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Skeletal pathological disturbances during childhood years in the Danish medieval period

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This project examines childhood health as seen in adult skeletons from skeletal markers and discusses “The Osteological Paradox”. The Osteological Paradox is concerned with the problem of interpreting skeletal health from archaeological populations. The discussion highlights the issue of considering those individuals with signs of skeletal pathologies as the diseased and unhealthy group of a population. This may not be correct, as developing skeletal evidence from diseases requires first an individual to survive the disease and then continue life long enough in order to allow the pathology to be manifested skeletally. Hence, those adult skeletons showing signs of disease from childhood may in fact be the healthy and fit individuals, since they survived to adulthood, despite adverse conditions during development.

For this investigation, three skeletal markers are chosen that could indicate childhood health. These three markers are developed during childhood and leave permanent or semi-

permanent changes that can be seen in adult skeletons. The three skeletal markers are: Harris lines, enamel hypoplasia and infectious middle ear disease. Harris lines occur during childhood development when growth is temporarily halted but bone continues to mineralize. The temporarily growth arrest could be explained by periods of disease, malnutrition or starvation. When bone growth resume, this results in a residual line of increased mineral density, which is evident from X-ray images as horizontal lines, mainly on the leg bones. Linear enamel hypoplasia is similar to Harris lines, as this is also caused in childhood years when dental enamel formation is disrupted by periods of severe disease, malnutrition or starvation. This causes disruptions to the enamel producing cells which causes horizontal lines of decreased enamel production to be permanently evident on the teeth. The third skeletal marker is the permanent changes in the temporal bones of the cranium, induced by infectious middle ear disease in childhood. All three skeletal markers have nonspecific multifactorial origin indicating that they reflect general living conditions during growth rather than specific diseases. In addition, they may reflect the health status of the individual and adverse conditions of the environment and cultural measures to nurture the individual for survival.

Two Danish medieval populations are compared: a rural and an urban population. The historical sources indicate a social difference between these two populations, with the urban population considered a more affluent society of the town with higher status compared to the peasants in the country. It is hypothesized that there will be found a higher frequency of Harris lines, linear enamel hypoplasia and infectious middle ear disease in the urban population versus the rural population. This is expected as children growing up in the more well-to-do urban environment would have better resistance to malnourishment, hunger and disease episodes and thus have a better chance of surviving childhood illness. It is therefore anticipated that the adult urban population will show a higher frequency of skeletal disease markers and this will evidently address the discussion of "The Osteological Paradox".

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