

How Does the Age Gap between Partners Effect the Women's Longevity

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Abstract

This study is done in the Koplík city population. Koplík is a small city, in the north of Albania. It is build a database for 19200 inhabitants of the Koplík Municipality, where it is included the year of birth, year of marriage and the year of death. From this database are taken datas for 764 couples, who are married since 1870-2012 and all the women are dead. From these datas, by using linear regression methods, it is studied the effect of age gap between partners, on marriage time in the longevity of women. The mean age at marriage for men in these couples is 26.1 years old, and for women is 19.5 years old. The spousal age gap on marriage time for 764 couples is $\bar{X} = 6.6$ and the average life expectancy is $\bar{Y} = 67.41$. In general, for all couples who are taken into consideration, men in time of their marriage, are older, than their wives, so the opposite case, how a younger man influence the woman's longevity can not be studied, because such marriages in Koplík city, don't exist. The equation of linear regression, that shows functional connection between the age gap of partners and women's longevity is: $\hat{Y}_i = 62.281 - 0.1287 X_i$. These parametres are connected with each-other with a regression percentage about 0.22 %, which is not significative. This study concludes than being married with older husband, for women has no effect in their longevity, otherwise for men, being older than their wives, has positive influence in their longevity and has increased the longevity.

Key words. Koplík, interspousal age gap, linear regression, effect, longevity

1-Introduction

The studies on the longevity and the factors that effect on it, it has so many years, that it is a tendence on human research activity. So by knowing the factors that effect on longevity, to find a way to increase it. With nowadays knowledges, it is thought, that in human's longevity, 25% influence the genetic factors and the 75 % influence by non-genetic factors. (Hersking et al. 1996)(1). In non-genetic factors, it is thought that the social-economical status, education, smoking and alcohol has essential effect in individual's survival. (eg. Christensen & Vaupel 1996)(2).

The longevity is also influenced from the characteristics on couple's relationship. One of the factors that may effect on the partner in different ways, is the age gap between them. Studies which take into consideration the impact on age gap in the time of marriage and in their longevity are rare and relatively old. The first study in this field is done by Fox, Bulus and Kinlen 1979 (4). They concluded that based on social norms, that when men are older than their wives, will live longer, compared with the case, when the men are in the same age, or younger than their wives. The difference from this norm, sent to higher mortality for both pairs. Two other studies went deeper in this theme in 1980. Foster, Klinger, Vaterbian and Eispel (1984) studied the effect of age gap in marriage and men's longevity, also in 1986 on women based on the same datas. The bigger deficiency of these studies is that, their datas are limited in 5 years age groups and they didn't have any information about extra variables, like marriage duration. The lack of this information may effect on the conclusions, because it is unsure if these marriages had enough time to effect in the mortality.

The positive aspect of the study done in Koplík, is that, all the marriages done in Koplík's population, which are taken into consideration in total 3421 (all the marriages done from 1900-2012 about 100 years), to study the effect of spousal age gap, on women's longevity, are separated 764 couples, that marriage has ended because all the women are dead. Since we have full information that how long the women has lived in such marriages, it is possible to lay out acceptable conclusions, how the spousal age gap, effect on women longevity, by using linear regression method.

2. The datas and mathematical method

This study is based in the datas taken from the study of genealogical trees of 19200 of Koplík's inhabitants. There are 3421 couples who are married from 1870-2012. The age of these couples are used for the calculation of mean age at marriages for women. To study the effect of the spousal age gap in the women's longevity, are taken only the couples that women are dead, which are 764. Datas, for the year of birth, marriage and death are taken from the interviews with their familiars, but these datas are also cheched from the register of Koplík Municipality.

To study the functional connection between the age gap in the marriage time and the women's longevity, is used

the regression linear method(5),(6),(7),(8),(9), because we are using quantitative datas.

In the simple linear regression, is an independent variable X ,concreately in our case,is the difference in the partner'a age in the time of their marriage,a variable Y,concreately,in this article women's longevity. There are also,two parametres α and β_1 which are connected with the following function :

$$y_i = \alpha + \beta_1 x_1 + \dots + \beta_i x_i + \epsilon_i \quad \text{where } i=1,2,3\dots$$

α is a constant and has the same value like Y,in the case of X_i values are 0. β_1 is the regression coefficient. The term ϵ_i is a term of fault and index i is for all of special observations.

The common regression methods is the method with small squares (10);(11);(12).It is built the regression's table between spousal age gap and women's longevity.For a random moster from one population,based on essential parameters,which are taken from the regression analysis,it is gain the linear regression model about the moster.
 $\hat{Y} = \alpha + bX$

The percentage of functional connection between the age gap in the marriage and women's longevity is calculated with formula.

$$\% \text{ of regression} = \frac{\sum \hat{y}^2}{y^2}$$

3.The effect of spousal age gap on Women's longevity

Table 2:The result taken from the analyse regression table, between spousal age gap and the women's longevity

Parameters	Value
Xmes-spousal age gap	6.
$x = X - \bar{X}$	5.04485E-13
$x^2 = (X - \bar{X})^2$	23361
Ymes – The average life expectancy	67.5 2
$y = Y - \bar{Y}$	2.27374E-13
$y^2 = (Y - \bar{Y})^2$	176514.93
$x*y$	-3005.5
\hat{Y}	33743.72
$dx y = Y - \hat{Y}$	0.2821
$d^2 x y$	76128.259
$\hat{y} = \hat{Y} - \bar{Y}$	-0.2821
\hat{y}^2	386.9482

Based on calculated values of regression linear parameters is built the regression equation between spousal age gap and women's longevity. $\hat{Y}_i = 62,281 - 0.1287$

The regression value = 0.22 % ,which is not significative.

The correlation,that indicate the quantitative connection between these parameters is negative,but also no significative.In the figure below is represented the value distribution of spousal age gap and women's longevity which shows the quantitative connection between these parameters,but also the connection direction .

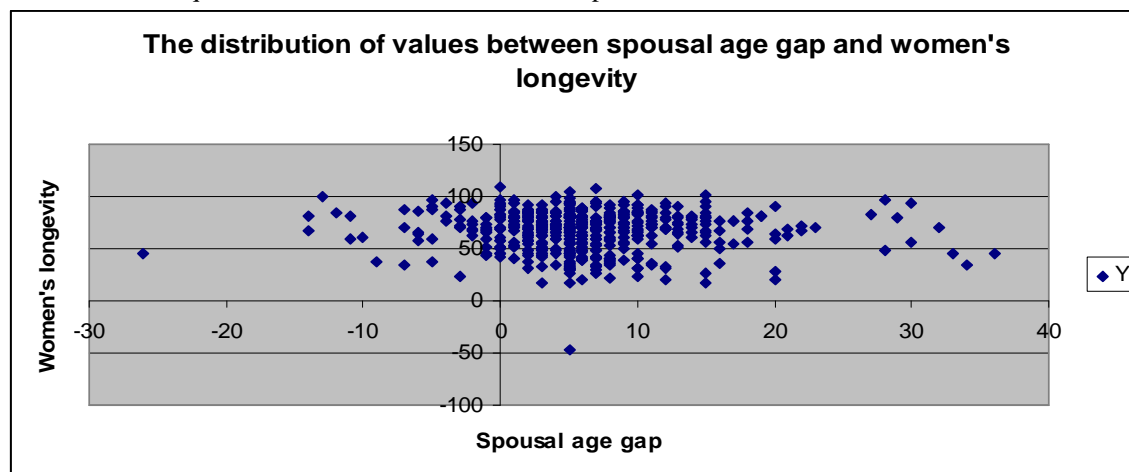


Fig 3 The value distribution of spousal age gap and women's longevity .

This distribution's graphic indicate,that has no correlation between these parameters,That mean, that being

married with older husband ,for women has no effect in their longevity,otherwise for men being married with younger woman,has positive influence in their longevity and has increased the men's longevity.

4. Conclusion

It can be concluded that being married with older husband,don't effect the women's longevity.Maybe for the women a more important factor, than spousal age gap,can be social-economical status, education etc.

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