How does the Age Gap between Partners affect their Survival?

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1 Background

Partnership as a basic principle of human society represents one of the closest relationships individuals experience during their lifetime. Regarding predictors of their mortality, partners usually share many characteristics such as household size, financial situation, number of children, and quality of the relationship. But there are also several factors that might affect partners differently, for example education and social status. A factor that might influence partners in different ways is the age gap between them.

The age difference between spouses at marriage remained relatively stable for several decades in many countries. Danish data shows that, if considering all marriages, men are about 3 years older as their spouses on average. For first marriages, the difference is a little bit smaller.

Studies considering the impact of age differences between the partners on their mortality are rare. Rose and Bell (1971) made one of the first attempts to quantify the influence of a spousal age gap on men's longevity. The authors found a correlation between longevity and having a younger wife, which was the 13th highest among all 69 variables they studied in their analysis.

The first study considering the impact of an age gap in both sexes was conducted by Fox, Bulusu, and Kinlen (1979). The authors concluded that "conformity to the social norm, of the man being older than his wife, is associated with relatively lower mortality for both parties" while differences from this norm, especially if they are extreme, will lead to higher mortality. Fox et al. (1979) speculate that this pattern might be driven by the different characteristics of those who form these unusual partnerships. In the 1980's two studies provided further insights into this topic. Foster, Klinger-Vartabedian, and Wispé (1984) studied the effect of age differences on male mortality, while Klinger-Vartabedian and Wispé (1989) focused on females. Both studies used the same data and generally supported earlier findings. They concede that results regarding larger age gaps should be interpreted with caution, mainly due to insufficient data. As the direction of the observed effects were about the same, Foster et al. (1984) and Klinger-Vartabedian and Wispé (1989) draw similar conclusions. The first possible explanation, that healthier or more active individuals are selected by younger men or women, was already mentioned

by Fox et al. (1979). Such individuals would have lived longer whomever they married because physical vitality and health usually coincides with an increased longevity. Another possible outcome of selection is that physical needs are better taken care of in later life for persons married to a younger spouse. The second possible explanation refers to spousal interaction. It is speculated that there might be something psychologically, sociologically, or physiologically beneficial about an interrelationship with a younger spouse. Furthermore it could be that intimate involvement with a younger spouse enlivens anybody's chances for a longer life. This explanation directly refers to psychological determinants of mortality like social and interpersonal influences, happiness, self-concept and social status.

The major drawbacks of all studies are that their data were limited to 5-year age groups, that the authors did not include any information about the duration of the marriage, that they were limited to married couples, and that they only included individuals whose spouses were still alive. The missing information on the duration of the marriage could probably lead to a selection bias because it is uncertain whether the marriages in the samples were of sufficient duration to allow for any effects on mortality. Foster et al. (1984) stated that an unobserved significant relationship between marriage duration and age of the spouse could question the generality of the observed mortality differentials (Foster et al., 1984).

In two more recent publications, historical data were used to identify a mortality pattern by the age of a spouse. Williams and Durm (1998) basically replicated the results of the studies mentioned earlier but their study also faced the same limitations. Kemkes-Grottenthaler (2004) used a set of 2,371 family related entries dating 1688-1921 of two neighboring parishes in Germany. She shows that the mortality differentials were not only determined by the age gap itself, but were affected by several covariates such as socioeconomic status and reproductive output. Regarding socioeconomic status it was found that age-heterogamy was much more prevalent in upper classes.

In sum, previous research found that having a younger spouse is beneficial, while having an older spouse is detrimental for the survival chances of the target person. Most of the observed effects could not be explained satisfyingly until now, mainly because of methodological drawbacks and insufficiency of the used data. The most common explanations refer to selection effects, care giving in later life, and some positive psychological and sociological effects.

2 Research Questions and Hypotheses

In contrast to that I hypothesize that the underlying mechanism is not the age difference itself but rather the remaining life expectancy. Regarding all couples, differences in remaining life expectancy between partners determine the expected average time that one has to live widowed. Thus, on average the person within a couple that has a lower remaining life expectancy will live alone for a shorter period than the person with a higher remaining life expectancy. It is a well established finding that widowed persons suffer a much higher mortality than their married counterparts (Johnson, Backlund, Sorlie, and Loveless, 2000; Poppel and Joung, 2001). Thus, I assume that the average time living alone as widowed is the main

factor that determines differences in mortality by the age gap to the partner. Specifically, I hypothesize that the person within a couple that has the lower remaining life expectancy will experience a decreased mortality and the person that has the higher remaining life expectancy will suffer an increased mortality. I suppose that the gain or loss is more pronounced in males compared to females. This is due to the fact that widowers usually suffer a higher excess mortality after the death of their wife than their female counterparts (Bowling, 1987; Erlangsen, Jeune, Bille-Brahe, and Vaupel, 2004).

3 Data and Methods

I extend previous research of this area in several aspects. First, I apply a longitudinal approach using Danish Register data and hazard regression models to examine the age and time-varying influences of having children on parents' mortality. Hazard regression represents the most suitable analytical framework for studying the time-to-failure distribution of events of individuals over their life course. Danish registers are considered as a source of detailed and very exact information with a very low percentage of missing data. The information collected for every individual are events like birth, death, migration, and marital status, as well as a variety of very detailed demographic background information such as occupation, education, income and health. The base population of my analysis consists of all people living in Denmark between 01 January 1980 and 31 December 2005. By using the Danish registers it is possible to track all individuals from the date of their first marriage until their date of death and to incorporate all events like the death of their spouse, a divorce or a remarriage into the analysis that happened within the observed period. The longitudinal approach certainly avoids most of the drawbacks of earlier studies. It is possible to take the number of previous partnerships and the duration of partnerships into account. This could solve the problem of a possible selection bias caused by an insufficient length of partnership. Moreover, a longitudinal analysis is the only way to incorporate periods of widowhood and divorce into the analysis and to test the hypothesis that the length of widowhood is the most important factor regarding mortality by the age gap to the partner. Additionally, it provides the possibility to obtain a sample that includes all individuals and is not limited to people who died as their spouses were still alive as in Foster et al. (1984) and Klinger-Vartabedian and Wispé (1989) or who were buried together as in Williams and Durm (1998). A further extension to previous research is related to the data set. My study will use population data / register data to test these hypotheses and not samples as it was done in previous research. Many problems related to sampling methods will be avoided, while the statistical power will be increased substantially.

4 Results

Access to the Danish Register data has been established. Statistical analyses are presently carried out. Results and conclusions will be available in time for the PAA meeting.

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