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Abstract

The knowledge base of cancer-related symptoms is increasing; yet, limited attention has been given to provide evidence on differences in the perception of cancer symptoms between ethnic groups, especially in the Hispanic Puerto Rican (PR) population.

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Velda J. Gonzalez, PhD, RN declares that she has no conflict of interest. Dr. Leorey N. Saligan, PhD, RN, CRNP, FAAN declares that he has no conflict of interest. Dr. Ming Ji, PhD declares that he has no conflict of interest. Dr. Maureen Groer, PhD, RN, FAAN declares that she has no conflict of interest. Dr. Elsa Pedro, PharmD declares that she has no conflict of interest. Dr. Susan McMillan, PHD, ARNP, FAAN declares that she has no conflict of interest.

Compliance with Ethical Standards:

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Ethical approval:

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Objective—to examine whether there are significant differences in the severity, distress, interference, and frequency of cancer symptoms between island Hispanic PR and mainland non-Hispanic whites.

Methods—In this secondary data analysis, data from 109 Hispanic PR was matched by age, gender and cancer diagnosis with data from non-Hispanic whites. Cancer symptoms were assessed using the Cancer Symptom Scale (CSS). *Mann-Whitney* statistical test was used to evaluate pairwise differences between Hispanic PR and non-Hispanic whites on symptoms from the CSS.

Results—There were significant differences on some symptoms including PR reporting: (a) more intense itching, swelling, taste change, difficulty sleeping, bloating, depression, sadness, worry, and nervousness; (b) significantly greater distress about taste change, appetite, anxiety, depression, worry, and feeling nervous; (c) rash, anxiety, depression, sadness, and nervousness interfered the most with their daily lives; and, (d) that the frequency of occurrence of the symptoms of pain, itching, dizziness, taste change, anxiety, sadness, and nervousness was higher compared to non-Hispanic whites.

Conclusion—PR cancer patients are at increased risk for experiencing greater severity of cancer symptoms compared to non-Hispanic whites. But because the Hispanic oncology population does not always report symptoms, risking under-assessment and under-management, this suggests there may be a greater need for symptoms surveillance for this population.

Keywords

cancer-related symptoms; symptom assessment; Hispanic Puerto Ricans

Introduction

Cancer in the United States and in the island of Puerto Rico touches almost every family and is one of the leading causes of death. Indeed, there were more than 14, 483, 830 cancer survivors in the US in 2014 [1]. Likewise, according to the Puerto Rico Central Registry estimate, approximately 62,000 patients were living with cancer in 2010 in Puerto Rico [2]. While the limited available evidence suggest that Hispanics are more likely than their non-Hispanic white counterparts to perceive worsening of treatment-related symptoms, few studies have included island Puerto Rican (PR) participants, as a separate group in their analysis [3–7]. Uncovering potential differences in cancer symptoms among those of ethnic minorities could be a first step in identifying a source of health disparities in treatment outcomes [4].

Few studies have sought to examine the differences between Hispanics and non-Hispanic whites in self-report of treatment-related symptoms. For example, in their study of 116 breast cancer survivors, Eversley et al. reported that Hispanic women showed significantly higher rates of fatigue and depression than non-Hispanic whites [8]. When comparing ethnic groups, Hispanics were significantly more likely than non-Hispanic whites to report more than 10 symptoms. Being Hispanic, or older than 65 years old, or unemployed, was related to reports of chemotherapy-related symptoms. Pain-related symptoms also were significantly reported by Hispanics and those older than 65 years. A longitudinal study on early referral to a supportive care specialist for symptom burden on 752 lung cancer patients showed that

Hispanics reported higher rates of fatigue, pain, depression, and swelling and that fatigue was significantly associated with referral for symptom management [9]. In addition, no significant improvement in pain or fatigue was observed among Hispanics in general when compared to non-Hispanic whites.

The literature on pain showed that the occurrence and severity of pain among non-Hispanic African-Americans and Hispanics is higher compared with that among non-Hispanic whites [10]. In another study, one notable finding was that health care providers under-recognized and under-treated cancer-related-symptoms, especially among Hispanic women [7]. In contrast, one study among 26 island PR prostate cancer patients found that at baseline and at end of treatment respectively, the fatigue mean scores of the sample was similar compared to previously published mean fatigue score of the U.S. general population using the same measure [11]. At each of the three time points the PR participants reported lower levels of fatigue as compared to: Canadian prostate cancer men receiving androgen deprivation therapy [19]; US non-anemic cancer patients; and US cancer patients receiving chemotherapy/radiotherapy using the same measure of fatigue [11].

Numerous explanations for the observed differences in self-report of symptoms have been offered. These include level of acculturation, quality of information regarding therapeutic interventions, ability to afford rehabilitative therapies, language barriers, effectiveness of communication with providers, culture, and socio-economic factors [8, 12]. Others have proposed focusing on biological causal pathways to explain the variability in the symptom experience [13–14]. In addition, several authors addressed the importance of taking into consideration that Hispanics are diverse in nationality, exposed to different environmental factors, genetic composition, socio-economic status, cultural practices, health outcomes, and, in the case of migration, patterns among subgroups are different while evaluating treatment outcomes [4, 15].

Despite the variation in symptom reporting that may exist among ethnic groups, it is well documented that Hispanics, including Puerto Ricans, are an understudied population who are underrepresented in clinical trials, especially in symptom research [16–17]. Thus, the proposed study provides a unique opportunity to fill this knowledge gap in symptom science, as well as advance the oncology field, by examining whether there are significant differences in the severity, distress, interference, and frequency of cancer symptoms between island Hispanic PR and mainland non-Hispanic whites.

Methods

Sample

This secondary data analysis used data from two studies. The PR data is part of a descriptive, cross-sectional study that examines the symptom experience of PR oncology patients across the disease trajectory. Data from 109 participants undergoing cancer treatments of the parent study was used. Patients in the parent study were included if they had a diagnosis of cancer; were actively receiving or had received in the past six months at least two or more rounds of therapy; and, were at least 21 years of age or older. Data collection was conducted in June 2016. The recruitment and data collection of study

participants took place at two ambulatory cancer treatment facilities located in San Juan, Puerto Rico.

The non-Hispanic whites data is from a longitudinal study (N= 534) evaluating the effectiveness of the COPE (creativity, optimism, planning and expert information) intervention ameliorating the intensity, frequency, distress, and interference of cancer-treatment related symptoms in adults undergoing cancer treatments. Baseline data from the parent study was used. Setting for the parent study was a National Cancer Institute-designated comprehensive cancer center in the Southeastern United States. Subjects were outpatients who: (a) had a diagnosis of cancer; (b) had started cancer treatment; (c) experienced at least three symptoms regardless of the etiology; (d) were 18 years of age or older; (e) were able to read and understand English; and, (f) signed the Informed Consent.

Measures

Study participants completed the Cancer Symptom Scale (CSS). Participants also recorded demographic and health information on the demographic and clinical data form.

Cancer Symptom Scale—The CSS measures the presence, intensity, distress, frequency and interference of a list of 35 symptoms [18]. The presence of symptoms was defined as a yes or no on each symptom. Then, patients are asked four questions that describe their experience (intensity, distress, frequency and interference) during the past week with the symptoms that they have endorsed. A typical question for the CSS is: “You had “Fatigue; no energy” this week? and How severe or intense Fatigue; no energy has been;” Intensity/ severity was rated on numeric 1 to 10 scales from “least” to “most,” (0 was not used because failing to endorse the symptom was considered to be equivalent to a zero score) and distress, frequency and interference on numeric scales (0 to 10) from “least” to “most.” The reliability and validity were evaluated in a sample of 234 cancer patients. Construct validity was examined by correlating the CSS subscales with the Multidimensional Quality of Life-Cancer scale hypothesizing a weak to moderate correlation. Correlations ($r = -0.34$ to -0.56; $p < .001$) all were at the hypothesized levels, thus, supporting construct validity. In addition, test-retest reliability coefficients for the CSS subscales ranged from $r = 0.74$ to 0.81 in a subset of 15 patients, and Cronbach’s alphas above .70 were reported (N=234) [18].

The Spanish-CSS validity and reliability study was conducted in a sample of 121 PR patients undergoing cancer treatments [19]. Specifically, all the Intensity Items of the Spanish CSS correlated significantly with the matched items on the MD Anderson Symptom Inventory (rho .55–.82, p<.002). In a subgroup of 77 participants, each CSS subscale total scores correlated significantly with the total scores from the Spanish version of the Functional Assessment of Cancer Therapy- General questionnaire. Discriminant validity was demonstrated between those receiving chemotherapy and those who were post treatment (z = −1.9- 2.2, p<.05). The Spanish CSS internal consistency reliability was 0.98.

Demographic Data and Health Form—Demographics included the respondent’s age, gender, ethnicity, and years of education. Information on diagnosis and Eastern Cooperative Oncology Group (ECOG) score was also obtained. The research assistant obtained that information from the participants’ self-report on the demographic form.

Procedures

Parent Studies—The 109 PR patients were accrued from the oncology ambulatory clinics. The principal investigator, who is a native Puerto Rican advanced practice nurse, visited the oncology ambulatory clinics to screen potential participants. Eligible participants were formally asked if they wanted to participate in the study, which involved self-report of questionnaire, demographics and disease characteristics. They were given an information sheet and signed informed consent after they indicated their understanding of the study procedures and willingness to participate. All patients were assured that their decision to participate would not affect their care in any way. After written informed consent was obtained, the principal investigator reviewed the instructions with the study participants and explained how to complete the questionnaires. Then, participants were asked to complete the demographic form and the CSS questionnaire in hard copy during a visit to the clinic.

The non-Hispanic white patients were accrued from the outpatient clinics after being referred to the study. Patients who met study criteria were invited to participate. After consenting, the baseline assessment was conducted in a quiet, private location in the Cancer Center during that regular outpatient visit. This baseline data included the demographic data, the health form, and the symptom data from the CSS.

Procedures for Secondary Analysis—The study was approved by the Institutional Review Boards of University of Puerto Rico Medical Science Campus, Oncology Hospital Dr. Isaac Gonzalez Martinez, a Southeastern academic institution, and of the University of South Florida. De-identified data were collected from both studies and data were cleaned by reviewing it for outliers and missing data. In this secondary data analysis, data from 109 Hispanic PR was matched by age, gender and cancer diagnosis with data from non-Hispanic whites. After matching, statistical analysis was conducted.

Data Analysis

Descriptive statistics including the frequency, percentages, means, and standard deviations (SDs) were performed on demographics and disease characteristics of the sample. In addition, descriptive statistics including the means, standard deviations (SDs), and medians were computed for the CSS. Since histograms showed that the CSS data was not normally distributed, a non-parametric (*Mann-Whitney test*) statistical test was used to evaluate pairwise differences between Hispanic PR and non-Hispanic whites. Specifically, *Mann-Whitney test* was conducted to determine whether the population medians of the CSS between Hispanic PR and non-Hispanic whites differ. The data was analyzed using Statistics Package for Social Sciences SPSS, version 22.0 for windows. All statistical testing used a significance level of 0.05.

Results

Patient Characteristics

The matched sample consisted of 109 participants that had breast 39 (36%), prostate 23 (21%), colorectal 12 (11%), other solid tumors 11 (ie. pituitary; 10%), cervical 6 and lung 6 (5% each), gastrointestinal 4 (ie. gastric; 4%), Head and neck 3 (i.e. laryngeal) and

genitourinary 3 (Bladder, testicular) (3% each) and ovarian 2 (2%) cancers. The PR participants' average age was 61.1 years and for the mainland non-Hispanic Whites was 59.9 years (Table 1). Most of the participants were female (60%). Table 1 also shows that PR participants' average number of total symptoms reported was 10.1 and for the mainland non-Hispanic whites was 13.9.

Severity, distress, interference and frequency of cancer symptoms

Intensity of Symptoms—There were significant pairwise differences on the severity of the symptoms (PR reporting higher scores-more severity) of itching (*U*336.0, $p = .04$), swelling (*U*233.0, $p = .02$), taste change (*U*1170.0, $p = .005$), difficulty sleeping (*U*1880.5, $p = .001$), bloated (*U*271.0, $p = .05$), depression (*U*366.5, $p = .005$), sadness (*U*421.0, $p = .01$), worriedness (*U*552.5, $p = .006$),) and nervousness (*U*220.0, $p = .003$) (Table 2). However, the self-report of severity for the remaining 24 symptoms were similar between groups.

Distress from Symptoms—PR reported significantly higher distress scores for the symptoms of taste change (*U*1074.0, $p = .002$), poor appetite (*U*795.5, $p = .03$), anxiety (*U*561.0 $p = .03$), depression (*U*370.5, $p = .005$), sadness (*U*405.5, $p = .006$), worriedness (*U*598.0, $p = .02$), and nervousness (*U*192.0, $p = .001$); the self-report of distress for the remaining 25 symptoms were similar between groups (Table 2).

Interference caused by Symptoms—Similarly, there were significant differences in that PR reported significantly higher interference scores on the symptoms of rash (*U*59.5, $p = .02$), anxiety (*U*561.0, $p = .03$), depression (*U*333.0, $p = .001$), sadness (*U*396.0, $p = .004$), and nervousness (*U*204.0, $p = .001$) on symptoms interference with daily life; the self-report of interference for the remaining 27 symptoms were similar between groups (Table 2).

Frequency of Symptoms—PR reported significantly higher frequency scores in the perception of frequency of the symptoms of pain (*U*1619.5, $p = .04$), itching (*U*232.5, $p = .03$), dizziness (*U*532.0, $p = .03$), taste change (*U*1214.0, $p = .02$), anxiety (*U*545.0, $p = .02$), sadness (*U*419.5, $p = .009$), and nervousness (*U*185.0, $p = .001$); the self-report of frequency for the remaining 25 symptoms were similar between groups. Non-Hispanic white participants were *not* found to have significantly higher scores on severity, distress, interference, or frequency of any cancer symptoms compared to island Hispanic PR.

Discussion

The significant number of PR emigrating to international territories for economic and other reasons, taking their cancer risk with them, has created new challenges for clinicians to be able to provide culturally competent symptom management [17, 20–21]. For example, research on differences in the severity, distress, interference, and frequency of cancer symptoms between island Hispanic PR and mainland non-Hispanic whites might be a step in identifying a potential source of disparity in treatment outcomes among the PR cancer population. If these symptoms are identified at diagnosis, they might benefit from advanced management of symptoms.

The overall picture emerging from the findings of the present study suggest that our sample of PR patients with mixed cancer diagnoses experienced significant differences in the severity, distress, interference, and frequency of some cancer symptoms. Specifically, PR patients were at increased risk for experiencing worse itching, swelling, taste change, difficulty sleeping, bloated, depression, sadness, worriedness, and nervousness compared to non-Hispanic- whites. Consistent with our findings, differences between Hispanics and non-Hispanics in severity of the symptoms of depression and swelling have been previously reported [8–10]. However, the finding that the severity of pain and fatigue was similar between groups was not consistent with earlier studies. Other studies have found that Hispanics reported worse fatigue and pain, and that fatigue was significantly associated with referral for symptom management [9]. In addition, at first follow-up visit after referral to the supportive care specialist, no significant improvement in pain or fatigue was observed among Hispanics in general when compared to non-Hispanics [9]. Further, PR patients in the current study reported higher distress from the symptoms of taste change, poor appetite, anxiety, depression, sadness, worriedness, and nervousness compared to non-Hispanic whites. These findings highlight the importance of conducting a routine assessment and management of symptoms during the cancer trajectory. An adequate assessment of symptoms during cancer treatments will help to identify at-risk patients for symptom burden so appropriate clinical management of symptoms can be offered early in treatment. Nevertheless, it is an important concern for clinicians that not only can severe and distressing symptoms be exacerbated during treatment and interfere with daily life, but may also lead to a need for dose adjustment or interruption of treatments, non-compliance, and/or abandonment of treatment, and thus decreased survival if symptoms are not addressed [22–25].

Compared to non-Hispanic whites, the symptoms that PR participants reported that interfered the most with their daily lives included rash, anxiety, depression, sadness, and nervousness. Also, the frequency or constancy of occurrence of the symptoms of pain, itching, dizziness, taste change, anxiety, sadness, and nervousness was higher among PR compared to non-Hispanic whites. This finding highlights the importance to educate PR patients to report pain when they are asked, so the symptom of pain does get recognized and treated. This has great implications in the clinical care of individuals with cancer because if pain is not properly assessed and managed, they may result in unnecessary suffering, and may lead to non-compliance, and/or abandonment of treatment [5, 22–23]. Further, there is also evidence that Hispanics are at increased risk for under-treatment of cancer-related symptoms [7, 12]. Indeed, one notable finding of Yoon et al. (2008) study was that Hispanic breast cancer survivors reported more unmet need for symptom management compared non-Hispanic whites [7]. A reason cited by the investigators was deficiencies in physician-patient communication including lack of recognition of how much the symptoms bother patients. Further studies on developing and testing interventions to improve physician-patient communication regarding cancer-therapy related symptoms among Hispanics are granted.

Studies have consistently addressed the importance of assessing the psychological status of cancer patients during the trajectory of their disease [22]. Interestingly, PR reported significant differences in all the symptoms on the CSS that evaluate psychological status (e.g. anxious, depression, sadness, worriedness, and nervousness) compared to non-Hispanic

whites. Similar findings have been reported by others [8–9]. Indeed, these symptoms should be continuously assessed because it is often a first sign to health care providers that patients are not coping well with their treatment-related symptoms. Nevertheless, researchers have proposed the need to appropriately educate Hispanics and their family caregivers about cancer, availability of psychological support services, and to conduct individual or group therapy for symptom management strategies/in order to decrease misperceptions about cancer [12]. Additional longitudinal studies on the trajectory of symptoms during and beyond cancer treatments may provide helpful information on when Hispanics are at increased risk for psychological symptoms in order to deliver target interventions. Perhaps an early referral to psychologist evaluation, monitoring, and counseling might be helpful in evaluating those symptoms.

Specific reasons why PR patients undergoing treatment are at increased risk of experiencing significant differences in the perception of severity, distress, interference, and frequency of several cancer symptoms compared to non-Hispanics white are unclear. Some factors that have been proposed to explain those differences include psychological, societal, hormonal, and biological factors (e.g. genetic, admixture) [3, 15]. For example, previous research among the PR population has found heterogeneity-related differences in the field of pharmacogenetics [26]. Ruanno et al. (2009) suggested that PR admixture, a type of gene flow among human populations that may occur when individuals from two or more parental populations form a new hybrid population, may play a role in explaining disparities in treatment outcomes. Much remains to be investigated, including whether physiological evidence can explain the variability of symptom reporting between ethnic groups.

Limitations of this study include the relatively modest sample size with heterogeneity in cancer diagnoses, type of treatments, and time points of treatment. A longitudinal study with a larger sample would have permitted evaluation of changes in symptoms over time. Another limitation was the involuntary error that the Spanish version did not include items on “feel drowsy,” neither “difficulty swallowing,” nor distress, interference, and frequency of the symptom of difficulty sleeping,” The symptoms of “feel drowsy” and “difficulty sleeping” ranked as second and third most common in the original study among non-Hispanics whites. Future research should examine the latter three symptoms in the Hispanic PR population. Finally, our sample was limited to two sites in Puerto Rico; therefore, the findings may not be representative of the entire cancer population in Puerto Rico, nor of PR cancer patients living outside of Puerto Rico.

Clinical Implications

Studying differences in the severity, distress, interference, and frequency of cancer-related symptoms between island Hispanic PR and mainland non-Hispanic whites is an important endeavor in enhancing health care professionals’ understanding of the relatively higher risk for poor patient-reported outcomes among Hispanics and other minority groups. In our secondary data analysis, there were significant differences on some symptoms including that PR may be at particular risk for pain, difficulty sleeping, anxiety, sadness, nervousness and other cancer-related symptoms compared to non-Hispanic whites. These findings have potential clinical implications. Routine assessment of symptoms is an important prevention

method that facilitates patients' early reporting of symptoms at potentially more treatable stages. Symptoms cannot be managed if clinicians do not know the extent of them. Thus, these study findings emphasize the importance of regular and complete symptom assessments.

These findings also suggest the need for clinicians to continuously educate and clarify health information to Puerto Rican cancer patients and caregivers about cancer-related symptom and the negative consequences of underreporting and under treatment of cancer-related symptoms on their QOL [12, 27]. Delaying and or underreporting of symptoms may be partially explained by factors such as health literacy, language barriers, as well as by cultural health beliefs (e.g. fear of addiction to opioids; it is OK to do nothing for symptom management, symptoms are expected and non-treatable) [3, 28]. In addition, given the evidence that non-pharmacological interventions (e.g. exercise, telephone –based interactive voice response pain intervention, music, cognitive behavioral, psychoeducational, online support groups) may have a beneficial effect on ameliorating cancer-related symptoms of oncology patients receiving active treatment [29–33], future studies should include the development of culturally tailored interventions and/or exploring the efficacy of these interventions in improving those symptoms among Puerto Ricans with cancer. It also calls for clinicians to utilize the guidelines from the National Comprehensive Cancer Network for the assessment and treatment of symptoms such as fatigue [34].

Conclusion

Symptom research has helped improve understanding of the morbidity experienced by cancer patients. Although there is increasing evidence about ethnic differences in incidence and outcomes of cancer, researchers have not fully explored differences in cancer symptoms among those of ethnic minorities including the PR population. Findings from this study suggest that Puerto Ricans are at risk for experiencing symptom management inequities. However, it is not clear whether the PR patients' symptoms are not being addressed or if they are just perceiving them to be more severe than non-Hispanic white patients. Nonetheless, exploring differences in the perception of severity, distress, interference, and frequency of cancer symptoms of cancer symptoms among ethnically diverse populations is an emerging research priority in order to reduce and eliminate health disparities in treatment outcomes. Future research is needed to continue evaluating the prevalence of symptom management inequalities in order to identify therapeutic targets and improve HRQOL of PR patients and families. Puerto Rican patients undergoing cancer treatments are likely to benefit from interventions to ameliorate cancer-related symptoms.

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Table 1

Means and SD of Age and Years of Education, Total Number of Symptoms, and ECOG (Non-Hispanic Whites N = 109, Hispanic Puerto Ricans N = 109)

Variable	Non-Hispanic whites N = 109	Hispanic Puerto Ricans N = 109
	Mean (SD)	Mean (SD)
Age	61.1 (11.8)	59.9 (10.9)
Years of Education	12.5 (4.5)	14.7 (2.6)
Total # of symptoms	13.9 (6.1)	10.1 (7.1)
ECOG	1.0 (0.8)	0.71 (.77)

Table 2

Summary of *Mann-Whitney test* for the items of the CSS (Non-Hispanic Whites N = 109, Hispanic Puerto Ricans N = 109)

Symptom	Non-Hispanics	Hispanic PR	Mann-Whitney	
	Median	***Median***	***U***	***p-value***
Fatigue				
Intensity	6.0	6.0	3633.5	.65
Distress	6.0	6.0	3551.0	.48
Interference	6.0	6.5	3721.5	.85
Frequency	6.0	5.0	3531.5	.45
Pain				
Intensity	6.0	6.0	1967.5	.70
Distress	6.0	5.0	2020.5	.90
Interference	6.0	6.0	1924.5	.56
Frequency	7.0	8.0	1619.5	.04*
Numb/feet				
Intensity	6.0	6.0	824.0	.36
Distress	5.0	6.5	771.0	.17
Interference	4.0	6.5	786.5	.21
Frequency	6.0	7.0	804.5	.27
Numb/hand				
Intensity	5.0	6.0	671.5	.38
Distress	5.0	6.0	654.5	.30
Interference	3.0	5.0	603.5	.12
Frequency	5.0	7.0	582.5	.11
Itching				
Intensity	4.0	6.0	336.0	.04*
Distress	4.0	6.0	410.5	.29
Interference	2.0	5.0	410.5	.29
Frequency	4.0	5.0	323.5	.03*
Dizziness				
Intensity	5.0	5.0	712.0	.44
Distress	5.0	6.0	669.5	.33
Interference	5.0	5.0	616.0	.20
Frequency	5.0	7.0	532.0	.03*
Swelling				
Intensity	4.0	7.0	233.0	.02*

Symptom	Non-Hispanics	Hispanic PR	Mann-Whitney	
	Median	*Median*	*U*	*p-value*
Distress	3.5	7.0	299.5	.24
Interference	3.0	6.0	259.5	.06
Frequency	4.0	8.0	274.5	.11
Nausea				
Intensity	5.0	5.0	925.5	.90
Distress	5.0	5.0	939.5	.50
Interference	5.0	4.0	848.5	.79
Frequency	6.0	5.0	936.5	.42
Vomiting				
Intensity	4.0	6.0	199.0	.32
Distress	3.0	6.0	213.5	.50
Interference	3.0	3.0	230.5	.79
Frequency	3.0	4.0	207.5	.42
Hair loss				
Intensity	9.0	10.0	1023.0	.86
Distress	6.0	3.0	798.0	.08
Interference	4.0	2.0	878.5	.27
Frequency	8.0	10.0	804.0	.15
Dry mouth				
Intensity	6.0	5.5	1836.5	.67
Distress	5.0	6.0	1755.5	.41
Interference	3.5	5.0	1785.5	.50
Frequency	7.0	7.0	1759.5	.50
Taste Change				
Intensity	6.0	8.0	1170.0	.005*
Distress	5.0	9.5	1074.0	.002*
Interference	5.0	7.0	1433.0	.19
Frequency	7.0	9.5	1214.0	.02*
Poor appetite				
Intensity	6.0	7.0	879.0	.12
Distress	5.0	7.5	795.5	.03*
Interference	5.0	6.5	969.5	.40
Frequency	7.0	7.5	862.0	.18
Weight loss				
Intensity	5.0	6.5	327.5	.21
Distress	3.0	4.5	374.0	.60
Interference	3.0	1.5	384.0	.72

Symptom	Non-Hispanics	Hispanic PR	Mann-Whitney	
	Median	*Median*	*U*	*p-value*
Frequency	5.0	6.0	298.5	.12
Difficulty Sleeping				
Intensity	2.5	7.0	1880.5	.001**
SOB				
Intensity	5.5	5.0	341.5	.53
Distress	6.0	5.0	349.5	.62
Interference	5.0	5.0	353.5	.67
Frequency	5.0	5.0	377.5	.97
Cough				
Intensity	4.5	4.0	304.5	.56
Distress	3.5	5.0	316.0	.71
Interference	3.5	3.5	298.0	.48
Frequency	4.0	5.5	268.5	.29
Constipation				
Intensity	6.0	6.0	1106.0	.62
Distress	6.0	6.0	1069.0	.45
Interference	5.0	5.0	1094.0	.69
Frequency	5.0	7.0	1030.0	.38
Diarrhea				
Intensity	6.0	4.0	491.5	.38
Distress	5.0	5.0	549.0	.89
Interference	5.0	5.0	461.5	.21
Frequency	5.0	4.0	483.0	.33
Sweats				
Intensity	6.0	7.0	549.5	.17
Distress	5.0	6.0	556.0	.19
Interference	3.0	6.0	565.0	.23
Frequency	5.0	7.0	539.5	.14
Bloated				
Intensity	5.5	8.5	271.0	.05*
Distress	6.0	8.6	273.5	.07
Interference	5.0	8.0	267.5	.06
Frequency	6.0	9.6	270.0	.06
Sore mouth				
Intensity	6.0	6.0	212.5	.27
Distress	5.0	6.0	243.0	.87
Interference	6.0	6.0	245.5	.92
Frequency	6.0	6.0	233.5	.70

Symptom	Non-Hispanics	Hispanic PR	Mann-Whitney	
	Median	*Median*	*U*	*p-value*
Urination problems				
Intensity	7.0	7.0	306.5	.33
Distress	7.0	7.0	339.0	.68
Interference	7.0	7.0	339.0	.68
Frequency	8.5	8.0	324.0	.38
Skin				
Intensity	5.0	6.0	359.0	.26
Distress	4.5	5.0	390.5	.69
Interference	3.5	3.5	412.0	.59
Frequency	6.0	7.5	349.0	.19
Rash				
Intensity	6.0	4.5	98.5	.39
Distress	5.0	3.5	72.0	.06
Interference	5.0	1.0	59.5	.02*
Frequency	5.0	3.5	101.5	.31
Anxious				
Intensity	6.0	7.0	613.5	.09
Distress	6.0	7.0	561.0	.03*
Interference	5.0	8.0	561.0	.03*
Frequency	5.0	8.0	545.0	.02*
Depressed				
Intensity	6.0	8.0	366.5	.005*
Distress	6.0	8.0	370.5	.005*
Interference	5.0	8.0	333.0	.001**
Frequency	6.0	7.0	444.5	.07
Sad				
Intensity	6.0	8.0	421.0	.01*
Distress	5.0	8.0	405.5	.006*
Interference	5.0	8.0	396.0	.004*
Frequency	5.0	8.0	419.5	.009*
Sex problems				
Intensity	9.0	7.0	280.5	.33
Distress	8.0	6.0	277.5	.31
Interference	9.0	5.0	239.5	.09
Frequency	9.5	7.0	325.0	.75
Concentrate				

Symptom	Non-Hispanics	Hispanic PR	Mann-Whitney	
	Median	*Median*	*U*	*p-value*
Intensity	5.0	6.0	465.0	.42
Distress	5.0	6.0	394.5	.15
Interference	5.0	6.0	416.5	.15
Frequency	5.0	6.0	371.5	.08
Worry				
Intensity	7.0	8.0	552.5	.006*
Distress	6.0	8.0	598.0	.02*
Interference	5.0	8.0	664.0	.09
Frequency	5.0	8.0	627.0	.07
Nervous				
Intensity	5.0	10.0	220.0	.003*
Distress	5.0	10.0	192.0	.001**
Interference	4.0	9.0	204.0	.001**
Frequency	5.0	10.0	185.0	.001**
Irritable				
Intensity	5.0	6.5	345.5	.17
Distress	5.0	6.5	349.5	.19
Interference	4.0	6.0	407.0	.63
Frequency	5.0	6.5	358.0	.24

Significance values

* $p \leq 0.05$;

** $p \leq 0.001$