The Toll of Caregiving: Life-Course Family Care and Disparities in Physical Functioning

Chioun Lee, PhD[1,*]

Xinyao Zheng, MA[2]

Soojin Park, PhD[2]

1. Department of Sociology, University of California, Riverside, Riverside, California, United States

2. Graduate School of Education, University of California, Riverside, Riverside, California, United States

* Address correspondence to: Chioun Lee, PhD. E-mail: chiounl@ucr.edu

ABSTRACT

Objectives: While gender and racial patterns in caregiving and adverse health impacts of caregiving are well documented, few studies have examined how different domains of family care over the life course are linked to later-life physical health or how various caregiving exposures contribute to health disparities across gender and racial groups.

Methods: Data come from the Midlife in the U.S. study, including Non-Hispanic White and Black adults (N=8,778; 18% Black; 53% women). Family caregiving was assessed across two domains: caregiving for minors and providing care for family members with chronic illness or disability. We examined gender and racial disparities in caregiving exposure, the associations between each domain of family care and physical functioning, and estimated the extent to which family care—individually and jointly—explains physical functioning disparities.

Results: Intensive and expanded caregiving were more prevalent among women—particularly Black women—who were more likely to report early parenthood, major grandparenting, and repeated care for family members with chronic illness and disability. These experiences were significantly associated with greater functional limitations, with some variation by race. Family caregiving—especially caregiving for minors—partially explained both gender disparities in physical functioning and Black–White disparities among women.

Discussion: Findings highlight that the convergence of multiple caregiving roles across the life course may contribute to disparities in physical functioning in later life. These results underscore the importance of policy interventions and support systems aimed at alleviating the compounded demands of unpaid caregiving and addressing their unequal distribution across social groups.

Keywords: Family Care, Gender, Race, Life-Course Perspective, Functional Limitation

INTRODUCTION

There are substantial racial and gender gaps in disability at older ages in the United States. The prevalence of disability—including limitations in Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs)—is higher among racial/ethnic minorities and women, with the highest rates among Black women (Pebley et al., 2021; Warner & Brown, 2011). Notably, these disabilities often emerge before midlife and widen until early old age (Bloomberg et al., 2021; Taylor, 2018). Gender differences in functional status may be reflected not only by biological factors but also by sociocultural elements that shape individuals' opportunities, choices, and behaviors (Bird & Rieker, 2008). While prior research has examined socioeconomic and behavioral contributions to these disparities (Bloomberg et al., 2021; Fuller-Thomson et al., 2009), limited attention has been paid to the contribution of gendered roles and expectations within family contexts—particularly as experienced by women and minority women whose lives are shaped by interconnected caregiving and family obligations.

Drowning upon the Stress Process Model (Pearlin et al., 2010) and the life-course approach of family care (Keating et al., 2019), we propose that unequal exposures to unpaid family care over the life course—such as high-burden childcare (e.g., early parenthood, primary grandparenting) and caring for family members with disability or chronic illness—is an overlooked driver of gender and racial disparities in functional limitations. Using a causal decomposition framework (Jackson & VanderWeele, 2018), our study investigates the extent to which uneven exposures to family care contribute to disparities in physical functioning across gender and racial groups, accounting for heterogeneous effects of caregiving.

BACKGROUND

Family Care and Physical Health of Caregivers

Caregiving involves unpaid emotional, physical, financial, or other forms of support and assistance for loved ones, most often family members, and it touches nearly everyone in society. Although family care is multifaceted, *caring for minors* represents a central component of family life and intergenerational support. In some cases, childcare occurs beyond traditional parental or grandparental roles, such as teen parenthood or custodial grandparenting (Sweeney & Raley, 2014; Mutchler, Lee, & Baker, 2002). Another major dimension of family care involves *assisting frail and dependent family members*, such as aging parents, spouses, adult children, or extended relatives, who live with chronic illness, disability, or other serious medical conditions (*National Academies of Sciences, Engineering, and Medicine [NASEM]*, 2024; Schulz et al., 2016). Despite many positive aspects of family care, substantial evidence demonstrates that off-timing, prolonged, intensive, or recurring care episodes can significantly undermine caregivers' health (Capistrant et al., 2016; Pinquart & Sörensen, 2003).

Previous studies have primarily examined the mental health of caregivers (Capistrant, 2016), but a growing body of work also links family care to physical health outcomes, for example, functional limitations in midlife and later life. Specifically, early maternal age at first birth (i.e., early parenting) is associated with poorer physical performance in midlife and old age (Pirkle et al., 2014; Thomeer et al., 2022), and grandparental childcare, especially among grandmothers, undermines physical functioning, with adverse effects increasing as care intensity rises (Eibich & Zai, 2024). Similarly, caring for a child with developmental disabilities is associated with more functional limitations for middle-aged women than men, with the largest burden for Black women (Lee et al., 2022). In addition, care for older adults, particularly for aging parents or spouses, is often physically demanding. Studies found spousal health is closely tied to an individual's own physical functioning among middle-aged and older couples, underscoring the interdependent nature of caregiving within families (Hoppmann et al., 2011; Wang et al., 2021). Together, these studies underscore that the effects of family care span diverse roles and life stages, highlighting its cumulative toll on functional health in later life.

The Stress Process Model and Life-Course Perspectives on Caregiving

Pearlin's Stress Process Model (Pearlin et al., 2010) is one of the most influential frameworks for understanding how caregiving affects health. The model emphasizes that stressors are embedded within social hierarchies, leading to unequal exposure across social groups. In addition, stressors often spill over into other life domains (e.g., work-caregiving conflicts), and disparities in the availability of coping resources further shape individuals' adaptive capacity to manage these stressors and their associated outcomes. Together, these processes provide a mechanism linking social inequality to health disparities. The Stress Process Model has been widely applied in research on chronic stressors, such as caregiving, to highlight these dynamics, demonstrating, for example, the burdens of caregiving and their heterogeneous effects across social groups, particularly for gender and race groups (e.g., Amirkhanian & Wolf, 2006; Brown et al., 2020).

Existing research on family care often focuses on a single type of care or on a specific stage of the life course. Departing from this approach, Keating et al. (2019) have argued that family care should be understood within a life-course framework. According to this perspective, caregiving is a dynamic and cumulative process, rather than a single event or static role, that unfolds across different stages of life through transitions into and out of family roles related to, for instance, marriage, parenthood, or grandparenthood. Additionally, unpaid caregiving arises at different life stages as family members—such as parents, spouses, or other relatives—develop serious medical illness or disability. These insights highlight how, through linked lives, exposure to family care can accumulate over the life course, with important implications for shaping life trajectories and health outcomes in later adulthood.

Gendered and Racial Inequalities in Life-Course Family Caregiving

Research from the U.S. and other countries reveals a robust gender imbalance in unpaid caregiving, extending beyond childcare during young adulthood and continuing into midlife and old age, encompassing spousal and parental caregiving as well as grandparenting (Lee & Tang, 2015; Patterson & Margolis, 2019). Even among caregivers, women spend more hours caregiving, take on more hands-on and complex tasks, assist more frequently with personal care, and provide care for longer durations and across more episodes compared to men (Pinquart & Sörensen, 2006; Yee & Schulz, 2000). These patterns indicate that longstanding gender norms on care work and socioeconomic pressures on unpaid labor disproportionately place caregiving responsibilities and intensities on women compared to men (Carmichael & Ercolani, 2016; Cohen et al., 2019).

Importantly, gender-based caregiving stereotypes are pervasive among racial/ethnic minorities and low-income families. Black women, in particular, often face a compounded caregiving load for minors over the life course; they tend to enter motherhood at younger ages, have larger families, and frequently shoulder greater parenting responsibilities, especially as single parents (Sweeney & Raley, 2014). Many also become primary caregivers for grandchildren, often due to the financial hardships or other challenges faced by their adult children (Mutchler, Lee, & Baker, 2002). In addition, compared to non-Hispanic Whites, Black individuals are more likely to provide unpaid care for family members and relatives with chronic illness or disability, often beginning these roles earlier in life, spending more hours with extended periods, and providing more intensive care (AARP & National Alliance for Caregiving, 2025).

These racialized caregiving patterns reflect structural inequalities, such as higher morbidity and disability rates in minority communities (Quiñones et al., 2019), limited access to paid leave or affordable long-term care options, and a greater likelihood of co-residing with care recipients (Cohen et al., 2019; AARP & National Alliance for Caregiving, 2025). In addition, cultural values that emphasize strong family bonds, collective responsibility, and interdependence (Dilworth-Anderson et al., 2002), also reinforce caregiving norms. Collectively, these layered responsibilities contribute to a cumulative caregiving burden that weighs heavily on Black women's health in later life.

CURRENT STUDY

The Stress Process Model (Pearlin et al., 2010) and the life-course approach of family care (Keating et al., 2019) suggest that uneven exposure to caregiving responsibilities may accumulate over time, leading to compounded disadvantages that contribute to disparities in physical functioning in later life. To examine how caregiving across multiple life-course domains shapes later-life health disparities, we pursue the following aims and hypotheses.

First, we assess gender and racial disparities in caregiving exposures across two domains: caregiving for minors and providing care for family members with chronic illness or disability. We hypothesize that women will experience greater caregiving experiences than men across domains of family care (Hypothesis 1a). We also hypothesize that among women, Black women experience greater caregiving experiences than White women (Hypothesis 1b).

Second, we examine the association between family care and physical functioning in mid-to-late adulthood and assess how this relationship varies by gender and race. We hypothesize that intensive or expanded caregiving experiences will have particularly strong adverse effects on later-life physical functioning, with heterogeneity in some of these associations (Hypothesis 2). For example, prior research suggests that African Americans perceive caregiving as less burdensome than Whites, potentially due to strong familial support and coping styles that promote resilience (Brown et al., 2020).

Finally, we quantify the extent to which family care contributes—both individually and jointly—to gender and racial disparities in physical functioning, accounting for significant heterogeneous effects in the estimation. We hypothesize that caregiving will partially account for the gender gap in physical limitations (Hypothesis 3a) and the Black–White gap in physical limitations among women (Hypothesis 3b).

DATA AND METHODS

Data and Sample

Data were drawn from Wave 2 and the Refresher sample of the Midlife in the United States (MIDUS) study, which includes a two-stage survey: a telephone interview followed by a Self-Administered Questionnaire (SAQ) (see Supplementary Methods Section 1 for sampling details). The initial MIDUS cohort (Wave 1, 1995–96) included 7,108 respondents. At Wave 2 (2004–06), 4,963 of these original participants were re-interviewed, and 592 new respondents were added from a Milwaukee oversample. In 2011–14, a new Refresher cohort (N=3,577), drawn from the national population using a dual-frame sampling design (landlines and cell phones), was added to maintain representation across the original age range (25–74). An additional Milwaukee subsample of African Americans aged 25–64 (N=508) was also recruited at this time.

To maximize the representativeness of racial minority in the sample, we included data (N=9,640) from the Wave 2, Wave 2 Milwaukee, Refresher, and Refresher Milwaukee surveys. We restricted the sample to respondents with racial information (N=9,564). We then excluded from the analysis those who identified as other racial/ethnic groups due to the small size of these subgroups, which was insufficient for stable estimates for gender differences (355 Latina/o and 431 other groups). The final analysis includes 8,778 respondents aged 24–85 (See Figure S1 for details). comprising 53% women, 82% non-Latina/o Whites (hereafter referred to as “Whites”), and 18% non-Latina/o Blacks (hereafter referred to as “Blacks”).

Measures

Life course indicators of family care include *seven* measures grouped into two domains: caregiving for minors and providing care for family members with chronic illness or disability. Caring for minors is examined by two variables: the timing of transition to parenthood and major grandparenting. Following the approach used in previous studies (Lee & Ryff, 2016; Wolfe et al., 2023), the ***timing of the transition to parenthood*** was calculated the respondent's age at the birth of their first child by subtracting the age of their oldest biological child from their own age. We then created five dummy variables to categorize the timing of the transition to parenthood: (1) age 18 or younger, (2) ages 19-22, (3) ages 23 or older, and (4) no living biological child reported. ***Major grandparenting*** is a binary variable based on a question of whether respondents ever reported a major responsibility for raising grandchild(ren) for six months or more.

Family care for chronic illness or disability. MIDUS was not explicitly designed to track respondents' caregiving experiences over time. Therefore, we drew on all available information relevant to this domain. In particular, measures of recent or ongoing family health issues allowed us to assess whether respondents currently or recently had a child, spouse or partner, or parent with a chronic illness or disability that may have required caregiving responsibilities. In the household roster, respondents were asked about the presence and health status of children in the household, including biological, step, or adopted children, and whether any child had a developmental disability or a long-term serious mental health condition. The variable ***child with developmental disability or mental illness*** is a binary indicator reflecting whether a respondent had a resident or non-resident child with a developmental disability or mental health condition. The variable ***spouse/partner with disability or chronic illness*** is based on whether the respondent reported that their spouse or partner had a chronic illness or disability within the past 12 months. Similarly, the variable ***parent with disability or chronic illness*** was created for respondents who reported having a parent with a chronic illness or disability during the same period.

We also incorporate information on caregiving history for frail family members based on three questions: whether respondents had provided personal care for a month or more to a family member or friend due to a physical condition, illness, or disability, whether they were still providing care, and whether the care recipient lived in the same household. The ***recent and current caregiving history*** was then categorized into four groups: (1) no recent caregiving, (2) caregiving within the past 12 months but not currently, (3) current caregiving for a non-resident, and (4) current caregiving for a co-resident. In addition to their current caregiving status, respondents were also asked whether they had ever provided personal care for a family member or friend due to long-term physical or mental conditions, illness, or disability. If respondents answered yes, they were further asked how many separate times in their lives they had provided this type of personal care for one month or more. Using these responses, we categorized ***Number of previous personal care episodes*** into four groups: never, once, twice, and three or more times.

Physical functioning was measured using SAQ questions on how much health limits activities such as lifting groceries, climbing stairs, bending, walking varying distances, vigorous activities (e.g., running), moderate activities (e.g., vacuuming), and bathing or dressing. These items align with the SF-36 physical functioning subscale (Ware & Sherbourne, 1992), though MIDUS uses four response categories (vs. three in SF-36). We recoded responses as 0="a lot," 33="some," 67="a little," and 100="not at all"/"no limitation." Scores across the nine items were summed and standardized using the pooled sample distribution.

Controls. Family resources can influence both selection into caregiving and later health outcomes (Bom et al., 2019). To account for factors affecting both caregiving and physical functioning, we included three control categories: demographic characteristics, family structure/support, and early-life factors. Demographic controls include ***age*** (continuous), ***gender*** (female or male), and ***race*** (non-Hispanic Black or White). We also adjusted for ***sample collection*** (MIDUS 2 or Refresher) to account for potential differences in data collection.

Regarding family structure, we included the ***total number of biological children*** and the ***total number of household members***. We also accounted for whether respondents had a ***spouse or partner***, as well as whether they had ***any living parents***. Controlling for these variables allows us to estimate the effects of family health issues conditional on the presence of specific family members—for example, the effect of having an ill spouse or partner, given that the respondent has a spouse/partner. Family support systems significantly influence an individual's likelihood of assuming caregiving responsibilities within the family (Schulz et al., 2016), and strong social support is associated with a low risk of functional limitations (Seeman et al., 1996). Therefore, we controlled for a level of ***family support*** using an averaged score of items measuring social support focused on the perceived availability of emotional support (Schuster et al., 1990) (for details, see Supplementary Methods Section 2). Childhood socioeconomic status (SES) and adversities are important predictors of various indicators of family care and adult health (Williams & Finch, 2019). We controlled for ***early-life adversities (ELAs)*****,** which may confound the association between family care profile and physical functioning. ELA is a total count of 12 items capturing a broad range of early life experiences, including socioeconomic disadvantage, family instability, parental substance abuse, the death of a sibling or parent, and childhood abuse (for details, see Supplementary Methods Section 3). In the analytic models, we refer to demographic characteristics as baseline covariates and family structure, support, and early-life factors as intermediate confounders.

Analytical Strategy

Our conceptual and analytic models are illustrated in Figure 1. Descriptive statistics for all variables used in the analysis are provided in Supplementary Table 1. To test our first set of hypotheses regarding differential exposure to family care, we use multinomial or logistic regression models, adjusting for baseline and domain-specific covariates (e.g., including spousal presence when estimating exposure to caring for an ill spouse). To test our second hypothesis, we used ordinary least squares (OLS) regression to estimate the association between family care and physical functioning, controlling for corresponding covariates. Specifically, we examine the differential effects of each family care exposure on later-life physical functioning by gender and race.

As for the third set of hypotheses, we employed the causal decomposition framework (Jackson & VanderWeele, 2018) to identify family care factors that explain gender and racial disparities in physical functioning. Unlike traditional linear approaches, such as the difference-in-coefficients method (Olkin & Finn, 1995) and the Kitagawa-Oaxaca-Blinder (KOB) decomposition (Kitagawa, 1955), which are limited by intermediate confounding or condition-dependent group differences, the causal decomposition framework overcomes these challenges. It estimates both individual and joint contributions of family care factors using single- and multiple-mediator-imputation estimators (Park et al., 2024).

Using the causal decomposition framework, we first estimate the initial disparity, defined as the observed difference in physical functioning between groups after adjusting for baseline covariates (M0). This initial disparity is then decomposed into two components: disparity reduction and remaining disparity. Disparity reduction represents the expected improvement in physical functioning for the comparison group (e.g., women) if the individual and joint distributions of family care factors were equalized to those of the reference group (e.g., men). We estimate the reduction for each factor (M1–M7), by domain (M8–M9), and combined (M10). minor caregiving (M8) reflects the joint distribution of two factors examined in M1–M2; and family care for chronic illness and disability (M9) is based on the joint distribution of five factors (M3–M7). For some respondents, certain indicators may be interdependent—for example, having an ailing spouse in the past 12 months and reporting recent or current caregiving. In the combined models (M8-M10), we accounted for this interdependence by modeling the joint distribution of multiple indicators using a full covariance matrix, thereby accurately capturing their overlapping contributions.

When comparing the distribution of each family care factor between men and women, we adjusted for baseline covariates. To estimate the effect of each family care factor on physical functioning, we additionally controlled for their corresponding intermediate confounders along with baseline covariates. (See Supplementary Methods Section 4 for details). To account for potential heterogeneity by race and gender, interaction terms between each family care factor and gender or race were included when statistically significant. For M4 (ill spouse) and M5 (ill parent), we further adjusted for the presence of the relevant family member (e.g., spouse or parent). When estimating disparity reduction between Black women and White women, we applied the same set of covariates as in prior models, excluding gender. Estimates and their corresponding 95% confidence intervals were obtained using the average and the 2.5 and 97.5 percentiles from 500 bootstrap samples, respectively.

Among the 8,778 respondents included in the analysis, the covariates with the highest percentage of missing data (approximately 20-25%) were family health issues (spouse or parent) and the respondent’s functional limitations. Most of the missing data originated from items in the SAQ, which was completed by only about 80% of participants who were interviewed by phone. To address this, we employed multiple imputation under the assumption of missing at random. All analysis variables, along with relevant auxiliary variables (e.g., other health measures), were included in the imputation model. We conducted causal decomposition analysis using the ‘causal.decomp’ R package (Kang & Park, 2021), while all remaining analyses were performed in Stata 18.0 (StataCorp, 2023). All statistics were estimated using Rubin’s rules by averaging estimates across 5 imputed datasets (Heeringa et al., 2017).

RESULTS

Gender and Racial Differences in Family Care Exposure

Table 1 presents adjusted probabilities from multinomial or logistic regression models examining gender differences in exposure to family care domains (left) and racial differences among women (right). Clear, significant gender and racial patterns emerge in minor caregiving. Compared to men, women are more likely to enter parenthood early (before age 18 or between 19–22). Among women, Black women are more likely than White women to become mothers at younger ages. For major grandparenting, women more often than men—and Black women more than White women—report major grandchild caregiving. For recent family health issues, women are more likely than men to care for a child with developmental disabilities or report a partner's disability/chronic illness in the past year. Among partnered women, Black women report slightly higher rates of a partner's disabling condition (15% vs. 12%, p = 0.06). Women are also more likely than men to report a parent's disability/chronic illness. In caregiving history, women are more likely than men to have been recent co-resident caregivers or provided multiple caregiving. Black women are less likely than White women to report no caregiving in the past year (81% vs. 85%).

Association between Family Care and Physical Functioning

Table 2 presents the predicted levels of physical functioning for each family care factor, adjusted for their corresponding confounders. Regarding caregiving for minors, individuals who had their first biological child at age 18 or younger reported worse physical functioning compared to those who became parents at age 23 or older. As for grandparenting, individuals who served as primary caregivers for their grandchildren for six months or longer reported worse physical functioning compared to their counterparts.

With respect to family health issues, individuals who have a child with a developmental disability or mental illness exhibited poorer physical functioning than those who do not. Having a spouse with a chronic illness or disability in the past 12 months was also negatively associated with physical functioning. Similarly, having a parent with a chronic illness or disability during the same period was linked to poorer physical functioning. In terms of caregiving history, individuals who currently provide care and co-reside with the care recipient report worse physical functioning compared to those who have not provided care in the past 12 months. Regarding prior caregiving experiences, physical functioning declines with the number of personal care episodes, with the poorest outcomes observed among those who provided care three or more times.

We found that the associations between two family care factors and physical functioning significantly differ by race (Figure 2). Among Whites, but not Blacks, those who had their first biological child between ages 19 and 22 exhibited worse physical functioning than those who became parents at age 23 or older (Panel A). In contrast, the association between having a child with a developmental disability or mental illness and physical functioning was stronger for Black individuals than for White individuals (Panel B). Gender-stratified sensitivity analyses further indicate that these racial differences were driven by women (Supplementary Figures 2 and 3).

Gender and Racial Differences in Physical Functioning Explained by Family Care

Table 3 presents the initial disparity (M0) in physical functioning between men and women, as well as the extent to which this disparity would be reduced if the individual (M1–M7) and joint (M8–M10) distributions of family care factors were equalized across groups. The initial gender disparity is –.267 (95% CI excludes zero), indicating significantly worse physical functioning for women than men after adjusting for baseline covariates. The degree of disparity reduction varies across indicators, with the largest reduction associated with the timing of parenthood transition (12.4%). As for the contributions of the joint distribution, minor caregiving accounted for 14.6% of the initial disparity while family care for chronic illness and disability explained 8.2%. If all indicators were equalized, approximately 22% of the initial gender disparity in physical functioning would be reduced.

Among women, Black women had significantly poorer physical functioning than White women (gap = .379 SD; 95% CI excludes zero), even after adjusting for baseline covariates. The largest reduction in racial disparity was associated with the timing of the parenthood transition (11%); however, this reduction was not statistically significant. When examining the joint contribution of each caregiving domain, we found that the combined effects of minor caregiving significantly reduced the disparity by 15%. In contrast, the joint contribution of family care for chronic illness and disability did not significantly reduce the disparity. When all family care factors were equalized between the two groups, 8.7% of the initial racial disparity was reduced, and this reduction, however, was not statistically significant. This non-significant overall reduction likely reflects the offsetting effects of family care for chronic illness or disability, which widened the racial gap and thereby diminished the total disparity reduction.

DISCUSSION

Women outlive men but spend more years in poor health or with disability. Gender disparities in later-life health, such as functional limitations, are particularly pronounced among Black women. Scholars have sought to explain these disparities, with considerable attention given to socioeconomic factors as key contributors (Bloomberg et al., 2021; Pebley et al., 2021; Warner & Brown, 2011). Building on the Stress Process Model (Pearlin et al., 2001) and the life-course perspective on family care (Keating et al., 2019), we propose a novel framework to explain these disparities: uneven exposure to multiple family care over the life course—*from* early or expanded childcare experiences *to* caring for family members with chronic illness or disabilities— take a cumulative toll, contributing jointly to gender and racial disparities in later-life physical functioning. The current study yields three key findings.

Consistent with the core tenet of the Stress Process Model (Pearlin et al., 2001) and prior work (Patterson & Margolis, 2019), we found gendered and racial disparities in life-course exposure to family care, supporting our first hypothesis. Specifically, women are more likely than men to experience caregiving responsibilities across all indicators, including raising minor children at younger ages, serving as primary caregivers for grandchildren, and caring about or for family members with debilitating health conditions—both currently and in the past. The gendered caregiving exposures were further stratified by race. Black women are especially likely to take on demanding roles in childcare, such as becoming mothers at younger ages and providing primary care for grandchildren. The racial patterns align with prior research showing higher rates of early childbearing and custodial grandparenting among Black women (Mutchler, Lee, & Baker, 2002; Sweeney & Raley, 2014).

Unlike racial differences observed in childcare, no such patterns were found for caregiving involving family members with chronic illness or disability. This contrasts with prior studies showing that African Americans are more likely than non-Hispanic Whites to provide unpaid care for chronically ill or disabled family and community members, often through informal networks and in the context of higher community morbidity (AARP & National Alliance for Caregiving, 2025). The discrepancy may partly reflect limitations in the MIDUS data. Black individuals often begin caregiving earlier in life (Miller et al., 2024), while MIDUS measures of family health issues and caregiving focus on midlife and older adulthood, potentially capturing more of caregiving exposure among non-Hispanic Whites.

Second, consistent with our second hypothesis, we found evidence of a physical health toll of expanded and unpaid caregiving, with heterogeneity in some of these associations. Individuals who assumed early or later-life childcare roles, such as parenting in adolescence or young adulthood or providing primary grandchild care, showed poorer physical functioning. Ongoing or recent family health challenges were also negatively associated with physical functioning. Co-residential caregivers reported worse physical functioning than non-caregivers, reflecting the strain of continuous, intensive care. Moreover, the accumulation of personal care episodes over time displayed a dose–response pattern, underscoring the lasting physiological consequences of repeated caregiving strain. Overall, these findings align with existing research (e.g., Eibich & Zai, 2024; Pirkle et al., 2014; Wang et al., 2021).

Some racial heterogeneity emerged, particularly among women. The health penalty associated with parenthood in the early twenties was stronger among White women than among Black women, echoing prior research (Wolfe et al., 2023). This pattern aligns with studies highlighting positive appraisal and cultural norms surrounding caregiving among racial and ethnic minorities (Brown et al., 2020; Dilworth-Anderson et al., 2002). Greater social acceptance of early childbearing and stronger familial support may help buffer the adverse health consequences of early parenthood among Black women.

In contrast, caring for a child with developmental disabilities imposes greater physical strain on Black mothers than on their White counterparts, consistent with prior findings (Lee et al., 2022). Such caregiving often entails lifelong commitments and chronic stressors that spill over into other domains of life, including employment, medical expenses, and financial security

(Anderson et al., 2007). Black mothers, already disadvantaged in their socioeconomic position, may be particularly vulnerable to the added demands of caring for a child with chronic illness or disability, which can compromise their physical health in midlife and later life.

Lastly, prior studies have shown that socioeconomic factors, such as education and labor force status (Bloomberg et al., 2021; Liang et al., 2008) and behavior factors, including smoking and obesity (Crimmins et al., 2011) partially account for gender differences in functional limitations. However, these factors do not directly capture the influence of gendered social roles in the family context. Our study is among the first to demonstrate the significant contribution of gendered caregiving roles: if women experienced family care responsibilities across multiple domains at levels comparable to men, the gender gap in later-life physical functioning would be substantially reduced.

Our findings support the third hypothesis—family caregiving partially accounts for the gender gap and the racial disparities among women in functional limitations. Across family care indicators, the timing of parenthood (i.e., early parenthood) stood out as the most significant contributor. This finding aligns with earlier research emphasizing that consequences of early childbearing and parenting on women's health persist well beyond young adulthood, affecting health into midlife and later years (Williams & Finch, 2019; Wolfe et al., 2023). Other aspects of family care contributed to a lesser, yet still significant, extent. The relatively smaller contributions of caregiving for ill family members may partly reflect selection into family care (Le & Ibuka, 2023)—namely, that individuals in midlife or old age who take on caregiving roles for family members with disability or chronic illness are often those who are already in better health.

In examining racial disparities among women, we found that the joint contribution of minor caregiving significantly reduced the Black–White gap, highlighting the critical role of caregiving for minor children in shaping long-term health outcomes. Interestingly, equalizing exposure to family care for chronic illness and disability did little to reduce the racial gap and, even, appeared to widen it (although not statistically significant). In light of mortality selection (Ferraro & Farmer, 1996), one possible explanation is that individuals most adversely affected by the burdens of caregiving and who develop serious health problems may have died or otherwise been excluded from the MIDUS sample (e.g., institutionalized in long-term care facilities), thereby reducing observed racial gaps in exposure and vulnerability to family caregiving in our study.

Limitations

Findings should be interpreted in light of some limitations. To our knowledge, the MIDUS sample is the only U.S. population-based national survey that begins in early midlife and includes multiple measures of family care. However, it was not designed to track caregiving longitudinally from young adulthood into old age. Because Black individuals are more likely to begin caregiving earlier in life, and MIDUS primarily captures recent caregiving experiences, the contribution of family care to racial disparities among women may be underestimated. Moreover, most of the sample was drawn from the Milwaukee MIDUS subsample, limiting generalizability to the Black population nationwide. Nevertheless, the Milwaukee sample provides valuable insights into racial health disparities, given that many Black adults reside in segregated urban environments.

Regarding the measures of recent or ongoing family health issues, we interpret them as proxies for potential caregiving to a child, spouse, or parent with a chronic illness or disability.

As a result, we are unable to disentangle the direct effect of caregiving from the broader “family effect”—the impact of having a loved one in poor health. Prior research suggests that both caregiving and family effects independently and negatively influence health (Bom et al., 2019). We speculate that having an ill spouse may increase the respondent’s burden related to household responsibilities and emotional stress. In cases involving other family members, particularly when co-residing—for example, with a child who has a developmental disability or mental illness—the respondent may assume primary caregiving duties, which can have detrimental effects on their physical health.

While causal decomposition analysis helps address estimation issues that occur when using traditional decomposition methods (e.g., difference-in-coefficients and KOB), the findings should be interpreted with caution. It is possible that family care (e.g., having ill family members) and poor physical functioning are both symptoms of unobserved factors, such as genetic predispositions or shared environmental conditions, which may affect the health of both the respondent and their family members.

Conclusions

As the U.S. population ages and chronic illness becomes more prevalent, the dual demands of raising children and later caring for ill or disabled family members place increasing strain on families. Our findings underscore the significant and cumulative toll of unpaid caregiving on physical functioning in later life. These burdens are unequally distributed, with women—and particularly Black women—disproportionately affected due to earlier, longer, and more intensive caregiving responsibilities.

While consistent with prior research, this study advances the literature by examining a more comprehensive set of life-course family care experiences rather than a single type of caregiving, and by explicitly assessing gender and racial differences among women. Moreover, by quantifying differential exposure to family caregiving across the life course and its heterogeneous effects, our results show that such disparities account for a substantial portion of women's and Black women's higher rates of functional limitations in later life. These findings enhance our understanding of how caregiving contributes to enduring gender and racial gaps in physical health.

Without targeted policy interventions, the continued reliance on informal care, particularly on the shoulders of women and racial or ethnic minorities, will likely perpetuate health disparities. As Keating and colleagues (2019) emphasize, caregiving should be recognized as a lifelong domain rather than a single exposure at a specific life stage. In this context, existing policy arenas, such as affordable care services, employment protection, or family leave, could be adapted or expanded to better accommodate caregiving across the life course and to mitigate its long-term consequences. Moreover, identifying when and for whom such supports are most effective is essential to preventing the cumulative disadvantages associated with lifelong caregiving and to reducing health disparities across gender and race.

FUNDING

Chioun Lee received support from the University of California, Los Angeles RCMAR Center for Health Innovation and Maximizing Eldercare (CHIME) under NIH/NIA Grant P30-AG021684. This publication was also supported by NIH/NCATS UCLA CTSI Grant UL1TR001881. The contents are solely the responsibility of the authors and do not necessarily represent the official views of the NIH.

CONFLICT OF INTEREST

None.

DATA AVAILABILITY

The data from MIDUS can be accessed at: https://midus.colectica.org/ or https://www.icpsr.umich.edu/web/ICPSR/series/203

REFERENCES

AARP & National Alliance for Caregiving. (2025, July 24). *Caregiving in the U.S. 2025*. AARP. https://doi.org/10.26419/ppi.00373.001

Amirkhanyan, A. A., & Wolf, D. A. (2006). Parent care and the stress process: Findings from panel data. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 61*(5), S248–S255. https://doi.org/10.1093/geronb/61.5.S248

Anderson, D., Dumont, S., Jacobs, P., & Azzaria, L. (2007). The personal costs of caring for a child with a disability: A review of the literature. *Public Health Reports, 122*(1), 3–16. https://doi.org/10.1177/003335490712200102

Bird, C. E., & Rieker, P. P. (2008). *Gender and health: The effects of constrained choices and social policies.* Cambridge University Press.

Bloomberg, M., Dugravot, A., Landré, B., Britton, A., Steptoe, A., Singh-Manoux, A., & Sabia, S. (2021). Sex differences in functional limitations and the role of socioeconomic factors: A multi-cohort analysis. *The Lancet Healthy Longevity, 2*(12), e780–e790. https://doi.org/10.1016/S2666-7568(21)00249-X

Bom, J., Bakx, P., Schut, F., & van Doorslaer, E. (2019). Health effects of caring for and about parents and spouses. *The Journal of the Economics of Ageing, 14*, Article 100196. https://doi.org/10.1016/j.jeoa.2019.100196

Brown, L. L., Mitchell, U. A., & Ailshire, J. A. (2020). Disentangling the stress process: Race/ethnic differences in the exposure and appraisal of chronic stressors among older adults. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 75*(3), 650–660. https://doi.org/10.1093/geronb/gby072

Capistrant, B. D. (2016). Caregiving for older adults and the caregivers' health: An epidemiologic review. *Current Epidemiology Reports, 3*(1), 72–80. https://doi.org/10.1007/s40471-016-0064-x

Carmichael, F., & Ercolani, M. G. (2016). Unpaid caregiving and paid work over life-courses: Different pathways, diverging outcomes. *Social Science & Medicine, 156*, 1–11. https://doi.org/10.1016/j.socscimed.2016.03.020

Cohen, S. A., Sabik, N. J., Cook, S. K., Azzoli, A. B., & Mendez-Luck, C. A. (2019). Differences within differences: Gender inequalities in caregiving intensity vary by race and ethnicity in informal caregivers. *Journal of Cross-Cultural Gerontology, 34*, 245–263. https://doi.org/10.1007/s10823-019-09381-9

Crimmins, E. M., Kim, J. K., & Solé-Auró, A. (2011). Gender differences in health: Results from SHARE, ELSA and HRS. *European Journal of Public Health, 21*(1), 81–91. https://doi.org/10.1093/eurpub/ckq022

Dilworth-Anderson, P., Williams, I. C., & Gibson, B. E. (2002). Issues of race, ethnicity, and culture in caregiving research: A 20-year review (1980–2000). *The Gerontologist, 42*(2), 237–272. https://doi.org/10.1093/geront/42.2.237

Eibich, P., & Zai, X. (2024). Are the grandparents alright? The health consequences of grandparental childcare provision. *Journal of Population Economics, 37*(4), 71. https://doi.org/10.1007/s00148-024-01044-5

Ferraro, K. F., & Farmer, M. M. (1996). Double jeopardy, aging as leveler, or persistent health inequality? A longitudinal analysis of White and Black Americans. *Journal of Health and Social Behavior, 37*(3), 213–228. https://doi.org/10.1093/geronb/51B.6.S319

Fuller-Thomson, E., Nuru-Jeter, A., Minkler, M., & Guralnik, J. M. (2009). Black–White disparities in disability among older Americans: Further untangling the role of race and socioeconomic status. *Journal of Aging and Health, 21*(5), 677–698. https://doi.org/10.1177/0898264309338296

Heeringa, S. G., West, B. T., & Berglund, P. A. (2017). *Applied survey data analysis* (2nd ed.). CRC Press.

Hoppmann, C. A., Gerstorf, D., & Hibbert, A. (2011). Spousal associations between functional limitation and depressive symptom trajectories: Longitudinal findings from the Study of Asset and Health Dynamics Among the Oldest Old (AHEAD). *Health Psychology, 30*(2), 153–162. https://doi.org/10.1037/a0022094

Jackson, J. W., & VanderWeele, T. J. (2018). Decomposition analysis to identify intervention targets for reducing disparities. *Epidemiology, 29*(6), 825–833. https://doi.org/ 10.1097/EDE.0000000000000901

Kang, S., & Park, S. (2021). *causal.decomp: Causal decomposition analysis* (R package). CRAN. https://cran.r-project.org/package=causal.decomp

Keating, N., Eales, J., Funk, L., Fast, J., & Min, J. (2019). Life course trajectories of family care. *International Journal of Care and Caring, 3*(2), 147–163. https://doi.org/10.1332/239788219X15473079319309

Kitagawa, E. M. (1955). Components of a difference between two rates. *Journal of the American Statistical Association, 50*(272), 1168–1194. https://doi.org/10.2307/2281213

Le, D. D., & Ibuka, Y. (2023). Understanding the effects of informal caregiving on health and well-being: Heterogeneity and mechanisms. *Social Science & Medicine, 317*, 115630. https://doi.org/10.1016/j.socscimed.2022.115630

Lee, C., & Ryff, C. D. (2016). Early parenthood as a link between childhood disadvantage and adult heart problems: A gender-based approach. *Social Science & Medicine, 171*, 58–66. https://doi.org/10.1016/j.socscimed.2016.10.028

Lee, J., Gao, M., & Lee, C. (2022). Gendered racial disparities in health of parents with children with developmental disabilities. *Frontiers in Psychology, 13*, 926655. https://doi.org/10.3389/fpsyg.2022.926655

Lee, Y., & Tang, F. (2015). More caregiving, less working: Caregiving roles and gender difference. *Journal of Applied Gerontology, 34*(4), 465–483. https://doi.org/10.1177/0733464813508649

Liang, J., Bennett, J. M., Shaw, B. A., Quiñones, A. R., Ye, W., Xu, X., & Ofstedal, M. B. (2008). Gender differences in functional status in middle and older age: Are there any age variations? *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 63*(5), S282–S292. https://doi.org/10.1093/geronb/63.5.S282

Miller, K. E., Hart, J. L., Useche Rosania, M., & Coe, N. B. (2024). Youth caregivers of adults in the United States: Prevalence and the association between caregiving and education. *Demography,* 61(3), 829–847. https://doi.org/10.1215/00703370-11383976

Mutchler, J. E., Lee, S., & Baker, L. A. (2002). Grandparent care in the United States: Comparisons by race and ethnicity. University of Massachusetts Boston, Gerontology Institute. https://scholarworks.umb.edu/gerontologyinstitute_pubs/24

National Academies of Sciences, Engineering, and Medicine. (2024). *Supporting family caregivers in STEMM: A call to action.* National Academies Press. https://doi.org/ 10.17226/27416

Olkin, I., & Finn, J. D. (1995). Correlations redux. *Psychological Bulletin*, 118(1), 155–164. https://doi.org/10.1037/0033-2909.118.1.155

Park, S., Kang, S., & Lee, C. (2024). Choosing an optimal method for causal decomposition analysis with continuous outcomes: A review and simulation study. *Sociological Methodology*, 54(1), 92–117. https://doi.org/10.1177/00811750231183711

Patterson, S. E., & Margolis, R. (2019). The demography of multigenerational caregiving: A critical aspect of the gendered life course. *Socius*, 5, 2378023119862737. https://doi.org/10.1177/2378023119862737

Pearlin, L. I. (2010). The life course and the stress process: Some conceptual comparisons. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences,* 65(2), 207–215. https://doi.org/10.1093/geronb/gbp106

Pebley, A. R., Goldman, N., Andrasfay, T., & Pratt, B. (2021). Trajectories of physical functioning among older adults in the US by race, ethnicity, and nativity: Examining the role of working conditions. *Plos One*, 16(3), e0247804. https://doi.org/10.1371/journal.pone.0247804

Pinquart, M., & Sörensen, S. (2003). Differences between caregivers and noncaregivers in psychological health and physical health: A meta-analysis. *Psychology and Aging*, 18(2), 250–267. https://doi.org/10.1037/0882-7974.18.2.250

Pinquart, M., & Sörensen, S. (2006). Gender differences in caregiver stressors, social resources, and health: An updated meta-analysis. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences,* 61(1), P33–P45. https://doi.org/10.1093/geronb/61.1.P33

Pirkle, C. M., de Albuquerque Sousa, A. C. P., Alvarado, B., Zunzunegui, M.-V., & International Mobility in Aging Research Group. (2014). Early maternal age at first birth is associated with chronic diseases and poor physical performance in older age: Cross-sectional analysis from the International Mobility in Aging Study. BMC Public Health, 14, 293. https://doi.org/10.1186/1471-2458-14-293

Quiñones, A. R., Botoseneanu, A., Markwardt, S., Nagel, C. L., Newsom, J. T., Dorr, D. A., & Allore, H. G. (2019). Racial/ethnic differences in multimorbidity development and chronic disease accumulation for middle-aged adults. *Plos One*, 14(6), e0218462. https://doi.org/10.1371/journal.pone.0218462

Schulz, R., Eden, J., & National Academies of Sciences, Engineering, and Medicine. (2016). *Families caring for an aging America.* The National Academies Press. https://doi.org/10.17226/23606

Schuster, T. L., Kessler, R. C., & Aseltine, R. H., Jr. (1990). Supportive interactions, negative interactions, and depressed mood. American Journal of Community Psychology, 18(3), 423–438. https://doi.org/10.1007/BF00938116

Seeman, T. E., Bruce, M. L., & McAvay, G. J. (1996). Social network characteristics and onset of ADL disability: MacArthur studies of successful aging. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 51*(4), S191–S200. https://doi.org/10.1093/geronb/51B.4.S191

Sweeney, M. M., & Raley, R. K. (2014). Race, ethnicity, and the changing context of childbearing in the United States. *Annual Review of Sociology, 40*, 539–558. https://doi.org/10.1146/annurev-soc-071913-043342

Taylor, D. M. (2018). *Americans with disabilities: 2014* (P70-152). U.S. Census Bureau. https://www.census.gov/library/publications/2018/demo/p70-152.html

Thomeer, M. B., Reczek, R., & Ross, C. (2022). Childbearing biographies and midlife women's health. *Journal of Aging and Health*. 34(6-8), 870–882. https://doi.org/10.1177/08982643211070136

Wang, J., Wang, Q., Hou, X. Y., Chen, S., Guo, Z., Du, W., & Fan, L. (2021). Spousal concordance in the development of functional limitations among married adults in China. *JAMA Network Open, 4*(9), e2125577. https://doi.org/10.1001/jamanetworkopen.2021.25577

Ware, J. E., Jr., & Sherbourne, C. D. (1992). The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection. *Medical Care, 30*(6), 473–483. https://doi.org/10.1097/00005650-199206000-00002

Warner, D. F., & Brown, T. H. (2011). Understanding how race/ethnicity and gender define age-trajectories of disability: An intersectionality approach. *Social Science & Medicine, 72*(8), 1236–1248. https://doi.org/10.1016/j.socscimed.2011.02.034

Williams, K., & Finch, B. K. (2019). Adverse childhood experiences, early and nonmarital fertility, and women's health at midlife. *Journal of Health and Social Behavior, 60*(3), 309–325. https://doi.org/10.1177/0022146519868842

Wolfe, J. D., Thomeer, M. B., & Reczek, R. (2023). Age at first birth and women's midlife health: Cohort and race differences across the 20th century. *Social Science & Medicine, 331*, 116097. https://doi.org/10.1016/j.socscimed.2023.116097

Yee, J. L., & Schulz, R. (2000). Gender differences in psychiatric morbidity among family caregivers: A review and analysis. *The Gerontologist, 40*(2), 147–164. https://doi.org/10.1093/geront/40.2.147

Table 1. Gender and Racial Disparities in Family Care Exposure

Domains	**Measures**	**Gender comparisons (Total, N=8,778)**		**Race comparisons among women (n=4,687)**	
		Men (n=4,091)	Women (n=4,687)	Non-Hispanic White Women (n=3,737)	Non-Hispanic Black Women (n=950)
Caregiving for minors	Timing of the transition to parenthood				
	Age 18 or younger ^{a,b}	3%	10%	6%	27%
	Ages 19-22 ^{a,b}	16%	26%	25%	34%
	Ages 23 or older ^{a,b}	59%	46%	50%	26%
	No living biological child reported ^{a,b}	22%	18%	19%	13%
	Major grandparenting $^{a,\ b}$	5%	8%	6%	17%
Family care for chronic illness or disability	***Recent or ongoing family health issues***				
	Child with developmental disability or mental illness, currently ^{a}	8%	11%	11%	11%
	Spouse/partner with disability or chronic illness in past 12 months ^{a}	10%	14%	12%	15%
	Parent(s) with disability or chronic illness in past 12 months ^{a}	19%	22%	22%	20%
	Caregiving history				
	Recent and current caregiving				
	No past 12-month ^{a,b}	91%	84%	85%	81%
	Past 12-month ^{a}	3%	6%	6%	7%
	Current non-residence ^{a,b}	3%	4%	4%	6%
	Current co-residence ^{a}	3%	5%	5%	6%
	Number of previous personal care episodes ^{a}				
	Never ^{a}	82%	71%	70%	71%
	Once ^{a}	11%	14%	14%	13%
	Twice ^{a}	4%	8%	8%	7%
	Three or more ^{a}	3%	8%	8%	8%

Note. Adjusted probabilities are derived from multinomial or logistic regression models, which control for corresponding covariates. The notation "*a*" indicates that the gender disparity is statistically significant ($p < .05$), and "*b*" indicates that the racial disparity among women is statistically significant ($p < .05$).

Table 2. Predicted Means of Physical Functioning across Groups for Each Value of Family Care Factor (Total, N=8,778)

Domains	Measures	Predicted Means (95% CI)
Caregiving for minors	Timing of the transition to parenthood	
	Age 18 or younger	-.232 (-.321, -.144)
	Ages 19-22	-.058 (-.112, -.004)
	Ages 23 or older	.100 (.072, .127)
	No living biological child reported	-.043 (-.100, .015)
	Major grandparenting	
	Yes	-.294 (-.383, -.204)
	No	.037 (.014, .060)
Family care for chronic illness or disability	***Recent or ongoing family health issues***	
	Child with developmental disability or mental illness, currently	
	Yes	-.189 (-.268, -.109)
	No	.037 (.015, .059)
	Spouse/partner with disability or chronic illness in past 12 months	
	Yes	-.151 (-.218, -.084)
	No	.038 (.015, .060)
	Parent(s) with disability or chronic illness in past 12 months	
	Yes	-.073 (-.123, -.022)
	No	.038 (.012, .064)
	Caregiving history	
	Recent and current caregiving	
	No past 12-month	.025 (.003, .047)
	Past 12-month	-.003 (-.095, .089)
	Current non-residence	-.044 (-.147, .058)
	Current co-residence	-.114 (-.222, .002)
	Number of previous personal care episodes	
	Never	.040 (.015, .064)
	Once	-.009 (-.072, .053)
	Twice	-.066 (-.147, .014)
	Three or more	-.175 (-.263, -.086)

Note. CI = confidence interval. Reported values are average adjusted predictions of the outcome for each group, calculated while holding the distribution of baseline and intermediate covariates constant.

Table 3. Estimates of Disparity Reduction in Physical Functioning

Variable	**Total (N=8,778)**		**Women (n=4,687)**	
	Gender difference (95% CI)	**% Reduced**	**Racial difference (95% CI)**	**% Reduced**
Initial Disparity	-.267 (-.307, -.228)	--	-0.379 (-.462, -.295)	--
Disparity Reduction by Family Care Factor				
Individual contributions				
M1: Timing of the transition to parenthood	-.033 (-.046, -.021)	**12.4%***	-.042 (-.100, .016)	11.0%
M2: Major grandparenting	-.011 (-.017, -.004)	**4.0%***	-.029 (-.060, .002)	7.8%
M3: Child with disability/chronic illness, currently	-.006 (-.011, -.001)	**2.2%***	.008 (-.020, .035)	-2.0%
M4: Spouse with disability/chronic illness in past 12 months	-.006 (-.010, -.001)	**2.1%***	-.004 (-.026, .018)	1.1%
M5: Parent with disability/chronic illness in past 12 months	-.002 (-.005, - .002)	0.6%	.011 (-.012, .034)	-2.9%
M6: Recent and current caregiving	-.003 (-.008, .001)	1.2%	.001 (-.021, .024)	-0.4%
M7: Number of previous life occasions of caregiving	-.015 (-.023, -.007)	**5.5%***	.006 (-.016, .028)	-1.6%
Joint contributions				
M8: Caregiving for minors (2 items)	-.039 (-.053, -.025)	**14.6%***	-.057 (-.114, -.001)	**15.0%***
M9: Family care for chronic illness/disability (5 items)	-.022 (-.034, -.010)	**8.2%***	.024 (-.006, .054)	-6.3%
M10: All indicators (7 items)	-.058 (-.075, -.042)	**21.7%***	-.033 (-.093, .028)	8.7%

Note. CI = confidence interval. Predicted estimates are from decomposition models. Disparity reduction reflects the expected improvement in physical functioning for the comparison group (e.g., women) if family care factors were equalized to the reference group (e.g., men), adjusting for baseline covariates and intermediate confounders. *Bold indicates statistically significant disparity reduction ($p < .05$).

Figure 1. Conceptual and Analytic Framework

Note. H1–H3 refer to Hypotheses 1 through 3.

Alt Text: Conceptual model illustrating how gender and race shape exposure to minor care and family care for illness or disability, influencing mid- to late-life physical functioning through differential exposure and heterogeneous effects.

Figure 2. Predicted Means of Physical Functioning across Groups for Timing of Parenthood Transition and Child with Developmental Disability or Mental Illness (Total, N=8,778)

Note. Adjusted means are derived from OLS regression models controlling for baseline and intermediate confounders. We tested whether the association between each type of family care and physical functioning differs by race and gender. Panels (A) and (B) display the heterogeneous effects of family care by race.

Alt Text: Compared with having a child at age 23 or older, early parenthood (ages 19–22) is associated with poorer physical functioning among White adults, whereas child disability care shows a stronger negative association for Black adults.

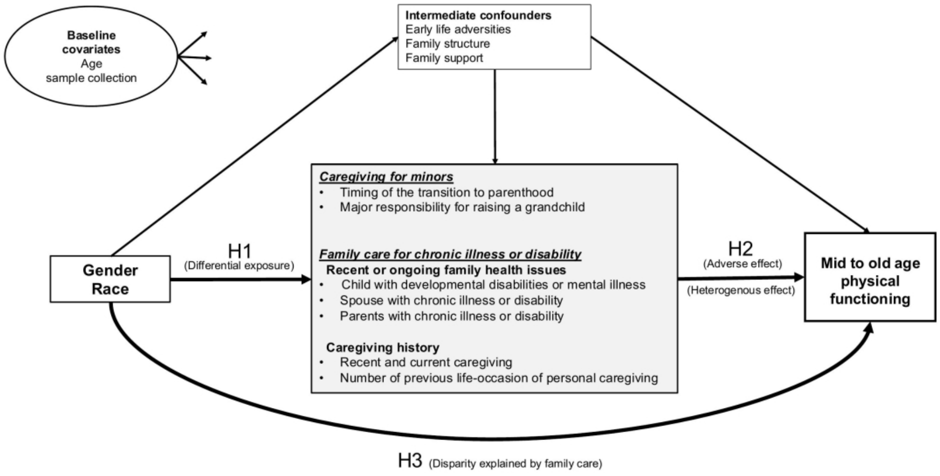
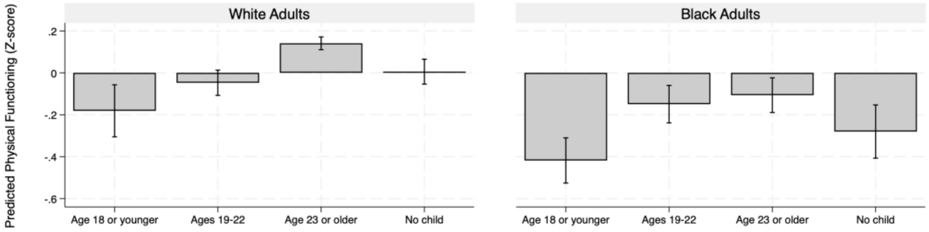


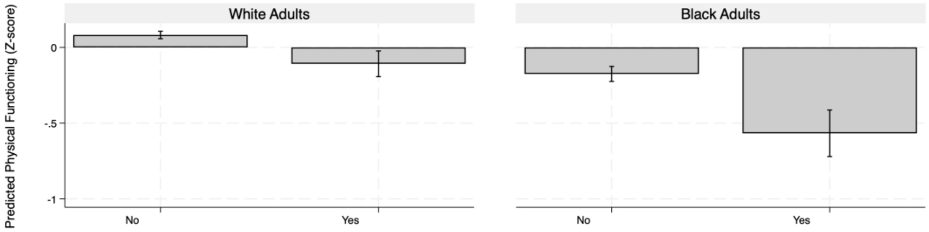
Figure 1. Conceptual and Analytic Framework

Note. H1–H3 refer to Hypotheses 1 through 3.

987x493mm (72 x 72 DPI)



(A) Timing of Parenthood Transition



(B) Child with Developmental Disability or Mental Illness

Figure 2. Predicted Means of Physical Functioning across Groups for Timing of Parenthood Transition and Child with Developmental Disability or Mental Illness (Total, N=8,778)

Note. Adjusted means are derived from OLS regression models controlling for baseline and intermediate confounders. We tested whether the association between each type of family care and physical functioning differs by race and gender. Panels (A) and (B) display the heterogeneous effects of family care by race.

846x508mm (72 x 72 DPI)