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Isfahan general dentist's awareness, attitude, and performance regarding prescription of new caries prevention materials containing calcium and fluoride components

Firouzeh Nilchian¹, Zahra Ataie², Sakineh Azadi²

Abstract:

BACKGROUND: Fluoride Ion can cause remineralization of primary caries lesions in the presence of calcium and phosphate. New compounds of calcium-containing casein phosphopeptides-amorphous calcium phosphate (CPP-ACP), make the remineralization more effective. This research has been done to evaluate the awareness, attitude, and performance of Isfahan general dentists regarding the prescription of new caries prevention materials containing calcium and fluoride components.

MATERIALS AND METHODS: This cross-sectional-descriptive-analytic study has been conducted on 152 general dentists in Isfahan ensuring confidentiality of information and obtaining informed consent. Isfahan general dental offices and clinics were selected using a simple random method. Data of this research were collected using a questionnaire from previous studies. The questions were divided into four sections, including demographic information, awareness, attitude, and performance towards products containing calcium and fluoride prescription. The significance level of *P* was considered 0.05. Data were analyzed using SPSS version 22, T statistical test, Pearson correlation coefficient, and one-way analysis of variance.

RESULTS: The mean score for dentists awareness was 46.3 (standard deviation [SD] = 15.4), the mean score of attitude was 91.4 (SD = 26.1) and the Mean Score of performance was 54.3 (SD = 27.3) (the scores range from 0 to 100). According to the Pearson correlation coefficient, there was no significant relationship between dentists' awareness, attitude besides performance, and their ages together with dentistry work experiences (*P* > 0.05).

CONCLUSION: According to the study results, dentists' awareness of compounds containing CPP-ACP is overall average. However, attending to their positive attitudes toward this context, providing appropriate training programs seem to stimulate them for optimum cooperation as well as using these products for patients.

Keywords:

Awareness, calcium compounds, caries prevention, general dentist, performance

¹Department of Public Oral Health, Dental Material Research Center, Dental Research Institute, School of Dentistry, Isfahan, University of Medical Sciences, Isfahan, Iran,
²Dental Student, Dental Research Institute, School of Dentistry, Isfahan, University of Medical Sciences, Isfahan, Iran

Address for correspondence:

Dr. Zahra Ataie,
Dental Students Research Committee, School of Dentistry, Isfahan University of Medical Science, Isfahan, Iran.
E-mail: zataei@gmail.com

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Introduction

According to the Center for Disease Control and Prevention, epidemiological and laboratory studies have shown that maximum fluoride effect is after tooth eruption and additionally in

its topical use, especially if a certain amount of it, is permanently present in saliva or plaque.^[1]

Fluoride compounds have been identified as the first line of defense for caries prevention.^[2] Dentists can help to reduce dental caries by using new and update

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product in the prevention of dental caries. Furthermore, they affect patients' oral healthcare behaviors.^[3]

Casein phosphopeptides-amorphous calcium phosphate (CPP-ACP) is a new product and a bioactive agent with a base of milk.^[4] ACP or amorphous calcium phosphate gives the teeth, a more accessible and amorphous form of calcium and phosphate than the saliva's calcium and phosphate ions.^[5]

Dr. Pakdaman's study has assessed the awareness and performance of Iranian dentists regarding fluoride prescription in 2010. In this research, 347 dentists participated. Most of them (67.4%) reported that they did not have clear guidelines for fluoride administration.^[6]

Although some researches have been done on dentists' awareness, attitudes, and performances toward preventive methods including fissure sealant, fluoride, etc., none of them has investigated products containing calcium and fluoride.

This research has been done to evaluate the awareness, attitude, and performance of Isfahan general dentists regarding the prescription of new caries prevention materials containing calcium and fluoride components.

Materials and Methods

Study design and setting

This cross-sectional and descriptive-analytic study was done on Isfahan general dentists and Isfahan general dental offices and clinics were selected using a simple random method by giving the number to each of them.

Study participants and sampling

Isfahan general dental offices and clinics were selected. Samples were selected one in three, at random and continued until the appropriate sample size for that clinic or office was completed.

One hundred and fifty-two general dentists working at Isfahan city participated in this study.

The inclusion criteria were that dentists were currently licensed, employed, and had given informed consent to participate in this study. Incomplete questionnaires were excluded.

Data collection tool and technique

Data of this research were collected using a questionnaire. The reliability of the questionnaire was assessed via Cronbach's alpha ($\alpha = 0.7$). In addition, the repeatability of that was measured by test-retest (Kappa = 0.86). Pediatric faculty professors' opinions were asked on the questions and professional ones were applied.

The questions were divided into four sections, including demographic information, awareness, attitude, and performance towards products containing calcium and fluoride prescription.

Demographic questions were about age, gender, work experience, and university of education. There were six questions in second part about dentists' awareness and knowledge on CPP-ACP together with commercial products containing this substance. In the third part, dentists' attitudes toward topical use of calcium and fluoride for tooth decay prevention, calcium, and fluoride-containing products roles in preventing children tooth decay and also considering a history of caries to prescript such outputs, were evaluated.

The fourth section was consisted of seven questions asking whether dentists had recently used these products for their patients and managing high-risk children or adults as well.

Ethical consideration

The research was approved by the University Ethics Committee. Research code: (397118) and ethical approval code: (IR.MUI.RESEARCH.REC.1397.3.118).

Results

One hundred and fifty-two general dentists took part in this study. Their ages ranged from 25 to 53 years with the average 33.4 and the standard deviation (SD) 7.1. Also, the average of their work experiences was 7.8 and its SD was 6.5.

The descriptive data analyses showed that 74 (48.7%) participants were graduated from Isfahan, 21 of them (13.8%) from Tehran, and 57 (37.5%) from other universities. Average score of dentists' awareness was 46.3 with the SD 26.1. Their attitude average score was achieved 91.3 with the SD 15.4. In addition, their performances average score was 54.3 with the SD 27.3 (scores range from 0 to 100), Table 1.

According to the Pearson correlation coefficient, there was no significant relationship between dentists' awareness, attitude besides performance, and their ages together with dentistry work experiences ($P > 0.05$). The Independent *t*-test demonstrated that awareness ($P = 0.87$), attitude ($P = 0.39$) and performance ($P = 0.71$) average scores were not remarkably different between men and women. Attending to One-way analysis of variance test results, average score of awareness ($P = 0.55$), attitude ($P = 0.41$) and performance ($P = 0.66$) were not considerably different among the dentists trained in various universities.

Frequency distribution of dentists' responses to the question showed that 34 people of the dentists (22.4%) had a specified guideline for prescription of calcium and fluoride-containing products [Table 2].

Frequency distribution of obstacles in calcium and fluoride-containing products prescription by dentists for patients including different treatments and low tariff treatments, high cost of products, disbelief in a definite result and treatments is time-consuming, is shown in Table 3.

Discussion

This study results indicated that dentists have poor awareness about products containing CPP-ACP although they have a positive attitude towards tooth decay prevention and knowledge of products containing fluoride and calcium. In addition to this, their performances were in a poor range.

In previous studies, dentists had a positive attitude towards dental preventive methods. However, they were not keen on the aspects of prevention that were relevant to their work^[7] in contrast with the results of the present study that the high score of dentists' attitude indicated their interest in learning new

Table 1: The mean score of knowledge, attitude and performance of the dentist regarding prescription of new caries prevention materials containing calcium and fluoride components

Variable	Men		Female	
	Mean	SD	Mean	SD
Knowledge	46.7	25.8	46.01	25.8
Attitude	90.2	16.3	92.4	14.9
Performance	55.4	25.5	53.6	28.3

SD=Standard deviation

Table 2: Frequency distribution of dentists' responses to performance part 6

Treatment	Agree, n (%)	Not agree, n (%)	No idea, n (%)
Restorative treatment	131 (86.2)	20 (13.2)	1 (0.6)
Fluoride varnish	144 (94.8)	7 (4.6)	1 (0.6)
Using MI paste plus	68 (44.7)	22 (14.5)	62 (40.8)
Using GC tooth mousse	75 (49.3)	17 (11.2)	60 (39.5)

MI=Paste pluse, GC=Toothmousse

Table 3: Frequency distribution of obstacles in calcium and fluoride-containing products prescription by dentists for patients

Obstacles	n (%)
Low tariff treatments	36 (23.7)
High cost of products	36 (23.7)
Disbelief in a definite result	89 (58.6)
Doing these treatments is time-consuming	26 (17.1)

concepts in preventive methods and their transmission to patients.

According to Pakdaman *et al.*, research, dentists were sufficiently aware of topical fluoride preventive effects.^[6] Fluoride effects and its administration to patients were the only subjects that had been investigated in this study. New products containing CPP-ACP that have been marketed alongside fluoride are researched in the present study. In a study by Nilchian *et al.*, on dental students of Isfahan University of Medical Sciences and Khorasgan Azad University, it was found that they did not have sufficient knowledge about the anti-decay role of fluoride in toothpaste. Dentists and dental students have not adequately perceived the importance of fluoride in toothpaste. So (therefore) having no information about products containing calcium and fluoride (as these products are newer) would not be out of the question.^[8]

In conformity with our study, although the dentists do not tend to use varnish form of fluoride, they recommended its home use (mouthwash). This could represent inadequate information about fluoride therapy for adults or the unwillingness of dentists to do preventive treatments at work. Less than half of the dentists agreed with MI paste plus and GC tooth mousse, and a high percentage of responses were related to the "don't know" option. Comparing these responses with those of routine treatments such as restorative ones and fluoride use, we find that there is a weakness in dentists' knowledge and awareness of these two products and their application to adults.

A study by Dorostkar *et al.*^[9] in Tehran examining the awareness, attitude, and performance of dental interns towards preventive dentistry; the least frequency of correct responses to awareness questions, was related to the importance of using fluoride-containing toothpaste rather than brushing. Only 30% of the participants answered correctly. In terms of their abilities, students stated that 86% of them do fluoride therapy for patients.

Attending to the dentists' response, it was concluded that they tend to train patients in the use of these products but because of lack of awareness and insufficient information, they do not believe in the effectiveness of these products. Pakdaman's study found that most dentists neglected fluoride therapy and health instruction since they were time-consuming.

Limitation and recommendation

There are some limitation due to lack of access to all dentists and some dentists' reluctance to cooperate.

Due to the level of awareness and attitude of dentists, their information can be increased by providing appropriate educational programs in universities and retraining courses. Future research on CPP-ACP training is recommended to be compared with the current study to determine the impact of instruction on dentists' awareness and performance.

Conclusion

The results show that dentists' awareness of products containing CPP-ACP and fluoride is poor.

Given their positive attitude toward this regard, it seems that if appropriate training programs are offered in the faculty, they will tend to cooperate favorably and use these products for patients. There was not much Proper performance against the use of products containing calcium and fluoride, which is likely to improve by increasing awareness.

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Conflicts of interest

There are no conflicts of interest.

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