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Transition to Widowhood and Health Care Use among the Elderly

OBJECTIVES

Marriage is salubrious and widowhood is deleterious to health. That is, individuals are at an elevated risk of death after the death of their spouse. Much empirical effort has been directed at delineating mechanisms of the widowhood effect, but little is known about whether individuals change the way they use health care when they become widowed and how that change may influence their health. This paper examines health care use as a link between widowhood and health. It asks: 1) how does the transition to widowhood affect the individuals' choices with respect to health care use and the quality of care they receive? And 2) to what extent do these changes contribute to the elevated mortality hazard for the widowed?

BACKGROUND

How might being married influence one's interaction with formal medical settings? Spouses may serve as conduits of information for each other. Marriage tends to expand one's social network; as a result, the married may have access to better information on healthcare utilization and more extensive referral network. Spouses may serve as advocates for their partners during the interaction with formal medical settings, especially when the partners are too sick to serve as their own advocates. Spouses may also promote regular and appropriate interactions with health care providers, and regular self-monitoring and self care. Self care is an important component of the care for chronic illnesses such as diabetes; better practice of self care and monitoring also facilitates the work of health care providers. In short, we hypothesize that the married, with the help of their spouses, tend to be more active, informed and resourceful patients than the unmarried. Existing literature suggests that it pays off to be an active, informed and resourceful patient: such patients are likely to enjoy higher quality of care and better health outcomes. As individuals become widowed, these marriage benefits are at least partially lost. This loss, coupled with the emotional burden of bereavement and the need to adjust to new roles and routines, may lead to deteriorating quality of care after transition to widowhood. To the extent that appropriate use of health care is crucial in maintaining health, especially for the elderly who often suffer from various and concurrent chronic and acute illnesses, the deteriorating quality of care around the transition to widowhood may contribute to ill health and higher mortality.

With a few exceptions, there has not been systematic research on how marriage per se influences individuals' interaction with the formal medical setting. Some prior work has examined cross-sectional correlation between marital status and health care use and suggested that married individuals enjoyed better quality of healthcare than the unmarried. However, the causal direction may be ambiguous. This project takes advantage of a large longitudinal dataset of elderly couples; by focusing on individuals who transition to widowhood, it examines the health care use of the same individual in both the married and unmarried states.

DATA

This study combines data from multiple sources. All married couples enrolled in Medicare as of January 1, 1993 were identified based on specially developed algorithms (Iwashyna et al. 1998). A sample of one million couples was then randomly selected and followed until January 2002. Survival status and death dates of the couples were ascertained. Individual demographics, detailed

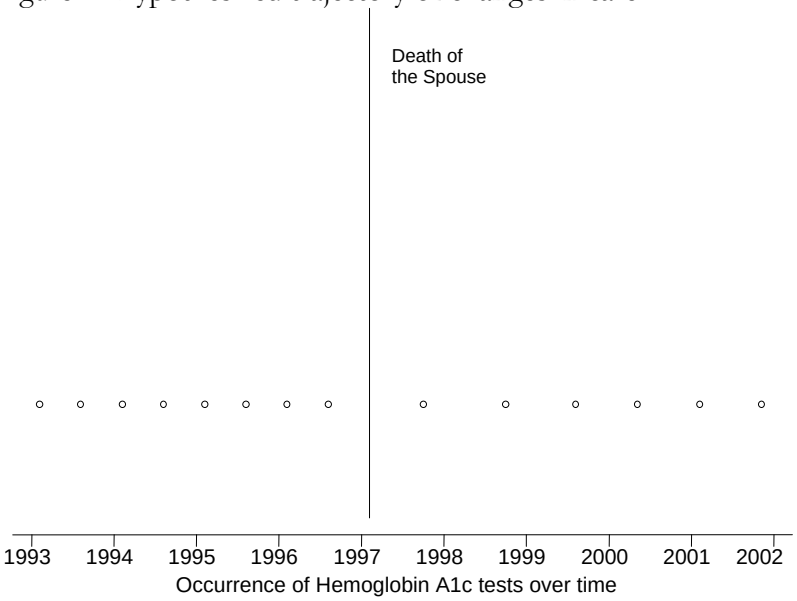
information on the use of inpatient and outpatient services, and characteristics of providers of medical dare were obtained for this sample. In addition, county-level and zip-code level information was also obtained from Area Resource Files and 2000 Census.

We examine two groups of measures of health care use and quality. The first group of measures concerns the delivery of routine and preventive services. It includes mammograms, influenza vaccination, cholesterol monitoring, and diabetes preventive service use such as diabetic eye examination and blood glucose monitoring. It also includes a measure of the occurrences of preventable hospitalizations. The second group of measures includes the quality of doctors and hospitals with which individuals were seeking care. Medicare claims data have been used with great success to identify eligible populations and to detect and time the delivery of these services.

METHODS

Figure 1 shows the hypothesized trajectory of changes in health care use around the transition to widowhood, using the occurrence of Hemoglobin A1c tests[1] as an example.

Figure 1. Hypothesized trajectory of changes in care



The general analytical approach is to compare the time periods before and after the deaths of the spouse. This approach uses patients as their own controls; it controls for any underlying propensity to seek care, and other temporally invariant factors, measured or unmeasured. Time-varying variables are constructed to indicate the quality of care an individual received at a certain time. Take the occurrence of Hemoglobin A1c tests as an example. We constructed a variable indicating whether an individual had at least two of these test in the previous twelve months for a particular month for each month the individual was in the study. The fixed effect logistic model is used to model the outcome. A time-varying covariate indicating whether an individual was widowed is the primary predictor. Other time-varying covariates indicating the health status of the individuals are also added as control variables. To further delineate the effect of spousal death from the age effect,

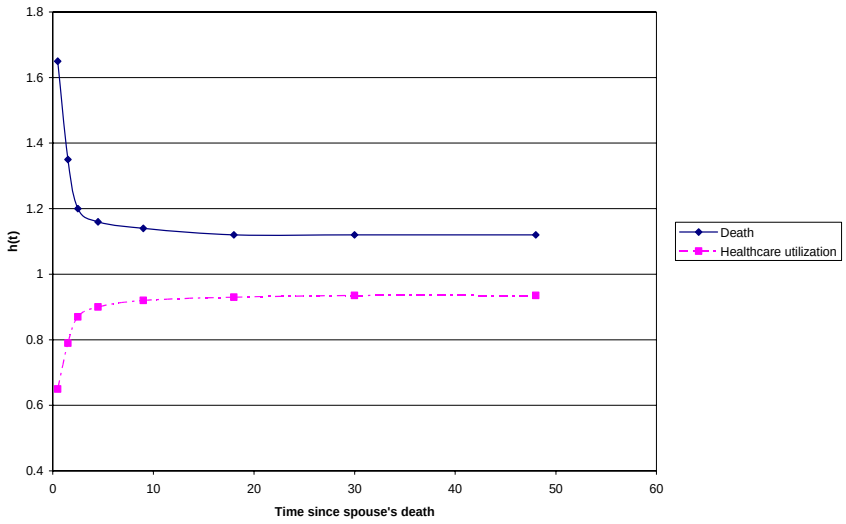
[1] A Hemoglobin A1c test is a test for long-term blood sugar levels for diabetic patients. The recommendation is that diabetic patients should have at least two of these tests a year and the two tests should be at least 3 months apart (American Diabetes Association, 2002).

we create a matched cohort of non-widowed elderly using the propensity score method. We then compare the trajectory of changes in health care use between the widowed and non-widowed individuals.

It is highly likely that the deceased spouses suffered from serious illnesses before death that 1) render them incapable of help their spouses coordinate their care and 2) increase the burden of care giving and thereby diverting attention and resources away from the "well" spouses to take care of their healthcare needs. In this situation, the decline of healthcare quality might have already begun before the transition to widowhood. We also consider this scenario by adding in time-varying indicators of onset of illnesses of spouses.

In the second step of our analysis, we examine whether changes in health care use at the transition to widowhood contribute to mortality risks. Figure 2 schematically represents the hypothesized closely aligned trajectories of hazards for death and healthcare utilization.

Graph 2. Hypothesized trajectories of hazards of death and healthcare use



In this step, time-varying indicators of quality of care are used as covariates in proportional hazard regressions with timing and survival status as dependent variable. The coefficients of these variables will indicate whether changes in healthcare utilization and quality contribute to the mortality risks. An interaction between the indicators of quality of care and being widowed shows whether receiving lower quality of care was particularly harmful for those who were widowed.

RESULTS

Thirty-seven percent of study subjects became widowed during the study period. About three quarters of the widowed were women. Preliminary findings suggested that quality of care declined around the transition to widowhood. For example, Table 1 shows that for any given month, if an individual had lost her spouse in the previous year, the odds of receiving at least two A1c tests that at least three months apart in the previous year, compares with all other months, were significantly lower. The regression controlled for the onset of diabetic complications and a linear term indicating the calendar year.

Table. Odds of having appropriate blood sugar monitoring in the previous year

	Odds (95% CI)	P value
Being widowed in previous year	0.987 (0.978, 0.996)	0.005
Renal complications	1.358 (1.34, 1.375)	<0.0001
Peripheral circulatory disorders	1.163 (1.152, 1.174)	<0.0001
Ophthalmic complications	1.579 (1.565, 1.593)	<0.0001
Neurological complications	1.523 (1.51, 1.535)	<0.0001
Calendar year	1.229 (1.228, 1.23)	<0.0001

DISCUSSION

This project has important policy implications. As the transition to widowhood is a common event at old age and as the proportion of the widowed grew in the population, investigating the effect of widowhood on healthcare utilization and the mechanisms underlying this relationship may provide insights into the timing and methods of interventions that may prevent or attenuate the harmful consequences of widowhood.

Note: We are still working on the analysis using the matched cohorts and the analysis examining the effects of health care use on mortality risks. We will add them to the final paper.

REFERENCES

Iwashyna, Theodore J., James X. Zhang, Diane Lauderdale, and Nicholas A. Christakis. 1998. "A Methodology for Identifying Married Couples in Medicare Data: Mortality, Morbidity, and Health Care Use Among the Married Elderly." *Demography* 35(3):413-419.

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