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Attitudes to oral health among adolescents with high caries risk

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Abstract

Objective. To explore and describe attitudes to oral health among adolescents with high caries risk. ***Material and methods.*** A strategic selection of 45 subjects (15 to 19 years of age) assessed with high caries risk were invited to participate in the study, and 7 girls and 10 boys gave their informed consent. Semi-structured interviews performed, recorded, and transcribed verbatim were evaluated using qualitative content analysis. ***Results.*** Three categories and seven associated subcategories could be determined, and cognitive consistency in parallel with emotional inconsistency in relation to oral health was disclosed. On a cognitive level, attitudes to oral health were characterized by an awareness of the determinants (diet, plaque, fluoride) for caries. Fresh breath and even, white, teeth were considered signs of good oral health. Breath and esthetic appearance were important inducements for home care. Although toothbrushing was considered the most important activity for maintaining good oral health, forgetfulness and lack of time were the main reasons for not brushing. The provision of adequate information on caries risk was perceived as important. On the emotional level, the three subcategories were: (i) a positive attitude to oral health and clear self-confidence that improved health would be achieved, (ii) an impassive attitude that everything would be all right and fixed by the dentist, and (iii) a negative attitude characterized by frustration and a tendency to give up. ***Conclusions.*** Allowing adolescents with high caries risk to relate their views on oral health is important for dental professionals when encouraging patients at caries risk towards healthy behavior.

Key Words: *Oral health beliefs, oral knowledge, quality content analysis*

Introduction

In this article, "attitude" is defined as the individual's view on and feelings about oral health as reflected in his/her behavior. The origin of attitude has both a cognitive and an emotional basis, and the relationship between attitude and behavior has attracted a certain interest. Knowledge of how attitudes are formed is relevant for understanding and predicting the health behavior of an individual, and how the individual's beliefs influence intention and behavior has been described [1]. Attitudes to health and health behavior are influenced by factors such as education, culture, socio-economy and place of residence [2–5]. Only a few Swedish studies have investigated the attitudes of adolescents to oral health, among them Östberg and co-workers [6], who found a correlation between oral health attitudes and self-experienced oral health in adolescents and young adults. They demonstrated that family characteristics were important for self-perceived oral health [7] and that there were gender differences between girls' and boys' attitudes and behavior and in how their oral health was experienced [8].

In recent years, an association between oral health and experienced quality of life on the physical, mental, and social planes has been suggested [9,10], as well as a strong correlation between self-esteem and the individual's oral health behavior [11]. In a study of the relationship between self-esteem and the health locus of control, Ozolins & Stenström [12] found that adolescents with good self-esteem exhibited both a greater belief in their own ability to influence their health and a distrust of the effect of chance. On the other hand, youths with little belief in their own ability to influence their health and who strongly believed in the effect of chance had a lower degree of self-esteem [12]. It has recently been shown that individuals with stable favorable dental beliefs from adolescence have better

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oral health throughout adulthood, while unfavorable dental health beliefs are related to poorer oral health [13].

The prevalence of caries among Swedish children and adolescents has decreased considerably over recent decades and a skewed distribution is now evident [14]. Caries risk assessment of the young patient has thus been an important strategy in dental care in distributing preventive resources to those with the highest need. Adolescents form a challenging group in this aspect, since they have vulnerable permanent teeth erupting at a time when they are establishing their independence from parental influence. Implementing effective preventive regimes for adolescents at risk has proved difficult [15]. To influence the behaviors that impact adversely on oral health requires an understanding of the attitudes and beliefs that underpin those behaviors. During a 4-year period, the cost of preventing caries in a group of youths with high caries risk was found to be more than twice as much as for a group with low or medium caries risk [16]. Adolescents with high caries risk can be expected to need and demand more dental care as adults, but to what extent has not yet been investigated. It has been shown that information on the different costs associated with dental treatment is an important motivating tool for young adults [17]. The feeling of being respected and being able to influence the care being delivered were important factors for this patient group.

Although qualitative studies on adolescents' views on oral health education and perception of oral health are available [18,19], to our knowledge no investigation has been published exploring the attitudes towards oral health in the group of adolescent patients with high caries risk. It is vital that those targeted patients are allowed to describe their attitudes toward that area of their health. The aim of this study was therefore to explore and describe attitudes to oral health among adolescents with a high risk of caries.

Material and methods

Study design

A qualitative research method based on interviews for the collection of data was chosen and the study protocol was approved by the Medical Faculty Ethics Committee of the Sahlgrenska Academy in Göteborg, Sweden.

Informants

The material comprised 15 to 19-year-old patients attending a Public Dental Clinic in southwest Sweden, and those considered to be at high risk of caries at the annual examination were eligible for participation. The patients were treated by 8 different dentists with average clinical experience from dentistry for children and adolescents of 24 years. Caries risk was assessed by the patients' regular dentists with the aid of a software program (Opus Dental, Planmeca, Helsinki, Finland) within the digital records, where caries risk was calculated according to number of decayed, filled and missed surfaces, and number of initial lesions. The estimated caries risk was calculated with regard to the patient's oral hygiene, dietary, and fluoride habits and was expressed in four levels ranging from low to very high. A strategic selection of 45 boys and girls of differing ethnic origin (determined by surname) and place of residence (suburban or urban) was made from those with the highest caries risk. They were each sent a letter inviting them to participate in an interview study and were informed that participation was voluntary and that all information would be treated confidentially. After 1 week, the 45 subjects were called and asked if they wished to participate. Seven girls and 10 boys with a mean age of 17.9 years accepted the invitation. In one case, the parents did not give their approval. None of the subjects had previously been treated by the interviewer, who works as a dentist at the clinic. Informed, written, consent was given by all participants, and by the parents of those under 18 years of age. The number of decayed and filled proximal surfaces (DFSa) varied from 1 to 10 (median = 6 DFSa); the median number of non-cavitated proximal lesions was 11 (range 5–18), as scored from available bitewing radiographs.

Collection of data

Data were collected through semi-structured interviews. The authors, familiar with the subject field and method, constructed an outline for the interview containing 10 open-ended questions that would reveal different aspects of how adolescents view oral health. These were: (i) the meaning of oral health, (ii) how one's view of oral health had been formed, (iii) how the interviewee viewed the future, and (iv) possibilities for the interviewee to influence his or her oral health. The questions, tested in a pilot set-up and corrected accordingly, were of the character: "What does oral health mean to you?", "How do you view your own oral health?", "How were you informed about the risk of caries?", and "Why do you think you have had many cavities?" In follow-up questions, the informants had a chance to clarify and expand on their statements.

The interviews were conducted by a dentist (K.H.) in the period March to June 2004 and were held in a separate room in an administration building not associated with health care or dental care. The sessions were tape-recorded and lasted between 25 and 40 min.

Data analysis

All the interviews were transcribed verbatim by the interviewer. To get a complete picture of the interviews, both the interviewer and the co-examiner (S.F., university lecturer, and R.D.H.) read the material several times and statements by the informants related to the purpose of the study were marked. A conventional qualitative content analysis was chosen to process the interviews; this is a systematic, replicable, technique for compressing many words of a text into fewer content categories based on explicit rules of coding [20]. The working method proposed by Graneheim & Lundman [20] was used, based on the search for manifest commonalities to pursue data reduction, and the categories were derived during data analysis. Statements related to the same central meaning were marked and named meaning units. Editing the content of the meaning units rendered the statements more manageable, and from the entire interview material statements containing aspects related by content and context could be associated with each other in the same code. For example, the statements "*I feel that I have brushed and kept [my teeth] clean and I get cavities anyway*" from one informant and "*. . . it is not any fun and still I feel that I take care [of my teeth] fairly well*" from another informant were sorted under the code "*Frustration*". This code was attributed to the subcategory "*Negative feelings*", which was part of the category "*Emotional relations to oral health*". The categories and designations of subcategories and codes were discussed by the examiners until consensus was reached.

Results

The principle theme was characterized by cognitive consistency and emotional inconsistency regarding attitudes to oral health. After the interview material was analyzed, the manifest content could be described in the form of three categories and seven associated subcategories, as presented in Table I.

Awareness of determinants for oral health

The main category could be subcategorized into knowledge and activities. For the informants, oral health was a term that they had not previously reflected upon, but still considered important or very important. To the question about what oral health meant, the reply was a description of the knowledge they had and an account of what activities were necessary for good oral health and actually what they themselves carried out. Oral health was primarily considered to be the health of the teeth.

Table I. Theme, categories, and subcategories resulting from semi-structured interviews of 17 adolescents assessed with high caries risk

Theme	Cognitive consistency and emotional inconsistency regarding oral health						
Category	Awareness of determinants for oral health		Emotional relations to oral health			Values in oral health	
Subcategory	Knowledge	Activities	Positive feelings	Impassiveness	Negative feelings	Appearance	Function
Code	• importance of dietary habits • caries is caused by bacteria • smoking is harmful • fluoride is protective • school, TV, dental care, home as sources of information	• brushing/forgetting to brush • eats sweets often • drinks soft drinks often • having fluoride tablets or rinses	• perceived improvement • sense of control • sense of satisfaction • belief in future • sense of being well supported	• I don't worry about my oral health • oral health doesn't mean anything • it'll be all right • the dentist will fix it	• frustration • fear • uneasiness about money • determined "by bad genes" • sense of lost oral health control	• fresh-smelling breath • white teeth • even teeth • social value	• smile freely • chew unhindered • speak unhindered

Knowledge

The informants, even the younger ones, declared that they now had more knowledge of the relationship between oral health and self-care compared to when they were younger.

> *You didn't know about it, that it (candy and sweetened drinks) could harm your teeth. You had a lot of sweetened drinks and so, and had a lot of things that weren't good for your teeth when you were younger. (Interview 17; boy 15 years)*

Caries was primarily considered to be a result of frequent consumption of candy and sweetened drinks, but that it was also caused by bacteria. Some informants, however, declared that the frequent consumption of Coca-Cola while playing computer games was a conscious risk they took and part of the computer game culture. Poor toothbrushing was known as a risk factor for caries and not drinking milk was regarded as a contributing cause of impaired oral health. The association between hygiene and periodontal conditions was not mentioned as anything that was actively recognized, and flossing was rarely mentioned. There was an awareness of the harmful effects of snuff on the oral mucosa and the risk of tooth discoloration. The perception was that snuff inhibited the development of caries. Smoking was considered to be negative for oral health. There was also knowledge of the positive effects of fluoride on teeth and the value of xylitol chewing gum. Although the informants had a general knowledge of the risks of caries, awareness of their own caries risk was low. The communication of knowledge by the personnel could be experienced as superfluous and not adapted to the patient's age.

> *But I thought, but I'm not a little kid who doesn't understand that it isn't good for the teeth. They don't need to stand there and declare everything to me. (Interview 8; boy 16 years)*

Above all, the informants believed that they had received their knowledge from their parents, who had repeatedly reminded them about toothbrushing. School had also contributed to their knowledge, as had TV and other advertising media. Information and support from the dental professionals was, for the most part, felt to be positive and satisfactory. Even though the causal link was known, there was the view that caries could not be avoided.

> *No, I thought it was common? Because I have been coming here once a year. I never knew that more than two teeth had been filled . . . or whatever. I thought that most people had it like that when they came. (Interview 2; boy 18 years)*

Activities

The informants declared that their oral hygiene habits had improved with age. They now brushed and rinsed with fluoride more often and explained their present caries by previous inadequate routines concerning toothbrushing and poor compliance in fluoride medication. Toothbrushing morning and evening was considered to be the most important activity to accomplish, especially in order to avoid bad breath.

> *. . . and if you come to brush, then it's not very much, and most of all because of the breath . . . (Interview 10; boy 15 years)*

Despite feeling that they had improved their habits, the informants reported forgetfulness and lack of time and energy as common reasons why they sometimes still failed in their oral hygiene.

> *And you don't, say, always brush that thoroughly either. I don't have time in the morning either. I do a lot of other things, and then, at the last minute, you remember-"Oh damn, I need to brush my teeth", and then the bus is coming and you have to beat it to make it to the bus. And then you get a little sloppy, or whatever. And then you forget it in the evening and, that's it. Sometimes, you wake up a little earlier, and then you brush your teeth. But that doesn't happen very often. Except for now, lately, it's been more often. (Interview 9; boy 17 years)*

When the recommendation on fluoride rinsing was not followed, it was explained by "don't get around to it" or by their lacking belief in the effect. Frequent candy consumption was common and sometimes described as an addiction that the informant wanted to be free of.

Emotional relations to oral health

This category, describing the informants' feelings about oral health, included three subcategories of feelings: positive, impassiveness, and negative.

Positive feelings

Seeing the dentist was a positive experience resulting in a sense of control, and continuing to see the dentist after the period of gratuitous dental care had ceased was considered a matter of course. Even though oral health was felt not to be optimal at the moment, a positive change was expected. Thinking of the future was not a concern and they intended to continue their efforts in oral hygiene.

> *. . . it feels good, I still have a lot of small cavities, but if I keep on like this to prevent it, it will help keep them from developing so fast. (Interview 3; girl 17 years)*

Impassiveness

This subcategory described an unconcerned attitude. The dentist was seen as the one whose task it was to "fix" possible defects. New cavities were therefore nothing to worry about and regarded as normal and not disquieting. To have worse teeth than others was not considered to be anything negative, just a part of being young.

> *. . . I'll wait and see what comes, if I have a cavity or if I have to pull one out, OK, then I will have to pay . . . (Interview 1; girl 19 years)*

Negative feelings

Getting more cavities despite taking care of the teeth by brushing and eating less candy was described as frustrating and the sense of losing control.

> *. . . then you get sad or whatever . . . It can't be your own fault that you have cavities, can it? Like when you didn't eat much candy. (Interview 4; girl 18 years)*

Poor awareness of one's own caries risk was considered a result of dental personnel's way of giving information. The informants considered that the professionals ought to have informed them more expressly of the results of the latest risk assessment in order thereby to motivate better habits at an earlier stage.

> *. . . they never really told me off properly, or how do you say, that I must improve now because the risk was great. They didn't say that . . . they should have. (Interview 16; boy 16 years)*

There was a view that heredity, poor habits passed on by the parents, or the transmission of poor saliva had a negative influence on emotions concerning present and future oral health.

> *It was said in the documents, or something, (that my teeth were bad) when I came to Sweden . . . at the age of two . . . and then it was, like, my teeth just got bad . . . (Interview 7; girl 17 years)*

The theme oral health renewed memories of fear and terror in connection with previous dental visits and feelings of discomfort at the thought of future dental care.

> *It is still there, in the back of your mind since you were little. You heard the drill coming and the syringes and everything. (Interview 13; boy 17 years)*

For the older youths, thoughts about future oral health were primarily associated with a fear of the high costs of dental care.

Values in oral health

This category was formed from two subcategories: "Appearance" and "Function". Oral health was considered important because the mouth and the teeth convey impressions of sight and smell to other people. Appearance also affected one's self-image; even functional aspects of oral health were valued.

Appearance

Appearance and breath were considered very important aspects of oral health. To have poor teeth could be perceived as being a social outcast.

> *They might be doing drugs, they might even be homeless tramps, because they don't have nice teeth. It's sad to think that way, but . . . (Interview 11; girl 19 years)*

A white, even, row of teeth was considered a sign of good oral health and something desirable and contributing to self-confidence. Among those interviewed there was both satisfaction and dissatisfaction with their appearance. The perception that teeth could be significant to self-esteem was emphasized in relation to treatment of incisive mineralization disturbances. Although white teeth were mentioned as important, placing too much attention on one's appearance was believed to be wrong and the informants were critical concerning what was considered a fixation on appearance.

Fresh-smelling breath was accorded great importance and a sign of good oral health. The informants related negative experiences of adults with bad breath, something that was felt to be repugnant. They brushed their teeth primarily for the sake of good breath and for the sensation of freshness. Chewing gum or consuming candy could also be a way of guaranteeing good breath. In this context, smoking was mentioned as a cause of bad breath and thereby poor oral health. Fresh-smelling breath was emphasized concerning contact with the opposite sex.

> *And then it is this thing about having a girlfriend or a boyfriend, then you are thinking "I hope my mouth doesn't smell bad" and all that. (Interview 5; boy 18 years)*

Function

Good oral functions, such as being able to chew and speak, were considered measures of oral health.

> *It is important for the future, the teeth. To be able to manage things yourself, eating and talking. I don't want dentures, as I said before. My father has them,*

and I see how difficult it is. He usually warns me himself also. (Interview 6; boy 19 years)

Discussion

Discussion of the informants and the method

Less than 40% of the selected patients with high caries risk chose to participate in this study. Those who declined were asked, without pressure, for the reason, and the answer was often "don't want to" or "don't feel like it". It is possible that the theme "oral health" was not felt to be very exciting by those with extensive and active caries and a need to see the dentist often. Those who accepted the invitation may therefore have been the most interested and communicative of the individuals having a relatively positive attitude to dental care and its representatives. Since the interviewer was a dentist, there was also a certain risk that the informants would try to appear better than they really were. Thus, in spite of a balanced mix of sex, socio-economy and ethnicity, the findings of this study may not be fully representative for the entire group of adolescent patients at high risk.

For the qualitative content analysis in this study, the Graneheim & Lundman model was used to create meaning units, codes, and categories [20]. A fundamental decision before such an analysis is carried out is whether it should focus on the manifest (visible, obvious components) or the latent (underlying meaning) content. The present study focused on the manifest content. In evaluating the text, meaning units and codes were created and data were categorized after discussions between the interviewer and the co-examiner. Saturation within each category was achieved during the analysis of the answers and statements. The validity of the method was assured by requirements for credibility, in that aim, selection, and data collection could be reviewed and presented.

Discussion of the results

The theme that characterized the interviews was one of cognitive consistency and emotional inconsistency regarding attitudes to oral health. On the rational plane, there was knowledge of the determinants for good oral health. Relevant intentions and activities in the oral health area were coupled with a rationale of the value of oral health. However, on the emotional plane, there was an ambivalence coupled with conflicting feelings. One important reflection was that the present high-risk informants described their knowledge rather than their attitudes to oral health, but when expressed they were largely similar to those of the adolescents with "normal" caries risk, as described in the qualitative study by Östberg et al. [19].

The relationship between oral hygiene and caries, as well as the association between eating habits and caries, was known by the interviewed. In spite of frequent contact with dental care, the dental professionals were not those reported to be the primary source of information; the parents' role was considered more important. This was in agreement with the recent study by Östberg [18], in which the participants acknowledged the support of their parents but also expressed a wish to be "taught more" at the dental visit. Information and knowledge as a foundation for creating a positive attitude to oral health are important, but may not necessarily lead to positive behavioral changes. Caries risk was not always considered a perceptible threat, probably because the result of the risk assessment was unknown. Some of the informants felt that the caries situation had suffered because of this. There is an obvious risk that if the potential dangers of initial caries are not clearly explained the situation may be perceived as less serious than it is. While some informants were frustrated over new cavities, others did not feel this to be a setback.

Toothbrushing emerged as the most important determinant of oral health, thus reinforcing previous findings [21]. Intentions about improving oral hygiene routines after a dental visit often came to nothing. Toothbrushing is apparently not an activity that has achieved the status of an internalized action. This low degree of "compliance" with dentistry's foremost health message is well known [22] and an effective strategy for promoting toothbrushing compliance in a long-term perspective has yet to be established [23]. The informants in the study attached no quality aspects to toothbrushing. Brushing was simply valued in terms of number of times a day; it is therefore important that the procedure is continually reviewed and monitored by the dental professionals.

Informants' attempts to describe their attitudes to oral health evoked emotionally descriptive statements, although generally negative. A feeling of inadequacy linked to the fact that initiatives had not produced the desired results elicited resignation and boredom which, together with the notion that oral health was determined by uncontrollable factors, could further impact on already poor self-esteem. In the present study group, varying degrees of self-esteem and varying ability to face the setbacks that can befall a patient with high risk for caries could be seen. Self-efficacy and self-esteem are variables associated with circumstances such as socio-economy and upbringing, but, interestingly, a recent report has suggested that the association between "self-esteem" and "oral health behavior/toothbrushing" disappears during adolescence [24]. The reason may not be clear, but it appears

important that dental caregivers attempt to strengthen the young patient's beliefs in his/her ability to influence oral health. The personal meeting with the dental service personnel was generally described as reassuring, but some informants related feelings of being scolded or of feeling stupid. Statements such as "*I have the world's worst fear of dentists*" made while describing oral health indicate an uneasiness that can be at the bottom of the individual's attitude to oral health. Such an attitude can readily result in a future avoidance of dental care [25].

Among positive feelings, assurance about improved oral health in the future and belief in one's own ability to manage the caries situation were prevalent. In these cases, the relation to dental personnel was described as trusting and personal. The informants in this study, however, placed a great deal of trust concerning improved oral health in supervised dental care. The thought of continuing the regular visits inspired confidence and a feeling of security, even though future dental costs were considered an unpleasant fact. Also, in the study of Östberg et al. [19], the young adults considered that dental care was expensive, but, even so, many break their contacts with regular dental care for monetary reasons [17]. Explanations such as "can't afford to take care of my teeth" can also be a justification of fear and a dental avoidance behavior, however.

Appearance and fresh-smelling breath, alongside functional aspects, were determinants for how the informants valued oral health. White and straight teeth were highly valued. Young people are strongly influenced by the media, where outward appearance is constantly in focus, and the informants' statements agree with results from surveys illustrating the role that appearance plays in valuing oneself and others [26,27]. Many of the informants in this study were torn between the issue of fixation on appearance and the moral position that emphasizes the equal value of people. The anxiety of not having fresh-smelling breath played a large role and served as a strong incitement for toothbrushing and may be an underestimated tool in motivating adolescents to brush. The viewpoint that the value of oral health lies in good function was emphasized by informants who have had contact with edentulous people in their surroundings, either in the family or in experiences from health care, but was in other cases taken for granted.

In conclusion, this qualitative study has provided an insight into attitudes to oral health among a group of adolescents assessed with high caries risk. Understanding attitudes is important for dental professionals if they are to encourage patients at caries risk to be more aware of oral health behavior and accordingly to take appropriate action.

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