

PALEODEMOGRAPHICAL DESCRIPTION OF THE 10TH-12TH CENTURY POPULATIONS IN THE NORTHEASTERN PART OF THE GREAT HUNGARIAN PLAIN ON THE BASIS OF MORTALITY

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ÖSSZEFOGLALÁS

AZ ÉSZAK-TISZÁNTÚL 10-12. SZÁZADI NÉPESSÉGÉNEK PALEODEMOGRÁFIAI REKONSTRUKCIÓJA AZ ELHALÁLOZÁSI PARAMÉTEREK ALAPJÁN

Kutatásaink során a korai magyarok csontvázleteinek elemzése révén olyan stabilis demográfiai paramétereket remélünk meghatározni, amelyek a Felső-Tisza-vidék töredékesen ismert 10-11. századi népességeinek megítéléséhez támpontul szolgálhatnak. Ehhez két reprezentatív temető – Hajdúdorog-Temetőhegy illetve Püspökladány-Eperjesvölgy – csontvázleteinek nem-, és kor szerinti meghatározását végeztük el. Ugyanakkor tudnunk kell azt, hogy e két temető alkalmas-e a stabilis demográfiai paraméterek meghatározásához, ezért a vizsgált temetőkben kimutatható várható élettartamokat összevetettük az Acsádi és Nemeskéri által kidolgozott 10-12. századi modellel, valamint öt 10. századi temető (Nagycserkesz, Tiszanána, Sárbogárd, Tengelic, Kál) várható élettartamával. A hajdúdorogi és a püspökladányi temető e tekintetben közel áll egymáshoz. Mivel mindkét minta reprezentatív, nagy esetszámú, és azonos földrajzi tájegységben található; egy olyan modell alapjául szolgálhat, mely segít a további észak-tiszántúli - gyakran töredékes - leletanyag demográfiai elemzésében.

RESULTS

1. Examination of the cemetery in Hajdúdorog-Temetőhegy

The chart in Figure 1 shows the tendency of the dead's proportion in the whole population. A relatively low early child (0-1 years) mortality and high infant mortality is to be observed. It is the 0-1-year-old individuals' underrepresentation characteristic of the 10th century cemeteries that may come out here. At the same time the salient high mortality rate of the 2-3-year-old individuals can be real, inasmuch as this age comes to pass the greatest crisis of children's life, that is, independence.

The individuals in their twenties have low mortality rate, then the proportion of the dead rises suddenly in the case of the 30-39 aged. That is the second greatest crisis, as at this age acquired diseases, the aftermath of the exhausted physique emerge. After that, there are three mortality waves to observe.

The chart in Figure 2 shows the proportion of the dead too, but only in the case of adults, for males and females separately. The mortality of females at the age of 23-37 is high.

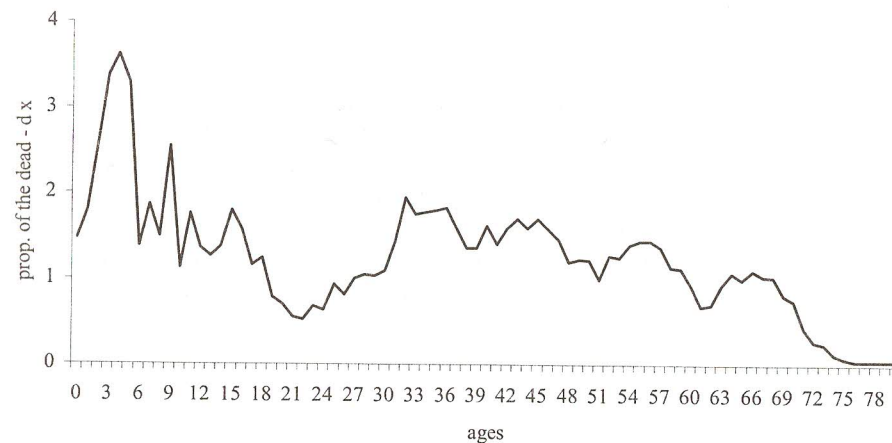


Figure 1. Proportion of the dead Hajdúdorog-Temetőhegy – total population

There may be two explanations of this fact. First, the high frequency of childbirth. Second, the raider Hungarians might not have brought the deceased home and that causes the underrepresentation of males at soldier age. Considering the estimated rate of females died of maternal cause in medieval Hungary calculated on the basis of the examinations of nine cemeteries from the Arpadian - age, namely 0.66 percent, the latter reason seems more likely (Nemeskéri 1970). The consecutive death waves of the older age groups are more balanced in the case of females, while those of males are fairly fluctuating. The adults' sex-ratio indicates female surplus. The masculinity index is 80.5 per cent. After a young mother died, her husband might have brought a new wife from another settlement.

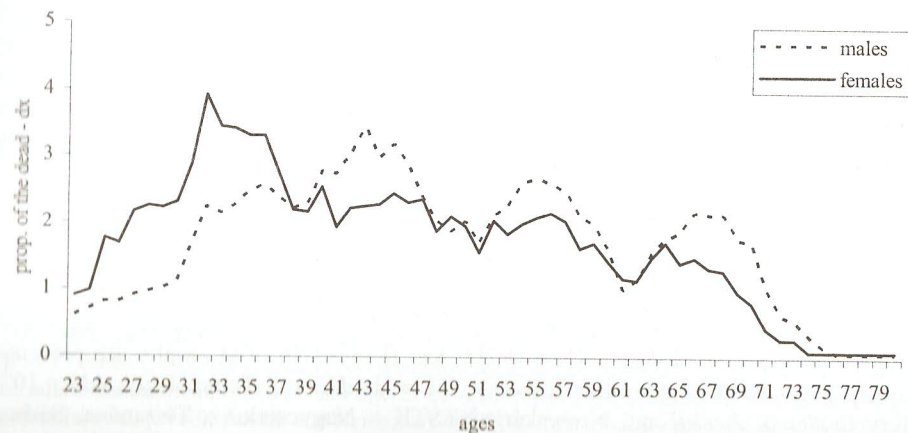


Figure 2. Proportion of the dead Hajdúdorog-Temetőhegy – adults

In this way the sex-ratio of the living population could have been re-established and the number of buried women could have increased. The above mentioned underrepresentation of males can be a cause for the low masculinity index.

2. Examination of the cemetery in Püspökladány-Eperjesvölgy

We had the opportunity to estimate the change of a population's internal demographical structure in the different age classes of the cemetery. We calculated the mortality data of the 10th and 11th century samples separately.

Figure 3 presents the death rate. The proportion of the 0 aged is less in both centuries than we expected. The infant mortality in the 11th century fluctuates highly, which cannot be interpreted. Perhaps most graves unsuitable for anthropological analysis belong to this age class. Considering the fairly similar shape of the graphs of the older age classes, the continuity of the population is to be supposed. The tendency represented in the adults' death rate is the same as in the cemetery in Hajdúdorog-Temetőhegy, namely the tendency of mortality is very similar to what was expected in the given age groups and with the sexes. There is a male surplus in both centuries. The masculinity index is 140.0 per cent in the 10th century and 108.5 per cent in the 11th century.

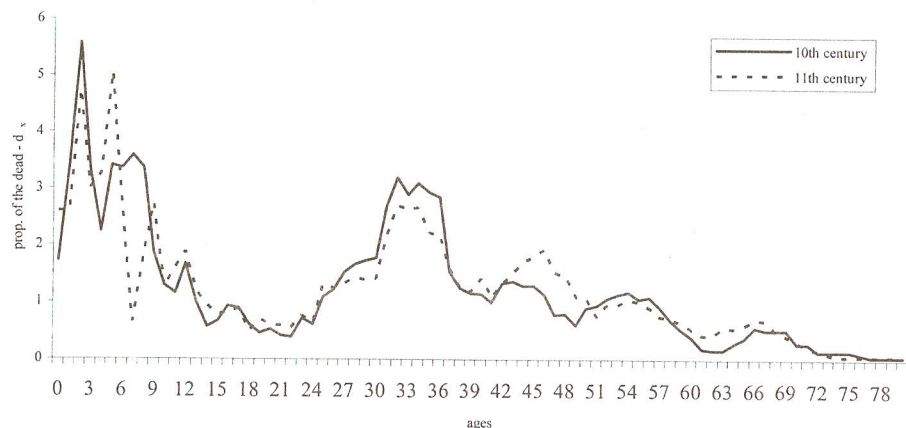


Figure 3. Proportion of the dead Püspökladány-Eperjesvölgy – total population

3. Interpopulation comparison

We compared the life expectancies calculated presently to the 10th-12th century model of Acsádi and Nemeskéri (1970) and the life expectancies in five 10th century cemeteries: Nagycserkesz (Szathmáry – Guba 1999), Tiszanána (Nemeskéri – Szathmáry – unpublished), Sárbogárd (Éry 1968), Tengelic (Éry 1971), Kál (Éry 1970). The results are presented in Figure 4. (PE = Püspökladány-Eperjesvölgy; HT = Hajdúdorog-Temetőhegy; AN = 10th-12th century model of Acsádi and Nemeskéri; NTSTK = Nagycserkesz, Tiszanána, Sárbogárd, Tengelic and Kál.) Larger deviations come about in the case of infants and young adults. It is the divergence of life expectancies in the age classes relevant for the populations' survival and reproduction that shows the discriminant importance of their parameter. From this point of view the cemeteries in Püspökladány and Hajdúdorog are closely related. As both samples

are representative, have large sample size, are located in the same area, they can serve as a basis of a model which helps the demographical analysis of other - often fragmentary - skeletal remains in Northern-Tiszántúl.

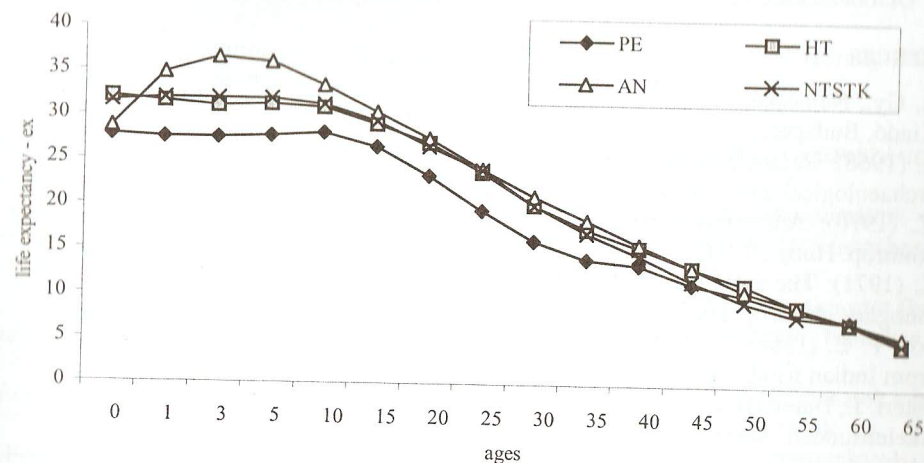


Figure 4. Interpopulation comparison of life expectancies

CONCLUSIONS

During our examinations we analysed the skeletal parameters of two cemeteries, namely Hajdúdorog-Temetőhegy and Püspökladány-Eperjesvölgy. On the basis of the data resulting from the anthropological examinations we constructed the paleodemographic mortality charts of the two cemeteries, and analysing these data further on we outlined a demographic profile. Relying upon the age and sex of individuals and applying the appropriate functions we could examine the number of individuals, the mortality rate, the proportion of survivors, the chance of death and life expectancy according to the breakdown by sex and age. A special emphasis was laid upon the analysis of death rate and life expectancy according to sexes, age-groups and even to chronology, i.e. the centuries of burials.

MATERIALS AND METHODS

By means of our examinations on the Early Hungarians' skeletal findings, we hope to determine the demographical parameters which present a basis for the judgement of the partly known 10th-11th century populations in the Upper-Tisza region. Therefore we accomplished the determination of sex and age at death of the skeletal findings from two representative cemeteries. Namely: Hajdúdorog-Temetőhegy (10th-12th century, 612 individuals) and Püspökladány-Eperjesvölgy (10th-11th century, 602 individuals). The adults' determination of sex and age at death was performed according to the method given by Nemeskéri et al. (1960), Acsádi and Nemeskéri (1970) and completed with some new, practical respects (Sjøvold 1975, 1988, Ubelaker 1978, Szilvássy 1988, Szathmáry 1993). In the case of individuals died before the age of 23 the method of Schour and Massler (1940) and that of Johnston (1961) were applied.

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ESTIMATION OF HUMAN SURVIVAL RHYTHM FROM NEOLITHIC TO IRON AGE IN HUNGARY

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ÖSSZEFOGLALÁS A TOVÁBBÉLÉS RITMUSÁNAK BECSLÉSE MAGYARORSZÁGON AZ ÚJKŐKORTÓL A VASKORIG

Jelen tanulmányunkban az őskori népségek továbbélési ritmusát rekonstruáltuk emberi csontvázletek révén az egymást követő régészeti kultúrák esetében. Az összehasonlítás alapját kilenc koponyaméret diszkriminancia analízise képezte.

Először négy (neolitikum, rézkor, bronzkor, vaskor), majd nyolc időrendi csoportot (korai és középső neolitikum, késő neolitikum, rézkor, korai bronzkor, középső bronzkor, késő bronzkor, szkíta időszak, kelta periódus) különítettünk el.

A négycsoportos beosztás nem adott lehetőséget a népességtörténeti folyamatok részletes elemzésére. Ezért inkább a nyolccsoportos analízis eredményeit mutattuk be. A korai neolitikumot tekintettük alapnépességnek. A késői neolitikumban az immigránsok aránya 81% lehetett. A későbbi időszakokban az immigránsok aránya fokozatosan csökkent, egészen a késői bronzkorig, ahol már csak 27,5% volt. Ebben a korszakban a népesség diverzitása a maihoz hasonlóan jelentős lehetett. A szkíta és a kelta periódusban drasztikusan megnőtt az új anatómiai arculatú népségek aránya (63,5% ill. 61,5%), ami nem azt jelenti, hogy a két időszak népessége hasonlított egymáshoz; inkább a különböző kraniológiai felépítésű immigránsok aránya lehetett hasonló.

INTRODUCTION

The estimation of the degree of survival through subsequent populations is a key problem for researchers working on the reconstruction of one-time people's life (e.g. historians, archaeologists and anthropologists). However, the ratio of autochthonous and immigrant components in a population may well be determined using the methods of physical anthropology, for the traits examined here are – at least partly – genetically determined. In the present study we try to reconstruct the survival rhythm on the example of craniometric changes of ancient populations which lived in the territory of today's Hungary.

RESULTS

According to our results summarized in Figures 1 and 2, a new immigrant wave was generally followed by a significant decrease in the ratio of the dominant population of the previous period, which only slightly changed during the next immigrant waves. That can be seen as a general survival rhythm: the ratio of survivals from the previous period decreases faster than the „stabilised” survival rate of earlier populations.

The small-scale division revealed more detailed results, therefore we analyse only that. Considering that there are no comparative finds before the Early Neolithic, we considered that population as autochthonous population.