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THE FORENSIC APPLICATION OF SKELETAL STRESS INDICATORS: A CORRELATION STUDY OF LINEAR ENAMEL HYPOPLASIA, HARRIS LINES, CORTICAL BONE LOSS, AND STATURE

Justin Z. Goldstein

ABSTRACT

Skeletal stress indicators have provided important bioarchaeological insights into prehistoric populations, but are rarely used in forensic contexts. Incorporating linear enamel hypoplasia (LEH), a non-specific indicator of stress, into current forensic biological profiles has proved a promising method for identifying and repatriating the remains of undocumented migrants. However, the relationship between LEH and other postcranial stress markers in recent populations is unknown. Understanding the relationship between LEH and other postcranial stress pathologies would help forensic anthropologists gain a more comprehensive foundation for incorporating skeletal stress into biological profiles. I consider the relationships between LEH, Harris lines, cortical bone thinning, and stunted stature in a recent (1900's) skeletal collection through multiple regression models and correlation analyses. Unlike previous studies on these indicators, sex differences in trait correlation are also considered. Moderate correlations were found only between cortical bone thinning and stunted stature, suggesting that future studies should consider the interaction between these measures at higher resolutions. Based on the intertrait correlations produced between Harris lines and cortical bone thinning, this study supports the hypothesis that Harris lines might be more indicative of periods of increased growth velocities rather than periods of malnourishment and arrested growth. No significant differences in trait expression were found based on sex. Incorporating non-specific stress indicators into forensic analyses would require the independent consideration of traits coupled with an in-depth analysis of life history events. While not practical for all forensic case work, this approach might aid the identification and repatriation of individuals with sparse antemortem data, such as undocumented migrants.