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Assessment of the Awareness among Diabetic Patients of Their Risk for Oral Disease as Complication Associated With Diabetics

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ABSTRACT

AIM: To assess the awareness of diabetic patients of their risk for oral disease as complication associated with diabetics.

INTRODUCTION: Diabetes mellitus is a metabolic disorder characterized by hyperglycemia due to defective secretion or activity of insulin. Type II diabetes is a common disorder with concomitant oral manifestation that impacts dental care Evidence shows that many patients are unaware about effects of diabetes mellitus on oral health.

METHODOLOGY: A cross sectional descriptive survey was conducted among adult dental patients attending a tertiary care hospital of Bangalore city. A total of 172 patients were included in the study. The tool used to conduct the survey was a close-ended self-administered 14-item questionnaire. Self-rate oral health was assessed using a 4 point scale as good, average, bad and don't know.

RESULTS: A total of 172 subjects, among them 120 (69.7%) were males and 52 (30.3%) were females. Among 172 subjects, 87(50%) were aware that diabetics are more prone to oral diseases .91(52%) of the study subjects did not know that diabetes effects gingiva.91(52%) of individuals knew diabetes causes delay in wound healing. 81% of the subjects, self-rated their mouth as good.

CONCLUSION: Diabetic patients are less aware of their risk for dental diseases. Thus, it is necessary for dental professionals and related government agencies to promote awareness of the relationship between diabetes mellitus and oral health in order to prevent harmful complications on oral health.

KEYWORDS: Diabetes Mellitus, Oral Complication, Risk of Oral Diseases

INTRODUCTON

Diabetes mellitus is an endocrine disease which occurs when the pancreas do not produce enough insulin or when the body cannot effectively utilize the insulin produced by it. Insulin, a peptide hormone that regulates blood sugar levels in body, gives us the energy that enables us to live. It has been projected by the WHO that diabetes will be the 7th leading cause of death by 2030.[1] In the IDF SEA region India is one of the 6 countries and 415 million people have diabetes in the world and 78 million people in the SEA Region; by 2040 this is estimated to rise up to 140 million, which is quite alarming.[2]

Oral diseases associated with diabetes mellitus have been recognized and reported recently as a major complication of diabetes mellitus and other complications include salivary dysfunction, taste dysfunction, fungal infection, Bacterial Infections, Poor Oral Wound Healing, Oral Mucosal Disease, and Neuro-Sensory Oral Disorder.[3] Periodontal disease is the sixth leading complication of diabetes.[4] There are abundant evidences that, chronic oral complications in patients with diabetes adversely affect blood glucose control. Literature evidence has proved a two way relationship between diabetes and periodontal disease.[5] Optimal blood glucose levels is the key in controlling and preventing mouth problems[6] hence, awareness about the susceptibility to oral complications, as well as effective management of these conditions for people with diabetes, is of paramount importance. Hence the study was conducted to assess the diabetic patient awareness of their risk for oral disease as complication associated with diabetes.

MATERIALS AND METHODS

A cross sectional descriptive survey was conducted among adult dental patients (defines as 18 years and above) attending a tertiary care teaching hospital in Bangalore city. A total of 172 study subjects were included. The study was conducted for a period of three months and all the patients fulfilling the inclusion criteria visiting the OPD was included.

Patients included in the study were diabetics (type II), having at least one natural tooth, diagnosed with diabetes since at least 1 year and who have signed the informed consent. Diabetics who were apparently physically or mentally handicapped were excluded from the study.

The study proposal was submitted for approval and clearance was obtained from the institutional review were the study was conducted. The purpose and

details of the study was explained to the patients and written informed consent was then obtained from them.

A close ended self-administered 14 item questionnaire consisting of oral health practice among the diabetic individuals like dental visits, brushing frequency, flossing frequency, added smoking habit, last dental appointment, rating the condition of mouth and teeth, awareness about effects of diabetes on oral health.

The structured Proforma consisted of two parts; the demographic details and the questionnaire. The survey instrument i.e. questionnaire was divided into two domains in line with the objectives of the study. The oral health behavior domain consisted of eleven questions and the awareness of oral health domain consisted of fourteen questions. The completed questionnaire contained the following items regarding effects of diabetes mellitus on oral health included questions like;-Diabetics are more prone to teeth and mouth related diseases, Diabetes mellitus affects gingiva, People with diabetes are just as likely to get gum diseases as people are non-diabetic, Gum diseases make it harder to control blood sugar in diabetes, Diabetics have gum problems more often if their blood sugar remains high, Diabetes causes loose teeth, Is smoking more injurious to the gum of diabetics more than non-diabetics?, Diabetes mellitus causes dental caries, Diabetes causes delayed healing in mouth, Diabetes mellitus causes dry mouth.

Diabetes causes mouth ulcers, Diabetes causes bad breath, Diabetes causes taste problems, and Diabetes mellitus causes oral fungal infections.

Questions designed were close ended so that the categories could be analyzed efficiently and with minimum bias. The limitation of self-administered questionnaires was minimized by:
•Formulating questions using common terms
•Attaching the cover page explaining the details of the study, giving instructions on completing the questionnaire.

A cross sectional survey was conducted among 172 patients. Validity of questionnaire was assessed. Patients visiting the hospital were personally contacted and administered the questionnaire and were duly collected after fifteen minutes. Results were subjected to statistical analysis.

To assess the significance of study parameters on categorical scale Chi-square test was used.

RESULTS

A total of 172 subjects were enrolled in the study among them 120 were males and 52 females. Among the study subjects 21 individuals belong to age group of 15- 35 years, 108 individuals are under age group of 36- 55 years, 43 individuals were more than 55 years old.

Educational status among the study population was, 19 individuals were illiterate, 23 subjects had completed primary schooling, 27 had intermediate, 51 had secondary, and 52 subjects had university or above level of education.

The study subjects rated the condition of their mouth and teeth as, 36 rated good, 96 rated average, 28 rated bad and 12 rated don't know. Figure 1 represents Responses of the study subjects on awareness of oral health. Table 1 depicts Association between awareness of diabetic patient of their risk for oral disease as complication associated with diabetes and gender. Association between awareness of diabetic patient of their risk for oral disease as complication associated with diabetes and self-rated oral health is depicted in table 2.

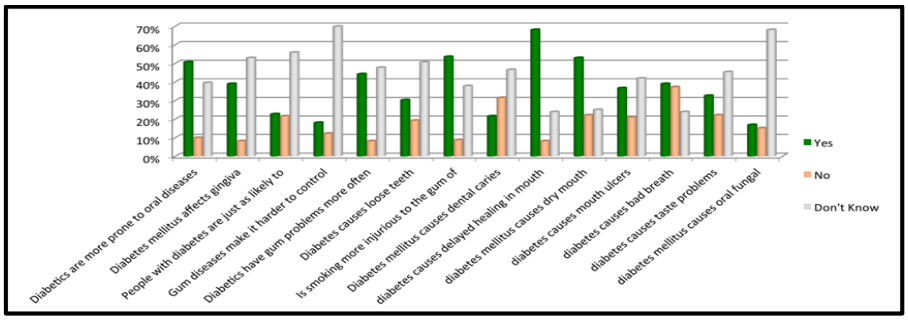

Figure 1. Responses of the Study Subjects on Awareness of Oral Health

Question	Response	Male (N=120)		Female (N=52)		χ^2	P-Value
		n	%	N	%		
AQ1	Yes	65	54%	22	42%	5.179	0.075
	No	14	12%	3	6%		
	Don't Know	41	34%	27	52%		
AQ2	Yes	53	44%	14	27%	4.981	0.083
	No	10	8%	4	8%		
	Don't Know	57	48%	34	65%		
AQ3	Yes	28	23%	11	21%	0.549	0.760
	No	24	20%	13	25%		
	Don't Know	68	57%	28	54%		
AQ4	Yes	19	16%	12	23%	1.577	0.455
	No	14	12%	7	13%		
	Don't Know	87	73%	33	63%		
AQ5	Yes	53	44%	23	44%	0.236	0.889
	No	9	8%	5	10%		
	Don't Know	58	48%	24	46%		
AQ6	Yes	37	31%	15	29%	0.728	0.695
	No	21	18%	12	23%		
	Don't Know	62	52%	25	48%		
AQ7	Yes	76	63%	16	31%	20.934	<0.001*
	No	12	10%	3	6%		
	Don't Know	32	27%	33	63%		
AQ8	Yes	23	19%	14	27%	1.386	0.500
	No	38	32%	16	31%		
	Don't Know	59	49%	22	42%		
AQ9	Yes	88	73%	29	56%	7.236	0.027*
	No	6	5%	8	15%		
	Don't Know	26	22%	15	29%		
AQ10	Yes	64	53%	27	52%	0.154	0.926
	No	27	23%	11	21%		
	Don't Know	29	24%	14	27%		
AQ11	Yes	50	42%	13	25%	4.943	0.084
	No	22	18%	15	29%		
	Don't Know	48	40%	24	46%		
AQ12	Yes	47	39%	20	38%	1.198	0.549
	No	47	39%	17	33%		
	Don't Know	26	22%	15	29%		
AQ13	Yes	42	35%	14	27%	1.115	0.573
	No	26	22%	12	23%		
	Don't Know	52	43%	26	50%		
AQ14	Yes	21	18%	8	15%	0.116	0.944
	No	18	15%	8	15%		
	Don't Know	81	68%	36	69%		

Table 1. Association between awareness of diabetic patient of their risk for oral disease as complication associated with diabetes and gender

Question	Response	Good (N=36)		Average (N=96)		Bad (N=28)		Don't Know (N=12)		χ^2	P-Value
		n	%	n	%	n	%	n	%		
AQ1	Yes	29	81%	42	44%	14	50%	2	17%	27.412	<0.001*
	No	2	6%	14	15%	1	4%	0	0%		
	Don't Know	5	14%	40	42%	13	46%	10	83%		
AQ2	Yes	27	75%	31	32%	7	25%	2	17%	34.224	<0.001*
	No	2	6%	12	13%	0	0%	0	0%		
	Don't Know	7	19%	53	55%	21	75%	10	83%		
AQ3	Yes	16	44%	17	18%	3	11%	3	25%	17.607	0.007*
	No	7	19%	25	26%	4	14%	1	8%		
	Don't Know	13	36%	54	56%	21	75%	8	67%		
AQ4	Yes	6	17%	18	19%	6	21%	1	8%	4.419	0.620
	No	5	14%	14	15%	2	7%	0	0%		
	Don't Know	25	69%	64	67%	20	71%	11	92%		
AQ5	Yes	18	50%	39	41%	14	50%	5	42%	6.300	0.390
	No	1	3%	12	13%	1	4%	0	0%		
	Don't Know	17	47%	45	47%	13	46%	7	58%		
AQ6	Yes	12	33%	28	29%	9	32%	3	25%	8.442	0.207
	No	7	19%	24	25%	1	4%	1	8%		
	Don't Know	17	47%	44	46%	18	64%	8	67%		
AQ7	Yes	27	75%	42	44%	17	61%	6	50%	12.643	0.050
	No	2	6%	11	11%	2	7%	0	0%		
	Don't Know	7	19%	43	45%	9	32%	6	50%		
AQ8	Yes	11	31%	24	25%	1	4%	1	8%	13.459	0.036*
	No	9	25%	34	35%	7	25%	4	33%		
	Don't Know	16	44%	38	40%	20	71%	7	58%		
AQ9	Yes	26	72%	71	74%	12	43%	8	67%	18.746	0.005*
	No	1	3%	11	11%	2	7%	0	0%		
	Don't Know	9	25%	14	15%	14	50%	4	33%		
AQ10	Yes	18	50%	57	59%	12	43%	4	33%	11.849	0.065
	No	12	33%	19	20%	5	18%	2	17%		
	Don't Know	6	17%	20	21%	11	39%	6	50%		
AQ11	Yes	16	44%	32	33%	12	43%	3	25%	4.257	0.642
	No	9	25%	21	22%	5	18%	2	17%		
	Don't Know	11	31%	43	45%	11	39%	7	58%		
AQ12	Yes	13	36%	43	45%	9	32%	2	17%	6.154	0.406
	No	16	44%	31	32%	12	43%	5	42%		
	Don't Know	7	19%	22	23%	7	25%	5	42%		
AQ13	Yes	12	33%	34	35%	7	25%	3	25%	2.302	0.890
	No	8	22%	22	23%	6	21%	2	17%		
	Don't Know	16	44%	40	42%	15	54%	7	58%		
AQ14	Yes	10	28%	16	17%	2	7%	1	8%	6.022	0.421
	No	4	11%	16	17%	4	14%	2	17%		
	Don't Know	22	61%	64	67%	22	79%	9	75%		

Table 2. Association between Awareness of Diabetic Patient of Their Risk for Oral Disease as Complication Associated With Diabetes and Self-Rated Oral Health

DISCUSSION

Diabetes has a negative impact on the patient`s health due to its many complications. Diabetic patients develop complications due to lack of awareness of the disease. The study subjects rated the condition of their mouth and teeth as 55.8% rated average, this in agreement with the study conducted by Moore et al.[7] The present study reveals only half of the study population was aware about diabetics are more prone to oral diseases. Diabetics have serious and irreversible effect on most of the oral tissues and most of the participants were not well aware. This result was in concurrence with study conducted by Fatin Awartani[8], Kamran M[9], and Allen EM.[10]

In the present study it was found that only 67(38 %) were aware of the signs of gum diseases which was in accordance with studies conducted by Moore PA[7], Moghadam FA[11] and Awartani F.[8] Only one third of the population was aware that diabetes are more susceptible for periodontal diseases. This result was in accordance with the results of other studies conducted showing that knowledge of the relationship of diabetes with periodontal disease is lacking.[5,8,10,12]

The present study reveals that less than one third of study population were aware that gum diseases make it harder to control blood sugar level in diabetics. This was in accordance in study conducted by Maha A Bhammam.[13]

CONCLUSION

The level of awareness about dental health among study population was deficient. Limitation of the study was self-rated oral health assessment was done of study participants and no oral examination of study subjects was done and the participants were not given health education or training regarding oral health behavior's and practices and the impact of diabetes on oral health.

Regular dental visits provide opportunity for educating the patients, provision of professional care in prevention, diagnosis it initial stages and treatment of oral diseases. Further studies can be conducted to provide health education to diabetic patients to improve their awareness regarding the risk of for oral disease as complication associated with diabetes.

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