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Knowledge, attitude, and practice of dental flossing among non-dental health personnel

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Abstract

Background: Tooth-brushing alone is reported as inadequate for removal of inter-dental plaque, indicating the need for adjunctive aids such as dental floss. Therefore, preventive dental health education, including the need for dental flossing has been regularly given among the various health personnel in the University College Hospital, Ibadan.

Aim: To determine the knowledge, attitude and practice of dental flossing among non-dental health personnel.

Materials and methods: A 22-item structured self-administered questionnaire was used to collect data regarding knowledge, attitude and practice of dental flossing among the non-dental health personnel of the University College Hospital, Ibadan. Ethical approval was obtained from UI/UCH Ethics Review Committee.The data was analyzed using Windows Statistical Package for Social Sciences version 21.0.

Results: Two hundred and four participants were involved, out of which 114(55.9%) were females, and 90 (44.1%) were males.The average age was 31 years. They included medical doctors, nurses, community health officers, medical laboratory scientists, surgeons, dieticians, pharmacists and physiotherapists.Response rate was 97%. Eighty-four percent of the participants were knowledgeable about dental flossing, with 74.0% using it to remove impacted food particles. Regarding participants' attitude to dental flossing, all respondents thought it was a good habit, but only 66.7% think it is a simple habit. However, about 60% flossed daily, while the rest flossed occasionally.

Conclusion: The knowledge, attitude and practice of dental flossing among non-dental health personnel of the University College Hospital, Ibadan is fair. However, regular dental flossing should be emphasized as mainly to remove inter-dental plaque, in order to prevent periodontal disease.

Keywords: *Knowledge, attitude, practice, dental flossing, health personnel*

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Résumé

Contexte: Le brossage des dents seul est considéré comme inadéquat pour l'enlèvement de la plaque dentaire, ce qui indique la nécessité d'utiliser des adjuvants telle que la soie dentaire. Par conséquent, l'éducation préventive en matière de santé dentaire, y compris le besoin d'utilisé la soie dentaire, a été régulièrement dispensée aux divers personnels de santé du Collège Hospitalier Universitaire d'Ibadan.

But: Pour déterminer la connaissance, l'attitude et la pratique de la soie dentaire parmi les personnels de santé non-dentaire.

Matériel et méthodes: Un questionnaire auto-administré structuré en 22-items a été utilisé pour recueillir des données sur la connaissance, l'attitude et la pratique de la soie dentaire parmi les personnels de santé non-dentaire du Collège Hospitalier Universitaire, Ibadan. L'approbation éthique a été obtenue auprès du Comité de Revue Ethique de l'UI / UCH. Les données ont été analysées à l'aide du Logiciel Statistique pour les Sciences Sociales version 21.0.

Résultats: Deux cent quatre participants étaient inclus, dont 114 (55,9%) étaient des femmes et 90 (44,1%) étaient des hommes. L'âge moyen était de 31 ans. Ils comprenaient des médecins, infirmières, agents de santé communautaires, scientifiques de laboratoire médical, chirurgiens, diététiciens, pharmaciens et physiothérapeutes. Le taux de réponse était de 97%. Quatre-vingt-quatre pour cent des participants étaient informés sur l'utilisation de la soie dentaire, avec 74,0% d'entre eux l'utilisant pour éliminer les particules de nourriture contaminées. En ce qui concerne l'attitude des participants envers la soie dentaire, tous les répondants pensent que c'est une bonne habitude, mais seulement 66,7% pensent que c'est une habitude simple. Cependant, environ 60% utilisent la soie dentaire par jour, tandis que le reste utilisent la soie dentaire de occasionnellement.

Conclusion: La connaissance, l'attitude et la pratique de la soie dentaire chez les personnels de santé non-dentaire du Collège Hospitalier Universitaire d'Ibadan est équitable. Cependant, l'usage régulier de la soie dentaire devrait être souligné pour principalement enlever la plaque inter-dentaire, afin de prévenir la maladie parodontale.

Mots clés: *Connaissance, attitude, pratique, soie dentaire, personnel de santé*

Introduction

Periodontal disease is one of the major public health problems in developing countries like Nigeria, thus there is a need to ensure preventive measures to reduce its burden [1]. Dental plaque is the main etiological factor in periodontal disease, and removal of this biofilm is the gold standard for the prevention of periodontal disease. Mechanical methods are the most effective measures of plaque control [2,3]; and toothbrushing alone is reported to be inadequate for removal of interdental plaque, indicating the need for adjunctive oral hygiene aids such as dental floss [4]. The dental floss was invented by Levi Spear Parmly, a New Orleans dentist, referred to as the apostle of oral hygiene [5]. They advised their patients to floss with a piece of silk thread in 1815. Subsequently, improvements have occurred to produce the current floss types [6].

Claydon [2] opined that there is good evidence to recommend dental floss to adults for the prevention of gingival inflammation. In a systematic review, Sambunjak *et al.* [7] concluded that in addition to tooth brushing, flossing further reduces gingivitis, compared to tooth brushing alone. Another study showed that use of dental floss regularly by orthodontic patients resulted in marginally better gingival outcome than those who did not use dental floss [8].

The American Dental Association (ADA) [9] recommends flossing at least once a day. It advises that dental flossing be done using about 18-inches of floss, wound around one of the middle fingers, with the rest wound around the opposite middle finger. The floss can then be held tightly between the thumbs and forefingers and gently inserted between the teeth. It should then be curved into a "C" shape against the side of each tooth, rubbed gently up and down, while pressed against the tooth.

The use of dental floss as an added oral hygiene measure has been reported as poor throughout the world [10-12]. In a study among Indians [13], it was reported that only 15.8% used dental floss,which was attributed to the low level of awareness among the people, and poor prescription practices of the dentists. In a study conducted among dentists practicing in theUSA and Japan, 56.3% and 23.4% respectively, used dental floss [14,15]. Studies have also shown that information, education, and communication by dentists regarding good oral hygiene play a significant role on positive health behavior among their patients [16].

Though dentists play a major role in prescribing effective oral hygiene measures for maintenance of good oral health, health workers in other disciplines can readily be engaged to provide valuable counsel to many people in the course of their practice with regard to dental flossing. Thus, improving the knowledge, attitude and practice of dental flossing among other health workers can influence both their personal oral care, and their oral health advice to others.

Oral health education activities are usually conducted by designated members of the Department of Periodontology and Community Dentistry on a daily basis. These oral health care talk sessions are given at several fora: en-masse in the Dental Centre reception hall, one-on-one during dental treatments, and in many gatherings of the hospital staff such as seminars. This study was done to assess the impact of these teachings.

Methodology

Design: This was a cross-sectional study using a 22-item structured, close-ended, questionnaire, designed to gather coded historical data regarding *knowledge, attitude and practice of dental flossing.* The study population was the ***NON-DENTAL****health personnel of all specialties of the University College Hospital, Nigeria:* medical doctors (including those who did postings in dentistry), nurses, community health officers, medical laboratory scientists, surgeons, dieticians, pharmacists and physiotherapists. Ethical approval was obtained from UI/UCH Ethics Review Committee.

Sampling:

The sample size was determined using the formula for proportions: n=z2[pq]/d2 at 95% confidence level. A prevalence of 14.4% from a similar study [17] was used. This gave a sample size of 189. However, 210 questionnaires were distributed.Convenient sampling technique was employed i.e. non-dental health personnel who were informed and who consented to the research process, participated. This was continued until the questionnaires were exhausted.

Data collection procedure

The questionnaire was pretested among 20 non-dental health personnel that were not included in the study. Necessary modifications were made based on the pretest. The questionnaires were then distributed and self-filled by the consenting adults. Anonymity of participants was maintained.

Data analysis

The data collected were analyzed using Windows Statistical Package for Social Sciences (version 21.0,

SPSS, Chicago, IL, USA). Ranking was done during data entry in order to give maximum weight to the variable with the highest ranking. Descriptive statistics which included calculation of percentage, mean and standard deviation, were performed on the subjects' *knowledge, attitude, and practice of dental flossing*,and associated factors. Significant differences between variables were tested using Chi-square test, level of statistical significance set at $P < 0.05$.

Results

Of the 210 questionnaires administered, 204 (97%) were properly filled and used for analysis.

One hundred and fourteen (55.9%) participants were females, and 90 (44.1%) were males. Among the females 93, (81.6%) used dental floss, while 21, (18.4%) did not.Among the males, 79(87.8%) used dental floss, while 11, (12.2%) did not.On analysis, the gender was not found to have a significant influence on the use of dental floss ($X^2 = 1.461$, p=0.227).

Table 1: Occupation versus use of dental floss *among* non-dental health personnel

Occupation	Use Dental Floss	Do Not Use Dental Floss	Total	Percentage among all Participants
Medical doctor	64	11	75	
	85.3%	14.7%	100.0%	36.8%
Nursing	26	9	35	
	74.3%	25.7%	100.0%	17.2%
Community	28	6	34	
Health Officer	82.4%	17.6%	100.0%	16.7%
Medical Lab.	13	4	17	
Scientist	76.5%	23.5%	100.0%	8.3%
Surgeon	15	0	15	
	100.0%	0.0%	100.0%	7.3%
Dietician	13	1	14	
	92.9%	7.1%	100.0%	6.9%
Pharmacist	7	1	8	
	87.5%	12.5%	100.0%	3.9%
Physiotherapist	6	0	6	
	100.0%	0.0%	100.0%	2.9%
Total	172	32	204	
	84.3%	15.7%	100.0%	100%

$X^2 = 8.351, p = .303$

The ages of the respondents ranged from 22 to 55years, with the majority between 35 and 45 years of age. There were 75 medical doctors (36.8%), out of which 64, (85.3%) use dental floss; 35 Nurses (17.2%), out of which 26, (74.3%) use dental floss. There were also 34 Community Health Officers, 17 Medical Laboratory Scientists, 15 Surgeons and others whose usage of dental floss is depicted in Table 1. Also, there was no significant association between the occupation and the usage of dental floss.(X^2=8.351, p = 0.303).

Knowledge

From Table 2; 84% (171) of the participants had knowledge about dental flossing, out of which, 46.5% sourced the information about dental flossing from dental hygienists, 32.8% from dentists, and 20.7% from other sources. A high majority of those who flossed did so to remove impacted food pieces; while others did it to remove dental plaque. The purpose for tooth flossing was found to have a significant impact on the usage of dental floss(X^2=11.395, p=0.010).

The majority (80.8%) of the respondents knew that regular flossing of teeth reduces risk for dental disease, and in the same manner, 71.7 % know that failure to regularly floss teeth increases the risk of dental disease. Theseknowledge had significant impact on the usage of dental floss (p=0.000) and (p=0.001) respectively.

Attitude

A high majority (84%) believe dental flossing is a good habit to form, while 66.7% of those who floss think it is a simple habit to form, and these

Table 2. Knowledge Versus *Use of Dental Floss among* Non-Dental Health Personnel

Knowledge use of dental floss	Frequency value	Percent	Chi-Square
Knew about dental floss	171	84	
Did not know about dental flossing	33	16.2	
Got information about dental flossing from dental hygienist	79	46.5	X^2=1.056 p=.590
Got information about dental flossing from dentist	56	32.8	
Got information about dental flossing from others (friend, mother, father)	35	20.7	
Purpose for tooth flossing is to remove impacted food pieces	126	74	X^2=11.395 p=.010
Purpose for tooth flossingis to remove dental plaque	45	26	
Thought regular flossing of teeth reduces risk for dental disease	138	80.8	X^2=23.972 p=.000
Did not think regular flossing of teeth reduces risk for dental disease	33	19.3	
Knew that failure to regularly floss teeth can increases the risk X^2=16.463p=.001	123	71.7	
Did not know if failure to regularly floss teeth can increases the risk of dental disease	48	28.3	

beliefs(that it is a good habit and simple habit to form) have a significant impact on the usage of dental floss(p=0.007) and (p=0.000) respectively (Table 3).About three quarter (75.8%) of the participants would like to be able to floss regularly.

occasionally. Many(64.3%) claimed they had a form of plan regarding dental flossing. Analysis showed that having such a plan had a significant influence on the usage of dental floss (X^2=8.662, p=0.013).

Table 3. Attitude Versus *Use of Dental Floss among* Non-Dental Health Personnel

Attitude	Use of dental floss		
	Frequency	Percentage	Chi-Square value
Think dental flossing is a good habit to form	171	100	X^2=10.018 p=.007
Do not think dental flossing is a good habit to form	0	0	
Think dental flossing is a simple habit to form	114	66.7	X^2=37.428 p=.000
Do not think dental flossing is a simple habit to form	57	33.3	
Would like to be able to floss regularly	130	75.8	X^2=.262
Would not like to be able to floss regularly	41	24.2	p=.877

Practice

From Table 4; 32.7%of participants use the Traditional Finger-held floss while 65.5% use disposable pre-threaded floss. There is a significant association between the type of floss used and the usage of dental floss(X^2=18.707, p=0.001). The majority (75.4%) of those who floss do it after eating a meal, and there is also a significant association between the time of flossing and the usage of dental floss(X^2=42.275, p=0.000). More than half (60.2%) of those who floss did it once daily; the rest did it

Few participants had complaints of pain during flossing (19.3%), which had no significant influence on the usage of dental floss (X^2=1.011, p=0.799), but 17.0% of those who flossed reported gum-bleeding during flossing, and this had a significant influence on the usage of dental floss (X^2=9.522, p=.023).

Discussion

This study aimed at determining the present level of knowledge about dental flossing,the attitude towards it, and the practice of it,among non-dental health

Table 4. Practice Versus Use of Dental Floss among Non-Dental Health Personnel

Practice	Use of dental floss		
	Frequency	Percent	Chi-Square value
Use the Traditional Finger-held floss	56	32.7	X^2=18.707
Use disposable pre-threaded floss	112	65.5	p=.001
Use Re-usable floss holders	3	1.8	
Floss in the: Morning	17	9.9	X^2=42.275
Floss in the Afternoon	4	2.3	p=.000
Floss in the Night	21	12.3	
Floss after meals	129	75.4	
Floss at least once a day	103	60.2	X^2=42.414
Floss Occasionally	68	39.8	p=.000
Have a plan/routine regarding Flossing	110	64.3	X^2=8.662
Have no plan/routine regarding Flossing	61	35.7	p=.013
Feel pain when flossing	33	19.3	X^2=1.011
Do not feel pain when flossing	138	80.7	p=.799
Gums bleed when flossing	29	17.0	X^2=9.522
Gums do not bleed when flossing	142	83.0	p=.023

personnel of the University College Hospital, Ibadan.This is in order to see how equipped these fellow health workers are, with regard to good personal use of dental flossing, to be able to effectively impart this advantage to the people they meet in the course of their work.

This study showed that an appreciable proportion (84.0%) of these health personnel are knowledgeable about dental flossing. This is higher than 56.3% reported by Merchant et al.[14], among dentists in US who used dental floss once daily, and farhigher than23.4% reported byNakamura et al. [15] among dentists in Japan. This difference may be due to the afore mentioned daily oral health education activity being carried out by the team of dental health workers comprising public health dentists, dental therapists and dental nurses from the Hospital, every workday morning.Our results also showed that most of the participants got their information about dental flossing from dental hygienists (46.5%) and dentists (32.8%).

The purpose of flossing had a significant influence on the usage of dental floss in this study (X2=23.972, p=0.000). However, more of the subjects floss for the purpose of removing impacted food pieces, rather than to remove dental plaque. This indicates an area where the flossing education needs to be improved: it should be better emphasized that removal of dental plaque from the inter-dental area is the main purpose for regular dental flossing. Many of our subjects also knew that regular flossing of teeth reduces risk for dental disease, and believe that failure to regularly floss teeth increases the risk of dental disease. This might attest to the possibility that they were well motivated by those who gave them instruction about dental flossing. Furthermore, this knowledge and belief (that regular flossing of teeth reduces risk for dental disease, and failure to regularly floss teeth increases the risk of dental disease), did have a significant impact on the use of dental floss among the respondents. However, this finding does not agree with the report of Neamatollahi *et al.*[18] which stated that though 40.6% of their subjects believed that tooth brushing is not enough for oral and dental health, they hardly used dental floss.Also,Orlando *et al.* [19] stated that though about 90% of their subjects had been instructed on dental flossing to prevent periodontal disease and bleeding gums, yet about 42% did not floss.

Though all those who floss think dental flossing is a good habit to form, fewer (66.7%) think it is a simple habit to form. Considering that the participants' attitudes about the simplicity of dental flossing significantly impacted the usage of dental floss: (X2=37.428, p=0.000), measures to improve on their perception of this simplicity will improve their use of dental floss. For instance, since we saw from the participants who have some form of plan regarding regular dental flossing, that this plan significantly influenced the usage of dental floss(X2=8.662, p=0.013), it is likely that if some effort is made towards building a workable plan with regard to regular flossing, there will be a good improvement in the perception about the simplicity of flossing. This is also a promising area to work on, considering that many (75.8%) would like to be able to floss regularly. The studies of Neamatollahi *et al.* [20]; Rise *et al.* [21]; Schüz *et al.* [22] and Suresh *et al.*[23] agreed with the positive effect of having a workable plan for regular flossing.

Conclusion

This study showed that the present level of knowledge of, attitude towards, and practice of dental flossing among non-dental health personnel of the University College Hospital, Ibadan are good; though there is need to emphasize that the main purpose of dental flossing is to remove dental plaque. We recommend that they should be encouraged to impart this advantage to the people they meet in the course of their work.

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