

Lower jaw shape reflects dietary differences between human populations

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New research from the University suggests that many of the common orthodontic problems experienced by people in industrialised nations is due to their soft modern diet causing the jaw to grow too short and small relative to the size of their teeth.

The research, which was conducted by Dr Noreen von Cramon-Taubadel from the University's School of Anthropology and Conservation, tested the long-debated theory that the transition from a largely hunter-gatherer to an agricultural subsistence strategy across many parts of the world has had a knock-on effect on the growth and development of the human skull and lower jaw.

Dr von Cramon-Taubadel compared the shape of the cranium (skull) and mandible (lower jaw) of 11 globally distributed populations against models of genetic, geographic, climatic and dietary differences. She found that lower jaw shape, and to some extent the shape of the upper palate, was related to the dietary behaviour of populations, while the cranium was strongly related to the genetic relationships of the populations.

In particular, the lower jaw reflects whether populations are primarily hunter-gatherer or agriculturalist in nature, irrespective of what part of the world they come from. This therefore suggests that chewing behaviour causes the lower jaw to grow and develop differently in different subsistence groups, while the skull is not affected in the same way.

Overall, the hunter-gather groups had longer and narrower mandible, indicating more room for the [teeth](#) to erupt correctly, while the agriculturalists had generally shorter and broader mandibles, increasing the likelihood of dental crowding.

Dr von Cramon-Taubadel, a lecturer in Biological Anthropology with research interests in human and primate evolution, and in particular the causes of modern human skeletal diversity, said: ‘Chewing behaviour appears to cause the lower jaw to develop differently in hunter-gatherer versus farming populations, and this holds true at a global level. What is interesting, is that the rest of the skull is not affected in the same way and seems to more closely match our genetic history.’

‘Global human mandibular variation reflects differences in agricultural and hunter-gatherer subsistence strategies’ is published in *Proceedings of the National Academy of Sciences*.

Provided by University of Kent

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