

Towards a better understanding of the “male-female health-mortality paradox”: First results of the Health Survey of the German-Austrian Cloister Study

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ABSTRACT

The purpose of this paper is to advance the understanding of the still unexplained male-female health-mortality paradox that is that women live longer than men but experience worse health. Investigating this phenomenon is always difficult since many biological and non-biological factors influence the health and mortality of women and men and the differences between them. The aim of this study is therefore to gain clearer insights to the complex health-mortality relationship by comparing the health of Catholic nuns and monks to women and men of the worldly population. The characteristics of cloistered life provide an ideal setting for this research because socio-economic conditions and many other non-biological factors have no direct impact on the health of female and male order members. Our analyses will be based on the first wave of the Health Survey of the German-Austrian Cloister Study. In total, 1,158 order members (622 nuns and 536 monks) of 16 different orders from Germany and Austria participated to the survey, including 142 religious communities and 69 brothers and sisters who live on their own (response rate 68.8%). Information for the worldly population stems from several surveys, including SHARE, the German Aging Survey, and the Austrian Health Survey. We will base the study on different indicators for the health status, including self-rated general health, limitations in activities of daily living (ADLs) as well as instrumental activities of daily living (IADLs), the complete SF-36, and others. This paper will include the first analyses of this specific and new health survey data. We expect important insights to better understand the complex mechanisms behind the male-female health-mortality paradox.

1. DESCRIPTION OF THE TOPIC TO BE STUDIED

That women live longer than men has been known at least since the middle of the 18th century when the first sex-differentiating life tables were constructed. The finding of male excess mortality was confirmed with the introduction of official population statistics in all Western societies. The mortality differences between women and men remained more or less constant until the first half of the 20th century and started to increase thereafter. This increase in the gap coincided with a rise among men in mortality from cardiovascular diseases, cancer, and accidents and a fall in maternal mortality and in causes of death related to pregnancy. Since the beginning of the 1980s the gap between women and men in overall mortality has been slowly narrowing in the developed world, with Japan being the only exception (Trovato and Lalu 1996; Luy 2002; Gjonça et al. 2005). Until recently, a higher life expectancy at birth for men was known only for some developing countries, mainly due to an excessive female mortality among infants and in young childhood ages. A few years ago, Barford et al. (2006) announced in a British Medical Journal editorial entitled “life expectancy: women now on top everywhere” that females outlive males now even in the poorest countries of the world.

In light of the universal observable male excess mortality it is surprising that studies on sex differences in morbidity report that on average women are in worse health than men (e.g. Leveille et al. 2000; Benyamini et al. 2003) and that women spend a higher proportion of their total life in poor health (Robine et al. 2001; Crimmins et al. 2002). Even when reproductive conditions are excluded, a sizable sex difference still remains in acute conditions and short-term disability (Green and Pope 1999). Apart from that, women show a

greater rate of decline in physical function and they are less likely to recover from disability (Leveille et al. 2000). Moreover, women are reported to have a higher utilisation of health care services (Anson et al. 1993; Redondo-Sendino et al. 2006) and they generally use more prescription and non-prescription drugs than men (Roe et al. 2002). These obvious contradictions to the mortality differences between the sexes have led to numerous publications describing the phenomenon with expressions like “gender and health paradox” (Rieker and Bird 2005), “morbidity paradox” (Gorman and Ghazal Read 2006), “morbidity-mortality paradox” (Kulminski et al. 2008), or “male-female health-survival paradox” (Oksuzyan et al. 2008, 2009; Van Oyen et al. 2013).

Recently the existence of such a general paradox has been increasingly questioned. Several studies have shown that gender differences in health vary by age, morbidity measure, time and social context (e.g. Haavio-Manila 1986; Verbrugge and Wingard 1987; Macintyre et al. 1996; Rieker and Bird 2005; Gorman and Ghazal Read 2006; Kulminski et al. 2008). Nevertheless, the aforementioned citations demonstrate that the idea of a general paradoxical relationship between health and mortality among women and men persists until today. This might be caused by the fact that despite the efforts of many demographers, epidemiologists, socio-medical scientists and others still very little is understood about the reasons for the paradox or its mechanisms, as concluded by Austad (2006) and Grundy (2006).

The suggested explanations for differences between men and women in health and mortality include biological factors, risks acquired through social roles and behaviours, types and severity of illnesses and disability, illness and prevention orientation, and health reporting behaviour. **Biological factors** (mainly genetic and hormonal differences between the sexes) and **acquired risks** (behavioural and environmental factors such as smoking, alcohol consumption, diet, reckless driving, health risks at work, social stress) are thought to explain male excess mortality (see overviews in Wingard 1984; Waldron 1985; Luy 2003). **Types and severity of illnesses and disability** (women have more chronic conditions than men do, but their conditions are less severe and are often not life-threatening), **illness and prevention orientation** (perception of and complaining about symptoms as well as willingness to seek medical help and cut down activities when ill or injured) and **health reporting behaviour** (completeness of reporting, gender imbalance among proxy respondents) are discussed as factors for causing female excess morbidity (see overviews in Verbrugge 1985; Verbrugge and Wingard 1987; Rieker and Bird 2005).

Intensive research during the last few decades made it clear that the extent and the trends in mortality differences between women and men are caused by a complex combination of biological factors and acquired risks. Several authors have attempted to determine the relative contributions of these two cause categories and concluded that the acquired risks are mainly responsible for the differences in life expectancy between women and men (e.g. Wingard 1984; Waldron 1983; Zhang et al. 1995; Lemaire 2002; Luy 2003). In contrast to the situation regarding mortality differences, there is still no conclusive understanding about the reasons for the contradictory picture of higher female morbidity rates. Frequently cited explanations for apparently higher rates of morbidity among women are that they are more sensitive than men to bodily discomforts, and more willing to report symptoms of distress and illness. Yet the evidence, though limited, is conflicting. Some studies have found that when one controls for specific conditions, there are either no sex differences in pain or symptom reporting or it turns out that men are more likely to complain (Macintyre and Pritchard 1989; Macintyre 1993). With regard to the widely accepted belief that women use health services more than men, one can also find contradictory evidence in the literature (Hibbard and Pope 1983; Waldron 1985; Haavio-Manila 1986; Arber and Cooper 1999). Other studies failed to detect any sex differences in the reporting of health problems and health service contacts or in the readiness to mention symptoms (Kooiker 1995; Macintyre et al. 1999; Galdas et al. 2005). Oksuzyan et al. (2009) found that hospitalised women and women taking medication are somewhat more likely to participate in a health survey than comparable men, but the contribution of such a selection bias is only a minor component. Some other arguments regarding the different health behaviours of women and men are based solely on theoretical considerations or intuitive assessment, and thus many counterarguments could be found against these explanations (see Verbrugge 1982).

As with all phenomena of differentials in health and mortality the sex differences in morbidity are probably caused by a very complex combination of many different factors. It might be that the above mentioned health behaviours in fact contribute to the female excess in some morbidity measures, but it seems unlikely that they play a major role in the relationship between sex on the one side and health and mortality on the other. More important appear to be the differences between women and men in types and severity of illnesses and disability. Several studies have demonstrated that women have more frequent illness and disability, but the problems are typically not serious (life-threatening) ones. In contrast, men suffer more from life-threatening

diseases, and these cause more permanent disability and earlier death for them (e.g. Verbrugge 1985; Rieker and Bird 2000; Spiers et al. 2003). As Verbrugge and Wingard (1987: 125) concluded in their review of the empirical evidence it appears that “one sex is sicker in the short run, and the other in the long run”. Thus, the overall reversal in sex morbidity and sex mortality differentials is thought to occur because conditions which figure importantly in morbidity are not very important in mortality, and vice versa. Case and Paxson (2005) even claimed that the difference in self-assessed health between women and men could be entirely explained by differences in the distribution of the chronic conditions they face. This conclusion, however, appears to be exaggerated (Shinberg and Murphy 2007).

Nevertheless, investigating the male-female health-mortality paradox is always difficult since many biological and non-biological factors influence the health and mortality of women and men and the differences between them. Above all the various dimensions of socio-economic status have a strong impact on male and female health and mortality. However, even this relation is caused by a complex interplay of biological, behavioural and psychosocial factors (Molarius and Janson 2002). ***The aim of this study is therefore to gain clearer insights to the complex health-mortality relationship by studying a population in which socio-economic conditions and many other non-biological factors have no direct impact on women’s and men’s morbidity: the members of Catholic religious orders.*** The characteristics of cloistered life provide an ideal setting for analysing the relationship between health and mortality within and between the sexes. Members of religious orders are the group of women and men among whom behavioural and environmental conditions are probably as close to being equal as can be found in modern societies. Female and male order members lead a “simple lifestyle” that is determined by vows (living in poverty, chastity and obedience), with similar daily regimes as regards time for sleep, work, study and recreation, and also with respect to diet, housing and medical care. Furthermore, cloistered life entails no sex-specific influences of financial burdens, socio-economic status, reproductive roles, marital status or familial responsibilities. These preconditions make order members a valuable experimental group for the study of health and mortality, permitting us to isolate the impact of biological factors and to control for most of the confounding non-biological factors (Madigan and Vance 1957; Luy 2003).

2. DATA AND METHODS

Our analyses will be based on the first wave of the Health Survey of the German-Austrian Cloister Study. The questionnaire covers many aspects of health as well as its determinants and includes modules on education and professions, health and lifestyle, self-image, social contacts and relationships, stress and other pressures, life satisfaction, age and ageing as well as childhood and life years before becoming order member. The modules contain several established batteries of questions, like the SF-36, PANAS (Positive and Negative Affect Schedule), NEO-FFI-30 (Five-Factor Personality Inventory), PSS-10 (Perceived Stress Scale) or LOT-R (Life Orientation Test). The survey was conducted between July and December 2012. The follow-up waves will be carried out in a rhythm of two years.

The survey is based on a self-administered questionnaire for Catholic order members aged 50 years and older. We advertised the project in several religious communities in Germany and Austria. In a first step we contacted the superiors in order to explain the project and discuss the possibilities for realizing the study. In those communities where the superiors opened the participation to their members we presented the study to the members by giving presentations and/or distributing written information. Finally, we sent the questionnaire to all members (after performing a pre-test) what gave each person the possibility to participate in the study. In total, 1,158 order members (622 nuns and 536 monks) of 16 different orders from Germany and Austria—with a few members living in Switzerland and Italy—participated to the first survey wave, including 142 religious communities and 69 brothers and sisters who live on their own (see Figure 1). The response rate was 68.8% (nuns 76.8%, monks 63.4%). Some further information about the survey can be found at the website of the Cloister Study at www.cloisterstudy.eu.

We will compare the health of Catholic nuns and monks to women and men of the worldly population. Information for the worldly population will stem from a couple of available surveys including ***SHARE*** (Survey of Health, Ageing and Retirement in Europe), ***SOEP*** (German Socio-Economic Panel), ***BASE*** (Berlin Ageing Study) and ***LES*** (German Life Expectancy Survey). To complement the information on health of the general populations, our analyses will also include the ***German Aging Survey***, the ***Austrian Health Survey*** and the ***Austrian and German Micro-censuses***.

3. RESEARCH AIMS AND EXPECTED FINDINGS

The data cleaning of the Cloister Study health survey has just been completed. Thus, this paper will include the first analyses of this specific and new health survey data. The collected life history and survey data will provide new insights into the mechanisms behind the health-mortality relationship among women and men. Therefore, two specific research aims will be followed.

Aim (i): Comparison of nuns and worldly women

The specific research question of aim (i) is: *do the identical environmental and behavioural living conditions of nuns influence the relationship between health and mortality as compared to worldly women?* From our previous mortality we know that that mortality differences between nuns and women of the general population are small with slight advantages in favour of nuns (Luy 2003). As it is likely that the level of mortality influences the level of morbidity we expect no significant differences between nuns and worldly women in the relationship between health and mortality.

Aim (ii): Comparison of monks and worldly men

The specific research question of aim (ii) is: *does the relationship between health and mortality differ between same-sex populations experiencing different levels of mortality?* Our previous research showed that mortality differences between monks and men of the general population are substantial with significant advantages for monks. As a consequence of these huge differences in mortality we expect also significant differences between monks and worldly men. However, the direction of these differences is not clear. If the relationship between health and mortality is strong within the sexes we should expect that monks exhibit better health conditions than worldly men. However, if this relationship is less strong, it might also be that monks show worse health, reflecting a similar situation to that observed in the female-male health-mortality paradox.

In sum, we expect important insights to better understand the complex mechanisms behind the male-female health-mortality paradox. We will base the study on different indicators for the health status, including self-rated general health, limitations in activities of daily living (ADLs) as well as instrumental activities of daily living (IADLs), the complete SF-36, and others.

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Figure 1: Geographical origin of participants to the health survey of the Cloister Study

