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ORIGINAL ARTICLE

Adolescents' experiences of a theory-based behavioural intervention for improved oral hygiene: A qualitative interview study

Sandra L. Dimenäs[1,2] | Anna-Lena Östberg[3] | Mona Lundin[4] | Jesper Lundgren[5] | Kajsa H. Abrahamsson[1,2]

[1]Department of Periodontology, Institute of Odontology, The Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden

[2]Clinic of Periodontics, Public Dental Service, Region Västra Götaland, Gothenburg, Sweden

[3]Department of Behavioral and Community Dentistry, Institute of Odontology, The Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden

[4]Department of Education, Communication and Learning, Faculty of Education, University of Gothenburg, Gothenburg, Sweden

[5]Department of Psychology, Faculty of Social Sciences, University of Gothenburg, Gothenburg, Sweden

Correspondence
Sandra L. Dimenäs, Department of Periodontology, Institute of Odontology, The Sahlgrenska Academy, University of Gothenburg, Box 450, SE 405 30 Göteborg, Sweden.
Email: sandra.lod.dimenas@gu.se

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Abstract

Objectives: Adequate oral hygiene, that is self-performed infection control, is crucial to prevent periodontal disease. Epidemiological studies reveal poor oral hygiene conditions among Swedish adolescents and indicate a need for more effective prevention programs. The aim of the current study was to analyse adolescents' experiences of a person-centred, theory-based, oral health education program for improved oral hygiene.

Methods: Data were obtained by interviewing 19 adolescents treated by dental hygienists in accord with the person-centred education program in a preceding clinical field study (ClinicalTrials.gov NCT02906098). Study participants were selected to reflect a variation of male and female adolescents, treated at clinics in areas with various socio-demographic profiles within Region Västra Götaland, Sweden. Interviews were audio-taped, transcribed verbatim and analysed with qualitative content analysis.

Results: A main theme was identified: 'Adolescents on a guided and challenging journey towards beneficial oral hygiene behavior'. The results elucidate the importance of a person-centred approach in therapy. The adolescents described insight on a personal level about the importance of improved oral hygiene as fundamental for behavioural change. Planning and monitoring of the behaviour, with guidance and support by the dental hygienist, was considered to facilitate change and encouraged further behavioural efforts. However, the adolescents expressed a need of reminders and support to keep up oral hygiene routines over time.

Conclusions: The study brings knowledge on factors of importance in educational interventions to increase beneficial health behaviours among adolescents and emphasize areas for further improvements of such interventions.

KEYWORDS
adolescent, behavioural intervention, oral hygiene, prevention, qualitative interview

1 | INTRODUCTION

To promote health and prevent disease progression are issues in focus for health professionals. In the meeting with young patients, promotion of healthy habits should be given specific priority since trying to change unhealthy habits after they have become a part of the person's lifestyle is harder.[1] For several decades, health promotion and prevention have also been in focus for the free-of-charge dental care provided to Swedish children and adolescents. However, to what degree such current prevention programs are effective enough in order to promote periodontal health among young people could be questioned. Epidemiological surveys reveal that Swedish adolescents have poor oral hygiene conditions, with a high degree of plaque and gingivitis.[2–5] If left untreated such poor oral hygiene conditions may over time progress into a chronic and destructive oral disease, that is periodontitis. Periodontitis is one of the most common diseases in adult populations and effective measures to promote periodontal health are thus of great importance.[6,7] Hence, to encourage young people to prevent an oral disease that might be reality in a distant future is an important challenge for dental professionals.

The results of a previous study, focusing on adolescents' views on oral health education, elucidate the importance to be recognized as an individual person by the dental personnel and suggest that health education is more likely to be successful when credibility and confidence are perceived.[8] In addition, having appropriate knowledge is important in order to make informed choices about health-related issues but not necessarily enough and there are many factors in a young person's life that might interact with their oral health behaviours, such as environmental influences and support as well as the individual's maturity, motivation, ability and priorities.[9] Yeager et al.[10] discussed why prevention programs to influence adolescent behaviour often fail, although could succeed. The authors propose that interventions fail when they do not align with adolescents' enhanced desire to feel respected and be accorded (social) status, while interventions that do align with such desires are more likely to capture adolescents' attention and motivation to create a positive behavioural change. Hence, effective interventions can make long-term healthy choices aligned with short-term rewards that come from attaining status and being respected, rather than trying to make adolescents care about long-term health more than short-term social success.[10]

Evidence suggests that educational approaches, based on social-cognitive theoretical constructs, could reinforce patient's adherence to beneficial oral hygiene behaviour.[11–13] Social-cognitive theory[1] place the individual in a social context and health promotion models based on this approach include knowledge of health risks/benefits, perceived self-efficacy, that is to be in control over one's health habits, expectancies of costs/benefits of health-related behaviours, as well as individual health goals and concrete plans for realizing them. The conclusions drawn from a systematic review, by Newton & Asimakopoulou,[11] were that understanding the benefits of behavioural change and the seriousness of (or risks for) periodontal disease are important predictors for the likelihood of behavioural change. Moreover, the results of this review suggest that the use of goal-setting, planning of the behaviours in question, as well as self-monitoring of behaviours are important components in interventions for improved oral hygiene. Additionally, motivational interviewing (MI), that is a collaborative and person-centred form of guiding to elicit and strengthen an individual's motivation for change,[14,15] has been suggested as a promising communicative approach to use in interventions towards improved oral hygiene behaviour.[16] Person-centred communication and care refers to the importance of acknowledging the individual behind the patient with own preferences, needs and values and thus, engage the person to be an active partner in his/her care and treatment.[17,18] In dentistry, however, the evidence for theory-based behavioural interventions is still weak and, so far, most of available evidence relies on studies involving adult patients with periodontitis treated at specialist clinics.[19] Hence, it is important to evaluate such theory-based behavioural interventions in other age and patient groups[12] as well as when treatment is performed in general practice.[20] Moreover, to increase understanding of how educational- behavioural interventions exerts their effects, the use of complementary qualitative research approaches could contribute with knowledge that cannot be captured with quantitative methods.[21]

The current qualitative interview study was performed to gain deeper understanding of treatment related factors with potential influence on adolescents' motivation for adequate oral hygiene behaviour. The specific aim was to analyse adolescents' experiences of a behavioural intervention in accordance with a person-centred, theory-based, oral health education program for improved oral hygiene.

2 | METHODS

2.1 | Study design and study group

2.1.1 | Preceding clinical field study and treatment in accord with the person-centred, theory-based, oral health education program

The target study group consisted of adolescents, 17–19 years of age, who had taken part in a preceding randomized clinical field study (ClinicalTrials.gov NCT02906098) to test a person-centred, theory-based, oral health education program for the potential to increase adolescents' motivation for self-performed periodontal infection control, that is adequate oral hygiene behaviour. Adolescents with poor oral hygiene status (i.e high degree of gingival bleeding and/or dental plaque) were judged as eligible for participation in the preceding clinical study and identified in conjunction with regular dental examination in the Public Dental Service (PDS), Region Västra Götaland (VG), Sweden.

Treatment in accord with the person-centred, theory-based, education program involved 16 dental hygienists (DHs), specially trained for the study and working at different clinics within the PDS, VG. The DHs used a collaborative, person-centred and guiding approach, inspired by MI,[22] in communication with the adolescent patients. The treatment, that was based on a social-cognitive theoretical approach[1] (model inspired by Jönsson et al.[19]), followed a specific structure including components such as formulation of personal goals for oral health and oral hygiene behaviours, planning of behaviours and continuous self-monitoring by written diary. The initial intervention phase contained three treatment sessions, 45–60 min each, during a period of 10–12 weeks. Follow-up was then performed after 6 and 18 months. Clinical outcome variables evaluated were gingival bleeding and dental plaque (for further details on the intervention and clinical outcomes, see; Dimenäs et al.[23]). An overview of the study and components of the behavioural intervention is presented in Figure 1.

2.1.2 | Current qualitative interview study

Adolescents who had been treated in accord with the person-centred education program and who had fulfilled participation in the preceding clinical study to the 18-month follow-up were informed about the following, current, interview study in written and that they might be contacted by phone for an invitation to participate. Voluntariness and confidentiality were stressed and the study participants gave a written informed consent before entering the study. The study protocol was reviewed and approved by the Regional Ethical Review Board, Gothenburg, Sweden (Dnr: 357–18). In addition, consolidated criteria for reporting qualitative research[24] (COREQ: 32 item checklist) were carefully considered and addressed when deemed as relevant with regard to the current study.

Study participants were strategically selected to reflect the variation of the target study group of male and female adolescents, treated at clinics geographically located in metropolitan, urban and rural areas with various socio-demographic profiles within Region

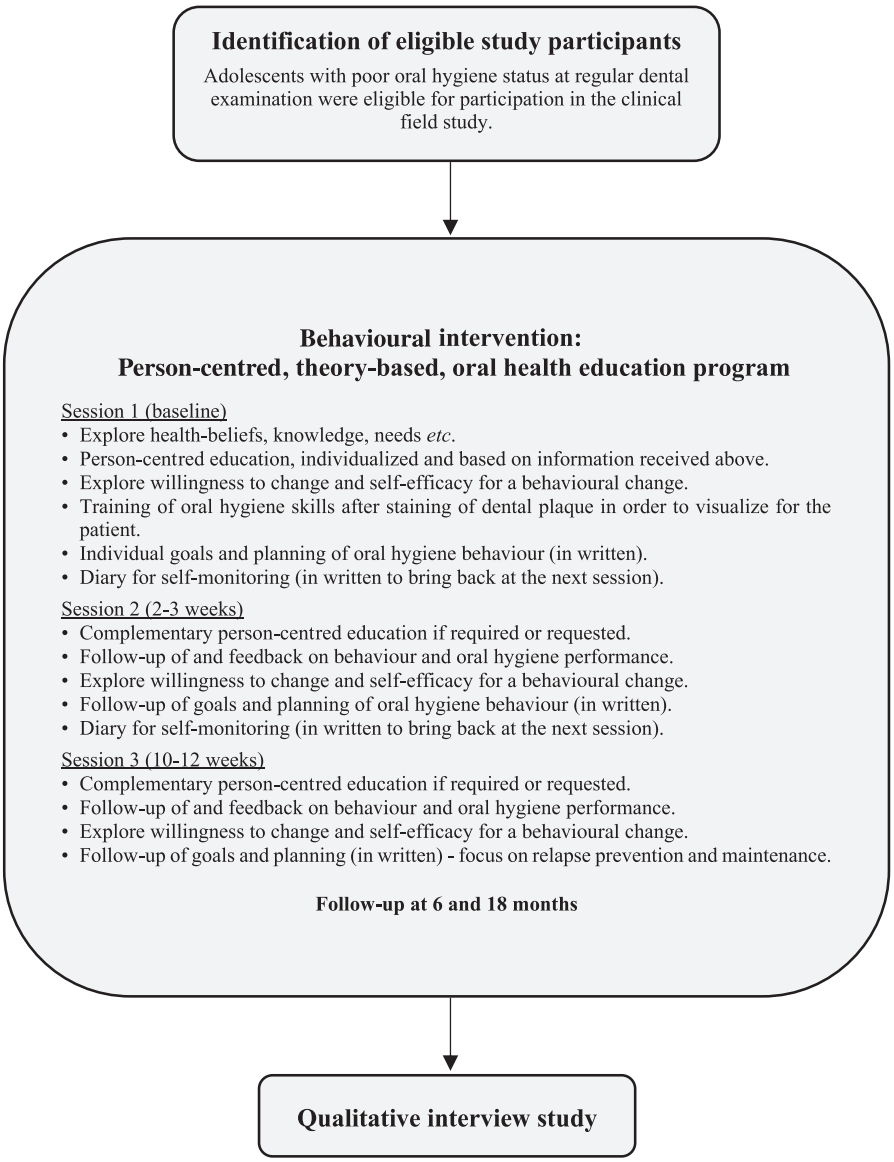

FIGURE 1 Overview of the clinical field study and the components of the behavioural intervention. Adolescents who fulfilled participation to the 18-month follow-up were eligible for participation in the current qualitative interview study

VG. Potential study participants were subsequently contacted by phone (by the first author) for further information about the interview study and asked about their willingness to participate. In total, 47 adolescents were contacted by phone. If interested to participate the adolescent was scheduled for a forthcoming focus group interview planned to comprise 4–5 adolescents/group. At the time of the interview, however, some adolescents cancelled or did not show up meaning that the focus group interviews were conducted with less participants than originally planned for or even as individual interviews. The given reason for cancellation or not showing up was illness, lack of time or that they simply had forgotten it. These adolescents were offered a new time for an interview. The study participants were reimbursed for any travelling expenses in connection with the interview and were also given four cinema tickets after the interview for taking the time to participate. Data sampling was terminated after interviews with 19 adolescents (five focus group interviews with 2–3 participants in each group and six individual interviews) and when deemed that adequate amount of information had been gained with regard to the study aims. Characteristics of study participants are shown in Table 1.

2.2 | Qualitative interviews

Open-ended interviews were conducted by the first author (DH and doctoral student without previous relationship with the study participants). Before data collection started, the interviewer was trained in interview technique. The interviews were then performed during January to December 2019 and took place at neutral locals, outside the dental clinics, within Region VG. An interview guide was used covering focus areas for dialogue, that is adolescents' views on; (a) communicative factors in the therapy, (b) the different components/means included in the person-centred education program and (c) potential benefits of therapy for improved oral health behaviour and overall oral health. The interviews started with the open and broad question; 'Please tell me about how you experienced the therapy that you received during the study?' Based on the adolescents' answers, various follow-up and probing questions were raised in order to cover the interview areas of focus and get as rich information as possible in relation to the study aim. The interviews were performed in an open and conversational style to establish a relaxed and comfortable atmosphere, and where the adolescents had opportunity to raise own thoughts and topics for dialogue at any time. During group interviews, all participants were encouraged to talk and the interaction among participants was stimulated by the interviewer. In addition, an observer familiar with focus group interviews participated during the group interviews. The role of this observer was to take notes during the interviews, and also to be at help for the interviewer so that all participants had the opportunity to talk and that no important information was missed. The interviews lasted between 35 and 90 min (group interviews mean 70 min and individual interviews mean 50 min). All interviews were audio-taped and consecutively evaluated and discussed among the authors representing different fields of expertise and with extensive experience in interview technique and qualitative methodology.

2.3 | Data analysis

The audio-taped interviews were transcribed verbatim. The first author listened carefully to the tapes and added the observer's notes to the transcripts. The transcribed interview data was then imported into software for qualitative data analysis (NVivo for Mac 11.4.3) and further analysed using qualitative content analysis.[25,26] The software was used as a mean to support the researchers to manage and organize data during the different steps of analysis. The initial step of the analysis was to identify meaning units, that is central words/sentences that were condensed into descriptions near to the text. In the next step, condensed meaning units sharing similarities regarding content and context were grouped into sub-categories labelled close to the text/content. The content of the sub-categories was then interpreted on a more abstract level and further organized into categories on a higher level, that is sub-themes. In the final step of the analysis, the underlying meaning of the content of the categories and sub-themes were interpreted and formulated as a main theme. The analysis process was performed in close collaboration among the authors to ensure high quality of the interpretations of interview data.

3 | RESULTS

An overview of the results is shown in Figure 2. The main theme 'Adolescents on a guided and challenging journey towards beneficial oral hygiene behaviour' was generated from three sub-themes, (a) Initiation: To gain insight and to feel involved; it's about me and my teeth, (b) Action and change: To act by means of guidance and support, (c) Maintenance: To keep up new behavioural routines, with continued need of reminders and support. Selected interview quotations will illustrate the content of the results.

3.1 | Initiation: To gain insight and to feel involved; it's about me and my teeth

The adolescents expressed that they had quite poor knowledge about periodontal disease conditions before participating in the preceding treatment study and most of them had not reflected on their gingival bleeding in terms of a disease. That the DH took the time to explain and was interested in exploring the adolescent's thoughts and wonderings was important and made them feel acknowledged in their communication. The adolescents expressed that in such manner the information was perceived as more personalized to 'me and my teeth' than previous experiences in dentistry, which contributed to relating to the information in a different way than before:

You paid more attention to your own oral hygiene habits and everything that had to do with the mouth. What you could improve yourself. Where you were at that point in time. What you had done before… which is very individual… it's very different for different people.

(2:2 = Focus group/Interview 2: Informant 2).

TABLE 1 Characteristics of study participants

Gender	Age	Geographic location of clinic[a]	Focus group (FG) and ID number in interview[b]
Female	18	Urban	FG1; 1:1
Male	19	Urban	FG1; 1:2
Male	19	Rural	FG1; 1:3
Male	19	Urban	FG2; 2:1
Female	19	Urban	FG2; 2:2
Male	19	Rural	FG3; 3:1
Female	19	Rural	FG3; 3:2
Male	19	Rural	FG3; 3:3
Female	19	Urban	FG4; 4:1
Male	19	Urban	FG5; 5:1
Female	19	Urban	FG5; 5:2
Male	18	Urban	FG6; 6:1
Female	18	Rural	FG7; 7:1
Male	18	Metropolitan	FG7; 7:2
Male	19	Metropolitan	FG7; 7:3
Male	18	Rural	FG8; 8:1
Male	18	Rural	FG9; 9:1
Female	17	Rural	FG10; 10:1
Female	17	Metropolitan	FG11; 11:1

[a]Representing clinics in geographic areas with different socio-demographic profiles.

[b]Some planned focus group interviews were performed as individual interviews due to late cancellations/respondents not showing up.

Important for understanding and adapting to the information on a personal level was that the DH also took the time to show the bacterial deposits in the mouth, using disclosing solution to visualize and one could also see that it bled from the gums adjacent to the coatings. In addition, to have the opportunity to practice oral hygiene skills with guidance from the DH made the adolescents feel more confident about what and how to do these procedures at home.

The preceding treatment program included that the adolescents should formulate goals for their oral health and also, what needs to be done to reach these goals both in the short and long term. Setting goals was described as somewhat difficult and not something the adolescents had considered before. One of the adolescents compared it to a school assignment and that coming up with good goals would mean a good grade from the DH. Even so, the adolescents expressed that the goal-setting helped them to think about their oral conditions and what they wanted to achieve, as well as an insight in that a change in behaviour was for their own sake:

You started thinking in a different way, that you should do it for your own sake and move forward. Because if you don't have a goal, where should you go?

(2:1).

As part of the treatment program, the adolescents were also encouraged by the DH to draw up a written action plan for oral hygiene by answering questions about; where, when and how they planned their behaviour for the next visit, as well as any problems that could be foreseen and how to handle these. The experiences of the action plan varied from contributing to the treatment becoming more personal and serious, to being unnecessary and/or too much paper to handle. Still, most adolescents expressed that it was good to think about and formulate in writing how to proceed in everyday life and how to solve obstacles along the way:

Main theme	*Adolescents on a guided and challenging journey towards beneficial oral hygiene behaviour*		
Sub-themes	**Initiation:** To gain insight and to feel involved; it's about me and my teeth	**Action and change:** To act by means of guidance and support	**Maintenance:** To keep up new behaviour routines, with continued need of reminders and support
Sub-categories	• Personalized, understandable information and practical skills training • Personal goals and planning of how to reach them in everyday life • Expressions of ambivalence between willingness and action	• Realistic expectations and means to succeed • Encouraged by means of a good treatment alliance and feedback on behavioural efforts • Supported by significant others during behavioral change	• Keeping up new behaviour for one's well-being and health • Established beneficial new routines • Need of reminders and support

FIGURE 2 Overview of the results: The sub-categories represent condensed meaning units from interviews that were grouped and labelled based on content and interpretation of meaning, then further interpreted and organized in higher level categories, that is sub-themes. Finally, a main theme was generated that covered the interpretation of the underlying meanings of categories, that is interview data

> It felt more serious initially, to write it down here; like, what can stop you from reaching your goal? And then you really started thinking about what made you not brush your teeth. It kind of took it to an entirely different level.
>
> (1:3).

Even though the adolescents expressed that they gained an insight into the importance of improving their oral hygiene, they expressed at the same time ambivalence about whether they should succeed in living up to the goals they had set. The DH had touched on the question of how motivated and confident one felt to be able to carry out what one had set out to do and, at that moment, it was easy to think that one both wanted and was sure to succeed. Soon afterwards, however, feelings of doubt often arouse. The adolescents related to previous experiences in life and actions that have been difficult to realize despite good intentions, will was simply not always enough:

> It's pretty easy to think, "yes, I want better gums, I want whiter teeth. I want to feel fresher and I will use dental floss." They are goals that you want to pursue, that you want to achieve, but when it comes to actually doing it, it's not that easy.
>
> (4:1).

3.2 | Action and change: To act by means of guidance and support

The adolescents expressed the importance of individual goals being realistic and achievable. In addition, planning for the behaviour increased the chances that it was actually done. The adolescents reflected on that goal-setting and planning differed from previous experiences in dental care, which often were based on perceived expectations from dental care rather than on their own preferences and insight of their own role and responsibility:

> If you just think, “ok, I should do this,” then you probably won't do it… but if you make a plan to improve things, I think you take it more seriously and do it properly… I also think the “How” and “When” questions sort of provided a basis. Because if you just think that you ought to do it, you still haven't answered the question of “How and When”…
>
> (2:2).

As part of the treatment program the adolescents had also been encouraged to use a written diary between visits to monitor their oral hygiene behaviour. Most adolescents had not used the diary as frequently as the DH had suggested. The adolescents expressed that the idea of using a diary was good, but that it probably would have been easier to use if it had been in digital form as, for example a smartphone-application to avoid handling paper. However, it was also those who had experienced the written diary as positive to use and a good help during behavioural change. Both perspectives on the diary are exemplified in the following:

> I don't remember filling it in… can't remember where I put it… (1:1); Difficult… it's a piece of paper (1:3); I love noting down what I do during the day… You could see the difference when you go from brushing your teeth every other day to every day, morning and evening.
>
> (1:2).

The adolescents described that meeting the same DH, at several occasions during the initial phase of treatment, made the relationship more personal than previously experienced in dentistry. To talk about everyday things with the DH was important for the relationship and contributed to the feeling of being acknowledged as an individual, not just like a patient among others:

> It was more like a personal thing… it wasn't just the dental hygienist talking to you but more like you and the dental hygienist in a way.
>
> (3:3).

In addition, feedback and coaching by the DH were important to keep the motivation alive during behavioural change and statements from the DH were perceived to mean more when you had a good relationship:

> It was good to have, like a personal trainer; for how to plan and move on to achieve what you're going to do…
>
> (5:1).

The personal relationship and the frequent visits also brought some pressure to perform between visits that was expressed as positive in order to change their oral hygiene routines and also, not wanting to disappoint the DH. Follow-up of the action plan and the diary, in cases where it was used, became a concrete receipt of what was achieved. In addition, to actually see progress in terms of less bacterial deposits on the teeth and less bleeding from the gums encouraged continued behavioural change efforts:

> There was change so I could see that I was progressing… it's like a pat on the shoulder. You continue to perform then.
>
> (8:1).

Some of the adolescents described that support by another/close person had played a significant role in whether they had succeeded with their behavioural change. Parents were mentioned as role models and of significance for establishing early oral hygiene routines, but

who also continued to have great influence on how one as adolescent thought and acted about oral health-related issues. A partner could, for example be a very important support in the behavioural change process:

> I was constantly reminded by my girlfriend. She reminded me ten times a day or more, like this: "Don't forget to brush tonight! Do you have dental floss?" She was almost more enthusiastic about what I was doing than I was. (1:2); I mean, your girlfriend was absolutely wonderful! Solid support is bloody well everything!
>
> (1:3).

3.3 | Maintenance: To keep up new behavioural routines, with continued need of reminders and support

The adolescents expressed that their improved oral hygiene contributed to feeling fresher and some had also experienced that it was easier to fall asleep after tooth-brushing in the evening that in turn contributed to that they felt more alert during day-time. It was also those who expressed that they after the treatment felt safer when socializing:

> It feels great! Because for some time before I had the examination [participated in the treatment study] I didn't show my teeth when smiling. I just felt, "shit, my mouth feels really unhealthy"… so it was like a carrot, to take greater care. Today I show my teeth all the time when I smile.
>
> (6:1).

To maintain good oral hygiene habits was also considered as important for future oral health, as well as to avoid future expensive costs for dental treatments:

> I want to still have my teeth as good-looking as they are now when I am 50 years old. Losing my teeth is my worst nightmare. Jesus Christ! So, a reason why I brush my teeth is… that they should last for the rest of my life. Yes, that's incredibly important.
>
> (4:1).

That the new oral hygiene habits felt properly established made it easier to continue like this after the initial treatment period and when the visits to the DH became less frequent. The adolescents had also developed their own strategies to be reminded of oral hygiene, for example by placing oral hygiene aids so that they were clearly visible before bedtime and/or to set the alarm on the phone. For some of the adolescents, however, the pause in the treatment study between 6 and 18 months felt like a too long period without further backing by their DH:

> Then, when we didn't meet as often… well, my routines were kind of put on the back burner. But I understand that the idea behind the longer periods between meetings is that I should have established my own routines and then sort of continue on my own, without the help. But, well, it didn't really work for me.
>
> (5:2).

The adolescents expressed that being a teenager is an intensive period in life. Personal self-care, such as brushing your teeth, could easily be neglected when you simply could not cope with all demands and yourself. They discussed that teenagers in general might be in special need of reminders and support to maintain healthy habits:

> I don't know if I'm supposed to say this, but we are teenagers! So many things happen… and then you sort of forget yourself. Maybe you can't be bothered to brush your teeth, or there's no time for a shower. You can't cope, it's just too much.
>
> (11:1).

It was obvious that the adolescents considered the change towards more beneficial oral hygiene behaviour as challenging and as a journey. They expressed a need of reminders and support to keep up their new oral hygiene routines over time, but also that their participation in the treatment study had encouraged them to initiate a positive oral health behavioural change that probably would not have happened otherwise:

> I don't think it would have been as good if I hadn't received the treatment. Then I would have just carried on as before.
>
> (9:1).

4 | DISCUSSION

The main theme, 'Adolescents on a guided and challenging journey towards beneficial oral hygiene behaviour' reflect a process of behavioural change. In the beginning of this process it was utmost important to gain insight about one's oral health problem, by personalized and understandable information. The person-centred educational approach, where the DH took the time to explain properly and showed interest in the adolescents' own thoughts and preferences regarding their oral health, differed from the adolescents' previous experiences in dental care.

The results emphasize the importance of communication in therapy and could be discussed in relation to a previous interview study among Swedish adolescents,[8] elucidating that adolescents considered it questionable if conventional oral health educational approaches increased their understanding, which might be explained by dental personnel not having the time to communicate properly

with their patients. In the current study, the adolescents expressed that they experienced the information in a different way than before. From a health psychology perspective and in educational interventions aiming to increase beneficial health behaviours, knowledge of health risks and benefits creates the precondition for change and are thus closely related to motivation and willingness for a change.[1] Moreover, a fundamental part of such health behavioural interventions is to strengthen the individual's sense of control to handle the behaviour in question, that is self-efficacy.[1] The adolescents in the current study expressed that they, after the initial visit with the DH, were willing to change and also that the practical skills training, with guidance by the DH, strengthened their self-efficacy in performing oral hygiene at home. Nevertheless, ambivalent feelings were expressed between their willingness to change and self-doubt in their ability to succeed; will was simply not always enough despite good intentions and the adolescents referred to previous experiences of failures. Dental personnel should be aware of such possible imbalance between motivation and self-efficacy and acknowledge that negative experiences, such as previous failures, can affect self-efficacy.[1] The DHs in the current study were trained in a collaborative and guiding communicative approach, inspired by MI,[22] that is a useful approach for dental personnel to learn and practice in order to explore their patients' ambivalent feelings and strengthen their willingness and autonomy to overcome obstacles in the process of behavioural change.[15,16,27]

Personal goal-setting and planning of how one intend to achieve them, as well as self-monitoring of behavioural efforts, have been suggested as effective components in health behavioural interventions[1,28] as well as in interventions for improved oral hygiene in periodontal management.[11] Goal-setting and planning of behaviour were expressed as important by adolescents in the current study, but also something that they felt unfamiliar with. Their experiences from previous dental care were that the dental personnel use to decide for them on what to do and how to do it. Hence, the current intervention differed and most of the adolescents expressed that personal goals were perceived as more realistic and attainable than when decided by dental personnel. In addition, adolescents were encouraged to use a written diary to monitor their oral hygiene performance between visits with the DH. Even though the adolescents expressed that the idea of using a diary was good, most of them had not used it as intended as it was difficult with a 'paper version'. The adolescents suggesting a digital diary instead was not surprising with the frequent use of smartphones in this age category.[29] There is a growing interest in using smartphone-applications as means in behavioural interventions[30,31] and such applications might also be useful tools for adolescents in order to promote beneficial oral hygiene behaviour, as indicated in previous studies.[32,33]

Social support has been argued as important during the process of behavioural change and for long-term success.[1] In the current study, social support by family/other related parties was mentioned by the adolescents as important for whether they had succeeded with their behavioural change. In addition, the partnership they felt with their DH during therapy was mentioned frequently as utmost important in order to succeed in establishing a more beneficial oral hygiene behaviour. Hence, the DH was mentioned in terms of a friend and a personal trainer. Statements from the DH were perceived to mean more when they had built a good relationship and the positive relationship also brought some pressure to perform between visits, both for the adolescents' own sake but also in order not to disappoint the DH. The association between person-centred communication and a positive therapeutic alliance has been shown previously with positive impact on patients' adherence to health advice and treatment outcome.[34]

When new routines were established the adolescents experienced feelings of well-being and increased confidence in socializing, which encouraged them to keep up with their efforts. The importance to keep up with the new oral hygiene habits were also discussed in relation to long-term goals of a good oral health during life-span. The results could be discussed in relation to what has been argued by Yeager et al.[10]; that what adolescents are learning about and/or change should be relevant to status and respect in their lives, but also that effective interventions can make long-term healthy choices aligned with short-term rewards. Still, the adolescents in the current study brought up the struggle to maintain their new habits when the visits with the DH became less frequent. It has been argued that behaviour and motivation, related to disease prevention and management, are likely to be more extrinsic than intrinsic.[35] Extrinsic motivation can be more or less internalized and can affect behaviour positively, but may not be as lasting as intrinsic motivation.[36] Hence, to keep up motivation for beneficial behaviours over time there might, at least for some individuals, be important with continuous reminders and support after the initial behavioural intervention phase, as indicated by adolescents in the current study. To be an adolescent was expressed as an intensive period in life and consequently, that adolescents might be in special need of reminders and support to maintain good health habits as also indicated in previous studies.[37–40] It was obvious that the adolescents considered their journey towards beneficial oral hygiene behaviour as challenging, but an individual step had been taken due to the current intervention. The adolescents felt respected and acknowledged during the person-centred education program and this contributed to their positive experience of the effectiveness of the intervention, in contrast to what they previously had experienced in dentistry. They also made the distinction between feeling like an individual person and the partnership in therapy, rather than feeling like a patient among others, which is fundamental in person-centred care[17,41] and that also can be related to the closely connected concepts of patient participation and empowerment.[42]

The methodology used in the current study contributes to the understanding of factors of importance in educational interventions aiming to improve health behaviours among adolescents. Even though the current results are of particular interest for dentistry, the results generated may also have implications for health educational interventions outside dentistry. Established routines and guidelines were implemented in order to ensure high quality in data sampling and analysis.[25,26,43] The analysis procedures

and interpretation of data were performed in close collaboration between the authors representing different fields of expertise (odontology, education and psychology) and with extensive experience of using qualitative methodology. Yet, some limitations and shortcomings needs to be addressed. The fact that the interviewer (SLD) was a DH could have affected the responses to be more positive than experienced.[44] However, both positive and negative responds were discussed throughout each interview, and each interview was listened through and discussed among authors in order to assure that all aspects on the intervention were properly acknowledged. Still, a factor to consider when interpreting the results is that the participants consisted of adolescents' who had fulfilled the clinical field study to the 18-month follow-up that might have contributed to a positive view on the educational intervention. In addition, recruitment issues, such as no interest and/or late cancellations, have been discussed in previous interview studies involving adolescents[40,45] and in specific when conducting focus groups.[43,46] That some of the planned focus groups were conducted as individual interviews might be seen as a shortcoming, since the two methods may generate somewhat different data.[47] Hence, focus group interviews aim at stimulating interactions in the dialogue and generate rich information on different perspectives and experiences in relation to the phenomena of interest.[47] This was also the experiences of group interviews in our study. A challenge, however, was to encourage all individuals to be part of the dialogue. Individual interviews, on the other hand, have been suggested to contribute in-depth data on personal feelings and experiences.[47] In the current study, the individual interviews were considered as somewhat less challenging to perform and the data generated might also be considered as somewhat more of personal in-depth information compared to information based on the group interviews. For some individuals it might be considered as less frightening to express their personal feelings and experiences in the individual interviews, while others might consider the presence of peers as stimulating with influence on own perceptions and expressions. Hence, both approaches have their strengths, but also their challenges and limitations. It has been argued that combining individual interviews and focus groups might enhance data richness.[47] When using qualitative content analysis, the optimal amount of data depends on the aim of the study and the quality of data.[26] Within the limitations of the current study, the data generated in both focus group and individual interviews was considered as contributing to a rich amount of good quality data, and also that the two different interview approaches complemented each other and contributed to a nuanced understanding of the phenomenon of interest.

In conclusion, the results elucidate the importance of a person-centred approach in therapy to increase adolescents' motivation for beneficial oral hygiene behaviour. Planning and monitoring of the behaviour, with therapeutic guidance and support, facilitated a change and encouraged further behavioural efforts. However, to keep up motivation and for long-standing beneficial oral hygiene behaviours, individual needs of reminders and support need to be acknowledged. The study brings valuable knowledge on factors of importance in educational interventions aiming to increase beneficial health behaviours among adolescents and also, emphasize areas for further improvements of such interventions.

5 | CLINICAL RELEVANCE

5.1 | Scientific rationale for the study

A health education program is claimed to be more beneficial if it is guided by health behavioural theory. Little is known about adolescents' experiences of such theory-based educational intervention for improved oral hygiene.

5.2 | Principal findings

A person-centred approach in therapy contributed to the adolescents feeling respected. Insight on a personal level and planning and monitoring of the behaviour encouraged behavioural efforts. Reminders and support are needed to keep up oral hygiene routines over time.

5.3 | Practical implications

Dental personnel should acknowledge the importance of a person-centred approach in therapy and implement components in educational interventions that encourage desirable behavioural efforts.

AUTHOR CONTRIBUTIONS

SLD conducted this study as part of her PhD studies at the University of Gothenburg. The study was designed in collaboration among all authors. SLD performed the interviews and the analysis process were performed in collaboration among SLD, ALÖ, ML and KHA. All authors contributed in the preparation of the manuscript and approved the final manuscript.

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CONFLICT OF INTEREST

The authors declare that they have no competing interests.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

Sandra L. Dimenäs https://orcid.org/0000-0002-0221-4534

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