

Original Article

The Knowledge, Attitude, Self-Reported Practice and Prescription Pattern Regarding Dental Floss Among Dentists

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Abstract

Aim & Objective: To evaluate the knowledge, attitude, self-reported practice and prescription pattern regarding dental floss among dentists.

Materials and Methods: A total of 100 dentists around Kelambakkam were randomly selected and included in the study. Among them 17% were Dental faculties, 38% were PG students and 45% were BDS students. A questionnaire format was provided to the dentists and the data were collected and interrupted.

Statistical Analysis: The data were analyzed using Pearson's Chi-square test and the P value < 0.05 as statistical significance.

Results: The results showed that 92% of dentists responded, that for a good periodontal health, routine use of dental floss is necessary. 69% of dentists described the uses of dental floss as a time-consuming procedure and 48% as expensive one. 31% of dentists do not floss at all. The dental floss prescription to their patients was given by only 43% of dentists.

Conclusion : Dental floss awareness should be created among the general population by adequately providing the health education programs and adequate training of using dental floss at undergraduate level is essential. The dentists should also practice oral self-care and act as role models for the patients.

Key words : Periodontal disease, Interdental aids, Dental floss, Knowledge of dentist

Introduction

Periodontal disease is one of the major health diseases affecting 50% of the world's adult population.¹ According to the 2010 global burden of disease, periodontal disease is the major cause of tooth loss and considered it as the sixth most prevalent human disease.² There are multifactorial etiology for periodontitis and the principal etiological factor is the accumulation of plaque biofilm at and below the gingival margin which is associated with an inappropriate and destructive host inflammatory-immune response. Therefore prevention of periodontal diseases rely fundamentally on the plaque removal or control.

The self performed oral hygiene measures acts as non-specific reducer of plaque mass and thus modify both the quantity and composition of subgingival plaque.³ This therapeutic approach is based on the rationale that a permanent optimal supragingival plaque control regimen could alter the composition of the pocket microbiota and lower the

percentage of periodontopathic bacteria, including furcation areas.⁴ Thus, plaque control is an effective way of treating and preventing gingivitis and periodontal diseases.

The gold standard measures in controlling the dental plaque is the mechanical plaque control. The most dependable way of achieving oral health care is to practice daily use of toothbrush and other oral hygiene aids. To prevent inflammation in periodontally healthy subjects, plaque must be completely removed at least every 48 hours as dental plaque grows within hours.⁵ The Tissue destruction in periodontal disease often leaves large, open spaces between teeth and long, exposed root surfaces with anatomic concavities and furcations. These areas are poorly accessible to toothbrush and difficult for the patients to clean.⁶ The toothbrush alone is inadequate in controlling the gingival and periodontal diseases because periodontal lesions are predominantly found in interdental locations; hence other oral hygiene aids have been emphasized.⁷

The purpose of interdental cleaning should be clearly emphasized to the patients and not to not to dislodge the food wedged between teeth. The interproximal cleaning aids include interdental brush, dental floss and toothpick, which augment the effect of tooth brushing. They should be recommended based on the patient's interdental architecture (e.g., size of interdental spaces), presence of furcations, tooth alignment and presence of orthodontic appliances or fixed prostheses. Also, ease of use and patient cooperation are important considerations.

Both the American Dental Association (ADA 2005), and the British Dental Association recommend the daily use of dental floss in addition to brushing teeth.⁸ The habit of brushing at least twice a day was analysed among the students of Italian population and found that 92% of students brush twice daily and 15% floss their teeth daily as a self-prevention.⁹ But in general population majority of the people never floss according to Bader in 1998.¹⁰ Even if patients have been instructed and motivated in multiple sessions to use dental floss, adherence to recommendations often drops as soon as supervision is ceased. Hence the key problem in the prevention of periodontal disease is the lack of patient compliance in home care.¹¹

Hence due to the lack of awareness regarding the effect dental floss among the general population, patient motivation, understanding and compliance regarding dental floss use should be highly emphasized. Therefore the dentists play a major role in creating awareness about dental floss.¹² Hence the study was conducted to evaluate the knowledge, attitude, self-reported practices, and prescription patterns regarding dental floss among dentists.

Materials and Methods

The study was conducted in the Chettinad dental college and Research Institute, Kelambakkam. A total of 100 dentists who are the post graduate students, interns and dental faculty were included in the study. The questionnaires were delivered to each dentist and the filled form was received. The anonymity of prospective participants was maintained by avoiding the name in the questionnaire. The questionnaires were adapted from the questionnaire used by Madan et al, in their publication.¹³ The questions were grouped into different categories and subcategories as follows.

- To assess the knowledge about dental floss eight questions were interrogated (Figure -1).
- 5-point Likert scale of "agree," "strongly agree," "none," "disagree," and "strongly disagree" were used to assess the attitude of the dentists toward the use of dental floss, the degree of agreement with essentiality of dental floss, compliance in the use of dental floss and awareness in relation to dental floss (Figure-2).

Department of Periodontology

EDUCATIONAL QUALIFICATION: YEARS OF PRACTICE:

AGE/ SEX:

Questionnaire

- Does dental floss remove plaque and debris from the interdental area?
A. Yes B. No C. Don't know
- Does dental floss polish the tooth surfaces as it removes the plaque and debris?
A. Yes B. No C. Don't know
- Does dental floss massage the interdental areas?
A. Yes B. No C. Don't know
- Does dental floss aid in identifying the presence of subgingival calculus deposits, overhanging restorations and interproximal carious lesions?
A. Yes B. No C. Don't know
- Does dental floss reduce gingival inflammation?
A. Yes B. No C. Don't know
- Should dental floss be customarily used with tooth brushing everyday?
A. Yes B. No C. Don't know
- Do modern toothbrushes with advanced bristle design remove interdental plaque similar to dental floss?
A. Yes B. No C. Don't know
- Do you think that the use of dental floss would injure/ harm the interdental gingiva?
A. Yes B. No C. Don't know

Questionnaire

- Toothbrush and toothpaste are enough to remove plaque and debris
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None
- Dental floss is an essential oral hygiene aid along with the toothbrush
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None
- Dental floss has a significant role in the maintenance of periodontal health
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None
- Routine dental flossing is necessary
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None

5. Lack of patient compliance in using dental floss
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None
6. Dental floss is freely available
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None
7. Dental flossing is a time consuming procedure
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None
8. Dental floss is expensive
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None
9. Dental floss is not as well marketed as other oral hygiene aids in India
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None
10. Lack of awareness regarding dental floss among the people in India
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None
11. Dentists should create awareness and motivate people to use dental floss regularly
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None
12. Dental flossing should be taught at the school level, to be incorporated as a routine oral hygiene measures
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None
13. Dental floss is not given adequate importance in undergraduate and postgraduate dental education
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None
14. Greater emphasis is needed on dental flossing training/ education in the dental curriculum
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None
15. Do you use floss your teeth regularly?
A. Strongly agree B. Agree C. Disagree
D. strongly disagree E. None
16. Do you prescribe dental floss to patients?
A. Yes B. No

Statistical Analysis

The data obtained were analyzed by SPSS software version 15. The data were analyzed using Pearson's Chi-square test and the P value < 0.05 as statistical significance.

Results

A total of 100 dentists participated in this study who was 17 dental faculties, 39 postgraduate students and 44 internship students (Table-1). 62 dentists have experience of less than 5 years and 38 of dentists have more than 5 years of experience. 93% of dentists knew that the dental floss will remove plaque from the interdental area (Table-2, Graph-1). The dental floss does not polish the tooth surface as it removes plaque and debris was correctly answered by 65% of dentists. Instead the dental floss acts as a vehicle for application of polishing or chemotherapeutic agents (FI) to interproximal or subgingival areas. 45% of dentists answered that the dental floss massages the interdental area. While 39% of dentist reported correctly that the floss does not massage the interdental area. 80% of dentists reported that the dental floss helps in identifying the presence of overhanging restorations, subgingival calculus, deposits, and interproximal carious lesion. 62% of dentists believed that the dental floss reduces gingival inflammation while 26% of dentists believed it will not reduce inflammation. The dental floss should be customarily used along with tooth brushing everyday were believed by 64% of dentists. 19% of dentists had the opinion that the modern toothbrushes with advanced bristle design remove interdental plaque similar to dental floss. But 71% of dentists responded correctly that the modern toothbrush with advanced bristle design does not remove the interdental plaque similar to dental floss. 47% of dentists reported that the use of dental floss would injure/ harm the interdental gingiva. Instead 43% of dentists knew that the use of floss does not harm or injure the interdental gingiva.

64.5% of dentists gave the correct responses for all the questions. Both female and male dentists had a equal knowledge regarding the dental floss. The dental faculties had far better understanding of dental floss when compared to interns and Postgraduate students.

The toothbrush and toothpaste alone was not enough to remove plaque and debris was strongly agreed by 3% of dentists and agreed by 35% of dentists (Table-3). The dental floss is an essential oral hygiene aid along with the toothbrush was agreed by 62% and strongly agreed by 32% of dentists. 85% of dentists agreed and strongly agreed that the routine use of dental floss is necessary.

87% of dentists had reported that there is a lack of patient compliance in using dental floss. The dental floss is freely available was responded by 53% of dentists. 52% of dentist agreed and 17% of dentists strongly agreed that the dental flossing is a time-consuming procedure. The dental floss is not a xpensive one was considered by 44% of dentists..

In India, the dental floss is not a well marketed oral hygiene aids when compared to other oral hygiene aids was reported by 87% of dentists. There is a lack of awareness regarding dental floss among the general population was felt by 96% of dentists and the 94% of dentists agreed that the dentists should create awareness and motivate people to use dental floss regularly.

16% of dentists strongly agreed and 38% agreed that dental floss is not given adequate importance in undergraduate and postgraduate dental education. The dental flossing should be taught at the school level and to be incorporated as a routine oral hygiene measures was emphasized by 98% of dentists and 87% of dentist agreed that there should be a greater emphasis needed on dental flossing training/ education in the dental curriculum. The frequency of using dental floss was once daily by 12%, twice daily by 4%, on alternate days by 13%, occasionally by 40% and don't floss by 11% (Graph-2). 43% of dentists prescribe dental floss regularly to their patient (Graph -3).

GENDER	NUMBER	PERCENTAGE
MALES	46	46%
FEMALES	54	54%
QUALIFICATION		
BDS	44	44%
PG STUDENTS	39	39%
MDS	17	17%
YEARS Of PRACTICE		
<5	62	62%
>5	38	38%
Total	100	100%

Table 1: Characteristic of the dentists- gender, qualification & years of practice

Questions	Options	MDS n	PG students n	BDS n	Total n/ %	P value	Females n	Males n	Total n/ %	P VALUE (CHI SQUARE TEST)
1. Does dental floss remove plaque & debris from interdental area?	Yes	16	36	41	93	$X^2=0.469$ $p=0.976$	50	43	93	$X^2=0.087$ $P= 0.957$
	No	1	2	2	5		3	2	5	
	Don't know	0	1	1	2		1	1	2	
2. Does dental floss polish the tooth surfaces as it removes plaque & debris?	Yes	4	7	17	28	$X^2=5.242$ $p=0.263$	14	14	28	$X^2=0.754$ $P= 0.686$
	No	11	29	25	65		37	28	65	
	Don't know	2	3	2	7		3	4	7	
3. Does dental floss massage interdental areas?	Yes	3	15	27	45	$X^2=10.576$ $p=0.032$	20	25	45	$X^2=3.012$ $P= 0.222$
	No	10	17	12	39		24	15	39	
	Don't know	4	7	5	16		10	6	16	
4. Does dental floss aid in identifying the presence of subgingival calculus deposits, overhanging restorations and interproximal carious lesion?	Yes	10	33	37	80	$X^2=9.523$ $p=0.146$	40	40	80	$X^2=3.012$ $P= 0.222$
	No	6	3	5	14		9	5	14	
	Don't know	1	3	2	6		5	1	6	

5. Does dental floss reduce gingival inflammation?	Yes	9	29	24	62	$X^2=4.494$ $p=0.343$	30	32	62	$X^2=2.156$ $P= 0.34$
	No	6	7	13	26		16	10	26	
	Don't know	2	3	7	12		8	4	12	
6. Should dental floss be customarily used with tooth brushing everyday?	Yes	10	24	30	64	$X^2=4.911$ $p=0.297$	35	29	64	$X^2=.077$ $P= 0.963$
	No	7	9	10	26		14	12	26	
	Don't know	0	6	4	10		5	5	10	
7. Do modern toothbrushes with advanced bristle design remove interdental plaque similar to dental floss?	Yes	1	11	7	19	$X^2=8.061$ $p=0.089$	11	8	19	$X^2=0.930$ $P= 0.628$
	No	16	26	29	71		39	32	71	
	Don't know	0	7	3	10		4	6	10	
8. Do you think that the use of dental floss would injure/ harm interdental gingiva?	Yes	3	25	19	47	$X^2=13.844$ $p=0.008$	27	20	47	$X^2=1.18$ $P= 0.601$
	No	13	12	18	43		23	20	43	
	Don't know	1	7	2	10		4	6	10	

Table 2: Assessment of the knowledge of the dentists to dental floss

QUESTIONS	OPTIONS	MDS %	PG STUDENT %	BDS %	TOTAL %	p VALUE (Chi Square Test)
1. Toothbrush and toothpaste are enough to remove plaque and debris	Strongly agree	1	3	4	8	$P=0.111$ $X^2=15.622$
	Agree	6	19	26	51	
	Disagree	7	14	14	35	
	Strongly disagree	2	1	0	3	
	None	1	0	0	1	
2. Dental floss is an essential oral hygiene aid along with the toothbrush	Strongly agree	5	14	13	32	$P=0.491$ $X^2=5.426$
	Agree	10	23	29	62	
	Disagree	1	2	2	5	
	Strongly disagree	0	0	0	0	
	None	1	0	0	1	
3. Dental floss has a significant role in the maintenance of periodontal health	Strongly agree	5	14	16	35	$P=0.304$ $X^2= 7.131$
	Agree	10	24	23	57	
	Disagree	1	0	5	6	
	Strongly disagree	0	0	0	0	
	None	1	1	0	2	

4. Routine dental flossing is necessary	Strongly agree	3	8	14	25	P=0.417 X ² = 6.058
	Agree	10	23	27	60	
	Disagree	3	7	3	13	
	Strongly disagree	0	0	0	0	
	None	1	1	0	2	
5. Lack of patient compliance in using dental floss	Strongly agree	5	13	15	33	P=0.401 X ² = 8.336
	Agree	9	19	26	54	
	Disagree	2	6	3	11	
	Strongly disagree	0	1	0	1	
	None	1	0	0	1	
6. Dental floss is freely available	Strongly agree	2	2	3	7	P=0.35 X ² = 8.914
	Agree	11	16	19	46	
	Disagree	2	16	20	38	
	Strongly disagree	1	4	1	7	
	None	1	1	1	3	
7. Dental flossing is a time consuming procedure	Strongly agree	3	7	7	17	P=0.25 X ² = 10.216
	Agree	7	20	25	52	
	Disagree	6	11	8	25	
	Strongly disagree	0	4	1	5	
	None	1	0	0	1	
8. Dental floss is expensive	Strongly agree	4	0	3	7	P=0.00 X ² =34.002
	Agree	0	16	25	41	
	Disagree	10	18	15	43	
	Strongly disagree	1	0	0	1	
	None	1	0	0	1	
9. Dental floss is not as well marketed as other oral hygiene aids in India	Strongly agree	4	6	21	31	P=0.01 X ² =20.176
	Agree	10	28	18	56	
	Disagree	2	1	5	8	
	Strongly disagree	0	3	0	3	
	None	1	1	0	2	
10. Lack of awareness regarding dental floss among the people in India	Strongly agree	9	15	23	47	P=0.252 X ² =7.814
	Agree	7	22	20	49	
	Disagree	0	2	1	3	
	Strongly disagree	0	0	0	0	
	None	1	0	0	1	

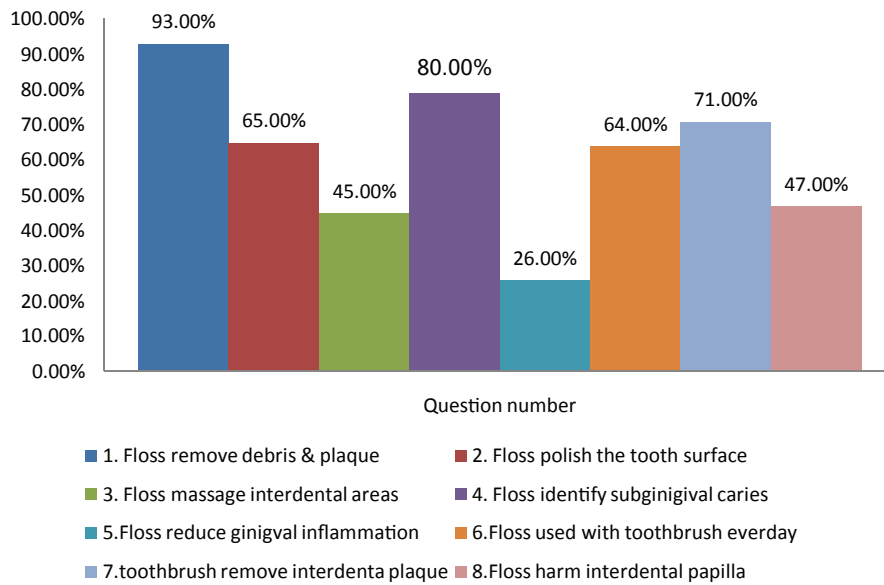
11. Dentists should create awareness and motivate people to use dental floss regularly	Strongly agree	6	18	23	47	P=0.426 X ² =5.979
	Agree	9	19	19	47	
	Disagree	1	2	2	5	
	Strongly disagree	0	0	0	0	
	None	1	0	0	1	
12. Dental flossing should be taught at the school level, to be incorporated as a routine oral hygiene measures	Strongly agree	3	17	28	48	P=0.004 X ² = 18.825
	Agree	12	22	16	50	
	Disagree	1	0	0	1	
	Strongly disagree	0	0	0	0	
	None	1	0	0	1	
13. Dental floss is not given adequate importance in undergraduate and postgraduate dental education	Strongly agree	4	3	9	16	P=0.095 X ² = 16.162
	Agree	10	15	13	38	
	Disagree	2	13	16	31	
	Strongly disagree	0	8	4	1	
	None	1	0	1	2	
14. Greater emphasis is needed on dental flossing training/ education in the dental curriculum	Strongly agree	6	6	12	24	P=0.095 X ² = 16.162
	Agree	7	27	29	63	
	Disagree	3	2	3	8	
	Strongly disagree	0	1	0	1	
	None	1	3	0	4	
15. Do you use floss your teeth regularly	Once daily	2	4	6	12	P=0.467 X ² = 7.659
	Twice daily	0	1	3	4	
	Alternate days	2	2	9	13	
	Occasionally	8	17	15	40	
	Don't floss	5	15	11	31	
16. Do you prescribe dental floss to patients	Yes	12	21	10	43	P=0.004 X ² = 18.825
	No	5	18	34	57	

Table 3: Assessment of the attitude & self reported practice of dental floss towards the dentists

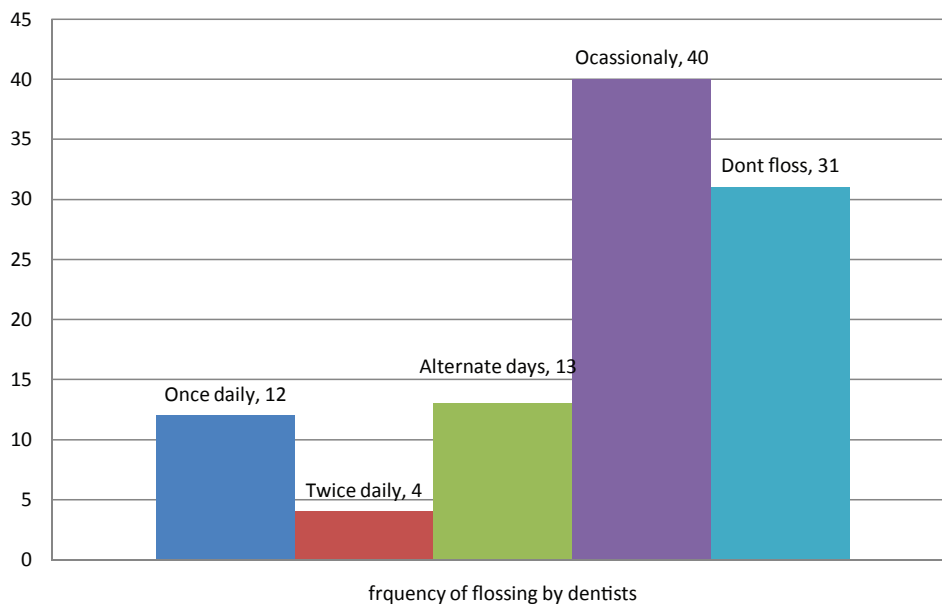
Discussion

The use of dental floss along with brushing regularly prevents the gingival disease but the dental floss usage was deficient. Hence it is essential to find the knowledge, attitude, self-reported practices, and prescription patterns among dental professionals to identify deficiencies, which would be helpful to plan corrective measures. This study has the same objectives among the dentist in Kelambakkam, Chennai. This study includes 100 who were 17 dental faculties, 38 postgraduate students and 45 internship students.

The dental floss is the most widely recommended interdental cleaning aid which is a bundle of thin filaments made of either nylon or silk. The dental floss can be coated with fluoride or non coated, flavored or unflavored and waxed or unwaxed. When interdental spaces are filled with interdental papillae and the teeth are in contact, the most effective interdental cleaning aid is dental floss, when used regularly and properly by patients. The objectives of dental floss was to remove the plaque & debris (which adheres to teeth, restoration, orthodontic appliances, interproximal embrasures & around implants), aids in identifying the presence interproximal calculus, overhanging restorations & interproxi



Graph 1 : Assessment of the knowledge of the dentists to dental floss- Correct answers for questions



Graph 2 : Assessment of the frequency of flossing by dentists

mal carious lesions, reduces gingival bleeding and acts as a vehicle for application of polishing or chemotherapeutic agents (FI) to interproximal or subgingival areas. Flossing is a technique of cleaning teeth by the use of a dental floss.

The daily flossing among adults was 31.6% according to Fleming et al, 2018. To ensure interdental cleaning, flossing was recommended at least once daily by ADA (2014) PHE/DoH (2017).¹⁴ In a study conducted by Stefan Zimmer et al 2007, a combination of tooth brushing with daily use of the tested mouth rinses may result in a higher interproximal plaque reduction than daily flossing.¹⁵

This study reported that 92% of dentists responded, that for a good periodontal health, routine use of dental floss is necessary. 69% of dentists described the uses of dental floss as a time-consuming procedure and 48% as expensive one. 31% of dentists do not floss at all. The dental floss prescription to their patients was given by only 43% of dentists. Similar study reported that there was 15.3% of those surveyed do not use floss at all and 78% of the dentists responded that the routine use of dental floss was necessary for good periodontal health and 63.9% of the dentists prescribed floss routinely to their patients.¹⁵

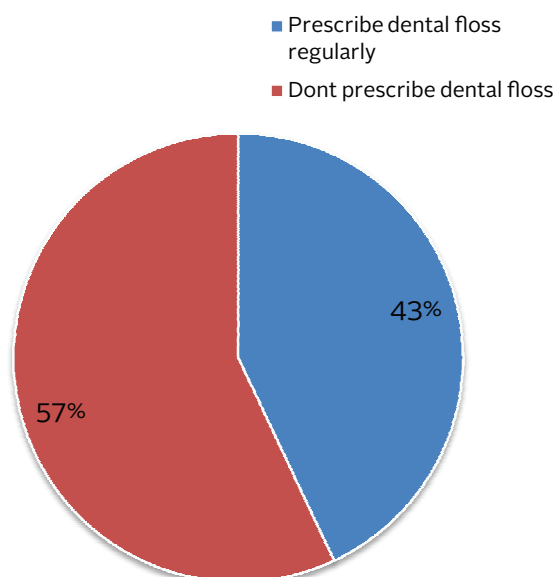


Figure 3: Prescription pattern of dental floss of dentists

Thus, the dental floss awareness should be created among the general population by adequately providing the health education programs and adequate training of using dental floss at undergraduate level. The dentists should also practice oral self-care and act as role models for the patients.

Conclusion

Most dentists recognize the dental floss as an essential oral hygiene aid. The ultimate goal of the patients self care program is to prevent periodontal disease which includes removal of plaque from all areas including interproximal areas, hence the routine use of dental floss is necessary. The dentist should be addressed about the importance of dental floss to the general populations as a preventive oral healthcare behaviour and monitor the performance in their maintenance program.

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