Self-Reported Compliance with Preventive Measures Among Regularly Attending Pediatric Patients

Malka Ashkenazi, D.M.D.; Rafaela Cohen, D.M.D.; Liran Levin, D.M.D.

Abstract: This study evaluated the compliance with preventive measures of regularly attending pediatric patients. Children attending at least four consecutive recall appointments in a pediatric dental clinic were interviewed regarding their compliance with the previously recommended preventive measures. During each recall appointment, participants and/or their parents received oral and written instructions regarding the preventive measures. Caries experience index was calculated as sum of decayed, missing, and filled surfaces of participants' primary and permanent dentition. Files of 496 children were analyzed. Mean age was 9.0 ±4.5 years. Mean caries experience index was 7.0 ±9.0. Participants reported eating more than six times a day (22.8 percent) and consuming in between meals water only (54.4 percent), noncarbonated beverages (23.2 percent), carbonated beverages (13.1 percent), and a combination of both beverages (9.3 percent). Children reported brushing their teeth at least once a day (94.4 percent), rinsing their teeth once a day (11.9 percent), flossing once a day (5.6 percent), and brushing once a week regularly with highly concentrated fluoride gel (12.6 percent). No statistical differences were found in compliance measures within two consecutive dental recalls. Caries experience was correlated with regular meals ($p=0.01$), drinks between meals ($p<0.001$), and toothbrushing frequency ($p=0.01$). In conclusion, compliance with preventive measures is low among regularly attending pediatric patients. In high caries risk patients, a frequent preventive intervention might be warranted by dental practitioners.

Dr. Ashkenazi is a Lecturer, Department of Pediatric Dentistry, The Maurice and Gabriela Goldschleger School of Dental Medicine, Tel-Aviv University, Tel-Aviv, Israel; Dr. Cohen is a graduate student, Department of Pediatric Dentistry, The Maurice and Gabriela Goldschleger School of Dental Medicine, Tel-Aviv University, Tel-Aviv, Israel; and Dr. Levin is a Clinical Instructor, Department of Oral Rehabilitation, The Maurice and Gabriela Goldschleger School of Dental Medicine, Tel-Aviv University, Tel-Aviv, Israel and Unit of Periodontology, Department of Oral and Dental Sciences, Rambam Medical Center, Haifa, Israel. Direct correspondence and requests for reprints to Dr. Malka Ashkenazi, Department of Pediatric Dentistry, School of Dental Medicine, Tel-Aviv University, Tel-Aviv, 69978, Israel; 972-3-6409254 phone; 972-3-9326075 fax; shkenazi@post.tau.ac.il.

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An important component in maintaining dental health and reducing individual dental risk is meticulous practice of several daily home preventive measures.[1] These include avoiding frequent consumption of carbohydrates between meals, toothbrushing twice a day with fluoridated dentifrices, and, from age eleven, flossing once a day. For high caries risk children, rinsing with fluoride mouthwash and/or brushing with a high concentration of fluoride gel once a week are also recommended.

Frequent consumption of food containing fermentable carbohydrates, including carbonated beverages (more than six per day), is associated with increased demineralization of tooth substance, decreased remineralization, and increased caries experience.[2,3] The role of eating frequency in the development of carious lesions has been demonstrated with particular clarity by the provision of meals of known weight for known periods of time and at variable frequency by a programmed feeder.[4]

Duration of demineralization following fermentable carbohydrate consumption depends on the presence, depth, and age of the accumulated plaque. Stephan and Miller[5] have shown that, after rinsing with sucrose solution, the pH of the plaque dropped within three minutes from 6.5 to 5.0 and remained at that level for forty minutes. However, after cleaning the teeth, no decrease in pH was registered. In old plaque (several days), the decrease in pH could continue for several hours.[3] Moreover, mineral loss from an enamel section with an artificially formed caries lesion covered with thick plaque was twice as large as that covered with thin plaque.[6] Dijkman et al.[7] have shown that mineral loss increased by about 50 percent in an enamel lesion in a nonbrushing group after three months, did not change statistically in brushing with

a nonfluoridated dentifrice, and decreased about 40 percent in brushing with a fluoridated paste.

Brushing at least twice a day is recommended to prevent accumulation of old pathogenic plaque. Toothbrushes should be replaced regularly before bristle wear becomes so excessive that it decreases the effectiveness of plaque removal.[8] Parents with young children (up to seven years old), who lack the ability to effectively brush, should brush their children's teeth. Over the age of eleven years, children should have sufficient eye-hand coordination to brush by themselves and should also be instructed to floss their teeth to remove proximal plaque not removed by the toothbrush.

Toothbrushing combined with fluoridated toothpaste is recommended to enhance the remineralization process induced by saliva.[9] The benefits and safety of fluorides in caries prevention are well known.[10-11]

Daily fluoride mouth rinsing and a highly concentrated fluoride gel (12,500 ppm fluoride ion) once a week are recommended to patients with a moderate to high risk of caries development, such as high caries rate with a high concentration of *Streptococcus mutans* in saliva, patients under orthodontic treatment, individuals with decreased amounts of saliva and unbalanced nutrition, or patients unable to clean their teeth. Topical fluoride products, e.g., fluoride rinsing or gels, can decrease caries development by 30 percent.[12]

In spite of the prime importance of these recommendations for daily home preventive measures, only a few studies evaluated the compliance of pediatric patients and had conflicting results.[13-17] Significant improvement was reported in twice-a-day toothbrushing one year following dental treatment under intravenous sedation.[17] In contrast, oral health instruction for Danish adolescents did not induce change in their oral health habits after one year, although it did slightly increase their awareness of the importance of preventive dentistry.[13] In a study conducted in Salford, North-West England, 58-78 percent of the children brushed their teeth twice a day with fluoridated toothpaste,[16] compared to another study in which 37-60 percent of the children in the same area brushed their teeth twice a day.[15] Compliance with dental flossing was even lower.[14,18,19]

Eckersley and Blinkhorn[16] studied the variables associated with compliance of parents of three-year-old children. Of the 241 parents, 8 percent claimed to have modified their children's oral health habits as a result of the advice they were given. Parents from deprived areas (41 percent) were more inclined to change their children's oral health habits than those from nondeprived areas (22 percent) after receiving dental health advice. Similarly, symptomatic attendees (61 percent) were more likely to change than asymptomatic attendees (24 percent) ($p<0.001$).

There are no previous studies that have evaluated the compliance of pediatric patients attending regular dental treatment. This population is believed to have good compliance since they visit the dental clinic on a regular basis. However, this assumption has not been evaluated.

The aim of our study was to evaluate the compliance of pediatric patients receiving regular dental treatment, following oral and written basic instructions in the previous appointments regarding preventive measures recommended by their dentists; to correlate the caries experience to the different parameters of patient compliance; and to study the effect of consecutive dental examinations on the compliance of these patients.

Methods

Children aged two to eighteen years who received regular examinations in a pediatric dental clinic from October 2002 to December 2004 participated in the study. Only children who regularly attended at least four consecutive recall appointments in six- to twelve-month intervals were included. Medically compromised patients were excluded. During each recall appointment, participants and/or their parents received oral and written instructions regarding preventive measures the child needed to practice until the next periodic examination. Instructions and explanations for the recommended preventive measures were given by the dentist (MA). At the examinations, children and their parents were interviewed regarding the present status of the child's compliance with the preventive measures. Interviews were completed before the clinical examinations. In many cases, patients reported that, several months after the previous recall that had improved their compliance, they reverted to their old habits. Therefore, patients' compliance was defined only when the patient complied with the recommended preventive measures at the time of the recall. The categorization of children into groups, as described below for the compliance factors to be measured, was based on information derived from the interviews. A structured form was designed to

collect demographic data, such as patient's age and gender.

Caries experience index was calculated for each participant according to dental clinical and radiological examinations. The clinical examination was performed under artificial light using a front surface dental mirror and compressed air. The objective was to evaluate the influence of compliance on caries experience in children with primary, mixed, and permanent dentition. To overcome bias due to primary decayed/missing/filled teeth exfoliation, the sum of all previous caries experience was evaluated, including decayed, missing, and filled surfaces of primary and permanent dentition.

Patients were instructed not to eat more than six meals a day. The patients and/or their parents were asked whether they usually ate more or less than six meals a day, not including soft drinks.

Patients were instructed to drink only water between meals, but were allowed carbonated, noncarbonated, or milk beverages with meals. Therefore, they were interviewed only about their habits between meals. Patients were categorized into four groups: drinking only water or diet beverages, drinking noncarbonated beverages (with or without water), drinking carbonated beverages (with or without water), and drinking a combination of noncarbonated and carbonated beverages.

Children and/or their parents were instructed to brush the child's teeth twice a day: in the morning before or after breakfast, and in the evening, after supper. Children were asked whether they brushed their teeth in the morning and in the evening. If yes, they were asked how many days a week they accomplished their toothbrushing.

Parents with children younger than seven years were instructed to brush their children's teeth regularly. Over the age of seven years, children were instructed at the dental clinic (on a model and in their mouth) how to properly brush. Children who showed good coordination were instructed to brush their teeth by themselves while those without capabilities were instructed to brush their teeth under their parents' supervision. Children were categorized into three groups: children whose parents brushed their teeth, children whose parents supervised or helped with the brushing, and children who independently brushed their teeth.

Parents were instructed to adjust the fluoride-ion concentration in the toothpaste with the children's age. For children up to four years, the recommended fluoride-ion concentration was limited to 500 ppm F^-, since these children tend to swallow most of the toothpaste and the risk of fluorosis is relatively high. For children aged four to seven years, the recommended fluoride-ion concentration was 1000 ppm F^-, and over the age of seven years, parents were instructed to use adult toothpaste (1200-1450 ppm F^-) for their children. Oral instructions were given to parents on how to verify the F^- concentration in toothpaste together with a written list of several toothpastes with their fluoride concentration. Children were categorized into three groups: using correct, lower, or higher concentrations of F^- in their toothpaste than recommended. Children were also categorized by those who replaced their toothbrushes every three months or less, every four to six months, or every seven months or more.

Children diagnosed as medium to high risk for caries development were urged to rinse their teeth daily with a fluoride mouthrinse. To increase compliance, children were given a taste of several merchandized fluoride rinses and told to buy the one they thought had the best taste. Compliance of these children with the daily rinses was evaluated and recorded as days per week (zero to seven) at the next appointment.

Children diagnosed as medium to high risk for caries development were urged to brush their teeth once a week with highly concentrated fluoride gel, Elmex gel (GABA Ltd., Switzerland), which contains 12,500 ppm F^-. These children's use of Elmex gel was evaluated and recorded as number of weeks per month (zero to four) at the next appointment.

Children over the age of eleven years without fixed orthodontic appliances were instructed to floss their teeth once a day. Their compliance was evaluated and recorded as days per week (zero to seven) at the next appointment.

Compliance with the same preventive measures at the two last consecutive appointments was also analyzed. All compliance measurements were recorded during periodic check-up appointments. Compliance was defined according to the behavior at the time of recall visit. The Ethics Committee of Tel Aviv University approved the study.

Data were analyzed using SPSS 10.0 (SPSS, Inc., Chicago, IL, USA). Pearson's chi square test, linear by linear association was used for evaluating the relation between age groups or gender with several compliance measures, such as who brushed the child's teeth, kind of toothpaste used, type of drink between meals, and frequency of meals per day. ANOVA, Tukey test, chi square, and Pearson correlation 2-

tailed (as needed) methods were used to evaluate the relationship between DMFS or age groups and various compliance measures and gender. Mann-Whitney test was used to evaluate the effect of age on brushing time (morning, evening) and on frequency of brushing per week. Paired T-test was used for analysis of compliance of each patient with preventive measures at two consecutive recall visits.

Results

Files of 496 children (47 percent boys) who attended regular examinations in a private clinic of one certified pediatric dentist (MA) were analyzed. Mean age was 9.0 ±4.5 years (girls 9.3 ±4.6, boys 8.6 ±4.4, p=NS).

Eating less than six times a day was reported by 375 (77.2 percent) children, and 111 (22.8 percent) reported eating more than six times a day (snacks between meals). Only ten (2 percent) did not respond.

Drinking only water between meals was reported by 270 (54.4 percent) children; 115 (23.2 percent) reported drinking noncarbonated drinks; sixty-five (13.1 percent) reported drinking carbonated beverages; and forty-six (9.4 percent) reported drinking a combination of noncarbonated and carbonated beverages. There was a significant increase in consumption of noncarbonated and carbonated beverages with age (see Table 1, p=0.001). Children who reported drinking carbonated (80 percent) or a combination of noncarbonated and carbonated beverages (67 percent) were over the age of seven years.

A high percentage of the children brushed their teeth at least once a day (94.4 percent). Toothbrushing seven days a week in the morning was reported by 371 (75 percent) children, and 352 (71 percent) brushed in the evening. Forty-one children (8.3 percent) did not brush their teeth at all in the morning, and forty-eight (9.7 percent) did not brush in the evening (see Table 2). Over half—286 (57.7 percent)—brushed regularly twice a day (fourteen times a week). Only four (0.8 percent) did not brush at all. No statistical differences were found in the frequency of toothbrushing in the evening among children at different age groups (<four, four-six, seven-twelve, ≥thirteen) or between genders. However, children aged <four years tend to

Table 1. Distribution of the children according to their drinking habits

Age (y)	Water Number (%)	Noncarbonated Beverages Number (%)	Carbonated Beverages Number (%)	Noncarbonated and Carbonated Beverages Number (%)	Total Number (%)
4>	43 (71.7)	12 (20.0)	1 (1.7)	4 (6.7)	60 (100)
4-6	72 (53.7)	39 (29.1)	12 (9.0)	11 (8.2)	134 (100)
7-12	120 (54.8)	48 (21.9)	31 (14.2)	20 (9.1)	219 (100)
13<	35 (42.2)	16 (19.3)	21 (25.3)	11 (13.3)	83 (100)
Total	270 (54.4)	115 (23.2)	65 (13.1)	46 (9.3)	496 (100)

p=0.001 (linear by linear association)

Table 2. Compliance of the study population with toothbrushing, mouthwash, and flossing

Compliance Days/Week	Morning Toothbrushing Number (%)	Evening Toothbrushing Number (%)	Mouth Rinsing Number (%)	Flossing Number (%)
0	41 (8.3)	48 (9.7)	124 (80)	87 (81.3)
1	6 (1.2)	4 (0.8)	3 (2)	8 (7.5)
2	12 (2.4)	12 (2.4)	2 (1)	2 (1.9)
3	15 (3.0)	21 (4.3)	6 (4)	2 (1.9)
4	14 (2.8)	16 (3.2)	1 (1)	0 (0.0)
5	12 (2.4)	25 (5.1)	0 (0)	1 (0.9)
6	24 (4.9)	17 (3.4)	0 (0)	1 (0.9)
7	371 (75.0)	352 (71.1)	19 (12)	6 (5.6)
Total	495 (100)	495 (100)	155 (100)	101 (100)

brush their teeth in the morning less frequently than children aged ≥thirteen years (p=0.017).

Distribution of the children according to who brushed their teeth in different age groups is summarized in Table 3. Up to the age of seven years, 23.4 percent brushed their teeth without any assistance from their parents. Over the age of seven years, 90 percent brushed their own teeth (p<0.001). Girls tended to brush by themselves more often than boys: 70.1 percent vs. 57.1 percent (p<0.001).

Distribution of the children according to fluoride concentration in their toothpaste in the different age groups is summarized in Table 4. Up to age four years, 37 percent used a higher than recommended fluoride concentration. Over the age of seven years, 24 percent used a lower than recommended fluoride concentration in their toothpaste.

Less than half of the children—220 (44.4 percent)—replaced their toothbrush every three months or less, 200 (40.3 percent) every three to six months, and seventy-two (14.5 percent) less than twice a year.

Of the 155 children instructed to use a fluoride rinse, 124 (80 percent) reported no rinsing at all, nineteen (12.3 percent) rinsed regularly once a day, and twelve (7.7 percent) rinsed sporadically, one to four days a week (see Table 2).

Of the 206 children instructed to brush once a week with highly concentrated fluoride gel (Elmex gel, 12,500 ppm F), 176 (85.4 percent) did not brush at all with Elmex gel. Only twenty-six (12.6 percent) brushed regularly once a week with Elmex gel, and four (1.9 percent) brushed one to two times a month with Elmex gel.

Of the 101 children instructed to floss their teeth once a day, eighty-seven (81.3 percent) did not floss at all. Six (5.6 percent) flossed regularly once a day, twelve (11.9 percent) one to three days a week, and four (4 percent) flossed three to six days a week (see Table 2).

The mean caries experience index was 7.0 ±9.0. This score was correlated with regular meals (p=0.01), drinks between meals (p<0.001), and toothbrushing frequency (p=0.01).

No statistical differences were found in all compliance measures within the two consecutive dental recalls.

Discussion

Compliance is defined by the extent of a patient's behavioral adjustment and their willingness to comply with medical treatment, maintaining a correct diet, or changes in lifestyle recommended by any health care provider.[3] Treatment with medication twice a day has a higher compliance than three times a day (70 percent and 52 percent, respectively) or four times a day (40 percent). Compliance decreases as treatment becomes more complicated (different types of drugs). Long-term compliance with medical drugs is lower than short-term.[20] Lack of compliance in

Table 3. Distribution of children according to who brushed their teeth, in different age groups

Age (y)	Parents (%)	Child and Parents (%)	Child (%)	Total (%)
4>	44 (76)	8 (14)	6 (10)	58 (100)
4-6	56 (42)	39 (29)	39 (29)	134 (100)
7-12	14 (6)	15 (7)	188 (87)	217 (100)
13<	1 (1)	0 (0)	82 (99)	83 (100)
Total	115 (23)	62 (13)	315 (64)	492 (100)

p<0.001 (linear by linear association)

Table 4. Distribution of the study population according to age and concentration of fluoride in their toothpaste

Age (y)	500 ppm (%)	500-1000 ppm (%)	1200-1450 ppm (%)	Total (%)
4>	37 (63)	14 (24)	8 (13)	59 (100)
4-6	25 (19)	76 (58)	30 (23)	131 (100)
7-12	9 (4)	42 (19)	165 (77)	216 (100)
13<	0 (0)	1 (1)	82 (99)	83 (100)
Total	71 (15)	133 (27)	285 (58)	489 (100)

medicine is estimated to be 92 percent in short-term treatments[21] and 50 percent in chronic diseases.[22] Compliance is reduced with medical improvement of the patient's health.

The basis for maintaining and improving oral health is compliance with dental preventive measures. Unfortunately, in medicine and dentistry, achieving compliance is a difficult challenge.[21] Dental literature is scarce regarding compliance in pediatric patients with preventive measures, especially among regularly attending pediatric patients. In our study, compliance with daily and weekly home preventive measures, such as rinsing, flossing, and use of a high concentration of fluoride gel, was limited (5.6-12.6 percent), although patients and/or their parents received oral and written instructions regarding the importance of these measures. Furthermore, consecutive dental examinations, associated with repeated reinforcement, did not significantly increase patient compliance.

These results are in agreement with Honkala et al.,[23] who found 14 percent compliance with fluoride gel among Finnish youth. Fluoride tablets and rinses were rarely used at home despite dental health education. In our study, lower compliance (5.6 percent) was also reported for regular dental flossing. These results are similar to those of others who found 7.7-10 percent compliance with flossing among Israeli adults[18,19]—significantly lower than a survey of adults in the United States that found 41 percent floss at least once daily.[14] The minor discrepancy between our study (focusing on children) and the other studies (focusing on adults) may be attributed to the age difference of the population studied. In our study, eleven-year-old children were given instructions on how to floss their teeth. At this age, coordination is more difficult, and motivation to look good may be lower than that of adults and adolescents. Nevertheless, the 12 percent compliance with daily rinsing, although very low, was still higher than that reported by Honkala et al.,[23] who found that only 1 percent of the children asked whether they performed daily rinses gave a positive response. In our study, only the children instructed to use daily rinses were interviewed. Also, children were exposed to different tastes of rinses, which may slightly increase their compliance with daily rinsing. Honkala et al.[23] asked youngsters without referring to the question whether they were instructed by their dentists to rinse. Nevertheless, compliance remains too low.

To increase compliance, further studies are warranted to determine the reason for noncompliance among children. In our study, compliance was high (94.4 percent) in children who brushed with fluoridated toothpaste. Interestingly, although brushing in the evening was explained to be the most important time, the distribution of children who reported brushing regularly in the morning and evening was equivalent. This is in accordance with Bakdash,[14] who found that 98 percent of the adults in the United States brush at least once daily, and with Busuttil Naudi et al.,[24] who found that 90 percent of the children in Scotland used fluoridated toothpaste, 73 percent brushed regularly twice a day, and 5 percent never brush their teeth. The variable associated with compliance with toothbrushing was studied by Hodge et al.,[25] who found that the only factor contributing to regular brushing was basic knowledge about the effect it had on dental disease. In our study, all parents and patients received oral and written explanations about dental diseases, which could explain the high compliance of the study population with toothbrushing.

A correlation was found between regular toothbrushing and caries experience, which may be attributed to the fact that all of the children used a fluoridated dentifrice. These results are in accordance with Busuttil Naudi et al.[24] and Jones et al.,[15] who found that compliance with brushing was statistically correlated with the level of caries risk, i.e., 60 percent of parents of children with low caries risk compared with 37 percent with high-caries toddlers reported brushing their children's teeth twice daily with fluoride toothpaste. In our study, the fluoridated dentifrice was probably the most important source of fluoride exposure. The exceptionally high compliance with using fluoridated toothpaste could be attributed to the fact that most dentifrices sold in Israel contain fluoride. This guarantees a high probability of fluoridated dentifrice use when brushing. Furthermore, toothbrushing and fluoridated dentifrices are encouraged by advertisements on television.

A high compliance was also found in restricting the number of meals per day, a factor that correlated with caries experience. Three-fourths of the children ate less than six times a day, and slightly more than half drank only water between meals. The high compliance with this preventive measure may be attributed to unawareness of eating between meals or that most children are at school nearly all day or engaged in other activities. Similar results regarding a positive relationship between number of meals per day and caries experience have been reported. Jones et al.[15] found that the frequency of sugar intake (10.5 episodes) was higher in children in a high caries community compared to a low caries

community, and Marshal et al.[26] found that higher snack and daily total eating events increased caries risk ($p<0.05$). These results are in accordance with the results of our study.

Drinking carbonated and noncarbonated drinks between meals was also correlated with caries experience, and children from the age of four years tended to increasingly drink these beverages between meals. These results are in accordance with Vanobbergen et al.,[27] who reported that between-meal consumption of sugared beverages increased both risk and extent of caries in seven-year-old children. However, in contrast to our study results, Marshall et al.[26] and Heller et al.,[28] who evaluated the effect of drinks on caries in children (exposed to fluoridated water), found that consumption of 100 percent juice, juice drinks, or soda pop at snacks significantly increased caries risk, especially in people over the age of twenty-five years. However, the cariogenicity of beverages was not associated with the timing of exposure or with primary tooth caries in children aged two to eleven years.

The discrepancy between studies could be related to several variables. In the study of Marshall et al.,[26] the number of meals per day was defined as three, and every other consumption was defined as a snack. In contrast, in our study the number of meals was defined as six, and only children who reported drinking between these six meals were classified as drinking between meals. This definition might significantly decrease the number of children classified as drinking between meals and highlight only the children who consumed beverages between meals. Moreover, Heller et al.[28] evaluated the number of exposures between meals per day; in contrast, in our study we referred only to dichotomic evaluation, e.g., drinking or not drinking between meals. Therefore, it is impossible to compare these studies. This factor is important since the frequency of consumption of carbonated and noncarbonated beverages is also influenced by regional temperature, which is quite high in Israel. Moreover Marshall et al.[26] and Heller et al.[28] assessed the DMFS only by visual and tactile examination, whereas in our study, the caries experience was evaluated by clinical and radiographic examinations. Thus, caries lesions, particularly proximal lesions, could have been underdiagnosed. Another factor is that, in our study, most of the population consumed nonfluoridated water, and thus the fluoride in the toothpaste was probably the main source of fluoride exposure. Frequent exposure to fluoridated water may decrease the deterioration effect of consuming beverages. Moreover, Heller et al.[28] analyzed data collected from 1988 to 1994. Since then, consumption of sugared soda has greatly increased, and the composition of the sweeteners or additives in the product is probably different. Notwithstanding that, during dietary consultation, pediatric dentists should emphasize the importance of refraining from drinking noncarbonated and carbonated beverages between meals.

Surprisingly, low compliance with daily rinsing and/or flossing, weekly usage of a high concentration of fluoride gel, and replacing toothbrushes was found in regularly attending pediatric patients who received oral and written instructions and explanations for the recommended preventive measure during each recall visit. Compliance was not statistically improved in further consecutive recall visits. A patient's level of knowledge, attitude, or behavior does not necessarily change when information is provided.[29] The complex relationship governing attitudinal and behavioral change is the primary reason why many simple knowledge-based health education programs fail to produce discernible modifications in an individual's lifestyle. A patient is unlikely to adopt a new mode of behavior that does not conform to the beliefs of the family and peer groups. It should be remembered that oral hygiene is more than a habit; it is a culture.

Our study has several limitations. Dietary data were reported by the parents and the child and therefore were dependent on their ability to remember their previous month's diet, which may not necessarily reflect their actual consumption. Moreover, patients usually tend to report higher compliance to satisfy their dentists. Nevertheless, many preventive measures had low compliance. Since this study analyzed data from personal examination, the parents, in recall visits, were motivated to involve the dentist in an effort to improve their children's compliance. Parents usually admonish their children for noncompliance and increase the accuracy of their reports. Data were based on consumption over several months and were potentially more representative of the person's usual intake than the single day recording in the twenty-four hours. Another limitation was that the frequency of food and drink per day could not be recorded, but used only dichotomy analysis. Both methods have limitations, but both are considered valid to describe the diet of population groups in a survey.[30]

Compliance depends on macro- and micro-components. The macrocomponents are thoughts, attitudes toward disease and treatment, motivation, social environment, socioeconomic class of the patient, and the ability to understand, memorize, and follow instructions. For example, during dietary

instruction, the dentist should be aware of the strong social forces that encourage carbohydrate consumption and therefore be prepared to give constant reinforcements to both the child and parents and should not be discouraged when behavioral changes do not immediately occur.[31,32]

Attitudes toward dental care, such as anxiety, can have negative effects on home care. Children with dental phobia tend to avoid dental visits and do not see good oral hygiene as a way to avoid the need for restorative dental treatment.

Microcomponents are part of the communication between dentist and patient and are extremely important.[33,34] The dentist should adopt a friendly approach to improve patient satisfaction. Effective communication will not be achieved and patients are less likely to ask questions and be compliant when they perceive a false sense of superiority by the clinician.[35] It is important that the dentist/clinician be an active listener to what the patient has to say.[36] The clinician who can rephrase and repeat what has been said, for clarification, assures the patient that the clinician has their full attention. Compliance may be improved by simplifying instructions to patients, accommodating patient needs, improving communications, and giving positive rather than negative reinforcement,[36] as well as stressing the need for maintenance before and during active treatment.[37] Patients should also take an active role in this relationship by expressing their concerns with problems regarding procedures, products, etc.[32]

It should be emphasized that, when dealing with compliance among pediatric patients, usually their compliance depends on their parents or guardians as well. The child cannot always understand the importance and consequences of the treatment or the learned habits that can negatively influence compliance.[20] It is advisable that family members or peers provide necessary secondary reinforcement.

Conclusions

Among regularly attending pediatric patients, compliance was low with certain preventive measures, such as flossing daily, fluoride rinsing, replacing toothbrushes, and using a highly concentrated fluoride gel. Caries experience correlated with regular meals, drinking between meals, and brushing frequency. In high caries risk patients, a frequent preventive intervention might be warranted by the dental practitioners, e.g., topical fluoride gel application. Further studies to elucidate the reasons for the low compliance are needed.

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