Comparative analysis of nasal aperture height and width between young and older Malaysian adults for forensic application

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ABSTRACT

Introduction: Nasal aperture of the skull is a key cranial feature that is frequently measured during forensic identification. This structure forms the nasal region of the face, which involves in facial reconstruction. The objective of this study was to evaluate differences in nasal aperture height and width between young and older age groups in Malaysian adult populations. **Materials and Methods:** A total of 210 head and neck computed tomography (CT) scans, which comprised of two different age groups, the young (18-30 years) and older (50-65 years) age group were selected. All subjects were male to ensure the sex factor was eliminated. Landmarks were placed on the anatomical points of the bone using Stratovan Checkpoint software. The linear distance between the most lateral points of the aperture was measured for the width, and the distance between the highest to lowest midline point of the aperture, was measured for the height. Both parameters were exported into SPSS (version 25) software for further analysis. **Results:** The independent t-tests revealed significant differences in both width and height of the aperture between young and older age groups ($p < 0.05$), with the older age group demonstrating larger dimensions in both parameters. These findings were due to bone changes that occur in elderly individuals. Prolonged bone resorption also contributes to a relative expansion of the width of the nasal aperture. Besides, a decrease in soft tissue volume with increasing age in the midfacial region influences the size of the aperture. **Conclusion:** There were significant differences in nasal aperture height and width between young and older age groups of the adult Malaysian population. Nasal aperture age-variations are crucial during forensic identification to ensure accurate age estimation.

Keywords: Nasal aperture, age, computed tomography (CT), Malaysian