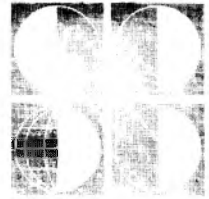


Risk of Mortality Following Widowhood: Age and Sex Differences by Mode of Death



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ABSTRACT: This study examines how spouses' deaths from sudden or lengthy illnesses differentially affect the mortality risks of surviving widows and widowers by age. Using the Panel Study of Income Dynamics, we find the mortality risk differs by gender, age, and type of widowhood. For nonelderly (< 65) widowers, there is an elevated risk when their wives died suddenly. For older (≥ 65) widows, the mortality risk is lower than that of comparably aged married women when their husbands died after a long-term illness. These gender, age, and mode-of-death differences are consistent with role theory and theories of social support.

A consistently reported health consequence of widowhood is an increased risk of mortality among surviving spouses. Considerable speculation regarding the reason for this elevated risk of mortality exists. Some suggest that bereavement raises the risk of mortality (Stroebe et al., 1981; Stroebe and Stroebe, 1993). Others hypothesize that major role changes following the death of a spouse may trigger diseases that lead to premature death (Bowling, 1987). Sanders (1983) speculates that the stress of caring for a terminally ill spouse may cause the caregiver spouse to ignore his/her own health. Finally, Smith and Zick (1994) argue that some spouses may share lifestyles (e.g., smoking, drinking, living in poverty) that simultaneously diminish the longevity of both partners.

One dimension of the widowhood experience that may link all of the above perspectives is mode of death: Did the first spouse die suddenly or after a lengthy illness? Mode of death may affect the couple's shared lifestyle

(e.g., spending down into poverty to meet the rising health care costs of a spouse with a chronic illness), the soon-to-be widowed spouse's caregiving responsibilities, the pace at which the surviving spouse must prepare for new roles, and his/her grieving process. As such, mode of death may be a key familial factor in explaining widows' and widowers' elevated risk of mortality.

The purpose of this study is to examine how widowers and widows differ from their married counterparts in their mortality risks depending upon the mode of death leading to the widowhood event. This analysis focuses on widowhood events that result from deaths caused by long-term illnesses versus widowhood events that result from deaths that occur unexpectedly. In this study, particular attention is given to how mode of death affects the relative risk of mortality by gender and age after controlling for a number of individual-specific socioeconomic and demographic risk factors.

LITERATURE REVIEW

THEORETICAL PERSPECTIVES

Four different theoretical models can be used to generate hypotheses regarding the impact of type of widowhood (i.e., sudden or anticipated) on the surviving spouse's risk of mortality and why type of widowhood effects might vary with gender and age of widowhood. Each of these models and the hypotheses they generate are described briefly. The hypotheses associated with each model are summarized in Table 1.

1. *Psychiatric Models.*—Why should the nature of the first spouse's death affect the survivor's health? Stroebe and Stroebe (1987; 1993) appeal to several psychiatric models to answer this question. First, drawing on theories of depression, they note that positive reinforcement and social support formerly provided by the decedent are quickly removed in the case of an unexpected death. More time is available to the survivor to compensate for these losses when the fatal illness develops slowly. Second, psychoanalytic theory suggests that guilt experienced by survivors following the unexpected death of a spouse cannot be addressed since the survivor does not have sufficient opportunity to make restitutions. And third, proponents of the learned helplessness perspective predict that deaths that occur suddenly leave the survivor with a severe sense of helplessness since the perception was that nothing could have been done to prevent the death. Taken altogether, these psychiatric models generate the hypothesis that sudden, unexpected deaths should be more likely to precipitate elevated risks of morbidity and mortality among

the surviving spouses than are expected deaths.

2. *Role Theory.*—Role theory predicts that sudden deaths should increase the surviving spouse's risk of mortality when compared to deaths after a prolonged illness. In addition, it provides a rationale for why the effects of sudden deaths may vary by gender and age (Bowling, 1987; Osterweis et al., 1984). For recent widowers, the husband's dependence on his wife for daily home production activities may leave him ill-equipped to assume these responsibilities himself. While he may attempt to take them on himself, he may also purchase such services, call on his children, if possible, to help out, or remarry. In any event, he is unlikely to replace completely the skills possessed by his former wife especially when her death occurs suddenly. This effect is predicted to be strongest when the widower is older and the loss of her household work activities would be likely to exacerbate his already-declining health.

In contrast, widows are less likely than widowers to lose access to the daily household production activities (for which they generally take responsibility), but they are more likely to lose substantial amounts of income that had been provided by their deceased spouses (Burkhauser, 1990; Smith and Zick, 1986). It is hypothesized that with a sudden illness, a widow is less able to adjust her income-generating potential and as a consequence her economic status will often decline, placing her health in greater jeopardy. This relationship is likely to be strongest when the woman is widowed at a younger age, when she would rarely qualify for Social Security

TABLE 1

SUMMARY OF HYPOTHESES GENERATED FROM THE ALTERNATIVE THEORETICAL MODELS

Model	Type of Widowhood Effect	Gender Interactions with Type of Widowhood	Age X Gender Interactions with Type of Widowhood
Psychiatric Theories.....	Sudden deaths should elevate the risk of mortality for the surviving spouse relative to a death after a prolonged illness.	No predictions.	No predictions.
Role Theory	Sudden deaths should elevate the risk of mortality for the surviving spouse relative to a death after a prolonged illness.	Effects likely differ between widows and widowers but no prediction is made regarding who will be at greater risk.	(a) Older widowers should be at greater risk than younger widowers. (b) Younger widows should be at greater risk than older widows.
Social Support Theory ...	Sudden deaths should elevate the risk of mortality for the surviving spouse relative to a death after a prolonged illness.	Widowers should be at greater risk than widows.	Elderly widowers should be at greater risk than younger widowers.
Caregiver Burden.....	Deaths after a prolonged illness should elevate the risk of mortality for the surviving spouse relative to a sudden death.	Widows should be at greater risk than widowers.	Younger widows and widowers should be at greater risk than older widows and widowers.

or private pension benefits based on his earnings' history and when she would be most likely to have dependent children still at home who would be in need of her care.

3. *Social Support Theory.*—Informal social support has been shown repeatedly to affect numerous aspects of health (House et al., 1988; Litwak and Messeri, 1989). In the context of mortality following widowhood, it is hypothesized that married individuals who die unexpectedly place their surviving spouses in greater jeopardy because there would be too little time to marshal existing sources of social support. This finding may be especially true for widowers who have relied on

their wives to maintain social ties with family and friends. In the context of this framework, elderly widowers are hypothesized to be particularly vulnerable because of their long-standing inability or lack of experience in seeking emotional support outside of the marriage in a time of crisis.

4. *Caregiver Burden.*—Research on caregiver burden provides a contrasting hypothesis regarding mortality following widowhood. Proponents of this framework suggest that widowed individuals whose spouses have died after an extended period of illness should be most likely to experience elevated risks of mortality. Since women are more likely than men to take on

such caregiving responsibilities, it is predicted that caregiver burden will raise widows' risk of mortality more than widowers'. Furthermore, if younger surviving spouses must tend to the needs of their chronically ill partners while also meeting other responsibilities (e.g., market work), then they may suffer the strains of doing too much. This responsibility may lead younger survivors to overlook their own well-being to the point of increasing their own risk of morbidity and mortality (Zarit et al., 1986). It has also been suggested that longer-term illnesses may increase attachment to the dying spouse thereby enhancing the grief experienced by the caregiver (Vachon et al., 1982).

PAST RESEARCH FINDINGS

1. *Post-Widowhood Mortality Studies*.—While no study has examined the relationship between mode of death and the surviving spouse's risk of mortality, many studies have examined the impact of widowhood more generally on the surviving spouse's risk of mortality. These studies, reviewed in detail in Stroebe and Stroebe (1993), vary in their sample frames, time periods, and lengths of follow-up. Yet, the majority find excess mortality among the widowed when compared to otherwise similar married individuals. They also report evidence of gender differences (Bowling and Charlton, 1987; Helsing et al., 1982; Jones, 1987, 1988; Kaprio et al., 1987; Zick and Smith, 1991) and age differences (Bowling and Charlton, 1987; Helsing and Szklo, 1981; Helsing et al., 1982; Helsing et al., 1981; Jones, 1987, 1988).

2. *Post-Widowhood Morbidity Studies*.—Numerous studies have investi-

gated the effects of expected and unexpected deaths on the survivors' psychological and physical morbidity, but the research findings from these latter studies have been equivocal.

Clayton et al. (1973) found little difference in psychiatric symptoms between survivors of unexpected and expected deaths twelve to eighteen months following widowhood. Sanders (1983), however, reported that those with medium preparation time for the spouse's death appear slightly better off. In support of the idea that sudden deaths are worse for the surviving spouses, Parkes and Weiss (1983), Lundin (1984a, 1984b), and Ball (1977) found that psychiatric morbidity is elevated most for surviving spouses with little warning. In contrast, Gerber et al., (1975) reported that doctor office visits, feeling ill, and the use of psychotropic medications were greatest among surviving spouses who endured their spouses' long-term illnesses.

Inconsistency in the results of these widowhood morbidity studies suggest that the effects of caregiving may dominate in some instances whereas loss of social support, roles, and psychiatric considerations may dominate in other circumstances. In addition, some of the variation in the results may be related to differences in samples, research designs, length of follow-up, method of measuring the forewarning of death, and the timing of the interviews relative to the widowhood event. A common deficiency in many of these investigations is that the studies did not (or could not) control for other basic socioeconomic and demographic factors that have been found to affect both widowhood and health (e.g., employment status, income, education) (Du-

leep, 1986; Feldman et al., 1989; Verbrugge, 1983; Wingard, 1984; Zick and Smith, 1991).

In addition, in most of these analyses, the survivors were contacted only after the widowhood event. It is unclear whether pre-widowhood levels of morbidity account for some of the post-widowhood differences, when they were observed. Asking a surviving spouse to recall his/her health prior to the widowhood also poses problems of measurement and recall bias. Also, the initial samples selected may be biased to the extent that survivors whose health worsened or who died soon after the widowhood event (i.e., the most severely affected), were not included in such post-widowhood surveys.

Finally, these studies use a variety of categorization schemes to classify unexpected and expected widowhood events. At one extreme, Lundin (1984*a*, 1984*b*) classifies an unexpected death as one that occurred within two hours of falling ill. In contrast, Gerber et al. (1975) use a scheme where an unexpected death is defined to be one where the onset occurred less than two months prior to the death. Such differences in classification may also affect the conclusions.

MATERIALS AND METHODS

The current analyses are based on incident cases of widowhood and a comparison group of married couples identified in the 1984 release of the Panel Study of Income Dynamics (PSID). Since 1968, the Survey Research Center at the University of Michigan has collected socioeconomic and demographic data annually from

the same 5,000 U.S. families that comprise the PSID (Survey Research Center, 1989). The PSID includes an oversampling of poor households. To account for this oversampling, results for age-sex-specific death rates reported below have been adjusted by the use of appropriate sampling weights to produce statistics that are nationally representative of the U.S. widowed population. The weights used are generated by the University of Michigan's Survey Research Center, and they correct for the oversampling of poor households and any systematic sample attrition that has occurred over the years in the panel (Survey Research Center, 1989). While the PSID data are based on a panel, it was not possible to construct weights derived from a single calendar year appropriate for all respondents because spouse deaths occurred over a wide range of years. Accordingly, sampling weights for all widowed persons were constructed by using their year-specific PSID sample weights (the weights change annually) from the year prior to their spouses' death. Applying these weights then allows us to generalize our findings to the mortality experiences of widowed individuals in the United States during the 1970's and early 1980's.

All Cox proportional hazards regressions (described below) are estimated without applying PSID sampling weights. Instead, variables that form the basis for the nonsimple random sampling design of the PSID (poverty status primarily) are taken into account by including them as covariates (DuMouchel and Duncan, 1983).

The PSID offers several advantages over other data sets that might be used

for the current investigation. The primary advantage is that death certificate information has been matched to panel member records for over 80 per cent of the decedents in the PSID. Such information can be used to make an informed decision as to whether or not a death was sudden or expected. Another advantage of the PSID is that it contains extensive socioeconomic and demographic information including continuous age, difference in age between husband and wife, urbanicity, recent spells of poverty, labor force participation, education, whether or not other household members lived with the couple, and race. These variables will be included in the estimating equations so that we might remove their possible confounding effects.

Widows and widowers used for this study are selected based on three criteria: (1) the widowed individuals were age 25 or older at the time of widowhood; (2) any related adult surviving the decedent (nearly always the surviving spouse) had to be interviewed the year after the widowhood; and (3) the individuals became widowed between 1971 and 1982. While the PSID began in 1968, the sample is restricted to those who were widowed between 1971 and 1982 in order to obtain at least three years of prewidowhood information about the to-be-widowed household. It is also necessary to have at least one year of follow-up information after the year of widowhood in order to determine whether the widowed individual died or not and to obtain some post-widowhood information. For most widowed households in the PSID, the surviving spouse would be contacted and the deceased spouse's death would be recorded as having occurred

sometime during the previous year. When both a widowhood and survivor's death occurred within a year's time, other family members reported that the deaths had occurred. Given the long-standing involvement of the study families, this method of ascertaining information on spouses' deaths that occurred less than a year apart proved successful.

With these restrictions, there are 141 widowers and 351 widows identified in the PSID. These counts are somewhat small and as a consequence, the analyses based on these data are suggestive. Nonetheless, the lengthy followup period and the prospective sample design for a nationally representative sample of married and widowed persons strengthen the power of the analysis.

A sample of 1,782 married couples who were married from 1968 to 1970 serves as an unexposed comparison group. The mortality experiences of these married men and women are compared to the widow and widower samples. A married individual is observed until he/she leaves the study by his/her own death, the death of his/her spouse, refusal or loss to follow-up for some other reason. Couples who separated or divorced during the study are not included in the analyses.

Death certificate information is used to determine whether a spouse died following a long-term illness or suddenly. Death certificates for 80 per cent of the deceased wives and 84 per cent of the deceased husbands are usable. All listed causes of death recorded on the death certificate are used to characterize the nature of the death leading to the widowhood. The advantages of using multiple cause-of-death

information has been described by others (Israel, et al., 1986). Duration of the disease leading to the death as described on the death certificate was also considered when it was available and unambiguous. All death certificate coding has been done by a physician who had extensive prior experience in interpreting death certificate data.

Widowed individuals are divided into three groups: unexpected, expected, and unknown. "Unexpected" widowed individuals had spouses who died within six months of the onset of the condition(s) that led to their deaths. Deaths in this group include, but are not limited to, suicides where no other conditions are listed on the death certificate, automobile accidents with no other chronic conditions noted, and myocardial infarctions (MI) where the decedent had no prior chronic conditions reported on the death certificate. Spouse deaths are classified as "expected" when they had medical conditions that began more than six months prior to their deaths. These deaths were typically the result of various forms of cancer, ischemic heart disease, and cerebrovascular disease. Deaths from MI's that are accompanied by associated or contributing causes of death from atherosclerotic heart disease, cerebrovascular disease, diabetes mellitus, or previous MI's are also treated as expected deaths. The use of a six-month threshold in this classification scheme was decided upon based on past research (Clayton et al., 1973; Gerber et al., 1975) and in consultation with nosologists and physicians.

Individuals are included in the "unknown" category if they had spouses whose death certificates either contain

too little information or ambiguous information about the length of their medical condition, or whose death certificates could not be matched confidently to the PSID.

Table 2 summarizes the sample sizes, person-years, number of deaths, and death rates (deaths \div person-years) in the PSID by age and gender. Person-years are reported because they provide descriptive background information about the total number of years surviving spouses were at-risk of their own deaths, information that is used in estimating the mortality rates on which the proportional hazards regression models are based. Person-years for an individual are calculated by adding the number of years s/he lived after widowhood up to death or the end of the study. For example, person-year data help to distinguish between two samples of 10 widows each where all widows die, except that for the first sample they all die one year after widowhood and for the second sample they all die 10 years after widowhood. In the first sample, 10 deaths occurred during 10 person-years (10×1 year of survival) while in the second sample, the same number of deaths occurred in 100 person-years (10×10 years of survival). The second sample has a much lower death rate (10 deaths/100 person-years = 0.10) than the first sample (10 deaths/10 person-years = 1.00).

In Table 2, note that the 351 deaths among married men produced the 351 widows. Simultaneously, the 141 deaths among the married women yielded 141 widowers.

Mortality patterns are compared between married individuals and each of the three widowed groups by age and

TABLE 2
AGE-SEX-SPECIFIC COUNTS AND DEATH RATES BY MARITAL STATUS, AND TYPE OF DEATH

SEX	AGE 25-49				AGE 50-64				AGE 65+			
	N	PY ^a	D ^b	Death Rate ^c	N	PY ^a	D ^b	Death Rate ^c	N	PY ^a	D ^b	Death Rate ^c
Men												
Married	1,119	13,831	133	9.6	515	5,331	153	28.7	148	930	65	69.9
Widowers.....	27	229	3	13.1	47	347	10	28.8	67	430	25	58.1
Unexpected	9	82	2	24.3	12	74	6	81.1	9	59	2	33.9
Expected.....	11	98	0	0.0	23	188	3	16.0	46	295	19	64.4
Unknown.....	7	49	1	20.4	12	85	1	11.8	12	76	4	52.6
Women												
Married	1,119	13,831	44	3.2	515	5,331	54	10.1	148	930	43	46.2
Widows	77	617	3	4.9	151	1,198	20	16.7	123	820	25	30.5
Unexpected	23	220	1	4.5	27	222	2	9.0	22	165	3	18.2
Expected.....	33	227	1	4.4	92	719	14	19.5	85	563	15	26.6
Unknown.....	21	120	1	8.3	32	257	4	15.6	16	92	7	76.1

^aPY = person-years.

^bNumber of deaths.

^cDeath rate = (number of deaths) / person-years.

sex so that we might test the competing hypotheses generated by the alternative theoretical models. The age comparisons are between those aged 25-64, and ≥ 65 .

Tables 3 and 4 list the estimated rate ratios (RR) for all-cause mortality based on Cox proportional hazards regression models (Allison, 1984) for men and women, respectively. Our interest in this study is to test whether the mortality rate among surviving spouses varies by the type of death experienced by the deceased spouse. It is therefore appropriate to use the Cox proportional hazards regression model because it explicitly treats the mortality (or more generally, the hazard) rate as the dependent variable, it allows the mortality rate to be a function of numerous independent variables, and it uses all available survival information about widowed persons who died as well as those who did not die during the study period (i.e., records that were right-censored). This model also does not require that one specify the distribution of the mortality rate *a priori*.

These fully-adjusted estimates control for the possible socioeconomic and demographic confounders noted earlier. While figures are presented for all three groups, there are no hypotheses concerning the "unknown" group. Thus, while their rate ratios are presented for completeness, they will not be the focus of the discussion.

Nonelderly (25-64 years old) widowers have the highest risk of mortality when their wives die suddenly. The risk is greatest for the younger (25-49) widowers and somewhat lower but still substantial for middle-aged (50-64) widowers (not shown in Table 3; see Table 2 for sex-specific death rates for

men 25-49 and 50-64). This risk diminishes substantially for older widowers. While the risk of mortality declines with age for unexpected widowers, the risk tends to rise for expected widowers although the relative risks are all below unity. In the elderly group, it appears that both types of widowers experience an advantage over their married counterparts although these differences are not statistically significant.

In general, the relative risks are lower for widows than for widowers. Nonelderly (25-64) widows whose spouses died after a chronic illness experience a suggestive elevated mortality risk. For the elderly group, the figures swing in favor of the widows with both unexpected and expected widows experiencing lower mortality risks than their married counterparts. And in the latter case, the relative risk is statistically significant ($p < 0.05$).

DISCUSSION AND CONCLUSIONS

The current analyses offer several advantages over past widowhood mortality studies. First, socioeconomic and demographic characteristics measured immediately before (e.g., poverty, employment) and after (e.g., remarriage) widowhood are controlled for here. Second, the data are nationally representative, and they include a wide range of ages for both widows and widowers. Many previous studies have examined only one sex or they have imposed age restrictions on samples that are often from select geographic areas. Third, the PSID offers a long follow-up period during which deaths as well as

TABLE 3
FULLY-ADJUSTED RATE RATIOS^a FOR ALL-CAUSE MORTALITY BY TYPE OF WIDOWHOOD
AND AGE AT WIDOWHOOD: MEN

Age and Widowhood Type	Rate Ratio	95% Confidence Interval
25-64		
Married	1.00
Unexpected	2.54 ^b	(1.16-5.57)
Expected	0.39	(0.12-1.27)
Unknown	0.87	(0.21-3.73)
65+		
Married	1.00
Unexpected	0.28	(0.06-1.22)
Expected	0.84	(0.47-1.48)
Unknown	0.51	(0.18-1.45)

^aThese rate ratios are based on Cox proportional hazards regressions where the data were stratified by age (25-39, 40-49, 50-64, 65-74, 75+) and covariates are included to control for Black/Non-Black, education, whether remarried or not, whether fell below the poverty line during the three years prior to widowhood, whether they were in the labor market (< 500 hour/year or not), whether they lived with anyone else besides a spouse prior to widowhood, urbanicity, and age difference between spouses. The complete set of estimates are available from the authors upon request.

^b $p < 0.05$.

TABLE 4
FULLY-ADJUSTED RATE RATIOS^a FOR ALL-CAUSE MORTALITY BY TYPE OF WIDOWHOOD
AND AGE AT WIDOWHOOD: WOMEN

Age and Widowhood Type	Rate Ratio	95% Confidence Interval
25-64		
Married	1.00
Unexpected	0.68	(0.17-2.80)
Expected	1.32	(0.72-2.41)
Unknown	1.06	(0.42-2.72)
65+		
Married	1.00
Unexpected	0.36	(0.11-1.18)
Expected	0.36 ^b	(0.19-0.71)
Unknown	1.19	(0.52-2.71)

^aSee footnote *a* in Table 3.

^b $p < 0.05$.

other forms of non-response could be dated. Finally, and most importantly, the linking of death certificate data to the PSID contributed key information about the nature of the spouses' deaths (i.e., underlying, associated, and contributing causes of death, duration of the underlying cause of death, age at death) that has been unavailable in prior studies. While death certificates are prone to some measurement prob-

lems (Comstock and Markush, 1986), a careful review of all the information on the certificates used in concert with data collected from the PSID is viewed as an improvement in the method for classifying deaths as sudden or expected. The major limitation of this analysis is the sample size. With such a small sample, the reader should view the conclusions that follow as suggestive rather than definitive.

The empirical evidence from the widowers is somewhat consistent with the hypotheses generated by the social support and role theories. That is, widowers experience an elevated risk of mortality when their wives' deaths occur suddenly (rather than after a prolonged illness). But, the data do not support the hypothesis that older widowers would be at greater risk than nonelderly widowers.

The finding that widowers have higher rates of mortality than married men is consistent with previous prospective cohort studies (Parkes et al., 1969; Mellstrom et al., 1982; Kaprio et al., 1987; Helsing and Szklo, 1981). While several of these previous studies also found that younger widowers have higher rates of mortality, it was not known whether it was the impact of simply losing a wife early in the life span (regardless of the length of forewarning) or whether it was the mode of death that was underlying this effect. The present findings suggest that the increased risk is due primarily to deaths that occur without warning. It may be that younger widowers, who suddenly have to adapt to multiple roles (e.g., father, mother, housekeeper, and breadwinner) with the critical link in their social support network (i.e., their wives) now gone, have the most difficulty adjusting.

In contrast to the widowers, there is no statistically significant elevated risk of mortality among nonelderly widows and the older widows actually enjoy a significant reduction in the risk of mortality if their husbands died after an extended illness. Perhaps these older women have had time to prepare emotionally for the loss of their spouse. In addition, after the death there is little

need to adapt to new roles (i.e., after age 65, children are almost always gone from the house and both spouses are usually retired from the labor force), and social support networks are often still in place. Taken altogether, the results for the widows provide no evidence in support of the caregiver burden hypothesis but they do provide some indirect support for the role theory, social support, and psychiatric hypotheses.

The fact that the results differ for widows and widowers suggests that the behavioral mechanisms underlying their risks of mortality may be different. While we speculated above on what some of those differences might be, larger panels that include data on variables such as amount of and length of caregiving, social support networks and work and family roles, are needed if more definitive tests of these hypotheses are to be made.

We also found that regardless of the mode of death, older widows and widowers have lower mortality rates than their married counterparts. Lower or similar mortality rates among older widows have been reported previously (Helsing and Szklo, 1981; Kaprio et al., 1987). This observed relationship is likely to be the result of at least three factors. First, with increasing age, emotional changes associated with widowhood that might affect the survivor's health are more likely to be anticipated and therefore the mortality consequences due exclusively to widowhood are reduced. Second, marriage affords health protection to its members to the extent the illness is amenable to informal intervention. That is, a spouse may provide discernible health benefits for some conditions

(c.g., alcohol-related deaths, suicides) but not for others (e.g., pancreatic cancer) (Gove, 1973; Litwak and Messeri, 1989). Therefore, older married individuals may be at greater risk of diseases that are not as sensitive to the benefits of marriage. Third, older, married individuals may be the more hardy members of their cohort by virtue of the fact that they survived to age 65+. This could mean that stressful life events such as the death of a spouse may have smaller relative health effects on these "hardy" survivors.

The findings reported here raise a couple of important conceptual and intervention issues that merit future research. First, differences in the way unexpected and expected widowhood events are measured may account for the divergent findings in health studies of bereavement. Fulton and Gottesman (1980) draw attention to the conceptual distinction between "anticipatory grief" and "forewarning of loss" and argue that knowing that a spouse's illness is terminal does not necessarily describe how the survivor will react to the news. Vachon et al. (1977) reported that many widows of cancer patients did not acknowledge the news of their husbands' cancer even though they were explicitly told by a physician. Further work is therefore needed to understand fully the complex relationship between the type of death, the length of forewarning, and individual

reactions to impending widowhood. Moreover, interventions designed to reduce excess mortality among the younger widowed need to consider the mechanisms that produce the diverse responses by gender following unexpected and expected widowhood events.

Second, the proposition that role theory and social support systems may explain the lower mortality risks of older widows needs to be tested further. For example, more research is needed to identify the range of strategies used by spouses to care for their terminally ill partners and the extent to which individual wives draw on their social support networks to see them through this stressful time. It would also be important to know how variations in social roles affect the mortality risks experienced by the surviving spouse.

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