

# CURRENT TOPICS in review

## Dental health needs of the adolescent

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### Abstract

*The dental needs of adolescents are not well understood by the dental profession. Physical, emotional, and psychological changes peculiar to adolescence bring with them specific oral health care needs. Periodontal disease has its genesis in adolescence, and dental caries experience increases during this time. Facial growth and the transition from primary permanent dentition make adolescence a crucial period in a patient's dental life. Behaviors related to sex, peers, and authority make dental management a challenge. Restorative concerns, consent, and diet management are all affected by this transitional period in a person's life.*

### Adolescence and oral health

The adolescent has recently surfaced as a major interest of the health professions. Various professional organizations, including the American Academy of Pediatrics, American Academy of Pedodontics, and the Society for Adolescent Medicine, have devoted efforts to consideration of the special needs of teenagers. The American Academy of Pedodontics recently formed a committee to investigate the oral health needs of the adolescent and to make recommendations for professional action.<sup>1</sup> The Task Force on Pediatric Education, comprising members of various medical groups, made adolescents an integral component of its recently published report.<sup>2</sup>

Even with this renewed emphasis on the adolescent, the health care system only now is beginning to recognize the special needs of adolescents and remains somewhat unprepared to deal with them. Many important concerns are only now emerging, and the current system may not be prepared to treat these patients effectively without an exploration of the complex relationship between the adolescent and society.<sup>3</sup>

The dental profession has always treated the adolescent. This paper examines the special aspects of this care relationship and provides some concepts to improve the practitioner's recognition of special adolescent oral health care needs.

### Adolescents and adolescence

Adolescents account for nearly 20% of the population of the United States.<sup>4</sup> In round numbers, this is about 42 million persons. Although a host of criteria can describe adolescence, it is usually considered to be the time of life between 10–19 years of age.

A common mistake is to group all adolescents together without regard to the special needs of different age groups within the decade of adolescence. Daniel<sup>5</sup> warns that to view adolescents as comprising a homogenous group, similar today to what their parents were at that same age, is folly. It is well accepted today that adolescence is not a homogenous experience but an individually variable and highly structured period of physical and emotional change.<sup>6</sup>

Classically, adolescence is associated with four basic needs: (1) to find an identity; (2) to accept sexuality and find the sexual role; (3) to establish independence from the family; and (4) to establish a career or vocational choice. These needs translate into several characteristics that are often associated with this period of life.<sup>6</sup> Only the naive would assume that all adolescents fit this mold or that these characteristics apply to all ages included under the definition of adolescence. Look at these characteristics as possible bases of adolescent behavior rather than as descriptions applicable to all teenagers.

First, peers are important. Many, but not all, adolescents look to peers for advice, support, recognition, and acceptance. This facet of adolescent psychology

has both good and bad points. If a teenager values peer opinion, emulation of peer behavior and acceptance of peer recommendations may follow. Smoking often grows out of peer influence. Outstanding academic and athletic performance are also peer regulated to some degree. However, not all adolescents look to peers for guidance; many still seek answers from the source that has served them well before, the family.

Second, fads may be a common part of life. Adolescence is a time for trying new things, including drugs, sex, alcohol, and tobacco on the one hand, and classical music, drama, love, and personal responsibility for health care on the other. When well directed, fadism is a learning method and can shape positive behaviors—like good oral hygiene—that become the habits of adulthood. If fads are seen as ways of sampling the environment, they become less threatening, especially to parents.

Third, values may be of short duration, but their durational expectancy is as long as for other age groups. Said more simply, teenagers believe that their perception of things is “the way it is,” yet that perception may change within a short time. However, if questioned about their values, many adolescents will state that their beliefs will probably remain the same for a long time.

Fourth, adolescents are viewed as a separate culture by many elements of society. From literature, one gets the distinct impression that a generation gap exists. Teenagers are the fodder for much of the output of the television and film industry. Advertisers see the teenage market as distinct and as one of the most lucrative because of the access to spending money that adolescents enjoy today. Viewing all teenagers as representatives of a subculture creates a functional gap that can escalate to confrontation, a reality illustrated by the antiwar conflicts of the sixties. On a one-to-one basis, presumption of an adolescent’s goals or motives by an adult prevents the communication that is recognized as important for successful health care.

### Dentistry looks at adolescence

According to some, dentistry has followed suit with other health care factions by ignoring or misreading oral health needs of adolescents.<sup>7</sup> This is not to say that individualized care has not been good. The improving picture of oral health care in this country over the last two decades suggests that our children enter adulthood in better condition than did their parents. Whether this is due to our care of adolescents, or in spite of it, remains to be demonstrated. Certain misconceptions and underrated factors to be examined below shape the dental image of the adolescent and may help to answer the above question.

First, adolescents are an ill-defined, de-emphasized group in the dental care system. At this writing, no textbook deals with the oral health needs of the adolescent as a specific entity. McDonald and Avery<sup>8</sup> devote a chapter to adolescents in their widely used text, but the chapter focuses mainly on restorative needs and prosthetics. A monograph on adolescent dentistry, coined “ephebodontics” in the April, 1969, issue of *Dental Clinics of North America*, is perhaps the most comprehensive text available, but it is 10 years old and it lacks current data and techniques in prevention, management, and behavior, to mention just a few areas. The remaining data on adolescent needs and care must be gleaned from sources dispersed throughout literature.

At the professional level, activity has been scattered rather than coordinated. Efforts to eliminate junk foods from schools and the success of dental groups to make athletic mouthpieces mandatory are just two examples of the dental profession’s recognition of the adolescent’s special needs. The American Academy of Pedodontics’ special committee appears to be an initial effort to begin to look at adolescence as a specific health care area.

On the national level, one need only look at the tenor of health legislation aimed at the oral care of children. Applewhite’s<sup>7</sup> excellent analysis of past programs portrays the approach to our youth’s needs as well-intentioned and sound in principle but not carried to its logical end. Designers of these health programs presume that early childhood intervention prevents development of costly restorative needs later in life. Unfortunately, practical obstacles prevent the realization of good oral health and oral health-seeking behavior. As reported by Applewhite,<sup>7</sup> funding often stops during the elementary school years, so programs fall short of goals. Money that is available is spent treating primary teeth in the mixed dentition while it might be better spent on continued patient care during the teen years. It may also be a presumption that early treatment inculcates regular care-seeking behavior. Lambert and Freeman<sup>10</sup> show that children who were treated on an incremental basis in a clinical setting through the fourth grade had poorer oral health later on than did a similar group treated elsewhere.

These programs and the dental profession in general seem to have had little success in developing regular care-seeking behavior. Fig. 1 shows the dramatic drop-off of patient visits during teenage years for all patients, not just those in clinic programs. Data indicate that this phenomenon may be related to a number of factors, and not just to the separation of the adolescent from parental financing.<sup>11</sup>

A portion of the profession places the adolescent in a transitional period, free of a caries problem and not yet on the brink of periodontal involvement. The

result is that treatment needs are poorly understood and often underestimated, a second element in the dental profession's portrayal of the adolescent.

If one looks at the two most prevalent oral health problems, caries and periodontal disease, the adolescent period takes on greater significance as a critical period in a person's oral health life.

Caries appears to be a major problem in adolescence, perhaps due to the eruption of the permanent teeth and the increase in proximal surfaces exposed to decay. Massler's<sup>12</sup> characterization of life in terms of caries experience reflects the risk of dental caries during adolescence (Fig. 2). The U.S. Public Health Service study<sup>13</sup> carried out during the late sixties supports Massler's projections for adolescents, but it adds some disheartening information to the oral health picture of the adolescent. The study of youths 12-17 years of age shows an increasing DMF rating through adolescence, leveling out in early adulthood. The study also points out that the DMF rating did not correlate significantly with race, education of parent, or family income, although "filled" teeth increased with family income. The data indicate that caries is a problem that is (1) widespread and (2) not necessarily related to access to care, as suggested by the lack of relationship to parental income and education. One would expect that those who understand the need for oral health care and could afford it would benefit from increased prevention of disease. The government data would dispute this assumption.

Greenberg<sup>14</sup> presents some other views of the problem. Less than 4% of high school pupils are free of dental decay, and this same group averages two to

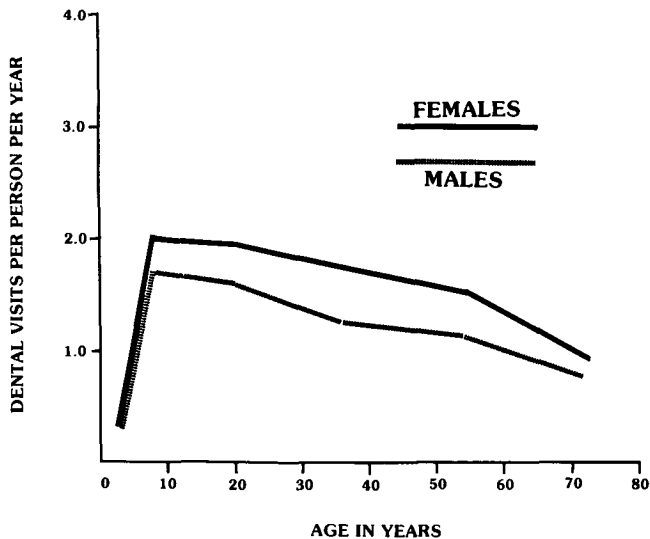


Fig. 1. Number of dental visits per person per year. (Reproduced from *Dental Visits: Volume and Interval Since Last Visit*, Vital and Health Statistics, Data from the National Health Survey, Series 10, No. 76.)

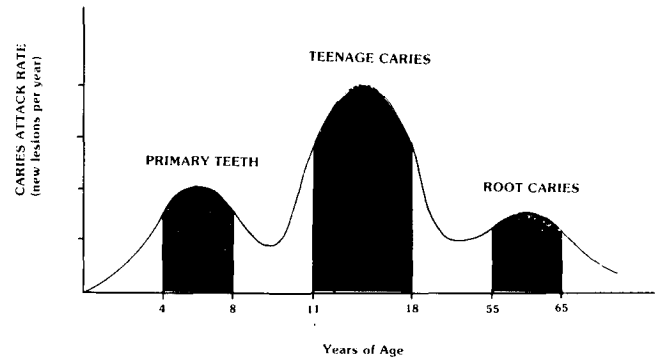


Fig. 2. A schematic view of human lifetime caries experience. (Reproduced from Ref. 12.)

three new lesions per person per year. A study by Dunning<sup>15</sup> found that teenagers 16-18 years of age required 38% more dentist time per year mainly for operative care than did children 9-11 years of age.

These data all suggest that teenagers are not in a safe transitional period with regard to dental caries. One must remember that (1) these data are from 10-20 years old, and that (2) they do not account for the effects of more widespread fluoridation, the generalized acceptance of preventive dentistry, or the access to care created by third parties. On the other hand, these data represent what is available and highlights how little we know about adolescent needs. Suomi<sup>16</sup> recently reviewed four decades of caries experience data for children and youths, but he was unable to make any conclusion about caries prevalence. He did comment that few studies cover the last decade and that an estimation of the extent of caries among youths and children today is impossible. It seems we know very little about the caries picture of the adolescent.

The information available regarding teenage periodontal health is more substantial but no more heartening. A valid characterization of periodontal status should involve a look at preventive knowledge. Two studies of note reveal how much our teenagers know, but how little it bears on their oral health condition and hygiene behavior. Brunswick and Nikias<sup>17</sup> looked at inner city teenagers' perceptions of oral health and found that although overall estimates of oral health by subjects agreed with those of dentists, the teenagers tended to overestimate their gingival health when compared to dentists' estimates using standard measures. The problem is not confined to those with low socioeconomic status. Linn<sup>18</sup> studied over 2000 predominantly white high school sophomores in the Midwest and found that although 94% had a regular dentist and 90% brushed daily, only a few (11%) flossed daily, and even fewer (1%) knew the full impact of dental plaque.

This rather alarming information points to a failure

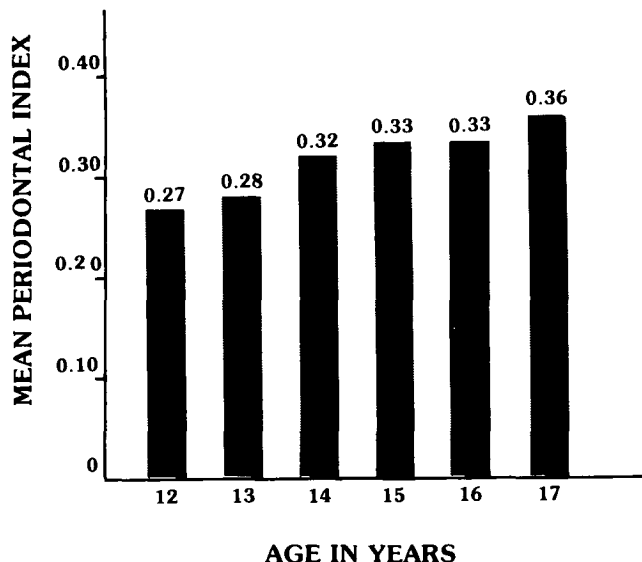


Fig. 3. Average periodontal index for youth by age (Reproduced from *Periodontal Disease Among Youths 12-17 Years*, Vital and Health Statistics, Data from the National Health Survey, Series 11, No. 141.)

to integrate knowledge with behavior with respect to oral hygiene and health status. The problem is reflected in government statistics that show periodontal problems increasing through adolescence (Fig. 3), along with fluctuating but eventually worsening levels of oral hygiene (Table 1). Periodontal disease appears to have its genesis in adolescence and should not be thought of as an "adult disease," as it is often termed by the lay population and some professionals.

The data on periodontal disease and oral health knowledge, caries, and care-seeking behavior highlight some of the problems of adolescence that are not fully understood or appreciated by the dental profession. In addition, problems related to malocclusion, dental phobias, traumatic injuries, management concerns, drug addiction, consent, and infectious disease present the dental practitioner with a complex patient who before adolescence was easily treated.

### Specific oral health concerns in adolescents

#### Oral health concerns related to physical changes

**General growth considerations.** Physical changes result from a complex interaction of hormones from the brain, gonads, and other parts of the body. Every generation of Americans has grown taller than its predecessor, and the age of menarche has decreased from about 16 to 12 over the last 100 years.<sup>19</sup> Both boys and girls experience a growth spurt during ado-

lescence. For boys, the precipitous changes in height and weight occur between 13 and 15.5 years; for girls, the age is from 11.5-13.5 years.

These changes affect all systems. Bones lengthen, the heart increases in size, the lymphatic system decreases, genitalia develop, and body fat deposits fluctuate. For the dentist treating adolescents, the importance of these physical changes can include such things as the effect of hormones on oral tissues and the normal increase in hematocrit and the fluctuation in serum alkaline phosphatase.

**Hard tissue changes in the oral cavity.** The clinical appearance of the prepubertal dental patient can vary greatly from that of a patient in the early stages of puberty. The primary dentition yields to an incomplete permanent dentition that will take most of puberty to evolve. In the space of a few years, primary canines and molars are exchanged for permanent canines, premolars, and second molars. Space management remains a concern, then, well into the onset of adolescence.

Craniofacial growth alters not just extra- and intraoral appearance but also the radiographic appearance of oral structures. Alveolar growth, development of sinuses, and general facial bone growth add subtle changes to a child's radiographic picture.

The growth of the brain is about 95% complete by age 10, but about 35% of facial growth takes place from age 10-20 years.<sup>20</sup> This growth of the facial

Table 1.

Mean oral hygiene index scores*	
Children (1963-65)	
6 years	1.38
7 years	1.50
8 years	1.49
9 years	1.47
10 years	1.41
11 years	1.40
Youths (1966-70)	
12 years	0.94
13 years	0.92
14 years	0.90
15 years	0.87
16 years	0.86
17 years	0.82
Young adults (1960-63)	
18 years	1.18
19 years	1.33
20 years	1.52
21 years	1.31
22 years	1.31
23 years	1.41
24 years	1.33

\* Oral Hygiene Among Youths 12-17 Years Vital and Health Statistics, Data from the National Health Survey, Series 11, No. 151.

structures follows the general body growth curve, especially standing height.<sup>21</sup> Adolescence becomes a critical period for orthodontic diagnosis and treatment because of the growth of the face, especially the mandible. During the ages of 12–16 years, according to Sassouni and Forrest,<sup>22</sup> the mandible grows downward and anteroposteriorly, the maxilla attains adult size, remodeling of the frontal sinuses takes place, and the cranial base continues to grow at the sphenoid-synchondrosis. If this combination of events were not enough, growth of the mandible occurs in spurts<sup>23</sup> and is often irregular in amount and timing.<sup>24</sup> Orthodontic therapy also does not seem to affect the time of maximal facial growth.<sup>25</sup>

Contrary to a quiescent period in a child's dental life, adolescence presents a time filled with uncertainties and difficult treatment decisions with regard to orthodontic care. Adolescence must be a time of close observation and monitoring of changes in the pattern of growth.

**Soft tissue changes in the oral cavity.** The hormonal, emotional, and psychological changes associated with adolescence often manifest in identifiable problems peculiar to teenagers and young adults.

The effects of body changes on gingiva alone are important. Puberty gingivitis has been recognized by some and discounted by others as an identifiable entity. Baer<sup>26</sup> considers the term a misnomer because it suggests that a hormonal imbalance is the etiologic agent; hormones may play a role but so, too, do local irritants. The data on periodontal disease in adolescents, cited earlier, point to the genesis of gingival problems sometime in adolescence. Sutcliffe,<sup>27</sup> in a longitudinal study of gingivitis and puberty in adolescents 11–17 years of age, found that gingivitis tended to peak and then to decline during the 6-year period, and that peak periods of poor oral hygiene did not correlate significantly with peak periods of gingivitis. His data suggest a heightened tissue response. The exact nature of periodontal disease and of its etiology in adolescence appears to be poorly understood.

Other clearly identifiable gingival problems associated with various stages of adolescence include acute necrotizing ulcerative gingivitis, infectious mononucleosis, periodontitis, recurrent aphthous stomatitis,<sup>28</sup> gingivitis associated with pregnancy,<sup>29</sup> and oral contraceptives.<sup>30,31</sup> These problems can be related to the habits, emotional changes, and environment of the adolescent.

Other soft tissue problems include the effects of sexual habits and sexually transmitted infectious diseases and the effects of birth control medication. Fiumara<sup>32</sup> describes 14 sexually transmitted diseases many of which are reaching epidemic proportions in the 15–29 year age group. A decade ago, the dental

student was taught to recognize the chancre of syphilis, but today, gonorrhea incidence outranks that of syphilis by about 40 to 1.<sup>32</sup> Because of changing sexual mores including increased oral-genital and anal-genital contact, multiplicity of sexual partners, and variant sex preferences, the dentist is faced with treating a host of "new" lesions. He or she must be able to identify the palatal erythema or petechiae associated with oral sex, the multiplicity of gonococcal lesions,<sup>33</sup> and genital warts.

Oral contraceptives tend to create problems beyond the gingivitis cited earlier. Hormonal contraceptives are known to affect clotting. Several studies<sup>34,35</sup> have noted an increase in postoperative, localized osteitis (dry socket) in women taking oral contraceptives. Since the third molars are a concern to dentists treating the adolescent, oral contraception must be considered in a work-up of a young woman for third molar extraction.

### **Oral health concerns related to behavior**

**Habits.** Drug taking and smoking are two very common habits among teenagers. Smoking among teenagers is a complex problem.<sup>36</sup> The dentist's responsibility should include counselling on the long-range problems, oral and otherwise, created by smoking. Although the classic signs of nicotinic stomatitis are rare in smoking teenagers, in the adolescent heavy smoker, a generalized erythema of the pharynx and hyperkeratosis of buccal mucosa are not. This appearance must be differentiated from, for example, the erythema of infectious disease. Some evidence also suggests that smoking may have a role in the etiology of acute necrotizing ulcerative gingivitis.<sup>26</sup>

Drug taking, on the other hand, presents a host of problems for the dentist. These problems result from the effects on the central nervous system and the addictive nature of many drugs. Drug-related problems include potential interaction of drugs and subsequent office emergency; oral neglect in order to obtain pain medications; requests for sedative medication prior to treatment; and, in some cases, forgery of prescriptions or theft of drugs or prescription pads. Although these concerns do not apply to a large number of adolescents, the potential for serious medical and legal consequences requires that they be a part of the dentist's consideration when treating the adolescent.

**Athletic injuries.** Many adolescents are involved in athletics and particularly team sports. Team sports that require contact or rapid activity enhance the chance for trauma to dental structures. Generally, football contributes a large number of athletic injuries

in our country yearly. Soccer and hockey contribute a moderate number, and lacrosse and baseball contribute some. Basketball, track, and swimming contribute very few.<sup>37</sup>

It should be remembered that the adolescent acquires his adult size fairly rapidly, but this size acquisition may not be closely paralleled by refinements in muscle movements. Coordination is related more to experience and perhaps to good coaching than it is to age. Additionally, many adolescent sports are competitive and are played with a rigorous commitment encouraged by fans, coaching staff, and peers. It is not hard to realize that a very peer-conscious, young athlete striving for success may extend his efforts far beyond his capability to play the sport without encountering injury.

Prevention is the best approach for dentistry in dealing with athletic injuries. The dentist can try to anticipate athletic injuries in his patients by noting a history of sports, an intention to continue playing sports, and a recent growth spurt. Athletes should wear protective mouth guards, and for those with "injury prone Class II profiles," comprehensive orthodontics or interceptive orthodontics to help alleviate the protrusion of maxillary incisors should be considered seriously. It is appropriate for the dentist to relay his concerns regarding the likelihood of dental injury in certain athletic sports to both the adolescent and the adolescent's parents.

In the event that a dentist has to treat fractured or luxated teeth after a serious athletic injury, the following guidelines are important. (1) Take the injury seriously in terms of the psychologic aggravation that it may cause the adolescent. (2) Restore esthetics as promptly and as reasonably as possible. (3) Determine how the injury happened, and, if it was avoidable, educate the adolescent how to avoid such injuries in the future.

**Psychology of treatment.** Adolescence represents a salient and extremely dramatic stage in the metamorphosis of the child to the adult. The physical parameters of change are easily observed by all adults. The psychological changes, although of equal magnitude to physical changes, are less perceptible to observing adults and often present an enigma to the dental clinician who treats adolescents as to what strategy to use to approach the adolescent behaviorally. The method of approach cannot be totally adult-oriented, since the assumption that the adolescent has made the dental appointment and kept it solely because of his own motivation cannot be assured. Similarly, the methods of managing younger children, particularly the more aversive methods used to intercept inappropriate behavior, have little practical application when dealing with adolescents.

The hallmark of the adolescent's personality is his excessive interest in himself.<sup>37</sup> This self-interest determines to a considerable degree the strategy that the dental clinician must use to manage and to motivate adolescent patients successfully. The adolescent demands that as much attention be given to him as to his symptoms, health needs, and treatment. Friendliness, not authoritarianism, is the best role for the dentist. The importance of the adolescent and his independence must also be tactfully handled when information is sought from parents. It is often more effective to interview the parents a day before the adolescent's appointment or to interview them without the adolescent if they accompany him to an appointment.<sup>37</sup>

Several important psychologic traits parallel the susceptibility of an adolescent to motivation toward self-hygiene and to acceptance of dental care without misgivings or inappropriate behavior. Curiously, the advent of sexuality and sex-appropriate behavior, egocentrism, and a deep desire for peer acceptance would seem to predispose adolescents to receive and to respond to any information regarding the prevention of disease, maintenance of dental esthetics, and avoidance of mouth odors. This fact was supported by a study in which 94% of an adolescent population agreed with the statement that health is "mainly how you look after yourself." The same study also found that 69% of the responding teenagers related that "it matters a lot to be healthy," as opposed to 31% who felt "it matters a little to be healthy."<sup>38</sup> Certainly, for the majority of adolescents, motivational persuasion can be based upon the importance of oral hygiene and good dental care to appearance and health.

Problems in predicting an adolescent's compliance with dental treatment and preventive practices do exist. Cornely and Bigman<sup>39</sup> have concluded that adolescents from low income families have inadequate health attitudes, knowledge, and behavior. Dennison<sup>40</sup> stated that compared to middle income 10th-grade adolescents, low income 10th-grade adolescents were significantly deficient at a 0.01 level of confidence in their knowledge and health behavior in the area of dental health. Obviously, the dentist working with adolescents from low socioeconomic levels needs to devote more time to motivation and should anticipate less compliance during treatment procedures.

Attitudes towards dentistry and behavior in the dental setting may be adversely affected by the adolescent's self-image and self-esteem. Erikson<sup>41</sup> has pointed out that the establishment of identity is the major focus of the task of adolescence. Sullivan *et al.*<sup>42</sup> believe that ego strength is an important dimension of moral character and may be a bridge between moral judgment and good behavior. These conclusions lead to the assumption that if the self-esteem of the ado-

lescent is compromised, he may not rely upon or adopt behaviors that seem to be normal and widely regarded as legitimate. For example, the dentist's appeal for better and more frequent tooth brushing may be based upon information that is self-evident to both the dentist and to the patient. The appeal may not be complied with by the adolescent, not because the dentist failed to persuade, but because compliance with any suggested alternative behavior is difficult when self-esteem is poor. In such cases, the dentist may be a pivotal influence in helping the adolescent and the adolescent's family to seek professional diagnosis and treatment services from the psychologic and psychiatric health science community. Other clues to a compromised self-esteem in the adolescent, other than lack of compliance with reasonable oral hygiene standards and inappropriate behavior in the dental setting, are obesity, use of drugs (including alcohol), dropping out of school, delinquent and perhaps criminal behavior, and lack of personal cleanliness.<sup>37</sup>

Adolescents who have not experienced dental treatment as children or who have not had dental care for a considerable period of time may pose considerable problems for the dentist.<sup>43</sup> Often these patients are in pain, and their treatment needs are extensive. The lack of regular dental care predicts that the adolescent will benefit from an orientation experience, perhaps even a tell-show-do presentation that the dentist usually reserves for preschool children. Often these patients come from lower socioeconomic groups, a fact which may further complicate their dental needs and their ability to be oriented into a regular dental practice. Again, patience with their fears and a genuine interest in the adolescents themselves are the best methods for dealing with this problem.

Adolescent females may present behavior problems for the dentist. Menarche has significant psychologic consequences for certain female adolescents. One study of the emotional reactions of female adolescents to the onset of their menses stated that 51% of the 475 subjects reported their reaction as one of indifference; 4% stated they were interested and curious; 12% were chagrined; 1% were terrified; and only 6% reported that they were delighted and proud.<sup>44</sup> The negative reactions of some girls to menstruation may be accounted for by the influence of negative attitudes of others. If an adolescent's parents and friends extend unwarranted sympathy for what they call euphemistically "the curse" or "being unwell," then the girl may adopt similar attitudes toward her own menstruation.<sup>45</sup> The negative attitudes may also be the result of physical discomfort. A number of girls experience disturbing or painful symptoms during their menstrual period. Most often cited are headaches, backaches, cramps, and severe abdominal pain. However, clinical experience has demonstrated that adolescent girls

have pain upon eruption of second permanent molars, nondescript and undiagnosable pulpal pain, and a discomfort ("feels hot") in gingival tissues. The dentist who encounters such a patient should proceed tactfully, but he will need to establish whether the onset of the pain can be correlated with the start of the menstrual cycle. The adolescent girl should be reassured that continuation of the discomfort is unlikely. Since certain patients report bruxism during this stage of their life, the dentition should be checked for high restorations and other potentially offensive occlusal relationships.

Anxieties about receiving dental treatment and an inability to cope with the stimuli attendant to certain dental appointments can affect a patient in any age group, and adolescent patients are no exception. Adolescence can be a time of great worry and frustration, and this may predict that many seemingly normal stimuli are reacted to inappropriately.<sup>37</sup> Additionally, certain childhood fears about dental treatment may grow in significance as the child gets to adolescent years, and the ramifications of the anxiety pattern may become larger and more dramatic. Pinkham and Schroeder<sup>46</sup> have reported a case of an adolescent female who needed psychological therapy before receiving further dental treatment because a childhood incident led to an extreme anxiety about dentistry. The dentist needs to be patient with highly anxious adolescents and to avoid frustrating the patient by assuming that because of age and size, the patient should be able to comply immediately with all directions.

### Other related concerns

**Restorative needs.** An upcoming text by Castaldi and Brass<sup>47</sup> on dentistry for the adolescent will treat the area of restorative dentistry for these patients in detail. Today, much confusion and disagreement still exist among dentists with regard to treatment choices and approaches.<sup>47</sup> The choice of fixed or removable, temporary or permanent, acid-etch or porcelain-fused-to-metal, and critical issues of timing and maintenance are just a few questions that arise when treating the restorative needs of the adolescent. Uncertainties about growth, motivation to maintain oral health, caries susceptibility, and cost effectiveness may make adolescent treatment planning difficult for the dentist.

**Diet.** The increased caloric demands of the teenager; the tendencies to skip meals and to make a habit of snacking; the effect of group dynamics on eating; the choice of certain foods and the rejection of others; the sampling of fads like macrobiotics, liquid protein diets, and organic foods; and problems such as obesity and anorexia nervosa<sup>48</sup> all complicate diet management in the adolescent. Diet may be the most difficult

variable to alter in a teenager's caries picture because of its strong ties with psychologic development.

**Consent.** Adolescents may seek care on their own or may prefer to be treated alone. Emergency care in some adolescent patient groups is the rule. The dentist must know state laws regarding consent, which procedures can be approved by an adolescent, and at what age the patient takes responsibility for consequences and payment. State boards of health and family planning agencies usually have up-to-date information on age and treatment categories for those under legal age. Dentists should be aware of so-called "enabling laws" that permit adolescents to obtain certain types of nondental treatment, such as birth control, which might bear on oral health care.<sup>49</sup>

The chronically ill or handicapped adolescent, neoplasia, and patient motivation have not been covered in this paper. The emphasis of this paper was to create an awareness of problems and needs. The time is ripe for a textbook to deal with each of the areas described in this paper in depth with specifics on incidence, etiology, and treatment. Dental schools, especially pedodontic and family dentistry departments, need to focus on the adolescent as an integral component of the health care system and to train graduates to look more closely at the individual who is the adolescent.

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