AN ABSTRACT OF THE THESIS OF

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Major: Epidemiology

Title: Malocclusion and orthodontic treatment need in elementary school children in Beirut: prevalence and related factors

Introduction:
Malocclusion, defined as any deviation from the norm of the arrangement of the teeth, can be caused by genetic and/or environmental factors. Occlusal indices are used to quantify the severity of the malocclusion and assess the treatment need in a given population. Lebanon lacks data on the severity of malocclusion and its associated factors. The objective of this study was to assess the prevalence and severity of the malocclusion and orthodontic treatment need comparing between public and private schools in a sample of 6-11 years Lebanese elementary school children in Beirut as well as the relationship between these components and socio demographic and selected behavioral background factors of both children and parents.

Design:
A comparative cross-sectional study of elementary school children aged 6-11 years, grades 2 to 5, in public and private schools in Beirut-Lebanon.

Methods:
The sample comprised 655 school children aged 6-11 years selected from 2 public schools (PB) and 5 private schools (PV) in Beirut. Dental screening was performed by a calibrated examiner to record information regarding occlusion, overjet (OJ), overbite (OB), posterior crossbite (PXB), midline diastema and crowding (II). Data on socio-demographic background, health status, oral hygiene habits and nutritional habits were collected via a questionnaire sent to the parents. The index for orthodontic treatment need was computed (IOTN). Multinomial, binomial and multiple linear regressions were performed to test the association of selected factors with occlusal indices.

Results:
Malocclusion was more severe in PB compared to PV with statistically significant difference regarding overjet (p=0.22), anterior crossbite (p=0.008) and occlusion (p=0.002) when stratified based on the overjet. After adjusting for appropriate variables, age was positively associated with OJ (RRR: 1.35; 95%CI: 1.06; 1.71 / β: 0.14; 95%CI: 0.046; 0.249), OB (RRR: 2.23; 95%CI: 1.03; 4.83) and PXB (OR: 1.29; 95% CI: 1.18; 1.39). Increased sucking habit duration was associated with a shallower OB (RRR: 0.98; 95%CI: 0.97; 0.99) and a PXB (OR: 1.01; 95%CI: 1.01; 1.18). Crowding is more prevalent among males (RRR: 1.69; 95% CI: 1.36; 2.1) and is associated with an increase in the DMFT (Decayed, Missing, and Filled Teeth) score (RRR: 1.04; 95%CI: 1.03; 1.06), which was evaluated in another part of this epidemiologic study.

The IOTN (Index of Orthodontic Treatment Need) scores revealed that nearly one fourth of the children are in urgent need of treatment.
Conclusion:
Orthodontic treatment need evaluated in Lebanese children 6-11 years of age is 2.7 times higher than in comparative data in the USA (ages 8-11 years). Differences in population age limit comparisons with data from other countries, however, the findings suggest the need for education campaigns to parents in order to have their children screened early for orthodontic needs (age 7) along with the integration of orthodontic screening in schools on an annual basis with greater attention in public schools. Mouth breathing and sucking habits should be detected in a timely manner. Long term follow up is needed on the screened subjects to build up a cohort for subsequent assessment of oral health in general and malocclusion in particular. Such data should form the basis for third-party entities (government, NGO agencies, and insurance companies) to engage in the prevention or early treatment of occlusal problems.