

Assessing Subpubic and Mental Angle Variations: Implications for Forensics and Obstetrics in a South African Sample.

Undergraduate research

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BACKGROUND: Cephalopelvic disproportion remains a major contributor to maternal and neonatal morbidity and pelvic adequacy plays a key role in obstetric risk assessment. The subpubic angle (pelvis) and the mental angle (mandible) are known to show sexual dimorphism, but their relationship in the South African population remains underexplored.

OBJECTIVE: This study aimed to assess the reliability and validity of subpubic and mental angle measurements in a black South African sample. Adult bodies with intact pelvises and mandibles housed in a medical school in Gauteng North were examined using standardised goniometric methods.

METHODS: Measurements were taken twice by the primary investigator and once by an independent observer. Statistical tests included: descriptive statistics; intraclass correlation coefficients (ICC) for inter- and intraobserver reliability, t-tests or Mann-Whitney U tests for sex comparisons and lastly regressions for correlation between the two angles. A p-value < 0.05 was considered significant.

RESULTS: Both inter- and intraobserver ICC indicated excellent repeatability for subpubic angle, while moderate intraobserver and good interobserver for the mental angle. Both parameters were larger in females than males but only significant for the subpubic angle: (88.00° and 69.59°); mental angle (85.92° and 83.98°) respectively. Correlations between mental versus subpubic angles were negligible and statistically not significant: positive for the entire sample and for males, while negative for females.

CONCLUSION: The significantly larger subpubic angle noted in females than males was expected while a tendency towards a negative correlation between the two angles in females could indicate a preservation of pelvic adequacy for obstetric requirements regardless of the size of another body part (e.g. mental angle). Future studies using larger samples could give greater insights regarding the correlation between the subpubic and mental angle for predictions in obstetric risk assessments while validating the sex differences could be valuable for forensic contexts in South Africa.