In Sickness and In Health?
Physical Illness as a Risk Factor for Marital Dissolution at Older Ages

PAA Extended Abstract

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Abstract

A large literature documents the consequences of marital status for health across the life course, but little work has examined the impact of health on marital status. In this study we use data from the Health and Retirement Study to examine the role of chronic disease onset (i.e., cancer, heart disease, lung disease, and/or stroke) in subsequent divorce/separation, widowhood, and mortality among Americans aged 51 to 61 at baseline and their partners. We use a series of discrete-time event history models with multiple competing events to estimate the role of chronic illness onset of respondent and spouse on subsequent divorce/separation, widowhood, and death. We find that spousal illness onset is associated with subsequent divorce, but only for men. Subsequent analysis will examine the role of strains associated with caregiving by husbands as non-gender-normative behavior and financial strains as explanatory mechanisms in the elevated risk of divorce following wives' illness.

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Introduction and Research Questions

A large body of literature has identified marital status as a strong predictor of health and well-being. Not only are the married healthier than the nonmarried (e.g., Lillard and Waite 1995), studies also find divorce and widowhood are precursors to poor physical and mental health (e.g., Hughes and Waite 2009; Williams and Umberson 2004). Less attention, however, has been paid to how poor health may be a determinant of marital status. Health may operate as a selection process both into and out of marriage. Work that has focused on health as a determinant of marital status have tended to focus on better health positively selects individuals into marriage. However, poor health may be an equally important selective force out of marriage through both widowhood and divorce. The implications of poor health for marital dissolution may be particularly important at older ages, when the majority of chronic morbidity onset occurs (Crimmins and Beltrán-Sánchez 2011) and impacts the greatest proportion of the population firsthand. However, little research to date has examined the impacts of aspects of health such as disease onset on subsequent marital status at older ages.

The most obvious potential linkage between disease onset and subsequent marital status is between illness and widowhood, due to the association between several chronic diseases and mortality. However, decreasing mortality associated with several chronic diseases (Crimmins 2004) means that individuals are living longer with chronic disease. One consequence of increased survival from chronic disease may be increased divorce risk, which recent research finds is increasing at older ages (Brown and Lin 2012). Physical illness may increase martial dissolution via increased divorce risk by operating as a stressor on the marital relationship. In particular, increased caregiving responsibilities for the well spouse and lost income due to the inability to work for either the ill or caregiving spouse may represent specific stressors that tax the marital relationship.

The relationship between illness onset and subsequent divorce may also vary by gender. Small clinical studies have found elevated divorce risk following wives' disease onset compared with husbands' (e.g. Glantz et al. 2009) or for female cancers (Carlsen et al. 2007). This finding is consistent with two developed literatures in family demography. First, (re)marriage markets increasingly favor men as individuals age (England and McClintock 2010), leaving men with more potential partner options than women, which lowers the exit costs of divorce for men. Second, the caregiving that frequently accompanies chronic illness may be stressful for individuals (both caregivers and recipients) and marriages, but given gendered norms about women as caregivers (England 2005), situations in which men must act as caregivers may be particularly stressful for individuals and marriages. While the few clinical studies finding gender differences in the impact of illness on divorce risk are intriguing, these results have not been replicated in nationally-representative data and potential mechanisms like caregiving have not been explored.

Our project uses nationally-representative data from the Health and Retirement Study (HRS) to address three research questions. First, what are the relationships between illness onset and subsequent divorce, widowhood, and death at older ages? Second, what roles do income and caregiving play as mechanisms in the relationship between chronic disease onset and divorce? Finally, is the relationship between illness and divorce moderated by gender?

Background

Health as a Determinant of Marital Status

The relationship between marital status and health is well-known. Numerous studies have documented the health benefits to getting married as well as staying married (Lillard and Waite 1995; Umberson 1992). Studies also find negative health consequences of marital dissolution due to either divorce (Hughes and Waite 2009; Williams and Umberson 2004) or widowhood (Hughes and Waite 2009; Elwert and Christakis 2008).The vast majority of this literature has focused on the impact of marital status (and marital status transitions) on health, rather than on the impact of health on subsequent marital status, though as substantial research alluded to earlier suggests, marital status is an important determinant of economic, physical, and psychological well-being (Hughes and Waite 2009; Lavelle and Smock 2012; Williams and Umberson 2004).

A few studies have examined the role of childhood health on the transition into marriage. One case-control study found that both male and female survivors of childhood and adolescent cancers were less likely to marry than siblings who were not diagnosed with cancer as children or adolescents (Byrne et al. 1989). Using 40 years of data from the Panel Study of Income Dynamics (PSID), another study found that individuals who retrospectively self-reported childhood psychological problems had an eleven percentage point lower probability of subsequently being married compared with siblings who did not report childhood psychological problems (Smith and Smith 2010). Several studies have also documented lower marriage rates for overweight and obese individuals, particularly women (Fikkan and Rothblum 2012; Gortmaker et al. 1993).

Health not only functions as a determinant of entrance into marriage but also marital dissolution. Beyond the obvious pathway between partner health decline and subsequent widowhood, a few studies have examined physical health as a risk factor for marital dissolution via divorce. Using data from the 1979 National Longitudinal Study of Youth, Teachman (2010) finds that work-related health-limitations among husbands are associated with elevated divorce risk. A meta-analysis of social and economic consequences of stroke among working age adults did not find a systematic relationship between stroke and divorce, but did find that stroke negatively impacted marital relationships (Daniel, Wolfe, Busch, and McKevitt 2009).

Of the few studies that examine health and divorce risk, the focus tends to be on relatively young populations. However, the number of divorces occurring among adults aged 50 and older has doubled in the past two decades, and in 2010 one in four divorces occurred among those over 50 (Brown and Lin 2012). Given that late middle-age and early older-ages are the stage in the life course when many individuals experience the onset of serious health conditions, the potential stresses of illness coupled with more permissive attitudes towards divorce and the already elevated divorce risks associated with more divorces earlier in life (Uhlenberg and Myers 1981) may make disease onset a particularly important risk factor for divorce among more recent cohorts of older Americans.

Mechanisms Linking Health and Subsequent Marital Dissolution

Why might illness be associated with subsequent divorce? First, a sick individual may require assistance with daily personal care tasks, and for those who are married, the ill individual's spouse is most often the primary caregiver (Wolff and Kasper 2006). Caregiving, however, has been identified as a source of psychological strain which may lead to increased morbidity and mortality among caregivers themselves (Schulz and Beach 1999). Further,

caregiving may alter the relationship dynamic between husband and wife in ways that are distressing (Teachman 2010), particularly if initial marital quality was low (Choi and Marks 2006). Both of these processes may lead to increased divorce risk via decreased marital quality and the stresses associated with caregiving. In addition, spousal illness may affect household income by interfering with either the ill or caregiving spouse's ability to engage in gainful employment. As both job loss and earnings shocks have been linked to elevated divorce risk in other studies examining younger populations (Charles and Stephens 2004; Weiss and Willis 1997), it is plausible that these processes continue to operate at older ages. To our knowledge, however, little work has utilized nationally-representative longitudinal data to interrogate the effect of illness onset on subsequent marital dissolution at older ages or to explore potential explanatory mechanisms.

Gender, Illness, and Marital Dissolution

An important question regarding the relationship between illness and subsequent marital dissolution (particularly via divorce) is whether this relationship varies by gender. A few clinical studies have found elevated divorce risks when wives experience cancer compared with husbands (Glantz et al. 2009; Kirchhoff, Yi, Wright, Warner, and Smith 2012) or for cancers that only affect women such as cervical cancer (Carlsen et al. 2007). These findings, however, have been limited in their examination of relatively young (Kirchhoff et al. 2012) or small samples (Glantz et al. 2009), and all neglect conditions besides cancer, missing the potential impact of other diseases that may impact divorce, such as heart trouble, stroke, and chronic lung diseases. These other conditions are important to examine because they are major risk factors for death and disability. For example, in the United States, heart disease is the leading cause of death (Kochanek et al. 2011) and stroke is the leading cause of major long-term disability (Roger et al. 2012).

Family demography outlines two processes that suggest an elevated divorce risk when wives become ill compared to husbands. First, marriage markets increasingly favor men as individuals age. Sex ratios become increasingly skewed towards women (Austad 2006) as a result of women's greater longevity compared to men's, surviving men are left with a larger pool of available opposite sex potential partners than women. Age-specific sex ratios that are increasingly skewed towards a female majority combine with the tendency for men to marry women younger than themselves (i.e. "age hypergamy") to yield pools of potential mates that are much larger for older men than women (Presser 1975). A "double standard of aging" that values youthful conceptions of beauty for women results in marriage markets in which "women are devalued as they age more than men are" (England and McClintock 2010: 814). Indeed, men are much more likely to remarry than women and are not penalized in marriage markets for being divorced as women are (Shafer and James 2013), yielding divorced men with far more re-partnering options than divorced older women.

The second process that may yield differences in the relationship between chronic illness and subsequent divorce are gender norms regarding the caregiving that frequently accompanies disabling chronic illness. Women are socialized and habituated to caregiving for others across the life course (England 2005). Indeed, studies suggest that this extends to caring for ill husbands. However, this caregiving is not fully reciprocated by husbands for sick wives. Wives were more likely to report experiencing gaps in caregiving thank husbands (Allen 1994). Given the gendered nature of caregiving and receiving and caregiving's frequent stressful nature, it is

plausible that caregiving differences may explain gender differences in the relationship between illness and divorce.

The Present Study

We use data from the Health and Retirement Study (HRS) to assess the relationship between illness onset and three competing outcomes: divorce, widowhood, and death. Beyond contributing to understanding about the predictors of divorce at older ages, our project extends knowledge of health as a stratifying mechanism by focusing on how it may shape access to beneficial institutions such as marriage at older ages by selecting those most physically vulnerable (and most in need of the benefits of marriage) out of marriage via divorce. We will estimate competing risk models for the determinants of marital dissolution due to both divorce and widowhood as well as death, as physical illness/disability onset may be associated with both divorce and widowhood. This analytic strategy also contributes to ongoing research addressing shifts in the relative contributions of divorce and widowhood as pathways out of marriage (Stevenson and Wolfers 2007), which have generally focused on the role of increasing life expectancy but not on how potential increases in living with illness and disability, especially for younger cohorts (King et al. 2013; Freedman et al. 2013), may increase divorce risk.

Methods

Data

We use data from Waves 1-10 of the RAND HRS data file, a user-friendly, harmonized data set generated from the original HRS files. The Health and Retirement Study (HRS) is an on-going, representative, prospective panel study of Americans over the age of 50 years. Detailed health and socioedemographic information has been collected from respondents and their spouses (regardless of the spouse's age) every two years since 1992.

Key Measures

Dependent Variable: Marital Status and Mortality: The main outcome of interest is whether a married respondent experiences divorce/separation, widowhood, or death in subsequent observational periods.

Key Independent Variable: Respondent and Spousal Illness Onset: The primary independent variable is respondent or spousal illness onset. We focus on the onset of four major chronic, life-threatening diseases: cancer, stroke, lung disease, and heart disease which together comprise a substantial portion of chronic disease burden in the United States (Kung et al. 2008). These four conditions were also selected because recovery from these conditions is protracted, if it occurs at all, which represents a serious and protracted marital stressor. We examine whether respondent or spouse experienced any of these four conditions as well as the experience of onset of each specific condition.

Controls: We also include controls for several factors that are associated with divorce, widowhood, and/or mortality. These include: gender, race/ethnicity, age of respondent and spouse, education of respondent and spouse, race/ethnicity of respondent, marital duration, number of living children, whether the respondent or spouse identifies as Catholic, and initial marital quality. Unfortunately, subsequent measures of marital quality were not collected.

Additional controls (such as for whether the current marriage is a remarriage or not) will be included in future analysis.

Analytic Sample
The analytic sample is based on 9,714 HRS individuals who are married at baseline (Wave 1). As we are interested in the role of chronic disease *onset* as a risk factor for marital dissolution (as well as timing in future analyses), we exclude individuals (n= 1,887) and their spouses who report having ever had any of the four chronic conditions at baseline (n= 1,343). If we were to include those who had ever had any of the four chronic conditions, we might be selecting for particularly robust marriages, biasing downwards our estimates of the relationship between illness and divorce. Further, we do not know the date of diagnosis for diseases at baseline relative to date of marriage. We also exclude individuals who experience divorce, widowhood, or death in the second wave (1994) as it cannot be ensured that our key independent variable, illness onset, in Wave 2 preceded a change in marital status (see Statistical Analysis below). We also exclude those missing information on any covariates (n=362), yielding a final analytic sample of 5,467 respondents (2,644 men; 2,823 women). This corresponds to 37,450 person-intervals. Future analysis will evaluate the robustness of results to missing data.

Statistical Analysis
To assess risk of divorce/separation, widowhood, and mortality, a series of discrete-time event history models with multiple competing events will be estimated using multinomial logistic regression. Widowhood and respondent death are be modeled as competing events, as these may also be related to disease onset. We generate a person-period dataset in which each individual contributes a person-period until an event occurs (divorce, widowhood, or death, whichever comes first occurs) or until the individual is censored. For those experiencing an event, we assume that the event occurred halfway through the interval (Preston, Heuveline, Guillot 2001). A primary concern given our interest in the time-varying effect of illness on subsequent marital status change is ensuring that illness onset precedes a potential change in marital status. As such, we lag time-varying respondent and spousal illness onset one wave in order to ensure that illness onset precedes a potential change in marital status. As gender differences are of particular interest, we run models separately by gender. Regression analyses are clustered at the individual level.

Preliminary Results
Descriptive statistics are displayed in Table 1 by gender. The distribution of events and disease initial onset by wave can be found in Table 2. As expected given a sample of this age, there is a significant amount of death of respondents or spouses. While lower, there are also a substantial number of divorces between 1994 and 2010. Also not surprising, there is a substantial amount of new chronic disease onset (any of: cancer, stroke, lung disease, or heart disease) among respondents and spouses.
Table 3 displays multinomial logistic regressions predicting divorce, widowhood, and death by gender. Among men, spouse age is negatively associated with getting divorced versus staying married, and spousal chronic disease onset and poor baseline marital quality are strongly positively associated with subsequent divorce versus remaining married. Among women, respondent minority race and poor baseline marital quality are positively associated with subsequent divorce. Among men, increasing observational duration (period) is positively

associated with widowhood, as is spouse disease onset. Among women, an examination of linear and quadratic observational period terms indicates that the log odds of widowhood for women increases with observational period, indicated by the statistically significant linear observational period term, but that this positive relationship flattens out over time, as indicated by the significant negative quadratic term. Both spouse age and spouse disease onset are positively associated with widowhood for women. For men and women, increasing observational period is positively associated with increasing mortality (the positive, statistically significant linear period term), but this pattern flattens out over time (the negative, statistically significant quadratic period term). Likewise, for both men and women, increasing respondent age and respondent disease onset is positively associated with subsequent mortality, and higher levels of respondent education are negatively associated with mortality. There are also gender differences for mortality models. For men only, minority racial/ethnic status is positively associated with mortality.

Discussion and Future Directions

In this project, we examine the consequences of chronic disease onset on subsequent marital status and mortality among a nationally-representative sample of Americans aged 51 to 61 at baseline. Many of our results are consistent with long-established findings regarding risk factors for divorce, widowhood, and mortality. For example, for both men and women, those in poorer-quality marriages at baseline are more likely to subsequently divorce. Likewise observational duration and respondent illness onset are associated with higher subsequent mortality for both genders, as is spousal disease onset for widowhood. An important novel finding from this paper, however, is that spousal illness onset is associated with subsequent divorce, but only for men.

Our preliminary analyses establish the gendered nature of the relationship between chronic disease onset and subsequent marital dissolution and lay the foundation for future analysis. First, we plan to add additional covariates (such as marital duration and disability) to regression models and to examine chronic disease onset by individual disease. We will also conduct statistical tests of differences in coefficients between models for men and women. We also plan to examine the potential mechanisms outlined in the background section as potential pathways that link illness with subsequent divorce, widowhood, and mortality. Caregiving, for example, is more commonly enacted by women across the life course (England 2005). Compared to instances in which husbands must care for ill wives, caregiving for an ill husband may be less stressful for women and for marriages because it conforms to traditional gender patterns of care-giving and -receiving. On the other hand, situations in which husbands are unable to work and result in lost household income may be associated with elevated divorce risk regardless of which spouse is ill, given the traditional emphasis on men's economic contributions to marriage (Becker 1981). We also plan to examine whether the relationship between spousal illness and divorce is moderated by other characteristics (e.g. age, birth cohort, race, pre-illness marital quality, and marital duration).

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Table 1. Baseline Desciptive Statistics by Gender, Health and Retirement Study, 1992

	Men (n=2644)		Women (n=2823)		Range
	Mean	SE	Mean	SE	
Respondent Age (years)	56.58	0.04	52.66	0.04	25-92
Spouse Age (years)	52.60	0.04	56.54	0.04	25-92
Respondent Nonwhite	0.21	0.00	0.22	0.00	0-1
Respondent Education (years)	12.53	0.03	12.40	0.02	0-17
Respondent Catholic	0.28	0.00	0.30	0.00	0-1
Spouse Education (years)	12.43	0.02	12.46	0.02	0-17
Spouse Catholic	0.30	0.00	0.28	0.00	0-1
Marital Quality (not excellent)	0.12	0.00	0.18	0.00	0-1

Table 2. Events (n) by Wave, Health and Retirment Study (HRS) 1996-2010

	Divorces	Spouse Deaths	Respondent Deaths	Respondent New Morbidity Onset	New Spouse Morbidity Onset
Wave 3	70	60	366	375	274
Wave 4	103	135	483	303	339
Wave 5	119	194	560	319	374
Wave 6	131	274	566	378	421
Wave 7	146	314	592	368	419
Wave 8	136	407	500	406	451
Wave 9	138	505	479	375	440
Wave 10	164	590	550		
Total	1007	2479	4096	2524	2718

Table 3. Multinomial Logistic Regression Models Predicting Divorce, Widowhood, and Death Among Men and Women Married at Baseline, Health and Retirement Study 1992-2010

	Men									Women								
	Divorce			Widowed			Died			Divorced			Widowed			Died		
Period	-0.03	0.19		0.36	0.17	*	0.37	0.07	***	0.04	0.15		0.51	0.10	***	0.40	0.10	***
Period²	0.01	0.02		-0.02	0.01		-0.03	0.01	***	0.00	0.01		-0.04	0.01	***	-0.04	0.01	***
Respondent Age	-0.01	0.03		-0.01	0.02		0.07	0.01	***	-0.03	0.02		0.00	0.01		0.06	0.01	***
Spouse Age	-0.06	0.02	**	0.04	0.02		0.01	0.01		-0.01	0.03		0.06	0.01	***	0.02	0.01	
Respondent Disease Onset	0.45	0.36		-0.18	0.35		0.54	0.13	***	-0.01	0.46		-0.34	0.28		1.43	0.16	***
Spouse Disease Onset	0.79	0.18	***	0.91	0.13	***	0.11	0.14		0.29	0.19		0.43	0.10	***	-0.06	0.16	
Respondent Minority Race	-0.06	0.29		0.14	0.25		0.29	0.10	**	0.50	0.21	*	0.20	0.13		0.07	0.15	
Respondent Education	-0.06	0.05		-0.03	0.03		-0.04	0.01	**	0.03	0.05		0.00	0.02		-0.06	0.02	*
Respondent Catholic	-0.22	0.41		-0.27	0.34		-0.11	0.14		-0.23	0.32		0.00	0.16		0.15	0.19	
Spouse Education	-0.01	0.06		-0.02	0.04		-0.01	0.02		-0.03	0.04		-0.02	0.02		-0.02	0.02	
Spouse Catholic	-0.13	0.41		0.09	0.33		0.10	0.14		-0.04	0.32		-0.06	0.17		-0.21	0.20	
Baseline Marital Quality not Excellent	0.94	0.26	***	-0.02	0.27		0.01	0.12		0.63	0.19	**	0.12	0.13		0.24	0.13	
Constant	-1.10	1.91		-6.87	1.14	***	-8.25	0.54	***	-3.45	1.54	*	-8.50	0.71	***	-8.27	0.79	*

	Men	Women
Person Periods	18212	19312
Wald χ²	385.85 ***	391.80 ***
Pseudo R²	0.0387	0.0391
Log-Likelihood	-3764.7485	-4161.6978

Note: Omitted category is continuously married. *p<0.05; **p<0.01; ***p<0.001. Likelihood ratio tests indicate the presented functional form of period is preferable to alternatives omitting the quadratic term or adding a cubic term.