Journal of Adolescent Health 59 (2016) 209–214

ELSEVIER

JOURNAL OF ADOLESCENT HEALTH

www.jahonline.org

Original article

Black-White Disparity in Young Adults' Disease Risk: An Investigation of Variation in the Vulnerability of Black Young Adults to Early and Later Adversity

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Article history: Received January 11, 2016; Accepted April 20, 2016
Keywords: Black and white disparity in health; Adolescents; Young adults; Cardiometabolic disease risk; Exposure and vulnerability

A B S T R A C T

Purpose: Socioeconomic adversity in early years and young adulthood are risk factors for poor health in young adulthood. Population differences in exposure to stressful socioeconomic conditions partly explain the higher prevalence of disease among black young adults. Another plausible mechanism is that blacks are differentially vulnerable to socioeconomic adversity (differential vulnerability hypothesis), which has not been adequately investigated in previous research. The present study investigated variation in the vulnerability of black young adults leading to cardiometabolic (CM) disease risk.
Methods: We used a nationally representative sample of 8,824 adolescents who participated in the Add Health study. Early and later adversity was measured using a cumulative index of social and material adversity in adolescence and young adulthood. CM disease risk was assessed using nine biomarkers. Path analysis within a structural equation modeling framework was used.
Results: The findings indicated that both early and later socioeconomic adversity act as stressors with independent additive influences on young adults' CM disease risk, consistent with the differential exposure hypothesis. Moreover, the results showed that black youth are less vulnerable to early socioeconomic adversity than whites, but they are more vulnerable to later adversity.
Conclusions: The findings provide support for the unique and additive influences of early and later socioeconomic adversity on CM disease risk contributing to the black-white health disparity in young adulthood. The results also suggest that vulnerability to adversity varies depending on the life stage, which highlights the need for life-stage specific interventions to mitigate the existing black-white disparity in young adults' physical health.

IMPLICATIONS AND CONTRIBUTION

The findings highlight the need for future research to enhance our knowledge about the vulnerability or protective processes underlying the black-white health disparity in young adults. A deeper understanding about the processes related to the variation in vulnerability over the life course will enable the formulation of effective life-stage specific intervention strategies.

Although both adolescence and young adulthood are generally considered to be periods of good health, research documents that black young adults show higher prevalence rates for cardiovascular and metabolic diseases including diabetes, hypertension, and obesity, compared to their white counterparts [1,2]. Consistent with the differential exposure hypothesis, these health disparities are partly attributed to black adolescents' exposure to more stressful socioeconomic adversities than their white counterparts, resulting in greater disease risk in young adulthood [3]. Furthermore, the relatively lower socioeconomic attainment of black adolescents during the transition to young adulthood may place an additional burden on their physical health [4]. Previous research suggests

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1054-139X/
http://dx.doi.org/10.1016/j.jadohealth.2016.04.014

that both these early and later adverse socioeconomic conditions act as stressors with independent additive influences on young adults' disease risk by invoking stress-related physiological responses [5,6].

Although physiological stress responses are thought to be adaptive as the body attempts to maintain "stability through change" (i.e., allostasis), the excessive and repeated activation of these systems stemming from socioeconomic adversity can lead to long-term cumulative dysregulation in multiple physiological regulatory systems including the autonomic nervous system, the neuroendocrine system, and the immune system [7,8]. In addition, early stressful experiences of black adolescents may impair their stress response to later stressors, including heightened stress reactivity [9,10]. Although the differential vulnerability hypothesis suggests that all individuals are not equally vulnerable to stress exposure and have different health-related consequences after exposure to risk factors [11], past research has not adequately investigated whether black youth (adolescents and young adults) are differentially vulnerable to early and later stressful socioeconomic conditions.

Previous studies provide mixed findings about vulnerability of black adolescents to early adversity. Some research suggests that black youth are more vulnerable to early socioeconomic adversity, which acts to further enlarge the black-white health disparity in later years because they lack the necessary coping resources largely due to their experiences with stressful life circumstances [11]. On the contrary, others suggest that numerous family and community resources in early years, such as ethnic density, extended family structure, and supportive family arrangement as well as warmth, authoritarian, and involved parenting, protect black adolescents from the adverse influences of early socioeconomic adversity [12,13]. Thus, black adolescents who grew up in these types of supportive environments may respond to early adversity in less deleterious ways than their white counterparts [14].

Unlike early adversity, however, we expect that black young adults are more vulnerable to socioeconomic adversity in young adulthood compared to their white counterparts for several reasons. First, previously mentioned early family and community protective factors (i.e., ethnic density, support from extended family, and involved parenting) that buffer the deleterious health influence of adversity in early life may not protect young adults from age-specific socioeconomic risks. Second, the socioeconomic challenges that black young adults are likely to experience due to their relatively low socioeconomic attainment may be intensified by the continuation of early adversity or stress potentiation. Moreover, black young adults are likely to experience day-to-day and institutional racism or racial discrimination, which may also intensify their socioeconomic challenges [15,16]. Consequently, black young adults may not be able to successfully negotiate the socioeconomic challenges that arise in young adulthood [9,10]. Third, on average, black young adults engage in more metabolic disease–related health behaviors, such as unhealthy eating and physical inactivity, as coping strategies for stress-related emotions [17]. These risk behaviors may contribute to the dysregulation of physiological regulatory systems [18]. Thus, we expect that there is an amplification of the adverse influence of socioeconomic adversity for blacks. A deeper understanding of differential vulnerability mechanisms in relation to early and later adversities will have important implications for health policies and programs that aim to reduce the black-white health disparity.

In the present study, consistent with the multiple risk exposure notion [19], we used an additive index of multiple risks to indicate both early and later socioeconomic adversity. Multiple risk exposure typically has a greater negative impact on health outcomes than exposure to single risks. Recent research has shown that the disease risk of cumulative socioeconomic adversity is considerably stronger than the independent effect of individual dimensions of socioeconomic adversity, and exposure to multiple risk factors is a potential explanation for socioeconomic health disparity [6,20,21]. We contend that early risks include both material and social risk factors associated with the family and community environments (e.g., poverty in family and community, parents' martial stability), whereas later risks are associated with young adults' independent living (e.g., household income and assets). Because these risks covary, following previous studies, we expect that an additive formulation of these risk factors (captures by dichotomous indicators), rather than an interactive formulation, adequately captures the overall socioeconomic risk context in which youth live.

The first objective of this study is to investigate the unique additive influences of early and later socioeconomic adversity on young adults' cardiometabolic (CM) disease risk, which is measured by a composite index of biomarkers. There is a clear evidence that elevated levels of biomarkers, including body mass index (BMI), blood pressure, pulse rate, and blood sugar, reflect dysregulation in cardiovascular and metabolic systems caused by socioeconomic stressors, which is linked to cardiovascular and metabolic diseases later in life [22,23]. The second objective is to examine the variation in differential vulnerability, or moderating mechanisms, of black youth in relation to early and later adversities underlying the black-white disparity in disease risk.

Methods

Sample

Data for this study came from a nationally representative sample of adolescents participating in the National Longitudinal Study of Adolescent to Adult Health (Add Health). In 1995, baseline (wave 1) data were derived from a complex stratified cluster sampling of middle and high school students, yielding 20,745 respondents (M_{age} = 15.5 years; range = 12–20 years at baseline) from 134 middle and high schools. To ensure diversity, the sample was stratified by region (south, west, midwest, and northeast), urbanicity, school type (public vs. private), racial composition, and size. The second, third, and fourth waves of data were collected in 1996, 2001, and 2008 (N_2 = 14,738; N_3 = 15,100; N_4 = 15,701). We used interview data from black and white adolescents who participated in all waves and had available biomarker data at wave 4 (2008; young adulthood, M_{age} = 29.1 years; range = 24–32 years). The final study sample included 8,824 respondents. More information about Add Health is available at http://www.cpc.unc.edu/addhealth.

Measures

Race/ethnicity. We created a dichotomous variable representing race/ethnicity (1 = black, n = 2,185; 0 = white, n = 6,639) based on adolescents' self-reported race/ethnicity information, resulting in regression coefficients that can be interpreted with reference to whites.