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MENTAL HEALTH DISPARITIES BETWEEN HISPANIC AND NON-HISPANIC PARENTS OF CHILDHOOD CANCER SURVIVORS

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Abstract

Background—Parents of childhood cancer survivors (CCS) experience considerable distress related to their child's cancer. However, little is known about cultural variation in this experience. We examine parental distress, specifically symptoms of posttraumatic stress (PTSS) and depression, comparing Hispanic and non-Hispanic parents of CCS.

Procedure—79 Hispanic and 60 non-Hispanic parents of CCS (currently aged 14–25, off treatment 2 years) completed questionnaires assessing demographics, depression, PTSS, perceived stress, and child's health status/quality of life (QOL). T-tests and chi-square statistics were used to compare differences in demographic characteristics between Hispanic and non-Hispanic parents and multivariable regression was used to determine independent risk factors associated with parental PTSS and depression.

Results—Hispanic parents were significantly younger, had less education, lower incomes and reported significantly more PTSS and depressive symptoms than non-Hispanic parents (all p-values < 0.0001). Among Hispanic parents, foreign birthplace predicted higher PTSS after controlling for other factors (p < 0.001). Hispanic parents, regardless of birthplace, reported more depressive symptoms than non-Hispanic parents (US-born, p < 0.05; foreign-born, p < 0.01). For PTSS and depression, there were positive relationships with parental stress and negative relationships with the child's psychosocial QOL. Hispanic and non-Hispanic CCS did not differ significantly on disease and treatment factors or health-related QOL.

Conclusions—Hispanic parents of CCS may be at greater risk for poorer mental health outcomes. Ethnic-specific factors (e.g., acculturation, immigration status and previous trauma) may influence parents' responses and adjustment to their child's cancer. Research is needed to determine how to meet the needs of the most vulnerable parents.

INTRODUCTION

Childhood cancer affects all family members, and parents of childhood cancer survivors (CCS) experience more emotional distress, including depression, anxiety, and post-traumatic stress symptoms (PTSS), than patients [1–3]. Even when their child is cancer free and off treatment, parents continue to worry about relapses and treatment-related late-effects, including second malignancies[4,5]. Clinically significant levels of post-traumatic stress among parents of CCS range from 10–40%[6,7]. In an extensive review, Bruce identified PTSS risk factors for parents of CCS, including female gender, perception of cancer and treatment severity, poor social support, emotional-focused coping and prior trauma[8]. However, limited information was available for minorities and findings for education and socioeconomic status were inconsistent. This knowledge gap is critical because of the approximately 12,400 children (0–19 years) diagnosed with cancer each year in the United States (US), 25% are Hispanic[9]. In Los Angeles, California, nearly 60% of children diagnosed with cancer are Hispanic[10].

In terms of mental health among the broader Hispanic population, a *Hispanic Paradox* has been documented that finds despite lower socioeconomic status, depression rates among Hispanics are typically lower than in the Anglo community[11]. Other findings indicate that lower acculturation (i.e., greater affiliation with Hispanic community and its values) serves a protective function, buffering against depression, and that rates of depression increase with years spent in the US.

Research with mothers of children newly diagnosed with cancer demonstrated that Spanish-speaking mothers reported significantly more symptoms of PTSS and depression relative to English-speaking counterparts[12]. Only PTSS differences persisted after controlling for maternal education. However, language, education, immigration status, and acculturation among Hispanics may actively affect parenting survivors of childhood cancer, since parents of CCS continue to interface with healthcare systems, face complex medical explanations and survivorship care plans, and must help their children transition to “normal” life, including independent functioning as an adult.

The purpose of this study was to compare mental health outcomes in Hispanic and non-Hispanic parents of CCS. We used parent data from a larger project on long-term follow-up practices among Southern California CCS. We investigated PTSS and depression in Hispanic and non-Hispanic parents, taking into account immigration and acculturation factors. We hypothesized that Hispanic parents would report higher levels of distress than non-Hispanic parents, with less acculturated parents reporting the most distress.

METHODS

Patients diagnosed with cancer at age 18 or younger at Children’s Hospital Los Angeles (CHLA) or Miller Children’s Hospital in Long Beach (LBMMC) between 2000–2007, and who were 14–25 years old in 2009, were selected from the Los Angeles Cancer Surveillance Program (CSP), the Surveillance Epidemiology and End Results (SEER) cancer registry for

Los Angeles County. Parents of all patients were eligible for the study. Hodgkin's patients and parents were excluded because they were eligible for another registry study.

Prior to contacting the patient, we sent a letter to the physician of record to determine whether there was any objection to us contacting the patient. If there was none, study materials were sent to prospective participants. For minor patients, materials were mailed to the parent inviting both parent and patient to participate. Written or verbal parental consent and patient verbal assent were requested. For adult patients, materials were mailed directly to patients and then to parents if the patient provided permission.

Subjects with Spanish surnames received materials in English and Spanish. Surveys could be completed on paper, on-line, in person, or over the telephone. Research staff was bilingual. Participants received a \$20 gift card and entry into a lottery (\$300 prize value). Study procedures were approved by (or received appropriate exemption from) the California Committee for Protection of Human Subjects, California Cancer Registry and the Institutional Review Boards at the University of Southern California, CHLA and LBMMC.

Parent Survey

1) Parent Information

Depression—The Center for Epidemiological Studies Depression Scale (CES-D) assessed depressive symptoms[13]. Parents endorsed frequency of symptoms during the previous week on a four-point scale ('rarely/none of the time' – 'most or all of the time') to generate a total score. Higher scores signify elevated levels of depressive symptoms. A cut-off score of 16 indicates probable diagnosis of clinically significant depression[13]. The CES-D English and Spanish versions yield high internal consistency, adequate test-retest reliability and good construct validity in clinical and community samples[13]. Cronbach's alpha in this sample was 0.84.

PTSS—The 22-item Impact of Event Scale-Revised (IES-R, English and Spanish versions) assessed PTSS clusters of intrusion, avoidance and hyper arousal[14,15]. Parents rated distress from each symptom in the past week with respect to their child's cancer using a five-point scale ('not at all' --'extremely'). Higher scores indicate more symptoms. A score of 33 indicates probable diagnosis of PTSD[6,15,16]. The IES-R has been used with parents of children with cancer and demonstrates good reliability and validity. Cronbach's alphas for this sample ranged from 0.92–0.97.

Perceived Stress Scale—The 4-item version of the Perceived Stress Scale is a global measure of stress measuring the degree to which situations in one's life are appraised as stressful during the last month[17]. Items are rated on a five-point scale ('never' –'very often') and summed for a total score. Higher scores indicate more stress. Adequate reliability and test-retest validity have been established for this brief version[17]. For this study, Cronbach's alpha was 0.69.

Social support—A single question used in previous studies assessed parents' social support (i.e., How many people do you have that you can count on for help when you need them).

Demographic information—Parents provided information on their age, race/ethnicity, birthplace, marital status, education, income, and health insurance. We categorized parents' ethnicity as non-Hispanic, US-born Hispanic or foreign-born Hispanic.

Acculturation—The Acculturation Rating Scale for Mexican Americans-II (ARSMA-II), administered only to Hispanic parents, is a self-report bilingual English/Spanish measure with two subscale scores: the Anglo Orientation Scale, and the Mexican Orientation Scale[18]. The ARSMA-II utilizes a 5-point scale ('not at all' – 'almost always/extremely often'), with higher scores indicating higher orientation. We used a brief version (13 items) of the original measure. Brief versions of the ARSMA-II have been utilized with children, adolescents, and adults, and demonstrate adequate to excellent internal consistency[19]. In this study, Cronbach alphas for Anglo and Mexican orientation scales were 0.95 and 0.93, respectively.

2) Parent's Perception of Child's Health

The 23-item PedsQL™ 4.0 Generic Core Scales (English and Spanish versions) assessed parent perceptions of their child's health-related QOL[20,21]. Parents rated how problematic each item was for their child in the past month ('never a problem' -- 'almost always a problem'). Responses are reverse-scored and linearly transformed to a 0–100 scale. Higher scores represent better health-related QOL. Physical Health and Psychosocial Health Summary Scores are generated and have been tested with pediatric oncology patients, demonstrating strong internal consistency/test-retest reliability, and differentiating between cancer patients and healthy controls[21]. In this sample, Cronbach's alphas for the Physical and Psychosocial Summary Scores were 0.91 and 0.93, respectively.

We developed several questions to assess parents' perception of their child's current and risk of future health problems and a single question to assess difficulty in communicating with their child's doctor because of language differences.

3) Child's Demographic and Clinical Information

The CSP provided child's diagnosis, diagnosis date, birthdate, sex, and socioeconomic status (SES) based on residential census tract. We used the Intensity of Treatment Rating Scale 2.0 to estimate each child's cancer treatment exposures[22]. Ratings were based on cancer registry/medical chart review, including cancer diagnosis, stage at diagnosis, treatment modalities and relapse history. Treatment intensity was categorized as 1=least intensive (e.g., surgery only), 2=moderately intensive (e.g., chemotherapy or radiation), 3=very intensive (e.g., >2 treatment modalities), 4=most intensive (e.g., relapse protocols).

Statistical Analysis

We used t-tests and chi-square statistics to test for differences between Hispanic and non-Hispanic parents. ANOVA and Pearson correlations were used to identify significant

correlates of parents' depressive symptoms and PTSS. Variables demonstrating a bivariate association with CES-D or IES-R ($p < 0.20$) were tested in multivariable models. Step-wise backward elimination regression procedures were used to identify significant predictors of CES-D and PTSS ($p < 0.05$). To examine the relationship between acculturation and PTSS and depression among Hispanic parents, we added the ARSMA-II subscales to the final regression models, adjusting for significant covariates. Analyses were conducted using SAS statistical software (Version 9.2) (SAS Institute; Cary, NC).

RESULTS

Study Sample

The CSP identified 470 eligible CCS. Of these, 235 CCS (50%) and 174 parents (37%) participated in the study. Among the 235 CCS, parent participation was 74%. Non-participation was due to loss to follow-up ($n=87$), adult CCS declining parent contact ($n=48$) and passive/active refusals ($n=169$). Participants' children were younger than non-participants ($p < 0.05$), likely due to older survivors refusing to have parents contacted. Participation rates were similar for Hispanic and non-Hispanic parents. Participants and non-participants did not differ according to child's sex, age diagnosed, cancer type, treatment intensity, years since diagnosis, census tract SES, or ethnicity/race. Data from 139 of the 174 parents were used in these analyses, excluding 35 whose children had been off therapy less than two years.

Parent Demographics—Eighty-seven percent of parent participants were mothers. Relative to non-Hispanic parents, Hispanic parents were younger, less educated, had lower incomes, and were more likely to be foreign-born and uninsured (Table I). Notably, 54% reported less than an eighth grade education compared to 5% for non-Hispanic parents, and only 17% reported household income greater than \$35,000, compared to 65% for non-Hispanic parents.

Child's Characteristics and Parent's Assessment of Child's Disease—Most CCS were 18 years or over, diagnosed between age 10–14, and were, on average, eight years post-diagnosis (Table II). Eighty percent live with their parents. Disease/treatment factors did not differ significantly between Hispanic and non-Hispanic CCS (Table II). Hispanic and non-Hispanic parents did not differ significantly in their concern about their child's future health, chances of developing a late effect, or rating their child's health-related QOL.

PTSS—Hispanic parents reported significantly more PTSS than non-Hispanic parents (Table III). Significant differences were present for intrusion, avoidance, and hyper-arousal subscales, with 55% of Hispanic parents reporting symptoms suggestive of PTSD, compared to 23% of non-Hispanic parents. Foreign-born Hispanic parents had significantly greater PTSS compared to non-Hispanic parents. Risk was not elevated for US-born Hispanic parents. Other variables associated with PTSS included parent's education, income, insurance coverage, social support, perceived stress, and child's PedsQL Physical and Psychosocial Summary Scores (Table IV). In multivariable analyses, PTSS was significantly

higher for foreign-born Hispanic parents, lower education, higher perceived stress, higher treatment intensity and lower assessment of child's psychosocial functioning (Table V).

Depression—Regardless of birthplace, CES-D scores were significantly higher for Hispanic than non-Hispanic parents, with depression rates nearly twice as high among Hispanic parents (48% vs. 25%, $p=0.002$) (Table III). Similar to what was found for PTSS, several other variables were related to parent's depression including parent's education, income, age, marital status, health insurance, social support, perceived stress and the child's PedsQL summary scores (Table IV). The only factors remaining significant in the multivariable model included Hispanic (US-born and foreign-born), lower incomes, higher perceived stress and lower ratings of child's psychosocial functioning.

Acculturation among Hispanics—Foreign-born Hispanic parents had higher Mexican orientation scores, lower Anglo orientation scores ($p<0.0001$), and were more likely to speak Spanish. US-born parents were more likely bilingual or English speaking ($p=0.02$) than foreign-born Hispanic parents. Lower Anglo orientation was associated with higher PTSS ($p=0.05$) but not with depression.

Discussion

This study is the first to compare mental health outcomes among Hispanic and non-Hispanic parents of CCS diagnosed and/or treated at two hospitals in Los Angeles County. For non-Hispanic parents, results are consistent with previous survivorship studies, finding significant PTSS among 23% and depression among 25% of parents[1,23,24]. However, rates for foreign-born Hispanic parents were significantly higher, with 62% reporting significant PTSS and 51% reporting significant depressive symptoms. Foreign-born Hispanic parents were more than twice as likely to be at risk for a dual diagnosis of PTSD and depression as US-born Hispanic and non-Hispanic parents.

Socio-demographic differences between Hispanic and non-Hispanic parents were striking, mirroring statistics for California at large[25]. Hispanic parents reported less education, lower income and less insurance, all of which are considered proxy indicators for access to healthcare, and are linked to health outcomes[26]. Health disparity studies often find that ethnicity is no longer a significant factor after controlling for socio-demographic differences[11]. In this study, however, parents' ethnicity and immigration status remained a significant risk factor for distress and depression even after adjusting for sizeable demographic differences.

Past research in the general population has found that greater Hispanic orientation serves a protective function for Hispanic mental health, potentially due to familism and social support[27]. However, a qualitative CCS study found that Hispanic parents felt isolated from extended family and community, and reported hesitation to discuss their child's cancer experience with family/friends[28]. Instead, they obtained support and information from parents with similar experiences (e.g., other parents on the oncology unit). In contrast, non-Hispanic parents obtained support/information through their existing social networks. Belonging to social networks and comfort expressing cancer-related thoughts/feelings to

friends and family plays a key role in mothers' long-term adjustment[29]. The change in family dynamics for Hispanic parents may limit opportunities to process emotions and obtain assistance, thereby creating a barrier to healthcare for both Hispanic CCS and parents[28,30].

Our finding of higher PTSS among Hispanics is consistent with previous studies of trauma-exposed populations, which have shown that Hispanic adults experience higher distress than non-Hispanic whites[31]. Galea and colleagues identified Hispanic ethnicity as an independent risk factor for PTSD and depressive symptoms among civilians exposed to the 9/11 terrorist attacks[32]. Similar findings have been reported for Vietnam War veterans, survivors of natural disasters and acute medical trauma[33–35]. Pole suggests high levels of persistent distress among Hispanic adults may result from ethno-cultural differences in post-trauma coping and access to care[31].

Interestingly, we found birthplace and acculturation predicted PTSS but not depression. Foreign-born Hispanic parents reported significantly more PTSS than US-born parents. While not previously reported in the US, a Swedish CCS study found increased PTSS among immigrant parents[3]. In the general population, a positive trauma history increases PTSS risk[36]. While not a consistent finding among CCS parents[8], we recommend that future PTSS studies assess previous trauma exposures and immigration-related stress.

Acculturation can also contribute to immigrants' PTSS risk. Traditional Hispanic coping styles (e.g., avoidance, dissociation), more prevalent among recent, less acculturated immigrants, are associated with poor adjustment and PTSS [31,37]. In a study of Hispanic adults, Spanish language (an indicator of low acculturation) predicted avoidance and hyper-arousal[38]. In this current study, all US-born Hispanic parents spoke English very often/ almost always compared to 26% of foreign-born Hispanic parents ($p<0.0001$). This language disparity impacted parents' caregiver role, as 41% of foreign-born parents reported some language barrier-related difficulty in understanding their child's doctors, compared to 13% of US-born Hispanic parents ($p=0.04$). Other immigrant-related factors, including parent/child citizen status (legal vs. illegal) and family structure/resources, need assessment and may represent targets for psychosocial intervention

In contrast to PTSS, Hispanic adults in the US reportedly have lower depression rates than non-Hispanics[31]. However, we found that Hispanic parents of CCS have a higher depression rate than non-Hispanics. Depression and PTSS are unique although inter-related constructs[16]. We found a strong relationship between PTSS and depression ($r=0.65$), so high depression rates may reflect parents' high rate of PTSS. Longitudinal studies may clarify the trajectory/interrelationship between PTSS and depression.

Despite significant demographic differences between Hispanic and non-Hispanic parents, no differences were found for perceived stress or parent's appraisal of child's QOL. While both constructs were associated with PTSS and depression, they are amenable to psychosocial intervention. This study surveyed parents after the child had completed therapy, when parents may have limited access to mental health services. When treatment ends and the child's follow-up visits become infrequent, hospital-based supportive care services are less

available to parents. While standard practice in pediatric oncology prepares patients and parents for transition to survivorship care, it is likewise important to assess parents' needs for transitional services including mental health interventions and referrals[28]. Persistent untreated parental distress can impact children's mental health/adjustment, parents' health, and their ability to access services for their child[3,39]. A family-centered approach to survivorship recognizes the long-lasting impact of cancer on the family and has been proposed as a model of care[28,40].

Limitations

This is a cross sectional study and causal conclusions cannot be drawn. Nearly all Hispanic parents were from Mexico or Central America, so results may not be generalized to other US Hispanic populations. Neither trauma histories nor immigration stress were assessed, so their impact on parents' PTSS was not evaluated. Immigration data were limited to parent's birthplace. Age at immigration and current immigration status (legal vs. illegal) would strengthen future projects. Primarily mothers participated, limiting examination of gender-related cultural differences.

In summary, Hispanic parents of CCS reported significantly higher distress levels than non-Hispanic parents, with foreign-born Hispanic parents reporting most distress. These findings have public health implications since parental mental health directly affects child's mental health and family functioning[39]. Furthermore, Hispanic adults in the US face barriers in accessing mental health services, including insurance, language, and cultural stigma of seeking mental health services[11,41]. Additional research is warranted to better understand the influence of ethnic-specific factors on parents' adjustment to their child's cancer diagnosis and transition to survivorship.

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Table 1

Parent characteristics by Hispanic ethnicity

Selected Characteristics	Parent's Ethnicity		Hispanic vs. Non-Hispanic
	Hispanic	Non-Hispanic	p-value
	N(%)	N(%)	
Total	79(100%)	60(100%)	
Parent participating			0.67
Mother	70(90%)	50(85%)	
Father	9(11%)	9(15%)	
Education			<0.0001
Grade school (1–8 years)	43(54%)	3(5%)	
Some HS	14(18%)	8(14%)	
HS graduate/GED	17(22%)	20(34%)	
Some college/AA	3(4%)	13(22%)	
College graduate/Graduate school	2(3%)	14(24%)	
Income			<0.0001
<10K	8(13%)	6(12%)	
10–35K	43(70%)	12(23%)	
35+	10(17%)	34(65%)	
Birthplace			<0.0001
US-born	18(23%)	43(72%)	
Foreign-born	61(77%)	15(25%)	
Age (Mean/SD)	46.77(6.19)	51.79(6.61)	<0.0001
Marital status			0.07
Single	7(9%)	11(18%)	
Married	59(75%)	38(63%)	
Other (divorced/widowed)	13(16%)	8(13%)	
Health insurance			0.001
Yes	48(61%)	53(88%)	
No	27(34%)	5(8%)	
Social support			0.03
None	11(14%)	6(10%)	
1–2	37(47%)	16(27%)	
3	30(38%)	35(58%)	
Perceived stress (Mean/SD)	2.47(0.88)	2.28(0.87)	0.23
Depression (Mean/SD)	17.59(12.18)	11.24(11.08)	0.002
PTSS (Mean/SD)	34.29(23.79)	15.89(20.80)	<0.0001

NOTE: Percentage values summing <100 indicate missing data in that domain

Table 2

Child's demographic and clinical characteristics by parent's ethnicity

Selected Characteristics	Parent's Ethnicity		Hispanic vs. Non-Hispanic
	Hispanic	Non-Hispanic	p-value
	N(%)	N(%)	
Total	79(100%)	60(100%)	
PedsQL™ Physical Summary Scale (Mean/SD) (parent proxy)	76.12(25.70)	75.44(23.57)	0.88
PedsQL™ Psychosocial Summary Scale (Mean/SD) (parent proxy)	75.57(22.33)	73.92(18.73)	0.86
Does child have cancer-related health problems?			
Yes	33(42%)	34(57%)	0.17
No	46(57%)	26(43%)	
Describe child's main chronic health problem			0.44
Mild	49(62%)	32(53%)	
Moderate	21(27%)	23(38%)	
Severe	2(3%)	2(3%)	
Concern over child's health			0.31
Not very	4(5%)	1(2%)	
Little bit/moderately	19(24%)	16(27%)	
Quite a bit/extremely	53(67%)	43(72%)	
Chance child might develop cancer-related health problem?			0.15
Not very	12(15%)	12(20%)	
Little bit/moderately	36(46%)	23(38%)	
Quite a bit/extremely	26(33%)	25(42%)	
Child's Sex			0.48
Male	36(46%)	31(52%)	
Female	43(54%)	29(48%)	
Current age			0.72
15–17 years	14(18%)	12(20%)	
18–20 years	37(47%)	24(40%)	
21–26 years	28(35%)	24(40%)	
Cancer site			0.65
Leukemia	23(29%)	14(23%)	
CNS	10(13%)	13(22%)	
Bone	6(8%)	3(5%)	
Lymphoma	16(20%)	12(20%)	
Other	24(30%)	18(30%)	

Selected Characteristics	Parent's Ethnicity	Hispanic vs. Non-Hispanic	
	Hispanic	Non-Hispanic	p-value
	N(%)	N(%)	
Age diagnosed			0.29
6–9 years	20(25%)	9(15%)	
10–14 years	45(57%)	41(68%)	
15–19 years	14(18%)	10(17%)	
Treatment intensity			0.56
Least 1	6(8%)	7(12%)	
2	29(37%)	17(28%)	
3	37(47%)	31(52%)	
Most 4	7(9%)	4(7%)	
Years from diagnosis (Mean/SD)	8.03(2.10)	8.34(1.76)	0.36
Treatment center			0.24
CHLA	69(87%)	48(80%)	
LBMHC	10(13%)	12(20%)	

NOTE: Percentage values summing <100 indicate missing data in that domain

Table 3

Parental PTSS and depression by Hispanic Ethnicity and Birthplace

	Total sample N=139	Non-Hispanic parents N=60	All Hispanic parents N=79	US-born Hispanic parents (b) N=18	Foreign born Hispanic parents(c) N=61	Significance
IES [mean(sd)]						
PTSS	24.4(24.3)	15.9 (20.8)	34.3 (23.8)	13.6(14.1)	39.8(22.8)	a,b<c ^c
Avoidance	10.0(9.2)	5.9 (7.7)	13.2 (9.1)	5.1(6.8)	15.3(8.4)	a,b<c ^c
Intrusion	10.0(9.1)	6.2 (7.9)	12.9 (8.9)	5.3(5.3)	14.9(8.6)	a,b<c ^c
Hyperarousal	6.3(7.0)	3.8 (6.1)	8.2 (7.1)	3.1(4.4)	9.6(7.1)	a,b<c ^c
CES-D [mean(sd)]	14.8(12.1)	11.2(11.1)	17.6 (12.2)	15.8(13.4)	18.1(11.9)	a<c ^b
Prevalence [N(%)]						
PTSD *	55(41%)	13(23%)	42 (55%)	4(24%)	38(62%)	a,b<c ^b
Depression **	53(40%)	15(25%)	38 (48%)	7(41%)	31(51%)	a<c ^b
PTSD and Depression	42(31%)	12(20%)	30 (38%)	3(18%)	27(44%)	a<c ^b

^a p<0.05,

^b p<0.011,

^c p<0.0001

* PTSD=IES-R 33

** depression=CES-D 16

PTSS=Posttraumatic stress symptoms

IES=Impact of Event Scale

CES-D=Center for Epidemiologic Studies-Depression Scale

PTSD=Posttraumatic Stress Disorder

Table 4

Factors associated with PTSS and/or Depression in bivariate analysis

	PTSS		Depression	
	Mean(SD)	p-value *	Mean(SD)	p-value *
Parent's education		<0.0001		<0.0001
Grade school (1–8 years)	42.53(21.99)		20.14(11.95)	
Some HS	31.52(26.23)		15.90(11.66)	
HS graduate/GED	19.00(18.38)		14.17(11.61)	
Some college/AA	8.31(17.58)		7.13(9.05)	
College graduate/Graduate school	7.44(10.44)		7.25(9.81)	
Parent's income		<0.0001		<0.0001
<10K	38.36(27.05)		23.07(13.56)	
10–35K	32.64(23.09)		19.42(12.18)	
35+	9.43(12.13)		7.43(6.78)	
Parent's age		0.09 *		0.02
Parent's marital status		0.13 *		0.003
Single	37.53(28.29)		20.72(14.29)	
Married	24.83(23.06)		12.63(10.36)	
Other (divorced, widow)	25.10(25.39)		20.50(15.18)	
Parent's health insurance		0.0006		<0.0001
Yes	22.01(22.93)		13.03(11.59)	
No	39.27(24.50)		20.90(12.68)	
Parent's social support		0.01		<0.0001
None	35.25(24.15)		13.38(13.10)	
1–2	30.94(24.57)		16.71(12.09)	
3	19.59(21.98)		10.43(9.70)	
Parent's perceived stress		<0.0001		<0.0001
PedsQL™ Physical Summary Scale		0.01		0.0002
PedsQL™ Psychosocial Summary Scale		<0.0001		<0.0001
Chance child might develop cancer-related health problem?		0.64		0.17 *
Not very	21.74 (26.73)		10.45 (9.95)	
Little bit/moderately	26.16 (22.19)		14.75 (11.86)	
Quite a bit/extremely	27.54 (25.58)		16.37 (13.25)	
Treatment intensity		0.18 *		0.52
Least 1	22.00(20.47)		12.32(10.91)	
2	24.09(21.87)		14.75(12.31)	
3	26.58(25.21)		14.75(12.11)	
Most 4	35.27(29.06)		16.00(12.50)	

* meets criteria for multivariable modeling (p<0.20)

Table 5

Multivariable Model for PTSS and Depression

	PTSS	Depression
	β(SE) p-value	β(SE) p-value
Education	$\beta=-5.81(1.63)$ p=0.0005	
Income		$\beta=-2.73(0.68)$ p=0.0001
Ethnicity		
Non-Hispanic		
US-born Hispanic,	$\beta=-2.22(4.40)$ p=0.61	$\beta=4.35(1.90)$ p=0.02
Foreign-born Hispanic	$\beta=14.20(3.95)$ p=0.0005	$\beta=4.09(1.28)$ p=0.002
Perceived stress	$\beta=6.92(1.83)$ p=0.0003	$\beta=7.42(0.78)$ p<0.0001
PedsQL™ Psychosocial Summary Scale	$\beta=-0.30(0.07)$ p=0.0001	$\beta=-0.19(0.03)$ p<0.0001
Treatment intensity	$\beta=3.61(1.77)$ p=0.04	
Model statistics	F(6,129)=31.27 p<0.0001 R-square=0.61	F(5,130)=59.75 p<0.0001 R-square=0.71