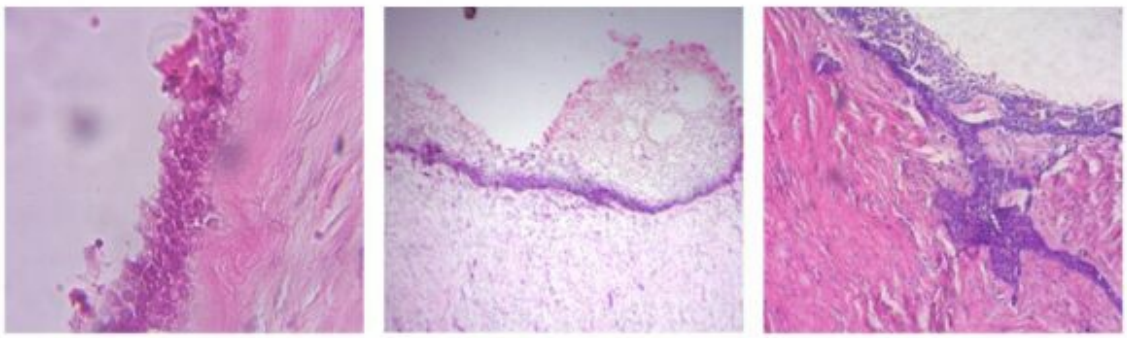
VOLUME 2, ISSUE 1, JUNE, 2017

NJDR

NIGERIAN JOURNAL OF DENTAL RESEARCH

Official Publication of the School of Dentistry, College of Medical Sciences, University of Benin, Benin City, Nigeria



Oral Health Knowledge and Attitude of Diabetic Patients in Lagos State University Teaching Hospital, Lagos State

*Nathan U. IKIMI (BDS, FMCFD) **Austin I. EDOMWONYI (BDS), **Ilemobayo A. OGUNTIMEHIN (B.Ch. D), **Motunrayo D. DAHUSI (BDS)

*Dental and Oral Maxillofacial Department, State House Medical Center, State House, Aso Rock, Abuja FCT
**Dental Clinic, Lagos State University Teaching Hospital, Ikeja, Lagos State

ABSTRACT

Objective: To investigate the oral health knowledge, attitude and practices of diabetic patients in Lagos State University Teaching Hospital and to assess their awareness of oral diseases as complications associated with diabetes mellitus.

Methods: This study was a questionnaire based cross sectional-survey of 261 diabetic patients attending the diabetic clinic in Lagos State University Teaching Hospital (LASUTH). Questionnaires were distributed, data obtained were analyzed using SPSS version 20 and a comprehensive descriptive statistics was produced.

Results: The majority (92.5%) of the participants had type 2 diabetes, 9.5% had type 1. dental complications: 10.3% knew diabetics are prone to oral disease; 1.1% knew diabetes mellitus (DM) can cause dental caries; 4.6% knew DM can affect the gingiva. medical complications: 28.7% were aware of DM's effects on the eyes; 87.4% aware of effects on heart and 72.4% aware DM can lead to diabetic foot. frequency of tooth brushing: 76.8% brushed after every meal; 1.8% brushed twice daily; 21.4% brushed once daily. on readiness to accept dental education: 94.3% of the respondents were ready; 5.7% declined.

Conclusion: Diabetics were more aware of medical complications resulting from diabetes mellitus than dental complications. Their oral health attitude was good and they showed readiness to be educated on dental complications of DM.

Keywords: diabetes mellitus, oral health, knowledge, awareness, attitudes.

Citation: *Ikimi NU, Edomwonyi AI, Oguntimehin IA, Dahusi MD. Oral health knowledge and attitude of diabetic patients in Lagos State University Teaching Hospital, Lagos State. Nig J Dent Res 2017; 2(1):43-48.*

Correspondence
Dr. Nathan U. Ikimi
Dental and Oral Maxillofacial Department
State House Medical Center
State House, Aso Rock, Abuja FCT
Email: familydentist3@gmail.com

Diabetes mellitus (DM) could be defined as a clinical syndrome categorized by hyperglycemia due to absolute or relative lack of insulin.[1] This endocrine-metabolic disorder results in complications such as microvascular, macrovascular, neuropathic and periodontal disorders.[1] The economic cost of managing diabetes mellitus is a significant health burden on both patients and healthcare systems worldwide. The total number of people with diabetes mellitus according to the World Health Organization (WHO) report is projected to increase from 171 million in 2000 to 366 million in 2030.[2,3] The greatest increase in prevalence of diabetes mellitus is expected to occur in Asia and Africa due to urbanization, changes in diet and lifestyle.[4] Already, prevalence varying from 0.65% in rural Mangu village in Plateau State Nigeria to 11.0% in urban Lagos has been reported.[5] In Port Harcourt, another city in Nigeria, the prevalence of diabetes was found to be as high as 23.4% among the high socioeconomic group and 16% among the low socioeconomic group.[6]

Research have shown that diabetes mellitus has negative effect on oral health and that diabetic patients have been found to show worse oral health status than non-diabetic patients.[7] Since oral health is an important factor in determining the general health status of an individual, a more favourable oral health status would thus prevent the community from many diseases not only at oral health level but also at systemic level.[8] The oral complications of diabetes mellitus, particularly from the poorly controlled disease include xerostomia, dental caries, gingivitis, burning mouth syndrome, median rhomboid glossitis, denture stomatitis, angular cheilitis, Lichen planus, parotid enlargement, halitosis and periodontal destruction with resultant tooth/teeth loss.[1,8-15] Periodontal disease is considered the sixth complication of both type 1 and type 2 DM[16] after microangiopathy, retinopathy, neuropathy, microvascular disease and delayed wound healing.[17] Studies have proved that a bi-directional unwanted relationship exists between DM and periodontal disease such that DM

can worsen periodontitis and periodontitis can negatively affect the control of DM.[18,19] However, only a few diabetic patients have knowledge of this adverse relationship while a greater number are not aware of the importance of glycaemic control in the prevention and control of oral infections such as periodontitis.[20] Thus, preventive measures like regular tooth brushing, flossing and dental visits which will prevent many dental complications of DM and consequent morbidities are not taken seriously.[21] Poor oral health knowledge which is usually due to illiteracy, economical pressures, lack of proper guidance and access to dental facilities, exerts a negative effect on the oral health attitudes of diabetic patients.[22] The probability of seeking preventive dental care has been found to be associated with dental health knowledge.[23] Therefore, dental health education coupled with motivation of each patient on the maintenance of an good oral hygiene status should be an integral part diabetic patients management. This is because dental health education attempts to modify behaviours by changing an individual's knowledge, attitudes and beliefs about oral health related issues.[23,24] The objective of this research was to investigate the oral health knowledge, attitude and practices of diabetic patients in Lagos State University Teaching Hospital and to assess their awareness of oral diseases as complications associated with diabetes mellitus.

MATERIALS AND METHODS

This study was a cross sectional survey of diabetic patients attending the Diabetic Clinic of Lagos State University Teaching Hospital (LASUTH). LASUTH is a tertiary Hospital offering quality care to both in-patients and out-patients irrespective of their social class or religious beliefs. A calculated minimum sample size of 205 was obtained using the Fisher's formula with the standard deviation at 95% confidence and a tolerable margin of error fixed at 5%; applying finite population correction factor formula and 10% attrition. The study group comprise of 261 diabetic patients above 18 years of age. Included in this study were confirmed diabetic patients who had been diagnosed for at least six (6) months prior to this study either type 1 or type 2 diabetes who were above 18 years of age irrespective of sex, ethnicity and religion. Pregnant patients, those patients with other chronic systemic illness like kidney disease, diabetic patients who were dental personnel and those who were apparently mentally challenged were excluded from this study. A self-administered questionnaire - previously used with patients in Abha, Saudi Arabia[2] was modified and adapted to investigate the knowledge, awareness and attitudes of diabetic patients. A pilot study was done on 10 patients in the same clinic to assess clarity of the questionnaire. The questionnaires were distributed and collected by the researchers over a period of 6 weeks. The questionnaire elicited information on demographic characteristics (age, sex, ethnicity, religion, and duration of diabetes), awareness of systemic and oral disease complications of diabetes mellitus, their attitudes towards maintaining good oral hygiene habits and regular dental attendance. Responses such as "Yes", "No", "I do not know", were used and respondents were required to circle names of diseases known to be related to diabetes mellitus. No grading system was used. Ethical clearance was obtained from the Health Research Ethics Committee of the Lagos State University Teaching Hospital. The data obtained was subjected to descriptive statistics using SPSS version 20.

RESULTS

A total of 261 patients with a mean age of 61.9±11.3years, comprising 37.9% male and 62.1% females participated in this study from the diabetic clinic in LASUTH. The largest ethnic group in this study was *Yoruba* (81.6%) and the lowest was *Hausa* (2.3%). Educational qualifications up to secondary school level constituted 40.2% of the participants while up to tertiary level accounted for respondents only 3.4% (Table 1). Distributions according to types of diabetes were 92.5% with type 2 diabetes mellitus, 9.5% type 1 diabetes mellitus (Figure 1).

Table 1: Sociodemographic characteristics

Variable	Frequency (n=261)	Percent
Age (years)		
≤50	39	14.9
51-70	174	66.7
>70	48	18.4
Gender		
Male	99	37.9
Female	162	62.1
Religion		
Christian	180	69.0
Islam	81	31.0
Ethnic group		
Hausa	6	2.3
Yoruba	213	81.6
Igbo	24	9.2
Others	18	6.9
Educational status		
Primary	87	33.3
Secondary	105	40.2
None	60	23.0
Tertiary	9	3.4

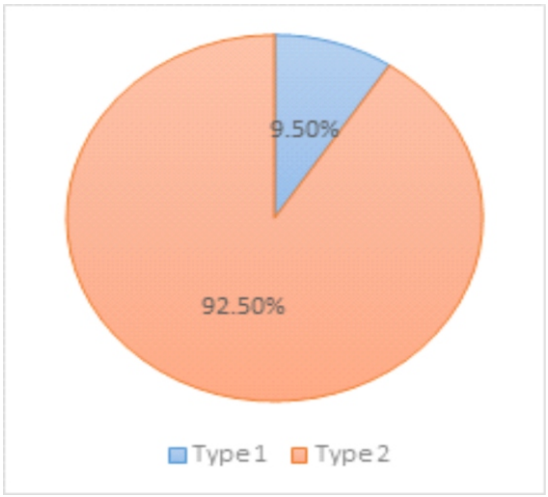


Figure 1: Types of Diabetes among the participants

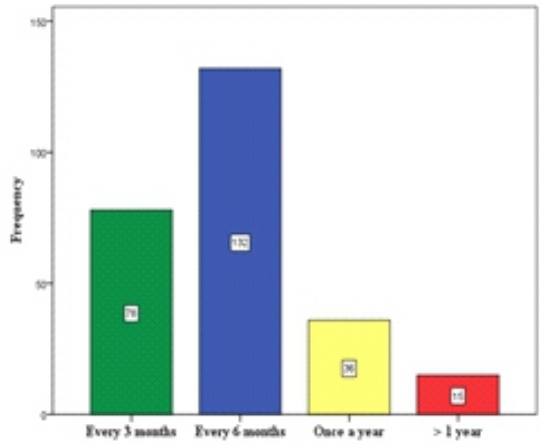


Figure 2: Frequency of Dental Visitation among the participants

Regarding knowledge of dental problems among the studied diabetics, we found that 10.3% knew that diabetics are prone to oral disease, 1.1% knew DM can cause dental caries; 4.6% knew DM can affect the gingiva, 47.1% knew DM cause oral fungal infection and 44.8% knew smoking was more injurious to the gum of diabetics than non-diabetics. On past dental problems, 39.1% had suffered bleeding gums while using a tooth brush; 39.1% had experienced gingiva swelling and 47.1% had suffered from soreness of the gingiva. Concerning patients' awareness of the effects of DM on other organs, 28.7% were aware of DM's effects on the eyes, 29.9% were aware of effects on kidneys, 23.0% were aware of effects on the nerves, 87.4% knew DM can affect the heart and 72.4% knew DM can lead to diabetic foot (Table 2).

On the question, what should be done with a dental problem? About three-quarters (74.7%) of the participants would consult a physician, 2.3% would consult a dentist and 23.0% would use self-remedies. With respect to the use of tooth brush, 64.4% brushed their teeth regularly with toothbrush while 35.6% do not use toothbrush. On the frequency of tooth brushing, 76.8% brushed after every meal, 1.8% brushed twice daily and 21.4% brushed once daily. On readiness to accept dental education about the effect of DM on oral health, 94.3% of the participants showed readiness while 5.7% declined (Table 3).

The diabetic patients' attitude towards the utilization of dental services was examined and the result showed that 78 (29.9%) went to dental clinic once every 3 months while 132 (50.6%) went once every 6 months (Figure 2).

DISCUSSION

DM is a common metabolic disorder that has been found to affect more people in Africa and Asia than any other part of the world.[4] It has been researched extensively that patients with poorly controlled DM have a lot of associated dental complications.[8-15] In this present study on 261 diabetic patients comprising 62.1% females and 37.9% male with a mean age 61.9±11.3years, we observed that the knowledge and awareness about the relationship of dental problems and diabetes mellitus among diabetics was very low. This is in consonance with finding of previous studies conducted in other parts of the world.[2,24-26] Only 10.3% knew that diabetics are prone to oral disease, 1.1% knew diabetes mellitus can cause dental caries and 4.6% knew diabetes can affect the gingiva. However, 44.8% knew that smoking was more injurious to the gingiva of diabetics than non-diabetics. This knowledge is especially important since in non-diabetics, smoking leads to a low level of oxygen and high level of carbon dioxide in the gingiva pockets which favour the proliferation of obligate anaerobes and capnophilic organisms, both of which have been implicated in periodontal diseases.[27] This harmful effect of smoking is further potentiated in poorly controlled diabetes mellitus by the release of Advanced Glycation End-products (AGE). The accumulation of AGE in tissue results in vascular changes such as thickening of the capillary basement membrane, reduced metabolic waste elimination, reduction in polymorphonulcear leucocytes' migration speed as well as diffusion of antibodies to sites of inflammation in the gingiva thereby further perpetuating inflammation and wound healing delay.[28]

Table 2: Knowledge of dental and medical problems among the participants

Variable	Frequency (n=261)	Percent
*Knowledge of dental problem in diabetes patients		
Diabetes are more prone to oral diseases	27	10.3
Diabetes mellitus can cause dental caries	3	1.1
Diabetes affect gingival	12	4.6
Diabetes cause oral fungal infection	123	47.1
Smoking more injurious to the gum of diabetes than non-diabetes	117	44.8
*Dental problems		
Ever experience bleeding tooth brushing	102	39.1
Ever had swollen gingiva	102	39.1
Ever had soreness of gingiva	123	47.1
*Awareness of diabetes complication in other organ		
Effect on eye	75	28.7
Effect on kidney	78	29.9
Effect on nerves	60	23.0
Effect on heart	228	87.4
Diabetes foot	189	72.4

**Multiple response*

This study shows that diabetic patients were more aware of medical complications of diabetes mellitus than dental complications and this result is also consistent with similar findings reported by a researcher who evaluated the awareness of diabetic patients, their attitudes and oral health-related quality of life.[26] The exposure to health education in the outpatient clinic through the doctors, nurses and other health workers caring for them may explain the higher awareness of medical complications than dental complications among the participants.

Although the use of "chewing sticks" got from plants was still high, about two-thirds of the participants (64.4%) used the toothbrush for teeth cleaning. This confirms that the use of chewing sticks in teeth cleaning is culturally ingrained, used in both urban and rural areas of Nigeria mainly because of low cost compared to toothbrush and toothpaste. This study showed that their oral hygiene habit was acceptable and their attitude toward maintaining a good oral hygiene status with dental health education is adequate. However, further exploration of the teeth cleaning techniques utilized is necessary to ensure effective cleaning and prevent dental tissue destruction.[20] Although, reported more than once-daily teeth cleaning and the utilization of dental services were high, 74.7% would still consult physician for dental problems. This could be as a result of the cost of dental consultation[22] and the fact that they visit the diabetic clinic more often than the dental clinic may make the patients confide more in their physician. The readiness to accept dental education on oral complications of diabetes mellitus reported among the majority of the participants offers opportunity for dentist and endocrinologist collaboration geared toward total effective health care of diabetic patients. In addition, dental professionals, government health agencies and non-governmental agencies (NGO) should promote awareness of the relationship between diabetes and oral health so as to prevent dental complications which could lead to expensive dental treatment.

Table 3: Dental hygiene practice among the participants

Variable	Frequency (n=261)	Percent
What should be done with dental problem?		
Consult a physician	195	74.7
Consult a dentist	6	2.3
Self-remedy	60	23.0
Teeth brushing practice		
Yes	168	64.4
No	93	35.6
Frequency of teeth brushing		
After every meal	129	76.8
Twice daily	3	1.8
Once daily	36	21.4
Ready to get education about effect of diabetes on oral disease		
Yes	246	94.3
No	15	5.7

CONCLUSION

Within the limitations of this present study, the data presented in this study showed that diabetic patients had better awareness of medical complications than dental complications of diabetes mellitus. The attitude and practice of oral hygiene of diabetic patients coupled with their readiness to accept oral health education were found to be adequate.

REFERENCES

1. Azodo CC. Current trends in the management of diabetes mellitus: The Dentist's Perspective. Benin J Postgrad Med 2009; 11(1):113-129.
2. Ismaeil FMR, Ali N. Diabetic patients knowledge, attitude and practice toward oral health. J Educ Pract 2013; 4(20):19-25
3. Bener A, Zirie M, Janahi IM, Al-Hamaq AO, Musallam M, Wareham NJ. Prevalence of diagnosed and undiagnosed diabetes mellitus and its risk factors in a population-based study of Qatar. Diabetes Res Clin Pract 2009; 84(1):99-106.
4. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. Diabetes Care. 2004; 27(5):1047-1053.
5. Akinkugbe OO. Final Report of National Survey on Non Communicable Diseases in Nigeria Series 1. Federal Ministry of Health and Social Services, Lagos; 1997.
6. Nwafor A, Owhoji A. Prevalence of diabetes mellitus among Nigerians in Port Harcourt correlates with socio-economic status. Appl Sci Environ Mgt 2001; 5(1):75-77.
7. Sandberg GE, Sundberg HE, Fjellstrom CA, Wikblad KF. Type 2 diabetes and oral health: a comparison between diabetic and non-diabetic subjects. Diabetes Res Clin Pract 2000; 50(1):27-34.
8. Sultan AM. Occupational Hazards of Cement Dust on Oral Cavity: A Brief Review. Pak J Orthodont Ped and Comm Dentistry 2002; 1(2):109-111.
9. Loe H. Periodontal diseases. The sixth complication of diabetes mellitus. Diabetes Care 1993; 16(1):329-334.
10. Iacopino AM. Periodontitis and diabetes interrelationships: role of inflammation. Ann Periodontol 2001; 6:125-137.
11. Ogunbodede EO, Fatusi OA, Akintomide A, *et al* Oral health status in a population of Nigerian diabetics. J Contemp Dent Pract 2005; 6(4):75-84
12. Field EA, Longman LP, Bucknall R, *et al*. The establishment of xerostomia clinic: a prospective study. Br J Oral Maxillofac Surg 1997; 35(2):96-103.
13. Rees TD. Periodontal management of the patient with diabetes mellitus. Periodontol 2000; 23(1):63-72.
14. Vernillo AT. Practicing for life: The dentist's role in managing the diabetic patient. Global Health Nexus 2003; 5(2):16-17.
15. Akpan A, Morgan R. Oral Candidiasis. Postgrad Med J 2002; 78(922):455-459.
16. Iacopino AM. Periodontitis and diabetes interrelationships: role of inflammation. Ann Periodontol 2001; 6:125-137.
17. Stegeman CA. Oral manifestations of diabetes. Home Health Nurse 2005; 23(4):233-240.
18. Matthews DC. The relationship between diabetes and periodontal disease. J Can Dent Assoc 2002; 68(3):161-164.
19. Preshaw PM, Alba AL, Herrera D, Jepsen S, Konstantinidis A, Makrilakis K, Taylor R. Periodontitis and diabetes: a two-way relationship. Diabetologia 2012; 55(1):21-31.
20. Taiwo JO. Oral health education needs of diabetic patients in Ibadan. Afr J Med Med Sci 2000; 29(3-4):269-274.
21. Mealey B. Diabetes Mellitus. In Burket's Oral Medicine Diagnosis & Treatment. 10th Ed. Glick M, Greenberg M, Ed. Hamilton, BC Decker P. 2003; 563-577.
22. Tsai C, Hayes C, Taylor GW. Glycemic control of type 2 diabetes and severe periodontal disease in the US adult population. Community Dent Oral Epidemiol 2002; 30:182-192.
23. Morgan R, Tsang J, Harrington N, Fook L. Survey of hospital doctors' attitudes and knowledge of oral conditions in older patients. Postgrad Med J 2001; 77(908):392-394.
24. Awartani F. Oral health knowledge and practices in Saudi diabetic female patients. Pak Oral Dent J 2009; 29(1):149-152.
25. Kamran M, Ayyaz A, Munawar M. Oral health knowledge, attitude, and practices and sources of information for diabetic patients in Lahore, Pakistan. Diabetes Care 2007; 30(12):3046-3047.
26. Allen EM, Ziada HM, O'Halloran D, Clerehugh V, Allen PF. Attitudes,

awareness and oral health-related quality of life in patients with diabetes. J Oral Rehabil 2008; 35(3):218-223.
27. Mitchell L., Mitchell D.A. and McCaul L. Oxford handbook of Clinical Dentistry 5th ed. Oxford. Oxford University Press 2009:178-180.
28. Ulrich P, Cerami A. Protein glycation, diabetes and aging. Recent Prog Horm Res 2001; 56(2):1-21.