Original Article

"Bond for Biscuits" – A Survey to Assess Consumption of Biscuits among Children in Chengalpattu District, Tamil Nadu

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Abstract:

Aims: Biscuit is one of the oldest bakery snack items, consumed by all age groups worldwide, and one of the most consumed bakery products by children. This study aims to determine the biscuit consumption pattern of children and the knowledge of parents about the sugar content in the biscuit consumed by their children. **Materials and Methods:** A cross-sectional study was conducted among 218 parents of children. A self administered validated questionnaire survey was conducted among N = 218 parents of children, the questionnaire consists of information about the demographic profile, followed by assessment of biscuits consumption pattern among children. **Results:** A total of 218 parents participated in the study; among all the children, 117 (53.7%) children take biscuits in the evening, 118 (54.1%) reported rinsing with water after consumption, 77 (35.3%) do not have the habit of either rinsing or brushing after biscuit consumption, 125 (57.3%) parents were not aware of the sugar content of the biscuits, 168 (77.1%) parents were aware that biscuits can cause dental caries, and 50 (22.9%) were still unaware of the role of biscuits in caries. **Conclusion:** The study showed that parents' knowledge of the sugar content present in biscuits and its impact on oral health was low, and there can be a reduction in the amount of dental health problems among children by imparting diet-related oral health education to the parents and children.

Keywords: Biscuit, children, parent's knowledge, snacking pattern

Introduction

Sugar is a simple carbohydrate that belongs to a class of chemically related sweet-tasting substances. It is available in many different forms. The three main types of sugars are sucrose, lactose, and fructose. Even though cells need glucose to survive, excess can cause health problems. The average sugar intake in adults is 30 g/day and 19 g for 4-6 years old. The American Health Association says that added sugars contribute zero nutrients and are empty calories "that can lead to extra pounds, or even obesity, thereby reducing heart health."[1]

Childhood obesity is one of the many public health concerns nowadays as it has been identified to increase the risk of getting other diseases in adulthood, including cardiovascular disease, Type 2 diabetes, hypertension, and some cancers.[2] Biscuits are the most favorite food items of children and one often presented to them as a token of love and affection from their parents and relatives. Consumption of biscuits is not limited to children alone; adults do consume biscuits as well. The common basic ingredients of biscuits are flour, fats, sugar, aerating chemicals, and milk or water.[3]

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Dental caries, with the prevalence as high as 60%–80% in children, is a major oral health problem in India, and diet poses a major role in the development of dental caries.[4] The dietary factors include the amount of sugar consumed, sugar concentration of food, physical form of carbohydrate, oral retentiveness (length of time teeth is exposed to reduced plaque pH), frequency of eating meals and snacks, and length of the interval between eating and sequence of food consumption.[5] Biscuits being a commonly preferred snack among children, it meets the abovementioned criteria toward the development of dental caries. Hence, the purpose of the study was to assess the consumption

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pattern of biscuits among children from Chengalpattu District, Tamil Nadu.

Materials and Methods

A cross-sectional descriptive study was conducted from January 2021 to June 2021, among outpatients reporting to Asan Memorial Dental College and Hospital with a sample size of $n = 218$ (95% confidence interval with 5%-α error). The sample size was calculated using Epi Info based on the pilot study data. Prior to the start of the survey, approval was obtained from the Institutional Scientific Review Board, Asan Memorial Dental College and Hospital. Inclusion criteria consisted of parents of children without any developmental, physical, and mental abnormalities, and parents of children who are living in hostel are excluded.

The study instrument consisted of a self-administered questionnaire; it was pilot tested and validated in the Department of Public Health Dentistry, Asan Memorial Dental College and Hospital prior to the survey.

Part-1 of the questionnaire included demographic questions related to the child's age and gender. Part-2 of the questionnaire included questions about the type, number, frequency, and brand of biscuits consumed by the children, and Part-3 of the questionnaire included questions such as the parent" knowledge and awareness on sugar content, role of biscuits in dental caries, and history of dental attendance of the children. Statistical analysis was performed using the IBM, SPSS Version 23 (Chicago, USA), and Chi-square test was used to assess the biscuit consumption pattern across the age groups and gender.

Results

A cross-sectional descriptive study was conducted among 218 mothers of children reporting to the Asan Memorial Dental College and Hospital, Chengalpattu, to assess the biscuit consumption pattern among their children. Table 1 depicts the distribution of the study subjects according to age: 130 (59.7%) parents of children aged between 3 and 8 years contributed to majority of the study population and 123 (56.4%) of the study subjects were female children [Table 2].

Table 3 shows that 188 (86.2%) children like to consume biscuits, which is six times more than that of the children who do not like to have biscuits ($n = 30$ [13.8%]). Table 4 depicts the preferred choice of the type of biscuits. The results showed nearly an even distribution (58 [26.6%]) cream biscuits, (54 [24.8%]) cookies, (51 [23.4%]) plain biscuits, and (55 [25.2%]) any of the above biscuits.

Table 5 depicts the biscuit consumption pattern and food consumption among children, majority of children (129 [59.2%]) take biscuits as between meal snacks. Table 6 depicts the preferred snacking time for the consumption of biscuits, (117 [53.7%]) children take biscuits in the evening followed by (67 [30.7%]) in the morning and least consumption of biscuits was seen in the night (8 [3.7%]). Table 7 depicts the quantity of biscuits consumption among children; (150 [68.8%]) children consume 1–5 biscuits per day, (58 [26.6%]) children consume 5-10

Table 1: Distribution according to age

Age (years)	Frequency (%)
<3	51 (23.4)
3-5	66 (30.3)
6-8	64 (29.4)
9-12	37 (17.0)
Total	218 (100)

Table 2: Distribution according to gender

Gender	Frequency (%)
Male	95 (43.6)
Female	123 (56.4)
Total	218 (100)

Table 3: Does your kids like to have biscuits?

Have biscuits	Frequency (%)
Yes	188 (86.2)
No	30 (13.8)
Total	218 (100)

Table 4: Preferred choice of type of biscuits

Choice of biscuit	Frequency (%)
Plain	51 (23.4)
Cream	58 (26.6)
Cookies	54 (24.8)
Any of the above	55 (25.2)
Total	218 (100)

Table 5: Biscuit consumption pattern and food consumption among children

Biscuit snacking pattern	Frequency (%)
Along with meal	40 (18.3)
After the meal	49 (22.5)
Between the meal	129 (59.2)
Total	218 (100)

Table 6: Preferred snacking time period to have biscuits?

Time of day	Frequency (%)
Morning	67 (30.7)
Afternoon	26 (11.9)
Evening	117 (53.7)
Night	8 (3.7)
Total	218 (100)

biscuits per day, and (10 [4.6%]) children consume more than 10 biscuits per day.

Table 8 depicts the habit of cleaning mouth after consumption of biscuits, (118 [54.1%]) reported rinsing with water after consumption, followed by 23 (10.6%) children who reported brushing the teeth after biscuit consumption and (77 [35.3%]) do not practice either rinsing or brushing which hay have deleterious consequences on the teeth.

Table 9 shows the parental awareness of the "sugar" content in the biscuits; majority of the parents 125 (57.3%) were not aware of the sugar content of the biscuits, and only 93 (42.7%) were aware of "sugar" in the biscuits. However, 168 (77.1%) parents were aware that biscuits can cause dental caries and 50 (22.9%) were still unaware of the fact that consumption of biscuits causes caries [Table 10].

Many brands of biscuits are available in the market: 105 (29.7%) children consumed Britannia brand followed by 66 (18.6%) who consumed ITC Sunfeast brand of biscuits. Other common brands of biscuits consumed include Parle (16.1%), Cadbury (15.5%), Unibic (9%), and others (11%) [Table 11].

Table 12 depicts the history of dental attendance and treatment among children: 117 (53.7%) had no history of dental treatment and 101 (46.3%) reported a history of dental attendance or treatment for their children.

Discussion

Childhood is a key period where children grow and develop. It is also an important time to build food preferences and establish healthy eating patterns. Dietary patterns of children aged 3–12 years generally consist of three main meals and some in-between meal-eating occasions. Having a snack in-between main meals has been part of local habits for a long time and holds a special place in children's eating habits.[6] Biscuits have been a common snack consumed by children, and the number of children who like to consume biscuits is more than triple the number who do not like to have biscuits.

In the assessment of the parental awareness of the "sugar" content in the biscuits, majority of the parents were not aware of the sugar content of the biscuits, and only few were aware of "sugar" in the biscuits. However, parents were aware that biscuits can cause dental caries, but 50 (23%) children were still unaware of the fact that consumption of biscuits causes caries. Lack of parental knowledge over the sugar content in the biscuit also contributes to dental caries. Hence, the parent as well as the children must be reinforced to have more nutritional food by replacing the biscuits with fruits or vegetables which will indirectly help in reducing the overall sugar intake for better oral health and overall health status in children. However, the data collected from the current study reports the parents are not showing much concern about the oral hygiene measures and routine dental checkups.

On an average, children were eating three meals plus two snacks per day, and this did not vary with age or body mass index group or between term-time and the school holidays.

Table 7: Quantity of biscuits consumed per serving among children

Quantity/serving	Frequency (%)
1-5	150 (68.8)
6-10	58 (26.6)
>10	10 (4.6)
Total	218 (100)

Table 8: Habit of cleaning mouth after consumption of biscuits

Habit	Frequency (%)
Rinsing	118 (54.1)
Brushing	23 (10.6)
None of the above	77 (35.3)
Total	218 (100)

Table 9: Do you know that there is "sugar" in the biscuits consumed by the children

Sugar	Frequency (%)
Yes	93 (42.7)
No	125 (57.3)
Total	218 (100)

Table 10: Do you know biscuits cause caries?

Caries	Frequency (%)
Yes	168 (77.1)
No	50 (22.9)
Total	218 (100)

Table 11: Brand of choice of biscuits among children

Brand	Frequency (%)
Britannia	105 (29.7)
Parle	57 (16.1)
Unibic	32 (9)
Cadbury	55 (15.5)
Sunfeast	66 (18.6)
Others	39 (11)
Total	354 (100)

Table 12: History of dental treatment

Dental visit	Frequency (%)
Yes	101 (46.3)
No	117 (53.7)
Total	218 (100)

Various studies investigated children's meal patterns conducted between 2012 and 2014 in nine countries (France, Spain, Germany, the United Kingdom, the United States, Russia, China, Brazil, and Middle-East countries) on a sample of 1000 adults in each country).[7] The study shows that even if the time and composition of eating occasions differ from one country to another, the pattern of three main meals (breakfast, lunch, and dinner) is predominant in many countries. In the same study, 90% of people surveyed said they eat snacks in-between meals at least once per day.

In the current study, children showed changes in their eating pattern due to consumption of biscuits especially during breakfast. It is assumed that the mothers who have true nutritional knowledge prefer the right foods for themselves and for their children. Sunwoong *et al*. stated that there is a correlation between nutritional knowledge of mothers and their nutrition status.[8] The present study shows that female children are more likely to have biscuits.

Conclusion

The present study highlights that there is still a lack of appropriate knowledge on the nutritional sugar content present in biscuits and its impact on oral health among parents, therefore the children must be enforced to have nutritious foods and parents must keep a control on the amount of biscuits their child consumes.

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Conflicts of interest

There are no conflicts of interest.

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