

Pacifier use in Early Childhood and its Influence on further Development of Overweight and Obesity between 5 and 18 years Old

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Abstract

The potential effect of the use pacifier of use during the first 5 years of life on the weight of the child between 5 and 18 years of age was assessed. The nutritional status of 400 children between 5 and 18 years of age in a private paediatric practice was investigated by questioning the mother on pacifier use between one and 5 years of age. In the group that did not use pacifier, males accounted for 48%, girls for 52%, and 62.3% were overweight and 16.6% obese. In the group using a pacifier, males accounted for 53.8%, girls 46.2% and 30.7% were overweight and only 5,3% were obese. The groups were com-parable in age and sex and there were no gender differences in the use of pacifiers. The percentage of eutrophic children was significantly higher in the group who used a pacifier in relation to the one who did not. The prevalence of overweight or obesity was significantly higher in the group of children who did not use a pacifier in relation to children who used a pacifier. Both bivariate and multivariate logistic analysis, considering the use of a pacifier as a dependent variable and nutritional status, sex and age, are consistent in that only the variable nutritional status was associated with pacifier use.

Keywords: *Infants; Pre-schooler; Pacifiers; Overweight; Obesity*

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Introduction

The Czechoslovak neurologist and psychiatrist creator of psychoanalysis, Sigmund Freud, in his theories on the psychosexual development of the child, observed that infants take pleasure in sucking the mother's breast and by this same fact, they would have the tendency to take everything to the mouth. From birth to preschool, the child needs to satisfy his or her sucking reflex, the mouth being the pleasure centre of his favourite activities, sucking and biting. Based on these observations, Freud postulated his theory of psychosexual states [1].

When the infant is weaned and does not use a pacifier, he would resort to the suction of the bottle to satisfy this need and this repetitive action during the day and night would lead him to take a greater number of milk and juice bottles, increasing the daily caloric intake and consequently would facilitate overweight and obesity [2].

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Children who receive pacifiers before and after the dis-tote, would not present this need to consume a greater number of bottles, since sucking the pacifier would compensate for their need for suction. This paper raises the hypothesis that children under 5 years of age who did not use a pacifier for a sufficient time, or never used it, would give with a fixation in their oral stage, leading them to eat with greater anxiety, as established by the consequences of Freudian model.

Cochrane who relate the use of entertainment pacifier with overweight or childhood obesity. The objective of this study was to analyse the relationship between the use of the pacifier of entertainment in infants and pre-schoolers during their first 5 years of life and the subsequent development of overweight and obesity, between 5 and 18 years of age.

Subjects and Method

A descriptive, correlational study was carried out, with a cross-sectional and retrospective historical design, the evaluation being carried out in a single moment. During a 6-month period in a paediatric consultation of the private health system (Clinical Antofagasta, Antofagasta, Chile), 400 children from 5 to 18 years old were enrolled, who were evaluated their nutritional status, calculating their Mass Index Body (BMI), (kg/m^2). The BMI was taken to the Body Mass Index by age (CDC/NCHS) tables for men and women, distributed in three groups: normal (10 and 85th percentiles), overweight (85th and 94th percentiles) and obesity (percentile ≥ 95) according to WHO (National Centre for Health Statistics) and MINSAL, for the Anthropometric evaluation for children under 6 years of age and MINSAL for children between 6 and 18 years old [3]. For these effects, a digital weighing machine (Seca Model 700) with 100g precision was used, with a measuring rod with a precision of 0.5 cm. The Z score (Z score) was calculated for weight-age, height-age and weight-height, considering the NCHS tables [4].

It was also investigated for the use of pacifier, between the year of life and the 5 years of age. The data were provided by the mother at the time of the consultation, through a survey designed specifically for this work that recorded age, sex, socioeconomic level, weight in grams, height in cm, BMI percentile, nutritional status, pacifier use and time of use.

Survey attached. The use of a positive pacifier was considered, if the mother's response was affirmative, adding more time to the use of the pacifier in years and/or months, from the age of onset to the age of abandonment. Among children who used pacifiers, the average daily time was 1 to 2 hours in the morning and 2 to 3 hours in the afternoon. Children who used pacifiers only to sleep, who did not use it during the day, or those who used the breast as a pacifier for entertainment were not considered. Mothers who did not remember or doubted how long their child used a pacifier were excluded from the study.

Regarding the socio-economic status (CSE) of the children surveyed, it was obtained by asking the mothers for the occupation of the head of household and the average monthly salary, according to the GSE (Economic and Social Segmentation Group) classification [5], obtaining the distribution in the group ABC1 25%, group C2 50% and group C3 25%.

In the case of sex, pacifier use and nutritional status, tables were used; in the case of the variables age and time of use of the pacifier, the average and the standard deviation were used.

For the statistical analysis the data were entered into the SPSS v. 17.0. In the bivariate analysis, the chi-square test was used, in the variables sex, nutritional status, and use of the pacifier and when it was significant, standardized waste was used.

In the variable age and pacifier use, we used the Shapiro Wilk test to evaluate normality, the Levine test to evaluate homoscedasticity and the Mann-Whitney test to compare the average age. It was considered significant if the p-value was less than 0.05. The Z indicator was obtained in the Shapiro Wilks test, therefore, to evaluate the normality of age at the global level, only for the group that used pacifier and in the group that did not use pacifier, this test was always used.

Results

In the total sample of 400 children, it was observed that males accounted for 51.3% and females 48.7%, mean age was 8.8 ± 2.9 years (range 5-16.7 years), use of the pacifier reached 56.3%. Of the total sample, 44.5% were overweight and 10.3% were obese. In the group that used pacifiers (n = 225 children, 53.8% men and 46.2% women, mean age 8.8 ± 2.8 years, range 5-16.7 years), 64% were eutrophic, 30, 7% were overweight and 5.3% were obese (Table 1). The pacifier use time ranged from 1 to 7 years with a mean of 3.1 years and a standard deviation of 1.5 years. The gender variable was not associated with pacifier use (chi square = 1.315, p-value = 0.268) as well as age, and although they do not have a normal distribution at the global level ($Z = 7.204$, p-value <0.0000) (SW = 5.7, p-value < 0.0000), used the pacifier ($Z = 5.7$, p-value = 0.0000), if there was homoscedasticity (Levine = 1.017 ; p-value = 0,314); therefore, when comparing the mean ages between the two groups (Mann-Whitney/Z = -0.315; p-value = 0.753), there was no association between gender and pacifier use, Thus, the groups are comparable in sex and age (Table 2).

There was no normality of the variable age in the total group (Shapiro Wilks = 0.92, p-value = 0.0001), as well as in the groups that used and did not use pacifiers (Shapiro Wilks = 0.91, p-value = 0.0001 and Shapiro Wilks = 0.94, p-value = 0.0001), respectively.

When comparing the nutritional status between the two groups, it was observed that there is an association between pacifier use and nutritional status (chi square = 7.4201; p-value <0.0000). The percentage of eutrophic children is significantly higher in the pacifier group compared to children who did not use a pacifier. Also the percentage of overweight or obese children is significantly higher in the group of children who did not use a pacifier in relation to the children than in pacifiers (p-value = 0.0214 and 0.0001, respectively) (Table 3).

Nutritional status	If you used a pacifier		He did not use a pacifier		Total number	Percentage
	Number	Percentage	Number	Percentage		
Eutrophy	144	64%	37	21.1%	181	45.3%
Overweight	69	30.7%	109	62.3%	178	44.5%
Obesity	12	5.3%	29	16.6%	41	10.3%
Total	225	100.0%	175	100.0%	400	100.0%

Chi Square = 74,201; p value = 0,000

Table 1: Evaluation of the association between pacifier use and nutritional status.

Discussion

The longest time children uses pacifier, they have more protection against overweight and Obesity

This study detected a statistically significant association between the use of the entertainment pacifier between the year and 5 years of life and a lower frequency of overweight and obesity between the ages of 5 and 18 years. Both the benefits and the unfavourable effects of the use of pacifier have been described (6-27), but no bibliographical references were found in the specialized world literature, relating the use of the pacifier of entertainment, as a protection factor against overweight and obesity in the paediatric age.

According to the last National Health Survey carried out by MINSAL, 2009/2010, the results showed significant variations in the excess weight item (2003: 61%, 6,800,000 people versus 2010: 67%, 8,900,000 people). The men presented 45% of overweight and 19.2% of obesity, and the women presented 33.6% of overweight and 30.7% of obesity.

As for morbid obesity, 2003 had approximately 148,000 people and in 2010 there were approximately 300,000. At the national level, obesity reached 25.1%, distributed among men (19.2%) and women (30.7%) [28].

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Considering the explosive increase in the incidence of overweight and obesity in the infant population of Chile, it was considered necessary to investigate within the multiple causes that determine this nutritional disorder, some possible factor to control, reason why pacifier use was chosen among -tension as a factor to consider, based on the author’s personal experience.

The finding that pacifier use before 5 years of age would prove to be a protective factor to avoid or reduce the possibility of being overweight or obese after 5 years, corroborate the observations made by the undersigned, which do not have been able to be compared with other similar or equivalent works, since there are no papers in the local or international specialized literature that relate the use of the pacifier of entertainment to overweight or obesity.

The use of the pacifier in childhood is a controversial subject, and there is a diversity of opinions for and against, in all the literature dedicated to: Ambulatory Paediatrics, Odonto-pediatrics, Speech-Language Pathology and Parvular Education.

Pacifier sucking has a positive effect on metabolic expenditure by exercising the lingual and maxillary musculature, as in chewing gum [18,19]. Infants over 18 months of age who do not use a pacifier usually take a bottle of milk to sleep and if they wake up, repeat another milk bottle, which increases their caloric intake and favours “bottle caries”. The child who uses a pacifier, falls asleep sucking his pacifier and if he wakes up at night, he calms down with his use. The American Association of Dentists and the American Academy of Paediatric Dentistry recommend that pacifiers should not be worn after 4 years [7, 23]. A study conducted in Chile in collaboration with the University of Washington to investigate the influence of long-term use of a bottle, finger-licking or pacifier on language acquisition, which incorporated 128 children between 3 and 5 years of age using a test of a simplified evaluation of the phonemic processes, found an increased risk of language disorders in long-term users of breastfeeding, children with finger sucking habit, and pacifier users for three or more years [27].

It is probable, according to the findings of the present study, that pacifier suspension from the year of age is a condition that could be favoring weight gain from that age, as the caloric intake increased due to the greater number of bottles [29].

Use of the pacifier	Number of girls	% in girls	Number of children	% in children	Age Average	D.S.
Did not use	91	52.0%	84	48.0%	8.8 years	3.0 years
If you used	104	46.2%	121	53.8%	8.8 years	2.8 years
		p > 0.05		p > 0.05	p > 0.05	

Table 2: Percentage distribution by sex, average age and standard deviation, according to pacifier use.

Use of the Pacifier	% Girls	% of Children	Eutrophy	Overweight	Obesity
Did not use	52.0%	48.0%	21.1%	62.3%	16.6%
If you used	46.2%	53.8%	64.0%	30.7%	5.3%

Table 3: Percentage distribution by sex, pacifier use and nutritional status.

If using a pacifier can help prevent “21st century malaise” [30-32], although it produces maxillary dento anomalies, which can be correction with orthodontic treatment, the percentage of children who become obese at puberty may be reduced.

Conclusions

The use of the pacifier of entertainment in children during the period of their oral stage, ie before 5 years of age, would become an object to satisfy their need for suction and thus avoid the need to be taking more milk or juice bottles, or eating less or more anxiously, to satisfy their need to suck.

Children who use a pacifier would fully meet the innate requirements of the oral stage and spontaneously leave their pacifier between 3 and 5 years of age, while children who do not use a pacifier would remain with the oral stage “unfinished” and they would have a permanent fixture to have something in contact with the lips and take everything to the mouth, such as a diaper or a toy to fall asleep, rub your lips, suck your finger, eat your nails, bite, night-time bruxism, drink and eat in excess, this being the latter, which would lead them to be overweight or obese. If we evaluate the adverse effects attributable to pacifier use versus the benefits of using it, it would be easier in the future to correct open bite, correct language or treat otitis than to treat obesity and its harmful consequences. According to these preliminary findings, the use of entertainment pacifiers in early childhood may have an important protective role to prevent the later development of overweight and obesity in the paediatric age, which with the limitations, allow to suggest it as a preventive alternative of these conditions of malnutrition and its serious consequences.

Use of the pacifier	Odds ratio	Error	Z	P-value
Overweight	0,164	0,039	-7,53	0,0001
Obesity	0,107	0,042	-5,73	0,0001

Table 4: Multivariate logistic model Multivariate logistic model.

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