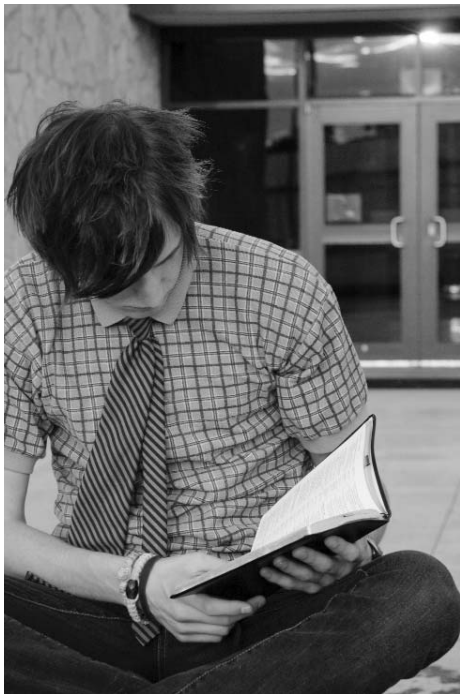


Dental Knowledge Regarding Preventive Measures of Young Adults

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Abstract

A study was undertaken to evaluate the oral health behavior and knowledge of preventive measures of young adults in Israel. A questionnaire was given to 442 Israeli young adults who were dentally screened immediately after high school. Of these, 44 reported they were treated regularly by certified pediatric dentists, 244 regularly by general practitioners, and the remainder were treated irregularly by general practitioners. Participants who reported treatment by CPDs provided more correct answers to questions about prevention of oral disease. However, the percentage of participants who showed good knowledge was small and differences between the three groups on the various questions were only 1%-30%. Participants who were treated irregularly by GPs reported receiving significantly less instruction and explanations about toothbrushing, mouthrinses, dental flossing and carbohydrate consumption.

COMPREHENSIVE ORAL HEALTH in adolescents can be achieved by regular treatment of incipient caries and gingivitis, along with education about measures to be used daily by patients to prevent oral disease. Unfortunately, most health promotions concentrate on treatment and regular visits to a dentist for routine examinations rather than on disease prevention.

Moreover, most studies focus on clinically diagnosing plaque and caries as indicators of appropriate oral health behavior. This is in spite of the fact that from behavioral and practical points of view, the most important objective is daily performance of healthy habits, such as toothbrushing and flossing, use of fluoride supplements and modification of carbohydrate consumption. To date, information about the public's knowledge and attitudes regarding oral diseases and their prevention is limited. Several studies have shown that the behavior of young adults and their attitude toward oral health are related to their dental and oral status.[1-4]

There is now an increased tendency to treat children and adolescents by certified pediatric dentists (CPDs) rather than by dental general practitioners (GPs).[5,6] At the same time, pediatric dentistry is recognized as a distinct specialty in many countries. A major goal of this specialization is to raise patient knowledge and awareness, to prevent oral diseases.[7]

Caries and periodontal disease, the two most common diseases of the oral cavity, can be prevented by adopting proper health habits, preferably, during childhood and adolescence. These habits

include correct toothbrushing twice daily with fluoridated dentifrices and, for some patients, rinsing with fluoride mouthwash and/or systemic fluoride supplementation, and flossing once a day. Furthermore, the patient has to accept significant lifestyle changes, such as avoiding frequent carbohydrate consumption between meals and routine dental examinations, which require compliance by both young patients and their parents. However, achieving compliance is among the most difficult challenges in medicine and dentistry.[8-9] Lack of compliance in medicine is estimated to be 92% for short treatments and 50% for chronic diseases.[10]

To improve compliance and develop new habits, therapeutic intervention should be accompanied by effective health education. This is a complicated process, especially when attempting to establish preventive behavior habits, where results are not immediate. Moreover, compliance and the acquisition of new habits do not necessarily improve with the accumulation of knowledge; they also depend on macro and micro components.

Macro components are thoughts, social environment and the ability to follow instructions. For example, during dietary instructions, the dentist should be aware of the strong social forces that encourage carbohydrate consumption. They should be ready with constant reinforcements and not be discouraged when behavioral changes do not occur immediately.[11-12]

Micro components are part of the interaction between dentist and patient and are extremely important. The dentist should adopt a friendly approach to improve patient satisfaction, and the patient should take an active role in this relationship.[11]

The goals of specialization in pediatric dentistry are similar, in part, to goals taught to general dentists. However, the assumption is that pediatric dentists practice these principles with greater emphasis and efficiency. Therefore, it is expected that a patient treated by a pediatric dentist would be healthier and more aware of the prevention of dental diseases. In a recent study, young children (8 to 10 years old) treated by a CPD provided more correct answers about the prevention of oral disease than did children treated by a GP. However, the percentage of children who showed good knowledge was small (14% to 82%), and differences between the two groups on various questions was only 7% to 20%.[3] There is still no information about the knowledge given by the dentist to young adults regarding measures to prevent oral diseases.

The purpose of this study was to assess the knowledge of young adults regarding measures for preventing dental diseases. It should be emphasized that there was no intention to study the actual performance of oral hygiene instructions and preventive treatment in dental clinics. Rather, the goal of this study was to assess the impact dental practitioners have on their patients' knowledge.

Participants and Methods

The study population consisted of 450 young Israeli adults (army recruits; 18 years old; 71% males and 29% females) who had been screened for dental status immediately after high school. Participants were from various socioeconomic backgrounds and communities around the country. Each filled out a questionnaire (Figure 1) anonymously.

Participation in the study was voluntary, and consent was obtained before participants received the questionnaire. The Ethics Committee of Tel Aviv University approved the study.

Questionnaire

A structured questionnaire, designed to assess the impact of dentists on their patients, was given to all participants. The questionnaire included information regarding the respondents' dentists—defined as at least four consecutive treatments or follow-ups performed by the same dentist—periodic follow-up visits; certification of their dentist; what they remember their dentists told them regarding preventive measures—for example, questions examined respondents' knowledge about toothbrushing, flossing, eating habits and fluoride use, and past dental experience.

Statistical Analysis

Data were analyzed by SPSS 10.0 *(SPSS, Inc., Chicago, IL)*, using Pearson's chi square test.

Results

Of the 450 young Israeli army recruits, only 8 did not complete the questionnaire (98.2% response rate; n=442). Of the participants, 55.2% reported being treated regularly by GPs, 10% by CPDs and 34.6% were treated irregularly by GPs. No statistically significant differences were found between the answers of males and females.

Reports on Preventive Measures

Generally, the percentage of participants who gave correct answers was higher in those who reported being treated regularly by CPDs compared to participants treated regularly by GPs, and was higher in participants treated regularly compared to those treated irregularly by GPs ($p<0.05$). However, differences were limited to 1% to 30% for questions dealing with knowledge of preventive measures. More participants who reported being treated regularly by CPDs also reported that their dentist explained the need to reduce their number of meals (18.2% vs. 16.3% for GPs and 5.9% for iGPs) ($p=0.019$).

However, 65.4% to 75.1% did not remember whether their dentist discussed sweets or frequency of meals, and 92.3% did not recall whether sugarless ("diet") carbonated beverages were discussed. Only 57.7% reported that their dentist reminded them to brush their teeth regularly. More participants treated by CPDs reported that their dentist told them to brush their teeth twice daily (50% vs. 41.2% in GPs and 32% in iGPs, $p<0.001$), provided instructions about toothbrushing (79.5% vs. 68.2%, 51.6%, $p<0.001$), instructed them as to the recommended toothbrush (38.6% vs. 28.6%, 17.6%, $p=0.006$) and toothpaste (47.7% vs. 37.6%, 31.6%, $p<0.05$), gave prescriptions for mouthrinses (9.1 %

TABLE 1

Correlation Between Number of Treatments and Percentage of Reported Toothbrushing Instructions, and Dentists' Instructions About Importance of Regular Recall Visits (p<0.001)

Number of Treatments	Toothbrushing Instructions (%)	Instructions about Importance of Recall (%)
0-1	56.5	57.4
2-4	55.1	72.2
>4	77.3	87.1

vs. 2.5%, 0.7%, p<0.001) and instructed them about dental flossing (31.8% vs. 20.8%, 10.5%, p<0.001).

More participants treated irregularly by GPs reported that their dentists did not give any explanations or instructions regarding toothbrushing, mouthrinses, dental flossing or nutrition (p<0.001). Only 34% reported that their dentist explained the importance of regular recall visits, compared with 53.7% of the participants treated by GPs and 63.6% treated by CPDs (p<0.001).

Interestingly, participants who experienced more treatments reported that their dentist instructed them about toothbrushing, mouthrinses and the importance of regular recall visits more frequently (Table 1) (p<0.001).

Discussion

An important task for a dentist is to instill correct oral habits to prevent oral diseases. The first step in establishing a habit is to provide relevant knowledge to the patient and to raise his or her awareness to prevent oral diseases. The study presented here showed that adolescents who reported being treated regularly by a CPD had statistically more knowledge about prevention of oral diseases compared to those who reported being treated by a GP. These findings indicate that CPDs apparently asserted more effort to communicate and educate their patients concerning preventive dentistry. Similar findings were obtained by Ashkenazi et al.,[3] who have shown that children 8 to 10 years old treated by CPDs had statistically more knowledge of preventive measures than did children treated by GPs. Moreover, a CPD dedicated more time and attention to child and parent education.[13]

Nevertheless, in the present study, the percentage of participants who showed good knowledge was relatively low and the difference between participants in each group who answered correctly was only 1% to 30%. The small discrepancy between groups was surprising and similar to results obtained in a previous study.[3] However, this relatively small difference between the two groups is not completely clear. One explanation could be that patients report-

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ed their beliefs and attitudes rather than the information they actually received from their dentist. A second possibility is that dental practitioners concentrate more on dental treatments than on education regarding prevention measures. Another is that the information might have been conveyed but the instructions were not repeated during recall sessions.

The results of this study indicated there was a positive relationship between the number of treatments and regular treatments by a dentist and knowledge about preventive measures, especially regarding brushing twice daily and using a mouthrinse. Thus, patients who had a lower number of treatments did not have the opportunity to practice and internalize the information and adopt it as a habit. Consequently, more frequent treatments provided the dentist with the occasion to repeat and reinforce important information.

Obviously, the essence of good communication is the ability to convey information in such a way that it can be comprehended and internalized. This can be achieved by understanding and considering the specific characteristics of the patient and adjusting the content accordingly.[14]

This study has certain limitations, most notably, that 71% of the study population consisted of male military recruits. However, as no significant differences were noted between males and females in this study, and in a previous one,[3] it is conceivable that the results are valid.

In this context, it should be remembered that other factors could also determine the patient's general awareness of dental treatment. Preventive activities are influenced by thoughts—beliefs, values, expectations; social environment—significant persons; and personal ability.[15-17] Moreover, to follow directions, patients have to believe that they are exposed to the disease, that the disease is serious and that they can gain from their effort.[18] A significant relationship was found between belief in the treatment benefit and improvement of oral hygiene as expressed in the bleeding index.[19] Thus, it is possible that information has been delivered but without sufficient emphasis placed on the benefits of oral hygiene.

An important finding of our study was that more than one-third of the participants reported irregular visits to the dental office. These participants had significantly less knowledge about oral hygiene, toothbrushing, mouthrinses, flossing and nutrition, as well as about the importance of regular recall visits, compared with participants treated by GPs and CPDs. This group visited the dentist mainly for emergency pain relief treatments. It is important to identify these patients and to provide thorough instructions even for short "emergency" visits.

It should be remembered that it is difficult to assess knowledge with brief instruments, such as the one adopted here, and to draw firm conclusions on attitudes and beliefs. Typically, research in health education is based on the assumption that knowledge is absolute. However, knowledge regarding the involvement of behavior in a disease is seldom certain, and there is disagreement, even among experts, about the relative importance of different factors.

FIGURE 1
Dental Questionnaire

Gender: ❑ Male ❑ Female Age _____

Years of Education _____

1. Until recently you have been treated by:
   - ❑ A certified pediatric dentist
   - ❑ A general practitioner
   - ❑ I am treated irregularly by a general practitioner
2. How many dental treatments did you experience in the past (fillings, root canal treatments and crowns)?
   - ❑ None ❑ 0-1 ❑ 2-4 ❑ More than 4
3. Which of the following sentences were used by your dentist?
   - ❑ It is worthwhile to reduce the number of meals a day
   - ❑ It is worthwhile to reduce the amount of food in each meal and increase the number of meals
   - ❑ Food does not harm the teeth
   - ❑ My dentist did not mention any of the above sentences
4. Did your dentist tell you not to eat sweets?
   - ❑ Yes, not to eat sweets between meals
   - ❑ Yes, not to eat too many sweets
   - ❑ Yes, not to eat sweets at all
   - ❑ No, did not mention anything about sweets
5. Did your dentist explain about sweet beverages to you?
   - ❑ Yes, sweet beverages do not harm the teeth
   - ❑ Yes, sweet beverages between meals can harm the teeth
   - ❑ No, did not mention anything about sweet beverages
6. Did your dentist explain about sugarless ("diet") carbonated beverages to you?
   - ❑ Yes, sugarless ("diet") carbonated beverages do not harm the teeth
   - ❑ Yes, sugarless ("diet") carbonated beverages can harm the teeth
   - ❑ No, did not mention anything about sugarless ("diet") carbonated beverages
7. Did your dentist tell you to brush your teeth?
   - ❑ Yes, at almost every appointment
   - ❑ Yes, sometimes ❑ Yes, but only once ❑ Never
8. Did your dentist instruct you on how to brush your teeth?
   - ❑ Yes ❑ No
9. Did your dentist tell you which toothbrush to use?
   - ❑ Yes ❑ No
10. Did your dentist tell you that toothbrushing prevents gum diseases?
    - ❑ Yes ❑ No
11. How many times a day did your dentist tell you to brush your teeth?
    - ❑ Twice daily ❑ Once a day ❑ After every meal
    - ❑ No mention
12. Did your dentist tell you which toothpaste to use?
    - ❑ Yes, toothpaste that contains fluoride
    - ❑ Yes, all toothpastes are good
    - ❑ No, it is not important to use toothpaste
13. Did your dentist tell you to floss your teeth?
    - ❑ Yes, at almost every appointment
    - ❑ Yes, once ❑ Never
14. Did your dentist tell you it is important to remove tooth calculus?
    - ❑ Yes, at almost every appointment
    - ❑ Yes, once ❑ Never
    - ❑ Yes, and referred me to a dental hygienist
15. Did your dentist tell you to use fluoride mouthrinses?
    - ❑ Yes, at almost every appointment
    - ❑ Yes, once ❑ Never
16. Did your dentist tell you about the importance of fissure sealants?
    - ❑ Yes, especially in deep fissures ❑ Never
17. Did your dentist tell you that it is important to come for regular dental checkups?
    - ❑ Yes ❑ No
18. Did your dentist tell you that regular dental checkups are important for early treatment?
    - ❑ Yes ❑ No

Furthermore, there may be bias toward endorsing items under conditions of uncertainty, which leads to inflated responses.

Conclusions

Participants treated regularly knew more about oral disease prevention than did those who were treated irregularly. Moreover, participants treated by CPDs knew more about preventive measures than did those treated by GPs. However, the percentage of young adults treated during adolescence by CPDs who gave wrong answers was quite high, and the difference between them and those treated regularly and irregularly by GPs was limited.

These findings should have implications regarding dental training and specialization programs in order to improve the success dentists have in teaching adolescents how to maintain oral health, and to emphasize patient educational skills in both dental schools and specialization programs. ■

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