

ORIGINAL ARTICLE

The Health of Caregiving Grandmothers: A Rural-Urban Comparison

Jeri L. Bigbee, PhD, RN, FNP-BC, FAAN;¹ Carol Musil, PhD, RN, FAAN;² & Diane Kenski, BS¹

¹ School of Nursing, Boise State University, Boise, Idaho

² Frances Payne Bolton School of Nursing, Case Western Reserve University, Cleveland, Ohio

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Abstract

Purpose: The purpose of this study was to compare the characteristics of rural versus urban caregiving grandmothers along with their physical and mental health status.

Methods: A secondary analysis of data produced from the first wave of a longitudinal study of 485 Ohio grandmothers was conducted. Health status was measured using the SF-36 Health Survey and the 20-item CES-D depression scale. Rural-urban classification was made using Rural Urban Commuting Area (RUCA) codes based on resident ZIP codes, identifying 97 rural and 388 urban grandmothers in the sample.

Findings: The rural and urban grandmothers were similar in age, educational level and employment status; however, 90% of the rural grandmothers compared with 60% of the urban grandmothers were white. Rural grandmothers were most likely to have traditional nonresidential relationships with their grandchildren. Approximately 38% of both the rural and urban grandmothers served as primary caregivers for their grandchildren, but a lower percentage of rural grandmothers lived in multigenerational homes. There was no significant difference between the rural and urban grandmothers in relation to physical or mental health. Among rural grandmothers, primary caregivers had significantly lower levels of mental health compared with the other caregiver groups.

Conclusions: These findings suggest that rural and urban grandmothers have similar levels of physical and mental health, despite differences in demographics and caregiving arrangements. Health promotion efforts with rural caregiving grandparents are indicated, addressing both mental and physical health.

Key words caregiving, grandmothers, health, rural, urban.

There has been a dramatic rise in the number of grandparents raising or providing significant caregiving for their grandchildren in the past 2 decades, particularly in rural and frontier areas. Nationally, over 2.4 million grandparents report that they have responsibility for their grandchildren in their home.¹ One in 10 grandparents in the United States is responsible for raising his or her grandchildren for 6 months or more at some point in their lives.² The most common reasons why grandparents as-

sume a custodial role include parent incarceration, death, mental illness, substance abuse, and neglect and abuse of children.³ According to the American Community Survey,⁴ two-thirds of caregiving grandparents are under the age of 60, just over half are white (non-Hispanic), two-thirds are women, 70% are employed, and 30% are disabled.

With grandparents increasingly serving as the safety net for the children in their families, promoting the

health of caregiving grandparents is critical to ensuring family stability and well being. Caregiving grandparents often voice concerns related to staying healthy and living long enough to see their grandchildren reach adulthood. Research that has examined the health of caregiving grandparents has produced mixed results. Some studies suggest that caregiving grandparents experience higher rates of depression, anxiety, diabetes, hypertension, insomnia, and limitations with activities of daily living than their age peers.^{5,6} This may be because the demands of child care can reduce grandparents' time for self-care, including exercising and accessing health care and may also exacerbate poor health behaviors, such as smoking.^{7,8} However, Hughes et al⁹ found little support for the negative effects of childrearing on the health of caregiving grandparents. In this large national longitudinal study, grandmothers showed a decline in self-rated health after their grandchild moved in, but the negative effect disappeared over time. Grandmothers in this study showed some increases in depression, obesity, and reduced exercise while providing care for their grandchildren. However, grandmothers developed more functional limitations after their grandchildren moved out, suggesting a positive effect of childrearing.

Musil¹⁰ found no differences between grandmothers who had primary responsibility for raising their grandchildren and those who did not in relation to self-assessed health, anxiety, or depression; however, grandmothers in both groups reported high depression and anxiety scores. In a subsequent study with 486 Ohio caregiving grandmothers, Musil et al¹¹ found that grandmothers raising grandchildren reported more depressive symptoms, but when demographic characteristics were controlled for, primary caregiving status was not related to depressive symptoms. Whitley et al's¹³ research with urban custodial African American grandmothers showed physical health levels significantly lower than national norms, but mental health levels were not significantly different (based on SF-65 Health Survey scores). Leder et al¹² found that custodial grandparents' reported levels of physical, social, and mental health were inversely related to levels of parenting stress. In a study of 104 custodial grandmothers, Dowdell¹⁴ found that 60% of the sample rated their health as being good or excellent, with 11% reporting that their health had improved and 10% indicating that their health had declined since assuming a primary caregiving role. In earlier studies, Minkler and Fuller-Thomson¹⁵ compared the functional and self-rated health of 173 grandparents raising grandchildren with that of 3,304 noncaregiving grandparents and found that custodial grandparents were significantly more likely to have limitations in activities of daily living and lower levels of satisfaction with health. Minkler et al¹⁶ also

found that custodial grandparents were almost twice as likely to have higher levels of depression. Similarly, Blustein et al¹⁷ found that, in a large (N = 10,293) prospective national sample of caregiving grandparents, grandparents with primary caregiving responsibility for their grandchildren had higher levels of depression, particularly among single women of color. Ruiz et al¹⁸ found that in their study of custodial African American grandmothers, 20% reported being depressed, which was also associated with higher levels of chronic physical health conditions. Nunn¹⁹ reported that among African American caregiving grandparents most considered their health to be satisfactory, but they reported a greater number of health concerns. Similarly, Burnette²⁰ found rates of self-reported poor health and depression to be twice as high among Latino custodial grandparents in New York City compared with grandparent caregivers nationally.

There has been very little research focusing on rural or frontier caregiving grandparents. However, this population has been identified as a needed area for future research.⁵ Rural elders in general have significantly lower incomes and higher poverty rates than their urban peers, particularly among women and rural elders of color. Many rural areas have experienced depopulation and economic distress, resulting in shrinking informal and formal support networks, particularly for rural elders who are left behind. The current methamphetamine epidemic affecting many rural communities is also a major contributor to the growth of caregiving grandparent families.^{21,22} Health-related research with rural and frontier grandparents suggests that they are a diverse population with complex physical and mental health needs. In a study of rural grandparents in general, perceived self-efficacy was found to be associated with church attendance, knowledge of one's own grandparents, a farm history, a strong grandparent-parent bond, geographic proximity, and having fewer grandchildren.²³ However, caregiving grandparents were not specifically identified in this study. Bullock's²⁴ qualitative research with 65 predominantly African American and Latino rural caregiving grandmothers in southeastern North Carolina indicated that raising grandchildren was associated with increased financial stress, cramped housing, role restriction and social isolation, but also greater life satisfaction, a sense of positive influence on future generations, and a reliance on spirituality. This study also found that the rural grandmothers tended to minimize their own social and health needs in deference to the needs of their grandchild. In a subsequent study of rural African American caregiving grandfathers, Bullock²⁵ found that 5 factors (obligation, lack of availability of other caregivers, family tradition, role modeling, care and concern) influenced their decision to assume the parenting role, along with

3 factors (lack of resources, feelings of powerlessness, religion/spirituality) that impacted their ability to continue to provide care.

A model intervention program in Georgia, *Project Healthy Grandparents (PHG)*, addresses the comprehensive needs of rural and urban caregiving grandparents through an interdisciplinary case management approach. Program-related research with some of the rural participants indicated low levels of reported psychosocial distress, high levels of feelings of family empowerment, moderate levels of perceived parental locus of control, but low levels of available resources and social support.²⁶ In a follow-up qualitative study, Kropf and Robinson²⁷ found the most common pathway that led to rural custodial grandparenting was the parent exiting a multigenerational household. Based on their experience in working with rural grandparents in the PHG program, Myers et al²⁸ concluded that "health issues are one of the major concerns of grandparents raising grandchildren" (p. 63) and recommend working with families to promote and maintain healthy lifestyles, particularly focusing on maintaining functioning and early detection of health problems with grandparents.

In a recently completed pilot study with 11 caregiving frontier grandparents in Idaho,²⁹ the most commonly reported health problems were diabetes (36%), hypertension (36%), hyperlipidemia (18%), and fibromyalgia (18%). Health status, measured using the SF-36 Health Survey, indicated higher than norm-based mental health scores (mean = 53.6) but lower than norm-based physical health scores (mean = 43.5). Means were BMI 31 (obese), systolic blood pressure 133 mmHg, diastolic blood pressure 85 mmHg, HDL 42 mg/dL, and glucose 126 mg/dL. These pilot findings suggest that frontier caregiving grandparents may be at significant health risk, particularly in relation to obesity, cardiovascular disease, and diabetes. No studies to date have been reported comparing the health of rural and urban caregiving grandparents.

Based on this review of the literature, it is clear that further research is needed related to the health of rural and urban caregiving grandparents. Comparative information is particularly needed regarding the health of rural and urban grandparents providing care to their grandchildren, to guide future intervention efforts. The purpose of this study was to compare the characteristics of rural versus urban caregiving grandmothers along with their physical and mental health status. The following research questions were addressed:

1. Is there a difference in demographic characteristics among rural versus urban grandmothers?

2. Is there a difference in physical health status among rural versus urban grandmothers?
3. Is there a difference in mental health status among rural versus urban grandmothers?

Methodology

This comparative retrospective study was a secondary analysis of data produced from the first wave of a larger longitudinal study of 485 Ohio grandmothers conducted in 2001-2003, which examined the effects of caregiving on the health of grandmothers. Women were eligible to participate if they had at least 1 grandchild younger than 16 years old and could be assigned to 1 of the 3 caregiving groups: primary, multigenerational, or traditional. Primary caregiver grandmothers were defined as having responsibility for raising their grandchildren without parents living in the home. Multigenerational grandmothers were defined as living in a home with 1 or more grandchildren and the grandchild(ren)'s parent(s). Traditional grandmothers were defined as having grandchildren living within a 1-hour drive, being in contact with the family, and providing less than 20 hours of care to grandchildren a week. Following institutional review, board review, and approval for the original study, potential participants were recruited by random digit dialing (RDD) provided by a university-affiliated survey research center, which identified grandmothers in each of the 3 caregiving groups. The grandmothers were later contacted by project staff to ascertain interest in participating in the study. Because of the proportionally lower percentages of grandmothers raising grandchildren, recruitment of grandmothers in this group was supplemented by convenience sampling through grandparent support groups, which yielded participants for the primary and multigenerational groups: 100% of traditional grandmothers, 93% of multigenerational, and 39% of primary caregivers were recruited through RDD. The overall response rate was 73%, consistent with other studies using mailed surveys.³⁰ Further details of the sampling procedure are reported elsewhere.¹¹

For this secondary analysis, 485 participants were included and classified as rural or urban based on resident ZIP codes using 2006 Rural Urban Commuting Area (RUCA) codes. Using the dichotomous Categorization D definition recommended by researchers at the WWAMI Rural Health Research Center,³¹ RUCA codes 1.0, 1.1, 2.0, 2.1, 4.1, 5.1, 7.1, 8.1, and 10.1 were classified as urban and all other codes were classified as rural. Based on this dichotomous classification, 388 (80.0%) of the sample were classified as urban and 97 (20.0%) were classified as rural. These findings are quite representative

of the Ohio population overall, which was estimated (in 2008) to include approximately 19.3% rural residents.³² Within the rural subgroup, participants resided in large rural cities/towns (n = 69, 14.2% of the total sample), small rural towns (n = 18, 3.7%), and isolated small rural towns (n = 10, 2.1%) (based on the WWAMI Rural Health Research Center Classification E).³¹

Participants were mailed an informed consent, a questionnaire, and a stamped return envelope. Then, 2-week reminder postcards, a 4-week replacement packet, and a 10-week reminder postcard were sent, if needed. Participants received a \$15 incentive upon questionnaire return. The sample completed the mailed survey on themselves and their families. Physical and mental health status were measured using the SF-36 Health Survey,³³ an established tool in public health research with strong reliability, validity, and norms data.³⁴ The SF-36 is a multipurpose, 36-item health survey that yields an 8-scale profile of functional health and well-being scores as well as psychometrically based physical and mental health summary measures. Reliability estimates have been published in more than 200 studies, and results from more than 30 test-retest studies have also been summarized.³⁵ Studies to date have yielded content, concurrent, criterion, construct, and predictive evidence of validity.^{33,36} The physical functioning, role-physical, and bodily pain scales and the physical component score have been shown to be the most valid SF-36 scales for measuring physical health. The mental health scale has been shown to be useful in screening for psychiatric disorders,^{34,37} as has the mental component summary measure.³⁴ In addition, participants were asked to indicate their current health concerns from a list of common chronic health problems. Depressive symptoms were also evaluated using the 20-item Center for Epidemiological Studies-Depression Scale (CES-D).³⁸ The CES-D measures depressive symptoms on a 4-point (0-3) scale, with scores of 16 and higher indicating increased risk of clinical depression. The CES-D has excellent reliability (reported $\alpha = .85$; sample $\alpha = .90$) and validity. Demographic variables including race, marital status, age, and work status were also assessed.

The secondary analysis included a quantitative comparison of the rural versus urban subgroups in terms of demographic characteristics, physical health scores, mental health scores, and reported health conditions using chi-squares, 2-tailed independent *t* tests, analysis of variance, and multiple regression.

Results

Demographically, the rural and urban groups were compared and significant differences were found (Table 1).

Table 1 Rural-Urban Demographic Characteristic Comparisons

	Urban (n = 388)	Rural (n = 97)	Chi-Square	P
Race			44.397	.000
White	2,302 (59.8%)	87 (89.7%)		
African American/black	142 (36.6%)	4 (4.1%)		
American Indian/Alaskan native	0 (0%)	1 (1.0%)		
Native Hawaiian/Pacific Islander	1 (.3%)	0 (0%)		
Multiple races	10 (2.6%)	5 (5.2%)		
Not listed	3 (.8%)	0 (0%)		
Employed	179 (46.1%)	50 (51.5%)	.912	.337
Married/partnered	202 (52.1%)	65 (67.0%)	7.008	.008
Caregiver status			9.133	.010
Primary	146 (37.6%)	37 (38.1%)		
Multigenerational	117 (30.2%)	16 (16.5%)		
Traditional	125 (32.2%)	44 (45.4%)		

The rural and urban grandmothers had similar levels of employment (51.5% vs 46.1%) and were similar in age (mean of 56.6 vs 57.1 years) and educational levels (approximately half of the sample had completed post high school study). However, the 2 groups differed significantly in racial distribution, with 59.6% of the urban grandmothers being white versus 89.7% of the rural grandmothers (chi-square = 44.397, *P* = .000), and significantly more of the rural grandmothers (67.0%) were married than the urban grandmothers (52.1%) (chi-square = 7.008, *P* = .008). The groups also differed significantly in terms of caregiver status. A similar proportion of rural and urban participants were primary caregivers (38.1% vs 37.6%); however, rural grandmothers were significantly less likely to live in multigenerational homes (16.5% vs 30.2%) and more likely to have traditional grandmother caregiver relationships with their grandchildren (45.5% vs 32.2%) compared with their urban counterparts (chi-square = 9.133, *P* = .010).

When the rural and urban groups were compared in relation to health status, however, no statistically significant differences were found (Table 2). In relation to physical health, the mean SF-36 composite physical health score was similarly below the adult norm for both groups (43.5 for rural and 42.9 for urban). In relation to specific

Table 2 Rural-Urban Health Indices Comparisons

	Urban Mean (n = 388)	Rural Mean (n = 97)	t-Test	P
SF-36 physical component	42.9	43.5	-.4.080	.684
SF-36 mental component	47.9	47.9	-.006	.995
CES-D 20 item	13.5	12.9	.501	.617

Table 3 Rural-Urban Comparison in Reported Health Problems

	Urban (n = 383)	Rural (n = 94)
Arthritis	199 (52.0%)	53 (56.4%)
Diabetes	73 (19.1%)	18 (19.1%)
Poor circulation	71 (18.5%)	18 (19.1%)
Hypertension	55 (14.3%)	12 (12.8%)
Chronic lung disease	52 (13.6%)	12 (12.8%)
Ulcer	45 (11.7%)	5 (5.3%)
Cancer	31 (8.1%)	7 (7.4%)
Complications from diabetes	21 (5.5%)	7 (7.4%)
Rheumatoid arthritis	26 (6.8%)	9 (9.6%)
Stroke/mini-stroke	18 (4.7%)	8 (8.5%)
Congestive heart failure	15 (3.9%)	2 (2.1%)
Heart attack	10 (2.6%)	6 (6.4%)
Liver disease	8 (2.1%)	3 (3.2%)
Alzheimer's	1 (.3%)	1 (1.1%)

physical health conditions, there were also no significant differences between groups (Table 3), with arthritis, diabetes, poor circulation, hypertension, and chronic lung disease most commonly reported for both groups. A similar percentage of both groups also reported no known conditions (14.1% for rural and 15.7% for urban). Given that both samples were relatively young, it is notable that the vast majority suffered from one or more chronic conditions, which is consistent with the SF-36 physical composite scores. In relation to mental health status, as shown in Table 2, the rural and urban grandmothers again did not differ significantly in terms of the SF-36 composite mental health score (47.9 for rural and 47.9 for urban). Similarly, mean scores on the depression index (CES-D) were not significantly different between groups (12.9 for rural and 13.5 for urban). Multiple regression analysis did not reveal significant rural/urban effects in relation to demographic characteristics, caregiver status, or health status.

Given the fact that the rural grandmothers were predominantly white, the comparisons were repeated using only the white grandmothers in the sample, since racial disparities could potentially confound the rural/urban differences. Again, few significant differences were found between the rural (n = 87) and urban (n = 232) white subgroups. Demographically, the rural and urban grandmothers were significantly different only in relation to caregiver status (P = .009), with a higher percentage of rural white grandmothers having traditional caregiver roles (48.3% vs 34.9%) and fewer rural white grandmothers living in multigenerational homes (16.1% vs 32.8%), which was consistent with the total analysis. A slightly higher percentage of rural white grandmothers (35.6% vs 32.3% for urban) served as primary caregivers. In contrast to the total group analysis, there was no signif-

Table 4 Comparison of Physical and Mental Health Composite Scores in Relation to Caregiver Group

	Mean Physical Composite Score		Mean Mental Composite Score		
	F	P	Score	F	P
Rural subgroup		.80	45.1	3.83	.025
• Primary			42.3		43.9
• Multigenerational			43.2		49.3
• Traditional			47.2		50.7
Urban subgroup		13.37		.000	5.49
• Primary			39.2		45.7
• Multigenerational			44.9		47.9
• Traditional			45.4		50.4

icant difference in marital status between the white rural and urban subgroups, with 72.1% of urban and 73.9% of rural grandmothers reporting being married. In terms of health indices, there were no significant differences in the mean SF-36 physical composite score (rural mean = 43.9, urban mean = 43.9), the mental composite score (rural mean = 47.4, urban mean = 47.9), or the CES-D 20 (rural mean = 13.0, urban mean = 12.4) among the white grandmothers. In relation to the specific reported health conditions, the rural and urban samples reported similar frequencies, except in relation to strokes (P = .009), which were reported by 9.5% of the rural white and 2.6% of the urban white grandmothers, and ulcers (P = .045), which were reported by 4.8% of the rural and 12.6% of the urban white grandmothers.

When the entire rural subgroup's SF-36 physical and mental composite mean scores were compared by caregiver group, there were no significant differences between the groups in relation to physical health scores; however, the primary and traditional groups differed significantly (P = .029) in relation to mental health scores. The primary group had the lowest mean physical and mental health scores, while the traditional group had the highest physical and mental health scores. This pattern was consistent with the urban-only subgroup, except that the mean physical health scores among the urban primary grandmothers were significantly lower than the traditional group (P = .000), and mental health scores were significantly lower between the urban primary and multigenerational (P = .004) and traditional (P = .004) groups (see Table 4). Findings related to the total sample were consistent with those from the urban subgroup.

Discussion

This comparative study of 485 Ohio grandmothers represents the first health status comparison between rural and urban grandmothers. The results suggest that despite

some distinct demographic differences, rural and urban grandmothers are quite similar in their mental and physical health status. The comparative demographic findings suggest that rural grandmothers are more likely to be white and married than their urban counterparts. However, when only white grandmothers were compared on rural/urban status, the marital status differences were not significant, suggesting that the marital status differences were primarily related to race rather than rural-urban location. Rural grandmothers in this study were most likely to have traditional nonresidential relationships with their grandchildren; however, over a third of both the rural and urban grandmothers reported being custodial (primary) caregivers for their grandchildren. The grandmothers in the sample were predominantly middle-aged. However, most reported at least 1 chronic health problem, with arthritis, diabetes, poor circulation, hypertension, and chronic lung disease most common among both rural and urban grandmothers, which is fairly consistent with previous studies.^{14,29} Composite SF-36 physical and mental health scores were slightly lower than normed means, with mental health scores higher than physical, which is consistent with previous studies using the SF-36 with caregiving grandparents.^{13,29} This finding challenges the view that grandmothers, especially those with significant responsibility for the care of their grandchildren, may be a risk particularly for mental health concerns. The majority of the health-related research to date with caregiving grandparents has focused on mental health status, but these findings suggest that both rural and urban grandmothers may be at even higher risk for physical health problems. Consistent with previous research, this study indicated that primary caregiving grandmothers are generally at the highest health risk compared with multigenerational and traditional caregiving grandmothers. However, among the rural grandmothers, the only significant difference among caregiver groups was between primary and traditional grandmothers in relation to mental health status. The findings related to only the white grandmother subgroup indicated that urban grandmothers may be at higher risk for ulcers, while rural grandmothers may have a higher risk of stroke. However, the relatively small numbers related to these illnesses require additional study with larger samples.

Limitations of this secondary analysis include the fact that self-report data were collected in only 1 state. The sample included relatively little ethnic diversity in the rural subgroup and overall included few Native American, Latino, or Asian participants. Replication of the study with larger samples from multiple states with more diverse populations would be useful. The descriptive and predominantly bivariate focus of this study also represents a limitation. The majority of the rural grandmoth-

ers in this study resided in larger rural communities, which limits the generalizability of the findings to rural and frontier populations in more isolated settings. Additionally, because only data from grandmothers with grandchildren living in their homes or within 1 hour's drive were included, no comparison with women without grandchildren or grandmothers with grandchildren living farther away was possible. This study was also limited by the fact that grandfathers were not included.

Implications for future research include the need for further examination of rural and frontier caregiving grandparents using larger samples from diverse cultural and geographic settings using multivariate designs and analyses. Including both grandmothers and grandfathers, as well as grandparent couples together as the unit of analysis, may be particularly relevant in studying rural caregiving grandparents and their health, given the finding that most rural caregiving grandparents are married. From a health care access perspective, further research is indicated to assess rural grandparents' access to care for themselves and their families, given the findings related to their physical and mental health status and the access challenges present in many rural and frontier communities. Longitudinal studies are also indicated to assess trends over time, along with efficacy studies of interventional programs, especially with rural populations.

Practice implications based on the findings from this study also suggest that health promoting interventions with caregiving grandparents need to address both physical and mental health. Targeting primary (custodial) rural grandparents particularly for mental health promotion efforts may be the highest priority for intervention, based on the findings from this study. Creative delivery of these interventions is needed in meeting the needs of rural grandparents, including grandfathers and grandparenting couples as a whole. Grandparent support groups have been established in many communities, but they have not been reported in rural areas. Logistical issues of travel and adequate numbers of participants may limit the feasibility of applying interventional approaches that have been used in urban areas to rural populations. Use of telehealth and web-based networking strategies in reaching rural grandparents may be particularly useful. Some custodial rural grandparents, in particular, may also shy away from supportive services due to their perception of being stigmatized related to their family situations and/or a traditional rural cultural perspective of independence and self-reliance. A combined effort of rural health care and social service professionals in collaboration with clergy, educators, and formal and informal community leaders is needed to support rural caregiving grandparents with a goal of maximizing their well being. As a result, the health of rural grandparents, an invaluable and critical

resource for rural families and communities, will be enhanced. Policy makers also need to be included in this process to ensure that appropriate financial, legal, educational, and health-related supportive policies are instituted that support rural grandparents in their roles as family caregivers.

In summary, this secondary analysis comparative study indicated that rural and urban grandmothers are similar in many ways, including their health status. Demographic differences, particularly in relation to ethnicity, point to the importance of community-based approaches to supporting caregiving grandparents as critical resources to families. Enhancing the physical and mental health of rural grandparents is consistent with traditional rural values and family structures and will promote the health of rural families and communities in the future.

References

- American Association of Retired Persons. State Fact Sheets for Grandparents and Other Relatives Raising Children. Available at: http://www.grandfactsheets.org/state_fact_sheets.cfm. Accessed April 11, 2010.
- Fuller-Thomson E, Minkler M. American Indian/Alaskan Native grandparents raising grandchildren: findings from the Census 2000 Supplementary Survey. *Soc Work*. 2005;50(2):131-139.
- Grinstead LN, Leder S, Jensen S, Bond L. Review of research on the health of caregiving grandparents. *J Adv Nurs*. 2003;44(3):318-326.
- American Community Survey. US Census Bureau. Available at: <http://www.census.gov/acs>. Accessed April 11, 2010.
- Hayslip B, Kaminski PL. Grandparents raising their grandchildren: a review of the literature and suggestions for practice. *Gerontologist*. 2005;45:262-269.
- Musil CM. Health of grandmothers as caregivers: a ten month follow-up. *J Women Aging*. 2000;12(1-2):129-145.
- Roe KM, Minkler M, Saunders F, Thomson GE. Health of grandmothers raising children of the crack cocaine epidemic. *Med Care*. 1999;34:1072-1084.
- Waldrop DP, Weber JA. From grandparent to caregiver: the stress and satisfaction of raising grandchildren. *Fam Soc-J Contemp H*. 2001;82:461-472.
- Hughes ME, Waite LJ, LaPierre TA, Luo Y. All in the family: the impact of caring for grandchildren on grandparents' health. *J Gerontol Soc Sci*. 2007;62B:S108-S119.
- Musil CM. Health, stress, coping, and social support in grandmother caregivers. *Health Care Women Int*. 1998;19(5):441-455.
- Musil C, Warner C, Zauszniewski J, Wykle M, Standing T. Grandmother caregiving, family stress and strain, and depressive symptoms. *West J Nurs Res*. 2009;31(3):389-408.
- Leder S, Grinstead LN, Torres E. Grandparents raising grandchildren: stressors, social support, and health outcomes. *J Fam Nurs*. 2007;13(3):333-353.
- Whitley DM, Kelley SJ, Sipe TA. Grandmothers raising grandchildren: are they at increased risk of health problems? *Health Social Work*. 2001;26(2):105-114.
- Dowdell EB. Grandmother caregiver reactions to caring for high-risk grandchildren. *J Gerontol Nurs*. 2005;31(6):31-37.
- Minkler M, Fuller-Thomson E. The health of grandparents raising grandchildren: results of a national study. *Am J Public Health*. 1999;89(9):1384-1389.
- Minkler M, Fuller-Thomson E, Miller D, Driver D. Depression in grandparents raising grandchildren: results of a national longitudinal study. *Arch Fam Med*. 1997;6(5):445-452.
- Blustein J, Chan S, Guanais FC. Elevated depressive symptoms among caregiving grandparents. *Health Serv Res*. 2004;39:1671-1689.
- Ruiz DS, Zhu CW, Crowther MR. Not on their own again: psychological, social, and health characteristics of custodial African American grandmothers. *J Women Aging*. 2003;15(2-3):167-184.
- Nunn PE. A study examining the health perceptions and parenting stressors of parenting African-American grandparents. *ABNF J*. 2002;13(5):99-102.
- Burnette D. Physical and emotional well-being of custodial grandparents in Latino families. *Am J Orthopsychiatry*. 1999;69(3):305-318.
- Gundy KV. Substance Abuse in Rural and Small Town America. *Reports on Rural America*, 2006;1(2). Durham, NH: Carsey Institute, University of New Hampshire. Available at: <http://www.carseyinstitute.unh.edu/publications/ReportSubstanceAbuse.pdf>. Accessed June 13, 2010.
- Haight W, Jacobsen T, Black J, Kingery L, Sheridan K, Mulder C. In these bleak days: parent methamphetamine abuse and child welfare in the rural Midwest. *Children Youth Serv Rev*. 2005;27:949-971.
- King V, Elder GH Jr. Perceived self-efficacy and grandparenting. *J Gerontol Series B: Psychol Sci Soc Sci*. 1998;53B(5):S249-S257.
- Bullock K. The changing role of grandparents in rural families: the results of an exploratory study in southeastern North Carolina. *Fam Soc-J Contemp H*. 2004;85(1):45-54.
- Bullock K. Grandfathers raising grandchildren: an exploration of African American kinship networks. *J Health Soc Pol*. 2007;22:181-197.
- Robinson MM, Kropf NP, Myers L. Grandparents raising grandchildren in rural communities. *J Mental Health Aging*. 2000;6(4):353-365.

27. Kropf NP, Robinson MM. Pathways into caregiving for rural custodial grandparents. *J Intergenerational Relationships*. 2004;2(1):63-77.
28. Myers LL, Kropf NP, Robinson M. Grandparents raising grandchildren: case management in a rural setting. *J Hum Behav Soc Environ*. 2002;5(1):53-71.
29. Prengaman M, Bigbee JL, Shaklee H, Vander Bough B. Keeping it in the family: Idaho grandparents raising grandchildren. *RN Idaho*. 2009;32(3):10-12.
30. Dillman D. *Mail and Internet Surveys: The Tailored Design* (2nd ed.). New York, NY: John Wiley; 2000.
31. WWAMI Rural Health Research Center. RUCA Data: using RUCA data. Available at: <http://depts.washington.edu/uwruca/ruca-uses.php>. Accessed April 11, 2010.
32. Rural Assistance Center, Ohio. Available at: <http://www.raconline.org/states/ohio.php>. Accessed April 11, 2010.
33. Ware J, Snow K, Kosinski M, Gandek B. *SF-36 Health Survey Manual & Interpretation Guide*. Boston, MA: The Health Institute, New England Medical Center; 1993.
34. Ware JE, Gandek B, the IQOLA Project Group. The SF-36[®] Health Survey: development and use in mental health research and the IQOLA Project. *Int J Mental Health*. 1994;23(2):49-73.
35. Turner-Bowker DM, Bartley PJ, Ware JE Jr. *SF-36[®] Health Survey & "SF" Bibliography: Third Edition (1988-2000)*. Lincoln, RI: QualityMetric Incorporated; 2002.
36. Ware JE. The status of health assessment 1994. *Annu Rev Public Health*. 1995;16:327-354.
37. Berwick DM, Murphy JM, Goldman PA, Ware JE Jr, Barsky AJ, Weinstein MC. Performance of a five-item mental health screening test. *Med Care*. 1991;29(2):169-176.
38. Radloff L. A self-report depression scale for research in the general population. *App Psych Meas*. 1977;1(3):385-401.