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Correlation between Awareness about Periodontal Diseases and Professional Status

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Abstract: *Utilization of dental services largely depends on awareness of the services. A few diseases produce early symptoms resulting in early management. Periodontal diseases have symptoms that are either missed or ignored as normal ageing process. The study aimed at assessing awareness about gum diseases and effect of profession on the same. Four hundred and twenty five patients responded to a written questionnaire with both open-ended and closed-ended questions and the results were statistically analyzed for professional variation. Awareness showed a strong correlation between professional levels in most parameters and a generalized moderate to good awareness on hygiene, oral-systemic relation and need for treatment.*

Keywords: *Awareness, Gingivitis, Oral Hygiene, Periodontal disease, Professional status.*

I. Introduction

Periodontal diseases, commonly known by the name 'gum diseases' refer to those diseases or conditions affecting the tissues surrounding the teeth. [1] These can range from mild, localized gingivitis to severe periodontitis resulting in tooth loss. Unlike caries, where patients tend to approach a dentist early due to pain, sensitivity or aesthetic impairment, periodontal diseases are painless in early stages and symptoms such as bleeding gums and oral malodour are often ignored. [2]

Periodontal diseases are mainly caused by improper oral hygiene that allows bacteria in plaque and calculus to remain on the teeth and infect the attachment apparatus. But there are other factors that increase the risk of developing gingivitis. Some of the most common risk factors are smoking or chewing tobacco, which affect tissue healing capacity. Crooked, rotated or overlapping teeth create more areas for plaque and calculus to accumulate and are harder to maintain. [3, 4] Hormonal changes in puberty, pregnancy, and menopause typically correlate with a rise in gingivitis. [5] The increase in hormones causes the blood vessels in the gums to be more susceptible to bacterial and chemical attack. Cancer and cancer treatment can make a person more susceptible to infection and increase the risk of gum disease. Stress impairs the body's immune response to bacterial invasion. [6] Poor dietary habits, such as a diet high in sugar and carbohydrates and low water intake, will increase the formation of plaque. Also, a deficiency of important nutrients such as vitamin C will impair healing and can lead to gingivitis. [7] Diabetes mellitus impairs circulation and the ability of gums to heal.

Most patients report to a dentist only when symptoms become severe or painful or when esthetics is affected, at stages when the periodontium is severely compromised, necessitating extraction. Patients with systemic conditions or diseases are unaware of the impact they can have on their oral health and more so about the impact of poor oral hygiene on their systemic health. [8] Even among medical professionals, the knowledge is only moderate. [9] Thus, there is a definite need to assess the level of awareness about periodontal diseases and also to educate the patients about the importance of oral hygiene, health and the need for regular dental check-ups for prevention, early detection and treatment of periodontal diseases.

II. Materials And Methods

General public and patients entering the Out Patient Departments of Sathyabama University Dental College and Hospital were recruited for the survey. Four hundred and twenty five subjects of both sexes falling in the age range of 18 to 60 years were randomly selected. The sample had individuals in a wide range of socioeconomic status and professions. An informed consent was obtained from all the subjects prior to their participation. Only those individuals who were interested and gave consent were included in the study. Individuals with cognitive disabilities and individuals who belonged to medical and paramedical professions were exempted. A questionnaire containing 12 questions of both open-ended and closed-ended types, in both English and Tamil (local language) was given and the subjects were asked to fill the questionnaire either by themselves or by their guardians.

Binomial and multinomial proportion tests were used to analyse statistical significance across sex-wise and profession-wise divided groups respectively. A p-value of less than 0.05 was considered to be statistically significant.

III. Results

A total of 425 people (225 males and 200 females) participated and completed the study. Based on their occupation, they were classified as Group A-non-working (115), B-unskilled (52), C-clerical (138) and D-professional (120). The results are summarized in Tables 1 to 9.

Only a small percentage felt their oral hygiene was bad. Statistical significance was not seen between the sexes and professions. Both good and average hygiene perception showed statistically significant difference between sexes, with more men reporting good hygiene and less average hygiene when compared to women. Between the occupational groups a highly significant number of professionals reported good oral hygiene compared to other groups. Both average and bad hygiene numbers were not statistically significant.

Numerous existing dental problems were reported by the sample population. Among sexes there was no statistical difference between the major problems reported, but males and significant number of professionals tended to report more one-off problems than females and other groups. Caries was reported more (non-significant) in Group B. Gingival conditions was reported more in Group B, significantly. Tooth pain distribution was highly significant in Groups A and B, while irregular teeth were noted more in Groups C and D. A significant number in Group A reported no complaints when compared to other groups.

Nearly 99% of the assessed population used toothbrush and paste for oral hygiene. Sex-wise and professional variation was statistically insignificant in brush-paste usage, but use of tooth powder was seen only in Group B with significant distribution. Use of adjunct aids was significantly more in Group D.

Presence of bleeding gums did not have a statistically significant distribution among sexes, but was highly significant among professional groups with 89% of Group D reporting bleeding gums. Regarding knowledge about the possible causes, don't know was the most common response in sex-wise groups and Groups B and C professionally. This was significant only among the professional groups. Significant number in Groups A and D and among females indicated improper brushing as the cause while a highly significant reporting of deposits as the cause was seen in Group B across professions.

More males and Group D subjects reported habits as the cause than other groups (p-value of 0.052 and 0.049 respectively). Improper nutrition was widely reported as a cause, more by females (insignificant) and in Groups A and D (significant). More females (significant) and Group A reported weak gums as a cause for gingival bleeding. A significant number in Group A cited Caries as a cause (significant).

A significant number of males reported bad breath. All subjects in Groups B and D reported malodour (a highly significant distribution). A minimum of a third indicated poor oral hygiene as the possible cause, insignificant sex-wise, but highly significant profession-wise. A significant number of males cited GIT disturbances as the cause. Food was significantly reported as a cause in both distributions, but gingival diseases was reported more among men and Diabetes (Group D) and caries (Group C) more professionally.

Significant number of females thought that deposits affect neither appearance nor gingival health while this distribution was highly significant across professions with nearly a third of Group A reporting the same. A significant number of males and a highly significant distribution across professions with 22% in Group C reported deposits as affecting both aesthetics and gingival health.

Age as the main cause for tooth loss was reported with high significance across professions, most in Group B while only 10% of the subjects cited it when assessed among sexes. 42% of Group D reported no knowledge of the cause, a distribution that was highly significant among professions, but not sex-wise. Poor oral hygiene was cited more in Group D, Diabetes in Group B, both significant. Identification of weak gums was significant only among sexes and not professions. More females and Group C reported caries as a cause with significance.

About two thirds of males and females thought that a relation exists between oral and systemic health. Distribution of a positive link was highly significant across professions with group B reporting only 27% while Groups A and D had more than 90% positive reporting. A highly significant number of Group B subjects rejected such a link.

More than 60% of all assessed subjects across both grouping had a previous dental consultation. Among sexes, self-referrals were most common. Significantly, self-referrals were highest among Group D, family played a major role for Group C, friends for Groups A and D and physician referrals for Groups A and B. More than 90% of the patients reported that they underwent the advised treatment.

IV. Tables

Table – 1 Opinion on Dental Health

Queries	Sex-wise Distribution			p-value	Profession-wise Distribution				p-value
Groups	Total	Males	Females	p-value	Non-working	Menial	Clerical	Professional	p-value
Good	190	55%	33%	0.047	61%	12%	16%	78%	p<0.0001
Average	191	37%	54%	0.0004	26%	77%	77%	14%	0.344
Bad	44	8%	13%	0.09	13%	11%	7%	8%	0.348

Table – 2 Oral Hygiene Practices

Queries	Sex-wise Distribution			p-value	Profession-wise Distribution				p-value
Brush & Paste	419	99%	98%	0.333	100%	96%	100%	100%	0.24
Brush & Powder	6	1%	2%	0.333	0%	4%	0%	0%	0.0024
Other Aids	17	4%	4%	1	0%	4%	2%	9%	0.0017

Table – 3 Existing Dental Problems

Queries	Sex-wise Distribution			p-value	Profession-wise Distribution				p-value
Decay	167	38%	41%	0.5	26%	58%	48%	25%	1.475
Gum Problems	76	17%	19%	0.57	22%	19%	15%	8%	0.034
Irregular Teeth	34	9%	7%	0.47	0%	0%	15%	10%	p<0.0001
Tooth Pain	48	10%	12%	0.46	28%	23%	4%	8%	p<0.0001
Wisdom Teeth Pain	13	2%	4%	0.2	4%	0%	2%	6%	0.192
Misc	65	20%	10%	0.04	5%	0%	13%	35%	p<0.0001
None	36	8%	9%	0.7	16%	0%	9%	7%	0.0066
Injury	19	5%	4%	0.658	3%	0%	2%	5%	0.282
Diabetes	2	0%	1%	0.133	0%	0%	1%	1%	0.512
Don't Know	155	42%	30%	0.016	0%	23%	38%	0%	p<0.0001

Table – 4 Presence of Bleeding Gums and Causes for bleeding gums

Queries	Sex-wise Distribution			p-value	Profession-wise Distribution				p-value
Presence of Bleeding Gums									
Yes	77	20%	16%	0.29	16%	23%	28%	89%	p<0.0001
Causes for bleeding gums									
Improper Brushing	99	19%	28%	0.03	39%	25%	23%	44%	0.001
Deposits	13	4%	2%	0.232	1%	15%	4%	3%	0.0004
Habits	11	4%	1%	0.052	0%	0%	3%	5%	0.049
Poor Nutrition	78	17%	20%	0.408	24%	15%	15%	36%	0.0006
Infections	11	4%	1%	0.052	13%	10%	7%	8%	0.44
Weak Gums	42	6%	14%	0.003	12%	8%	10%	3%	0.084
Decay	15	4%	3%	0.577	9%	4%	6%	2%	0.0233

Table – 5 Bad Breath and its Causes

Queries	Sex-wise Distribution			p-value	Profession-wise Distribution				p-value
Presence of Bad Breath									
Yes	110	31%	20%	0.009	35%	100%	15%	100%	p<0.0001
Causes for bad breath									
Poor Oral Hygiene	147	37%	32%	0.29	34%	48%	33%	61%	p<0.0001
Gastric Problems	67	21%	10%	0.002	26%	21%	15%	23%	0.177
Food	52	17%	7%	0.002	17%	10%	4%	4%	0.0005
Habits	17	5%	3%	0.321	1%	1%	1%	3%	0.35
Diabetes	2	0%	1%	0.133	0%	0%	0%	3%	0.015
Gum Problems	33	13%	2%	p<0.0001	4%	6%	11%	4%	0.1
Decay	15	4%	3%	0.577	3%	2%	11%	7%	0.027
Don't Know	117	20%	36%	0.0002	17%	23%	28%	34%	0.0282

Table – 6 How do Tartar & Stains affect teeth?

Queries	Sex-wise Distribution			p-value	Profession-wise Distribution				p-value
Only Appearance	216	47%	55%	0.104	52%	62%	60%	67%	0.157
Only Gum Diseases	79	24%	14%	0.022	9%	10%	18%	13%	0.136
Both	52	16%	8%	0.012	9%	0%	22%	10%	0.0001
None	78	13%	23%	0.02	30%	28%	0%	10%	p<0.0001

Table – 7 Opinions on Reasons for Tooth Loss

Queries	Sex-wise Distribution			p-value	Profession-wise Distribution				p-value
Decay	125	22%	38%	0.0003	18%	12%	20%	5%	0.0026
Weak Gums	78	25%	11%	0.0002	26%	23%	25%	17%	0.286
Poor Hygiene	91	19%	24%	0.22	20%	29%	16%	39%	0.0001
Trauma	9	3%	1%	0.13	0%	0%	2%	2%	0.332
Age	42	10%	10%	0.939	3%	29%	6%	10%	p<0.0001
Diabetes	12	2%	4%	0.167	0%	8%	0%	3%	0.0013
Poor Nutrition	77	19%	17%	0.573	17%	21%	14%	9%	0.14
Don't Know	61	12%	17%	0.142	16%	0%	22%	42%	p<0.0001

Table – 8 Opinions on Connection between Oral & Systemic Health

Queries	Sex-wise Distribution			p-value	Profession-wise Distribution				p-value
Yes	272	63%	65%	0.686	95%	27%	67%	93%	p<0.0001
Maybe	32	8%	7%	0.697	0%	35%	13%	0%	p<0.0001
No	55	13%	13%	0.973	2%	38%	15%	0%	p<0.0001
Don't Know	66	16%	15%	0.776	3%	0%	5%	7%	0.169

Table – 9 Dental Consultations

Queries	Sex-wise Distribution			p-value	Profession-wise Distribution				p-value
Have you had a previous dental consultation?									
Yes	265	60%	65%	0.288	74%	62%	64%	74%	0.338
On whose advice you visited the dentist?									
Self	132	52%	48%	0.98	12%	24%	21%	48%	p<0.0001
Family	80	30%	31%	0.559	38%	38%	68%	22%	p<0.0001
Friends	21	10%	6%	0.399	35%	19%	11%	24%	0.0073
Physician	32	8%	15%	0.069	15%	19%	0%	6%	0.001
Did you Undergo the treatment as advised?									
Yes	252	94%	95%	0.205	95%	100%	100%	100%	0.468

V. Discussion

Awareness about oral health and diseases had increased over the ages. More people are taking efforts in maintaining oral hygiene than before, mostly due to esthetics. This reflects in the small percentage of respondents who reported poor hygiene. Also the importance to good hygiene given by people in professional stream is noticeable.

A study reported that people tend to underestimate their dental treatment needs, the discrepancy being most distinct in the field of periodontology. [10] Another study revealed that self-reporting of periodontal health was not successful as many people who had some indications of the periodontal diseases appeared to be unaware of their condition and also appeared not to have been informed nor were being treated for it. [11]

Awareness among medical and allied professionals about gum diseases varies. A study conducted among nursing home staff demonstrated positive knowledge of periodontal disease and denture care, but knowledge of dental caries revealed substantial room for improvement [12]

A recent survey among cardiologists revealed a moderate level of knowledge. Eighty-two percent agreed on inflammation as a common factor for periodontal disease and coronary heart disease; 76% agreed that controlling infection and inflammation is important for managing CHD. Significantly, 62% reported not receiving any education on oral healthcare. Eighty percent of cardiologists believed that medical and dental students should be trained to work collaboratively. [9]

A study found that self-reported broken fillings, broken denture, cavities, mobile teeth, poor esthetics, and toothache were strongly associated with self-reported perceived need for dental care, while satisfaction with dental health was also associated with perceived need, but self-rated oral health was not. [13] This mirrors our study which showed that professionals were happy with their hygiene, but reported higher gingival conditions than other groups.

Another study conducted among adolescents in Helsinki showed that self-reporting of gingival health may be useful in monitoring the gingival health of populations but does not have sufficient validity for screening individuals for gingivitis as defined by dental professionals. [14]

Sex-wise analysis showed little variance in the sample. Significant results were obtained mainly for identification of causes for gum diseases, and presence of bad breath with women showing better awareness while men reported more awareness on the causes for tooth loss, effect of local factors and hygiene status.

Profession-wise analysis led to many strikingly significant findings. Non-working individuals reported maximum tooth pain, but minimum bleeding gums. They also strongly reported that local factors did not affect gum health and esthetics, but oral health and systemic health are related. Along with professionals, they had the

maximum exposure to dental care, influenced by familial and peers, but also the least follow-up and undertaking the treatments advised. These might be due to unavailability of resources, financial mainly. A possible bias in this group might be the mixing of skilled, educated professionals who were currently unemployed.

Individuals in the unskilled, the so-called Menial group reported least satisfaction with their oral hygiene. They reported maximum decay, followed by tooth pain and bleeding gums with all individuals reporting at least one problem. The use of cleaning adjuncts was reported, but mainly with tongue cleaners. Nearly a fourth of the subjects were unaware of the causes for bleeding gums. All of the 52 people reported halitosis, with nearly half identifying poor oral hygiene as the cause and linked age to tooth loss the maximum. They also reported lack of relation between deposits and gingival problems and had the maximum negative answers to oral-systemic relationship. They reported least dental visits, influenced mainly by family, but reported 100% compliance with advised treatments. The main possible factors influencing this group might be financial shortcomings and less exposure to health education.

Subjects reporting jobs as clerical in nature reported least bad hygiene, more decay, less bleeding gums and maximum lack of knowledge of the causes for bleeding gums. They reported least halitosis and identified poor oral hygiene as the cause. They reported maximal effects of deposits on gums over esthetics. There was a strong positive response for oral-systemic link. Nearly two-thirds of the sample had a dental consultation, strongly influenced by familial pressure and complied with the treatment advised. This group showed more awareness when compared with the first 2 groups, most probably due to better access to health care and information.

Professionals reported maximal satisfaction with their oral hygiene and very little gingival problems. Paradoxically, they also reported maximal bleeding gums, indicating a possible lack of knowledge about connection between bleeding gums and gingivitis. This group pointed to improper brushing and poor nutrition as major causes over others and gave multiple responses the most. Every person reported halitosis and blamed improper brushing for the same. Compared to their satisfaction with their hygiene status this was another paradox found. This group reported the link of deposits to esthetics the most and least knowledge about causes for tooth loss. Maximum subjects reported a strong oral-systemic link and had at least a single dental consultation in the past, self-driven and with full compliance. The results showed interesting deviations with both excellent and poor awareness, displaying high expected penetration of dental education and opportunities for utilization. Stress on esthetics was more than other groups, a possible result of the nature of their jobs.

Exposure to oral health and periodontal health education can have a major impact on improving awareness. In a recent population-based survey among Iranian adults aged 18–50, participants were interviewed before and after a mass media campaign that included an animation clip about periodontal health, disease including etiology and signs of gum disease that was telecasted for ten days from several national TV channels. Periodontal knowledge score and its change were calculated. The study showed significant improvement in knowledge, especially among women, participants in the age group of 25-34 and those educated beyond high school. [15]

VI. Conclusion

Dental education is essential for good oral health. The spread and penetration of this knowledge varies across groups with education levels, culture, financial status and public perception playing important roles. This study assessed the effect of profession as a criterion in influencing awareness of periodontal diseases in particular and oral health in general. Professional status showed moderate to strong correlation with awareness, but also threw up some interesting paradoxes. General perceptions of better education and financial status may not proportionately link to awareness, which is evident in this study. A comprehensive approach to importance of awareness about gingival health, disease and treatments for the same, as a part of oral health education is needed to improve the oral health status of the general population. Approaches can be modified according to the groups being educated, but messages have to be strong.

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