

Press Release  
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## **Craniofacial and Dental Features May Hold the Key to Diagnosis of Daytime Sleepiness in Adolescents**

Adolescents who have malocclusion or in need of orthodontic treatment are at higher risks of suffering from daytime sleepiness or obstructive sleep-disordered breathing (SDB), a study finds.

A cross-sectional study by the Faculty of Dentistry at The University of Hong Kong found that there was a higher incidence (59.7%) among subjects seeking orthodontic treatment who reported daytime sleepiness compared to the prevalence (41.9%) in the general adolescent population as reported in another study.

The difference implies adolescents with craniofacial anomalies or malocclusion are experiencing more daytime sleepiness than the general population.

In the study, 265 adolescents (99 and 166 girls) aged 11-17 years old seeking orthodontic treatment at the Prince Philip Dental Hospital were asked to complete an 8-item Paediatric Daytime Sleepiness Scale (PDSS), which evaluates the frequency of feeling tired or sleepy during the day.

Respondents had to rate the frequency of experiencing “sleepiness” event like “fall asleep or get drowsing during class periods” or “you need more sleep” as “sometimes/seldom/never” or “always/frequently”.

The scores of PDSS were further compared with the outcomes of the clinical assessment of subjects’ extra and intra oral characteristics - having a concave or convex profile; a normal or hypertrophy tonsil size; Class II molar relationship or other molar relationships; normal and long lower face or short lower face; a normal or large tongue size.

The findings showed that several craniofacial characteristics or anomalies were associated with daytime sleepiness.

Hypertrophic tonsils, a relatively large tongue and a retruded lower jaw were positively associated with daytime sleepiness.

In contrast, a short lower face and convex profile were negatively associated with daytime sleepiness and subjects having such craniofacial characteristics experienced less daytime sleepiness than other subjects.

The results were in line with some other studies which reported an association between increased overjet, Class II molar relationship and sleep-disordered breathing.

According to Dr Yanqi Yang, Clinical Assistant Professor in Orthodontics, craniofacial characteristics as well as dental malocclusions may have an impact on the breathing of the subjects, which may cause partial obstruction or intermittent complete obstruction of the upper airway, which in turn created problems experienced by people having SDB or obstructive sleep apnea syndrome (OSA), and manifested as sleepiness during the day.

The study was the first ever study on the association between craniofacial characteristics and daytime sleepiness among Chinese adolescents, and link between the two showed that craniofacial characteristics among adolescents might be predictors of daytime sleepiness or early signs of SDB

Given the potential impact of daytime sleepiness and SDB on adolescents' health, Dr Min Gu, Clinical Assistant Professor in Orthodontics, said an assessment of daytime sleepiness and SDB be recommended to orthodontists when examining young patients present with hypertrophic tonsils, relatively large tongue and a retruded mandible.

“It is important that SDB in adolescents be detected and treated early because there is growing evidence that SDB is associated with growth impairment, cardiovascular complications, neurocognitive deficits like attention-deficit hyperactivity disorder, behavioural problems as well as poor learning,” he said.

Dr Gu said functional appliance treatments like the Herbst or Twin Block appliance treatment had proved effective in improving the nocturnal breathing disorder by enhancing the growth of lower jaw, significantly increasing the upper airway.

“Orthodontists can help identify patients who required further medical referrals, and those suitable for application of functional appliances for the improvement of breathing,” he said.

Reference:

*Gu M, Yang Y, Ho CH, Wong RWK, Hagg EUO & McGrath CPJ. “Craniofacial characteristics related to daytime sleepiness screened by the paediatric daytime sleepiness scale”. The Open Dentistry Journal 2015;9.*

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**For media enquiries, please contact:**

Christina Wong, HKU Faculty of Dentistry; Tel: 2859 0494;  
E-mail: [cwong01@hku.hk](mailto:cwong01@hku.hk)