Oral habits in a population of Albanian growing subjects

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ABSTRACT

Aim *The aim of this study was to assess the prevalence of oral habits in an Albanian population of schoolchildren.*
Materials and methods *Study design: A sample of 2617 subjects, aged 7-15, was examined by clinical observation without radiograms. The sample comprised 1257 males and 1360 females, with no history of orthodontic treatment. Aestethical frontal and profile analysis, intraoral and functional analysis were performed. Statistics: Gender and age differences were compared by chi-square test. The relationship between malocclusions and oral habits was assessed by t-test and the level of significance was assessed at 0.01.*
Results *The findings indicated that oral habits were present in 2225 subjects (85.0%), 1103 males (87.7%) and 1121 females (82.4 %); the most frequent oral habit was pacifier sucking (30%) and it was mostly present in the 7-11 years group. It was observed a significant correlation between oral habits and dental malocclusions, open bite, altered overjet and maxillary contraction.*
Conclusion *The high number of oral habits observed in the studied sample suggest that prevention strategies adopted in other countries could be successfully integrated in the development of an effective national programme in Albania aimed at reducing malocclusion risk factors.*

Keywords *Albanian population; Causes of malocclusions; Growing subjects; Oral habits.*

Introduction

Evidence is available that oral habits are closely associated to malocclusion in growing subjects [Aznar et al., 2006; Cozza et al., 2007; Kats et al., 2004; Laganà et al., 2011; Leite-Cavalcanti et al., 2007; Luz et al., 2006; Mistry et al., 2010; Yemitan et al., 2010; Warren et al., 2001].

The effects of prolonged dummy or finger sucking on the transverse dentoskeletal relationships in growing subjects are clear. In particular, both thumb and dummy sucking are associated with reduced maxillary arch width and increased palatal depth. A significant association was found between sucking habit and malocclusions, such as posterior crossbite and anterior open bite [Cozza et al., 2005; Cozza et al., 2007].

Bottle feeding interferes negatively with the orofacial development. Open mouth posture, as a habit or as a result of adenotonsillar enlargement or prolonged inflammation of the nasal mucosa, associated with allergies or chronic infections, inhibits transverse maxillary growth and leads to a significant increase in the prevalence of posterior crossbite. Swallowing pattern progresses from an infantile form, which can persist until 4 years of age, to a mature form. If this does not happen because of obstacles in the mouth that prevent the normal position of the tongue (dummy, finger), the tongue must assume a lower position in the anterior part of the mouth. Infantile swallowing pattern is considered a dysfunction because of its association with certain malocclusions [Melink 2010].

Epidemiological studies are essential to gain knowledge of the prevalence of oral habits and their relationship with malocclusions; they are important to establish the social need for orthodontic therapy in different countries. However in every country there is the need to identify malocclusion incidence and orthodontic treatment indications [Borzabadi et al., 2009]. Such information can be used to devise public health plans for orthodontic prevention and screening. There are few investigations that have evaluated the prevalence of malocclusions and orthodontic treatment need in southern European ethnic groups [Perillo et al., 2010]. In a previous research no similar studies were found in current literature reporting data about malocclusions and oral habits in Albanese population [Laganà et al., 2012].

The aim of the present study was to assess the prevalence of oral habits and the association between oral habits and malocclusions in a population of Albanian growing subjects.

Materials and methods

The study population consisted of 2617 subjects, between 7 and 15 years of age, attending public schools

in Tirana (Albania). The fifteen examined schools (ten in the town and five in the province of Tirana) were chosen using a stratified selection technique, in order to represent the correct distribution of socioeconomic conditions during the school year 2009-2010. Classes within schools were sampled systematically and all students attending these classes were examined; prior to the study written consent was obtained from the schoolchildren and their parents.

Two thousand six hundred and seventeen students were randomly selected. Selection criteria for examination were: presence of deciduous cuspid and deciduous second molar in primary dentition and mixed dentition, presence of permanent cuspid and first molar in permanent dentition. Exclusion criteria for this study were: history or current orthodontic treatment, craniofacial anomalies (syndromes), non-Albanian ethnicity.

The orthodontic examination was carried out by five examiners. A pilot study on 50 children was conducted before beginning the present investigation to ensure accuracy of diagnosis and standardization of the procedures; no statistically significant differences were found between the five examiners (P<0.01). The schoolchildren were examined in the medical room of the schools and the examination lasted 20 minutes per child, following the WHO guidelines. The occlusal conditions were assessed by mouth mirrors, calipers and millimetric rulers, and using latex gloves. For each subject a registration chart was filled; it comprised an anamnestic questionnaire and clinical examination measurements, without radiograms. Oral habits were evaluated if they were present at the moment of clinical examination or if they were reported in the anamnestic questionnaire.

Statistical analysis

Data were processed with the Statistical Package for the Social Sciences for Windows, version 15.0 (SPSS, Chicago, Illinois, USA). Complete exploratory analysis was performed first. Inference for qualitative data was conducted using the Pearson's chi-square test. The α value for statistical significance was set at 0.05.

Results

Table 1 shows the composition of the sample at different ages: a total of 2617 subjects, 1257 males (48.4%) and 1360 females (51.6%), aged 7 to 15 years, were examined.

Table 2 describes the prevalence of oral habits in the total sample. Oral habits were present in 2225 subjects (85.0% of the sample). A great number of subjects (1397), 53.4% of the total sample, exhibited more than one oral habit, while 827 subjects (31.6% of the sample) had just one oral habit.

The use of pacifier in early childhood was reported as the most frequent oral habit (785 subjects, 30% of the sample); lip interposition was present in just 200 subjects (7.6% of the sample), resulting the oral habit with the lowest number of subjects.

Table 3 shows prevalence and distribution of oral habits by gender in the studied population: 992 were males (78.9%) and 1116 were females (82.1%). Seven hundred and eighty-five subjects, 30% of the sample, 353 males (31.7%) and 432 females (28.1%), showed pacifier sucking that results the most frequent oral habit. Mouth breathing was observed in 613 subjects, 303 males (24.1%) and 310 females (22.8%). Atypical swallowing was present in 424 subjects (16.2% of the total sample), 189 males (15.0%) and 235 females (17.3%). Finger sucking was present in 261 subjects, 10.0% of the total sample, 108 males (8.6%) and 153 females (11.3%). Low tongue position was observed in 250 subjects, 9.6% of the total sample, 127 males and 123 females. Lip interposition was present just in 200 subjects, 7.6% of the total sample, 188 males (7.0%) and 112 females (8.2%) and it is the less frequent oral habit in the studied sample. Other habits (bite of pen, pencils, etc.) were registered in 1686 subjects, 64.4% of the total sample, 888 males (70.6%) and 798 females (58.7%).

In relation to the prevalence and distribution of oral habits by age, it is possible to observe two age groups (7-11 years and 12-15 years). In the 7-11 years group 1165 subjects (85.9%) reported one oral habit and the most frequent was the use of pacifier (440 subjects, 32.4% of the sample), while the less frequent habit was lip interposition (83 subjects, 6.1% of the sample). In the group 12-15 years 1058 subjects (84.0%) reported one oral habit in their childhood, the most frequent being the use of pacifier (345 subjects, 27.4% of the sample) the less frequent was lip interposition (117 subjects, 9.3% of the sample).

A large number of subjects, 885 (65.2%) in the 7-11 years group and 801 (63.6%) in the 12-15 years group had a different habit, such as placing a pen, a pencil or another object in the mouth during the day or during sleeping time.

Table 4 describes the correlation between the different types of oral habit and dental malocclusion (canine and molar malocclusion, altered overjet, open bite and maxillary contraction). The correlation was calculated by Chi square test and the level of significance α was fixed at 0.01; so P values 0.01 were considered significant.

Significant correlations can be observed between:
- use of pacifier (P) and mouth breathing (MB), finger sucking (FS), time of finger sucking (TFS);
- mouth breathing (MB) and finger sucking (FS), time of finger sucking (TFS);
- atypical swallowing (AS) and lip interposition (LI), canine and molar malocclusion (LCM, RCM, LMM,

AGE	TOTAL SAMPLE				COMPOSITION SAMPLE BY AGE	COMPOSITION SAMPLE BY GENDER	
	M (n)	F (n)	M + F (n)	M + F (%)		Males (%)	Females (%)
7	132	137	269	10.3%		49.10%	50.90%
8	101	140	241	9.2%		41.90%	58.10%
9	143	145	288	11.0%		49.70%	50.30%
10	127	145	272	10.4%		46.70%	53.30%
11	136	151	287	11.0%		47.40%	52.60%
12	140	153	293	11.2%		47.80%	52.20%
13	164	142	306	11.7%		53.60%	46.40%
14	167	179	346	13.2%		48.30%	51.70%
15	147	168	315	12.0%		46.70%	53.30%
Total	1257	1360	2617	100%		48.40%	51.60%

TABLE 1 Composition sample (n = 2617) by age and gender.

ORAL HABITS	FREQUENCES			PERCENTAGES				
	No	Yes *	Total	No	Yes*	Total	*upper confidence interval	*lower confidence interval
Any habits	292	2225	2617	15.0%	85.0%	100%	85.7%	84.3%
Finger	2356	261	2617	90.0%	10.00%	100%	10.6%	9.4%
Pacifier	1832	785	2617	70.0%	30.0%	100%	31.76%	28.24%
Mouth breathing	2004	613	2617	76.60%	23.40%	100%	24.2%	22.6%
Atypical swallowing	2193	424	2617	83.8%	16.2%	100%	17.61%	14.79%
Low tongue position	2367	250	2617	90.4%	9.6%	100%	10.73%	8.47%
Lip interposition	2417	200	2617	92.4%	7.6%	100%	8.1%	7.1%
Other habits	2176	441	2617	83.1%	16.9%	100%	18.34%	15.46%
More than one habit	1220	1397	2617	46.6%	53.4%	100%	55.5%	51.3%
One oral habit	1390	827	2617	68.4%	31.6%	100%	70.3%	66.5%

TABLE 2 Prevalence and distribution of oral habits in the total sample.

ORAL HABIT	MALES		FEMALES		TOTAL		SIGNIFICANCE
	n	(%)	n	(%)	n	(%)	
Any habits	1103	87.7%	1121	82.4%	2224	85.0%	0.000*
Finger	108	8.6%	153	11.3%	261	10.0%	0.016
Pacifier	353	31.7%	432	28.1%	785	30.0%	0.018
Mouth breathing	303	24.1%	310	22.8%	613	23.4%	0.360
Atypical swallowing	189	15.0%	235	17.3%	424	16.2%	0.255
Low tongue position	127	10.1%	123	9.0%	250	9.6%	0.464
Lip interposition	88	7.0%	112	8.2%	200	7.6%	0.187
Other habits	888	70.6%	798	58.7%	1686	64.4%	0.000*

TABLE 3 Prevalence and distribution of oral habits by gender.

RMM), altered overjet (OVJ), anterior open bite (AOB) and maxillary contraction (MC);
- objects in the mouth (OM) and use of pacifier (P), mouth breathing (MB), time of finger sucking (TFS);
- finger sucking (FS) and use of pacifier (P), mouth breathing (MB), time of finger sucking (TFS) and maxillary contraction (MC);
- time of finger sucking (TFS) and use of pacifier (P), mouth breathing (MB), finger sucking (FS);
- left canine malocclusion (LCM) and atypical

	P	MB	AS	LTP	LI	FS	TFS	LCM	RCM	LMM	RMM	OVJ	AOB	MC
P	1	.104	-.016	.004	.033	.104	.672	-.006	-.006	.002	-.013	.020	.012	-.002
MB	.104	1	.024	.014	.024	.094	.078	.001	.021	.011	.011	.018	.014	.017
AS	-.016	.024	1	-.022	.075	.018	-.007	.061	.064	.074	.061	.156	.174	.641
LTP	.004	.014	- .022	1	.026	.020	-.005	.027	.032	.024	.025	.024	.044	-.023
LI	.033	.024	.075	.026	1	.001	.007	.092	.064	.103	.081	.078	.082	.061
OM	.099	.120	.000	-.030	-.008	-.001	.101	-.006	-.015	.012	-.004	.011	-.029	-.002
FS	.104	.094	.018	.020	.001	1	.062	.026	.025	.007	.014	.090	.009	.066
TFS	.672	.078	-.007	-.005	.007	.062	1	.018	-.002	.019	-.002	.017	.014	.025
LCM	-.006	.001	.061	.027	.092	.026	.018	1	.574	.592	.380	.013	.007	-.021
RCM	-.006	.021	.064	.032	.064	.025	-.002	.574	1	.375	.606	1	.062	.130
LMM	.002	.011	.074	.024	.103	.007	.019	.592	.375	1	.636	.062	1	.105
RMM	-.013	.011	.061	.025	.081	.014	-.002	.380	.606	.636	1	.130	.105	1

The blue values are significant (α= 0.01)

P= pacifier. MB= Mouth Breathing. AS= Atypical Swallowing. FS= Finger Sucking. TFS= Time of Finger Sucking. LTP= Low Tongue Position. LI= Lip Interposition. OM= Objects in the mouth. LCM=Left Canine Malocclusion. RCM= Right Canine Malocclusion. LMM= Left Molar Malocclusion. RMM= Right Molar Malocclusion. OVJ= altered Overjet. AOB= Anterior Open Bite. MC= Maxillary Contraction

TABLE 4 Correlation between different type of oral habit and dental malocclusion.

swallowing (AS), lip interposition (LI), right canine malocclusion (RCM), left molar malocclusion (LMM), right molar malocclusion (RMM);

- right canine malocclusion (RCM) and left canine malocclusion (LCM), atypical swallowing (AS), lip interposition (LI), right canine malocclusion (RCM), left molar malocclusion (LMM), right molar malocclusion (RMM), altered overjet (OVJ), anterior open bite (AOB), maxillary contraction (MC);
- left molar malocclusion (LMM) and atypical swallowing (AS), lip interposition (LI), left canine malocclusion (LCM), right canine malocclusion (RCM), right molar malocclusion (RMM), high overjet (OVJ), altered open bite (AOB), maxillary contraction (MC);
- right molar malocclusion (LMM) and atypical swallowing (AS), lip interposition (LI), left canine malocclusion (LCM), right canine malocclusion (RCM), left canine malocclusion (LCM), left molar malocclusion (LMM), high overjet (OVJ), altered open bite (AOB), maxillary contraction (MC).

The overall prevalence of malocclusions in the sample, as reported elsewhere [Laganà et. al, 2013], is 40.4% I Class, 29.2% II Class, 3.2% III Class and 27.1% asimmetries.

Discussion

Oral habits were observed in 2225 subjects, which account for 85% of the total sample, 1103 males (87.7%) and 1121 females (82.4%), 292 subjects (15.0%), did not present any oral habit. A great number of subjects , 1397 (53.4% of the total sample) presented more than one oral habit, while 827 subjects (31.6% of the sample) had just one oral habit. This prevalence rate is lower than the prevalence rates reported in other studies [Hebling], but it is higher than other results [Adair, et al., 1995; Farsi and Salama, 1997]. No other researches with the same age sample are present in literature, so it was possible to compare our results only with these studies. Oral habits are slightly higher in females than males and this difference is statistically significant (P=0.000), however this is not confirmed by other authors.

Finger sucking was present in 261 subjects and the correlation with maxillary contraction was significant, as confirmed by other Authors [Cozza et Al., 2007]; the correlation with open bite was not significant, which is consistent with other authors' results [Cozza et al., 2005, Larsson, 1994].

Pacifier use was the most frequent oral habit in the studied sample; the correlation with maxillary contraction is not significant in our sample as in other studies [Aznar et al., 2006; Melink et al., 2010]. It is important to consider the duration of the sucking habit: it is demonstrated that cessation of the sucking habits is associated with an evident improvement of occlusal conditions [Bishara et al., 2006, Melink et al., 2010].

Mouth breathing was observed in 613 subjects (23.4%) and our findings are similar to those of other studies [Ovsenik et al 2007]. In our sample the correlation between mouth breathing and maxillary contraction is not significant, differently from other

studies [Esteller Morè et al., 2011].

Atypical swallowing was present in 424 subjects (16.2%) and in the 12-15 years group it was observed in 156 subjects (12.4% of the sample). Our results are different than those found in similar studies: Ovsenik observed this habit still present at 12 years of age in 25% of a group of 267 subjects [Ovsenik et al., 2007].

Low tongue position was present in 9.4% of the sample and did not show a significant correlation with malocclusion: this is probably due to the very low number of subjects presenting this oral habit.

Lip interposition was present just in 200 subjects (7.6%), this being the less frequent oral habit in the studied sample; it was not possible to find other recent studies on this oral habit.

The distribution of oral habits by age shows a higher number of subjects in the 7-11 years group, apart from finger sucking and lip interposition: there are significant differences between the two age groups in use of pacifier, atypical swallowing, and lip interposition.

The high rate of oral habits in teenagers (12-15 years) might suggest to devise a national preventive programme in Albania aimed at oral habits, one of the most common risk factor of malocclusion.

Conclusions

- Oral habits were observed in 85.0 % of the total sample examined in Tirana, that is a very high percentage if compared with similar studies in other countries.
- The most frequent oral habit was pacifier use (30 %), which was mostly present in the 7-11 years old group.
- The less frequent oral habit was lip interposition (7.6 %), mainly observed in the 12-15 years old group.
- The high correlation between oral habits, dental canine and molar malocclusion, altered overjet, open bite and maxillary contraction can confirm the important role of oral habits in causing malocclusions.

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