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Palatal Rugae Pattern Identification to Determine Family Lineage in Minangkabau, West Sumatera, Indonesia

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Background: This paper discusses palatal rugae patterns and their contribution in the identification of individuals and the determination of family lineage in West Sumatera, Indonesia. Identifying an individual's a prerequisite for the issuance of death certificate as well as for personal, social and legal reasons. The most common techniques used in this context are dental records, fingerprint and DNA comparisons. However, under certain circumstances, these cannot always be used. But interestingly, palatal rugae patterns are preservable because they are impervious to disasters and hostile conditions and can be used as alternative human identification techniques. This paper argues that the study of palatal rugae (rugoscopy) cannot only help to reveal a person's identity but also to determine their family lineage.

Objective: The present study was carried out to ascertain whether there are any hereditary patterns in the palatal rugae patterns of the mother, father and the offspring in one family.

Method: This is a cross sectional study of 48 samples consisting of 12 families in Luhak Nan Tigo. The parents and offspring (son or daughter) of each family were randomly selected. Palatal rugae impression was recorded using alginate while palatal rugae patterns were noted and recorded. One Way ANOVA test (SPSS17) was used as statistical analysis method.

Result: The study shows that there is a significant similarity in curved, wavy and straight rugae patterns ($p > 0.05$) as well as in primary, secondary and fragmented rugae based on the family tie between the father, mother, sons and daughters of the Minangkabau ethnic. Unilateral and circular rugae tests are insignificant ($p < 0.05$).

Conclusion: This is a cross sectional study whose results are only based on 48 samples consisting of 12 families, therefore further studies are needed with a larger sample quantity. The results of this study indicate the role of factors in the patterns of palatal rugae.