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The relationship between child's emotions and deleterious oral habits. A study conducted in Kaunas City

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Abstract

Para functional oral habits are often found in children and adults, although their etiology is clear, these habits are seldomly linked to a person's emotional well-being. The aim of this study was to examine the relationship between para functional oral habits and child's emotions. An additional aim was later raised to determine whether a psychologist is a key specialist in deleterious oral habit treatment. This study contained 412 subjects which were from 3 to 16 years old. The subject's parents had to answer a questionnaire and to subjectively state their child's para functional oral habits and associated emotions with it. Deleterious oral habits were present in 44,7% of the subjects. Females had higher para functional oral habit prevalence (56,5%) than males (43,5%). 3-5-year-old group (n=98) had more para functional oral habits than any other age group. 3-5 and 11-12-year-old groups and "calm" emotion showed statistical significance (P=0,040) (P=0,048) respectively. Lip, nail, pencil biting was the most prevalent para functional oral habit (n=54). Most of the children were found to be calm while executing their para functional oral habit, although statistical significance was not found. Statistical significance was seen between non-nutritive sucking oral habits and angry (P=0,012) and happy emotion (P=0,005). No statistical significance was found between parental status, emotions and their child's para functional oral habits. A psychologist is a key specialist in the treatment of deleterious oral habits.

Keywords: oral habits, children, orthodontics, emotions.

1. INTRODUCTION

Typical oral habits include swallowing, breathing, talking, chewing and less specific ones like emotional communication, facial expression and facial appearance [1]. Oral dysfunctions or para functional oral habits are habits known as nail and finger biting, atypical swallowing, teeth grinding (bruxism), mouth breathing, tongue thrusting and non-nutritive sucking habits such as finger, pacifier sucking. Deleterious oral habits are described as those that are done over a long period of time. Most of the time these habits are done unconsciously, but it also could be done consciously during normal daily activities. The etiology of the deleterious habits can be a disharmonious relationship of parents and their children, premature weaning, emotional disturbances, dental and skeletal anomalies and different oral diseases, parasomnia, neurological disabilities and even brain injury [2,4]. Emotional distress in early childhood has been said to cause problems in later life such as different psychological difficulties, crime, antisocial behavior, violence, drug use and abnormal habits like para functional oral habits [3]. Having these atypical oral habits over a long period of time and not treating them causes harm to various oral structures in the mouth and the body [4]. Deleterious oral habits cause malocclusion, faster deterioration of teeth and the periodontal tissue, inflammation, muscular dysfunction, temporomandibular disorders, incorrect posture and many more [5].

Dubey et al. (2018) [6] divides these dysfunctional oral habits into two groups. Acquired oral habits are described as habits that are learned and could be easily stopped if the child wants to or is told to. On the other hand, compulsive oral habits form due to emotional

stress that a child is put under and the oral dysfunction is a way of coping for them. This form of oral habit is much harder to stop as the child will experience an increase in stress levels and cause more anxiety [6]. According to some authors deleterious oral habits are said to be abnormal and need to be treated, when the child reaches 6 years old, otherwise they are considered normal and can spontaneously stop [2].

It has been known for many years that emotional stress is one of the key factors causing and exacerbating oral para functional oral habits. The emotional status of a child and stress relates to para functional oral habits as it's usually seen as the way that a person responds to and/or recovers from stress [4]. The emotional stress that a child experiences will usually cause an increased activity in para functional oral habit frequency [7]. Para functional oral habit such as nail biting is highly associated with stress, obsessive compulsive disorder, depression, anxiety and many other emotional disorders. These para functional oral habits help children to soothe themselves and to let out their experienced frustration and disappointment [8]. The deleterious oral habits are an adaptive means of dealing with tense situations and that's why they can't be quickly eliminated or stopped and the treatment may take a while. First the child should be taught to control and solve their emotional problems and then the oral habit should be taken care of [9]. According to Massler [9] non-nutritive sucking, transitions to nail biting due to a demanding environment that the child is put in. This happens as the child is asked to stop or control their childish whims and emotions, then they are given more responsibility that they can cope with or are told to follow

certain rules that make them feel depressed, annoyed and/or frustrated.

A relationship between para functional oral habits and socio-economic status is also a very important factor in deleterious oral habit occurrence and frequency. A study done in 2011 [10] found that parents with higher education level and higher income have fewer children that are nail biters, compared to those with lower socio-economic status overall. Some authors say that stress related disturbances such as depression, anxiety, nervousness is a problem of a highly developed society and the fast living pace negatively affects the human psyche [11,12]. The higher developed society stressors include large number of duties, the need for good education, the uncertainty of the future, the need of good career and high income earnings [13]. It is also said that mental health can be affected by culture and their value system on education, life goals, their life expectations, cultural standards and concerns [1].

There are very few studies done only examining the relationship of child's emotional being and their present dysfunctional oral habits. It is necessary to evaluate the child's emotional status in order to make orthodontic treatment successful and long lasting. According to Schwartz [14] para functional oral habit such as nail biting is a bigger issue than it seems and the child may need psychotherapy to identify the underlying psychological issues. Thus the aim of this study is to examine the relationship between various oral para functional oral habits and child's emotional state according to their parents. An additional aim is to understand and identify if a child psychologist is a key specialist in the treatment of para functional oral habits.

2. MATERIALS AND METHODS

Population and sampling

This study was conducted in July of 2019. Eligibility criteria was chosen to be parents who had preschool and school aged children and were living in Kaunas city at the moment of the questionnaire passing. Exclusion criteria were parents who had older children and weren't living in Kaunas City. The questionnaire was distributed through social media platform "Facebook". The sample size was calculated using a sample size calculator formula. The sample size needed was 350 subjects, with a margin error of 5% and confidence level at 95%. The actual sample size came to be 412 participants who met eligibility criteria.

Data collection

The data was collected through a third party website called "Apklausa.lt". The main objective of the questionnaire was that parents had to select and identify their child's specific para functional oral habits and to subjectively evaluate the child's emotions.

The questionnaire had 6 different sections. First section included demographic questions about the child, their gender and age. Second section asked about the child's nutritive habits up to 6 months and up to 1 year. It further asked if the child was bottle fed and if so, what was the bottle teat: physiological or non-physiological. In the third section the parents were asked about the child's history of oral dysfunctions. They were asked to select one or few of the listed para functional oral habits (if applicable) and the length of time that the child had this para functional oral habit. In the fourth section the questions were the same as in the third, except that it was inquiring about current dysfunctional oral habits. In the fifth section

parents were asked about the most common place where they saw the child executing the para functional oral habits, how long it took at a single time and what was the child's emotional status. In the sixth and final section the parents had to state their educational status.

Data analysis

The collected data was analyzed using SPSS 25th version. The difference between subjects and variables were evaluated using nonparametric tests: Chi square independent test. P values <0.05 were considered to be statistically significant. Categorical variables were presented in terms of frequency and percentage.

3. RESULTS

There were 412 subjects, that matched the inclusion criteria. 224 (54,4%) of those were girls and 188 (45,6%) were boys. The age dispersed as follows: 266 (64,5%) subjects were between 3-5 years old, 89 (21,7%) were between 7-9 years old, 37 (8,9%) were between 11-12 years old and 20 (4,9%) subjects were between 15-16 years old.

Out of the 412 subjects, 184 (44,7%) children have at least one deleterious oral habit of those 104 (56,5%) are girls and 80 (43,5%) are boys. Nail, pencil and lip biting is the most occurring para functional oral habit (n=77). Second and third most occurring para functional oral habit is non-nutritive sucking habit and mouth breathing both having 47 subjects. 37 children have bruxism and only 3 participants have tongue thrusting deleterious oral habit. 158 (85,9%) out of 184 children have only one para functional oral habit and 26 (14,1%) children have 2 or more para functional oral habits.

According to the subject's parents out of 184 children with para functional oral habits, 133 (72,3%) of them experience at least one sort of emotion and 29 (15,7%) children experience two or more different emotions while executing the para functional oral habits. The remaining parents (12%) reported that they are not aware of their children's emotions and didn't choose an answer. 75 of the subjects are calm, 21 are annoyed, 1 is angry, 5 subjects are annoyed and angry, 2 are annoyed and experiencing another emotion and 5 subjects are happy. 31 parent said that the child experienced some other emotion that was not included in the questionnaire.

Across the gender and emotion dispersion (table 1), females experienced more emotions, excepts for the "anger" emotion, which was experienced more often by males. Although no statistical significance between gender and emotion were found.

Between all of the age groups, most commonly felt emotion was "calm" (Table 1). The 3-5-year-old as well as 11-12-year-old findings with "calm" emotion showed statistical significance. Most prevalent emotion between 11-12 year olds was chosen to be another emotion not included in the questionnaire.

Table 2 shows emotion and para function oral habit dispersion, the calm and annoyed children were found to have nail, lip and pencil biting most often. Statistical significance was found in the angry and happy emotion group and non-nutritive sucking habit group.

Table 3 examines parental education level and the link between their child's experienced emotions. No statistical significance between parental education and child's emotions was found, but the most chosen emotion was "calm" across all parental education levels.

Parents across all education levels most often has children with nail, lip and pencil biting oral para functional oral habit (Table 4). Although this discovery, no statistical

significance was found between parental education status and their child's para functional oral habits.

Table 1 Emotion dispersion across gender and age of sampled group						
	Calm n	Annoyed n	Angry n	Happy n	Another emotion n	Doesn't know n
Gender						
Male	40 P= 0,796	16 P=0,514	10 P=0,276	4 P=0,242	18 P=0,587	11 P=0,511
Female	54 P= 0,796	25 P=0,514	8 P=0,276	10 P=0,242	28 P=0,587	11 P=0,511
Age (years)						
3-5	65 P=0,040	23 P=0,381	11 P=0,938	9 P=0,852	20 P=0,184	11 P=0,218
7-9	21 P=0,178	11 P=0,974	4 P=0,656	5 P=0,424	12 P=0,438	8 P=0,271
11-12	4 P=0,048	5 P=0,283	2 P=0,629	0 P=0,246	6 P=0,053	3 P=0,316
15-16	4 P=0,438	2 P=0,508	1 P=0,564	0 P=0,475	0 P=0,204	0 P=0,359
n:frequency, P: p-value *P value statistically significant <0,05						

Table 2 Emotion dispersion and deleterious oral habits						
	Calm n	Annoyed n	Angry n	Happy n	Another emotion n	Doesn't know n
Oral habits						
Non-nutritive sucking habit	27 P=0,312	14 P=0,152	9 P=0,012	8 P=0,005	8 P=0,476	3 P=0,172
Nail, lip, pencil biting	38 P=0,689	21 P=0,168	8 P=0,814	4 P=0,295	15 P=0,739	10 P=0,715
Teeth grinding	20 P=0,553	5 P=0,068	2 P=0,565	1 P=0,428	12 P=0,128	1 P=0,138
Tongue thrusting	0 P=0,074	1 P=0,643	0 P=0,565	1 P=0,090	0 P=0,373	1 P=0,250
Mouth breathing	26 P=0,501	8 P=0,315	5 P=0,819	4 P=0,787	8 P=0,476	7 P=0,472
	n:frequency, P: p-value *P value statistically significant <0,05					

Table 3 Parent educational status and emotion dispersion						
	Calm n	Annoyed n	Angry	Happy n	Another emotion n	Doesn't know n
Education level						
Primary education	8 P=0,856	4 P=0,670	1 P=0,672	1 P=0,886	3 P=0,948	0 P=0,136
Secondary education	26 P=0,302	8 P=0,403	5 P=0,730	3 P=0,784	7 P=0,331	12 P=0,984
Higher education	47 P=0,226	23 P=0,799	9 P=0,697	8 P=0,827	26 P=0,051	12 P=0,984
Post graduate diploma	13 P=0,746	6 P=0,732	3 P=0,631	2 P=0,886	2 P=0,110	4 P=0,446

Table 3 Parent educational status and emotion dispersion

	Calm n	Annoyed n	Angry	Happy n	Another emotion n	Doesn't know n
	n:frequency, P: p-value *P value statistically significant <0,05					

Table 4 Parent educational status and oral para functional habits

	Non-nutritive sucking n	Nail, lip, pencil biting n	Teeth grinding n	Tongue thrusting n	Mouth breathing n
Education level					
Primary education	5 P=0,470	7 P=0,693	1 P=0,376	1 P=0,108	4 P=0,917
Secondary education	10 P=0,557	17 P=0,524	8 P=0,197	0 P=0,320	11 P=0,846
Higher education	28 P=0,404	41 P=0,799	25 P=0,115	2 P=0,666	25 P=0,854
Post graduate diploma	4 P=0,285	12 P=0,385	3 P=0,556	0 P=0,499	7 P=0,662
	n:frequency, P: p-value *P value statistically significant <0,05				

4. DISCUSSION

There are very few studies done that evaluate various para functional oral habits and a child's emotions. Some studies briefly discuss the relationship between temporomandibular joint disorders and emotional status in children and adults. Other studies highlight the importance of income and family life in terms of para functional oral habit occurrence.

Overall this study findings of para functional oral habit prevalence (44,7%) in

preschool and school aged children matches Leme et al. [1] study, which found that 71,3% of children have at least one deleterious oral habit. In a study done by Dubey et al. [6] the para functional oral habit prevalence matched this study findings, with the oral habit occurrence at 45,2%. In the Leme et al. study they found, that the para functional oral habit prevalence was higher in the girl group. It is also seen that nail, pencil and lip biting is the most prevalent oral habit [1]. Para functional oral habits most frequently occur in the 3-6-year-old group [6].

Bano et al. (2019) found that people with dependent personality disorder, which is explained as people with anxiousness, fear and feeling nervous, have higher levels of nail biting, compared to those that don't have this disorder. It is also quite clear that children that have non-nutritive sucking habits like pacifier or digit sucking, later in life adopt nail biting, pencil biting or smoking habits as a way of coping [16]. If a child persists with non-nutritive sucking habits for a long period of time, some authors suggest that they are under physical or psychological stress, feeling anxious, bored or even excited [23]. A study done in Brazil confirms these findings, as their study shows that children with oral dysfunctions have worse oral health related quality of life, and thus it further impacts their oral health related quality of life and their dysfunctional oral habits intensify [1].

A study found that children who have bruxism, especially sleep bruxism most often have obsessive compulsive disorder as well as they tend to have a controlling and aggressive personality [15]. A Mexican study [19] found that children who had deleterious oral habits were found to be tired, emotionally unstable or even often annoyed. Leme et al. study done in Brazil confirm these findings and found that 58,7% of children with various para functional oral habits had depressive symptoms and an increased cortisol blood levels [21]. Another study found that children who had anxiety disorders and bruxism, also had pacifier sucking and biting habits [23]. A study conducted by Brancher et al. (2020) [26] shows that children with sleep bruxism are the ones who internalize their problems, often have peer pressure issues and abnormal emotional symptoms.

According to Santos et al. [17] para functional oral habit like non-nutritive sucking can be a positive emotion expression way for children. This connection is formed when a newborn is breast fed and the positive bond between mouth, lips, tongue and the sucking sensation occurs. Later on in life these children try to find this positive sensation and recreate it with other objects like pencils or fingers. A study done in Mexico in 2019 [18] showed that children that had various deleterious oral habits more often were found to be calm, bored and having nothing to do. A Spanish study done in 2005 [23] agrees with the previous data, as they found that children with oral habits often were bored or even excited.

A study conducted in Saudi Arabia (2016) [3] investigated para functional oral habit prevalence in orphan children and non-orphans. It was discovered that orphaned children had more para functional oral habits with the most prevalent being digit sucking, whereas non orphans had more nail biting. It was known that all of these children were orphans from infancy, were raised by foster mothers and were not breast fed at all. The authors made a presumption that these children were in lack of the intimate, close positive feeling that children get while being breast fed by their mothers and so they tried to stimulate this feeling by choosing digit sucking oral habit.

A study done in 2019 [8] investigated the link between socioeconomic status and nail biting in adult population. The study collected data such as income, education level, the subject's specific profession and nail biting para functional oral habit. It was found low socioeconomic status more times leads to nail biting oral habit prevalence development than

those with higher standards of living. This study also discovered that subjects with higher education level had less chance to develop nail biting para functional oral habit. Contradicting findings were made in a study done in Poland [11] which showed that highly developed societies are more likely to suffer from stress related disorders and so the number of deleterious oral habits that people experience is rising. Authors in Mexico agree with this, as in their study same conclusions were drawn that, children with highly educated parents have more para functional oral habits than those with low education levels. Calisti et al. [22] in their study found that dysfunctional oral habits especially non-nutritive sucking was more prevalent in children living in towns and cities, rather than rural areas. Children with mothers who work outside of their homes found themselves feeling lonely and dissatisfied and as a mean of compensating this feeling they adapted a para functional oral habit [22].

A case-control report done in Spain evaluated para functional oral habits with family status and discovered that children who were raised by grandparents, single parent or had arguing parents had an increased chance to develop para functional oral habits than those children who had a harmonious family life with both of the parents involved [27].

A study done in Saudi Arabia [4] evaluating the para functional oral habit and emotional status relationship on adults showed similar results as in those studies done with children. The findings came to be that people who are emotionally stable tend to have less para functional oral habits including nail biting, teeth grinding, teeth clenching and lip/pencil biting. Also these people were less likely to report

temporomandibular joint disorders. It becomes clear that if para functional oral habits are not treated in childhood, they tend to carry over to adulthood. Another study found that adults with lower income were 1.4 times more susceptible to have teeth clenching. It was also discovered that younger males in particular had 1.95 more chances of lip/object biting and 1.4 more times to object and lip bite if they were single. From this we can say that younger people are more susceptible to stress and not knowing how to deal which leads to an increase in deleterious oral habit occurrence. Financial status and marital status also plays an important role in para functional oral habit prevalence.

A study done back in 2002 by Alamoudi [25] had drawn similar conclusions to this study as their study principle was almost identical. In both of these studies the subject's parents had to choose and evaluate their child's emotions subjectively. As in this study they found no significant correlation between all child's emotions and para functional oral habits.

5. CONCLUSION

64,5% of children in this study were between 3-5 years old. 44,7% of children have at least one para functional oral habit. The most prevalent deleterious oral habit is nail, pencil and lip biting. Overall girls experience more emotions than boys.

“Angry” and “happy” emotions showed statistical significance with non-nutritive sucking oral habit. Other emotions and para functional oral habits showed no statistical significance. 3-5 and 11-12 year olds and “calm” emotion showed statistical significance. From this we can say that a psychologist is a key specialist in diagnosing and treating deleterious oral habits as child's emotions play an important

role in para functional oral habit occurrence and frequency.

Parents that have higher education level more often have children with 1 or more para functional oral habits. Although no statistical significance was found between parental educational level, para functional oral habits and their child's emotions.

In the end each and every person receives the world and its caused stress differently. Some people are seen to deal with stress by clenching or grinding their teeth and biting their nails. Interdisciplinary approach is very important while treating children and adults with dysfunctional oral habits. These deleterious oral habits can be managed by the means of orthodontic treatment and psychological approach of attention giving, support, counselling, reward and a remainder system [9].

This study needs to further examine the emotional status of children by a professional psychologist before orthodontic treatment begins, to fully understand the etiology of para functional oral habits. This is important in order to have successful treatment without the possibility of habit or malocclusion reoccurrence.

6. LIMITATIONS

The limitations of this study were that the parents considered their children's emotions subjectively. To understand the true child's experienced emotions, the children need to be asked and evaluated by a professional.

To truly apprehend and link the relationship between socioeconomic status and para functional oral habits, the questionnaire should be extended and the parents should be asked to state their profession, and income margins, not just their education level alone.

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