

**Marital Biography and Cardiovascular-Related Biological Markers:
Exploring the Role of Gender**

Extended Abstract

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Background

A large body of research documents the positive association between marriage, health and longevity (Lillard and Waite 1995; Umberson 1992). Married adults have better health outcomes than the unmarried for a myriad of health conditions. Most recently, scholars have begun to investigate the link between marital *biography* and health outcomes to understand the exposures and behaviors that give rise to observed marital status differences in health. For example, how is a person's health shaped by their marital *transitions* net of marital status (Hughes and Wait 2009)?

Two recent studies provide important evidence that marital transitions are indeed powerful predictors of health outcomes. Zhang and Hayward (2006) examined how marital biography influenced cardiovascular health among middle-aged men and women. Hughes and Waite (2009) examined this issue more broadly, examining the links between chronic conditions, functioning, and mental health. Both studies report similar patterns of results. Marital disruption heightens adverse health outcomes, and this effect may be disproportionately felt among women. Moreover, both studies report evidence that remarriage does little to mute the negative health consequences of divorce. Divorce, at least on the surface, appears to leave an indelible mark on a person's health.

Both studies also use a similar strategy of assessing health outcomes – self reports. Although there is some evidence that marital experiences such as divorce alter biological processes (e.g., atherosclerosis) (Kiecolt-Glaser et al. 2003), the biological evidence is limited to small and non-representative samples. Whether and how marital biography is associated with health-related biological processes at the population level is unknown. This study addresses this gap by examining how important bio-markers of adult health are associated with marital biography.

The aims of this study are threefold. First, we seek to understand how an individual's marital biography is related to four health-related bio-markers: systolic blood pressure, diastolic blood pressure, body mass index, and C-reactive protein. These are indicators of under-the-skin "biological risk" associated with several important and highly prevalent disease conditions in older adults (e.g., cardiovascular disease and diabetes-II). By utilizing bio-markers we examine whether associations based on self-reported health are mirrored in the associations between marital biography and "under the skin" biological risk. Second, we explore in-depth how the relationship between marital biography and health varies by each of the four bio-markers. Does remarriage provide any health benefits in terms of reducing biological risk or are the effects of divorce immune to subsequent marital experiences? How is biological risk altered by exposure over time? Is biological risk altered at the time of the divorce, or does exposure to divorce exert additional negative effects? Third, we explore if and how the relationship between marital biography and health-related bio-markers vary by gender. Zhang and Hayward (2006) reported significant gender differences in the relationship between marital biography and cardiovascular health. Although Hughes and Waite (2009) found no statistical evidence for gender differentials, they too observed that women appeared to be more disadvantaged in their health in response to divorce.

Data

We utilize the 2005/2006 National Social Life, Health, and Aging Project (NSHAP) which is a nationally representative probability sample of U.S. community-dwelling adults age 57-85, funded by the National Institutes on Health and conducted by the National Opinion Research Center (NORC) at the University of Chicago. The study consists of 3,005 non-institutionalized older adults conducted between fall 2005 and spring 2006. In addition to in-home interviews and take-home questionnaires, anthropometric measurements, blood, salivary, and vaginal mucosal specimens were taken. The survey had an unweighted response rate of 75 percent and a weighted response rate of 76 percent.

Preliminary Results

We are currently in the initial stage of data analysis and hence will only present the bivariate relationships between marital biography indicators and our four biomarkers. Widows have been dropped from the analyses. In later stages we will explore the impact of the length of time an individual is single after undergoing a divorce as well the length of time one is married.

Table 1 shows that marital loss is associated with high levels of systolic blood pressure for both women and men. For both genders, the effect is confined to persons who remained divorced. Persons who had remarried did not differ from currently married persons in their blood pressure or for the other biomarkers. This pattern is contrary to the studies based on self-reported health.

The effect of marital loss for women was largely confined to systolic blood pressure. For men, however, the pattern was more complex. Divorced men experienced higher rates of high blood pressure and higher levels of inflammation indicated by CRP. However, divorced men also were less likely to be obese.

Table 1: Panel A
Bivariate Associations of Marital Biography and Various Bio-Markers among Women

		High Systolic BP	High Diastolic BP	High BMI (Obese) ^a	High C-Reactive Protein ^b
Model 1	Currently Married	-	-	-	-
	Previously Married	0.527 ***	0.148	0.336 *	-0.145
	Never Married	0.725 *	0.475	0.64	-0.187
Model 2	Continuously Married	-	-	-	-
	Remarried	-0.078	0.055	-0.305	0.020
	Previously Married	0.506 **	0.162	0.257	-0.146
	Never Married	0.704	0.489	0.561	0.244

Note: * p ≤ 0.05, ** p ≤ .01, *** p ≤ .001.

^aThe comparison group is those of normal bmi (< 25).

^bThe comparison group is those with normal levels (3.1-10) of c-reactive protein.

Table 1: Panel B
Bivariate Associations of Marital Biography and Various Bio-Markers among Men

		High Systolic BP	High Diastolic BP	High BMI (Obese) ^a	High C-Reactive Protein ^b
Model 1	Currently Married	-	-	-	-
	Previously Married	0.291 *	-0.060	-0.728 ***	0.560 *
	Never Married	0.279	0.213	-1.398 **	-0.298
Model 2	Continuously Married	-	-	-	-
	Remarried	0.018	0.015	0.209	0.031
	Previously Married	0.298 *	0.054	-0.663 **	0.570 *
	Never Married	0.286	0.220	-1.332 **	-0.289

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

^aThe comparison group is those of normal bmi (< 25).

^bThe comparison group is those with normal levels (3.1-10) of c-reactive protein.

Conclusion

This project is in its initial stages but the preliminary results suggest the relationship between marital biography, marital status, and health-related biomarkers is a complex one that requires further study. The preliminary findings suggest that marital biography (especially marital loss) may differ in its association with under-the-skin biological risk more than it does with self-reported health measures. Also, in contrast to prior studies, men -- not women -- appear more adversely affected biologically (except in terms of BMI) by marital loss. We acknowledge that our work is highly preliminary, but this project will be among the very first to examine how marital biography is associated with biological risk associated with cardiovascular health.

References

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