

ORIGINAL ARTICLE



Relationship between patient's education level and knowledge on oral health preventive measures

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Keywords

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Abstract

Background: Dental caries and periodontal disease are admittedly the most common oral diseases and are one of the main oral health problems, affecting the quality of life of the individuals. The aim of this study was to evaluate patient's education level and knowledge on dental treatment of caries/periodontal disease and oral hygiene through a specific questionnaire.

Materials and Methods: A group of 600 adults aged between 18 and 80 years old were evaluated. After the evaluation of the answers given, the participants in the survey were instructed regarding the main oral health preventive measures. The obtained data were submitted to descriptive statistical analysis.

Results: The results showed that 59% of the patients were female at age range of 31-40 years-old. The patients with a higher educational level had more previous information about caries, periodontal diseases, and oral health preventive measures. The dentist was pointed out as the person responsible for the oral hygiene instruction for 73.83% of the patients. The lack of oral hygiene were said to be the main factor accounting for both caries and periodontal disease etiology (79.85% and 62.93%, respectively). Pain was the motivating factor for seeing a dentist (44.50) whereas 55.50% of the patients were motivated by a preventive care (routine appointment). Dental floss was used by only 49.50% of the patients and 34.90% that did not use it by saying that it provokes gingival bleeding.

Conclusion: The evaluated patients presented an uneven knowledge level on caries, periodontal disease, and oral hygiene preventive measures. The educational level had a direct influence on both patient's knowledge and behavior regarding to the main oral diseases. There is the need for a continued instruction on caries and periodontal disease preventive measures, with emphasis on diet role and dental floss use in dental educational programs.

Introduction

The dentist is responsible for preventing diseases, minimizing risks, and promoting health. The patients also need to be awakened about their role in oral health care, and for this purpose, the institution of preventive measures of motivation and instruction for plaque control is indispensable.^[1]

Dental caries and periodontal disease preventive strategies should be guided to eliminate their etiologic factors. Considering

that the main etiologic factor of these two important diseases is dental plaque, its control is necessary and very important.^[2,3]

The most effective methods for dental plaque control have included mechanical procedures. The active plaque removal by the patient, also called self-care, is the result of many factors, such as: knowledge on etiology, pathogenesis, treatment and control of oral diseases; motivation; oral hygiene instruction; manual skills; and adequacy of cleaning instruments.^[4] On the other hand, motivation can be considered as the driving force of this

action dynamics, influenced by the patient's past experiences, family, culture, values, social level, and more precisely, by the dentist.^[5-7]

Both the dentist and the staff exert a fundamental role in instructing and motivating the patients to perform a frequent and effectiveness oral hygiene.^[1] Garcia *et al.*^[2] created an education and motivation program in which the patients were periodically instructed on the necessity of periodic recalls to maintain the good oral health achieved.

To establish adequate oral health habits, the use of educational strategies is necessary, which will enable that the patient become motivated to cooperate with both dental treatment and oral hygiene measures prescribed.^[8-10] Accordingly, it is indispensable that the patient is educated and aware of the importance in modifying improper behaviors, making an effort to develop habits leading to oral health maintenance.^[11]

Thus, the aim of this study was two-fold: To evaluate patients' education level and knowledge on oral health preventive measures through a specific questionnaire; and based on the responses given to instruct the patients regarding to the correct tooth brushing/dental floss technique and dietary habit changes, aiming at the prevention of the main oral health problems (dental caries and periodontal disease).

Materials and Methods

This study was submitted and approved by the Institutional Review Board under protocol number #042/2008-PH/CEP, according to the Resolution no. 196/96 of the Brazilian Health Council.

Six hundred patients, both genders, aged from 18 to 80 years-old, attending the ambulatory of the Institute of Science and Technology of São José dos Campos, UNESP were evaluated through questionnaire at the clinics of Operative Dentistry and Endodontics.

The questionnaire was created with direct questions to make the patients' comprehension easy and to contribute to the information clarity. Previously to questionnaire application, the participants were informed regarding to the study objectives and the doubts were clarified. The questions were answered voluntarily and individually. Patient could quit participating in the study at any time. The patients who accepted in participating in the study signed a Free and Clarified Consent Form.

After the questionnaire filling, all patients received an oral hygiene kit containing a soft-bristle tooth brushing, dental floss, fluoride dentifrice, and educative leaflets on instructions about dental caries, periodontal disease, dietary counseling, and proper tooth brushing/dental floss techniques. Patients watched a 10 min educative video on oral hygiene methods and proper diet for dental caries and periodontal disease prevention. Furthermore, oral instructions on the educative material (leaflets and video) were provided.

Data obtained through a questionnaire were evaluated and stored in Excel worksheets to calculate the percentages. The

obtained results were statistically analyzed through descriptive statistics.

Results

The questionnaire results were expressed by the frequency of distributions as percentages. With regard to the evaluated patients, 354 (59) were female and 246 (41) male, predominantly at the age range of 31-40 years-old (30). Tables 1-3 display the evaluated patients' profile and the dental appointment frequency in relation to the education level.

The distribution of questionnaire responses is displayed in Table 4. The results showed that the higher the education level of the patients, the more knowledge on dental caries, periodontal disease and preventive measures they had.

Discussion

The knowledge on dental caries and periodontal disease etiology is of fundamental importance for the prevention. Accordingly, the dentist should be aware on the patients' education level and clearly instruct them. In general, the population has an uneven knowledge level on oral hygiene methods and diet recommended for dental caries and periodontal disease prevention due to education level, social-economical profile, interest level and learning opportunity. In this context, social projects and/or programs are important to evaluate the patients' knowledge and establish educative parameters, aiming to reduce the number of tooth losses over the years.

Oral health educative programs may change habits at the individual life and population reality.^[12] To institute effective programs, it is necessary to evaluate previously both the habits and knowledge level of the target population.

According to Gonçalves *et al.*,^[5] most patients considered that toothbrushing is a preventive method of dental caries, but periodontal disease prevention is barely known. In this present, 79.85% and 62.93% of the participants pointed out the lack of hygiene as main etiologic factor of dental caries and periodontal disease, respectively [Table 4]. Although the lack of hygiene is really one of the etiologic factors, some authors have verified that depressive feelings may interfere in self-care, reflecting in general and oral health.^[13] The psychosocial stress and other psychological factors interfering in well-being may directly or indirectly affect the periodontal disease etiology.^[14]

The results of this study showed that the dentist was considered as the person major responsible for oral hygiene instruction [Table 4]. Teixeira *et al.*^[15] reported that 50% of the adults of an isolated riverside community had already received oral hygiene instructions by a dentist. Campos *et al.*^[16] affirmed that the dentist's participation in oral health education at schools, generally is limited to lecture on specific content, and the dental professional did not continue in the school life. This finding claims for the necessity of strengthening initiatives enabling the effective approximation of the dentists to children,

Table 1: Relationship between gender and education level of the patients evaluated in the study

Gender	Incomplete primary school (%)	Complete primary school (%)	Incomplete secondary school (%)	Complete secondary school (%)	Higher education (%)	Total (%)
Female	64 (60.38)	45 (60.81)	46 (57.50)	120 (54.30)	79 (66.39)	354 (59.00)
Male	42 (39.62)	29 (39.19)	34 (42.50)	101 (45.70)	40 (33.61)	246 (41.00)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)

Table 2: Relationship between age and education level of the patients evaluated in the study

Age (years)	Incomplete primary school (%)	Complete primary school (%)	Incomplete secondary school (%)	Complete secondary school (%)	Higher education (%)	Total (%)
18-20	8 (7.55)	2 (2.70)	9 (11.25)	21 (9.50)	13 (10.92)	53 (8.83)
21-30	4 (3.77)	9 (12.16)	6 (7.50)	31 (14.03)	46 (38.66)	96 (16.00)
31-40	34 (32.07)	17 (22.97)	20 (25.00)	86 (38.91)	23 (19.33)	180 (30.00)
41-50	23 (21.70)	20 (27.03)	18 (22.50)	37 (16.74)	14 (11.76)	112 (18.67)
51-60	14 (13.21)	11 (14.87)	17 (21.25)	31 (14.03)	18 (15.13)	91 (15.17)
61-70	17 (16.04)	12 (16.22)	3 (3.75)	8 (3.62)	2 (1.68)	42 (7.00)
71-80	6 (5.66)	3 (4.05)	7 (8.75)	7 (3.17)	3 (2.52)	26 (4.33)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)

Table 3: Relationship between the dental appointment frequency and education level of the patients evaluated in the study

Dental appointment frequency	Incomplete primary school (%)	Complete primary school (%)	Incomplete secondary school (%)	Complete secondary school (%)	Higher education (%)	Total (%)
3 months	19 (17.93)	17 (22.97)	16 (20.00)	38 (17.19)	39 (32.77)	129 (21.50)
6 months	48 (45.28)	28 (37.84)	35 (43.75)	103 (46.61)	62 (52.10)	276 (46.00)
1 year	17 (16.04)	12 (16.22)	12 (15.00)	27 (12.22)	10 (8.40)	78 (13.00)
More than 1 year	22 (20.75)	17 (22.97)	17 (21.25)	53 (23.98)	8 (6.73)	117 (19.50)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)

Table 4: Distribution of questionnaire responses on patients' oral health knowledge and behavior

Q/A	Incomplete primary school (%)	Complete primary school (%)	Incomplete secondary school (%)	Complete secondary school (%)	Higher education (%)	Total (%)
Do you know what caries is?						
Yes	58 (54.72)	47 (63.51)	49 (61.25)	190 (85.97)	104 (87.39)	448 (74.67)
No	48 (45.28)	27 (36.49)	31 (38.75)	31 (14.03)	15 (12.61)	152 (25.33)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)
Do you know what periodontal disease is?						
Yes	20 (18.87)	23 (31.08)	19 (23.75)	101 (45.70)	65 (54.62)	228 (38.00)
No	86 (81.13)	51 (68.92)	61 (76.25)	120 (54.30)	54 (45.38)	372 (62.00)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)
Do you think that caries is related to						
Lack of hygiene	90 (78.26)	64 (83.12)	68 (81.93)	199 (80.89)	110 (76.39)	531 (79.85)
Improper diet	4 (3.48)	1 (1.30)	1 (1.20)	25 (10.16)	18 (12.50)	49 (7.37)
Weak teeth	12 (10.43)	9 (11.68)	10 (12.05)	15 (6.10)	9 (6.25)	55 (8.27)
Familial heritage	9 (7.83)	3 (3.90)	4 (4.82)	7 (2.85)	7 (4.86)	30 (4.51)
Total	115 (17.30)	77 (11.58)	83 (12.48)	246 (36.99)	144 (21.65)	665 (100.00)

(Contd...)

Table 4: (Continue)

Do you think that periodontal disease is related to						
Lack of hygiene	82 (71.93)	48 (64.00)	54 (65.85)	125 (57.34)	90 (62.07)	399 (62.93)
Improper diet	4 (3.51)	1 (1.33)	5 (6.10)	43 (19.73)	19 (13.10)	72 (11.36)
Weak teeth	22 (19.30)	20 (26.67)	16 (19.51)	37 (16.97)	20 (13.80)	115 (18.14)
Familial heritage	6 (5.26)	6 (8.00)	7 (8.54)	13 (5.96)	16 (11.03)	48 (7.57)
Total	114 (17.98)	75 (11.83)	82 (12.94)	218 (34.38)	145 (22.87)	634 (100.00)
Have you ever received any oral hygiene instruction?						
Yes	84 (79.25)	58 (78.38)	66 (82.50)	206 (93.21)	115 (96.64)	529 (88.17)
No	22 (20.75)	16 (21.62)	14 (17.50)	15 (6.79)	4 (3.36)	71 (11.83)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)
If yes, who performed the instruction?						
Dentist	80 (75.47)	56 (75.68)	63 (78.75)	161 (72.85)	83 (69.75)	443 (73.83)
Parents	13 (12.26)	8 (10.81)	5 (6.25)	31 (14.03)	21 (17.65)	78 (13.00)
Media	12 (11.32)	7 (9.46)	10 (12.50)	20 (9.05)	12 (10.08)	61 (10.17)
Friends	1 (0.95)	3 (4.05)	2 (2.50)	9 (4.07)	3 (2.52)	18 (3.00)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)
Have you ever received any instruction on how to use dental floss?						
Yes	76 (71.70)	55 (74.32)	60 (75.00)	195 (88.24)	110 (92.44)	496 (82.67)
No	30 (28.30)	19 (25.68)	20 (25.00)	26 (11.76)	9 (7.56)	104 (17.33)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)
Which toothbrushing type do you use?						
Soft	51 (48.11)	36 (48.65)	35 (43.75)	104 (47.06)	66 (55.46)	292 (48.67)
Medium	39 (36.79)	29 (39.19)	25 (31.25)	91 (41.18)	43 (36.14)	227 (37.83)
Hard	8 (7.55)	6 (8.11)	15 (18.75)	6 (2.71)	5 (4.20)	40 (6.67)
Any	8 (7.55)	3 (4.05)	5 (6.25)	20 (9.05)	5 (4.20)	41 (6.83)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)
How many times a day do you brush your teeth?						
Once to twice	35 (33.02)	23 (31.08)	31 (38.75)	47 (21.27)	18 (15.13)	154 (25.67)
3 to 4 times	54 (50.94)	45 (60.81)	39 (48.75)	154 (69.68)	83 (69.75)	375 (62.50)
More than 4 times	17 (16.04)	6 (8.11)	10 (12.50)	20 (9.05)	18 (15.12)	71 (11.83)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)
How often do you change your toothbrush?						
At every month	25 (23.58)	10 (13.51)	6 (7.50)	29 (13.12)	18 (15.13)	88 (14.67)
At every 3 months	52 (49.05)	43 (58.11)	48 (60.00)	144 (65.16)	70 (58.82)	357 (59.50)
At every 6 months	29 (27.36)	21 (28.38)	26 (32.50)	48 (21.72)	31 (26.05)	155 (25.83)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)
Do you floss?						
Yes	45 (42.45)	33 (44.59)	32 (40.00)	119 (53.85)	68 (57.14)	297 (49.50)
Sometimes	30 (28.30)	23 (31.08)	30 (37.50)	84 (38.00)	44 (36.97)	211 (35.17)
No	31 (29.25)	18 (24.33)	18 (22.50)	18 (8.15)	7 (5.89)	92 (15.33)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)

Table 4: (Continue)

If you do not floss, which are the reasons?						
I do not know how to use	24 (43.64)	9 (37.50)	11 (29.73)	39 (37.50)	15 (42.86)	98 (38.44)
I feel pain	7 (12.73)	2 (8.33)	6 (16.22)	14 (13.46)	5 (14.28)	34 (13.33)
Gingival bleeding	18 (32.73)	9 (37.50)	14 (37.84)	38 (36.54)	10 (28.57)	89 (34.90)
High cost	6 (10.90)	4 (16.67)	6 (16.21)	13 (12.50)	5 (14.29)	34 (13.33)
Total	55 (21.57)	24 (9.42)	37 (14.50)	104 (40.78)	35 (13.73)	255 (100.00)
Do you use mouthwash?						
Yes	19 (17.92)	18 (24.32)	11 (13.75)	45 (20.36)	24 (20.17)	117 (19.50)
Sometimes	49 (46.23)	35 (47.30)	30 (37.50)	113 (51.13)	59 (49.48)	286 (47.67)
No	38 (35.85)	21 (28.38)	39 (48.75)	63 (28.51)	36 (30.25)	197 (32.83)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)
Have you been told about the benefits of fluoride in prevention?						
Yes	53 (50.00)	41 (55.41)	41 (51.25)	125 (56.56)	89 (74.79)	349 (58.17)
No	53 (50.00)	33 (44.59)	39 (48.75)	96 (43.44)	30 (25.21)	251 (41.83)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)
Have you received any diet instruction?						
Yes	49 (46.23)	32 (43.24)	39 (48.75)	111 (50.23)	86 (72.27)	317 (52.83)
No	57 (53.77)	42 (56.76)	41 (51.25)	110 (49.77)	33 (27.73)	283 (47.17)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)
Do you eat candies, gums, chocolate bars, and cookies or drink sodas in between meals?						
Yes	33 (31.13)	12 (16.22)	14 (17.50)	40 (18.10)	30 (25.21)	129 (21.50)
Sometimes	48 (45.28)	46 (62.16)	47 (58.75)	141 (63.80)	65 (54.62)	347 (57.83)
No	25 (23.59)	16 (21.62)	19 (23.75)	40 (18.10)	24 (20.17)	124 (20.67)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)
Do you drink coffee with sugar in between meals?						
Yes	60 (56.60)	33 (44.59)	30 (37.50)	62 (28.05)	27 (22.69)	212 (35.33)
Sometimes	18 (16.98)	21 (28.38)	18 (22.50)	66 (29.86)	24 (20.17)	147 (24.50)
No	28 (26.42)	20 (27.03)	32 (40.00)	93 (42.09)	68 (57.14)	241 (40.17)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)
If yes, how many times per day?						
Once to 3 times	31 (47.69)	37 (74.00)	34 (70.84)	112 (84.21)	39 (76.47)	253 (72.91)
3 to 5 times	18 (27.69)	7 (14.00)	7 (14.58)	13 (9.77)	9 (14.65)	54 (15.56)
More than 5 times	16 (24.62)	6 (12.00)	7 (14.58)	8 (6.02)	3 (5.88)	40 (11.53)
Total	65 (18.73)	50 (14.41)	48 (13.83)	133 (38.33)	51 (14.70)	347 (100.00)
When do you seek a dentist?						
When I feel pain	67 (63.21)	38 (51.35)	40 (50.00)	90 (40.72)	32 (26.89)	267 (44.50)
For recall and follow-up appointments	39 (36.79)	36 (48.65)	40 (50.00)	131 (59.28)	87 (73.11)	333 (55.50)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)
For which reason do you seek dental treatment?						
Pain	65 (61.32)	43 (58.11)	41 (51.25)	93 (42.08)	25 (21.00)	267 (44.50)
For recall and follow-up appointments	41 (38.68)	31 (41.89)	39 (48.75)	128 (57.92)	94 (79.00)	333 (55.50)
Total	106 (17.67)	74 (12.33)	80 (13.33)	221 (36.83)	119 (19.84)	600 (100.00)

parents and professor, aiming to obtain changes in health behavior and maintenance of favorable habits.^[17,18] According to Mafrán *et al.*,^[19] the educative instruction at schools provided the transmission of the acquired knowledge to the family and society, making these students health promoters.

Celeste *et al.*^[10] found the greater probability of non-treated caries lesion in low educated people. The results of this study showed that, the higher the education level of the patients, the higher was the knowledge on caries and periodontal disease [Table 4]; the more frequent was the search for the dentist [Table 3]; and thus the greater was the access to preventive and restorative procedures. Celeste *et al.*^[10] observed the greatest probability of non-treated caries lesions in male patients. In the present study, 59% of the patients were female predominantly at the age range of 31-40 years-old [Tables 1 and 2]. Differences related to the adoption of health habits and behaviors among males have been observed, identifying that females adopt more positive ones than males. In addition, females have been more concerned with physical appearance, very influenced by the current social and cultural patterns, thus contributing for assuming a higher care in relation to their body, reflecting on their oral health behavior.^[20]

Of the patients evaluated by the present study, 52.83% had received diet instruction, but 79.33% reported consuming sodas, candies, gums, chocolate bars or cookies in between meals [Table 4]. Coffee with sugar consumption in between meals was also frequent (59.83). These data are similar to those observed by Teixeira *et al.*,^[15] who reported the use of refined sugar in beverages by 75% of adults and 100% of children at a riverside community. These results demonstrated that the parents should be instructed also on their child diet. According to Reis *et al.*,^[11] the pregnant women, when well-oriented, may act as a multiplying agent of information on prevention, helping in the maintenance of preventive habits at familial environment.

Teixeira *et al.*^[15] reported that 50% of the evaluated adults exhibited late signs of oral disease as the motive of their last dental appointment, agreeing with our results, in which 44.50% pointed out pain as the main reason for seeking dental treatment [Table 4].

Davoglio *et al.*,^[21] in a study with adolescent students from the metropolitan region of Porto Alegre, verified that only 31.90% of the students flossed daily. Our study showed that 15.33% of the evaluated patients did not floss or flossed sometimes (35.17). Of these, 34.90% reported that dental floss provoked gingival bleeding, 38.44% that they did know how to use and 13.33% that they did not use because of "its high cost" [Table 4]. One possible explanation for these results could be the lack of instruction on the proper mode of dental floss use although 82.67% of the patients answered that they had received instructions of flossing. Other explanation could be that tooth brushing is a habit more consolidated than flossing. Tooth brushing distribution is relatively more common than dental floss distribution in educative programs or at schools. Dental floss provision could be also a practice adopted routinely since its universal access is a strategy adopted by the Brazilian Ministry of Health during a collective

approach of health promotion and dental caries prevention.^[21,22] Accordingly, Neves *et al.*^[23] believe that in addition to educative-preventive programs at schools and health units, there is the need of adopting strategies that make oral health instruments available to low social-economic population.

Orsi *et al.*,^[24] by evaluating the students' habits and knowledge on oral health, concluded that the educative-preventive program fulfilled the goal of transmitting knowledge to the students; however, some points should be still emphasized. These same observations are valid for this present study, since most of the patients, even while undergoing treatment, did not know important information on oral hygiene methods for prevention of the main oral diseases (dental caries and periodontal diseases).

Before the creation of oral health educative programs, it is fundamental that the target population is carefully evaluated. The proposed programs should be guided to the necessities and difficulties of the treated community,^[25] and even after the implantation of oral health education programs, longitudinal following-up to evaluate the obtained results is required.

Conclusion

According to the methodology employed and the results obtained, it can be concluded that:

- The evaluated patients showed an uneven knowledge level on oral health preventive measures;
- The education level directly influenced on patients' knowledge and behavior regarding to the main oral diseases and preventive measures;
- There is the need of continue instruction on dental caries and periodontal disease preventive measures, emphasizing the role of diet and dental floss in educative programs.

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