

Social determinants of health, psychological distress, and caregiver burden among informal cancer caregivers of cancer survivors during treatment

Running Head: Social determinants of health and caregiver burden

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ABSTRACT

Objective: This study compared three ethnic/racial groups of informal cancer caregivers on social determinants of health and tested social determinants of health as predictors of psychological distress and caregiver burden.

Methods: This study was a secondary analysis of baseline data of a sequential multiple assignment randomized trial (SMART) testing symptom management interventions with caregiver-survivor dyads. Caregivers completed baseline measures of social determinants of health (SDoH), functional limitations, psychological distress, and caregiver burden. Hispanic, non-Hispanic White, and non-Hispanic other races caregivers were compared on these variables. Multivariate tests of associations between social determinants of health and caregiver burden and psychological distress were conducted in structural equation modeling with caregiver burden and psychological distress as latent variables.

Results: Hispanic caregivers reported significantly higher caregiver burden, specifically for finances, family, and schedules. Caregiver burden was significantly predicted by having income barely or not meeting needs, being female, socially isolated, married, Hispanic, and having poor physical functioning. Significant predictors of caregivers' psychological distress: being female, being socially isolated, and having poor physical functioning.

Conclusion: Hispanic caregivers experience significant challenges associated with caregiver burden, especially if they are female, socially isolated, and have poor physical functioning. Assessment of these SDoH is important in caregiver health to provide supportive care during caregiving.

Key words: cancer, cancer caregivers, burden, psychological distress, social determinants of health

Informal caregivers (defined as family members or friends) of cancer survivors (defined as individuals from diagnosis to the end of life) play an important role in care management of survivors during treatment.¹ Caregivers experience physical and psychological symptoms that negatively influence their own quality of life and exacerbate caregiving burden.²⁻⁵ Caregiver burden is defined as the extent to which caregivers perceive that their physical and psychological health, schedule, social life and financial status suffer because of caring for a cancer patient.⁶ In a systematic review of 43 studies of cancer caregiver burden, Thana et al.⁵ reported factors contributing to caregiver burden were physical health, psychological factors, financial status, social isolation and family or social support.

The prevalence and severity of specific survivor and caregiver symptoms (e.g., fatigue, depression, anxiety, disturbed sleep), and the resultant increase in caregiver burden, are influenced by age, ethnicity, social isolation, and access to care.⁷ Younger caregivers consistently report higher burden as caregiving interferes with their multiple roles such as work and/or school and parenting. These caregivers typically report having more limited economic resources compared to older caregivers.⁸ There is also robust evidence that rural cancer caregivers have unmet needs with higher burden related to financial, transportation, social support, knowledge issues and health care access.⁹⁻¹³ Racial/ethnic minority group members, particularly living in rural areas, are also more likely to have reduced income and access to care.¹⁴⁻¹⁶

Caregivers' symptoms and compromised physical functioning not only decrease their own quality of life but may impair their abilities to assist the survivor. In our previous work^{4, 17} we found that caregivers' and survivors' symptoms were interdependent so that when symptoms such as psychological distress increased for caregivers, they also increased for survivors,

reducing quality of life for both. Many family members who provide care for someone with cancer have their own significant health and functional limitations¹⁸ that compromise their quality of life.¹⁹ In this study we also consider how the caregivers own functional limitations are associated with caregivers' burden and distress.

Psychological distress (depression and anxiety) is a major contributor to caregiver burden.²⁰⁻²² In a recent systematic review, high psychological distress was found among cancer caregivers; the pooled prevalence rates were 42.3% depression and 46.55%.²⁰ Globally, Bedaso et al.²³ found that two in five caregivers screened positive for depression with prevalence rates about 3 times higher than in the general population. The association between age and psychological distress has been mixed, with some studies indicating higher psychological distress among younger caregivers²⁴ and others indicating higher distress among older caregivers.^{3,25} Higher rates of psychological distress are seen among women compared to men^{26,27} and most caregivers are women.

People who are Hispanic appear to be at greater risk for psychological morbidity when in the role of caregiver for a cancer survivor than non-Hispanic Whites. Higher rates of distress have been reported for Hispanics compared to non-Hispanic Whites.^{24,28} In past studies, caregivers of Latinas with breast cancer reported greater psychological distress and greater burden than did caregivers of non-Hispanic White women with similar diagnoses.^{17,29} Similarly, Latino caregivers of lung or colon cancer patients were more likely to meet the Center for Epidemiological Studies-Depression scale (CES-D) criterion for clinically significant depression compared to non-Latino caregivers (50% vs. 19%).³⁰ In part, these findings may be due to Hispanic caregivers being younger, with less income, increased financial toxicity, and lack of

insurance.^{14, 31} These same issues may explain why Hispanic caregivers experience more caregiver burden³² than their non-Hispanic counterparts.

Segrin et al.,³³ among others^{5, 34} found social isolation, defined as feeling isolated and disconnected from others, is positively associated with burden. Social isolation and the associated loneliness indicates a person's social relationships are not meeting their desired levels of quality and quantity.⁴ Social isolation has a direct and significant effect on the experience of psychological symptoms such as depression and anxiety.³⁵ These, in turn, increased the severity of symptoms such as fatigue, pain and/or insomnia, and have been noted to increase caregiving burden. Robust evidence indicates the lack of family or social support contributes to higher symptom severity, including psychological distress and greater caregiving burden.^{29, 36, 37} Many caregivers experience this lack of support through feelings of social isolation.

Although demographic characteristics of age or race/ethnicity have been studied in relation to burden in caregivers,^{1, 5, 38, 39} fewer studies have used the broad array of social determinants of health (SDoH) that were examined in the current study. We included population, socioeconomic factors of education, income and whether the income met needs, social connections (social isolation), along with functional limitations (e.g., comorbidities, physical functioning) to determine how these factors predict psychological distress and caregiver burden. Our objectives were to compare three ethnic/racial groups of cancer caregivers based on SDoH and to determine which SDoH and functional limitations are most predictive of psychological distress and caregiver burden among people caring for someone with cancer. Examining and understanding the inter-relationships of multiple indices of SDoH will allow for more tailored and specific targeting of interventions and resources to those caregivers most in need.

METHODS

This report includes baseline data from a sequential multiple assignment randomized trial (SMART) of psychosocial interventions to improve symptom management and reduce psychological distress among cancer survivor-caregiver dyads. The baseline data used in this report were collected prior to the random assignment and only data from caregivers are included in this report. Baseline examination of SDoH and symptom burden in survivors is reported elsewhere.⁴⁰

Inclusion criteria for caregivers in the parent study were: 1) age 18 or older; 2) able to speak and understand English or Spanish; 3) access to a telephone; 4) not currently receiving counseling and/or psychotherapy; 5) not currently being treated for cancer, and 6) nominated by the survivor. Caregivers could be in any relationship role with the survivor (e.g., spouse, family member, friend) and did not need to reside in the same household. Exclusion criteria were diagnoses of disorders that would preclude participating in the study (e.g., psychotic disorder, inability to hear) per recruiter assessment. Participants were recruited from the University of Arizona Comprehensive Cancer Center, Valleywise Health system, Federally Qualified Health Centers, community cancer clinics and statewide cancer events to ensure recruitment in communities not well represented in research trials.

This study was conducted with the approval of the University of Arizona's Institutional Review Board. Survivors were recruited in the Southwestern US and provided contact information for the caregivers. Bilingual, bicultural recruiters explained the study over the telephone or in person. After receiving informed consent from both members of the dyad, separate baseline telephone interviews were scheduled in the participant's preferred language, English or Spanish. A thank you letter and a national retail gift card were sent to the participant

after completing the interview from which the data presented in this report were collected (between January 2018 and October 2021).

Measures

Social determinants of health included socio-demographic characteristics of age, sex, race/ethnicity, education, employment, household income and whether the income met needs, marital status, and population size of residence. For the analysis, population size of residence was summarized as <100,000 people or \geq 100,000 or more. In past studies whether income met needs was found to be a more robust indicator of financial toxicity than knowledge of simple household income.⁴⁰

Functional limitations were assessed through two variables. Comorbidity was measured with the Bayliss tool⁴¹ that queried the presence of 20 comorbidities. The total number of comorbid conditions was derived from this checklist. Physical functioning was measured by the PROMIS Physical Functioning-Short Form 4a.⁴² As with all PROMIS measures, participants responded to each item on a Likert scale from 1 (without any difficulty) to 5 (unable to do) and the scale was scored in the T-metric based on a general population mean of 50, standard deviation of 10. Higher scores reflect better physical functioning.

Social isolation was measured with the PROMIS Social Isolation-Short Form.⁴³ Survivors responded to each item on a Likert scale for 1 (never) to 5 (always) on statements such as “I feel left out”; “I feel isolated from others”; and “I feel that people are around me but not with me.” Social isolation was also scored in the T-metric, with the general population mean of 50, standard deviation of 10. Higher T-scores reflect greater social isolation.

Caregiver burden was assessed using the four subscales of the caregiver reaction assessment scale (CRAS)⁶. Specifically, these included impact on health ($\alpha = .68$), impact on

finances ($\alpha = .76$), impact on family ($\alpha = .75$), and impact on schedule ($\alpha = .73$). All items were responded to on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). For all subscales, higher scores represent more negative reactions. A confirmatory factor analysis (CFA) was conducted to determine if the four CRAS subscales loaded on a common latent variable. The single-factor model had a good fit, $\chi^2/df = 1.88$, CFI = .99, RMSEA = .047 (90% CI = .000 - .120). Therefore, the health, finances, family, and schedule variables were used as indicators of the caregiver burden latent variable.

Psychological distress was measured with four indicators. The CES-D⁶ is a 20-item measure asking respondents to rate the frequency of occurrence of various symptoms of depression on a scale ranging from rarely or none of the time to most of the time ($\alpha = .90$). The 8-item PROMIS-anxiety scale⁴⁴ was used to assess the frequency of various symptoms of anxiety, rated as never, rarely, sometimes, often, or always. The PROMIS-anxiety scale uses a T-metric. Finally, caregivers completed two items from the general symptom distress scale (GSDS).⁴⁵ Participants were asked to rate their intensity of depression and anxiety on a scale that ranged from 0 (do not have this) and 1 (mildly distressing) to 10 (extremely distressing). Pursuant to conducting a structural equation modeling (SEM) analysis, a single-factor CFA was conducted to determine if the observed indicators of psychological distress all loaded on a common latent variable. Specification of two correlated error terms was suggested by modification indices (PROMIS-anxiety ↔ GSDS anxiety, GSDS-anxiety ↔ GSDS-depression). The resultant model had 0 degrees of freedom, preventing estimation of model fit. However, the factor loadings of the four indicators were .95, .83, .63, and .75 which meets or exceeds standards for loadings in factor analysis.

Analysis

Demographic characteristics were described through means and standard deviations for continuous variables and frequencies and percentages for nominal variables. Demographic, clinical, and social aspects of health were compared as a function of race/ethnicity (Hispanic, Non-Hispanic White, Non-Hispanic other races). For continuous variables, distributions were first checked for normality and homogeneity of variance. If homogeneity of variance was met, comparisons were made with univariate ANOVA models. In cases where there were statistically significant differences between group means, post-hoc comparisons were conducted with the Tukey HSD test.

When the assumption of homogeneous variance was violated, group comparisons were made with Welch's F test, with post-hoc comparisons made by the Games-Howell test with p-values corrected by the Tukey method. Comparisons on nominal variables were conducted with the Fisher-Freeman-Halton exact test with upper and lower bounds of the significance value based on Monte Carlo simulations with 10,000 sampled tables. Tests of caregiver burden and psychological distress by race/ethnicity were also conducted by the univariate ANOVA or Welch's F test approach.

Multivariate tests of associations between social determinants of health, functional limitations, caregiver burden and psychological distress were conducted through a two-step process in SEM. First, two latent variables, one for caregiver burden and one for psychological distress, were analyzed for their adequacy of fit using CFA with maximum likelihood estimation. After these measurement analyses were completed, a full structural model was tested, also using maximum likelihood estimation. In this model, each of nine social determinants of health (e.g., income, ethnicity, marital status) and functional limitations were simultaneously tested for their

associations with caregiver burden and psychological distress. For both the CFA and SEM analyses, indicators of model fit included the χ^2/df ratio < 5 , Comparative Fit Index (CFI) $> .95$, and Root Mean Square Error of Approximation $< .08$.

RESULTS

Sample

Table 1 includes the characteristics of the 396 caregivers with complete baseline data. The mean age was 54.21 (SD=16.21) years with 3.73 (SD=2.80) co-morbid conditions (e.g., diabetes, heart disease, arthritis). Most caregivers were female (68%) and breast cancer was the most frequently reported cancer site for survivors (49%). All survivors were in treatment at baseline (e.g., hormonal therapy, chemotherapy and/or other targeted therapy), and 44% reported metastatic disease. More than half (64%) of caregivers lived with the survivor with the most frequently reported relationship type as spouse/partner (43%) followed by mother (23%). About 30% of caregivers had an educational level of high school or less and about half (53%) had incomes $< \$40,000$.

Table 2 shows the results for the comparisons among Hispanic (n=178), non-Hispanic White (n=175), and non-Hispanic other races (n=43) caregivers with univariate analyses of variance for continuous measures. Hispanics comprised 45% of the sample and missing data for race (30%) were mostly from Hispanic participants. Thus, we combined ethnicity and race into Hispanic, non-Hispanic White and non-Hispanic other races.

As shown in Table 2, Hispanic caregivers were significantly younger than non-Hispanic White or non-Hispanic other races caregivers, Welch's $F(2,393) = 34.60, p < .001$. Non-Hispanic White caregivers reported more comorbidities than Hispanic caregivers, $F(2,393) =$

9.00, $p < .001$, and Hispanic caregivers reported more problems with physical functioning than non-Hispanic White caregivers, Welch's $F(2,392) = 4.63$, $p = .012$.

The three groups were also compared on SDoH measured as nominal variables. Only 31% of Hispanic caregivers reported having incomes that met their needs compared to 67% for non-Hispanic White caregivers and 58% among non-Hispanic other race caregivers. Most Hispanic caregivers (63%) reported that their incomes did not meet or barely met their needs indicating high financial toxicity. Hispanic caregivers were 1) overrepresented in the lowest and underrepresented in the highest categories of income meeting their needs, Fisher-Freeman-Halton exact test = 49.54, $p < .001$; 2) underrepresented in the lowest and overrepresented in the highest education categories, Fisher-Freeman-Halton exact test = 59.42, $p < .001$; 3) underrepresented in the rural and overrepresented in the urban residential categories, Fisher-Freeman-Halton exact test = 9.18, $p = .047$; and finally, 4) overrepresented in the group with no health insurance coverage and underrepresented in the group with insurance, Fisher-Freeman-Halton exact test = 49.49, $p < .001$.

Table 3 reports the univariate tests of psychological distress and caregiver burden by race/ethnicity. There were no significant differences for any of the indicators of psychological distress as a function of race/ethnicity. However, there were significant differences on 3 of the 4 indicators of caregiver burden, namely, finances $F(2,393) = 16.37$, $p < .001$, family $F(2,393) = 6.69$, $p = .001$, and schedules $F(2,393) = 4.21$, $p = .016$. Post hoc tests revealed a consistent pattern of mean differences on these three variables: Hispanic caregivers reported more caregiver burden on finance, family, and schedules compared to non-Hispanic White participants.

Differences between Hispanic and non-Hispanic other races participants were not consistent in

any direction. On the health factor of caregiver burden, there were no statistically significant differences among the three groups.

The test of multivariate associations between SDoH, functional limitations, psychological distress, and caregiver burden was conducted in SEM (Figure 1). Specifically, nine SDoH and functional limitations were entered as simultaneous predictors of the psychological distress and caregiver burden latent variables. Because the caregiver burden and psychological distress latent variables were correlated at $r = .57, p < .001$, a correlation between their error terms was specified in the structural model. An initial test of the model indicated considerable room for improvement in model fit, the $\chi^2/df = 5.79$, CFI = .78, RMSEA = .110 (90% CI = .102 - .119). Modification indices showed that the fit of the model could be improved substantially by specifying six correlations between error terms of various social determinants of health (education↔income meeting needs, education↔Hispanic ethnicity, income meeting needs↔social isolation, income meeting needs↔Hispanic ethnicity, sex↔marital status) and functional limitations (comorbidities↔physical functioning). Although this is many correlated error terms, these specifications were considered appropriate as SDoH often have an intersectional quality whereby people experience multiple challenges that may even be causally related to each other (e.g., low education and low income, low income and income meeting needs, comorbidities and physical functioning). The same is true of functional limitations. With the specification of these terms, the resultant model demonstrated an acceptable fit to the sample data, $\chi^2/df = 3.42$, CFI = .89, RMSEA = .078 (90% CI = .069 - .087). The final model is depicted in Figure 1.

Turning to individual SDoH and functional limitations, the following were statistically significant predictors of caregiver burden: having income barely or not meeting needs ($\beta = -.16$,

$p = .003$), being female ($\beta = .11, p = .022$), socially isolated ($\beta = .37, p < .001$), married ($\beta = .15, p = .003$), Hispanic ($\beta = .19, p < .001$), and having poor physical functioning ($\beta = -.33, p < .001$).

The following SDOH and functional limitations were significant predictors of caregivers' psychological distress: being female ($\beta = .09, p = .030$), being socially isolated ($\beta = .62, p < .001$), and having poor physical functioning ($\beta = -.25, p < .001$).

DISCUSSION

These analyses compared three ethnic/racial groups of cancer caregivers on SDoH, psychological distress, and caregiver burden, and tested a multivariate model of SDoH and functional limitations as predictors of caregiver burden and psychological distress. According to the social disadvantage approach,^{46, 47} socioeconomic status, social capital, and living conditions influence disease through lack of access to resources that could reduce disease risk, the effects of which are reproduced over time. Lack of access to resources and/or inequitable distribution of resources generate stress and degradation of psychological and physiological functioning.

Cancer diagnosis and treatment, even under ideal circumstances, present major challenges to quality of life for survivors and caregivers, and these challenges may be further magnified by SDoH and caregivers' functional limitations. Increased psychological distress and caregiver burden are likely aggravated by SDoH and functional limitations, resulting in downregulated coping responses and deteriorated quality of life. The results of this study show that Hispanic caregivers experience sociodemographic (e.g., younger, female, low education), economic (incomes that do not meet needs), and functional challenges that contribute to caregiver burden compared to other groups in this study. Also, being female, socially isolated, and having poor physical functioning is associated with a high risk for psychological morbidity when caring for a cancer survivor.

The most consequential factors in the analyses influencing both psychological distress and caregiver burden were being female, experiencing social isolation and having limitations in physical functioning. These findings are supported by previous literature²⁰ about the higher prevalence of psychological distress among female caregivers. This may be due in part to cultural norms, especially pronounced among Hispanic women, that prescribe and burden women with greater caregiving responsibilities. Further, social isolation is known to have devastating consequences for health and well-being.^{48, 49} In this sample, the more socially isolated caregivers reported more psychological distress and more burden. Among many other deficiencies, social isolation implies reduced availability of social support that can otherwise be highly beneficial to coping and adjustment.

Caregivers with poor physical functioning were significantly at risk for psychological distress and caregiver burden. This finding was over and above the physical functioning challenges of the survivor, that has also been linked to caregiver distress and burden⁵⁰, and all of the other SDoH controlled for in the multivariate model, suggesting that more attention should be paid to caregiver physical functioning. Relatively little attention has been paid in research and practice to caregiver physical function and is an area for future research about best help physically impaired caregivers.

Although Hispanic caregivers were the youngest caregivers (47.7 years) compared to non-Hispanic White caregivers (61 years), it noteworthy that all caregivers in this sample reported multiple co-morbidities that influenced their physical functioning. Hispanic caregivers reported the lowest co-morbidities (3.0) compared to non-Hispanic Whites (4.28). It is possible that the high rates of hypertension, diabetes and other chronic conditions in this sample exacerbated psychological distress, along with the caregiver burden.

Marital status, specifically being married, was unexpectedly predictive of higher caregiver burden. Ordinarily, one would think of married persons as enjoying greater social support and social capital that would potentially mitigate processes that generate caregiver burden. However, caregivers who are married and provide care for a spouse are often in near-constant contact with the cancer survivor, resulting in high levels of care delivery. This has been shown by research indicating that married caregivers, and Hispanic caregivers, spend more time in daily caregiving than their unmarried or non-Hispanic counterparts.⁵¹

Hispanic caregivers reported higher burden on 3 of the 4 caregiver burden dimensions, and in the multivariate model, Hispanic ethnicity was a significant predictor of caregiver burden, and nearly significant ($p = .06$) predictor of increased psychological distress. These results provide some insight as to why Hispanic caregivers are in a disadvantaged context. Relative to other racial and ethnic groups, they are underrepresented in the category of survivors who indicate that their household income meets their needs and who have health insurance and are overrepresented in the category with lower levels of education (a high school education or less). This study also provided further support that determining whether the income meets the caregiver's needs is a better predictor of financial toxicity⁵² than household income, and should be included in future studies given the long-term consequences on quality of life. These factors likely explain, at least in part, why Hispanic caregivers report greater burden than their non-Hispanic White counterparts in the areas of finances, family, and schedule. One plausible explanation might be caregivers who are younger, an ethnic minority, female, with less income and education have less access to resources for their own and family's health care. Social isolation and psychological distress may occur as the caregiver tries to balance the competing

demands of work, parenting, caring for themselves while caring for the survivor is an important finding with implications for future research and health care.

These findings also document more negative outcomes for those who are Hispanic and non-Hispanic of other races compared to non-Hispanic Whites. Younger, female and socially isolated caregivers often had higher psychological distress and greater burden than their counterparts on the other end of these spectrums. In the case of social isolation, these disparities were strong and ubiquitous, across all outcomes. Consistent with the social disadvantage perspective, most of these SDoH reflect lack of resources and access, along with diminished social capital, that likely contribute to higher caregiver burden and greater distress.

Limitations and Strengths

One important limitation of this study was the cross-sectional nature of these data. Although this does not allow for causal inference, because many of the SDoH are sociodemographic in nature, in most cases, one can rule out the possibility that caregiver distress or burden causes SDoH. Also, the small sample size for the non-Hispanic other races category did not allow for any analyses of Black, Asian, or Native caregivers. These groups likely have strengths and disadvantages of their own that may diverge from those experienced by the Hispanic and non-Hispanic White groups who were most abundantly represented in this investigation. Similarly, caregivers of people with breast cancer were overrepresented relative to other cancer sites. Being a caregiver for a breast cancer survivor may differ substantially from caring for survivors with gastrointestinal, lung, pancreatic, and myeloma—cancers with dismal survival rates—especially in terms of caregiver psychological distress. Finally, as often occurs with secondary analyses, the SDoH chosen for this study were limited to those collected for the parent trial, and expansion of SDoH measures should be considered in future work. At the same

time, a strength of this sample was diversity in terms of ethnicity/race, socioeconomic status, and the inclusion of caregivers of survivors across different types and stages of cancer.

Implications for Psychosocial Providers

Knowledge of factors, such as social isolation, physical limitations, Hispanic ethnicity, and being the spouse of a cancer survivor, enables clinicians to identify high risk caregivers for appropriate referral to supportive services. Clearly, little can be done about one's some sociodemographic characteristics, however assistance with the financial toxicity or poor physical functioning may be possible. Among the multiple factors that predict psychological distress and caregiver burden, interventions targeting the social isolation of caregivers might be particularly fruitful. Low cost, accessible psychosocial interventions in which caregivers are contacted frequently to assess their own symptoms and health may be particularly beneficial and should be the target of future studies. The potential of digital interventions and their impact on symptom management and supportive care has only begun to be studied.

Conclusion

Caregivers, who play a critical role in caring for survivors, have characteristics, such as feelings of social isolation, incomes barely able to meet needs, and poor physical functioning with multiple co-morbidities that place them at high risk for increased psychological distress and caregiver burden. Supportive care services, whether delivered separately or by incorporating caregivers into existing support care services, often intended for survivors only, will ensure that caregivers have quality health care for their own, and by extension, improve the cancer survivor's well-being.

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Table 1. Baseline characteristics of caregivers

Characteristic	Caregivers, N=396 Mean (SD) or N (%)
Age	54.21 (16.21)
Number of comorbid conditions	3.73 (2.80)
Sex	
Male	128 (32%)
Female	268 (68%)
Ethnicity	
Hispanic	178 (45%)
Not Hispanic	217 (55%)
Missing	1 (<1%)
Race	
American Indian or Alaska native	20 (5%)
Asian	3 (1%)
Black or African American	9 (2%)
Native Hawaiian or Pacific Islander	3 (1%)
White	230 (58%)
More than one race	19 (5%)
Missing or did not respond	112 (28%)
Relationship: survivor is ^a	
Spouse/partner	169 (43%)
Sibling	31 (8%)
Daughter	22 (6%)
Son	3 (1%)
Friend	52 (13%)
Mother	93(23%)
Father	6 (2%)
Cousin	3 (1%)
Other	17 (4%)
Living arrangement	
Together	253 (64%)
Separately	143 (36%)
Marital status ^a	
Married/Living with a partner	252 (64%)
Divorced	46 (12%)
Single/never married	76 (19%)
Widowed	22 (6%)
Level of education	
Less than high school	37 (9%)
High school	84 (21%)
Vocational school/some college	125 (32%)
4-year college	94 (24%)
Graduate/professional degree	55 (14%)
Income	

Social determinants of health and caregiver burden

\$100,000 or more	62 (16%)
\$70,000-\$99,999	48 (12%)
\$40,000-\$69,999	76 (19%)
\$10,000-\$39,999	140 (35%)
Under \$10,000	40 (10%)
Missing	30 (8%)
Income meets needs ^a	
Not at all	22 (6%)
Barely	159 (40%)
Meets needs	197 (50%)
Missing	18 (5%)
Employment ^a	
Unemployed	38 (10%)
Part time	46 (12%)
Full time	138 (35%)
Retired	106 (27%)
Disabled	23 (6%)
Student/homemaker	40 (10%)
Missing	5 (1%)
Health insurance	
Yes	337 (85%)
No	56 (14%)
Missing	3 (1%)
Survivor's site of cancer	
Bladder	6 (2%)
Breast	193 (49%)
Colorectal	28 (7%)
Cervical	4 (1%)
GI	23 (6%)
Head and neck	5 (1%)
Kidney	5 (1%)
Liver	8 (2%)
Lung	29 (7%)
Lymphoma or myeloma	11 (3%)
Melanoma	6 (2%)
Ovarian	12 (3%)
Pancreatic	16 (4%)
Prostate	9 (2%)
Uterine	7 (2%)
Other	17 (4%)
Missing	17 (4%)

^aPercentages may not total 100 due to rounding. SD=standard deviation.

Table 2. Demographic characteristics and social determinants of health by race/ethnicity

Characteristic	Hispanic, N=178 Mean (SD) or N (%)	Non-Hispanic White, N=175 Mean (SD) or N (%)	Non-Hispanic other races, N=43 Mean (SD) or N (%)	P	effect size (η^2 or V)
Age	47.71 _a (16.39)	61.09 _b (13.92)	53.19 _c (12.64)	<.001	.15
Number of comorbid conditions	3.08 _a (2.53)	4.28 _b (2.92)	4.19 _b (2.91)	<.001	.04
PROMIS social isolation	43.45 (9.33)	42.18 (8.84)	45.50 (9.91)	.09	.01
PROMIS physical function*	52.94 _a (7.09)	50.56 _b (8.84)	50.36 _{ab} (8.32)	.01	.02
Gender				.14	.10
Male	53 (30%)	65 (37%)	10 (23%)		
Female	125 (70%)	110 (63%)	33 (77%)		
Marital status				.11	.11
Married	107 (60%)	121 (69%)	24 (56%)		
Not married	71 (40%)	54 (31%)	19 (44%)		
Income meets needs*				<.001	.25
Not at all	13 (7%)	5 (3%)	4 (9%)		
Barely	100 (56%)	47 (27%)	12 (28%)		
Meets needs	55 (31%)	117 (67%)	25 (58%)		
Missing	10 (6%)	6 (3%)	2 (5%)		
Level of education*				<.001	.39
High school or less	89 (50%)	24 (14%)	8 (19%)		
At least some college	88 (49%)	151 (86%)	35 (81%)		
Missing	1 (1%)	0 (0%)	0 (0%)		
Population of residence ^{a*}				.24	.09
<100,000 people	44 (25%)	52 (30%)	7 (16%)		
100,000 or more people	131 (74%)	120 (69%)	32 (74%)		
Missing	3 (2%)	3 (2%)	4 (9%)		
Health insurance coverage*				<.001	.34
Yes	128 (72%)	168 (96%)	41 (95%)		
No	48 (27%)	6 (3%)	2 (5%)		
Missing	2 (1%)	1 (1%)	0 (0%)		

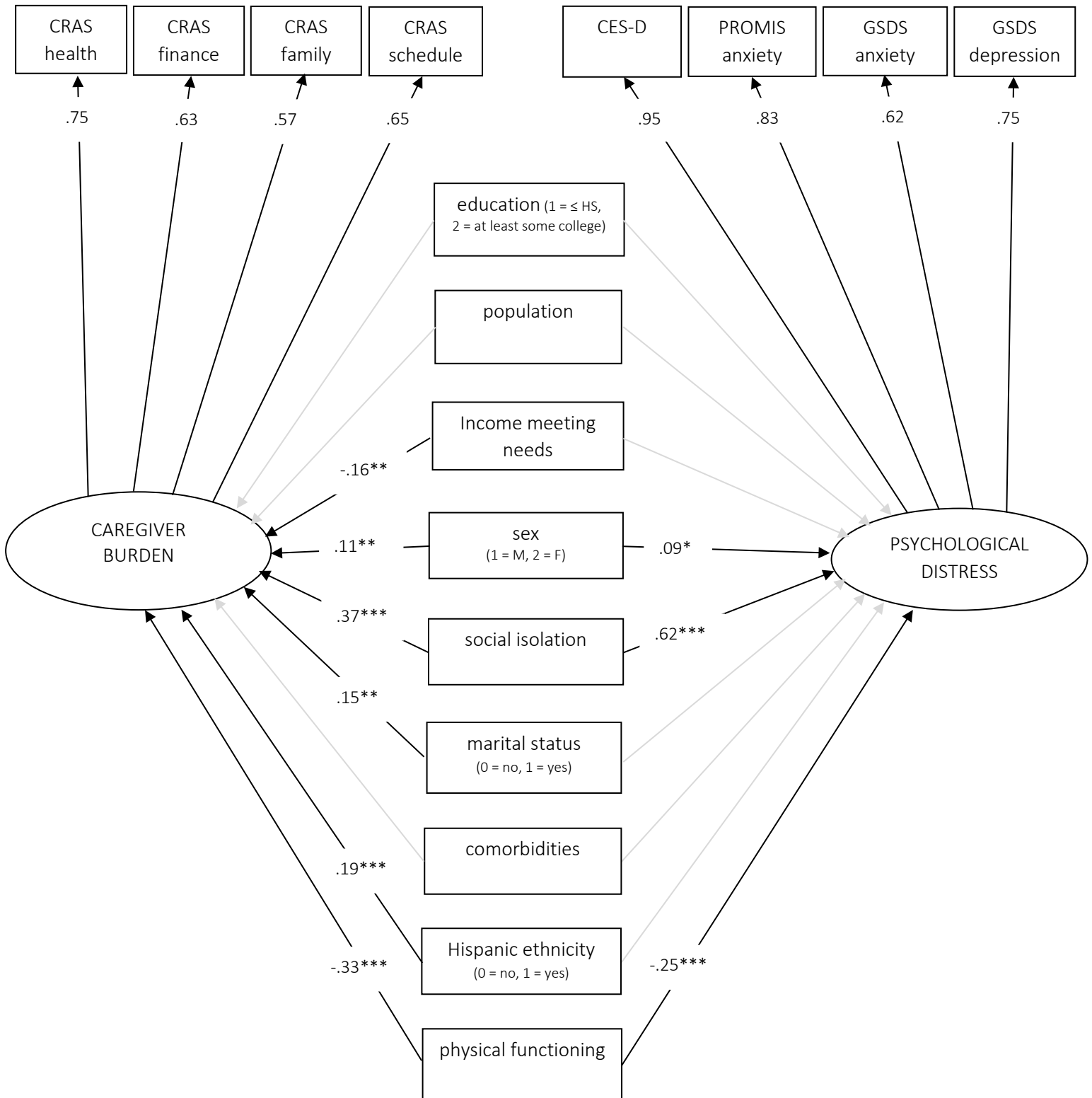
Note. *Missing values for these variables range from 1% - 9%. ^aPercentages may not total 100 due to rounding. SD=standard deviation. Row-wise means that do not share a common subscript are significantly different as determined by the Tukey HSD or Games-Howell test, with an adjusted *p* value for comparing a family of three. Effect size estimates for continuous variables are eta squared and Cramer's V for nominal variables.

Table 3. Caregiver Psychological Distress and Burden by Race/Ethnicity

Distress/Burden Variable	Hispanic, <i>N</i> = 178	Non-Hispanic White, <i>N</i> = 175	Non- Hispanic other races, <i>N</i> = 43	<i>p</i>	effect size (η^2)
	Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)		
Depressive symptoms (CESD)	14.99 (11.24)	11.82 (11.53)	11.81 (9.96)	.11	.01
Anxiety (PROMIS)	51.79 (10.22)	50.22 (9.97)	49.63 (8.01)	.22	.01
GSDS-anxiety	3.46 (3.15)	3.38 (3.06)	2.84 (2.73)	.49	.00
GSDS-depression	2.05 (2.87)	2.09 (2.79)	2.12 (2.86)	.98	.00
CRAS-health	1.85 (0.70)	1.79 (0.72)	1.88 (0.79)	.66	.00
CRAS-finances	2.73 _a (1.11)	2.08 _b (1.05)	2.35 _{ab} (0.90)	<.001	.08
CRAS-family	2.22 _a (0.89)	1.88 _b (0.80)	2.12 _{ab} (0.83)	.001	.03
CRAS-schedule	2.73 _a (0.91)	2.46 _b (0.93)	2.53 _{ab} (0.70)	.02	.02

Note. Row-wise means that do not share a common subscript are significantly different as determined by the Tukey HSD or Games-Howell test, with an adjusted *p* value for comparing a family of three. CES-D = Center for Epidemiology – Depression scale. CRAS = Caregiver Reaction Assessment Scale. GSDS = General Symptom Distress Scale. PROMIS = Patient-Reported Outcomes Measurement Information System.

Figure 1. Structural Model of Social Determinants of Health and Functional Limitations as Predictors of Psychological Distress and Caregiver Burden



Note. Figure values between latent variables and indicators are factor loadings. Values between manifest and latent variables are standardized regression coefficients. Error terms are omitted for ease of presentation. CES-D = Center for Epidemiology – Depression scale. CRAS = Caregiver Reaction Assessment Scale. GSDS = General Symptom Distress Scale. PROMIS = Patient-Reported Outcomes Measurement Information System. Paths indicated by grey lines are not significantly different from 0. * $p < .05$. ** $p < .01$. *** $p < .001$.