How does the Age of a child affect parental mortality?

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1 Background

Previous research investigated several different aspects of the relationship between having a child and parental mortality. The first aspect refers to maternal mortality connected to the birth of a child. In the past, maternal mortality was one of the most prominent causes of death among women of reproductive ages but due to the advancements in the medical system it has nearly disappeared in most industrialized countries while it still observable in some countries (Lane, 2004).

A second aspect that was investigated by earlier studies involves the cost of reproduction hypothesis. It states that post-reproductive survival of mothers decreases with an increasing number of births because using resources for reproduction reduces the available resources for maintenance which consequently leads to a decrease in length of life. Evidence for the cost of reproduction hypothesis can be found in various animal species (e.g. Lester et al. (2004), Partridge et al. (1987), plants (e.g. Obeso (2002)), and humans (e.g. McArdle et al. (2006), Smith et al. (2002), Doblhammer (2000)).

A third aspect that connects the mortality of women to their fertility history is related to heterogeneity represented by differences in the health status among female populations. Women who are able to achieve pregnancy are generally recognized to be healthier in average than other women (Hyppönen et al., 2005).

Social characteristics are a further aspect that also could have an influence on parental mortality. Individuals with greater access to social support are considered to be healthier and to experience lower mortality (Smith et al., 2002). Children are known to be one of the most important components of social support, and thus might have an effect on the longevity of their parents. Having a large number of children is not only connected to greater access to social support, a large family size may also indicate happier marriages, which may in turn be associated with an extended life span (McArdle et al., 2006).

Most of the studies cited above and in fact most of the existing research regarding the effect of children on parental mortality is mainly focused on mothers. Investigations in men are few and limited, such as the study of Dekker and Schouten (1993) who investigated the effect of life time reproduction of men on mortality from coronary heart disease, rather than all-cause mortality. Although their results were not

statistically significant, the authors found a higher mortality for men with four or more children. This effect was somewhat lower than that of the women (Dekker and Schouten, 1993).

An aspect of research that was neglected until now is the age of the child. If children have an effect on parental mortality it is likely that it is changing with age of the child because the demands and requests of children are changing as they grow up. Regarding the effect of the age of the youngest child, Martikainen (1995) found that all cause mortality is lowest for mothers who have a child that is younger than two years. For this age group, age-standardized mortality is only 66 percent of the mortality of women with children that are 16 or older. Starting from this low level, mortality increases with the age of the youngest child, but even mothers with a child that is 16 years and older have a decreased mortality as compared to women who do not have any children living in the household. As this aspect was not the main focus of their paper Martikainen (1995) does not give any presumptions about possible explanations for this finding. The study is also not able to investigate how the effect of children's age is influenced by other variables, for example parental characteristics like education, socioeconomic status, and marital status. However, it can be concluded that there are some indications that the effect is changing substantially with age but virtually nothing is known on the causes of this effect and how it is connected to other aspects of parenthood.

2 Research Questions and Hypotheses

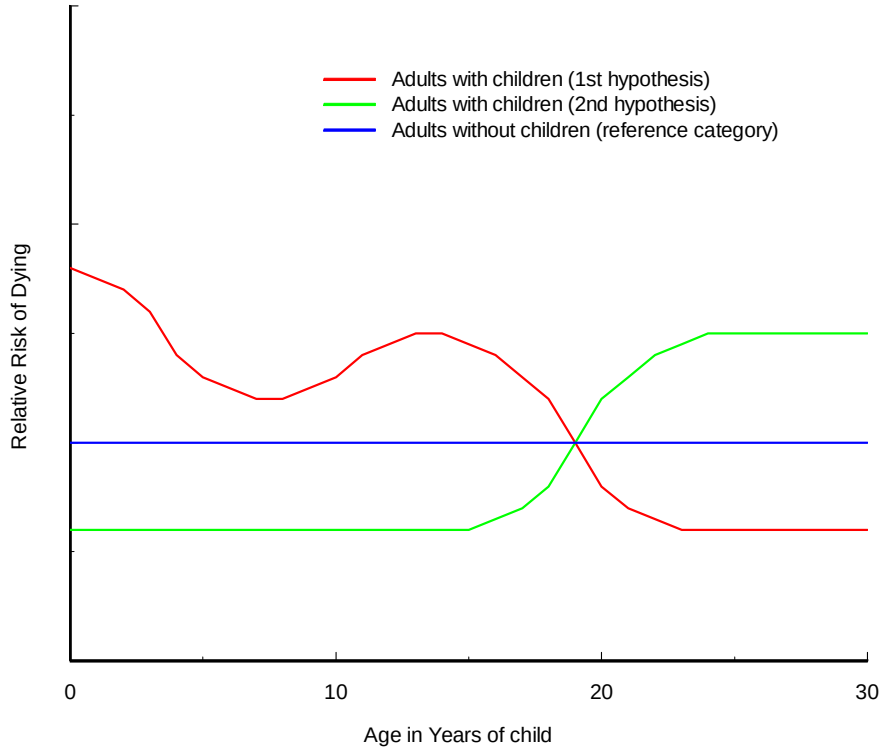
In this section I develop some hypotheses about the relationship between the age of the child and risk of dying of the parents. In my model, exposure to risk of mortality depends on an individual's own resources, those of their spouse, their children, and their gender. Previous limitations are addressed by using detailed Danish register data in a time-dependent framework using Hazard regression.

Regarding the impact of children on parental mortality it is not clear whether there is an effect and how this effect might differ between the sexes. It is likely that such an effect on parental survival is substantial but changing with the age of the child. I will examine two conflicting hypotheses, shown in Figure 1.

The blue line shows the reference category with a relative mortality risk of one. This group includes adults without any children. The red and green curves represent two hypothesized mortality trends for adults with children. The red line indicates that mortality of parents with younger offspring's is probably increased because the stress of child care is remarkably higher, while having an older child could even be a protective factor and thus increase parental survival. The green line shows that it is also possible that having a young child reduces parental mortality because the demands of parenthood force them to switch to a healthier lifestyle. If the child is growing older the parental mortality could probably rise again, due to the excess mortality in old age as stated by the cost of reproduction hypothesis.

As stated in the Background section it is likely that this effect also differs by sex and it seems reasonable to assume that the differences in survival by the age of a child is much less pronounced in men as compared to women, mainly due to the fact that men are generally less involved into parenting than women. In contrast to most

Figure 1: Hypothesized relative risk of mortality of parents by the age of child



other countries, Scandinavian countries like Denmark and Sweden are usually seen as egalitarian welfare states, which means that the society and family policies aim to involve both sexes equally into parenting. Nevertheless, I assume that the change of mortality by the age of child is less pronounced in men but that the differences between the sexes are small.

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, also called Event-History analysis or Survival analysis, 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 1990 and 31 December 2005.

4 Results

Access to the Danish Register data has been established. Statistical analyses are presently carried out. Preliminary results suggest that mortality of parents is changing with the age of the child and that these effects are differing between fathers and mothers. Further results and conclusions will be available in time for the IUSSP meeting.

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