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'I take for granted that patients know' – oral health professionals' strategies, considerations and methods when teaching patients how to use fluoride toothpaste

Abstract: *Objectives:* The aim of this study was to explore the oral health professionals' (OHPs') perspectives regarding their strategies, considerations and methods when teaching their patients the most effective way of toothbrushing with fluoride (F) toothpaste. *Methods:* A qualitative research method was used to collect data. To stimulate interactivity among the participants, interviews were performed in focus groups. Five groups of OHPs, including dentists, dental hygienists and dental nurses, were interviewed a total of 23 individuals. The interviews were analysed using manifest and latent qualitative content analysis. Data were systematically condensed and coded to the relevant phrases that identified their content. *Results:* Three categories were identified in the manifest and latent content analysis: (i) strategies and intentions, (ii) providing oral hygiene information and instruction and (iii) barriers to optimal oral healthcare education. Health promotion and seeing to the patients' best interest were driving forces among the OHPs as well as personal success in their preventive work. They focused on toothbrushing techniques more than on how to use F toothpaste. Barriers to oral health information were cost to the patients and, to some extent, the opinion of the OHPs that some patients were impossible to motivate or that patients already know what to do. *Conclusion:* The OHPs described toothbrushing with F toothpaste as very important, although the plaque removal perspective dominated. They did not focus on how to use F toothpaste, because they believed that knowledge about and appropriate behaviour concerning F toothpaste were already familiar to their patients.

Key words: attitudes; fluoride toothpaste; knowledge; oral health professionals; teaching strategies; toothbrushing

Introduction

The aim of oral healthcare education is to transmit knowledge and to increase individuals' knowledge of and attitudes towards oral health and even improve their behaviour (1, 2). Knowledge is often regarded from a traditional perspective, meaning that it is quantitatively measurable. The process of learning is thought to be dynamic and is based on the individual's previous knowledge and experience. The concept of 'education' is considered to include both factual knowledge and emotional, social

aspects, while 'information' is one-way communication with no consideration of the patient's emotional and social needs (3). The latter approach aims more or less to persuade the patient to change his or her behaviour and tends to produce a passive rather than an active partner (4). Attitudes and behaviour are inter-related, and various theories have been presented to describe this relationship as well as how attitudes influence individuals' actions and thoughts (5).

Knowledge of the willingness and abilities among oral health professionals (OHPs) to transfer knowledge to their patients and to the population at large has been very little described in the literature. Two studies by Jensen *et al.* (6, 7) indicate how people/respondents perceive the information given to them by OHPs. Few respondents stated that they received instructions from OHPs on how to use F toothpaste effectively when brushing. A study by Hedman *et al.* (8) concluded that the OHPs involved in oral health promotion in schools focused more on signs of diseases than on the individuals' views of their own oral health.

Fluoride toothpaste is considered to be the most significant tool in preventing caries (9, 10). The use of F toothpaste twice a day is the primary intervention for the prevention of caries recommended in both Sweden and in other countries (11). In addition to the frequency of toothbrushing, brushing time, the amount of F toothpaste and post-brushing behaviour are influential factors (10, 12–14). Several studies show that people in Sweden have adopted the habits of using F toothpaste and brushing twice a day (6, 15, 16). However, these studies also conclude that OHPs should work more with improvements in teaching people how to use the most effective toothpaste technique. Wikén *et al.* (16) found that their subjects' brushing technique and post-brushing behaviour were not optimal, and another recent study showed unfavourable behaviour concerning brushing time, amount of toothpaste used and post-brushing behaviour (7).

The aim of this qualitative study was to explore the OHPs' perspectives regarding their strategies, considerations and methods when teaching their patients the most effective way of toothbrushing with F toothpaste.

Material and methods

Data were collected through focus group interviews and were analysed using manifest and latent qualitative content analysis (17).

Study population

The participants were selected through purposive sampling, meaning that the selection is based on knowledge of the population and the purpose of the study. Thus, in order to establish credibility, OHPs of different gender, professions and professional backgrounds were chosen. Eighteen women and five men, totally 23 OHPs, from two Swedish regions participated in five focus groups, including 10 dental nurses, four dental hygienists and nine dentists. The informants' characteristics and experience are shown in Table 1. Each group consisted of at most 6 OHPs with different educational backgrounds, gender and number of years in profession. The first focus group included OHPs working with an oral health promotion programme in schools. The second and third groups represented OHPs working in a Public Dental Service in the Gothenburg Region and the county of Uppsala, respectively, treating patients from different socio-economic areas. The fourth group represented OHPs working in a private dental clinic in the county of Uppsala, and the fifth group represented dentists working as heads of Public Dental Services in the county of Uppsala. Three additional Public Dental Services were offered to participate in the study but declined due to lack of time.

Data collection

The interviews were performed by a moderator (author PG, dentist) and an observer (author OJ, dental hygienist), who also kept a logbook of all the interviews, noting information about the interviews, such as participant interaction and unexpected events during the interviews. The interviews took place at dental clinics or conference centres in Gothenburg and Uppsala. An interview guide was used with questions about background data on the informants' professions and number of years in the profession. Open-ended questions were used to collect data concerning the informants' strategies when teaching patients how to brush their teeth and how to use F toothpaste, for example, Can you tell me about your recommendations and instructions about use of fluoride toothpaste to the patients? Follow-up questions were asked when necessary. The intention was to explore the OHPs' knowledge of and attitudes about caries prevention and what they said to their patients concerning to use the best 'toothpaste technique'. Discussion focus was on the informants' own descriptions of teaching and their thoughts, feelings and actions concerning the subject. With the aim of stimulating the discussion, the moderator referred to findings from a previous study where patients had been interviewed about what they knew about toothbrushing' and toothpaste (6). Three quota-

Table 1. **The distribution of the informants' gender, dental occupation and years in profession**

	n = 23	Percentage
Gender		
Female	18	78
Male	5	22
Dental occupation		
Dentists	9	39
Dental hygienists	4	17
Dental nurses	10	44
Years in profession	Median	Range
Dentists	31	3–33
Dental hygienists	9	5–12
Dental nurses	19	7–37

tions, 'vignettes', were presented to the focus groups, each representing statements made by dental patients in the abovementioned study. Vignettes can be a useful way to more clearly identify the phenomena to be discussed (18). The vignettes were as follows: (i) 'The dental care services don't teach you how to use toothpaste…you put it on and you brush', (ii) 'Some people do say you aren't supposed to rinse… But I don't know whether that's a good idea… no dentist has ever told me not to rinse it off…' and (iii) '…but you have no idea which toothpaste really works. … You can only find out from a (company and brands) neutral dentist …you don't listen to the message if there is a company logo on it'.

The interviews were digitally recorded and later transcribed verbatim by a professional secretary and one of the authors. The interviews were performed and transcribed in Swedish. A professional translator translated the quotations into English.

Analysis

The analysis of the interviews was based on qualitative content analysis (17). Two of the authors (PG, OJ) made the first analysis of the transcribed interviews, and all the authors contributed at a later stage to the analysis of the texts. The analysis began with the authors reading the interviews thoroughly several times until they were familiar with the texts. Statements about knowledge, attitudes and behaviour were marked in the text. The statements were compared to find both similarities and differences. The data were systematically condensed and coded to the relevant phrases that identified their content. The following steps were performed in the analytical process:

1 Meaning units were identified, that is, statements relating to the same central meaning.
2 Abstractions were made, that is, interpretation at a higher level of logic.
3 Codes were created, that is, meaning units labelled.
4 Codes were sorted into subcategories and categories, that is, a group of content sharing a commonality.

Three of the researchers (PG, OJ, LP) discussed the tentative subcategories and categories, and the division was revised until a consensus could be achieved. Both the manifest and the latent areas were grounded in the data by selection of exploratory text quotations. In Fig. 1, an example of the process from codes to subcategories and category is shown.

Ethical aspects

The Ethics Committee at University of Gothenburg, Sweden, approved the study (ref. 551–10). Neither the moderator nor the observer had any professional relationship to any of the informants in the study. The questions during the interviews could be experienced as integrity trespassing and uncomfortable as they concerned personal knowledge, attitudes and behaviour. To limit this risk, a respectful attitude was emphasized during the interviews and the moderator declared that there were neither right nor wrong in the topics discussed. All the interviews were performed without the presence of clinical management. The informants were also given the opportunity to cancel their participation at any time without having to give specific reasons.

Results

Three categories were identified in the manifest and latent analysis: (i) strategies and intentions, (ii) providing oral hygiene information and instruction and (iii) barriers to optimal oral health teaching. Each category consisted of two subcategories (Table 2).

Strategies and intentions

This category included the subcategories: promoting oral health for the best interest of the patients and working for one's own sake.

Promoting oral health for the best interest of the patients

A common statement was that patients without caries experience did not need information or instruction. Instead, priority was given to instructing patients with oral diseases who received more treatment time and information, 'all of everything'. Other informants pointed out that all patients, that is, even the healthy ones, need advice and a dialogue about their oral health. The OHPs wanted to create participation, and a goal was to encourage the patients to 'like their mouths', which would improve their general self-esteem. The patients' own responsibility for good oral healthcare habits was stressed. Some informants felt that it was difficult to ask patients about their habits, because it felt as if they were violating their patients' integrity.

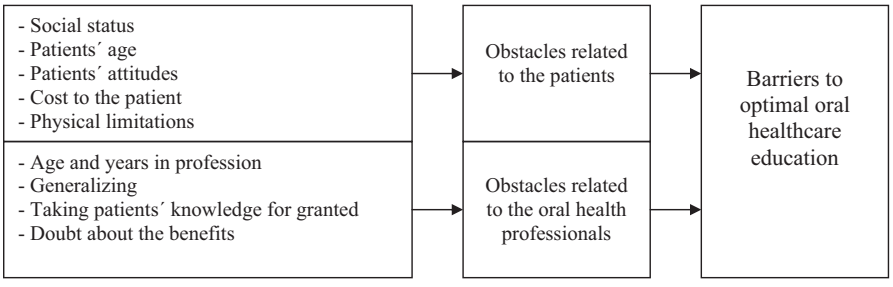

Fig. 1. Example of the process of analysis from codes to subcategories and category.

Table 2. **Summary of subcategories and categories identified in the manifest and latent qualitative content analysis**

Subcategories	Categories
Promoting oral health for the best interest of the patients	Strategies and intentions
Working for one's own sake	
Advice on oral hygiene	Providing oral hygiene information and instruction
Methods used for instruction	
Obstacles related to the patients	Barriers to optimal oral healthcare education
Obstacles related to the oral health professionals	

The informants stated that in all their treatments, at all times, they had their patients' best interest at heart. They described listening to the patient's attitude first. They tried to earn their confidence, learn about their abilities and desires and tried to satisfy the patients' needs. The OHPs were also keen to give both positive and negative feedback to increase the patient's motivation and desire to change his or her habits. It was also stated that the OHPs should never act like police and blame or give warnings to the patient:

... I guess I try to find a way that's easy for the patient too, because you mustn't make it too complicated – if you do they won't brush... and try to pick up the technique they already have and use themselves, but make it a little easier... (Dental nurse)

Working for one's own sake

Some OHPs expressed a need to succeed, not only because it was in the patient's best interest, but also for their own sake. The successes gave them power and incentives to continue working and strengthened their self-esteem. The informants experienced satisfaction when patients changed their behaviour and improved their oral health. If they had the feeling that they had made a difference in a patient's life, the satisfaction was even greater. Some OHPs described that they liked the challenges that their daily work and the patients provided, and this challenge became a driving force to go further and to succeed. They also described other driving forces such as the need to satisfy the authorities by following guidelines and laws. Some informants also mentioned that they wanted to show their colleagues that they were competent and that they acted in accordance with scientific guidelines:

... those few [patients] where you succeed from time to time, it gives you a lot back and it feels good to do a good job, it feels great. (Dental nurse)

Providing oral hygiene information and instruction

This category included the subcategories: advice on oral hygiene and methods used for instruction.

Advice on oral hygiene

The informants described that their oral hygiene advice focused mainly on toothbrushing techniques, less on F toothpaste and even less on toothpaste technique:

I guess I don't talk very much about that. Really what we say is ...that the most important thing is your toothbrushing technique and mechanical tooth cleaning, while the toothpaste doesn't really make any difference ... (Dental hygienist)

They stated that they often instructed children and adults how to improve their toothbrushing technique to remove plaque and avoid toothbrushing damages. The OHPs were in agreement that children of all ages and children's parents were given information 'all the time' on when and how to brush. They often described the examination process when testing patients' ability to carry out plaque removal. Their advice to have a 'clean mouth' was to brush twice a day for 2 min, although some were of the opinion that 2 min was too short.

Some OHPs mentioned the most important factors when brushing with F toothpaste, frequency, brushing time, amount of toothpaste and not rinsing with water after brushing, but the different elements of the optimal toothpaste technique were not described as a whole. In contrast, other informants were of the opinion that toothpaste technique advice included information on F concentration. They were concerned that the text showing the F concentration on the toothpaste tube was too small for the patients to read, and yet, it was still important. Some of the OHPs stated that they only discussed the amount of toothpaste with parents of young children and teenagers, and what they said was to squeeze out a small string of toothpaste or to cover the whole brush. The informants had different opinions about whether they informed their patients about the amount of toothpaste to use on electric toothbrushes.

Some OHPs were of the opinion that they informed their patients about not rinsing after brushing, especially to children, while others were uncertain whether they gave the corresponding advice to adults. Toothbrushing frequency was often mentioned when giving advice to children and their parents but seldom to adults. The OHPs stated that they seldom asked the patients about brushing time because they thought everyone knew about it and that brushing for 2 min was not related to the toothpaste, but only to remove plaque:

Yes, right, two minutes ...I actually just think about the surfaces, that you have to have time to go around all your teeth. I didn't think about the toothpaste having to be there. (Dental hygienist)

Some OHPs stated that they did not want to give advice to the patient concerning which toothpaste to use. Their opinion was not to recommend any specific brand and to take a quite neutral stand. Others were specific about giving advice and even recommended some toothpaste brands. The advice was

more easily given if the patient had specific problems, such as sensitive teeth. The informants were of the opinion that patients of all ages were affected by advertisements, as were the OHPs themselves. The most important factor determining the choice of toothpaste was thought to be good taste. Other factors mentioned were convenient tube, attractive design, nice colour, consistency and advertisements:

Well, I stay quite neutral, because you aren't supposed to push for any particular brand, just for the fact that it is supposed to contain fluoride and be used frequently in any case ...that's what I tell them. (Dentist)

Methods used for instruction

Four aspects, knowledge, guidelines, aids and time, were seen as essential in terms of giving advice on brushing and F toothpaste. The informants described their knowledge about F products, especially F toothpaste. Some of them stated that they had good knowledge, while others admitted knowledge gaps. The OHPs expressed uncertainty and showed lack of knowledge about the most effective F toothpaste technique, saying that they handled this issue unsystematically. Some informants also expressed dissatisfaction with the changes of recommendations over time indicating that this created uncertainty:

But this one: toothbrushing two times a day, for two minutes, with two centimetres of toothpaste. It's a good one, I use it sometimes. (Dental nurse)

The OHPs described their written clinical guidelines for both children and adults, which they followed when treating patients and noting in the records. Only some informants said that toothpaste technique was included in the guidelines. Some informants stated that they tried hard to follow these routines, 'like a machine', while others had their own routines they thought were better. The OHPs described using aids when informing and instructing patients about oral hygiene. They used a mirror and toothbrush, models, pictures and special brochures in foreign language when needed.

The informants discussed the issue of time as a prerequisite for giving oral hygiene advice. They complained that dentists had too little time for this kind of preventive work for adults. Their opinion was that dental nurses had the most time available for preventive care and dentists the least time, but at the same time, it also depended on individual preferences. It was also stated that dental nurses give the highest quality information and instructions.

Barriers to optimal oral healthcare education

This category describes which factors the informants expressed to be obstacles to information.

Obstacles related to the patients and obstacles related to the oral health professionals were the subcategories included in this category.

Obstacles related to the patients

The opinion was that the patient's social status, not least the patient's level of education, could both facilitate and present an obstacle to providing optimal information. Some OHPs described the difficulties associated with working in areas with lower social background and with people from different cultural backgrounds.

Some informants mentioned that it was difficult to give information and instruction to elderly patients. In the elderly, physical limitations such as poor eyesight and locomotor problems could be an obstacle to good oral hygiene. The informants described that teenage boys do not brush twice a day, their excuses being they are tired and do not have time. Some OHPs expressed the view that patient's attitudes affected them when giving information, while others felt that their own professional skills could compensate for the negative attitudes of some patients. Some felt that the patient's level of interest was important in relation to giving information. It also felt difficult to charge patients for preventive measures such as information and instruction. In fact, some OHPs stated that they did not charge at all for information and instruction, because patients are only willing to pay for treatment but not for information and instruction. It was easier to give information when the patient had dental insurance with all measures already paid for:

Most adults, in my opinion, need instruction about toothbrushing, but they might not be very inclined to pay for it, if they think they have been managing to brush their own teeth for thirty or forty years. (Dentist)

Obstacles related to the oral health professionals

Some informants expressed that their own age and number of years in profession might constitute an obstacle to giving information and instruction. If the patient has been attending the same clinic or being treated by the same OHP for many years, then it felt hard to tell the patient that his or her oral hygiene was inadequate and improvements needed. It was also suggested that if the personal chemistry between the OHP and the patient was poor, changing OHP could improve the outcome of the treatment. One reason for failure to give information about toothpaste use was neglect; they simply forgot to talk about it. Another reason was the belief that the patients sought this knowledge on their own, and there was no need for OHP to inform them.

The attitude of the OHP could also be an obstacle if the OHP had the opinion that some patients lacked the ability to perform good oral hygiene. In several respects, the informants seemed to have difficulties seeing patients as individuals. Instead, they generalized and attributed characteristics to all patients. Teenagers were described as more careless with their oral hygiene, and older men were stated to be difficult to motivate to change their habits. Some OHPs even labelled them as 'hopeless cases'. They also generalized concerning

patients' knowledge about F toothpaste. They took it for granted that patients already knew and that they must have heard how to use F toothpaste many times before:

I take it for granted ... everybody's heard it, lots of times, ...if I am at a clinic where the patient has been coming for thirty years or more ... that makes it a little difficult to ask: do you use toothpaste. It's easier to say ... you've got a bit of plaque, and you have trouble getting at this spot ... that kind of information about oral hygiene, those kinds of instructions are easier than the fluoride part specifically. (Dentist)

The informants expressed doubts about whether or not the preventive measures such as information would benefit the patients. They also doubted that the information was worth paying for, as the patient did not get 'anything' for the money, no 'real' treatment such as removing calculus or doing fillings. Some informants had even doubts about the advantages of F toothpaste because using toothpastes without abrasives to avoid tooth wear was more frequently given advice than using a large amount of toothpaste for adding F to the oral cavity. Doubt was also expressed about whether F is a safe product or if it causes fluorosis on the teeth of young children. In addition, the informants seemed to be embarrassed to talk about something as self-evident as toothpaste.

Discussion

In this study, 23 OHPs described their experiences concerning the most effective way of toothbrushing with F toothpaste, their ways of teaching the patients good oral hygiene habits and the difficulties associated with influencing patients' behaviour. The findings in the study describe the variations in using decisions, strategies and methods as well as the obstacles encountered when teaching patients oral hygiene.

A qualitative research design was used to explore and acquire knowledge about a subject about which very little is yet known. Qualitative designs allow the participants to describe their perception of their work in own words, which was the main objective of the study (19). Focus group interviews are able to capture a richer interpretation of the participants' perspectives on the subject and also allow the researcher to observe the interaction among the participants (20). In this study, the interaction between the informants was important and may have resulted in richer and more extensive material than individual interviews. Disadvantage of group interviews is the possibility that individual experience will not be fully explored.

Presenting the three vignettes from a previous study provided a good basis for the OHPs to further discuss these issues, positioning themselves in relation to these statements. Vignettes together with the interview guide contributed to the dependability of the study. Other factors of importance for the quality of the study's trustworthiness are credibility and transferability. Transferability was reached by carefully describing the research process (17). Quotations from the focus group interviews are presented in the text to facilitate the reader's evaluation of the trustworthiness of the results (21).

Intentions are a good start when it comes to implementing strategies and decisions, but do not fully explain how we act, as described by Ajzen (22): 'Intentions are sometimes found to be poor predictors of behaviour'. Ajzen also states that there are several other underlying factors that control the behaviour of individuals. In this study, the OHPs had good intentions in always having the patients' best interest at heart, but it transpired that they did not always behave according to their own strategies. When different beliefs are activated, they will produce different attitudes, subjective norms and/or perceptions of control, which will result in different intentions (5). The OHPs described that sometimes the interaction with the patient affected their initial intentions negatively and changed their behaviour towards the patient. These interactions negatively influenced the beliefs of the OHPs leading to non-professional behaviour such as generalizing about patients and made them doubt the benefits and value of the preventive work as well as impacting on their self-confidence. Even if the OHPs have the best of intentions about helping their patients, they seem to face both personal and professional obstacles such as lack of knowledge, lack of time and attitudes, which complicate the giving of oral health preventive recommendations. The OHPs were very perceptive about their patients' attitudes and behaviours and sensitive to the interaction with the patients, and this played a role in how they, in turn, responded to the patients. Similar observations have been described when dental professionals interact with schoolchildren during health promotion activities and when dentists interact with patients during treatment decisions (8, 23). Besides having the patients' best interest at heart, OHPs also expressed personal motivations, such as wanting to impress their colleagues and following recommended policies.

According to the informants, patients have an own responsibility for their oral health and behaviour, at the same time, the OHPs felt responsible for both oral health information and the outcome. This ambivalent attitude towards health promotion has also been reported by Hedman *et al.* (8), who interviewed OHPs about oral health education in schools. The informants stressed the importance of patient participation, which could be attained by giving feedback. Patient participation increases the opportunities for empowerment and is in line with the stipulations of the Swedish Dental Act (24), with which Swedish OHPs are required to comply. Patients want to be taught and involved, and they also want the OHP to treat them as individuals (25). Previous studies have also shown that oral health information becomes more effective when dental professionals can bring a patient from being a passive to an active partner (4). However, OHPs in this study also showed some preconceptions concerning certain groups of patients such as teenagers and elderly men, even calling some of them 'hopeless cases'.

Recommendations often given to the patient by the OHP are that toothbrushing should be performed twice a day with

toothpaste containing F, be of sufficient duration and the toothpaste should not be rinsed off with water. The advice about toothbrushing frequency has strong support in national guidelines from the authorities, but no informants referred to these guidelines (26) and no one mentioned or defined the use of effective toothpaste technique when teaching their patients. Children of all ages were given extensive information, while adults and the elderly seldom received information and instruction. The reasons for this were described as cost to the patient and OHPs' lack of time. Concern was expressed about the need for preventive measures to be taken by elderly patients. This is a relevant view because the elderly have an increased risk of deterioration of their oral health (27, 28). The opinion that taste is the most important determinant of people's choice of toothpaste is in line with the findings in previous studies (6, 7, 14).

The results in this study show that OHPs generally thought it was easier to point out plaque on teeth to patients than to ask about their use of F toothpaste. A common perception among the informants was that patients already had the necessary knowledge about F toothpaste and the optimal toothpaste technique. However, as shown in several studies, it should not be taken for granted that the patients know and have adopted the correct toothpaste habits (6, 7, 10). Furthermore, there seemed to be an opinion that patients with no active caries lesions did not need knowledge about F toothpaste.

Previous studies in Sweden have shown that OHPs are the main source of knowledge regarding oral health (8, 29), and therefore, OHPs cannot expect the patients to get this knowledge from other sources. In a previous study (6), patients stated that they had confidence in their OHP, while they expressed negative attitudes about advertisements for toothpaste and commercial companies. In contrast, in this study, a common opinion expressed by the OHPs was that they should not recommend any specific brand of toothpaste. They wanted to be neutral in relation to brands and companies and just describe to the patients what characterizes a suitable toothpaste to help the patients make their own choices of purchase. Although some OHPs were aware that it would help the patients to be given the names of suitable toothpastes, it was considered even more important not to favour any specific company.

In conclusion, the OHPs seemed to be driven by good intentions towards their patients, but their behaviour was affected by events beyond their control, which could lead to their omitting information. The OHPs in this study showed limited knowledge regarding F toothpaste. They described toothbrushing with F toothpaste as very important, but focused on plaque removal. They also spoke less about F toothpaste because they took for granted that their patients' knowledge of and behaviour concerning toothpaste were already in place. The benefits of F toothpaste use for the general population have strong scientific support, and efforts should be made to spread knowledge and appropriate habits.

Clinical relevance

Programmes for oral health promotion and education can increase individual's knowledge of and attitudes towards oral health and can improve oral health behaviour. OHPs are considered to be the main source of knowledge regarding oral health. In this study, OHPs believed that patients used other sources to obtain knowledge about oral health and they even took it for granted that patients already have the knowledge. In their preventive work, the OHPs should recognize their role as oral health promoters with the purpose of teaching patients the most effective methods for self-care.

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