



# AGE DETERMINATION BY MANDIBLE MORPHOLOGY ANALYSIS USING DIGITAL PANORAMIC IMAGES

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## Introduction

Previous studies reported that mandible morphology is influenced by age and could play a vital role in age estimation in adult whom teeth are fully developed. However, there was still some controversy among different sample. Measurement on digital panoramic radiographs is convenient and may be a non-invasive technique for estimating the age of adults in both living and dead.

## Methodology (Material and Methods)

Digital panoramic radiographs of patient who attended the clinic of the College of Dental Medicine, Rangsit University between the year 2012-2017 were selected and evaluated. The patient was grouped into two age groups; the adult (20-59 years old) and the elderly (60-80 years old). The bigonial breadth, ramus breadth, ramus height, gonial angles, position of mental foramen and bicondylar breadth were measured using imageJ software by one examiner per each parameter.

## Data analysis

The data was statistically analyzed for the difference and correlation between age and all parameters using SPSS.

## Result

Mean +/- SD	Adult group (20-59 years old)	Elderly (60-80 years old)	Analysis ( t-test, $p < 0.01$ )
Bicondylar breadth	158.42+/-11.18	161.20+/-10.6	No sig.
Bigonial breadth	154.08+/-10.36	154.05+/-10.27	No sig.
Ramus breadth (RB)			
R-RB	25.30+/-2.85	24.88+/-2.55	No sig.
L-RB	25.64+/-3.03	25.04+/-2.98	No sig.
Ramus height (RH)			
R-RH	53.37+/-7.37	55.5+/-5.33	Sig.
L-RH	51.2+/-6.00	54.61+/-5.56	Sig.
Gonial angle (GA)			
R-GA	122.85+/-6.24	121.94+/-6.14	No sig.
L-GA	122.13+/-6.37	121.72+/-5.47	No sig.
Mental foramen (MF)			
Upper R-MF	15.36+/-2.06	15.02+/-2.19	No sig.
Upper L-MF	15.2+/-2.00	15.12+/-2.38	No sig.
Lower R-MF	10.53+/-1.54	10.61+/-1.55	No sig.
Lower L-MF	10.70+/-1.64	10.72+/-1.41	No sig.

All six positions (twelve parameters) show statistically significance between males and females. Males had greater in all parameters than females except the gonial angle. Significance difference in ramus height (both left and right) were found between the adult group and the elderly group but correlation of age with these parameters were not significant. The adult group had lesser ramus height than the elderly group.

## Conclusion

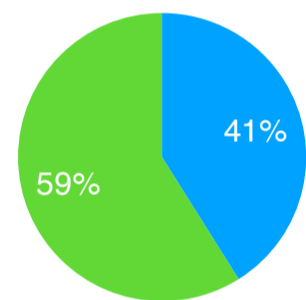
Mandibular parameters can be implicated as a forensic tool for sex determination but might not suitable for age determination.

**Keywords :** Age estimation, Forensic, Mandible, Morphology, Panoramic radiograph

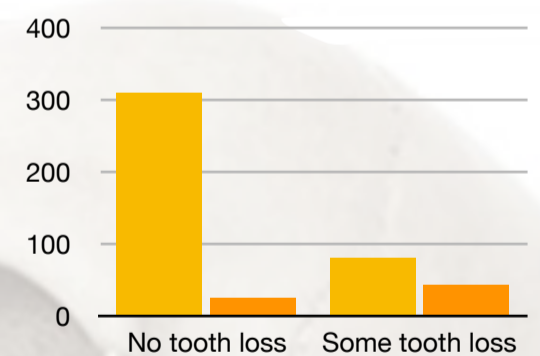
## OBJECTIVE

The objective of the current study is to assess the usefulness of six mandibular parameters on digital panoramic radiograph as indicators for age in Thai adult population ages between 20-80 years old.

● Male N = 184  
● Female N = 264



■ 20-59 N = 385  
■ 60-80 N = 63



■ Female N = 264  
■ Male N = 184

