

STRESS, COPING, AND CARDIOMETABOLIC HEALTH IN AFRICAN AMERICAN
FAMILY CAREGIVERS

by

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Abstract

African American female caregivers experience higher levels of stress and burden, and lower levels of psychological well-being compared to other populations. High levels of stress can increase cardiometabolic risk factors, such as blood pressure and body mass index (BMI). These effects on the body make coping strategies, such as spirituality, important to understand in this population. The purpose of this study was to examine the relationships between caregiver stress, caregiver reward, daily spirituality, and cardiometabolic health indicators (blood pressure, heart rate, BMI) in African American female caregivers. A secondary analysis was conducted using data from the Study of Women's Health Across the Nation, a multi-center longitudinal cohort study.

There was a statistically significant positive relationship between caregiver reward and daily spirituality. However, there was not a statistically significant relationship between caregiver stress and daily spirituality. There was a statistically significant inverse relationship between caregiver reward and BMI. There was a statistically significant positive relationship between caregiver stress and BMI. There was a statistically significant inverse relationship between caregiver stress and heart rate. These findings suggest stress may contribute to changes in cardiometabolic health. Additionally, daily spirituality may influence reward in African American female caregivers. Future research should explore how stress impacts the body and examine the effect of spirituality and other coping mechanisms on psychological and physiological health outcomes in this population.

Introduction

In the United States, approximately eight million employed adults are family caregivers, with the majority identifying as female. Furthermore, female, middle aged and non-white individuals were more commonly caregivers than other groups (Hopps et al., 2017). The majority of the caregiver population is female and non-white. Thus, it is important to focus on the stress experience in this population. More specifically, African American women in the family caregiver role. African American women (AAW) tend to have fewer financial resources, poorer health outcomes, and provide more care to their care recipients compared to their white counterparts. However, AAW report lower levels of burden, strain, and distress (Ejem et al., 2018). This lower burden and stress may be related to spiritual and religious coping mechanisms, such as prayer, that other populations may not participate in. AAW are among the most religious and attend church services at least once a week (Sahgal & Smith, 2009; Washington Post-Kaiser Family Foundation, 2011).

Background

Women are more likely to be exposed to caregiving stressors and typically spend more time providing personal care to a care recipient than men. Women also tend to experience greater caregiver burden, greater psychological distress, and greater physical strain than their male counterparts (Sharma et al., 2016). When looking at the AAW population, about half of AAW caregivers felt they had no choice in taking on their caregiving role. In addition, AAW tend to be placed in more intense care situations than Caucasian or Asian family caregivers (AARP, 2020). These factors can cause many unnecessary stressors in the lives of AAW caregivers, so it is important to assess their physiological and psychological stress responses in order to improve health outcomes.

According to Spruill and colleagues (2019), African Americans are at greater exposure to chronic stressors, and due to these stressors, the risk for hypertension increases in this population. Furthermore, women have a higher risk for hypertension due to stressors compared to men (Spruill et al., 2019). Chronic stress has shown to increase heart rate and blood pressure, which can make the heart work harder. This may lead to hypertension, as previously mentioned, along with other complications such as myocardial infarction (heart attack), heart failure, stroke, and abnormal heart rhythms (Torpy et al., 2007). Concerning BMI, in the caregiver population, there has been an association between caregiving time and patient care with a higher BMI. This may be due to fatigue caregivers may experience, which could limit energy for exercise. (Hajek et al., 2017).

It is also important to look at caregiver stress and caregiver reward in AAW. AAW caregivers report that they experience high reward and lower burden when caring for elderly African Americans. Furthermore, African American caregivers tend to find the caregiving experience more favorable and have stronger coping abilities under challenging caregiving circumstances than their Caucasian counterparts (Chadiha et al., 2004). Caregivers who are able to maintain healthy adaptation skills are more likely to appraise caregiving responsibilities as less stressful. According to Wilks and colleagues (2018), African American caregivers exhibit more spiritual appraisal and higher levels of religion than their Caucasian counterparts do. Spirituality has been shown to be an essential factor of resilience in caregivers (Wilks et al., 2018). Additionally, there is strong evidence that shows that spirituality can affect the autonomic nervous system, and can have long lasting effects on the brain, internal organs, and throughout the body. Specifically, spirituality can improve cardiac activity in caregivers, which can lead to decreased risk of cardiovascular disease and longer life span (Anderson, 2020).

Literature Review

In the United States, there has been an increasing demand for long-term care, which has led to an increasing demand for family caregivers. Approximately 34.2 million Americans provide unpaid assistance to older adults with activities of daily living every year. Some caregivers may find the caregiving experience beneficial; however, about 64% of all caregivers find the experience moderately to highly stressful (Keller, 2021). Long term stress in caregivers may cause changes in the emotional and physiological responses that affect susceptibility to diseases (Xu et al., 2020). The caregiver burden can also contribute to a greater risk for negative health outcomes, including mortality, that increases over time (McLennon et al., 2018).

Racial and Gender Differences

When examining caregiving populations, it is important to look at notable differences between races and genders. It has been shown that minoritized caregivers have been less likely than Caucasian caregivers to utilize support services, which may lead to these minority groups providing more care for family members. For minority groups, such as Asian Americans, Hispanic Americans, and African Americans, caregiving is a big part of their life and the decision to provide care is something done without question. On the other hand, European American caregivers tend to have less experience with caregiving growing up, which leads to caregiving not being an assumed part of their life experience (Pharr et al., 2014). There has also been a difference in psychological well-being across races. Research has shown that African Americans report lower levels of psychological well-being on cognitively focused measures such as life satisfaction and happiness, but reports higher levels of flourishing than Caucasians. Flourishing refers to higher levels of well-being and absence of mental illnesses. Caucasian caregivers report elevated levels of depressive and anxiety symptoms compared to African

American caregivers (William, 2018). In another study, African Americans were found to have better psychosocial health, with more positive appraisals of caregiving and greater spirituality than Caucasian caregivers. African American caregivers also experienced better mental health outcomes than other ethnic minority groups (Wilks et al., 2018).

Women make up the majority of the caregiving population; however, male caregivers are on the rise in recent years. Research worldwide has found that 57% to 81% of all caregivers of the elderly are women and 20% to 33% are men. Research has largely focused on female caregivers, so literature on the male caregiver role is limited; however, there are some gender differences that have been observed. Higher stress and poorer well-being have been more commonly reported in women, but the difference between the two genders is small. Women are more likely to adopt the role of caregiver due to the ingraining through social and cultural experiences starting from childhood compared to men and women are less likely to seek or receive support (Sharma et al., 2016).

Psychological and Physiological Health

This literature review will further focus on the physiological and psychological health of African American women (AAW). African American caregivers have potentially higher levels of burden and strain. They are more likely to provide care with limited use of other services such as home health, assisted living, or nursing home facilities (Wallace et al., 2003). However, another study mentions how African Americans experience low burden due to more positive perceptions toward their role as a caregiver (Liu et al., 2021). Due to these higher levels of strain that African Americans may experience, it is important to examine how that stress can affect the body. Also, research needs to investigate how AAW cope with this stress, such as religious practice.

Chronic stress can occur from caregiver burden over time in the AAW population. Since AAW are in these higher stress situations, it is important to observe the physiological effects that may occur. Research has shown that these higher levels of chronic perceived stress may be associated with reduced gray matter volume in the hippocampus. The hippocampus is the part of the brain that plays a major role in learning and memory. It also helps determine what is “stressful” and can determine health damaging or health promoting behaviors (McEwen et al., 2010).

Along with the brain, cardiovascular health is an important physiological factor that has been assessed in AAW caregivers. African American caregivers were reported to have higher baseline systolic blood pressure (SBP), diastolic blood pressure (DBP) readings, and reported higher levels of circulatory systems disorders (Knight et al., 2007). Caregivers, compared to non-caregivers, had a 1.4 times higher rate of incident hypertension (HTN), and the HTN risk among long-term caregivers was 2.3 times higher. The research also noted that there was a higher prevalence of hypertension risk in women than men (Ahn et al., 2022). In another study, AAW were reported to have a significantly higher level of physiological stress compared to Caucasian women (Williams & Zauszniewski, 2022).

Chronic stress may also be associated with weight gain in caregivers. Although the effects of this weight gain and increased waist-to-hip ratio were greater in men than women, weight gain may be related to the fact that stress can reduce participation in leisure time physical activity (Wardle et al., 2012). With the increased amount of stress in caregivers, they also may experience more fatigue. Fatigue may then lead to a decrease in energy, so they may not want to participate in physical activity. This can be associated with a higher BMI in the caregiver population (Hajek et al., 2017).

Stress and Coping Strategies

Due to the caregiving stress and effects on the body experienced in African American caregivers, it is important to look at the different coping strategies to reduce caregiver burden. African American caregivers report higher levels of self-efficacy in managing caregiving problems, and due to more positive and personal appraisals of caregiving, may experience lower levels of strain and emotional distress (Pearce et al., 2016; Wallace et al., 2003). African American caregivers are also more likely to receive spiritual and religious support to aide in coping with caregiver burden. Spirituality has shown to give caregivers strength to perform their day-to-day activities. With a higher spiritual meaning, caregivers avoid perceiving the caregiving experience as straining, depressive, and insurmountable (Dilworth-Anderson et al., 2007).

The use of religion and other coping practices can have a modifiable effect on physiological health, such as blood pressure. Mindfulness, which relates to one's ability to self-regulate attention toward immediate experiences and an orientation of openness and acceptance, seems to be an important concept in reducing blood pressure (BP) in caregivers. When mindfulness is low, stress seems to have a stronger association with diastolic BP than when mindfulness is high. This can suggest that mindfulness has a protective effect over BP (Vara-García et al., 2018). In another study, religion and spirituality (R/S) were assessed in relation to effects on hypertension. There was a 13% reduction in the risk of hypertension for women that reported religion was involved in dealing with stressful situations. However, this study also mentioned that frequent prayer was associated with a somewhat increased risk of HTN. The literature on more frequent prayer and hypertension is mixed, so more research is needed on this topic. This study also identified an association between R/S coping and weight management (Cozier et al., 2018).

Further studies on spirituality experiences and cardiometabolic health were conducted using the 16-item Daily Spiritual Experiences Scale (DSES). DSES measures the experience of connection to God and other experiences including compassion, gratitude, and inner peace. In this research, there was very little difference in adjusted SBP for both African Americans and Caucasian caregivers in the highest DSES group compared to the lowest. For both races, low, not high, DSES appeared to be protective against age-related increases in SBP (Fitchett & Powell, 2009).

Based on the research found, there needs to be more research done on how African American female caregivers are impacted by the caregiver role. Research needs to look further into how stress can affect cardiometabolic health, such as BP and BMI in this population. Also, since African Americans tend to participate in greater spiritual practices than other racial groups, more research should be done to examine how that might impact the caregiver role. Therefore, I proposed that my research would focus on the relationship between caregiver stress, cardiometabolic health, and spirituality in African American women who identify as caregivers.

Purpose

The purpose of this study was to examine the relationship between psychological appraisal (stress, reward, and daily spirituality) and cardiometabolic health (blood pressure, heart rate, BMI) in African American female caregivers.

Research Question 1

What is the relationship between psychological stress (caregiver stress) and coping (caregiver reward, daily spirituality) in African American female caregivers?

Research Question 2

What is the relationship between psychological appraisal (caregiver stress, caregiver reward, and daily spirituality) and cardiometabolic health indicators (blood pressure, heart rate, BMI)?

Research Question 3

What is the relationship between cardiometabolic health indicators (blood pressure, heart rate, BMI)?

Methodology

Design

This study was a descriptive, cross-sectional study using publicly available existing data from the Study of Women's Health Across the Nation (SWAN). SWAN is a multi-center, longitudinal, cohort study of the biological, physical, and psychological changes that occur during the menopause transition.

Data Collection

SWAN began in 1996 and 3,302 eligible women were enrolled into the longitudinal study, 935 women identified as African American. African American participants were recruited from four research sites: Detroit, MI; Boston, MA; Chicago, IL; and Pittsburgh, PA. These women completed screening, baseline, and annual follow-up visits. The annual visits include physical measures (weight, height, hip, waist and blood pressure), fasting blood draw, and questionnaires. Daily spiritual experiences were captured during the fourth study visit. Thus, we utilized data from the fourth visit to examine the relationship between psychological appraisal (caregiver stress, caregiver reward, and daily spirituality) and cardiometabolic health (blood pressure, BMI) in African American female caregivers.

Caregiver Stress

Caregiver stress was measured by asking caregivers “How stressful is your role as caregiver?” Responses ranged from “Not at all” (=1) to “Extremely” (5).

Caregiver Reward

Caregiver reward was measured by asking caregivers “How rewarding is your role as caregiver?” Responses ranged from “Not at all” (=1) to “Extremely” (5).

Daily Spiritual Experiences

Daily Spiritual Experiences were captured using an 8-item version of the daily spiritual experience scale. This scale was originally 16 items and captures spiritual connection in daily life, regardless of religion (Underwood & Teresi, 2002). Scores ranged from “Many times/day” (=1) to “Never/almost never” (=6). Each item will be reverse coded for our analysis to range from “Never/almost never” (=1) to “Many times/day” (=6). Thus, higher scores indicate more spiritual experiences.

BMI

Body mass index was calculated as weight in kilograms divided by the square of height in meters.

Blood Pressure

Systolic and diastolic blood pressure were obtained by a trained technician. Three consecutive measurements were obtained. The first blood pressure reading was discarded and the final two were recorded and averaged for each participant.

Sample

The study sample was comprised of African American midlife women who identify as family caregivers. Women were eligible for SWAN if they were premenopausal or

perimenopausal women aged 42 to 52 years, if they had an intact uterus and at least one ovary, had menstrual bleeding within the prior three months, were not currently pregnant or breastfeeding, and had not used reproductive hormones within the prior three months. Our analysis included data from the fourth study visit. Participants were included in our analysis if they (1) identified as African American, (2) identified as a caregiver. Participants were excluded if they were pregnant because this could impact the cardiometabolic measures.

Results/Data Analysis

Sample Characteristics

A total of 90 participants were included in this secondary analysis. Respondent ages ranged from 46-56 years ($M=50.08$, $SD=2.67$). A summary of demographic characteristics of the sample can be found in Table 1.

Table 1

Demographic Characteristics of the Sample (N=90)

Variable	n (%)
Marital Status	
Single/never married	15 (16.7)
Currently married/living as married	38 (42.2)
Separated	8 (8.9)
Widowed	4 (4.4)
Divorced	25 (27.8)
Age at Current Visit	
46-50 years	53 (58.9)
51-56 years	37 (41.1)

Total Family Income

Less than \$19,999	12 (13.3)
\$20,000 to \$49,999	33 (36.7)
\$50,000 to \$99,999	29 (32.2)
\$100,000 or more	7 (7.8)
Do not know	3 (3.3)
Refused	6 (6.7)

Cardiometabolic Health IndicatorsMean $\pm$ SD

Systolic blood pressure	127.91 $\pm$ 18.22
Diastolic blood pressure	78.90 $\pm$ 10.20
Heart rate (beats per minute)	70.50 $\pm$ 13.07
Body mass index (BMI)	32.42 $\pm$ 8.45

Description of Study Variables

Major study variables included caregiver stress, caregiver reward, and daily spirituality. Caregiver stress was measured by asking caregivers “How stressful is your role as caregiver?” Responses were defined as 1=Not at all, 2= A little, 3= Somewhat, 4= Quite a bit, 5=Extremely. Four women (5%) identified not at all, sixteen women (18%) identified a little, thirty-seven women (41%) identified somewhat, twenty women (23%) identified quite a bit, and twelve women (13%) identified extremely.

Caregiver reward was measured by asking caregivers “How rewarding is your role as caregiver?” Responses ranged from “Not at all” (=1) to “Extremely” (5). Five women (6%) identified not at all, ten women (11%) identified a little, twenty-seven women (30%) identified somewhat, thirty-one women (35%) identified quite a bit, and sixteen women (18%) identified extremely.

Daily Spiritual Experiences were captured using an 8-item version of the daily spiritual experience scale (Underwood & Teresi, 2002). Scores were reverse coded for our analysis to

range from 1=Never/almost never to 6= Many times/day. Average scores were calculated for each participant. The mean score for the sample was $4.61 \pm .83$. The range of possible scores was 0-6. The actual range was 2-6. Higher scores indicate more daily spiritual experiences.

Results of Research Questions

Results of the research questions are summarized in Table 2.

Research Question 1. What is the relationship between psychological stress (caregiver stress) and coping (caregiver reward, daily spirituality) in African American female caregivers?

Pearson correlations were used to examine the relationship between caregiver stress, caregiver reward, and daily spirituality. Caregiver stress had a statistically significant inverse relationship with caregiver reward ($r(90) = -.29, p = 0.05$). Caregiver reward had a statistically significant, positive relationship with daily spirituality ($r(90) = .23, p = 0.05$).

Research Question 2. What is the relationship between psychological appraisal (caregiver stress, caregiver reward, and daily spirituality) and cardiometabolic health indicators (blood pressure, heart rate, BMI)?

Pearson correlations were used to examine the relationship between psychological measures and cardiometabolic health indicators. Caregiver stress had a statistically significant inverse relationship with heart rate ($r(90) = -.24, p = 0.05$). Caregiver reward had a statistically significant inverse relationship with BMI ($r(90) = .26, p = 0.05$). Caregiver stress had a statistically significant, positive relationship with BMI ($r(90) = .23, p = 0.05$).

Research Question 3. What is the relationship between cardiometabolic health indicators (blood pressure, heart rate, BMI)?

Pearson correlations were used to examine the relationships between cardiometabolic health indicators. Systolic BP had a statistically significant, positive relationship with diastolic BP ($r(90) = .75, p = 0.01$).

Table 2

Correlation Matrix of Main Study Variables

Variables	Reward	Stress	AVGSpirit	SYSBP	DIABP	BPM	BMI
Reward	-	-	-	-	-	-	-
Stress	-.275*	-	-	-	-	-	-
AVGSpirit	.231*	-.168	-	-	-	-	-
SYSBP	-.084	.049	.026	-	-	-	-
DIABP	-.190	-.098	-.025	.749**	-	-	-
BPM	.115	-.236*	.105	.080	.051	-	-
BMI	-.256*	.231*	.013	.090	.040	.073	-

Note. AVGSpirit= average daily spirituality; SYSBP= systolic blood pressure; DIABP= diastolic blood pressure; BPM= beats per minute; BMI= body mass index

*Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

Discussion

Results from the data analysis showed that increases in caregiver reward were associated with decreases in levels of caregiver stress and decreased BMI. These results compare to findings that AA caregivers who report higher levels of self-efficacy in managing caregiver problems, and who have more positive appraisals of caregiving, may experience lower levels of strain and emotional distress (Williams et al., 2003; Pearce et al., 2016). AA caregivers may also experience lower burden and stress due to the positive perceptions of their role as a caregiver

(Liu et al., 2021). These positive perceptions and appraisals are similar to feeling reward in the caregiver role.

Findings from the data analysis show that as caregiver stress increased, BMI increased and heart rate decreased. These findings suggest that caregiver stress may contribute to cardiometabolic health in this population. According to Hajek et al., caregivers may experience more fatigue, which may cause them to not want to participate in physical activity (2017). This may then contribute to a higher BMI in this caregiver population, which is evidenced by the results from the data analysis. Although there are no notable results from the data analysis about how caregiver reward and stress affect blood pressure, literature shows that caregivers had higher rates of hypertension than non-caregivers (Ahn et al., 2022). Further research can look into different races to compare how caregiver stress can affect blood pressure.

Daily spirituality experiences can also cause increases in caregiver reward, but it does not have any impact on caregiver stress. This suggests that daily spirituality may improve caregiver reward and health outcomes in AA caregivers. Caregivers can avoid perceiving the caregiving experience as straining, depressive, and insurmountable with higher levels of spirituality (Dilworth-Anderson et al., 2007). In relation to health outcomes, the data analysis did not show that spirituality causes any changes in blood pressure. However, during the literature review, religion and spirituality may reduce the risk of hypertension by 13% in caregivers (Cozier et al., 2018). Mindfulness seems to have a protective effect over BP according to Vara-García et al., but there was no notable impact in the analysis (2018).

Future research may look at how stress affects health outcomes in this population. It might also examine spirituality and other coping mechanisms and how they reduce stress in this population. An example of a coping mechanism that might be further researched is how stress

eating is used in this population and its impact on health. It may also look further into comparing different caregiving populations and how stress and spirituality can effect cardiometabolic indicators.

References

- AARP, National Alliance for Caregiving. (2020). Caregiving in the United States 2020. AARP.
<https://doi.org/10.26419/ppi.00103.001>
- Ahn, S., Esquivel, J. H., Davis, E. M., Logan, J. G., & Chung, M. L. (2021). Cardiovascular disease incidence and risk in family caregivers of adults with chronic conditions. *Journal of Cardiovascular Nursing*, 37(3), E47–E60. <https://doi.org/10.1097/jcn.000000000000000816>
- Anderson, M. R. (2020). The Spiritual Heart. *Religions*, 11(10), 506. MDPI AG. Retrieved from <http://dx.doi.org/10.3390/rel11100506>
- Chadiha, L. A., Adams, P., Biegel, D. E., Auslander, W., & Gutierrez, L. (2004). Empowering African American Women Informal Caregivers: A Literature Synthesis and Practice Strategies. *Social Work*, 49(1), 97–108. <http://www.jstor.org/stable/23720783>
- Cozier, Y. C., Yu, J., Wise, L. A., VanderWeele, T. J., Balboni, T. A., Argentieri, M. A., Rosenberg, L., Palmer, J. R., & Shields, A. E. (2018). Religious and spiritual coping and risk of incident hypertension in the Black Women's Health Study. *Annals of Behavioral Medicine*, 52(12), 989–998. <https://doi.org/10.1093/abm/kay001>
- Dilworth-Anderson, P., Boswell, G., & Cohen, M. D. (2007). Spiritual and religious coping values and beliefs among African American caregivers: A qualitative study. *Journal of Applied Gerontology*, 26(4), 355–369. <https://doi.org/10.1177/0733464807302669>
- Ejem, D., Bauldry, S., Bakitas, M., & Drentea, P. (2018). Caregiver Burden, Care Recipient Depressive Symptomology, and Social Exchange: Does Race Matter? *Journal of Palliative Care*, 33(2), 100–108. <https://doi.org/10.1177/0825859718758120>

- Fitchett, G., & Powell, L. H. (2009). Daily spiritual experiences, systolic blood pressure, and hypertension among midlife women in Swan. *Annals of Behavioral Medicine*, 37(3), 257–267. <https://doi.org/10.1007/s12160-009-9110-y>
- Hajek, A., Bock, J. O., & König, H. H. (2017). Association of informal caregiving with body mass index and frequency of sporting activities: evidence of a population-based study in Germany. *BMC public health*, 17(1), 755. <https://doi.org/10.1186/s12889-017-4786-6>
- Hopps, M., Iadeluca, L., McDonald, M., & Makinson, G. T. (2017). The burden of family caregiving in the United States: work productivity, health care resource utilization, and mental health among employed adults. *Journal of multidisciplinary healthcare*, 10, 437–444. <https://doi.org/10.2147/JMDH.S135372>
- Keller, A. O. (2021). A healthy life for African American Women Caregivers: A Concept Mapping Study. *Women's Health Issues*, 31(2), 130–139. <https://doi.org/10.1016/j.whi.2020.11.011>
- Knight, B. G., Longmire, C. V., Dave, J., Kim, J. H., & David, S. (2007). Mental health and physical health of family caregivers for persons with dementia: A comparison of African American and White Caregivers. *Aging & Mental Health*, 11(5), 538–546. <https://doi.org/10.1080/13607860601086561>
- Liu, C., Badana, A. N., Burgdorf, J., Fabius, C. D., Roth, D. L., & Haley, W. E. (2020). Systematic Review and meta-analysis of racial and ethnic differences in dementia caregivers' well-being. *The Gerontologist*, 61(5), e228–e243. <https://doi.org/10.1093/geront/gnaa028>

- McEwen, B. S., & Gianaros, P. J. (2010). Central role of the brain in stress and adaptation: Links to socioeconomic status, health, and disease. *Annals of the New York Academy of Sciences*, 1186(1), 190–222. <https://doi.org/10.1111/j.1749-6632.2009.05331.x>
- McLennon, S. M., Anderson, J. G., Epps, F., & Rose, K. M. (2020). “it’s just part of life”: African American daughters caring for parents with dementia. *Journal of Women & Aging*, 32(2), 168–182. <https://doi.org/10.1080/08952841.2018.1547002>
- Pearce, M. J., Medoff, D., Lawrence, R. E., & Dixon, L. (2016). Religious Coping Among Adults Caring for Family Members with Serious Mental Illness. *Community mental health journal*, 52(2), 194–202. <https://doi.org/10.1007/s10597-015-9875-3>
- Pharr, J. R., Dodge Francis, C., Terry, C., & Clark, M. C. (2014). Culture, caregiving, and Health: Exploring the influence of culture on family caregiver experiences. *ISRN Public Health*, 2014, 1–8. <https://doi.org/10.1155/2014/689826>
- Sahgal, N., & Smith, G. (2009). A Religious Portrait of African-Americans. *Pew Research Center’s Religion & Public Life Project*. <https://www.pewforum.org/2009/01/30/a-religious-portrait-of-african-americans/>
- Sharma, N., Chakrabarti, S., & Grover, S. (2016). Gender differences in caregiving among family—Caregivers of people with mental illnesses. *World Journal of Psychiatry*, 6(1), 7–17. <https://doi.org/10.5498/wjp.v6.i1.7>
- Spruill, T. M., Butler, M. J., Thomas, S. J., Tajeu, G. S., Kalinowski, J., Castañeda, S. F., Langford, A. T., Abdalla, M., Blackshear, C., Allison, M., Ogedegbe, G., Sims, M., & Shimbo, D. (2019). Association between high perceived stress over time and incident hypertension in black adults: Findings from the Jackson Heart Study. *Journal of the American Heart Association*. Retrieved April 12, 2022, from <https://www.ahajournals.org>

/doi/10.1161/JAHA.119.012139

Torpy, J. M., Lymn, C., & Glass, R. M. (2007). *Chronic stress and the heart*. JAMA. Retrieved April 12, 2022, from <https://jamanetwork.com/journals/jama/fullarticle/209139#:~:text=Stress%20can%20cause%20increased%20oxygen,flow%20needed%20for%20bodily%20functions.>

Underwood, L. G., & Teresi, J. A. (2002). The Daily Spiritual Experience Scale: Development, theoretical description, reliability, exploratory factor analysis, and preliminary construct validity using health-related data. *Annals of Behavioral Medicine*, 24(1), 22–33. https://doi.org/10.1207/S15324796ABM2401_04

Vara-García, C., Romero-Moreno, R., Márquez-González, M., Mausbach, B. T., von Känel, R., Gallego-Alberto, L., Olmos, R., & Losada, A. (2019). Stress and blood pressure in dementia caregivers: The moderator role of mindfulness. *Clinical Gerontologist*, 42(5), 512-520. <https://doi.org/10.1080/07317115.2018.1554611>

Wallace Williams, S., Dilworth-Anderson, P., & Goodwin, P. Y. (2003). Caregiver role strain: The contribution of multiple roles and available resources in African-American women. *Aging & Mental Health*, 7(2), 103–112. <https://doi.org/10.1080/1360786031000072312>

Wardle, J., Chida, Y., Gibson, E. L., Whitaker, K. L., & Steptoe, A. (2012). Stress and adiposity: A meta-analysis of longitudinal studies. *Obesity*, 19(4), 771–778. <https://doi.org/10.1038/oby.2010.241>

Washington Post-Kaiser Family Foundation. (2011). *Washington Post-Kaiser Family Foundation poll of black women in America*. The Washington Post. <http://www.washingtonpost.com/wp-srv/special/nation/black-women-in-america/>

Wilks, S. E., Spurlock, W. R., Brown, S. C., Teegen, B. C., & Geiger, J. R. (2018). Examining spiritual support among African American and Caucasian Alzheimer's caregivers: A risk and resilience study. *Geriatric nursing (New York, N.Y.)*, 39(6), 663–668.

<https://doi.org/10.1016/j.gerinurse.2018.05.002>

William, D. R. (2018). Stress and the mental health of populations of color: Advancing our understanding of race-related stressors. *Journal of Health and Social Behavior*, 59(4), 466–485. <https://doi.org/10.1177/0022146518814251>

Williams, E., & Zauszniewski, J. A. (2022). Burden and Heart Rate Variability in Bipolar Disorder Family Caregivers. *Western journal of nursing research*, 44(3), 279–287. <https://doi.org/10.1177/01939459211063660>

Xu, X. Y., Kwan, R. Y. C., & Leung, A. Y. M. (2020). Factors associated with the risk of cardiovascular disease in family caregivers of people with dementia: a systematic review. *Journal of International Medical Research*. <https://doi.org/10.1177/0300060519845472>