

# Chinese skull study by HKU and Peking University suggests people had better bites a few thousand years ago

Misalignment of the upper and lower jaws and teeth (malocclusion) has become more common in China during the past few thousand years, four dental researchers from HKU and Peking University have concluded after examining some ancient skulls.

In their study of 29 excavated 4000-year-old Chinese skulls, the researchers found that a quarter had misaligned jaws and teeth, leading to abnormal biting patterns. In contrast, they note the proportion of the modern Chinese population with abnormal bites is much larger—reaching as high as three-quarters—probably because of evolutionary and dietary changes.

Drs Wei Wang and Xiang-long Zeng from the Peking University School and Hospital of Stomatology and Drs [Cheng-fei Zhang](#) and [Yan-qi Yang](#) from the HKU Faculty of Dentistry examined the teeth and jaws of 56 skulls that had been unearthed in Henan and Shanxi provinces. The skulls, from 38 males and 18 females, were shown by radiocarbon dating to be about 4000 years old, from the Xia Dynasty.

The team identified a total of 86 upper and lower jaws with at least two-thirds of teeth remaining intact. Of these jaws, 20 (23%) displayed some form of abnormal tooth alignment: 7 had tooth crowding, 8 had wide tooth gaps, and 5 had crooked teeth. Among the 29 skulls containing both upper and lower jaws, 8 (28%) had abnormal bites, as confirmed by X-ray studies. Of these, 4 had a mostly normal bite but irregular tooth alignment, 2 had a protruding upper jaw, and 2 had a protruding lower jaw (known as skeletal class I, II, and III malocclusion, respectively).

The researchers comment that the occurrence of abnormal bites 4000 years ago in the Xia Dynasty (28%) is similar to published figures for 6000-7000 years ago in the Neolithic Age (26%) and 3000 years ago in the Shang Dynasty (28%), reflecting “residential agricultural” lifestyle and diet. However, the rate was 43% in the Weijin-16-States Age 1500 years ago, and 73% in the past decade among Chinese children with permanent teeth.

Genetic and environmental reasons cited for the increasing rates of jaw and teeth misalignment in China include an evolutionary reduction in jaw size and an altered diet, especially after the Industrial Revolution, leading to less chewing, less tooth wear, more tooth crowding, and weaker jaw muscles.

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For more information on bites and orthodontics (tooth straightening), see: <http://facdent.hku.hk/engagement/community/pdf/Orthodontics.pdf>

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