"Differential Mortality Between the Sexes: An Inevitable Pattern in the Middle Ages?"

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Introduction

The main goal in the field of paleodemography is the identification of factors that influenced the development of historical populations, especially in terms of overall life expectancy, health or disease. Therefore the density and distribution of these populations have to be analyzed. Mortality data derived from human skeletons can help to reconstruct the survival patterns that are fundamental to our understanding of the living conditions that human populations had to face in a historical and developing ecosystem.

For most ancient populations there is a clear difference between male and female mortality regimes. These sexually different patterns have changed noticeably over time. In ancient samples, women from their early twenties until the end of their fertile period usually showed higher mortality rates than men. Around age 50, male mortality started to exceed female mortality. Since the middle of the 18th century – at the latest –higher life expectancy for females can be universally observed, and was associated with lower female mortality for all age groups.

The observed differential mortality between the sexes might be shaped by biological and cultural factors, such as higher female mortality due to childbirth or maternal depletion, women's role in daily life or limited access to resources.

Methodological approach and data

On the basis of a skeletal sample from the late medieval cemetery S:tJörgen in Malmö, Sweden, the change from an historical to a modern mortality regime can be recognized. The parish graveyard was in use approximately from 1320 to 1530 AD, a period of growth for the city, mainly caused by the herring trade with the Hanseatic League. The whole collection includes general information, state of preservation and osteological observations, as well as notes about special features for 4182 data

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entries. The documented arm position of the skeleton in the grave characterizes different time periods of burials. The importance of S:t Jörgen as a valuable source of information for paleodemographic research beyond the high number of burials is given by the two different methods of age assessments. The first type of age assessment (Subjective Age Assessment) is based on all available bones. It results in an upper and a lower limit of an age interval. There are 4006 age estimates available obtained by this method. For subadult individuals under the age 16 and poorly preserved adults only the subjective age assessments are given. The second kind of age assessment is the Maximum Likelihood Age (MLA), derived by Transition Analysis. A total number of 973 skeletons could be estimated by this method. The estimates are given as point estimates and 95% confidence intervals. Only this subset was analyzed, since it was derived according to the rules of the "Rostock Manifesto"[1].

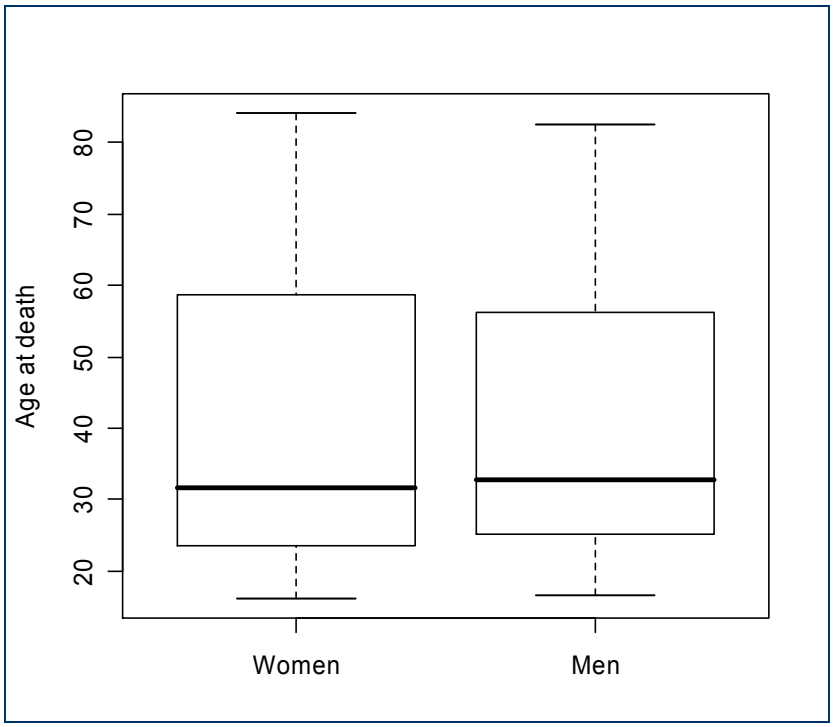
For the comparison between the different mortality schemes the Male/Female Mortality Ratio (M/F MR) was calculated. This allows also a comparison with data from the early medieval Danish skeletal sample from Tirup, Jutland (AD 1150 -1350) and four early modern parish records from Scania (AD 1766 - 1865).

Results

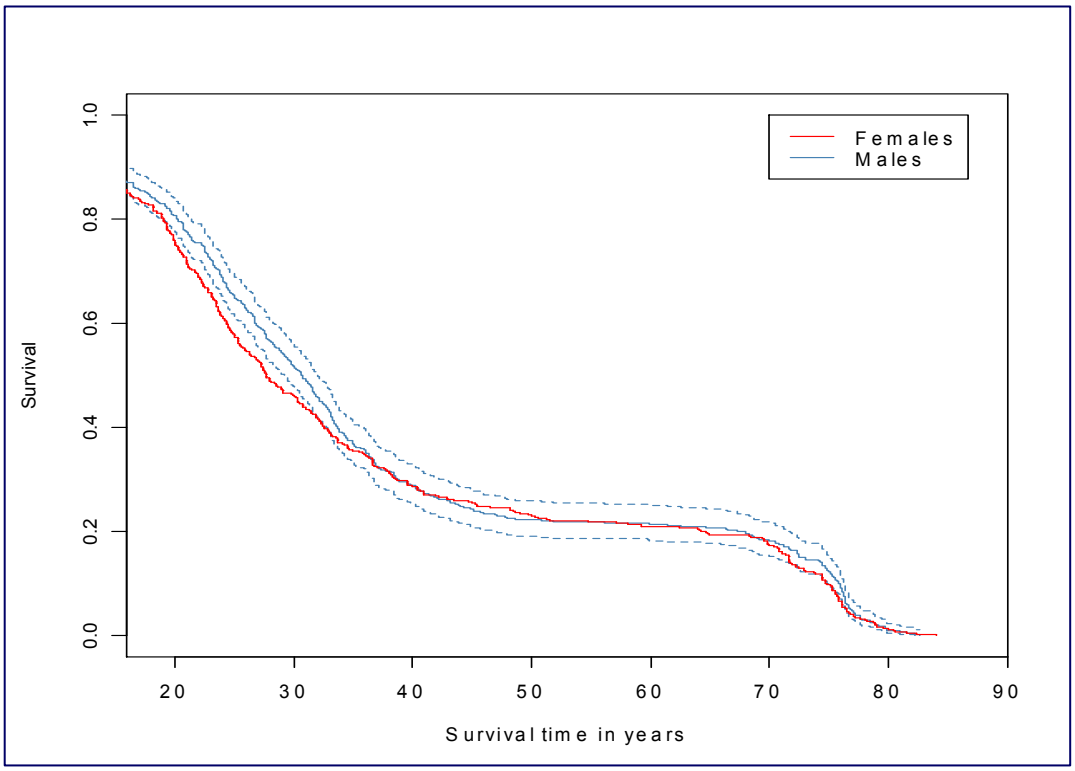
The distribution of ages-at-death is nearly similar for males and females above age 16 (Graph 1) and the survival curves show no significant difference between male and female survival for all age groups (Graph 2).

The Male/Female Mortality Ratio in S:t Jörgen is 1.03 for the ages 20 to 40 and 1.00 for the ages 40+. Compared to the early medieval cemetery from Tirup, where the excess female mortality in the reproductive years is clearly visible (Ages 20 to 40 M/F MR = 0.66), the late Middle Ages seem to be a period of equal risk of dying for both sexes. The Early Modern parishes from Scania already show higher male mortality rates for all ages. Therefore the late Middle Ages can be considered to be the turning point between the different mortality schemes for Scandinavia.

[1] Hoppa & Vaupel (eds), 2002



Graph1: Distribution of ages at death for both sexes



Graph1: Survival curves for males and females