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Correlates of social support in older American Indians: the Native Elder Care Study

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Abstract

Objectives—This study examined social support and identified demographic and health correlates among American Indians aged 55 years and older.

Methods—Data were derived from the Native Elder Care Study, a cross-sectional study of 505 community-dwelling American Indians aged 55 years. Social support was assessed using the Medical Outcomes Study Social Support Survey measure (MOS-SSS) of which psychometric properties were examined through factor analyses. Logistic regression analyses were used to identify associations between age, sex, educational attainment, marital status, depressive symptomatology, lower body physical functioning, and chronic pain and social support.

Results—Study participants reported higher levels of affectionate and positive interaction social support (88.2% and 81.8%, respectively) than overall (75.9%) and emotional (69.0%) domains. Increased age, being married/partnered, and female sex were associated with high social support in the final model. Decreased depressive symptomatology was associated with high overall, affectionate, and positive interaction support, and decreased chronic pain with affectionate support. The count of chronic conditions and functional disability were not associated with social support.

Conclusions—Overall, we found high levels of social support for both men and women in this population, with the oldest adults in our study exhibiting the highest levels of social support. Strong cultural values of caring for older adults and a historical tradition of community cooperation may explain this finding. Future public health efforts may be able to leverage social support to reduce health disparities and improve mental and physical functioning.

Keywords

American Indians; social support; older adults

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Introduction

The older adult population in the United States is expected to become more racially and ethnically diverse as it continues to grow. Between 2012 and 2030, the number of non-White older adults is expected to grow 126% compared to 54% among same-aged Whites (Administration on Aging, 2012). The number of older American Indians is expected to increase almost four-fold, with a resulting increase to 918,000 in 2050 from 235,000 in 2010. Moreover, American Indians aged 85 years are expected to grow nine-fold between 2010 and 2050 (Vincent & Velkoff, 2010). The long-standing history of trauma and oppression experienced by American Indians has led to health disparities that will only increase with the growth in numbers of older adults (Miller-Cribbs, Byers, & Moxley, 2009). As such, more studies are needed to better understand the health-related needs of older American Indians to better inform health services and interventions.

Older American Indians experience some of the highest rates of chronic conditions in the nation (Denny, Holtzman, Goins, & Croft, 2005). Diabetes, obesity, and hypertension are all reported to be higher among American Indians than the general population (Indian Health Service, 2014). American Indians continue to report higher rates of depression than other racial and ethnic groups in the United States (Li, Ford, Strine, & Mokdad, 2008; Substance Abuse and Mental Health Services Administration, 2013). Further, the prevalence of chronic pain among American Indians exceeds those seen in the general population (Jimenez, Garrouette, Kundu, Morales, & Buchwald, 2011; National Center for Health Statistics, 2013).

Studies have documented a strong association between the presence of chronic conditions and disability. Conditions such as arthritis, obesity, and pain, are all risk factors for physical disability (Hubert, Bloch, & Fries, 1993; Murtaugh, Spillman, & Wang, 2011), and physical disability can predict the development of chronic diseases such as heart disease. Although the temporal relationship between the two is complicated, it is clear that chronic conditions and physical disability negatively impact health and quality of life (Rothrock et al., 2010). American Indians report more physical disability related to chronic conditions than any other racial or ethnic group (Adams, Krirzinger, & Martinez, 2013). Physical disability rates for American Indians are among the highest in the United States (Denny et al., 2005; Goins, Moss, Buchwald, & Guralnik, 2007), and older American Indians report more functional limitations than their same-aged peers (Goins et al., 2007).

Social support has been well-documented for having positive health outcomes (Berard, VanDenKerkhof, Harrison, & Tranmer, 2012). Social support, or the perceived available assistance provided by relationships that help an individual cope with stress (Krause, 2006; Langford, Bowsher, Maloney, & Lillis, 1997), has been found to be protective against chronic conditions such as poor mental health (Kwag, Martin, Russell, Franke, & Kohut, 2011), impaired physical functioning (Hayward & Krause, 2013), and chronic pain (Evers, Kraaimaat, Geenen, Jacobs, & Bijlsma, 2003). Conversely, low levels of social support have been associated with depression (Golden et al., 2009) and an increased risk of mortality (Clausen, Wilson, Molebatsi, & Holmboe-Ottesen, 2007).

Social support and aging

As adults age, they are more likely to experience functional limitations and health problems that increase their risk for isolation and their need for social support (Langford et al., 1997). Due to changes in social networks from interpersonal (e.g., decreased mobility) and intrapersonal factors (e.g., deaths of peers), the quantity of social support declines with age and at a time when older adults are in need of drawing on such resources (Mazzella et al., 2010). Despite fewer network ties, evidence suggests that different types of social support may increase with age, for example, instrumental support in conducting activities of daily living (Van Tilburg, 1998), and that older adults may be more selective with their relationships by fostering closer, more intimate relationships (Lang, 2001).

Women generally report higher levels of social support and social network ties than men (Antonucci & Akiyama, 1987), but the evidence on whether this corresponds to better health outcomes is mixed. Lyyra and Heikkinen (2006) found that older women reporting low levels of emotional support experienced an increased risk of death 2.5 times higher at follow-up than women with high emotional support at baseline. They found no relationship, however, between social support and mortality in men. Conversely, Berard et al. (2012) reported in their study of persons aged 65 years that functional decline and death due to acute heart failure at 12 months were predicted by low baseline scores of social support in men, but no effects were seen in women.

In terms of other health outcomes, researchers suggest that men receive more health benefits from social support than women (Antonucci & Akiyama, 1987), but this difference may be due to men receiving generally less social support overall. In fact, there is some evidence that older men and women who report the same levels of social support experience similar outcomes including better health and decreased mortality (Hessler, Jia, Madsen, & Pazaki, 1995). Since women experience higher rates of depression (Centers for Disease Control, 2010) and loneliness (Golden et al., 2009), social support may play a more salient role in moderating the relationship between their risk factors and poor health outcomes (Arthur, 2006).

Social support among American Indians

Few studies have examined relationships between social support and health among American Indians. Authors have reported a negative relationship between depression and social support for both American Indian adults and older adults (Roh et al., 2014; Whitbeck, McMorris, Hoyt, Stubben, & LaFromboise, 2002). A study with indigenous Canadians aged 15 years reported high social support among participants, and found that social support was significantly associated with excellent or good self-reported health status, especially for women (Richmond, Ross, & Egeland, 2007). This study, however, also found that social support decreased with age highlighting a potential concern that older adults are more at risk of low social support during a time when their need is high. Inconsistencies in the literature in the definition and measurement of social support (Gottlieb & Bergen, 2010; Smith & Christakis, 2008) make it difficult to compare or summarize the literature on social support among American Indians. In addition, American Indians are a heterogeneous population representing 566 federally recognized tribes each with unique cultures (Washburn, 2013). As

such, more studies are needed to further understand social support and its impact on health across tribes.

It has been postulated that social support in native communities may be a strength that could support health outcomes (John, 1991); however, there is limited evidence supporting the relationship between social support and health among American Indians. Given the health disparities experienced by older American Indians, an improved understanding of protective factors such as social support may help develop viable health-promoting interventions. Thus, the objective of this study was to examine social support and its demographic and health-related correlates in a sample of older tribal American Indians. In particular, we focused on examining comorbidity of chronic conditions, physical functioning, depression, and chronic pain due to the high rates of these conditions among American Indian populations.

Methods

Sample and data collection

The data for our analyses were drawn from the Native Elder Care Study, a cross-sectional study that used community-based participatory research approaches with a federally recognized American Indian tribe in the southeastern United States. The purpose of the original study was to gather health-related information on community-dwelling members to inform local health services and programs. The study gathered in-depth information using interviewer-administered surveys on health, health care, and social service needs. Eligibility requirements, determined in collaboration with tribal leadership, included tribal enrollment, aged 55, living in the tribal service area, non-institutionalized, and cognitively intact. Cognition was assessed using the Time and Change test (Inouye, Robison, Froehlich, & Richardson, 1998). A lower than standard older age threshold of 55 years was used per the request of the tribe, and because evidence suggests more rapid declines in health status and shorter life expectancy among American Indians compared to other racial and ethnic groups (Indian Health Service, 2014). In addition, many American Indian communities designate members eligible for certain services as aged 55 years and older.

Random sampling from tribal enrollment records was used to identify possible participants, and sampling was stratified by age categories 55–64, 65–74, and 75 years. Of the 1430 persons eligible for this study, 680 were randomly selected. These individuals were contacted by telephone or by home visit and invited to participate. Of the 680 individuals, 47 could not be located and 50 were deemed ineligible. Of the remaining 583 persons, 78 declined participation, resulting in a total of 505 participants and an 86.6% response rate. For our study, we used a complete case analysis approach that yielded a final sample of 390 participants. Participants with missing data on the social support and depression variables were more likely to be older ($p > .001$); there were no statistically significant differences in the missingness on the other variables. The original Native Elder Care Study received institutional review board approval from West Virginia University as well as the tribe's institutional review board, health board, and tribal council. Oregon State University approved this secondary data analysis.

Measures

Our study was cross-sectional; therefore, we analyzed social support as a dependent variable because we were interested in examining correlates of social support using multiple variables. Perceived social support was assessed using the Medical Outcomes Study–Social Support Survey (MOS-SSS). The MOS-SSS is a 19-item scale with subscales that include the domains of emotional, informational, tangible and positive interaction support, and affectionate support (Sherbourne & Stewart, 1991). The scale ranges from 19 to 95 with each item receiving a score on a scale of 1–5 and high scores indicating high social support. Participants were asked how often they received each of the 19 social support items when they needed it. For the overall scale and each subscale, social support was treated as a binary variable with ‘low’ and ‘high’ categories of social support. Participants who reported receiving social support ‘most of’ or ‘all of the time’ were considered to have high levels of social support. Those who responded ‘none of,’ ‘a little of,’ or ‘some of the time’ were considered to have low levels of social support.

Age, sex, educational attainment, and marital status were obtained through self-reports. We treated age as a categorical variable (i.e., 55–64, 65–74, 75). Marital status was treated as a binary variable with marital status coded as currently married or partnered versus other (i.e., divorced, separated, widowed, or never married). Educational attainment was an ordinal variable with the categories of 11 years, high school graduate/General Education Development (GED), and at least some college.

We examined several measures of health including a count of chronic conditions, depressive symptomatology, lower body physical functioning, and chronic pain. The count of chronic conditions was collected using a 19-item listing of diagnoses based upon a survey measure previously used with community-dwelling older adults (Rigler, Studenski, Wallace, Reker, & Duncan, 2002). The number of chronic conditions was summed and treated as a count variable. Depressive symptomatology was assessed using the Centers for Epidemiologic Studies–Depression (CES-D) scale in which participants were asked the frequency of experiencing 20 depressive symptoms within the last week (Radloff, 1977). We used an established cutoff score of 16 of the CES-D to determine the level of clinically significant depressive symptoms (Radloff, 1977). We measured lower body physical functioning with the Short Physical Performance Battery (SPPB) (Guralnik et al., 1994). A composite score ranging from 0 to 12 was calculated using data collected through interviewer-evaluated chair stands, four-meter walk, and balance tests that comprise the SPPB; the higher scores indicate better lower body functioning. Chronic pain was assessed using the Chronic Pain Scale (Von Korff, Ormel, Keefe, & Dworkin, 1992). This scale measures pain intensity, both current and in the past six months, and pain-related disability. Chronic pain scores range from 0 to 4, with higher scores indicating a higher degree of disability and limitation due to pain.

All of the measures for our analysis were drawn from the Native Elder Study which had been designed in collaboration with tribal leaders. The CES-D has been validated in previous studies with older American Indians (Chapleski, Lamphere, Kaczynski, Lichtenberg, & Dwyer, 1997), and with this study population (Schure & Goins, unpublished manuscript). Using cognitive interviewing techniques, the entire survey was screened by a

group of tribal elders to identify and address potential sources of response error (Goins, Garrouette, Fox, Dee Geiger, & Manson, 2011).

The MOS-SSS was not previously validated among older American Indians; therefore, we conducted an analysis on the psychometric properties before conducting the full analysis. Cronbach's alpha was obtained for the overall social support scale, and for each subscale. Table 1 reports the Cronbach's alpha scores that ranged from .89 to .95, with the overall scale at .95. Overall, the MOS-SSS demonstrated excellent internal reliability with Cronbach's alpha levels exceeding those of the original study (Sherbourne & Stewart, 1991) and the commonly accepted standard of .80.

A principle component factor analysis supported the construction of an overall social support index. An eigenvalue of 10.65 on the first factor indicated that survey items were tapping a single dimension. This was further supported by high factor loadings for each item with the overall scale ranging from .65 to .83 (not shown). As the conventional accepted loading is greater than .40, these results strongly indicate that the survey items are measuring a single dimension (e.g., social support; Acock, 2014).

Findings from the confirmatory factor analysis are reported in Table 2 and supported the four-dimensional construction of the MOS-SSS. Both models had a significant chi-square statistic that could indicate a poor model fit as a p -value greater than .05 is desired (one-factor model: $X^2 = 2050.2$, $p < .001$; four-factor model: $X^2 = 510.0$, $p < .001$). The chi-square test, however, is sensitive to sample size and does not provide sufficient evidence of poor model fit (Schumacker & Lomax, 2004). The four-factor model outperformed the one-factor model and had the lowest chi-square statistic. Additionally, the root-mean-square error, comparative fit index, standardized root-mean-square residual, and the Tucker-Lewis index were used to assess fit and favored the four-factor model to the one-factor model. Finally, item loadings on the latent variables were strong, ranging from .73 to .95 (not shown).

Analyses

Bivariate analyses, including independent t -tests and chi-square tests, were used to test differences in demographic characteristics, count of chronic conditions, CES-D, SPPB, and chronic pain by low and high social supports. Logistic regression was used to examine the relationship of demographic characteristics, count of chronic conditions, CES-D, SPPB, and chronic pain with the MOS-SSS. Interaction terms were created to examine whether the relationship between health and social support differed due to sex or age. Our bivariate analyses indicated that separate models were warranted for each subscale of social support as well as overall social support. All analyses were completed in StataCorp 12.1 analytical software (StataCorp, 2011).

Results

Table 3 shows the characteristics of our study sample. The sample was primarily female (62.8%), and 50.5% of our sample was married or with a life partner. Approximately 36% of participants were aged 55–64 years, 36.9% aged 65–74 years, and 26.7% aged over 75 years

old. With respect to educational status, 31.3% had completed high school or earned a GED credential and 32.1% had at least some college education. Our study participants reported an average of 2.8 chronic conditions, an average SPPB score of 8.1 (standard deviation (SD) = 3.6) and an average chronic pain score of 1.4 (SD = 1.2).

Also shown in Table 2 is the percentage of participants that reported high social support. Study participants reported higher levels of tangible (84.6%), affectionate (88.2%), and positive interaction (81.8%) types of social support than overall (75.9%) and emotional (69.0%) types. Adults aged 55–64 years reported significantly lower levels of emotional social support than those aged 65 years (59.2% of adults aged 55–64 reported low emotional social support vs. 72.9% and 76.9% of adults aged 65–74 and >75, respectively, $p < .01$). Except for emotional support, there were no differences in other social support domains by age group. Those participants with high overall and tangible social support reported significantly fewer chronic conditions than those with high social support ($p < .001$; $p < .05$, respectively). Those who reported high levels of overall social support also reported being married, fewer chronic conditions, better lower body functioning, clinically insignificant level of depressive symptoms, and lower chronic pain scores, than those who reported low social support. Educational status and sex were not significantly related to any social support domain but were kept and included in the final models because of evidence in the literature of a relationship between these variables and social support (Berard et al., 2012; Lyyra & Heikkinen, 2006; Richmond et al., 2007).

In the final logistic regression models (see Table 4), older adults aged 65–74 years were 1.6 times more likely to report high emotional support than adults aged 55–64 years (95% confidence interval (CI) = 0.9, 2.9) and those aged 75 were 2.3 times more likely (CI = 1.7, 6.6). Being married or having a life partner was associated with high social support across all domains (emotional: adjusted odds ratio (OR) = 1.7; CI = 1.1–2.8; tangible: OR = 2.3; CI = 1.2–4.3; affectionate: OR = 4.1; CI = 1.9, 9.0; positive interaction: OR = 4.7; CI = 2.4, 9.0) and for overall social support (OR = 3.0; CI = 1.7, 5.2). Those whose highest education level was that of a high school diploma or GED reported receiving significantly lower tangible support (OR = 0.4; CI = 0.2, 0.8). Compared to those reporting low levels of overall social support, those reporting high overall social support were significantly more likely to be aged 75 years (OR = 2.3; CI = 1.1, 4.9), female (OR = 1.8; CI = 1.0, 3.1), and were less likely to report clinically significant depressive symptomatology (OR = 0.4; CI = 0.2–0.8). Females in our sample also reported higher affectionate support than males (OR = 2.3, CI = 1.1, 4.9).

Older adults who reported high affectionate (OR = 0.4; CI = 0.2–0.8) and positive interaction support (OR = 0.3; CI = 0.1, 0.6) were significantly less likely to report clinically significant depressive symptomatology than those with low levels of support in these domains. Better lower body physical functioning was not associated with any type of social support; however, reduced chronic pain was associated with high affectionate support (OR = 0.7; CI = 0.5, 1.0). Although significant in the bivariate analyses, the count of chronic conditions was not significantly associated with high social support in the adjusted model. Interaction terms (not shown) created to further explore the relationship between social support and marital status by sex and by age were insignificant for all social support types;

this indicates that the relationship between social support and health outcomes was consistent across our sample on these characteristics.

Discussion

This study aimed to explore the demographic and health correlates of social support among older American Indians. Our study showed significant relationships between social support and a number of demographic and health correlates. Age was significantly related to overall and emotional social support in that older adults in our sample were more likely to report high social support than younger adults (e.g., adults aged 75 years reported the highest levels of social support, followed by those aged 65–74 years, and finally those aged 55–64 years). This finding contradicts a study that found that older indigenous Canadians reported lower social support than younger adults (Richmond et al., 2007). These authors, however, did not examine social support differences among adults over 55 years old. Further, different levels of social support may reflect cultural differences between these populations. Another explanation is offered by a study that found that older adults who reported high social support had a decreased risk of mortality (Zhang, Norris, Gregg, & Beckles, 2007). This could suggest that the oldest adults in the community from which our sample was drawn are outliving their peers with low social support. Further, because our sample was restricted to non-institutionalized older adults, this finding may indicate that older adults with higher social support draw on such resources to delay or avoid institutionalization. Finally, among some American Indian tribes, respect for elders is an important traditional value that may translate into higher social support as evidenced by the higher levels of social support among the oldest adults in our sample (Jervis, Boland, & Fickenscher, 2010).

Marital status was an important determinant of high social support among all four subdomains, and overall social support. This finding has been echoed in other studies that emphasize marriage as an important source of social support, and in some instances, the preferred source of support (Cho, Zunin, Chao, Heiby, & McKoy, 2012). Spouses are likely to share similar values, characteristics and experiences with each other that are important elements of effective social support (Thoits, 1986). Studies have documented several health benefits of being married particularly among men (Manzoli, Villari, Pirone, & Boccia, 2007). We, however, found no evidence of sex differences in social support and marital status in this population. The measures used in our study prevent us from determining whether the lack of gender difference in our sample is due to the quality of the marital relationship or other factors. Qualitative studies could explore whether the qualities of the spousal relationships or the role that marriage plays in this culture can better explain our findings.

Older adults whose highest education level was a high school diploma or GED reported receiving significantly low tangible support. Educational status was used as a proxy for socioeconomic status. Although we did not include income in this analysis, it may be that these older adults represent those who are poorer and thus, more likely to be reliant on Medicare and assistance from the Indian Health Service. It may be that older adults with fewer financial resources are receiving inadequate amounts of assistance from formal and

informal care-givers. The purpose of the Native Elder Study was to identify gaps such as these to improve services within the community.

As has been found in other studies (Hays, Saunders, Flint, Kaplan, & Blazer, 1997; Kwag et al., 2011; Shin et al., 2008; Zhang et al., 2007), we found a significant relationship between clinically significant depressive symptomatology and overall, affectionate, and positive interaction support. Having perceived affectionate support indicates that participants feel loved and have individuals who show them affection. Similarly, having positive interaction-type support indicates that participants have someone with whom they spend time and can do fun things. By having affection and companions, these participants are likely less at risk for feelings of isolation or loneliness – both contributors to depression. Although our measures do not allow us to examine the qualities of these relationships, our findings of lower depression scores among those with high social support supports the evidence that feeling loved and engaging with others promotes mental health outcomes.

Low scores on chronic pain were linked to high affectionate support in our sample. This finding is partially supported by Cho et al. (2012) who found that patients with chronic pain preferred receiving emotional/affectionate types of support to tangible support. High tangible support can have negative outcomes by causing people feel to helpless or burdensome to others. Conversely, feeling loved may help provide comfort and encouragement to individuals that may help improve the management and control of pain symptoms.

This study adds to the literature on the relationship between health and social support among American Indians. Regardless, this investigation has limitations worth acknowledgement. First, the cross-sectional design does not allow us to determine causality between social support and health outcomes. Second, all data were self-reported, and the health variables were not verified with medical diagnosis. Further, we only examined a few health correlates in detail. A more substantive look at the relationship between each chronic condition and social support is beyond the scope of this study. Third, the data in our study do not provide information on other types or qualities of social support that may be relevant to health outcomes. As previously mentioned, our study did not examine the quality of the social support received or whether participants were satisfied with the quantity and quality of the social support. The impact of social support on health depends on the individual's perception of the meaning of and desire for social support assistance (Hayward & Krause, 2013). High social support can have negative outcomes if it is unwanted or if it discourages individuals from taking an active role in their health (Bozo & Guarnaccia, 2010). Additionally, studies show that the source of support, for example, child vs. spouse, sibling, or professional, is an important factor in determining the benefit of both measured and perceived social support, and that the preferred source of support varies across racial and ethnic groups (Chao, 2012; Hayward & Krause, 2013; John, 1991).

Qualitative studies are needed to examine the perception, quality, and role that social support plays in tribal communities. Such studies can provide a more rich and nuanced understanding of how social support impacts health and how cultural values shape and support social support systems. There exists great variability in cultural beliefs and health

status between tribes and among American Indians; as such, our findings should not be generalized to other American Indian communities without caution because we only sampled from one tribe. Future research should include other tribal communities as well as urban-dwelling American Indians.

In conclusion, our study examined the relationship between social support and demographic and health correlates among older American Indians. Overall, our findings demonstrate the important relationship between marriage/ partnership and social support among this sample, and indicate that social support among older adults in this community is high. We have also shown that social support is associated with positive health outcomes including decreased depressive symptomology and chronic pain. Further improving social support to older adults can help to improve aspects of health and mitigate negative outcomes. Senior companion programs are programs that pair more functionally independent seniors with their peers to provide companionship and assistance with basic household chores. Establishing companion programs is an excellent strategy for improving tangible and positive interaction social support for seniors who may otherwise be isolated (Rabiner et al., 2003). Furthermore, it is likely that both the recipient and the senior volunteers receive mutual social support benefits from the program activities. Another strategy to improving social support is through intergenerational programs that support cultural traditions such as mentorship and building respect for American Indian elders.

This study helps to address the dearth in literature on social support among older American Indians. Research and public health programs that emphasize strengths at a community level, such as strong social support, among minority populations may provide solutions to reducing health disparities and improving mental and physical functioning. Our study shows that social support is high in our study population, which could be used in future public health interventions to improve community health and to support healthy aging.

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Table 1

Descriptive statistics for the Medical Outcomes Survey – Social Support Scale.

	Items	Mean	Standard deviation	Scale range ^a	Study range ^a	Cronbach's alpha
Total scale	19	82.0	13.1	19–95	25–95	0.95
Emotional support	8	33.1	6.4	8–40	9–40	0.93
Tangible support	4	17.8	3.1	4–20	4–20	0.89
Affectionate support	3	13.6	2.3	3–15	3–15	0.94
Positive interaction	4	17.5	3.5	4–20	4–20	0.94

^a Higher scores indicate more support.

Table 2

Confirmatory factor analysis fit statistics.

Model	χ^2	df	p-value	RMSEA	CFI	SRMR	TLI
One-factor ^a	2050.16	152	<.001	0.18	0.71	0.09	0.67
Four-factor ^b	510.02	146	<.001	0.08 ^c	0.94 ^c	0.04 ^c	0.94 ^c

Note: RMSEA = root-mean-square error of approximation; CFI = comparative fit index; SRMR = standardized root-mean-square residual; TLI = Tucker–Lewis Index.

^aOne-factor model uses the overall social support scale.

^bFour-factor model includes emotional, tangible, affectionate, and positive interaction domains of social support.

^cA-priori model fit criterion met.

Table 3

Characteristics of subjects and percentage reporting high social support ($n = 390$)

	Total sample	Social support, all domains [*]	High social support, by domain [†]			
			Emotional support	Tangible support	Affectionate support	Positive interaction
Total sample (%)		75.9	69.0	84.6	88.2	81.8
Age (%)						
55–64	36.4	70.4	59.2 ^{**}	81.7	84.5	78.2
65–74	36.9	79.2	72.9	87.5	90.3	84.0
75	26.7	78.9	76.9	84.6	90.4	83.7
Sex (%)						
Male	37.2	75.2	69.7	84.1	86.9	82.1
Female	62.8	76.3	68.6	84.9	90.0	81.6
Marital status (%)						
Unmarried	49.5	68.4 ^{***}	64.3 [*]	80.8 [*]	82.9 ^{***}	73.1 ^{***}
Married	50.5	83.2	73.6	88.3	93.4	90.4
Educational status (%)						
1–11 years	36.7	75.5	66.4	88.1	85.3	79.0
High school graduate or General Educational Development	31.3	71.3	68.9	79.5	88.5	82.8
Some college, graduate, or more	32.1	80.8	72.0	85.6	91.2	84.0
Count of chronic conditions (Mean $\pm$ SD)	2.8 $\pm$ 2.4	2.6 $\pm$ 2.4 [*]	2.7 $\pm$ 2.4	2.7 $\pm$ 2.3 [*]	2.7 $\pm$ 2.4	2.7 $\pm$ 2.4
Short Performance Physical Battery ² (Mean $\pm$ SD)	8.1 $\pm$ 3.6	8.4 $\pm$ 3.6 ^{**}	8.4 $\pm$ 3.5 [*]	8.2 $\pm$ 3.6	8.2 $\pm$ 3.6	8.2 $\pm$ 3.7
Depression score ³ (%)						
Score <16	85.6	79.3 ^{***}	72.2 ^{***}	86.5 ^{**}	90.7 ^{***}	85.3 ^{***}
Score ≥ 16	14.4	55.4	50.0	73.2	73.2	60.7
Chronic pain ⁴ (Mean $\pm$ SD)	1.4 $\pm$ 1.2	1.3 $\pm$ 1.1 ^{**}	1.3 $\pm$ 1.1 [*]	1.3 $\pm$ 1.1 ^{**}	1.3 $\pm$ 1.1 ^{***}	1.4 $\pm$ 1.1

[†]There were 8 questions for emotional support, 4 each for tangible and positive interaction, and 3 for affectionate. Respondents indicated how often each type of support was available to them when they needed it. Those who responded “none of,” “a little of,” or “some of the time” were considered to have low levels of social support. “Those who responded “most of” or “all of the time were considered to have high levels of social support.

²Scored 1–12, high scores indicate greater functioning.

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³ Established cutoff for clinically significant depressive symptoms is 16.

⁴ Scored 0–4, high scores indicate more pain.

* $p < .05$;

** $p < .01$;

*** $p < .001$.

Table 4

Adjusted odds ratios for reporting high social support¹ (*n* = 390)

	Social support, all domains			Emotional support			Tangible support			Affectionate support			Positive interaction		
	Adjusted OR	(95% CI)		Adjusted OR	(95% CI)		Adjusted OR	(95% CI)		OR	(95% CI)		Adjusted OR	(95% CI)	
Age															
55–64 (ref)															
65–74	1.6	(0.9–2.9)		2.0*	(1.1–3.4)		1.3	(0.7–2.7)		1.4	(0.6–3.1)		1.2	(0.6–2.4)	
75	2.3*	(1.1–4.9)		3.9***	(1.9–7.9)		1.0	(0.5–2.3)		2.2	(0.8–5.8)		1.9	(0.8–4.2)	
Sex															
Male (ref)															
Female	1.8*	(1.0–3.1)		1.3	(0.8–2.1)		1.5	(0.8–2.8)		2.3*	(1.1–4.8)		1.8	(1.0–3.3)	
Marital status															
Unmarried/divorced/ widowed (ref)															
Married/partnered	3.0***	(1.7–5.2)		1.7*	(1.0–2.8)		2.3*	(1.2–4.3)		4.1***	(1.9–9.0)		4.7***	(2.4–9.0)	
Educational status															
1–11 years															
High school graduate or General Educational Development	0.6	(0.4–1.2)		1.1	(0.6–1.9)		0.4*	(0.2–0.8)		1.0	(0.5–2.3)		1.0	(0.5–2.0)	
Some college, graduate, or more	1.0	(0.5–2.0)		1.3	(0.7–2.3)		0.6	(0.3–1.3)		1.4	(0.6–3.5)		1.0	(0.5–2.0)	
Count of chronic conditions	0.7	(0.3–1.2)		0.7	(0.4–1.2)		0.9	(0.4–1.8)		1.1	(0.5–2.5)		0.8	(0.4–1.6)	
Short Performance Physical Battery ²	1.1	(1.0–1.1)		1.1	(1.0–1.2)		1.0	(0.9–1.1)		1.0	(0.9–1.2)		1.0	(1.0–1.1)	
Depression ³															
Score <16 (ref)															
Score 16	0.4**	(0.2–0.8)		0.6	(0.3–1.0)		0.5	(0.2–1.0)		0.4*	(0.2–0.8)		0.3***	(0.1–0.6)	
Chronic pain ⁴	0.9	(0.7–1.1)		0.9	(0.8–1.2)		0.8	(0.6–1.0)		0.7*	(0.5–1.0)		1.0	(0.7–1.2)	

Note: OR = odds ratio; CI = confidence interval.

¹There were eight questions for emotional support, four each for tangible and positive interaction, and three for affectionate. Respondents indicated how often each type of support was available to them when they needed it. Those who responded 'none of,' 'a little of,' or 'some of the time' were considered to have low levels of social support. Those who responded 'most of' or 'all of the time' were considered to have high levels of social support.

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