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Comparative Analysis of Toe Prints Between Male and Female in Gujarat Population

Toe prints, much like fingerprints, consist of friction ridge patterns that remain unique and permanent throughout an individual's lifetime. While fingerprints have been extensively studied for personal identification, toe prints remain underexplored despite their potential forensic value. The present study aims to investigate sexual dimorphism in toe print patterns by comparing their occurrence and distribution between male and female participants. A cross-sectional sample of [insert sample size, e.g., 100 individuals; 50 males and 50 females] was collected using inked impressions on A4 sheets, and the ridge patterns were classified into arches, loops, and whorls. Preliminary findings from previous studies suggest that males exhibit a higher frequency of whorl patterns, whereas females more commonly display loop patterns, though overlaps exist. In addition, foot morphology and indices such as the Chippaux-Smirak Index (CSI) were recorded to provide a complementary metric for sex estimation. The results indicate that toe print analysis, when combined with morphological indices, can serve as a supplementary biometric marker in forensic identification, particularly in cases where fingerprints are unavailable, such as mass disasters, decomposed remains, or burn victims. However, limitations include the relatively small sample size and the absence of large-scale comparative databases, which restrict broader generalizations. Overall, the study highlights that toe prints have the potential to strengthen multidisciplinary approaches to personal identification in forensic science.

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