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Paleodemographic Analysis of Necropolises from North East Bulgaria Dated in the Late Middle Ages and Early Osman Period (data from male skeletons)

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The male part of the population is studied with the method of paleodemo-graphic analysis, based on anthropological data about age and sex of buried in archaeologically excavated necropolises from North-East Bulgaria (Kavarna: Section 7, X-XI c.; Fortress, XII-XIV c. and Osman period necropolis, XV-XVII c.; Kaliakra: Ch. 3 (XV-VII c.) and Fortress, (XV-XVI c.).

Key words: Paleodemography, North-East Bulgaria, Middle Ages

Necropolises from the Second Bulgarian Kingdom and early Osman period (Kavarna — Section 7, X-XI th century, Fortress, XII-XIV th century and Osman period necropolis, XV-XVII th century, and Kaliakra — Fortress, XV th-XVI th century and Ch. 3, XV-XVII th century) of two city centres developed in the Late Middle Ages from North-East Bulgaria have been excavated [9]. The anthropological material found has been studied [2, 3, 7, 9]. Both Kaliakra and Kavarna (most probably Karvuna from the Middle Ages historical sources) were administrative centres and residences of despots (rulers of Dobrudja Despotia, originally part of Bulgarian Kingdom, later politically independent) in XIII th-XIV th century [4-6]. In XV-XVII c. both towns preserve their position of commercial centres of Osman Empire in North-West Black Sea Littoral. After the period of political instability in early XVIII c. both towns lost their economical positions and declined. It is of interest how these historical changes affected the human populations in both towns.

The biggest part of the anthropological material from the studied necropolises of age groups of adults and for both sexes is in the age of Maturus. In Kavarna, S. 7 the situation is different — low number of female skeletons in all age groups and relatively high number of skeletons from both sexes in age group Senilis.

Life tables are constructed according to the method of paleodemography [1] based on the age and sex distribution of buried, determined from skeletal remains. Values of the demographic indices (relative number of dead — dx, probability of death — qx, relative number of survived — lx and life expectancy — ex) are calculated for

any age interval of five years of male sex. Data for females and adolescents are included when necessary for comparisons and general conclusions.

The situation of high infant and young women mortality in populations of both towns during Xth-XVII th century had not been changed a lot in the region in the entire period of Bulgarian Kingdom to the first two centuries of Osman Empire. Many authors explain the high infant mortality by epidemic infections in child population and high mortality by young women due to complications and bad conditions of hygiene of pregnancy and birth. [8, 10]. The relative low life expectancy in first two age groups is in agreement with high infant mortality and high probability of death. The lowest life expectancy in the first age group is established for the population in Kavarna, XV th-XVII th century (Table 1). Life expectancy, calculated for Kaliakra, Ch. 3, is higher and it could be even higher for the population of the town in early Osman period, when the material of both necropolises from the period is regarded (Table 1).

Because of the bigger importance of females in process of the population growth (either positive or negative) and the strong effect of infant mortality on the values of life expectancy as well as higher sensibility of these groups of the population to worse conditions of life they were studied with more interest from demographers. On the contrary — the group of male part of the population did not attract much interest of the scientists. The study of the male part of the population in paleodemography presents some advantages. For males most rarely are valid taboos for burials in the necropolises and their remains are in most of the cases more carefully treated. The graves are deeper, some times with stone or wooden coffins, for that reason they get more rarely destroyed from later graves or field works. Male skeletons are more resistant to unfriendly environmental conditions. In consequence male skeletons are best preserved and hence the male part of the population in most of the cases is best represented in the anthropological material from the necropolises. In conclusion the comparing the results from study of necropolises on the basis of data from male skeletons would be most reliable. It is of interest to be studied how male part of the population has been affected by natural and social environment. On the other hand, as it has been already mentioned groups of infants and females are more influenced by global demographic factors and do not express contrast local and temporary changes.

There are significant differences in the male mortality between studied necropolises (Fig. 1). The necropolis in Kavarna S. 7 (X th-XI th century) with the earliest dating among studied necropolises shows earlier slow increase in male mortality from the age group of 30-34 years with the earliest peak in the age group 35-39 years (16.7%). The same value of relative number of dead by males is kept in the next age group. Slight decrease can be observed in the age group of 45-49 years. Earlier growth of mortality by men as well as the lowest life expectancy (Fig. 5, Table 1) for first age groups of Adultus and Maturus in necropolis in Kavarna, S. 7 (Xth-XI th century) compared to the remaining necropolises point to complicated life conditions for males in the population. Comparing life expectancy in this case data from two

T a b l e 1. Life expectancy for males in the First Age groups for Adultus, Maturus, Senilis.

Necropolises	e_0	Fe_{20-24}	Me_{20-24}	Me_{30-34}	Me_{60-64}	l_x=age group\value
Kavarna S.7	26,76	27,05	24,72	17,19	5,83	45-49\44,44%
Kavarna Fort.	30,8	24,88	27,00	18,91	1,88	50-54\40,00%
Kavarna XV-XVII	22,64	24,26	29,56	21,59	4,32	50-54\50,68%
Kaliakra Fort.	26,6	20,95	24,88	18,33	3,50	45-49\57,14%
Kaliakra Ch. 3	24,62	24,77	33,80	25,23	2,50	55-59\52,17%
Kaliakra Tot.	25,79	22,27	28,04	20,95	2,81	50-54\46,15%

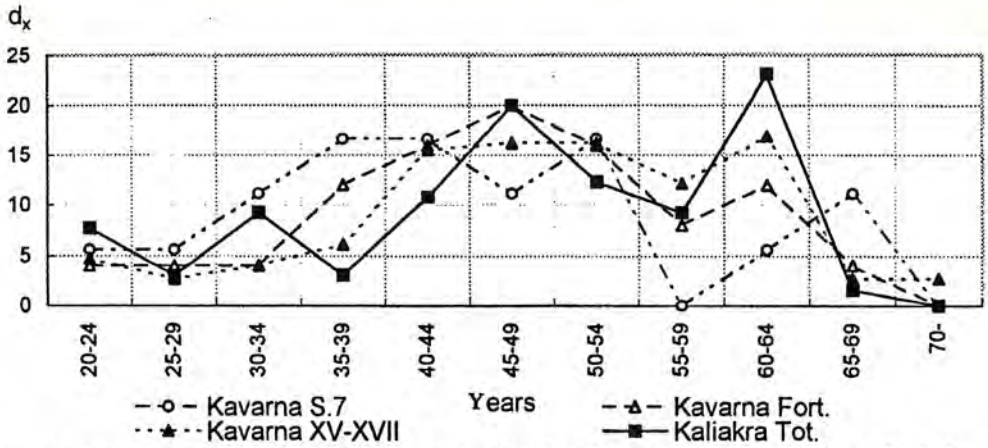

Fig. 1. Relative number of dead males in necropolises from North-East Bulgaria, dated in Late Middle Ages

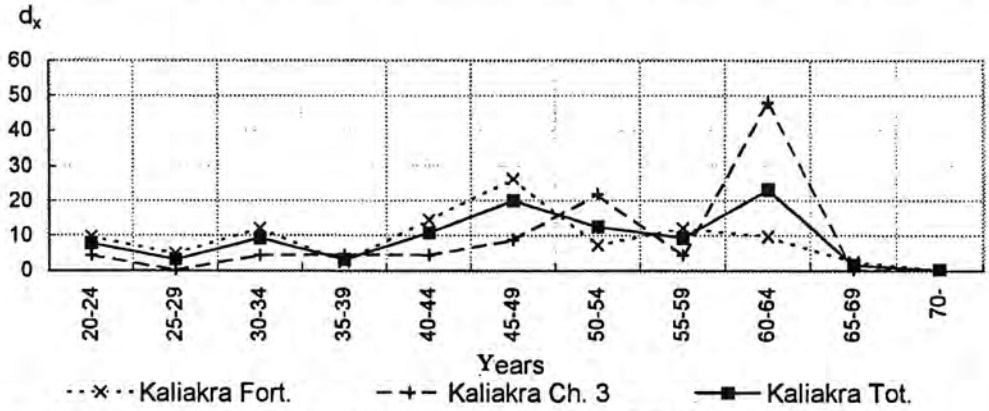

Fig. 2. Relative number of dead males in necropolises from XV th-XVII th century in Kaliakra

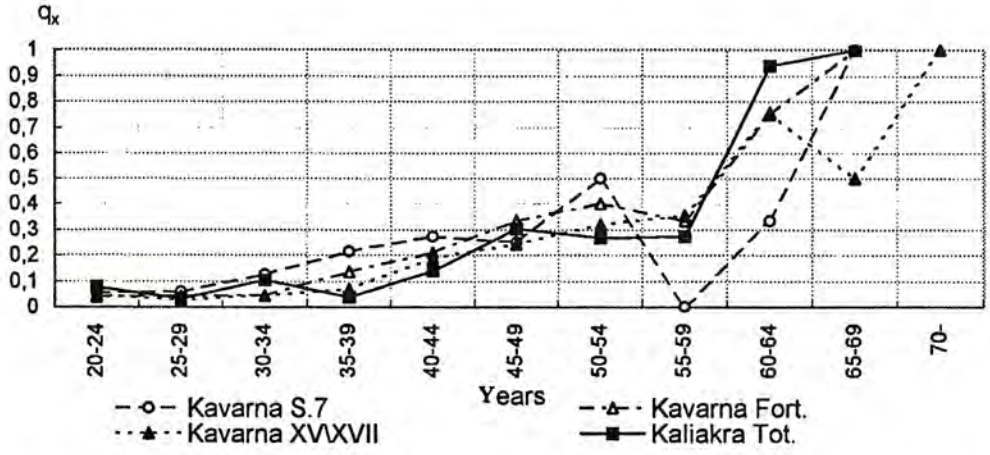

Fig. 3. Probability of death for males for necropolises in North-East Bulgarian Black Sea littoral in Late Middle Ages

necropolises in Kaliakra (Fortress and Church 3) are regarded together. Approximately equal values of relative number of dead (with deviation around 15%) for males between 30-54 years with highest probability of death in age groups between 20-44 and 50-54 years as well as relative high number of people aged in Senilis (Fig. 3) in Kavarna S. 7 point out that some of the members of the population are not represented in the anthropological material. This could be due to nomadic conditions of life. This conclusion is in agreement with reduced number of female skeletons in the material from the same necropolis.

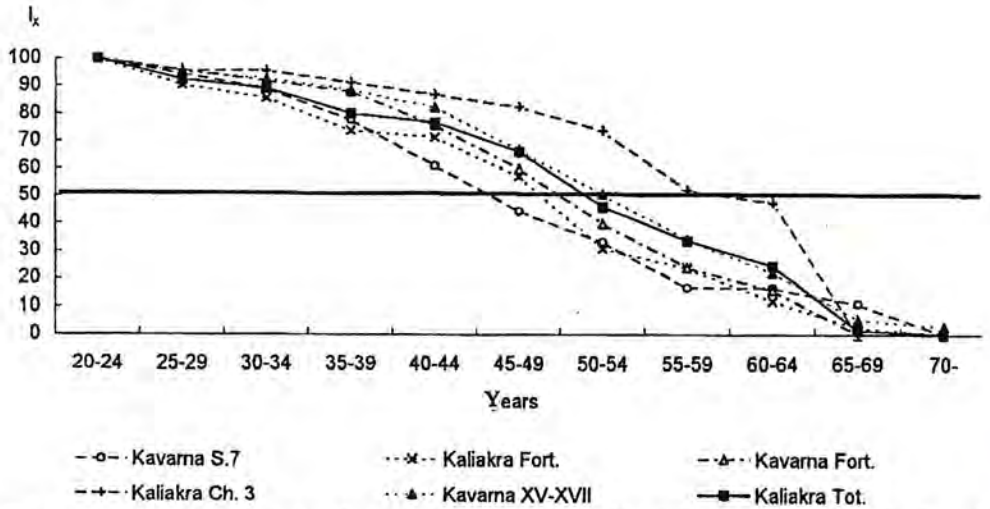

Fig. 4. Relative number of survived for males for necropolises in North-East Bulgarian Black Sea littoral in Late Middle Ages

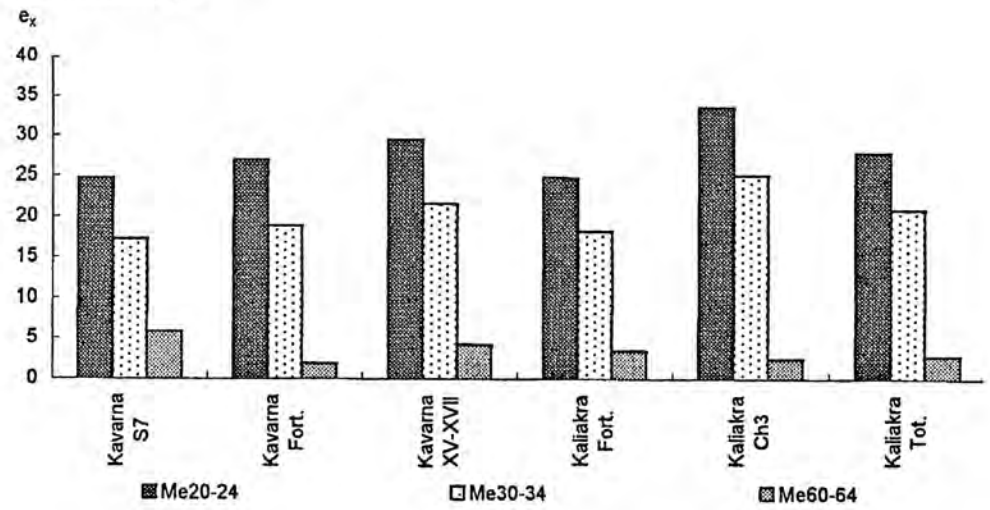

Fig. 5. Life expectancy for males in first age groups of adultus, matures and senilis for necropolises in North-East Bulgarian Black Sea littoral in Late Middle Ages

In the necropolis in Kavarna, Fortress (XII th-XIV th century) the increase in male mortality begins in the age group of 35-39 years and the peak of male mortality appears in age group of 45-49 years being 20% (Fig. 1). In early Osman period necropolis in Kavarna an increase in male mortality is observed in age group of 40-44 years (15%). After this age mortality by men remains at the same level to the age group of 60-64 years (Fig.1). According to paleodemographic analysis the population from Kavarna from XV th-XVII th century could have lived in worst conditions. In this necropolis is registered the lowest life expectancy for the first age group, highest infant mortality, highest mortality by young women. Conditions of higher mortality in this necropolis did not affect so strong the male part of the population, which shows higher resistance to unfriendly environmental conditions. On the contrary, values for relative number of dead and probability of dead for men in the necropolis from Kavarna Fortress (XIII th-XIV th century) are higher and their increase precede the increase of these coefficients for the necropolis of the town from XV th-XVII th century (Fig. 1, 3). This situation in the necropolis by the Fortress could be due to higher military activity in XIII-XIV Th. c. in the Balkans.

The two necropolises from Osman period in Kaliakra show complicated picture (Fig. 2). In Kaliakra, Fortress the relative number of dead is relatively high in the age group of 20-24 years (the highest in the studied necropolises being 10%). After this age group the relative number of dead for men varies between 5 and 15%. The peak of mortality appears in 45-40 years of age after that the values for the relative number of dead slightly decrease and vary around 10% for age groups between 50 and 64 years of age. A very reduced relative number of dead for males (20 - 44 years of age) is observed in the necropolis by Church No3, where male skeletons, determined as 25-29 years are missing at all. The values of this index reach 10% in age group of 45-49 years, after that a big deviation of its values in the age intervals in 50-59 years is observed. The peak of mortality in this necropolis appears in the age group of 60-64 years with the greatest value for investigated necropolises of 50%. The plot of relative number of survived vs. age groups for men in Kaliakra, Church 3 shows big deviation from the plots from necropolises studied exhibiting very high values of the index (Fig. 4). In the same time the necropolis Kaliakra, Fortress shows one of the lowest values for this index. Considering data from both necropolises in Kaliakra together values for male mortality vary between 9.2 and 3.1% in age groups between 20 and 39 years. An increase in the age group 40-44 years is observed while in the age group of 45-49 years values for relative number of dead reach 20%. After this age group a slight decrease of mortality is again observed, but in the age group of 60-64 years these values reach their maximum of 23.1%. So it could be supposed, that the population of Kaliakra buried its dead members in both necropolises with some preferences for burials of some age, sex and social groups in the necropolis near the Church 3. This explains the earlier age in which the male population, according to necropolis Kaliakra, Fortress, reaches half of the adults males as well as the oldest age in the region in which the same process is documented in the material from Kaliakra, Church 3 (Tabl. 1, Fig. 4). In the necropolis by the Church were also buried females of younger age. In the population of Kaliakra probably women have reached their positions in the society in earlier age than men. That can be explained with earlier age for marriage for women. Regarding total life tables, constructed for studied necropolises, one can conclude that the population in town Kaliakra during XV th-XVII th century has lived in the most favorable conditions. This observation is also valid for the male part of the population, nevertheless this tendency is not expressed so strongly in demographic indices for males as in the case of infants and females.

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