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E Hedman
P Gabre
D Birkhed
M Lepp

Authors' affiliations:
E Hedman, *P Gabre*, Department of Preventive Dentisty, Public Dental Health, Uppsala County Council, Uppsala, Sweden
E Hedman, *P Gabre*, *D Birkhed*, Department of Cariology, Institute of Odontology, The Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden
M Lepp, Institute of Health and Care Sciences, The Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden

Correspondence to:
Dr E. Hedman
Department of Preventive Dentisty
Public Dental Health
Ulleråkersvägen 21
SE-75017 Uppsala
Sweden
Tel.: +46 186116439
Fax: +46 186116120
E-mail: eva.hedman@lul.se

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Adolescents' experiences of a two-year oral health intervention programme in two Swedish secondary schools

Abstract: *Objectives:* To describe adolescents' experiences of participating in a school-based oral health intervention programme for 2 years containing education about oral health and fluoride varnish treatment at the school clinic. *Methods:* Sixteen adolescents aged 13–16 were interviewed in three focus group sessions. A phenomenographic approach was used for analysis. *Results:* The results are presented as three themes and seven descriptive categories. The three themes were 'Seeing the dental hygienist', 'Treatments at the dental hygiene clinic' and 'Education about oral health in class'. The results demonstrate satisfaction with the intervention, such as accessibility, time gain and expanding knowledge. On the other hand, feelings of vulnerability in the treatment sessions were expressed. The fluoride varnish treatment was given both positive and negative reviews. The contact between the participants and the dental hygienist was important, and the opportunity to ask questions about oral health issues was emphasized. *Conclusions:* Both positive and negative experiences of the programme were found. Adolescence is a transitional period of life, and for this reason, it is important to create a good working alliance between students and the dental hygienist in future school-based oral health interventions.

Key words: adolescents; interviews; oral health programme; phenomenography

Introduction

Schools are an interesting arena for oral health promotion because of the possibility of reaching almost everyone. In Sweden, dental professionals have been engaged in such programmes since the early 1970s (1). Adolescence is an important time of life for health promotion. It is also known that tooth brushing with fluoride toothpaste, smoking and snuff use habits, physical activity and dietary habits are established during this period (2).

The interactions between schools and different actors are important and can promote good health development for all adolescents (3). The social norm seems to be a key factor that supports good oral health. Thus, studies on health promotion should focus on the relationship between health behaviour and the social environment (4). Schools can contribute to achieving public health goals alongside their educational commitments (5).

Despite a number of studies, it is unclear which type of intervention is the most effective for oral health promotion at schools (4). Systematic reviews (6) highlight the use of fluoride and its caries reducing effects. The World Health Organization (WHO) has also published guidelines about the necessity of managing health problems from a variety of angles (7). Comprehensive strategies using several components like changing attitudes and behaviour and increasing adolescents' knowledge in the social environment have been found to be more effective than information based interventions (8).

Evaluation of oral health promotion is mainly performed using quantitative methods showing the prevalence of diseases, or measuring knowledge and attitudes before and after an intervention (9). This type of research is important for generalization, but also has limitations. One is that the perspectives of individuals participating in the study may be lost. Knowledge of how adolescents experience oral health interventions at school is, to our knowledge, rare. Bergström *et al.* (10) have recently studied the experiences from a school-based fluoride varnish programme for 13 to 16-year-olds, and Östberg (11) has shown that oral health education among adolescents is more likely to be successful when credibility and confidence of the dental personnel are perceived.

Adolescents should be seen as individuals with specific feelings, experiences and thoughts related to their own oral health. Therefore, a qualitative research approach can reveal unknown and relevant perspectives and can be a vital complement to a quantitative approach. Intervention programmes at schools involve many individuals, and their experiences may play an important role when planning effective health promotion programmes for the future. The aim of this study was therefore to describe adolescents' experiences of participating in a school-based oral health intervention programme for 2 years.

Methods

Design and approach

This study has a descriptive qualitative design with a phenomenographic research approach. Phenomenography aims to describe and identify different ways in which people experience, understand and conceptualize various phenomena in the world around them (12). The outcome of phenomenographic research is descriptions of variations in experiences of phenomena in the surrounding world (13, 14). The phenomenon in this study was experiences of a school-based oral health intervention programme. Marton (12) characterizes research that focuses on explaining how something 'really' is as the first-order perspective, while research on how things are subjectively experienced belongs to the second-order perspective. Phenomenographic research focuses on the second-order perspective.

The school-based oral health intervention programme

The programme was conducted in a county in central Sweden and included two parts:

(i) Education about oral health and tobacco, (ii) appointments at a dental hygiene clinic, where fluoride varnish treatments and prophylaxis were offered to the students. The intervention was performed as a longitudinal experimental study (Fig. 1). The intervention was studied in two parts. The first part is focused on caries incidence and will be published separately, and the second part is reported in this article.

The school-based oral health intervention programme was introduced in August 2009 in grades 6, 7 and 8 at four secondary schools, when the students were 13, 14 and 15 years old, respectively. It ran for 2 years until they finished grades 7, 8 and 9 (June 2011). The four schools, two intervention and two control schools, could not for practical reasons be randomly selected. Instead, the schools were chosen based on specific inclusion criteria: (i) the school should have a student population of at least 100 students, (ii) grades 6–8 should be represented, (iii) the school should not be situated in an area with low caries risk (15) and (iv) the school must be able to offer a special room for the dental hygienist during a 2-year period. After the schools had been selected, it was decided by drawing lots which school should be the intervention schools and which should be control schools. The programme was implemented by two dental hygienists who had been taught the same routines, one in each intervention school and is summarized as follow:

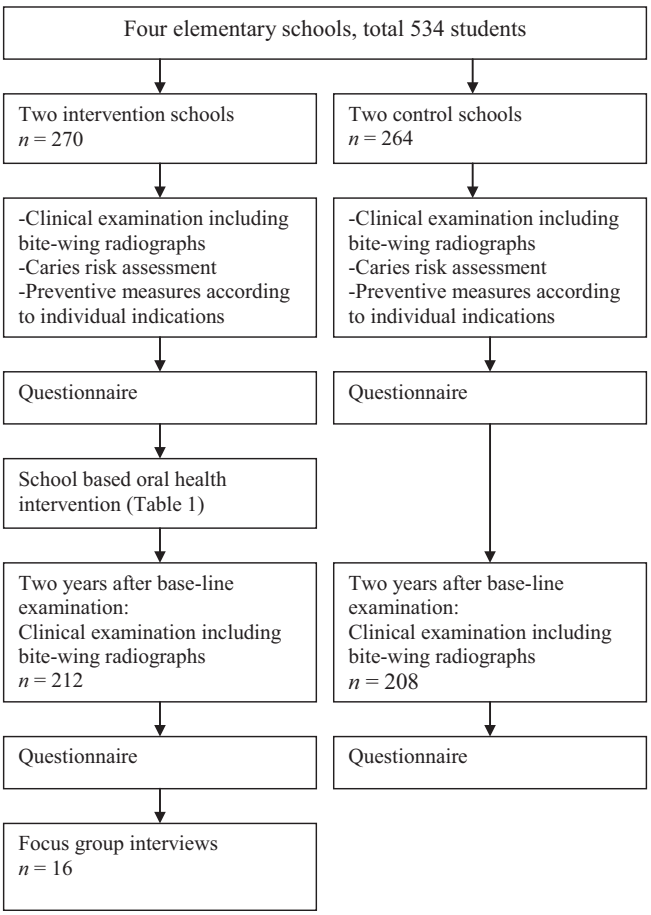

Fig. 1. Flow chart of the study.

Recurrent education about oral health and tobacco was performed once each semester for the 2 years. The teaching took place in conjunction with ordinary lessons like biology, chemistry and the dental hygienist cooperated with the teachers. In addition, the dental hygienist had an open clinic 4 h a week at the school, where screenings, prophylaxis, fluoride treatment and other preventive measures were carried out regularly. All students were offered fluoride varnish application every 6 months. Adolescents who were identified as at risk of caries were offered preventive measures at the school clinic. They were identified as high-risk patients by a dentist or dental hygienist at regular examinations in the public dental clinic. Through dialogue, the hygienist tried to motivate the adolescents to improve their oral health behaviour. Adolescents who declined supplemental preventive measures at school were offered the same treatment at the dental clinic. In the control schools, all adolescents who were identified as at risk of caries received the same preventive care at the dental clinic.

Students and school staff could go to see the dental hygienist at their own initiative for advice and help, and oral-care products such as toothbrushes and toothpaste were also for sale at a low cost. When the intervention began, parents were informed about the study design at a meeting at the school (Table 1). No interventions were carried out in the control group, but the effects of the attitudes and caries incidence were measured in the same way as for the intervention group (Fig. 1).

Selection of participants for focus group interviews

The study population consisted of 16 adolescents, ten girls and six boys between the ages of 13–16 (Table 2). Twenty students were originally invited, but two girls declined due to lack of time, and two boys did not turn up for the interview. The participants were selected from a larger sample of 212 students who had participated in the intervention programme. According to the phenomenographic research approach, a purposeful selection of individuals with different backgrounds and ages was made to gain a variety of experiences (13). The first criterion for selection was those Swedish speaking adolescents who had attended the whole 2-year intervention programme. To fulfil the selection of variation, both girls and boys were chosen; it was also important that all grades (7, 8 and 9) and ages (13–16 years) were represented. Request to participate in the interview was made through phone calls and class lists (Table 2).

Table 1. **Components in the school-based oral health intervention programme**

Intervention components	Description
Parent meetings	At the start of the study in grades 6–9
Population:	
Education about oral health	All participants were offered recurrent lessons once per semester for 2 years
Fluoride varnish treatments	Every 6 months in 6–9 grades
Spontaneous visits to the dental hygienist clinic	Participants in grades 6–9 could at their own initiative go to the dental hygiene clinic
High risk:	
Screening and prophylaxis	Participants with high risk of dental diseases were offered prophylaxis in the dental hygienist clinic

Focus group interviews

Focus group interviews were conducted in spring 2011. The most common method in phenomenographic research is based on interviews. In this study, data were collected in three focus group interviews, with 4–7 participants in each (Table 2). Focus groups were chosen because the method gives the advantage of a collective interplay of ideas, feelings and experiences among the participants, and this can initiate and stimulate the group discussion. The interviews that were built on group interaction can thereby be valuable for capturing how conceptions are constructed (16). One of the focus groups (group 1) was initially conducted to test the questions. However, as no change in procedure was made, this interview was also included in the study.

To obtain the adolescents' own experiences of the phenomenon, great emphasis was placed on the interview situation. The interviews were performed as conversations, led by a dental hygienist (author EH). She was trained in qualitative interviewing and did not participate in the school-based intervention programme. A co-researcher took notes during the sessions, which lasted between 20 and 30 min and were tape-recorded to ensure transcription accuracy. The interviews took place in a conference or classroom during school hours and were held without any school staff present. Three photos related to the intervention were used as a kind of starter for the group discussions and to help the participants to remember what they had experienced. Photos are known to highlight the discussion among participants in a group (17). The photos showed pictures of the dental hygienist, the treatments at the dental hygiene clinic and the education about oral health and tobacco in class.

The introductory interview question was 'Can you tell me about your experiences of the school-based oral health intervention you participated in?' To encourage conversation during the interviews, appropriate questions were used, for example, 'What do you mean?' 'Can you explain··· tell me more about···,' etc.

Analysis of data

The interviews were analysed using a phenomenographic research approach (13, 14). From the start, it was important to become familiar with the content and to obtain an overall impression of the interviews. One of the authors (EH) studied the material thoroughly, listened and read the tape-recorded text several times after the interviews had been transcribed verbatim. Variations in the material were noted, followed by

Table 2. **Distribution of number, sex, grade and schools (designated a and b) of the three focus groups interviews**

Focus group no	Number	Girls	Boys	Grade 7	Grade 8	Grade 9	School
1	4	4	0	2	1	1	a
2	7	3	4	1	3	3	b
3	5	3	2	1	2	2	a
Total	16	10	6	4	6	6	

identification of the three themes. The next stage was a more specific reading aiming to detect the various experiences of the participants. During the reading, seven categories emerged (see below) and constituted the 'outcome space' describing the variation of meaning of their conceptions of the school-based oral health intervention programme. The categories were compared with each other to arrive at a definitive description of the unique nature of each category (13). The credibility of the categories was discussed and redefined both in a research group with several researchers familiar with the phenomenographic approach and between the authors until agreement was reached.

Ethics

The Ethics Committee at the Faculty of Medicine, Uppsala University, Sweden, approved the study, Dnr 2009/087. The informants were contacted by telephone and asked whether they were willing to participate in the study. Informed written and verbal consent was obtained from all 16 participants and their parents before the beginning of the study. They were also informed that they could withdraw from the study at any time without giving a reason.

Results

The results of the analysis are presented as three themes representing different conceptions of having participated in the programme: 'Seeing the dental hygienist', 'Treatments at the dental hygiene clinic' and 'Education about oral health in class'. Seven descriptive categories about adolescents' experiences of participating in a school-based oral health intervention emerged from the focus group discussions, and they were 'Easy to access', 'Developing trust', 'Importance of the environment for feeling comfortable or uncomfortable', 'Fluoride varnish a positive and negative event', 'Taste of the varnish was special', 'Learning and expanding knowledge' and 'Taking control of your own health' (Table 3). Quotations were used to describe and illustrate the variation within the different conceptions. The square brackets [ ] include clarifications made by the authors.

Theme: seeing the dental hygienist

This theme consists of two categories: Easy to access and Developing trust.

Table 3. **Distribution of themes and categories**

Themes	Categories
Seeing the dental hygienist	Easy to access
	Developing trust
Treatments at the dental hygiene clinic	Importance of the environment for feeling comfortable and uncomfortable
	Fluoride varnish- a positive and negative event
	The taste of the varnish was special
Education about oral health in class	Learning and expanding knowledge
	Taking control over your own oral health

Easy to access

This category covers positive statements related to the accessibility of the dental hygienist and the time gained. The time gained meant not having to wait for the bus back and forth to the dental clinic. The short distance to the dental hygienist at school made it possible for the adolescents to participate in almost all their classes:

> Girl: It (accessibility) is good, because it's a long way to the dentist, and you have to catch the bus at the right time. Now it takes three minutes of class time instead of a whole morning.
>
> Boy: Or on a break, when you don't lose almost any time at all.
>
> Girl: Right, maybe even so, then you hardly miss anything. (Focus group 3)

The options on getting quick help when there was a problem with the gums or teeth were discussed:

> Girl: I had a gum problem and got help the very same day it's really easy to go down and see her [the dental hygienist] if you have any questions or want to buy toothbrushes or get help with your rubber bands for your braces.
>
> Girl: Yes, I use to go there and ask things. (Focus group 1)

The advantage of everyone having access to the dental hygiene clinic was also mentioned as well as the fact that all students were offered the opportunity to participate. The difficulty

of saying 'no' if all of your classmates accepted the offer to go to the dental hygienist was also highlighted. The feeling of not fitting in or being accepted by peers was described as strong:

> Girl: You don't have to, but everybody gets a chance, which is good. If you don't want to you just don't go down and see her.
>
> Boy: Yeah, it affects you, which is good too, but you just can't get out of it, hard to say no because you want to be like everyone else, so you go down [to get the fluoride varnish]. (Focus group 2)

Developing trust

The statements in this category indicate a development of trust in the dental hygienist. The participants also highlighted feeling free to ask all kinds of questions. Getting to know her meant, according to some statements, a basic sense of security, and her knowledge and ability to communicate led to a feeling of trust during the treatment:

> Girl: I don't consider her [dental hygienist] a dentist. It's like she's somebody you know, she's nice, you can ask about stuff. I know who she is and what she does, she tells you what she's going to do and all that. (Focus group 2)

The advantage of always seeing the same dental hygienist was also emphasized. At the public dental clinic, you often saw many different dentists or dental hygienists, and the continuity was mentioned as particularly important. The participants also mentioned the dental hygienist being nice, uncomplicated and gentle and that she took care of you in a professional way. This was described as making the participants less nervous when they went to their ordinary dentist later on:

> Boy: When I went to my regular dentist I felt more secure, listened better. I already knew there was no major problem 'cause she [dental hygienist] had checked. (Focus group 1)

Theme: treatments at the dental hygiene clinic

The second theme includes three categories: Importance of the environment for feeling comfortable or uncomfortable, Fluoride varnish – a positive and negative event and Tasting the varnish was special.

Importance of the environment for feeling comfortable or uncomfortable

Statements in this category express how different it was to see the dental hygienist at the dental hygiene clinic as compared with going to the public dental clinic in town. The statements included the design of the dental hygiene clinic in school, the equipment, the treatment chair and the smell in the room. This was described as less threatening than at the public dental clinic and something that could reduce uncomfortable feelings for people with dental fear:

> Girl: I'm sure it helps people who are scared, because it's not like going to the dentist really. The place doesn't smell like a dentist's office, there's no noise and the chair isn't as scary as a dentist's chair.
>
> Boy: It's comfortable and not scary. (Focus group 3)

However, the dental hygiene clinic was also described as ugly, and it was said that it was not proper to have the clinic in a kitchen:

> Girl: God, what ugly walls, like the kitchen at a workplace like, no I'd rather go into town. (Focus group 3)

Fluoride varnish – a positive and negative event

This category deals with statements about the varnish treatments being both positive and negative events. One positive aspect was that it was a short, undramatic and pleasant:

> Girl: There's nothing dramatic about going down to see her [dental hygienist] and it's often very quick. The first time it was a little exciting, trying something new.
>
> Boy: Yeah, it was fun right when she brushed on the varnish. You felt good you know ··· afterwards. (Focus group 2)

To be treated in groups of two or three could be considered as a positive experience, as the group could provide a feeling of security. However, it was also described as embarrassing, especially if the participants had not brushed their teeth properly:

> Girl: Going down to see her [dental hygienist] two by two can be a little embarrassing if you haven't brushed your teeth. (Focus group 1)

The taste of the varnish was special

In this category, the taste of the fluoride varnish was discussed. The taste was described as strong and yucky and suggestions about new flavours of the varnish came up:

> Boy: The banana flavor is yucky and strong, they ought to offer different flavors – strawberry, raspberry, chocolate milk.

Girl: No, juicy fruit. (Focus group 2)

Other statements described the taste as quite nice and a contributing factor to visit the dental hygienist:

Girl: The banana varnish tastes good, I suck on my teeth afterwards, look forward to getting it… (Focus group 3)

The texture of the varnish as flaky and lumpy was discussed:

Girl: I didn't like getting the banana varnish, having it on my teeth, it got lumpy like, it felt so yucky… (Focus group 2)

Theme: education about oral health in class

The third theme included two categories: Learning and expanding your knowledge and Taking control of your own oral health.

Learning and expanding your knowledge

In this category, the value of being informed, for instance, about tooth brushing twice a day, fluoride, dental erosions, healthy eating, the cost of dental care and tobacco use was described. The participants stated that the education did not include very much new information but it generated important questions to think about:

Girl: There wasn't all that much new, maybe, you learn more about teeth and all, that soft drinks corrode your teeth and how expensive dental treatment is. I think I knew almost everything about tobacco.

Girl: Yes, more or less···

Girl: But maybe I have more knowledge now, have found out things in a new way, even if I may have know about it, I guess I didn't know everything··· (Focus group 3)

More education about oral health was discussed, and the classes were mentioned as a highlight because all the classmates were listening. According to the statements, interest in teeth and oral health had increased when information was provided regularly in class and in an active way during the semester. The conversation had sometimes continued after class with peers, teachers and even parents. Films and different kinds of 'props' were described as valuable tools for starting discussions about oral health problems in class:

Boy: The classes were like the best part, when people in my class were listening and discussing for once. The teachers said [dental hygienist] and the stuff she knew was useful, she knew what she was talking about.

Girl: Right, and she came to the classroom sometimes and showed movies and stuff. We also got to look at teeth under a microscope, see what they looked like inside. We had a full morning of 'lab work' and stuff. (Focus group 2)

According to the statements, the interplay with classmates and others seemed to generate social support and made it possible to learn from each other:

Boy: I may have the same problem as somebody else, let's say I have a problem with something, then maybe they can get help through me. We can help each other and stuff.

Girl: Yeah, information spreads, like oh gosh, do you also have ··· everybody finds out about it and stuff. (Focus group 1)

Taking control of your own oral health

This category covers statements about taking responsibility for your teeth, gums and oral health:

Boy: Now I know I can affect my own situation pretty much, we got to try that out statistically, whatever it was called? What is the probability that you will get cavities if you have certain eating habits. (Focus group 2)

Aesthetics in the form of nice looking white teeth and the importance of fresh breath were also discussed:

Girl: Now I know, of course, now… that I'm responsible for my own teeth. I see my teeth somewhat different. I think it's really important to have nice white teeth, and you want to smell good, too. (Focus group 3)

Discussion

The aim of this study was to describe adolescents' experiences of participating in a school-based oral health intervention programme for 2 years. To gain access to the participants' experiences, a qualitative method based on the phenomenographic approach was used. The fundamental assumption of this approach is that there is qualitative variation in how people experience phenomena in the world around them. The approach is empirical, and the focus is on describing the world as people see it, rather than on explanations, links or frequencies (13).

In phenomenographic research, individual interviews are the most common method. In this study, we chose focus group

interviews to achieve interaction between the participants. This was important and probably made the interview material richer and more extensive compared with individual interviews. It was in the focus group discussions sharing of experiences emerges, and with rather small groups (4–7), all participants could be heard and express their experiences of the phenomenon. The disadvantage of group interviews may be the impact the group has on the individuals' opportunity to express his/her experiences. Furthermore, a single strong voice may tend to dominate the group; this must be handled by the interviewer, creating opportunities for everybody voice to be heard (16).

The interview began with a question as mentioned above: 'Can you tell me about your experiences of the school-based oral health intervention you participated in?' As a complement and to refresh the adolescents' memories, three photos from the intervention were used. This may have affected the conversation in a certain direction, but it also helped getting the group discussions started. The purpose of the interviews was not to establish a consensus among the participants but to give everyone an opportunity to describe his or hers experiences (18). The general impression was that the interaction was greater and the conversions livelier in the larger group with seven participants than in the groups with 4 or 5 participants. This may have affected the results as slightly fuller material was obtained from the larger group.

We consider the intervention programme as an entirety, one phenomena, containing different parts, like education about oral health and fluoride varnish treatments at the school clinic. The categories are the main results of different conceptions that contain meanings while the themes act like a sort and classification of data. In phenomenography, qualitatively different ways to experience a phenomenon is generally forming a hierarchy which can be defined in terms of increased complexity or different layers of individual experiences (19). This study derives description from a relatively small number of young people, and therefore, a categorized system like this can never claim to be definitive: However, it is likely that young people in general have similar experiences.

Qualitative data can be analysed in different ways, although it is important that the chosen method is consistent with the aim and the research questions. In this study, we strove that the categories must have a clear relationship to the phenomenon of the study, to tell us about the adolescents' experiences of having participated in the intervention programme. We think this has been achieved, and in our view, phenomenography served the purpose of the study in a satisfactory way and led to new ways of understanding the studied phenomenon that could be of use in planning future oral health interventions in schools. To improve future intervention programmes, it is important to highlight the dental hygienist pedagogic approach, so that young people feel involved, secure and empowered within the programme.

The results from this study showed both positive and negative experiences of the intervention. The access to the dental hygienist at school was considered convenient, and it was said to be easy to get quick help with oral issues. Personal contact between the participants and the dental hygienist seemed to be essential and was described as positive when it took place at school, in a neutral and less stressful environment than at a public dental clinic. The participants emphasized the importance of being well informed and given the opportunity to ask questions about their oral health. This is in line with other studies showing that the close contact between patient and therapist is important and has an impact on the outcome of dental treatments (20). According to the focus group discussions, the intervention generated social support, considered to be an essential element for health promotion (21). Participation, democracy and empowerment are important factors in health promotion (22). The participants in this study considered that the programme helped them understand how to take control over their own oral health.

To be treated in groups or in pairs seemed to create security, but at the same time a sense of vulnerability. The participants discussed the difficulty of saying no if all their classmates accepted the offer to participate in the fluoride treatment sessions. The feeling of not fitting in or not being accepted by peers seemed to be strong. Others considered it a positive experience, as the group provided a feeling of security. Adolescence is a transitional period of life and can be described as an ongoing socialization process including learning and internalizing values (23). Meeting adolescents' actual needs in future health interventions programmes is important and requires understanding and knowledge of their experiences and attitudes.

Dental caries is unevenly distributed in the Swedish population, and two different strategies to prevent caries can be used. People with less caries could be targeted using high-risk strategies, that is, only those individuals who suffer seriously from caries would receive preventive measures. However, this strategy has limitations. High-risk individuals are difficult to reach with a message about prevention, and it is difficult to obtain compliance. In addition, as very few individuals (10–15%) in Sweden suffer from serious caries problem today, the majority of caries lesions will be found among the population at low risk (24). Therefore, directing the preventive interventions to the whole population is the most effective methods. High-risk individuals can be included when they do the same things as their friends and will not be singled out because of their poor oral health (1).

Many adolescents in Sweden have good oral health, and the task of further motivating them to have good oral health habits could be a challenge for the dental staff. Previous studies have shown that knowledge alone does not bring behavioural changes (24). The participants in the present study emphasized the importance of health training and good interaction between teachers and the dental hygienists and that it stimulates further discussion among peers and parents. The importance of involving parents in oral health questions is obvious, as children transmit information effectively to the family and thus change the knowledge and attitudes of their family members (25). Other studies have also shown the importance of

good atmosphere and good cooperation between actors at school and that this is an important factor for pupils and teachers' welfare and interaction (26, 27).

The oral health intervention programme included several components, such as dental check-ups, fluoride varnish treatments, oral health education in class, spontaneous visits, parent meeting and sale of oral-care products such as toothbrushes and toothpaste. The participants in this study discussed the fluoride varnish treatment, the special taste and the texture of the varnish in detail. This is in line with a recently published study by Bergström *et al.* (10), showing that the adolescents experienced the varnish differently from person to person, and it was also described as positive to take part in a varnish programme at school. In addition, the participants reflected on activities in the classroom and the importance of a respectful meeting with the dental hygienist. This is in line with the findings of other studies in which adolescents expressed a desire to receive information in respectful dialogue and with a content dealing with health consequences that affect them and are not too far away in time (9). Adolescence is a sensitive age, and for this reason, it is important for dental hygienists to create good working alliances with both students in groups and individual students in future school-based oral health intervention programmes.

Clinical relevance

Scientific rationale for study

Knowledge about adolescents' experiences of preventive programmes gives dental professionals insight into young people's own thoughts in accordance with the United Nations Convention on the Rights of the Child.

Principal findings

The access to the dental hygienist at school was described as convenient. Personal contact between the adolescents and the dental hygienist seemed to be essential and was described as positive when it took place at school, in a neutral and less stressful environment than the at the public dental clinic.

Practical implication

Knowledge about oral health programmes can help dental professionals to develop guidelines for preventive population strategies.

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Author's contribution

EH contributed to the study design and performed the literature search, conducted and analysed the interviews and served as a main author of the article. PG and ML supervised the study design, gave advice on methodology, took part in the analysis and acted as co-authors. DB contributed to the study design, gave advice and acted as co-author.

Conflict of interests

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

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