high school education (52.8%) (Table 1). Over 95% of participants rated their overall health as fair or better with 37.2% rating their overall health as very good or excellent. On average, participants reported $M=2.65 \pm 6.88$ days that physical health and $M=2.19 \pm 6.51$ days that mental health were not good out of the last 30 days.

Most surveys (85.6%) were completed by individuals recruited in the community. Demographic characteristics, with the exception of age, and overall health measures differed by recruitment setting. The community sample had higher proportions of individuals who were male, born in the US, single, completed the survey in Spanish, and rated their overall health as very good or excellent compared to the clinic sample; additionally, participants from the clinic sample reported a greater number of days that physical and mental health was not good out of the last 30 days compared to the community sample (Table 1).

Demographic characteristics, with the exception of gender, overall health measures, and 30-day measures differed by administration language. Participants completing the survey in Spanish (89.1%) as compared to English were older and had a higher proportion of individuals with less than a high school education, were born in the Dominican Republic, were single or married/living with a partner, were recruited as part of the community

sample, and rated their overall health as very good or excellent; plus, participants completing the survey in English reported a greater number of days that physical and mental health were not good out of the last 30 days compared to Spanish (Table 1).

Symptoms

Participants reported $M=4.23\pm 8.51$ days during the past 30 in which pain interfered with usual activities, and $M=21.32\pm 10.91$ days during the past 30 that they felt very healthy and full of energy (Table 2). For depressed mood, 85.6% of participants were categorized as normal compared to the reference population and reported $M=2.66\pm 6.71$ days that they felt sad, blue, or depressed out of the last 30 days. For anxiety, 77.5% of participants were categorized as normal and reported $M=2.96\pm 6.94$ days that they felt worried, tense, or anxious out of the last 30 days. Most (86.4%) participants were categorized as normal for sleep disturbance.

Participants in the clinic sample had more symptoms than the community sample, including a greater number of days that pain interfered with usual activities; feeling sad, blue, or depressed; and feeling worried, tense, or anxious as well as fewer days feeling very healthy and full of energy out of the past 30. A greater proportion of participants from the clinic sample were categorized as having at least mild depression and anxiety and higher sleep disturbance T-scores (Table 2).

Participants completing the survey in English reported a greater number of days that pain interfered with usual activities; feeling sad, blue, or depressed; and feeling worried, tense, or anxious as well as fewer days feeling very healthy and full of energy out of the past 30 compared to participants completing the survey in Spanish; likewise, a greater proportion of participants completing the survey in English were categorized as having at least mild depression, anxiety, and sleep disturbance (Table 2).

Participation in usual activities

Overall, participants reported $M=2.15\pm 6.51$ days during the past 30 that poor physical or mental health kept them from participating in their usual activities (Table 3). Participation differed by both recruitment setting and survey administration language. Participants recruited from the clinic ($M=5.79\pm 10.37$) compared to the community sample ($M=1.54\pm 5.38$) and completing the survey in English ($M=3.84\pm 8.51$) compared to Spanish ($M=1.94\pm 6.19$) reported a greater number of days that poor physical or mental health kept them from doing their usual activities during the past 30 days.

In the ULR models, number of days with pain ($b=0.377$), depression ($b=0.448$), anxiety ($b=0.416$) and feeling full of energy ($b=-0.240$) and levels of sleep disturbance ($b=0.119$) were significantly ($p<0.001$) associated with participation (Table 4). Recruitment from the community compared to the clinic sample ($b=-4.253$, $p<0.001$) and completing the survey in Spanish compared to English ($b=-1.893$, $p<0.001$) were associated with a decreased number of days that poor physical or mental health influenced participation in usual activities (Table 4). In the MLR model ($R^2=0.397$), as the number of days with pain ($b=0.276$, $p<0.001$), depression ($b=0.168$, $p<0.001$), and anxiety ($b=0.106$, $p<0.001$), and level of sleep disturbance ($b=0.065$, $p=0.001$) increased, the number of days that poor

physical or mental health influenced participation in usual activities increased; a greater number of days feeling full of energy was associated with a decreased number of days that poor physical or mental health influenced participation in usual activities ($b=-0.094$, $p<0.001$) (Table 5). Recruitment from the community as compared to the clinic ($b=-2.052$, $p<0.001$) and Spanish administration language compared to English ($b=1.056$, $p=0.007$) were significantly associated with participation as well.

Satisfaction with participation in social roles

Overall, the majority (84.9%) of participants were categorized as having normal satisfaction with participation in social roles (Table 3). There were significant differences in satisfaction between the community (87.7%) and clinic (68.1%) samples and between those completing the survey in Spanish (86.2%) and English (74.1%).

In the ULR models, number of days with pain ($b=-0.122$, $p<0.001$) and feeling full of energy ($b=0.132$, $p<0.001$) and levels of depression ($b=-0.257$, $p<0.001$), anxiety ($b=-0.218$, $p<0.001$) and sleep disturbance ($b=-0.065$, $p=0.005$) were significantly associated with satisfaction with participation in social roles (Table 6). Completing the survey in Spanish compared to English ($b=-1.893$, $p<0.001$) was associated with decreased satisfaction with participation in social roles (Table 6). Recruitment setting was not a significant predictor of satisfaction. In the MLR model ($R^2=0.157$), as the number of days with pain ($b=-0.038$, $p=0.011$) and levels of depression ($b=-0.083$, $p=0.003$) and anxiety ($b=-0.153$, $p<0.001$) increased, levels of satisfaction decreased (Table 7); similarly, a greater number of days feeling full of energy was associated with increased levels of satisfaction ($b=0.071$, $p<0.001$). As levels of sleep disturbance increased, satisfaction increased ($b=0.075$, $p=0.003$). Additionally, Spanish administration language compared to English was associated with decreased levels of satisfaction ($b=-1.441$, $p=0.002$), and recruitment setting was not a significant predictor of satisfaction in the MLR model.

Discussion

The sample in this secondary analysis differs from other studies in three major ways; the Latino participants were primarily born in the Dominican Republic (79.9%), recruited from the community (85.6%), and completed the survey in the Spanish language (89.1%). Moreover, the majority rated their overall health as at least fair with more than one-third rating it as very good or excellent.

In terms of symptoms in the overall sample, more than three-fourths had PROMIS symptom scores within the national reference (i.e., normal) range for depressed mood, anxiety, and sleep disturbance. While the mean scores had some variability, the median number of days for the CDC HRQOL Healthy Days Symptoms Module 30 day measures was 0 for (a) pain, (b) feeling sad, blue, or depressed, and (c) feeling worried, tense, or anxious, and 30 for feeling very healthy and full of energy.

Not surprisingly, level of symptoms, with the exception of comparison by sleep disturbance severity categories, differed by setting, with the participants recruited from clinic sample reporting higher levels of symptoms. Direct comparisons with the literature are not possible

due to the fact that a general medical population was surveyed in the clinic. However, the prevalence of 29.1% for depressive symptoms and 12.9% for sleep disturbance in our clinic sample are lower than those found in a study of Mexican-Americans undergoing cancer treatment where at least one-third reported pain, feeling sluggish, depression, and difficulty sleeping (Williams et al., 2014). In a Latina sample of breast cancer survivors, levels of depression and anxiety were rated as mild on average (Sanchez-Birkhead et al., 2017). In our analysis, 17.7% and 24% of the clinic sample rated their depression and anxiety, respectively, as greater than mild.

Levels of symptoms also differed by the language in which the survey was completed. Latinos completing the survey in English reported higher levels of symptoms. This is consistent with a study that found that Spanish-speaking Latinas were less likely to report severe symptoms than other breast cancer survivors including English-speaking Latinas (Yoon et al., 2008). This is likely confounded by the fact that a greater proportion of participants in the clinic sample completed the survey in English (55.5%) as compared to just 3.5% of the community sample.

In terms of primary outcomes, participants reported a minimal number of days that poor mental or physical health kept them from participating in their usual activities with a median of 0 and 84.9% of participants rated their satisfaction with participation in social roles within the reference range for normal. Not surprisingly, the clinic sample reported a greater mean number of days that physical or mental health influenced their participation compared to the community sample. However, the median of 0 for both groups indicates minimal variability and overall high participation in usual activities. Likewise, the proportion of individuals classified as being satisfied with participation in social roles in the clinic sample (68.1%) was lower than the community sample (87.7%). In a small sample (n=48) of Latina breast cancer survivors, 96% rated their ability to carry out social activities and roles as at least good and almost 40% as very good or excellent (Sanchez-Birkhead et al., 2017). Similar to findings with symptom ratings, a greater mean number of days kept from doing usual activities and a lower percentage of normal satisfaction with social roles was reported in the English survey sample than the Spanish.

In the ULR models with participation in usual activities as the outcome variable, symptoms are significant predictors and have associations in the expected direction (i.e., more days of pain, depression, and anxiety, and higher levels of sleep disturbance are associated with more days kept from doing usual activities, and more days feeling full of energy is associated with fewer days kept from doing usual activities). These associations remained significant in the MLR model that included demographic variables, recruitment setting, and survey administration language.

The expected associations between symptoms and satisfaction with participation in social roles are also supported in the ULR models (i.e., more days of pain and higher levels of depression, anxiety, and sleep disturbance are associated with lower levels of satisfaction, and more days feeling full of energy is associated with higher levels of satisfaction) and, with the exception of sleep disturbance, in the MLR model. There are several possible explanations for this exception. The associations are not causal and it may be that the level

of participation in social roles to achieve satisfaction influences sleep quality. Moreover, there is limited variability in both the predictor and outcome variable as discussed previously.

The influence of recruitment setting on the outcome of participation in usual activities was consistent across the ULR and MLR models with the community sample having fewer number of days in the past 30 that poor physical or mental health kept the participant from doing usual activities as compared to the clinic sample. In contrast, for the second primary outcome, satisfaction in participation in social roles, recruitment setting was non-significant in both ULR and MLR models.

The influence of language varied across the outcome variables. For participation in usual activities, in the ULR model, survey administration in Spanish was associated with fewer number of days in the past 30 that poor physical or mental health kept the participant from doing usual activities compared to English. However, this relationship was reversed in the MLR model possibly due to the limited variation in the outcome variable, i.e., median of 0 days. In contrast, for satisfaction, the relationships are consistent across both models with Spanish survey administration showing decreased satisfaction with participation in social roles.

This study had several limitations including those common to secondary analysis such as using existing measures to answer the questions of interest. Moreover, there was low symptomatology overall and limited variability in the primary outcomes, but the analysis did reveal the expected differences between community and clinic samples. In addition, because the vast majority of surveys were administered in Spanish, the differences seen may not hold in a more balanced sample.

Despite these limitations, the study addresses multiple knowledge gaps about the Latino symptom experience. These include associating symptoms with outcomes of participation in usual activities and satisfaction with participation in social roles which may be particularly important for Latinos, comparing community and clinic samples, comparing language of survey administration, and specifying nativity.

REFERENCES

- Centers for Disease Control. (2018). Health Related Quality of Life. Retrieved from <https://www.cdc.gov/hrqol/methods.htm>
- Escovar EL, Craske M, Roy-Byrne P, Stein MB, Sullivan G, Sherbourne CD, ... Chavira DA (2018). Cultural influences on mental health symptoms in a primary care sample of Latinx patients. *Journal of Anxiety Disorders*, 55, 39–47. doi:10.1016/j.janxdis.2018.03.005 [PubMed: 29576380]
- Flores A (2017). How the U.S. Hispanic population is changing. Retrieved from <http://www.pewresearch.org/fact-tank/2017/09/18/how-the-u-s-hispanic-population-is-changing/>
- Fu OS, Crew KD, Jacobson JS, Greenlee H, Yu G, Campbell J, ... Hershman DL (2009). Ethnicity and persistent symptom burden in breast cancer survivors. *Journal of Cancer Survivorship*, 3(4), 241–250. doi:10.1007/s11764-009-0100-7 [PubMed: 19859813]
- Kaufmann CN, Mojtabai R, Hock RS, Thorpe RJ Jr., Canham SL, Chen LY, ... Spira AP (2016). Racial/Ethnic Differences in Insomnia Trajectories Among U.S. Older Adults. *American Journal of Geriatric Psychiatry*, 24(7), 575–584. doi:10.1016/j.jagp.2016.02.049

- Kim HJ, Yang GS, Greenspan JD, Downton KD, Griffith KA, Renn CL, ... Dorsey SG (2017). Racial and ethnic differences in experimental pain sensitivity: systematic review and meta-analysis. *Pain*, 158(2), 194–211. doi:10.1097/j.pain.0000000000000731 [PubMed: 27682208]
- Kwok W, & Bhuvanakrishna T (2014). The relationship between ethnicity and the pain experience of cancer patients: a systematic review. *Indian Journal of Palliative Care*, 20(3), 194–200. doi: 10.4103/0973-1075.138391 [PubMed: 25191006]
- Lee YJ, Boden-Albala B, Larson E, Wilcox A, & Bakken S (2014). Online health information seeking behaviors of Hispanics in New York City: a community-based cross-sectional study. *Journal of Medical Internet Research*, 16(7), e176. doi:10.2196/jmir.3499 [PubMed: 25092120]
- Masterson Creber RM, Fleck E, Liu J, Rothenberg G, Ryan B, & Bakken S (2017). Identifying the complexity of multiple risk factors for obesity among urban Latinas. *Journal of Immigrant and Minority Health*, 19(2), 275–284. doi:10.1007/s10903-016-0433-z [PubMed: 27225251]
- Munoz-Laboy M, Worthington N, Perry A, Guilamo-Ramos V, Cabassa L, Lee J, & Severson N (2014). Socio-environmental risks for untreated depression among formerly incarcerated Latino men. *Journal of Immigrant and Minority Health*, 16(6), 1183–1192. doi:10.1007/s10903-013-9814-8 [PubMed: 23508876]
- Nuyen BA, Fox RS, Malcarne VL, Wachsmann SI, & Sadler GR (2016). Excessive Daytime Sleepiness as an Indicator of Depression in Hispanic Americans. *Hispanic Health Care International*, 14(3), 116–123. doi:10.1177/1540415316660616 [PubMed: 27465932]
- Sanchez-Birkhead AC, Carbajal-Salisbury S, Larreta JA, Lovlien L, Hendricks H, Dingley C, & Beck SL (2017). A community-based approach to assessing the physical, emotional, and health status of hispanic breast cancer survivors. *Hispanic Health Care International*, 15(4), 166–172. doi: 10.1177/1540415317738016 [PubMed: 29164912]
- Sepulveda-Pacci AL, & Bakken S (2017). Correlates of Dominicans' identification of cancer as a worrisome health problem. *Journal of Immigrant and Minority Health*, 19(5), 1227–1234. doi: 10.1007/s10903-016-0509-9 [PubMed: 27766506]
- U. S. Department of Health and Human Services. (2018). HealthMeasures. Retrieved from <http://www.healthmeasures.net/explore-measurement-systems/promis>
- Velasco RV, Bakhshaie J, Walker RL, Viana AG, Garza M, Ochoa-Perez M, ... Zvolensky MJ (2016). Synergistic effects of pain intensity and anxiety sensitivity in relation to anxiety and depressive symptoms and disorders among economically disadvantaged latinos in a community-based primary care setting. *Journal of Anxiety Disorders*, 43, 23–31. doi:10.1016/j.janxdis.2016.07.007 [PubMed: 27475925]
- Williams PD, Lantican LS, Bader JO, & Lerma D (2014). Symptom monitoring, alleviation, and self-care among Mexican Americans during cancer treatment. *Clinical Journal of Oncology Nursing*, 18(5), 547–554. doi:10.1188/14.CJON.547-554 [PubMed: 25253108]
- Yoon J, Malin JL, Tisnado DM, Tao ML, Adams JL, Timmer MJ, ... Kahn KL (2008). Symptom management after breast cancer treatment: is it influenced by patient characteristics? *Breast Cancer Research and Treatment*, 108(1), 69–77. doi:10.1007/s10549-007-9580-1 [PubMed: 17638071]

Table 1.

Participant characteristics

Characteristic <i>M±SD, median or frequency (percentage)</i>	Overall	Clinic Sample	Community Sample	& p-value	English Survey	Spanish Survey	& p-value
Age	53.07±16.18, 56 <i>n=2974</i>	53.66±15.26, 55 <i>n=429</i>	52.99±16.31, 56 <i>n=2545</i>	ns	49.72±16.86, 52 <i>n=323</i>	53.48±16.05, 56 <i>n=2651</i>	***
Gender Female Male	2222 (74.8%) 748 (25.2%) <i>n=2970</i>	359 (84.1%) 68 (15.9%) <i>n=427</i>	1863 (73.3%) 680 (26.7%) <i>n=2543</i>	***	252 (78.5%) 69 (21.5%) <i>n=321</i>	1970 (74.4%) 679 (25.6%) <i>n=2649</i>	ns
Education Some high school or less Completed high school/GED Some college or more [‡]	1557 (52.8%) 709 (24.0%) 684 (23.2%) <i>n=2950</i>	237 (55.2%) 67 (15.6%) 125 (29.1%) <i>n=429</i>	1320 (52.4%) 642 (25.5%) 559 (22.2%) <i>n=2521</i>	***	156 (48.3%) 54 (16.7%) 113 (35.0%) <i>n=323</i>	1401 (53.3%) 655 (24.9%) 571 (21.7%) <i>n=2627</i>	***
Birth Country Dominican Republic USA Other	2357 (79.8%) 381 (12.9%) 214 (7.2%) <i>n=2952</i>	339 (79.0%) 45 (10.5%) 45 (10.5%) <i>n=429</i>	2018 (80.0%) 336 (13.3%) 169 (6.7%) <i>n=2523</i>	**	219 (67.8%) 72 (22.3%) 32 (9.9%) <i>n=323</i>	2138 (81.3%) 309 (11.8%) 182 (6.9%) <i>n=2629</i>	***
Marital Status Single, never married Married/living with partner Divorced/separated Widowed	998 (34.4%) 1040 (35.8%) 646 (22.3%) 219 (7.5%) <i>n=2903</i>	66 (15.4%) 154 (36.0%) 172 (40.2%) 36 (8.4%) <i>n=428</i>	932 (37.7%) 886 (35.8%) 474 (19.2%) 183 (7.4%) <i>n=2475</i>	***	93 (29.0%) 108 (33.6%) 101 (31.5%) 19 (5.9%) <i>n=321</i>	905 (35.1%) 932 (36.1%) 545 (21.1%) 200 (7.7%) <i>n=2582</i>	***
Recruitment Setting Clinic sample Community sample	429 (14.4%) 2545 (85.6%) <i>n=2974</i>	NA	NA	NA	234 (72.4%) 89 (27.6%) <i>n=323</i>	195 (7.4%) 2456 (92.6%) <i>n=2651</i>	***
Survey Language English Spanish	323 (10.9%) 2651 (89.1%) <i>n=2974</i>	234 (54.5%) 195 (45.5%) <i>n=429</i>	89 (3.5%) 2456 (96.5%) <i>n=2545</i>	***	NA	NA	NA
Self-reported overall health % Poor Fair Good Very good Excellent	89 (3.0%) 935 (31.6%) 832 (28.1%) 448 (15.1%) 655 (22.1%) <i>n=2959</i>	29 (6.8%) 223 (52.0%) 125 (29.1%) 29 (6.8%) 23 (5.4%) <i>n=429</i>	60 (2.4%) 712 (28.1%) 707 (27.9%) 419 (16.6%) 632 (25.0%) <i>n=2530</i>	***	14 (4.3%) 135 (41.8%) 93 (28.8%) 40 (12.4%) 41 (12.7%) <i>n=323</i>	75 (2.8%) 800 (30.3%) 739 (28.0%) 408 (15.5%) 614 (23.3%) <i>n=2636</i>	***
Self-reported number of days out of the last 30 that physical health was not good [‡]	2.65±6.88, 0 <i>n=2951</i>	8.38±10.88, 3 <i>n=425</i>	1.68±5.37, 0 <i>n=2526</i>	***	6.21±9.93, 0 <i>n=320</i>	2.21±6.27, 0 <i>n=2631</i>	***
Self-reported number of days out of the last 30 that mental health was not good [‡]	2.19±6.51, 0 <i>n=2938</i>	6.93±10.50, 0 <i>n=425</i>	1.39±5.15, 0 <i>n=2513</i>	***	5.21±9.21, 0 <i>n=317</i>	1.83±6.00, 0 <i>n=2621</i>	***

ns=nonsignificant;

<0.01;

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<0.001>

§ Significance level from chi-squared test, t-test, or wilcoxon rank-sum test (as appropriate);

Some college or technical, trade, or vocational school or post-secondary education degree;

% Question asked: In general, how would you rate your overall health?;

† Question asked: Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?;

‡ Question asked: Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?

Table 2.

Symptom summary

Symptom Assessment Question or Instrument <i>M±SD, median or frequency (percentage)</i>	Overall	Ambulatory Care Sample	Community Sample	p-value	English Survey	Spanish Survey	p-value &
Pain							
During the past 30 days, for about how many days did PAIN make it hard for you to do your usual activities, such as self-care, work, or recreation?	4.23±8.51, 0 <i>n</i> =2944	6.59±10.02, 0 <i>n</i> =427	3.82±7.97, 0 <i>n</i> =2517	***	5.56±9.99, 0 <i>n</i> =320	4.06±8.30, 0 <i>n</i> =2624	**
Energy/Fatigue							
During the past 30 days, for about how many days have you felt VERY HEALTHY AND FULL OF ENERGY?	21.32±10.91, 30 <i>n</i> =2934	17.29±12.02, 20 <i>n</i> =424	22.00±10.57, 30 <i>n</i> =2510	***	18.84±11.72, 22 <i>n</i> =319	21.61±10.77, 30 <i>n</i> =2615	***
Depression							
During the past 30 days, for about how many days have you felt SAD, BLUE, or DEPRESSED?	2.66±6.71, 0 <i>n</i> =2943	6.60±10.02, 2 <i>n</i> =424	1.99±5.72, 0 <i>n</i> =2519	***	5.03±8.97, 0 <i>n</i> =318	2.37±6.32, 0 <i>n</i> =2625	***
PROMIS Depression ^a T-score	45.71±7.49, 41 <i>n</i> =2916	49.26±10.01, 41 <i>n</i> =395	45.15±6.85, 41 <i>n</i> =2521	***	47.71±9.32, 41 <i>n</i> =289	45.49±7.23, 41 <i>n</i> =2627	***
PROMIS Depression ^a Severity <i>Normal</i> <i>Mild</i> <i>Moderate</i> <i>Severe</i>	2497 (85.6%) 238 (8.2%) 165 (5.7%) 16 (0.5%) <i>n</i> =2916	277 (70.1%) 48 (12.2%) 60 (15.2%) 10 (2.5%) <i>n</i> =395	2220 (88.1%) 190 (7.5%) 105 (4.2%) 6 (0.2%) <i>n</i> =2521	***	217 (75.1%) 32 (11.1%) 35 (12.1%) 5 (1.7%) <i>n</i> =289	2280 (86.8%) 206 (7.8%) 130 (4.9%) 11 (0.4%) <i>n</i> =2627	***
Anxiety							
During the past 30 days, for about how many days have you felt WORRIED, TENSE, or ANXIOUS?	2.96±6.94, 0 <i>n</i> =2950	7.62±10.44, 2 <i>n</i> =428	2.17±5.80, 0 <i>n</i> =2522	***	5.43±9.05, 0 <i>n</i> =319	2.66±6.58, 0 <i>n</i> =2631	***
PROMIS Anxiety ^b T-score	46.49±9.13, 40.3 <i>n</i> =2930	51.21±11.33, 51.2 <i>n</i> =399	45.74±8.49, 40.3 <i>n</i> =2531	***	48.94±10.14, 40.3 <i>n</i> =292	46.21±8.97, 40.3 <i>n</i> =2531	***
PROMIS Anxiety ^b Severity <i>Normal</i> <i>Mild</i> <i>Moderate</i> <i>Severe</i>	2272 (77.5%) 336 (11.5%) 279 (9.5%) 43 (1.5%) <i>n</i> =2930	231 (57.9%) 72 (18.0%) 70 (17.5%) 26 (6.5%) <i>n</i> =399	2041 (80.6%) 264 (10.4%) 209 (8.3%) 17 (0.7%) <i>n</i> =2531	***	195 (66.8%) 47 (16.1%) 42 (14.4%) 8 (2.7%) <i>n</i> =292	2077 (78.7%) 289 (11.0%) 237 (9.0%) 35 (1.3%) <i>n</i> =2638	***
Sleep Disturbance							
PROMIS Sleep Disturbance ^c T-score	49.69±5.21, 50.5 <i>n</i> =2961	51.87±3.42, 52.4 <i>n</i> =427	49.33±5.37, 50.5 <i>n</i> =2534	***	51.59±4.05, 52.4 <i>n</i> =320	49.46±5.29, 50.5 <i>n</i> =2641	***
PROMIS Sleep Disturbance ^c Severity <i>Normal</i> <i>Mild</i>	2558 (86.4%) 355 (12.0%) 48 (1.6%)	372 (87.1%) 52 (12.2%) 3 (0.7%)	2186 (86.3%) 303 (12.0%) 45 (1.2%)	ns	281 (87.8%) 35 (10.9%) 4 (1.3%)	2277 (86.2%) 320 (12.1%) 44 (1.7%)	***

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Symptom Assessment Question or Instrument <i>M±SD, median or frequency (percentage)</i>	Overall	Ambulatory Care Sample	Community Sample	p-value &	English Survey	Spanish Survey	p-value &
<i>Moderate</i>	<i>n=2961</i>	<i>n=427</i>	<i>n=2534</i>		<i>n=320</i>	<i>n=2641</i>	

ns=nonsignificant;

**<0.01;

***<0.001;

&Significance level from chi-squared test, t-test, or Wilcoxon rank-sum test (as appropriate);

^aEmotional Distress-Depression v1.0 – Short Form 4a asks participants to respond to the following four statements with “never,” “rarely,” “sometimes,” “often,” or “always”: “In the past 7 days, I felt (1) worthless, (2) helpless, (3) depressed, and (4) hopeless”;

^bEmotional Distress-Anxiety v1.0 – Short Form 4a asks participants to respond to the following four statements with “never,” “rarely,” “sometimes,” “often,” or “always”: “In the past 7 days, (1) I felt fearful, (2) I found it hard to focus on anything other than my anxiety, (3) my worries overwhelmed me, and (4) I felt uneasy”;

^cSleep Disturbance v1.0 – Short Form 4a asks participants to rate their sleep quality in the past 7 days as “very poor,” “poor,” “fair,” “good,” or “very good” and to respond to each of the following three statements with “not at all,” “a little bit,” “somewhat,” “quite a bit,” or “very much”: “In the past 7 days, (1) my sleep was refreshing, (2) I had a problem with my sleep, and (3) I had difficulty falling asleep.”

Table 3.

Participation in usual activities and satisfaction with participation in social roles

Outcome <i>M±SD, median or frequency (percentage)</i>	Overall	Clinic Sample	Community Sample	p-value &	English Survey	Spanish Survey	p-value &
During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?	2.15±6.51, 0 <i>n</i> =2947	5.79±10.37, 0 <i>n</i> =420	1.54±5.38, 0 <i>n</i> =2527	***	3.84±8.51, 0 <i>n</i> =316	1.94±6.19, 0 <i>n</i> =2631	***
PROMIS Satisfaction with Participation in Social Roles ^a T-score	51.1±6.65, 52 <i>n</i> =2964	50.55±9.52, 52 <i>n</i> =426	51.19±6.03, 52 <i>n</i> =2538	ns	52.15±8.86, 52 <i>n</i> =320	50.97±6.32, 52 <i>n</i> =2644	ns
PROMIS Satisfaction with Participation in Social Roles ^a Category <i>Normal</i> <i>Mild</i> <i>Moderate</i> <i>Severe</i>	2516 (84.9%) 306 (10.3%) 115 (3.9%) 27 (0.9%) <i>n</i> =2964	290 (68.1%) 71 (16.7%) 53 (12.4%) 12 (2.8%) <i>n</i> =426	2226 (87.7%) 235 (9.3%) 62 (2.4%) 15 (0.6%) <i>n</i> =2538	***	237 (74.1%) 52 (16.3%) 27 (8.4%) 4 (1.3%) <i>n</i> =320	2279 (86.2%) 254 (9.6%) 88 (3.3%) 23 (0.9%) <i>n</i> =2644	***

ns=nonsignificant;

<0.001;

& Significance level from t-test, Wilcoxon rank-sum test, or Fisher exact test (as appropriate);

^a Satisfaction with Participation in Social Roles v1.0 – Short Form 4a asks participants to respond to each of the following four statements with “not at all,” “a little bit,” “somewhat,” “quite a bit,” or “very much”: “In the past 7 days, (1) I am satisfied with how much work I can do (include work at home), (2) I am satisfied with my ability to work (include work at home), (3) I am satisfied with my ability to do regular personal and household responsibilities, and (4) I am satisfied with my ability to perform my daily routines.”

Table 4.

Unadjusted linear regression analysis of symptoms and the number of days in the past 30 days that poor physical or mental health kept participant from doing usual activities

Predictor	<i>n</i>	b-coefficient	95% CI	p-value	R ²
Pain %	2930	0.377	0.353, 0.401	<0.001	0.241
Energy/Fatigue ‡	2915	−0.240	−0.260, −0.220	<0.001	0.162
Depression ‡	2927	0.448	0.417, 0.480	<0.001	0.210
Anxiety &	2932	0.416	0.385, 0.446	<0.001	0.196
Sleep Disturbance ^	2936	0.119	0.074, 0.164	<0.001	0.009
Recruitment Setting <i>Community sample</i> <i>Reference: Clinic sample</i>	2947	−4.253	−4.908, −3.599	<0.001	0.053
Survey Language <i>Spanish</i> <i>Reference: English</i>	2947	−1.893	−2.649, −1.136	<0.001	0.008

% During the past 30 days, for about how many days did PAIN make it hard for you to do your usual activities, such as self-care, work, or recreation?;

‡ During the past 30 days, for about how many days have you felt VERY HEALTHY AND FULL OF ENERGY?;

‡ During the past 30 days, for about how many days have you felt SAD, BLUE, or DEPRESSED?;

& During the past 30 days, for about how many days have you felt WORRIED, TENSE, or ANXIOUS?;

^ PROMIS Sleep Disturbance v1.0 – Short Form 4a T-score asks participants to rate their sleep quality in the past 7 days as “very poor,” “poor,” “fair,” “good,” or “very good” and to respond to each of the following three statements with “not at all,” “a little bit,” “somewhat,” “quite a bit,” or “very much”: “In the past 7 days, (1) my sleep was refreshing, (2) I had a problem with my sleep, and (3) I had difficulty falling asleep.”

Table 5.

Multiple linear regression analysis of the number of days in the past 30 days that poor physical or mental health kept participant from doing usual activities

Predictor	b-coefficient	95% CI	p-value [@]
Age	−0.012	−0.028, 0.004	ns
Gender <i>Female</i> <i>Reference: Male</i>	−0.330	−0.790, 0.129	ns
Education <i>Completed high school/GED</i> <i>Some college or more[#]</i> <i>Reference: Some high school or less</i>	−0.007 −0.442	−0.511, 0.497 −0.989, 0.104	ns
Birth Country <i>USA</i> <i>Other</i> <i>Reference: Dominican Republic</i>	0.031 −0.098	−0.681, 0.743 −0.849, 0.652	ns
Marital Status <i>Married/living with partner</i> <i>Divorced/separated</i> <i>Widowed</i> <i>Reference: Single, never married</i>	0.465 0.355 1.414	−0.017, 0.947 −0.220, 0.930 0.561, 2.267	*
Recruitment Setting <i>Community sample</i> <i>Reference: Clinic sample</i>	−2.052	−2.759, −1.344	***
Survey Language <i>Spanish</i> <i>Reference: English</i>	1.056	0.285, 1.828	**
Pain [%]	0.276	0.251, 0.301	***
Energy/Fatigue [†]	−0.094	−0.115, −0.073	***
Depression [‡]	0.168	0.124, 0.212	***
Anxiety ^{&}	0.106	0.063, 0.149	***
Sleep Disturbance [^]	0.065	0.026, 0.103	**

$n=2,754$, Model overall multiple r -squared=0.397. ns=nonsignificant;

*
<0.05;

**
<0.01;

<0.001;

@ Wald test p-value reported for predictors with multiple categories;

Some college or technical, trade, or vocational school or post-secondary education degree;

% During the past 30 days, for about how many days did PAIN make it hard for you to do your usual activities, such as self-care, work, or recreation?;

† During the past 30 days, for about how many days have you felt VERY HEALTHY AND FULL OF ENERGY?;

‡ During the past 30 days, for about how many days have you felt SAD, BLUE, or DEPRESSED?;

& During the past 30 days, for about how many days have you felt WORRIED, TENSE, or ANXIOUS?;

[^] PROMIS Sleep Disturbance v1.0 – Short Form 4a T-score asks participants to rate their sleep quality in the past 7 days as “very poor,” “poor,” “fair,” “good,” or “very good” and to respond to each of the following three statements with “not at all,” “a little bit,” “somewhat,” “quite a bit,” or “very much”: “In the past 7 days, (1) my sleep was refreshing, (2) I had a problem with my sleep, and (3) I had difficulty falling asleep.”

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Table 6.

Unadjusted linear regression analysis of symptoms and analysis of satisfaction with participation in social roles

Predictor	<i>n</i>	b-coefficient	95% CI	p-value	R ²
Pain [%]	2934	−0.122	−0.150, −0.094	<0.001	0.024
Energy/Fatigue [‡]	2924	0.132	0.111, 0.154	<0.001	0.047
Depression [‡]	2906	−0.257	−0.288, −0.227	<0.001	0.085
Anxiety ^{&}	2929	−0.218	−0.243, −0.193	<0.001	0.090
Sleep Disturbance [^]	2952	−0.065	−0.111, −0.019	0.005	0.003
Recruitment Setting <i>Community sample</i> <i>Reference: Clinic sample</i>	2964	0.634	−0.048, 1.317	0.069	0.001
Survey Language <i>Spanish</i> <i>Reference: English</i>	2964	−1.182	−1.953, −0.412	0.003	0.003

[%] During the past 30 days, for about how many days did PAIN make it hard for you to do your usual activities, such as self-care, work, or recreation?;

[‡] During the past 30 days, for about how many days have you felt VERY HEALTHY AND FULL OF ENERGY?;

[‡] PROMIS Emotional Distress-Depression v1.0 – Short Form 4a T-score asks participants to respond to the following four statements with “never,” “rarely,” “sometimes,” “often,” or “always”: “In the past 7 days, I felt (1) worthless, (2) helpless, (3) depressed, and (4) hopeless”;

[&] PROMIS Emotional Distress-Anxiety v1.0 – Short Form 4a T-score asks participants to respond to the following four statements with “never,” “rarely,” “sometimes,” “often,” or “always”: “In the past 7 days, (1) I felt fearful, (2) I found it hard to focus on anything other than my anxiety, (3) my worries overwhelmed me, and (4) I felt uneasy”;

[^] PROMIS Sleep Disturbance v1.0 – Short Form 4a T-score asks participants to rate their sleep quality in the past 7 days as “very poor,” “poor,” “fair,” “good,” or “very good” and to respond to each of the following three statements with “not at all,” “a little bit,” “somewhat,” “quite a bit,” or “very much”: “In the past 7 days, (1) my sleep was refreshing, (2) I had a problem with my sleep, and (3) I had difficulty falling asleep.”

Table 7.

Multiple linear regression analysis of satisfaction with participation in social roles

Predictor	b-coefficient	95% CI	p-value [@]
Age	-0.052	-0.071, 0.033	***
Gender <i>Female</i> <i>Reference: Male</i>	0.776	0.225, 1.328	**
Education <i>Completed high school/GED</i> <i>Some college or more[#]</i> <i>Reference: Some high school or less</i>	0.638 0.955	0.037, 1.240 0.297, 1.614	*
Birth Country <i>USA</i> <i>Other</i> <i>Reference: Dominican Republic</i>	-0.174 0.220	-1.029, 0.681 -0.680, 1.120	ns
Marital Status <i>Married/living with partner</i> <i>Divorced/separated</i> <i>Widowed</i> <i>Reference: Single, never married</i>	0.470 0.324 0.183	-0.107, 1.047 -0.362, 1.010 -0.832, 1.197	ns
Recruitment Setting <i>Community sample</i> <i>Reference: Clinic sample</i>	0.460	-0.376, 1.295	ns
Survey Language <i>Spanish</i> <i>Reference: English</i>	-1.441	-2.369, -0.513	**
Pain [%]	-0.038	-0.067, -0.009	*
Energy/Fatigue [†]	0.071	0.047, 0.094	***
Depression [‡]	-0.082	-0.136, -0.028	**
Anxiety ^{&}	-0.153	-0.198, -0.108	***
Sleep Disturbance [^]	0.075	0.026, 0.124	**

$n=2,718$, Model overall multiple r -squared=0.157. ns=nonsignificant;

*
<0.05;

**
<0.01;

<0.001;

[@] Wald test p-value reported for predictors with multiple categories;

[#] Some college or technical, trade, or vocational school or post-secondary education degree;

[%] During the past 30 days, for about how many days did PAIN make it hard for you to do your usual activities, such as self-care, work, or recreation?;

[†] During the past 30 days, for about how many days have you felt VERY HEALTHY AND FULL OF ENERGY?;

[‡] PROMIS Emotional Distress-Depression v1.0 – Short Form 4a T-score asks participants to respond to the following four statements with “never,” “rarely,” “sometimes,” “often,” or “always”: “In the past 7 days, I felt (1) worthless, (2) helpless, (3) depressed, and (4) hopeless”;

[&]PROMIS Emotional Distress-Anxiety v1.0 – Short Form 4a T-score asks participants to respond to the following four statements with “never,” “rarely,” “sometimes,” “often,” or “always”: “In the past 7 days, (1) I felt fearful, (2) I found it hard to focus on anything other than my anxiety, (3) my worries overwhelmed me, and (4) I felt uneasy”;

[^]PROMIS Sleep Disturbance v1.0 – Short Form 4a T-score asks participants to rate their sleep quality in the past 7 days as “very poor,” “poor,” “fair,” “good,” or “very good” and to respond to each of the following three statements with “not at all,” “a little bit,” “somewhat,” “quite a bit,” or “very much”: “In the past 7 days, (1) my sleep was refreshing, (2) I had a problem with my sleep, and (3) I had difficulty falling asleep.”

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