Published in final edited form as:

Clin Gerontol. 2007 June 1; 30(4): 39–54. doi:10.1300/J018v30n04_03.

Urban Hypertensive African American Grandparents: Stress, Health, and Implications of Child Care

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Abstract

Because stress is a major factor in hypertension, research on parenting stressors and lifestyle behaviors of grandparents with hypertension is important. This study describes urban African Americans caring for grandchildren and examines effects of perceived parenting stressors on hypertension self-management. Hypertensive African American grandparents ($N = 49$) residing in a large Midwestern city participated in the study. Structured interviews collected descriptive data and the Index of Parental Attitudes (IPA). Participants' ages ranged from 30 to 82 years, were mostly female (77%), and had from 1 to 6 grandchildren. Participants were sedentary (51%), cigarette smokers (47%), and obese (67%). Mean systolic blood pressure was 157 and mean diastolic blood pressure was 89. IPA scores averaged 12.7, with scores ≥ 30 , indicating high levels of parental stress. Some participants (8.4%) had clinically stressful relationships with their grandchildren. The correlation between blood pressure and parental stress was not statistically significant, with a significant negative correlation found between participants' ages and diastolic blood pressure. The correlation between the number of hours spent caregiving and age produced a statistically significant relationship.

Keywords

Parental stress; hypertension; grandparent(s); urban; African American

SIGNIFICANCE OF THE STUDY

More than 42% of households in urban Wayne County, Michigan (Detroit area) are headed by grandparents (US Census, 2000). As parenting responsibilities among elders increase, it is important to examine effects of parenting attitudes on health and well-being of caregiving adults experiencing chronic healthcare problems, such as hypertension. Cardiovascular disease is the leading cause of death among African Americans and coronary heart disease is a principal fatal outcome related to hypertension (American Heart Association, 2004; Cooper & Rotimi, 1997). African American men and women between 55 and 64 years of age disproportionately

experience higher incidences of hypertension than other racial groups. African Americans living in high-poverty urban areas may experience progressively worsening health from middle to older age, which can be further diminished with the occurrence of a variety of stressful events (including grandparenting responsibilities).

LITERATURE REVIEW

Grandparent-Headed Households

Grandparent-headed households are those with a grandparent having parental responsibility for grandchildren residing in the home. Parental responsibility is defined as time spent rearing, providing financial support, emotional support, and/or spiritual guidance to grandchildren. Although grandparents do not need to have full legal custody to be considered head of the household in which the grandchildren reside, she may be the major financial provider and/or decision maker of the family.

The number of grandparents providing care to their grandchildren increased from 2.2 million US households in 1970 to 3.9 million in 1997, an overall increase of 76% (Fuller-Thompson & Minkler, 2001). The 1990 US Census showed a continuing rise in grandparent-headed households between 1980 and 1990, an increase of 44%. In 1990, approximately 5% of all US children resided with their grandparents. The 2000 US census reported that approximately 5.5 million children nationwide were being raised in grandparent-headed households. Therefore, about 10% of children in the US were being raised by their grandparents. In addition, approximately 7.8% of all children registered in Michigan public schools between the ages of 3 and 18 were residing in grandparent-headed households (US Census, 2000).

Many factors have been cited for the increase in African American grandparent-headed households, especially those where neither biological parent is present. Physiological health problems, emotional problems, working mothers, teen pregnancy, homicide, suicide, imprisonment, drug abuse, and child abandonment are some factors cited in the literature that have contributed to an increase in grandparents caring for their grandchildren (Fuller-Thompson & Minkler, 2001; Fuller-Thompson, Minkler, & Driver, 1997).

Cultural norms for African American families have been rooted in extended family kinships since pre-American slavery times (Willis, 1998). Kinships include role flexibility among parents, grandparents, aunts, uncles, close friends, and neighbors, all of whom take active roles in rearing family children. During slavery, many African American parents were required to work on plantations and leave the care of child rearing to family elders (grandparents or other close kinships). Initially, grandparents caring for grandchildren were a primary means of survival for many African American families, but throughout the decades, the role of grandparents in African American families broadened and provided African American families with greater stability, financial prosperity, coping efficacy, emotional support, and resiliency (Willis, 1998). These kinships afforded close familial bonds, that encouraged extended family members committed to help one another financially, spiritually, and emotionally. Although many African Americans lived in three-generation households in the early to mid-1900s, this trend has changed (US Census, 2000). Although some grandparents often reside in homes away from their children and grandchildren, the flexibility of their roles as caretaker, advisor, babysitter, spiritual, and emotional leaders remains important.

Additional studies suggest that African Americans are at greater risk of becoming grandchild caregivers than other races (Fuller-Thompson et al., 1997). Furthermore, the state of Michigan reported a higher proportion of African American grandparent-headed households than White grandparent households (US Census, 2000). In Michigan, Wayne County grandparent-headed households accounted for 5.2% of all children enrolled in school. Wayne County showed

similar disparities among African Americans and Whites, who were responsible for the care of their grandchildren (US Census, 2000).

According to Fuller-Thompson et al. (1997), the majority of grandparent caregivers are women (77%). Pruchto (1999) asserted that African American grandmother households are more likely than White grandmother households to provide extensive care to their grandchildren (9.2% vs. 2.3% of White households). Extensive care is defined as more than 30 hours of care per week or more than 90 nights per year (Minkler & Fuller-Thompson, 2001). In addition, Minkler and Fuller-Thompson (1999) suggested that grandparent caregivers were more prevalent in inner cities, with approximately half of all urban children cared for by their grandparent(s). For these reasons exploring the effects of African American grandparents' parental attitudes on their hypertension self-management is important. It is common for adults in lower-income inner city neighborhoods to assume the role of extensive caregivers for their grandchildren. This trend may lead to increased stress levels associated with inadequate financial resources and support networks (i.e., babysitters). An extensive search of the literature found no published studies describing or relating parental stress to hypertension control in grandparent caregivers.

Studies have explored the mental health status of grandparents providing extensive care to their grandchildren. Minkler and Fuller-Thompson (2001) using African American grandparents who ranged from 53 to 60 years of age and were caring for 4–6 children had the lowest family income (\$20,809). They were more likely to demonstrate depressive symptoms than grandparents of other ethnic groups. A greater number of depressive symptoms have been found among African American female grandparents who were caring for more than four children (Minkler & Fuller-Thompson, 2001; Solomon & Marx, 1998).

Some studies describing demographics of grandparents caring for grandchildren provided insight into differences between age and income levels of African American and White grandparents (American Association of Retired People (AARP), 2002; Jendrek, 1994). The age of African American grandparents providing extensive care to grandchildren ranged from 40 to 62 years, with a mean age of 48 years. In contrast, their White counterparts' ages ranged from 60 to 69 years, with a mean age of 64 years. The average income reported by African American grandparent caregivers (\$20,809) was less than half of the mean income of White grandparent caregivers (\$50,000; AARP, 2002; Minkler & Fuller-Thompson, 2001). African American grandparent caregivers also were less educated, more likely to be employed, whereas a greater number of White grandparents reported higher levels of education and being retired (AARP, 2002; Baydar & Brooks-Gunn, 1998; Straw-bridge, Wallhagen, Shema, & Kaplan, 1997).

Studies by Fulton-Picot, Stull, Robinson, and Hill-Westmoreland (2002) and Lu (2002) provided information on blood pressure stress responses in African American caregivers related to living arrangements, acting-out behaviors, and caregiver characteristics. Preliminary results from these conference presentation studies found that people who reported higher stress levels also had increased blood pressure readings.

A study on the social support and life satisfaction of White female caregivers (Landry-Meyer, Guzella, & Gerard, 2002) used a modified version of the Index of Parental Attitudes (IPA) instrument to measure caregiving stress. Study results indicated that stress among grandparent caregivers influenced general quality of life. Perceived social support did not buffer the association between caregiving stress and life satisfaction.

Researchers (AARP, 2002; Fulton-Picot et al., 2002; Landry-Meyer et al., 2002; Lu, 2002) found that lower income and education levels, as well as diminished social support contributed to increased stress. As many African American grandparents were not retired, they mirrored responsibilities associated with working parents, while endeavoring to manage their chronic

health conditions. In addition to caring for grandchildren, many low-income urban African Americans grandparents (especially those not old enough to qualify for Medicare and Social Security) were caring for themselves and their children and/or grandchildren on insufficient incomes. These grandparents also may lack transportation, access to health care and insufficient medical and prescription drug coverage (Minkler & Fuller-Thompson, 1999; Pruchno, 1999).

Therefore, the purpose of this study is to examine effects of parental attitudes (stressors) on lifestyle behaviors (diet and physical activity) among urban dwelling hypertensive African Americans caring for grandchildren. This study describes systolic and diastolic blood pressure, and self-reported dietary habits (specifically sodium intake), minutes of physical activity, and levels of parental stress of those caring for grandchildren. This study will address the following research questions:

1. What are the demographic characteristics of urban hypertensive African American grandparents who are responsible for raising grandchildren?
2. Is there a relationship between parental stress and systolic and diastolic blood pressure readings among urban hypertensive African American grandparents who are responsible for raising grandchildren?
3. Is there a relationship between parental stress and lifestyle behaviors (sodium intake and physical activity) among urban hypertensive African American grandparents who are responsible for raising grandchildren?

METHODS

This study uses data collected from a larger randomized controlled trial designed to compare effects of home blood pressure telemonitoring versus usual care on change in blood pressure from baseline to 12-month follow-up. Participants in the parent study were recruited through free blood pressure screenings at selected community sites, such as community centers, school parent groups, grocery stores, pharmacies, etc. The average of at least two blood pressures on three different screening visits was used to determine eligibility for the study. For this study blood pressure results, dietary habits, physical activity and total Index of Parental Attitudes (IPA) scores were obtained at baseline only for each grandparent.

Participants

Inclusion criteria for participants in the larger study were diagnosis of uncontrolled hypertension, African American ethnicity, 18 years of age or older, arm circumference < 18 inches, and ability to read and understand English. Exclusion criteria included: cancer, end-stage renal disease, hemodialysis, or other terminal illness, as well as pregnancy or self-reported substance abuse. Participants who met the eligibility criteria of the parent study and reported having their grandchildren living with them were included in this study.

Measures

Index of Parental Attitudes—The Index of Parental Attitudes (IPA) questionnaire (Hudson, 1992) was used to measure grandparent relationship problems with a child of any age, from an infant to an adult. The IPA is a 25-item instrument designed to measure the extent and severity of parent-child relationship problems as perceived and reported by grandparents, with the total score providing a parental relationship index. Each of the 25 items representing a parent stressor is rated by grandparents using a 7-point scale ranging from 1 for none of the time and 7 for all of the time. Hudson provided a protocol for scoring the IPA. The ratings for the 25 items are summed to obtain a score. The number of completed items is then subtracted from the summed score, with this result multiplied by 100. The outcome of this calculation is then

divided by the number of completed items multiplied by 6. This score computation produces a score between 0 and 100, with higher scores indicating greater stress from parenting.

Hudson (1992) developed cut scores for the IPA. A clinical score of 30 indicates that grandparents who score above 30 have a clinically significant problem with a stressful grandparent-child relationship. Scores below 30 are indicative that grandparents are generally free from clinically significant stress associated with the grandparent-child relationship. A second cutting score of 70 was used to identify grandparents who were experiencing severe stress from the grandparent-child relationship. If scores reach this level, a possibility exists that the grandparent could use violence to resolve his/her stress with the child, although the test administrator should not assume that violence is going to occur.

Internal consistency reliability has been reported to be very good, with alpha coefficients ranging from 0.90 to 0.97 (Hudson, 1992). High face, content, discriminant, and construct validity have also been reported (Hudson, 1992; Hudson, Wung, & Borges, 1980; Kanak, 1998).

Demographic Survey—The demographic items on the survey included the number and ages of grandchildren for whom participants were providing care. Participants were asked to report the number of hours per week they spent caring for their grandchildren and whether their grandchildren had cognitive or physical disabilities. Participants were asked to indicate their legal relationship with grandchildren for whom they were providing care, as well as the frequency and influence of spiritual activities as stress-relieving strategies.

Health Indicators

Blood Pressure—Blood pressures were measured using an electronic blood pressure monitor (Omron HEM-737 Intellisense) that has been validated in accordance with criteria of the British Hypertension Society and the Association for the Advancement of Medical Instrumentation (Dahl Educational Trust, 2005). Blood pressures were measured following a 5-minute rest period; at least three blood pressure readings were recorded and the average of them all was used for analyses. All blood pressure readings were taken in accordance with JNC-7 guidelines (JNC-7, 2003).

Dietary Habits—Participants were asked to complete three 24-hour self-reported food recalls at baseline. Specifically, information regarding the sodium intake of the participant based on the average of three self-reported food recalls at baseline were evaluated for the purposes of the present study. Daily servings from each food group will be measured by using 24-hour dietary recalls. Multiple-day food recall is a valid, noninvasive method of measuring dietary intake because this represents more accurately a person's usual or habitual intake (Block, 1982). Participants were contacted on two randomly selected weekdays and one weekend day to ask them to recall what they had eaten within the last 24 hours. Each recall took approximately 10 minutes to complete. The review of the food intake moved sequentially through the day beginning with the first food and drink. Food models and measuring cups and spoons were used as memory aids to assist the participant to report accurate serving sizes. Twenty-four-hour food recalls permitted assessment of daily servings and serving sizes, as well as assessment of micronutrients and sodium. Data were translated into nutrient intakes using computer software titled the Food Processor by ESHA Research (Salem, OR). Recommendations for reduced sodium intake were taken from "The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure" (2003). Recommendations were to reduce sodium intake to less than 100 mmol/day (2.4 g sodium or 6 g sodium chloride). Sodium intake was measured using 24-hour food recalls

as described above, and through nutrient analyses counting the number of sodium grams consumed per day.

Body Mass Index—Body mass index (BMI) is a relationship between weight and height that is associated with body fat and health risk. The formula for calculating BMI is weight in pounds divided by the height in inches squared. The result is then multiplied by 703 to provide the BMI. BMI over 25 is considered overweight, with BMI outcomes greater than 30 indicative of obesity.

Physical Activity—Physical activity was measured by the 7-day Physical Activity Recall (PAR; Montoye, Kemper, Saris, & Washburn, 1996). This instrument determined the amount of time and intensity spent on physical activities. Reliability and validity of this measure was established in previous research.

Data Analysis

Correlations between variables (blood pressure and parenting attitudes) were examined to assess strength and direction of association between blood pressure readings at baseline and parenting attitudes. In addition, correlations were obtained between IPA scores with blood pressure readings and personal characteristics of the grandparents. All decisions on the statistically significant of the findings were based on a criterion alpha level of 0.05.

RESULTS

Description of the Sample

Forty-nine grandparents were in the sample, with actual ages ranging from 30 to 82 years of age and a mean age of 60.88 ($SD = 12.35$) years (see Table 1). The majority of participants were female ($n = 38, 77.6\%$). The number of years of education ranged from 6th grade through graduate school. The majority of grandparents were single, but had formerly been married ($n = 29, 59.2\%$), with 6 (12.2%) reporting their marital status as single, never married.

The largest group of African American grandparents indicated they were caring for 1 ($n = 26, 53.1\%$) or 2 ($n = 13, 26.5\%$) grandchildren (see Table 2). They spent an average of 48.31 ($SD = 22.04$) hours per week providing childcare for their grandchildren. Two (4.1%) grandparents reported they had disabled grandchildren in their care and 3 (6.1%) had legal custody of their grandchildren.

The household incomes of the African American grandparents ranged from less than \$5,000 to more than \$50,000, with most grandparents ($n = 16, 34.0$) reporting annual incomes less than \$10,000. The majority of grandparents ($n = 34, 69.4\%$) were not working. Of those who were employed, their work hours ranged from 6 hours per week to 65 hours a week. Most of the grandparents ($n = 40, 81.6\%$) reported they had health insurance. The largest group of grandparents ($n = 29, 59.2\%$) reported engaging in spiritual activities to relieve stress, with time spent in these activities ranging from 1 to 26 hours a week.

Lifestyle Behaviors—Their self-reported health was either good ($n = 24, 49.0\%$) or fair ($n = 15, 31.3\%$). The average intake of sodium was 2,095.97 mg per day ($SD = 840.76$) (Table 1), with sodium intake ranging from 888.67 to 4,133.00 mg daily. A majority were not smoking cigarettes at the time of the study ($n = 38, 77.6\%$). When asked to self-report their physical activity, 25 (51.0%) did not exercise at all, with the next largest group indicating they exercised one to three days a week ($n = 21, 42.9\%$). The average BMI of participants in the study was 31.63 ($SD = 5.23$), with a range from 21.14 to 44.92.

Relationship Between Parental Stress and Blood Pressure

The mean IPA score was 12.69 ($SD = 11.80$; Table 1), with scores ranging from 0 to 62.67. Scores that exceeded 30 were considered stressful. The correlations between IPA scores and systolic and diastolic blood pressure readings, age, number of grandchildren in the home, and number of hours spent providing direct child care were not statistically significant, indicating that parenting stress was unrelated to blood pressure readings, age of the grandparent, number of grandchildren, and number of hours spent in providing care to grandchildren. Similar findings were obtained for diastolic blood pressure, with the exception of age, $r = -0.58$, $p < 0.001$, which indicated that younger grandparents having higher diastolic blood pressure readings. To further explore this finding, age was correlated with four variables that could contribute to caregiving stress: IPA scores, hours worked per week, number of grandchildren in home, and number of hours spent caregiving grandchildren. The correlation between the number of hours spent caregiving and age produced a statistically significant relationship, $r = -0.30$, $p = 0.037$. This finding indicated that younger grandparents spent more time in caregiving activities than older grandparents.

Relationship Between Lifestyle Behaviors and Parental Stress

Correlation coefficients using Pearson product moment correlation were used to determine the strength and direction of the relationships between nutrition (average intake of sodium), number of days participant exercised for 30 minutes, and body mass index with parental stress scores. The results of these analyses were not statistically significant, indicating that parental stress levels were not related to average intake of sodium, number of days participant exercised for 30 minutes, and body mass index.

LIMITATIONS OF THE STUDY

As the pilot study data had been collected as part of a larger study, the researcher lacked control over selection of participants and administration of the instruments. The study was limited to African American participants. As a result, findings may not be applicable to grandparents of other ethnic or racial groups. A large Midwestern urban area was used to recruit grandparents for the study. Grandparents from other geographic areas (suburban and rural) may have different experiences that are unrelated to the present study.

DISCUSSION

Throughout history African American grandparents commonly assumed extensive roles in parenting grandchildren. Culturally, African American families have survived on kinship care without legalities of custody or guardianships. Traditionally, African American families, particularly grandparents, accept the responsibility of providing care and guidance for dependent children when their biological parents are unable to be full-time parents. In many urban environments where African American families reside, many multi-family housing units were built to accommodate these close kinships. For example, many homes are conjoined to form two or more units, one for grandparents and one or more for other members of the family (parents, grandchildren, aunts, uncles, cousins, etc.). These dwellings allowed grandparents to assume parenting roles in convenient, close environments. Grandparents in these situations were available to care for grandchildren given various life situations (e.g., working parents, divorce, family illness, death of parents). Given that some African American grandparents practice these traditional kinship values, their perceptions of parenting dependent grandchildren may not be stressful or negative in nature. Some participants in the present study reported experiencing stressful relationships with their grandchildren, although the overall correlation between parental stress and blood pressure was not significant.

When the health indicators were correlated with grandparent-related variables, one statistically significant outcome was obtained. The negative correlation between age and diastolic blood pressure was statistically significant, indicating that younger grandparents were more likely to have higher diastolic blood pressure readings. Previous research on diastolic blood pressure has not provided conclusive evidence of the effects of age on change for diastolic blood pressure. However, when age was correlated with factors related to caregiving, the younger grandparents spent significantly more time in direct care with the child and experienced higher diastolic blood pressure readings. The findings could indicate that younger grandparents who are not of retirement age and continue to work full-time jobs experience higher levels of diastolic blood pressure readings due to the added responsibility of caring for themselves and their grandchildren.

The present study was an initial attempt to develop a knowledge base about the influence of parenting attitudes on grandparents' blood pressure when caring for grandchildren. Based on the results of this study, further studies and possible interventions can be tested to help grandparents cope with parental stress experienced as a result of caring for themselves and their grandchildren. The findings of this and future studies may have implications for policy changes within Social Security, Medicare, and other government entitlement programs. Special attention should be given to lower-income younger grandparents caring for children because younger grandparents had significant health effects related to providing care to their grandchildren (increased diastolic blood pressure) and are not eligible for government entitlement programs until 62 years of age. Grandparents caring for grandchildren need to be aware of available support services that can aid in relieving parental stress and financial burden of grandparenting. For grandparents who are willing to pursue legal custody of grandchildren, some agencies support this process by providing monthly federal subsidies, and funds to pay for the first two years of the grandchild's college education.

Results of studies with larger sample sizes and follow-up measurements can provide better indicators of the effects of parental stress among hypertensive African American grandparents caring for grandchildren and the influence of stress on their hypertension regimen compliance. Because extended family kinships have been, and remain, a stabilizing, supportive force in many African American families, role flexibility among grandparents in caring for grandchildren might not be perceived as stressful. Caregiving of grandchildren by African American grandparents may be a cultural expectation that is accepted.

Although this study was limited to African American grandparents, as more grandparents assume caregiving responsibilities for their grandchildren, research is needed to examine health effects arising from these duties. Future research should determine how grandparent caregiving activities influence physical and emotional health in grandparent-headed households including participants across various cultural, ethnic, and racial groups.

Acknowledgments

Funding for this research was provided in part by NIH/NINR (Minority Supplement 3 RO1 NRO 7682-02 S1 to Jacquelyn Y. Taylor), and NIH/NINR (R01 NRO 7682 to Drs. Artinian and Washington).

References

- American Association of Retired People (AARP). The grandparent study: 2002 Report. 2002. Retrieved on 09/15/2002 from the Internet at <http://research.aarp.org>
- American Heart Association (AHA). 2004 Heart and Stroke Statistical Update. Dallas, TX: American Heart Association; 2004.
- Baydar N, Brooks-Gunn J. Profiles of grandmothers who help care for their grandchildren in the United States. *Family Relations* 1998;47(4):385–393.

- Block G. A review of validations of dietary assessment methods. *American Journal of Epidemiology* 1982;114:492–505. [PubMed: 7041631]
- Cooper R, Rotimi C. Hypertension in Blacks. *American Journal of Hypertension* 1997;10(7):804–812. [PubMed: 9234837]
- Dabl Educational Trust. The British Hypertension Society and the Association for the Advancement of Medical Instrumentation. 2005. www.dableducational.com
- Fuller-Thompson E, Minkler M. American grandparents providing extensive child care to their grandchildren: Prevalence and profile. *Gerontologist* 2001;41(2):201–209. [PubMed: 11327486]
- Fuller-Thompson E, Minkler M, Driver D. Profile of grandparents raising grandchildren in the United States. *Gerontologist* 1997;37(3):406–411. [PubMed: 9203764]
- Fulton-Picot, S.; Stull, D.; Robinson, K.; Hill-Westmoreland, E. Inter-individual & intraindividual blood pressure stress response variation in African American caregivers: Latent growth curve analysis. Paper presented at the GSA Annual Meeting; Boston, MA. 2002.
- Hudson, W. The WALMYR assessment scales scoring manual. Tallahassee, FL: WALMYR Publishing Company; 1992. Index of parental attitudes.
- Hudson W, Wung B, Borges M. Parent-child relationship disorders: The parent's point of view. *Journal of Social Service Research* 1980;3(3):283–294.
- Jendrek M. Grandparents who parent their grandchildren: Circumstances and decisions. *Gerontologist* 1994;34(2):206–216. [PubMed: 8005493]
- Joint Committee. JNC-7: The Seventh Report of the Joint Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. JNC-7 Express. 2003
- Kanal, B. Unpublished Doctoral Dissertation. Adelphi University; Garden City NY: 1998. Attitudes of mothers and fathers toward their children with cleft lip and palate.
- Landry-Meyer, L.; Guzell, J.; Gerard, J. Grandparent caregivers: Social support and life satisfaction. Paper presented at the GSA Annual Meeting; Boston, MA. 2002.
- Lu, Y. Effects of caregiving stress on functional capability and health promoting behavior in elderly caregivers. Paper presented at the GSA Annual Meeting; Boston, MA. 2002.
- Minkler M, Fuller-Thompson E. The health of grandparents raising grandchildren. *American Journal of Public Health* 1999;89(9):1384–1389. [PubMed: 10474557]
- Minkler M, Fuller-Thompson E. Physical and mental health status of American grandparents providing extensive child care to their grandchildren. *Journal of the American Medical Womens Association* 2001;56(4):199–205.
- Montoye, HJ.; Kemper, HCG.; Saris, WHM.; Washburn, RA. Measuring Physical Activity and Energy Expenditure. Champaign, IL: Human Kinetics; 1996.
- Pruchno R. Raising grandchildren: The experiences of Black and White grandmothers. *Gerontologist* 1999;39(2):209–221. [PubMed: 10224717]
- Solomon J, Marx J. The grandparent grandchild caregiving gradient: Hours of caring for grandchildren and its relationship to grandparent health. *The Southwest Journal of Aging* 1998;14:31–39.
- Strawbridge W, Wallhagen M, Shema S, Kaplan G. New burdens or more of the same? Comparing grandparent, spouse, and adult child caregivers. *Gerontologist* 1997;37(4):505–510. [PubMed: 9279039]
- U.S. Census Bureau. DP-2. Profile of selected social characteristics: 1990. Data Set: Census 1990 Summary File 3 (SF 3)–Sample Data. 1990. <http://factfinder.census.gov>
- U.S. Census Bureau. DP-2. Profile of selected social characteristics: 2000. Data Set: Census 2000 Summary File 3 (SF 3)–Sample Data. 2000. Geographic Area: United States
http://factfinder.census.gov/servlet/QTTable?_bm=y&-geo_id=01000US&qr_name=DEC_2000_SF3_U_DP2&-ds_name=DEC_2000_SF3_U&-_lang=en&-_sse=on Geographic Area: City of Detroit, Michigan
http://factfinder.census.gov/servlet/QTTable?_bm=y&-geo_id=16000US2622000&-qr_name=DEC_2000_SF3_U_DP2&-ds_name=DEC_2000_SF3_U&-_lang=en&-doLog=false&-_sse=on Geographic Area: Wayne County, Michigan
http://factfinder.census.gov/servlet/QTTable?_bm=y&-geo_id=05000US26163&-qr_name=DEC_2000_SF3_U_DP2&-ds_name=DEC_2000_SF3_U&-_lang=en&-_sse=on Or: go to <http://factfinder.census.gov>/ Click on “Factsheet,” then enter “Wayne County, Michigan,” then go

down to “Social Characteristics” and click on “show more.” Repeat for United States and City of Detroit.

Willis, W. Families with African American roots. In: Lynch, EW.; Hanson, MJ., editors. *Developing Cross-Cultural Competence*. 2. Baltimore, MD: Paul H. Brookes Publishing Co; 1998.

TABLE 1

Descriptive Statistics: Variables (Health Indicators and Grandparent Stress Measures)

	Number	Mean	SD
Health Indicators			
Blood pressure			
Systolic blood pressure	39	155.01	22.93
Diastolic blood pressure	39	86.24	14.19
Average sodium intake	36	2095.97	840.76
Body mass index	39	31.63	5.23
Grandparent stress measures			
Age at time of study	49	60.88	12.35
Number of hours spent caregiving	49	48.31	22.04
Index of parental attitudes score	48	12.69	11.80

TABLE 2

Frequency Distributions: Grandparent-Related Variables (N = 49)

Grandparent-Related variables	Frequency	Percentage
Number of grandchildren in home		
One	26	53.1
Two	13	26.5
Three	7	14.3
Five	1	2.0
Six	2	4.1
Child is physically/mentally disabled		
Yes	2	4.1
No	47	95.9
Legal custody of grandchild		
Yes	3	6.1
No	46	93.9
Used spiritual activities to relieve stress associated with parenting		
Yes	29	59.2
No	20	40.8
Number of hours per week spent in spiritual activities		
None	20	41.7
1 to 5	12	25.0
6 to 10	10	20.8
11 to 15	2	4.2
21 to 25	3	6.2
Over 25 (Missing 1)	1	2.1