

## **Marital History and Mortality in Norway**

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### **EXTENDED ABSTRACT**

#### 1. Introduction

##### Effects of marital status

Numerous studies across time and space have shown that married men and women have lower mortality than those who are not married (for two early but important reviews, see Livi-Bacci (1985) and Hu and Goldman (1990)). Generally, the greatest differences are found between the married and the never-married (single), but the mortality of the married is also markedly lower than that of the previously married. A particularly high mortality is seen for divorced men compared with married men (Prinz 1995, Kravdal 2001). In fact, the bulk of the evidence suggests more generally that marriage seems to be more beneficial to men than to women (Gove 1973).

Effects of marital status are not the same for all causes of death. For example, Gove (1973) and Verbrugge (1979) found that high mortality rates among unmarried persons were related to high-risk life styles, such as tobacco and alcohol consumption, few hours of sleep, unhealthy diets, and more risky driving habits. Causes that are unrelated to life-style, such as death due to leukaemia, showed very little difference between marital statuses.

Also the importance of remarriage has been addressed. In particular, remarriage among widowers has been found to lower mortality compared to that of the men and women who do not remarry (Helsing, Szklo, and Comstock 1981). Apparently, similar studies of cause-specific mortality are not done.

##### Selection vs protection

There are two main explanations why the married have lower mortality than the unmarried. The first explanation is selection. The key idea is that individuals who have good health, are well educated and have high income have greater chance of getting married than those with poor health, less education and lower income. A similar selection argument is, of course, also relevant for marital disruption and re-marriage (Weingarten 1985; Prinz 1995).

The second explanation is protection, which can take several forms including psychological well-being (less stress, regular sexual relationship, more social support) (see for example Mastekaasa 1992), financial circumstances (economies of scale), and health behaviour (take fewer risks, healthier diet, consume less alcohol and tobacco). One reason why men benefit more than women from marriage may be that efforts to control and monitor spouse's health behaviour are stronger among women than among men (Umberson 1992).

Most authors agree that both selection and protection account for the differences between the marital status groups in mortality, but the relative contribution of the two is not known (Vallin, Meslé, Valkonen 2001).

### Interactions with calendar period and duration

Some studies have shown changes in the effect of marital status over time. For example, Mergenhausen et al. (1985) concluded that excess mortality of divorced men in the US has declined significantly after WWII. One possible explanation is that as divorce became more widespread, the social stigma attached to being divorced weakened somewhat. Another explanation is the increased prevalence of non-married cohabitation among divorced persons. At the same time, the income position of divorced persons may have improved (Van Poppel 1990).

Moreover, some investigators have taken a more dynamic perspective and estimated short- and long-term effects of changes in marital status. For example, Zick and Smith (1991) showed that the low mortality premium increased with marriage duration (Zick and Smith 1991), and Brockmann and Klein (2004) found that the adverse effect of marriage dissolution was lost after a short period of time (after two years for widowhood and first divorce). Martikainen and Valkonen (1996) showed that mortality in Finland was highest in the first week following bereavement, and then mortality risks dropped gradually during the next half year. Only all-cause mortality was considered in these studies. In a large longitudinal study by Johnson *et al* (2000), however, the effects of widowhood was shown to persist for at least five years for all cause mortality, cardiovascular mortality, and mortality from causes other than cardiovascular diseases or cancers.

## 2. The current paper

The general concern of this paper is the importance of previous marital or family status on mortality. The following specific questions will be addressed:

Q1. How high is mortality among the remarried compared to those in first marriage? How does the difference depend on whether the first marriage was dissolved by death or divorce?

Q2. Does the number of years as single/unmarried influence mortality among those in a first or second marriage?

Q3. What are the effects of time since remarriage, i.e. does it matter whether the period as single/unmarried was a few years earlier or many years earlier (given its length)?

For all questions, interaction with SES will be examined.

### 3. Data

The research questions will be addressed on the basis of individual-level data, covering the entire Norwegian population, from the Norwegian Central Population Register for the period 1971-2002. The data are arranged (by Statistics Norway) such that several individual life courses are constructed for all persons who have lived in Norway after 1971. These life courses include marital status histories, family histories, parental (own children/step-children) histories, educational histories, and residential histories.

Marital status histories reflect the individual's marital status as of 1 January of each year since 1971, in which the following five statuses can be distinguished: never married, married, separated, divorced, and widow(er). The marital status histories of partners will be linked to each other.

The paper will consider a few broad groups of causes of death, for example those related to health behavior (cancer, cardiovascular diseases, cirrhosis of the liver), lifestyle (e.g. risk taking; motor vehicle accidents, other accidents) and all other cause of death.

Complete parental histories can be constructed for all individuals born in about 1935 or later, covering children born (and their dates of birth) in about 1953 or later. For a very small number of children (approximately two per cent), the father's identity is unknown.

Educational level (and activity) is available from the censuses of 1960 and 1970. Besides, there are data for the years 1980-82 and from 1985 onwards for those born after 1935. Since 1991, some information is available for education taken abroad, and since 1999 the information is of good quality.

### 4. Methods

The analysis will be based on continuous- or discrete-time hazard models estimated in SAS or aML. Both all-cause and cause-specific mortality (using a competing-risk approach) will be considered. The men and women will be followed from 1971 at age 20. The life courses will be censored at the time of emigration or the last date that the data cover (31.12. 2002).

### 5. Expected findings

Q1. How high is mortality among the remarried compared to those in first marriage? How does the difference depend on whether the first marriage was dissolved by death or divorce?

- In previous papers (2006, 2007) I found similar results as Helsing, Szklo, and Comstock (1981):

- the remarried (widow(ers) and divorced combined) had significantly higher all cause mortality than those in first marriages in Norway (RR of 1.5 and 1.3 for men and women respectively)
- the remarried had much lower mortality than those who did not remarry
- whether mortality differences between first and second marriages depend on whether the first marriage was dissolved by death or divorce will be analyzed further in this paper

Q2. Does the number of years as single/unmarried influence mortality among those in a first or second marriage?

- Zick and Smith (1991) showed that the low mortality premium increased with marriage duration (Zick and Smith 1991)
  - I believe that married individuals with a long period as single/unmarried before first marriage or between first and second marriage will not have as low mortality premium as those with shorter durations in the single/unmarried state.

Q3. What are the effects of time since remarriage, i.e. does it matter whether the period as single/unmarried was a few years earlier or many years earlier (given its length)?

- Johnson *et al* (2000) and Brockmann and Klein (2004) found that the adverse effect of bereavement or divorce was lost after 2-5 years, while Martikainen and Valkonen (1996) showed that mortality was highest in the first week following bereavement, and then mortality risks dropped gradually during the next half year.
  - I believe to find that negative effects on health and mortality of being in the single/unmarried state and divorced will disappear in a similar way as these studies have documented.

Finally, I expect that the present analysis will show that there can be important interactions between socioeconomic status and the duration effects on mortality. For example, being unmarried (and divorced/widow(er)) and in a low socioeconomic position for a long time before (re)marrying, is probably more detrimental to your health and mortality than being in these states in a higher socioeconomic position.

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