Research Article

Oral habits and atypical deglutition in certain Sao Paulo children

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Oral Habits And Atypical Deglutition In Certain Sao Paulo Children

Master's Degree thesis by Branca Vaidergorn, 1990

Translation and article by Marvin L. Hanson, Ph.D.

INTRODUCTION

Some useful information regarding interrelationships among sucking habits and atypical swallowing patterns can be gained in countries where children are permitted to continue bottle feeding or pacifier sucking, or to persist in digit-sucking, well beyond the age where such activities are usually halted. Such is the case in certain areas of Sao Paulo, the locale of the present investigation. Without assuming any causal relationships, the investigator reveals some interesting patterns of co-occurrences.

The study from which this article was drawn fulfilled the requirements for a thesis for a master's degree in Communication Disorders at the Paulista School of Medicine in Sao Paulo, Brazil, in 1990. The title of the thesis is "Of Oral Habits in Seven-to-Ten-Year-Old Patients with Atypical Deglutition."

In the thesis, tests of statistical significance were applied. In the present article, results of those tests are not included, in favor of simply presenting numerical data.

During the past decade there has been a tendency to consider atypical deglutition as an oral myofunctional disorder (Deschenes, 1983; Hanson, 1988), broadening the scope of patterns, their diagnosis, and treatment.

A wide range of inadequate behaviors of tongue, lips, mandible and facial musculature are observable, collectively called oral myofunctional disorders; these may appear in isolation or in association with one another. It is important to remember that atypical deglutition can be accompanied by alterations in respiration, in articulation of speech sounds, and in orthodontic problems (Guedes, 1985).

For the present study we selected the behaviors of labial interdentalization, tongue pressures against the anterior teeth, and positioning of the tongue between upper and lower anterior teeth as characteristic signs of atypical deglutition (Segovia, 1977; Lino, 1980).

The etiology of atypical deglutition is still considerably disputed. The principle factors that could be named as responsible for abnormal orofacial muscle patterns are: sucking habits (finger or thumb, bottle feeding, bottle nipple and pacifier), mouth breathing, presence of hypertrophied tonsils and adenoids, early loss of primary teeth, continuation of eating of soft foods at an advanced age and presence of other oral habits such as nail-biting and bruxing. (Hanson & Cohen, 1973; Lino, 1980; Lieberman & Gazit, 1985; Viti et al., 1985; Moses, 1987; Meyers & Hertzberg, 1988; Altmann, 1990).

Sucking habits have been the object of study of

various researchers concerned with assessing their cases and consequences. In spite of this interest, nevertheless, little is known about preventive measures and of interrelationships among these habits. The objective of the present investigation was to study, in children seven to ten years of age with atypical deglutition, co-occurrences of bottle-feeding, digit-sucking, and pacifier use.

REVIEW OF RESEARCH.

Relationships between atypical deglutition and sucking habits, including use of pacifiers or inappropriate bottle nipples, have been postulated by a number of writers (Straub, 1951; Strang, 1958; Ardran, Kemp & Lind, 1958; Picard, 1959; Straub, 1960; Ward, 1961; Andersen, 1963; Fletcher, 1970; Garliner, 1974; Segovia, 1977; Gellin, 1978; Lino, 1980; and Altmann, 1990.) All above references make mention only of the writers' *opinions*. Specific research investigations are:

Salzmann, 1966, found no evidence of any cause and effect relationship between the use of bottle nipples and atypical deglutition. Salzmann attributed the atypical deglutition to malocclusion and to speech disorders.

Barrett & Hanson, 1978, found a high coincidence of sucking habits and atypical swallowing, and concluded that it is difficult to find a tongue thruster who does not have other habits as well.

Stanley & Lundeen, 1980, compared the prevalence of bottle feeding in a group of Navajo children with that of a group of non-Indians, from 7-13 years of age. Atypical deglutition appeared in 65% of the Indians and in 81% of the non-Indians, which constituted a significant difference. However, they were not able to establish a cause and effect relationship between atypical deglutition and bottle feeding.

Pizarro & Honorato, 1981, in research with 5-year-old children, found that 81% had "bad oral habits," and related the habits to the use of the pacifier beyond the age of two years.

Meyers & Hertzberg, 1988, sent a questionnaire to parents of 737 children ages 10-12 years, to determine any relationship between bottle feeding and malocclusion. The data presented show that 51.9% of all the children used a pacifier during approximately 11.5 months. Digital sucking occurred in 45.3% of the children, with a mean duration of 49 months. The authors concluded that there was no significant association between use of a pacifier and method of feeding, and no significant relationship between digital sucking and methods of feeding. They noted that children who were bottle fed were inclined to use the pacifier more than children who were breast fed.

THE PRESENT STUDY.

Subjects: Subjects studied were 160 children, ages seven to ten years, patients of a special dental clinic in San Paulo. All of the children demonstrated atypical deglutition. Ninety-two were females, and sixty-eight were males. Three groups were formed from the subjects:

- A. Those with digit sucking habits.
- B. Those using the pacifier.
- C. Those being bottle fed.

Procedures: An oral myofunctional evaluation was done on the subjects, consisting of testing the swallow of liquids. The patients were distributed in three groups according to the type of deglutition being demonstrated:

- A. Atypical deglutition with tongue protrusion, where the tongue is positioned between the upper and lower teeth, occurring generally in anterior open-bites or as the mouth is opened during swallowing.
- B. Atypical deglutition with labial interposition, where the lower lip is placed under the upper teeth, in an attempt to create an anterior oral seal during swallowing, appearing generally in cases of Angle Class II occlusion.
- C. Atypical deglutition without interpositioning, with no protrusion of the tongue between the teeth or placement of the lip under the upper teeth, but instead a pushing of the tongue *against* the anterior teeth during swallowing.

In addition to sex and age, relationships were examined among the three types of atypical deglutition and the oral habits of digit sucking, bottle feeding, and use of pacifier, as related to each of the four age groups.

Results: Table 1 shows the number of atypical swallows in each of the four age groups whose only oral habit at the time that this research was conducted was bottle feeding. A total of seven males and three females were being bottle-fed, and had no other oral habits.

Table 1
Prevalence of Bottle Feeding in Male & Female Children
With Atypical Swallowing Patterns

BOTTLE FEEDING				
SEX	AGE	TOTAL NUMBER	NUMBER	PERCENT
M	7	23	3	13.04
F	7	25	0	0.00
Totals		48	3	6.25
M	8	14	1	7.14
F	8	30	2	6.67
Totals		44	3	6.82
M	9	20	2	10.00
F	9	17	0	0.00
Totals		37	2	5.41
M	10	11	1	9.09
F	10	20	1	5.00
Totals		31	2	6.45
TOTALS		160	10	6.25

Table 2 reveals that of the 160 children in the study, a total of one male and 14 females had digit sucking as an isolated oral habit. At the age of ten years, three girls were still being bottle-fed.

Table 2
Prevalence of Digit Sucking in Male & Female Children
With Atypical Swallowing Patterns

DIGIT SUCKING				
SEX	AGE	TOTAL NUMBER	NUMBER	PERCENT
M	7	23	1	4.35
F	7	25	3	12.00
Totals		48	4	8.33
M	8	14	0	0.00
F	8	30	5	16.67
Totals		44	5	11.36
M	9	20	0	0.00
F	9	17	3	17.65
Totals		37	3	8.11
M	10	11	0	0.00
F	10	20	3	15.00
Totals		31	3	9.68
TOTALS		160	15	9.37

In Table 3, children whose only oral habit was pacifier use are seen to total 48 (25 males and 23 females). At the age of ten years, ten of the 160 were still using the pacifier, but were not being bottle-fed nor sucking their thumbs or fingers.

Table 3
Prevalence of Pacifier Use in Male & Female Children
With Atypical Swallowing Patterns

PACIFIER USE				
SEX	AGE	TOTAL NUMBER	NUMBER	PERCENT
M	7	23	7	30.43
F	7	25	8	32.00
Totals		48	15	31.25
M	8	14	7	50.00
F	8	30	7	23.33
Totals		44	14	31.82
M	9	20	7	35.00
F	9	17	2	11.76
Totals		37	9	24.32
M	10	11	4	36.36
F	10	20	6	30.00
Totals		31	10	32.26
TOTALS		160	48	30.00

Tables 4, 5 and 6 show numbers of children with combined oral habits. Table 4 lists numbers, by age and sex, of children with combined digit-sucking and pacifier use. A total of one male and nine females were in this group. Four children were still demonstrating both habits at the age of ten years.

Table 5 shows a total of four males and one female to be demonstrating combined digit-sucking and bottle-feeding.

Table 4
Prevalence of Combined Digit Sucking & Pacifier Use in
Male & Female Children With Atypical Swallowing Patterns

DIGIT SUCKING & PACIFIER				
SEX	AGE	TOTAL NUMBER	NUMBER	PERCENT
M	7	23	0	0.00
F	7	25	1	4.00
Totals		48	1	2.00
M	8	14	0	0.00
F	8	30	2	6.67
Totals		44	2	4.54
M	9	20	0	0.00
F	9	17	3	17.65
Totals		37	3	8.11
M	10	11	1	9.09
F	10	20	3	15.00
Totals		31	4	12.90
TOTALS		160	10	6.25

Table 5
Prevalence of Combined Digit Sucking & Bottle Feeding in
Male & Female Children With Atypical Swallowing Patterns

DIGIT SUCKING & BOTTLE FEEDING				
SEX	AGE	TOTAL NUMBER	NUMBER	PERCENT
M	7	23	2	8.70
F	7	25	1	4.00
Totals		48	3	6.25
M	8	14	0	0.00
F	8	30	0	0.00
Totals		44	0	0.00
M	9	20	1	5.00
F	9	17	0	0.00
Totals		37	1	2.70
M	10	11	1	9.09
F	10	20	0	0.00
Totals		31	1	3.23
TOTALS		160	5	3.12

Table 6 shows the greater number of children who were being bottle-fed and were using the pacifier; 19 boys and 28 girls. Six children were still manifesting both habits at the age of ten years.

Table 7 shows relationships between types of abnormal swallowing and occurrences of oral habits. Table 8 shows ranking by frequency of oral habits occurring with each of the three types of atypical swallowing. A "7" denotes greatest frequency, and a "1" least. Pacifier use, or its use combined with bottle feeding, ranked highest among all three types of atypical swallowing. Occurring least frequently among all types of swallowing was combined digit-sucking and bottle-feeding.

DISCUSSION.

The primary concern in the present study was to exclude from the sample children that might be presenting an infantile swallowing pattern that was normal

for their age. For that reason, the lower limit of seven years was set.

Table 6
Prevalence of Combined Bottle Feeding & Pacifier Use in
Male & Female Children With Atypical Swallowing Patterns

BOTTLE FEEDING & PACIFIER USE				
SEX	AGE	TOTAL NUMBER	NUMBER	PERCENT
M	7	23	9	39.13
F	7	25	9	36.00
Totals		48	18	37.50
M	8	14	5	35.71
F	8	30	9	30.00
Totals		44	14	31.82
M	9	20	4	20.00
F	9	17	5	29.41
Totals		37	9	24.32
M	10	11	1	9.09
F	10	20	5	25.00
Totals		31	6	19.35
TOTALS		160	47	29.38

Table 7
Children with Atypical Deglutition According to Types
of Deglutition, with Oral Habits

	LINGUAL PROTRUSION	LABIAL INTERPOSITIONING	TONGUE PRESSURES	TOTAL
Bottle Feeding				
Number	7	1	2	10
Percent	70.0	10.0	20.0	100.0
Digit Sucking				
Number	12	2	1	15
Percent	80.0	13.3	6.7	100.0
Pacifier Use				
Number	38	5	5	48
Percent	79.2	10.4	10.4	100.0
Digit Pacifier				
Number	7	0	3	10
Percent	70.0	0.0	30.0	100.0
Digit & Bottle				
Number	5	0	0	5
Percent	100.0	0.0	0.0	100.0
Bottle & Pacifier				
Number	34	8	5	47
Percent	72.3	17.1	10.6	100.0

Digit-sucking, pacifier-sucking, and bottle feeding were chosen because they were the most common types of sucking habits. We had previously studied pacifier sucking habits in atypical swallowers and in normal swallowers in Sao Paulo, and had found evidence of 77.2% and 23.3%, respectively, demonstrating a significant difference between these two groups (Vaidergorn, 1986). These data, associated with those found in the literature, led us to the choice of three types of atypical deglutition for the present study: tongue protrusion, labial interpositioning, and tongue pressure against the lingual surfaces of the anterior teeth.

Males and females were very similar in prevalences of the three sucking habits. As shown in Table 3, the

isolated habit of pacifier sucking appeared in a total of 48, or 30% of the 160 patients. Bottle feeding combined with pacifier use appeared in 47, or 29.38% of the children (Table 6). Tongue protrusion occurred with greater frequency than did the other two types of atypical swallowing in all the habits studied. This may explain the practice of some authors in equating atypical deglutition and interpositioning or protrusion of the tongue. We believe that atypical deglutition with labial interpositioning occurs more frequently in cases of Class II Angle occlusion with considerable overjet. Table 7 shows that 80% of the children that suck fingers or thumbs have tongue protrusion. This is in agreement with Subtelný, 1973, who relates the predominance of lingual protrusion in children with digit sucking habits.

Table 8
Ranked Occurrence of Three Oral Habits with Respect to
Three Types of Atypical Deglutition

ORAL HABIT	NO.	TONGUE PROTRUSION PERCENT	RANK
Pacifier	38	31.9	7
Bottle	7	5.9	2.5
Digit	12	10.1	4
Pacifier & Bottle	34	28.6	6
Pacifier & Digit	7	5.9	2.5
Digit & Bottle	5	4.2	1
Without Habits	16	13.4	5
Total	119	100.0	

ORAL HABIT	NO.	LABIAL INTERPOSITIONING PERCENT	RANK
Pacifier	5	23.8	5
Bottle	1	4.7	3
Digit	2	9.5	4
Pacifier & Bottle	8	38.1	7
Pacifier & Digit	0	0.0	1.5
Digit & Bottle	0	0.0	1.5
Without Habits	5	23.8	5.5
Total	21	100.0	

ORAL HABIT	NO.	TONGUE PROTRUSION AGAINST TEETH PERCENT	RANK
Pacifier	5	25.0	6.5
Bottle	2	10.0	3
Digit	1	5.0	2
Pacifier & Bottle	5	25.0	6.5
Pacifier & Digit	3	15.0	4
Digit & Bottle	0	0.0	1
Without Habits	4	20.0	5
Total	20	100.0	

Table 7 also shows that 79.2% of the children who suck the pacifier have atypical deglutition with lingual protrusion, while only 10.4% have labial interpositioning and 10.4% have atypical deglutition without protrusion. Once more, atypical deglutition with lingual protrusion predominates. All the children with combined digit sucking and bottle feeding were found to be demonstrating atypical deglutition with lingual protrusion, as can be seen in Table 7. That same table shows that 72.3% of the patients with combined bottle feeding and pacifier use presented atypical deglutition with lingual protrusion. This group once more predominates over the other two groups.

Combined digit sucking and bottle feeding co-occur with relatively low frequency with abnormal swallowing (five subjects). The low co-occurrence of pacifier use and digit sucking (10 cases) confirms our clinical observation that in the presence of pacifier use, generally you do not find concomitant digit sucking. In our sample, though, these ten children may have possibly used the pacifier before a determined age, and then afterwards acquired the habit of digital sucking; this occurs frequently in cases where the pacifier is abruptly taken from the child, against his or her will.

The isolated habit of bottle feeding appears in only ten children in our sample. The short duration of sucking sessions, that is, the small amount of time necessary for the children to drink an entire bottle of milk, perhaps does not take care of the need for sucking of the child, causing him/her to look elsewhere to satisfy that oral need. We also must consider the group of patients without oral sucking habits, consisting of 25 children. We would like to reaffirm that sucking a pacifier, in contrast with sucking a finger or thumb, allows the child to play and use the hands freely while sucking. This can occur during an indeterminate time, up until several hours. Sucking of the thumb or finger is probably interrupted more times than sucking the pacifier, by the simple necessity of the child to use the hands.

Another important aspect is the maintenance of the pacifier in the mouth without sucking, simply as something to fill the intrabuccal space. As referred to by Moses, 1987, children who really suck the pacifier are, in general, nose breathers; it is easier to eliminate the habit in these children than in children who just keep the pacifier in the mouth without sucking it. These latter children are generally mouth breathers and as such, do not succeed in closing the lips to suck the pacifier.

SUMMARY.

From this study on oral sucking habits (finger, pacifier, and bottle feeding), and of relationships between those habits and types of atypical deglutition (with lingual interposition, with labial interposition, and without interposition) in children 7, 8, 9 and 10 years we can conclude that:

1. The habit of pacifier sucking appeared more frequently than bottle feeding or digit sucking.
2. Oral habits occurred about equally in males and females whether the habits appeared individually or collectively.
3. The oral habits occurred about equally among the four age groups studied.
4. The types of atypical deglutition did not show any apparent relationship with the types of oral habits.
5. Types of atypical deglutition occurred in relatively equal amounts in children with oral habits as in children without oral habits.

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