Association between Oral Health Knowledge, Attitudes and Practices of Elderly Patients and chronic medical disorders in a Nigerian Tertiary Hospital

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How to cite this article:
Okeigbemen AS, Atsikidi AL Association between Oral Health Knowledge, Attitudes and Practices of Elderly Patients and chronic medical disorders in a Nigerian Tertiary Hospital. *NDJMS* 2020; **2**(3)29-38

Received: 18th January 2020 | **Accepted:** 5th March, 2020 | **Published** 27th April, 2020

Abstract

Background: *Oral health of the elderly is an important component of general health and shares common risk factors. Poor oral health may significantly influence major chronic medical disorders, disability and quality of life in the elderly. The study sought to ascertain the knowledge of oral health and perceived impact of functional disability related systemic conditions among older adult patients.*

Methods: *A cross-sectional descriptive study was conducted on respondents aged 50 years and over attending General Practice Clinic, University of Benin Teaching Hospital, Benin City, Edo State, Nigeria, recruited by stratified sampling and surveyed using an interviewer-administered questionnaire.*

Results: *A total of 392 respondents were included in the study period of which 157 (40.1%) were males and 235 (59.9%) females. The mean age of respondents was 61.9years (SD=6.8)*

Over half of the respondents (59%) had a chronic medical disorder with hypertension (31.4%) being the commonest. Also, disability (25.3%) was reported with visual impairment (17.1%) being the most common.

Majority of the respondents (76.3%) had some knowledge of the dentist and dental caries (62.2%).

On dental experiences (36.0%) had had tooth decay, gum bleeding (18.6%), dry mouth (45.2%), while with regards to practices they reported brushing daily (83.7%), previous dental visit (46%) and consumption of alcohol (18.4%). Furthermore 40.8%had knowledge that tobacco use could predispose to halitosis, periodontal diseases (24.5%) cancer (40.8%) respectively. There was no significant relationship between chronic medical conditions and habits except in their knowledge of annual routine check-up.

Conclusions: *The study demonstrated good oral health knowledge, attitudes and dental practices with low consumption of alcohol and tobacco among elderly patients. There is howeverthe need for continuous health education, health promotion and surveillance. Dental professionals and policymakers need to pay greater attention to oral health associated chronic medical conditions.*

Keywords: Oral health perception, elderly, chronic diseases

Introduction

The natural ageing process has chronological, biological and psychological dimensions and certain diseases occur at different age levels. Though age group sixty years and above is globally known as a definition of older persons mainly for pension purposes, a more traditional African definition of an elder has been suggested to correlate with the chronological ages of 50 to 65 years. [1] Oral health of older adults forms an important component of their general health and poor oral health can significantly influence or be influenced by major chronic diseases or cause disability and may have common risk factors. [2, 3]

Poor oral hygiene in the elderly may predispose to dental caries, tooth loss, xerostomia, and oral pre-cancer or cancer. This has been attributed to poor oral health perception and inadequate oral hygiene practices. [4, 5] Both tobacco smoking and alcohol consumption habits have been known to be associated with periodontal disease, complete tooth loss, and oral cancer. [6.] Studies have also linked periodontal disease and total teeth loss with cardiovascular disease [7]

The adverse influence of poor oral conditions on the quality of life of older adults is an important public health issue. [8] Kimura *et al* reported that chewing difficulty in older adults is associated with activities of daily living, cognitive, and depression status. [9, 10, 11] The World Health Organization recommends that countries adopt certain strategies for improving the oral health of the elderly [3].

In a study relating knowledge of good oral health, opinion and practice to the prevalence of oral cancer, it was shown that adults and elderly people lacked the current knowledge of symptoms, signs and risk factors of oral cancer and still exhibited risky lifestyle that predisposes them to oral cancer. [12]

The extent to which systemic conditions and related factors influence oral health in older adults has not been fully investigated in our environment. [13]

The aim of the study was therefore to ascertain the knowledge of oral health, attitude, practices and the perceived impact of functional disability concerning systemic conditions among the older adult patients attending General Practice Clinic of the University of Benin Teaching Hospital, Benin City, Edo State, Nigeria.

Materials and methods

A cross-sectional descriptive study was conducted on male and female respondents aged 50 years and over attending General Practice outpatient Clinic under the Department of Family Medicine, University of Benin Teaching Hospital between September and November 2019.Recruitment of the participants was carried out by stratified sampling technique and subsequent consecutive selection, thereafter a pre-tested interviewer-administered questionnaire. was used to obtain information. The information requested included socio-demographics; age, gender, occupation, religion, level of education, marital status, physical disability and chronic medical condition conditions n, lifestyle habits, oral health knowledge and practices, and impact of disability on oral function.

Unwilling patients, those with impaired mental status and severe illness were excluded from the study The minimum sample size was determined using the formula for calculating sample size [14]

$$N = Z^2 \times (p) \times (1-p)$$

$$c^2$$

Where,

N = sample size;

Z = value corresponding to a given confidence level (1.96 for a confidence level of 95%

p = percentage of proportion estimated to have knowledge of oral health which corresponds to approximately half (50%) of elderly diabetics with moderate knowledge of oral health[15]

c = standard error expressed as a decimal (0.05). (1.96)2 × (0.5) (1- 0.5) / (0.05)2 = 385

Data from the questionnaire were analyzed using SPSS Chicago version 21 and summarized using frequencies, percentages for categorical data and means and standard deviations for continuous variables. Comparison of the categories was in all the parameters from both those with systemic diseases and without systemic diseases as related to their oral health perception. Chi-squared test was used to compare distributions of different categorical data between the groups. The statistical significance level will be set at $P < 0.05$.

Ethical clearance was obtained from the Ethics and Research Committee of the University of Benin Teaching Hospital and informed consent obtained from all the respondents after the objectives of the study have been explained to them

Results

A total of 392 respondents were included in the study, of which 157 (40.1%) were males and 235 (59.9%) females. The mean age of the participants was 61.9 years (SD=6.8.) and they were mostly 50-60 years old (47.2%), Christians (83.7%), had tertiary education (45.4%) and married. (81.1 %) (Table 1)

Table 1 Socio-demography distribution of respondents

Characteristic	N	%
Age group (Years) N=392		
50-60	185	47.2
61-70	169	43.1
71-80	34	8.7
81-90	4	1.0
Gender: Gender N=392		
Female	235	59.9
Male	157	40.1
Religion: N=392		
Christian	328	83.7
Islam	20	5.1
Traditional	38	9.7
Other	6	1.5
Level of Education: N=392		
Tertiary	178	45.4
Secondary	95	24.2
Primary	108	27.6
Non-formal	11	2.8
Marital Status N=392		
Married	318	81.1
Widowed	54	13.8
Single	12	3.1

Nearly half (47.2%) of the respondents were in the 50-60 years age group, over half were female (59.9%) mostly Christians, (83.7%) with tertiary education (45.4%) and married. (81.1%).

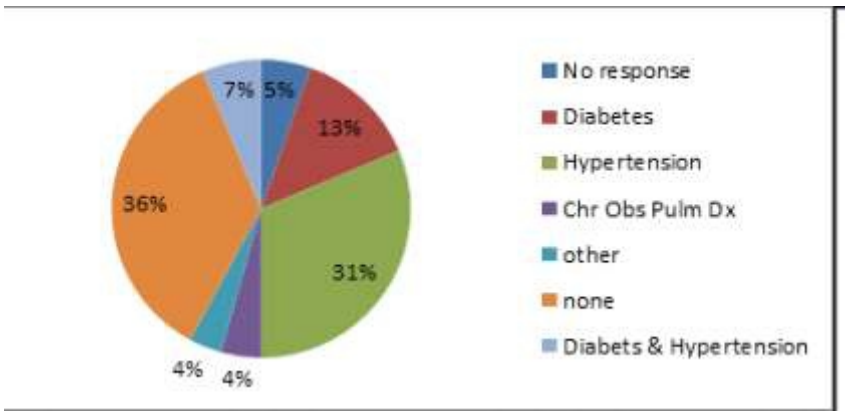

Figure 1 Distribution of the respondents by medical conditions
NB: ChrObsPulmDx = Chronic Obstructive Pulmonary Disease

Over half of the respondents (59%) had a chronic medical condition and hypertension (31.4%) was the most common condition.

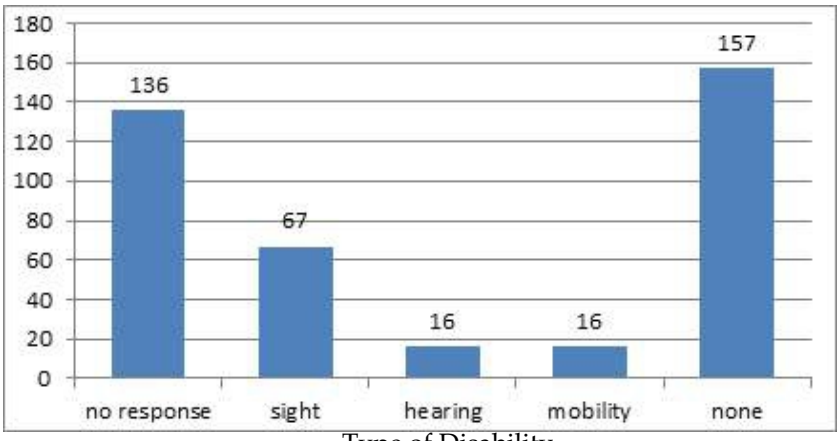

Figure 2 Distribution of the respondents by disability

About a quarter of them reported disability (25.3%) and visual impairment (17.1%) was the most common. No response 136 (34.7%), sight 67(17.1%), hearing 16 (4.1%), mobility 16(4.1%) and none 157(40.1%).

Table 2: Association between medical conditions and selected independent variables (*N=392)*

		NR	DM	HBP	COPD	OTHER	NONE	DMHBP	TOTAL	
Gender	X^2=8.722 df=6p=0.190									
	Female	11(2.8%)	24(6.1)	72(18.4)	12(3.1)	7(1.8)	93(23.7)	16(4.1)	235(59.9)	
	Male	10 (2.6)	28(7.1)	51(13.0)	5(1.3)	7(1.8)	47(12.0)	9(2.3%)	157(40.1)	
Marital Status	X^2=20.132df=18			p=0.325						
	Married	21(5.4)	45(11.5)		96(24.5)	16(4.1)	8(2.0)	112(28.6)	20(5.1)	318(81.1)
	Widowed		0(0.0)	4(1.0)	18(4.6)	1(0.3)	5(1.3)	21(5.4)	5(1.3)	54(13.8)
	Single	0(0.0)	1(0.3)	3(0.8)	0(0.0)	0(0.0)	4(1.0)	0(0.0)	8(2.0)	
	Divorced		0(0.0)	2(0.5)	6(1.5)	0(0.0)	1(0.3)	3(0.8)	0(0.0)	12(3.1)
Age group	(Years)	X^2=11.457	df=18	p=0.874						
	50-60	11(2.8)	20(5.1)	53(13.5)	8(2.0)	10(2.6)	71(18.1)	12(3.1)	185(47.2)	
	61-70	8(2.0)	24(6.1)	57(14.5)	8(2.0)	4(1.0)	57(14.5)	11(2.8)	169(43.1)	
	71-80	2(0.5)	8(2.0)	11(2.8)	1(0.3)	0(0.0)	10(2.6)	2(0.5)	34(8.7)	
	81>	0(0.0)	0(0.0)	2(0.5)	0(0.0)	0(0.0)	2(0.5)	0(0.0)	4(1.0)	

Note
NR= No response. DM=Diabetes. HBP=Hypertension. COPD= Chronic Obstructive Pulmonary disease. OTHER=diseases NONE=No disease. DMHBP= Diabetes/Hypertension

Females (33.5%) reported a higher burden of chronic medical disorders than males (25.5%)

Table 3 Oral health knowledge and perception of elderly patients (*N=392)*

	NR	DM	HBP	COPD	OTHER	NONE	DMHBP	TOTAL
Knowledge of dentist		X^2=*18.885*		*df=12*	*p=0.091*			
yes	18(4.6)	32(8.2)	95(24.2)	16(4.1)	9(2.3)	109(27.8)	20(5.1	299(76.3)
no	3(0.8)	20(5.1)	28(7.1)	1(0.3)	5(1.3)	29(7.4)	4(1.0)	90(23.0)
not sure		0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	2(0.5)	1(0.3) 3(0.8)
Knowledge of dental caries		X^2=*9.715*		*df=12p=0.641*				
yes	11(2.8)	39(9.9)	74(18.9)	11(2.8)	9(2.3)	88(22.4)	12(3.1)	244(62.2)
no	10(2.6)	13(3.3)	45(11.5)	6(1.5)	5(1.3)	49(12.5)	12(3.1)	140(35.7)
not sure		0(0.0)	0(0.0)	4(1.0)	0(0.0)	0(0.0)	3(0.8)	1(0.3) 8(2.0)
Previous dental visit		X^2=*8.931*		*df=12p=0.709*				
NR	0(0.0)	1(0.3)	1(0.3)	0(0.0)	0(0.0)	2(0.5)	0(0.0)	4(1.0)
yes	8(2.0)	24(6.1)	53(13.5)	10(2.6)	7(1.8)	72(18.4)	7(1.8)	181(46.2)
no	13(3.3)	27(6.9)	69(17.6)	7(1.8)	7(1.8)	66(16.8)	18(4.6)	207(52.8
Annual check- up frequency		X^2=*21.449*		*df=12 p=0.044*				
NR	7(1.8)	22(5.6)	66(16.8)	7(1.8)	7(1.8)	61(15.6)	19(4.8)	189(48.2)
6mths	3(0.8)	14(3.6)	18(4.6)	5(1.3)	1(0.3)	21(5.4)	2(0.5)	64(16.3)
12mths	11(2.8)	16(4.1)	39(9.9)	5(1.3)	6(1.5)	58(14.8)	4(1.0)	139(35.5

Note: values in parenthesis are percentages. KEY:NR= No response TBPASTE= Toothbrush/paste CHEWSTK=Chewing stick

Majority of the respondents (76.3%) reported knowledge of the dentist and dental caries (62.2%). There was no statistically significant difference in knowledge of oral health among participants with various chronic medical conditions (p- >0.05) (Table 3)
Table 4 Knowledge of risk of developing halitosis, periodontitis and oral cancer from alcohol consumption. (*N=392*)

		NR	DM	HBP	COPD	OTHER	NONE	DMHBP	TOTAL
Take alcohol	*X2 =6.574*		*df=6*	*p=0.362.*					
yes		5(1.3)	9(2.3)	24(6.1)	6(1.5)	1(0.3)	21(5.4)	6(1.5)	72(18.4)
no		16(4.1)	43(11.0)	99(25.3)	11(2.8)	13(3.3)	119(30.4)	19(4.8)	320(81.6)
Tobacco as risk for halitosis			*X²=12.440*		*df=12*	*p=0.411*			
NR		2(0.5)	3(0.8)	23(5.9)	1(0.3)	1(0.3)	19(4.8)	4(1.0)	53(13.5)
yes		10(2.6)	24(6.1)	50(12.8)	7(1.8)	6(1.5)	58(14.8)	5(1.3	160(40.8)
no		9(2.3)	25(6.4)	50(12.8)	9(2.3)	7(1.8)	63(16.1)	16(4.1)	179(45.7)
Tobacco as risk periodontitis			*X²=7.676*	*df=12*	*p=0810*				
NR		7(1.8)	13(3.3)	32(8.2)	2(0.5)	5(1.3)	31(7.9)	7(1.8)	97(24.7)
yes		5(1.3)	15(3.8)	30(7.7)	7(1.8)	3(0.8)	3(2.2)	4(1.0)	96(24.5)
no		9(2.3)	24(6.1)	61(15.6)	8(2.0)	6(1.5)	77(19.6)	14(3.6)	199(50.8)
Tobacco as risk for cancer		*X²=9.341*	*df=12*	*p=0.674*					
NR		6(1.5)	22(5.6)	41(10.5)	6(1.5)	5(1.3)	35(8.9)	9(2.3)	124(31.6)
yes		10(2.6)	17(4.3)	49(12.5)	4(1.0)	6(1.5)	64(16.3)	10(2.6)	160(40.8)
no		5(1.3)	13(3.3)	33(8.4)	7(1.8)	3(0.8)	41(10.5)	6(1.5)	108(27.6)

Note: values in parenthesis are percentages.
Among those who consumed alcohol, 11.7% reported chronic medical disorder and there was no significant relationship between knowledge of the risk of halitosis, periodontitis, oral cancer ad chronic diseases.

Table 5 Association between medical conditions and previous dental experiences (*N=392)*

		NR	**DM**	**HBP**	**COPD**	**OTHER**	**NONE**	**DMHBP**	**TOTAL**
Experience of tooth decay	X²=6.996	df=12	p=0.858						
yes		992.3)	19(4.8)	44(11.2)	7(1.8)	3(0.8)	51(13.0)	8(2.0)	141(36.0)
no		11(2.8)	30(7.7)	77(19.6)	9(2.3)	10(2.6)	79(20.2)	16(4.1)	232(59.2)
not sure		1(0.3)	3(0.8)	2(0.5)	1(0.3)	1(0.3)	10(2.6)	1(0.3)	10(4.8)
Gumbleeding	X²=9.142	df=12	p=0.691						
yes		4(1.0)	7(1.8)	27(6.9)	1(0.3)	2(0.5)	30(7.7)	2(0.5)	73(18.6)
no		16(4.1)	40(10.2)	87(22.2)	15(3.8)	12(3.1)	99(25.3)	22(5.6)	291(74.2)
not sure		1(0.3)	5(1.3)	9(2.3)	1(0.3)	0(0.0)	11(2.8)	1(0.3)	28(7.1)
Drymouth	X²=9.496 df=12	p=0.660							
yes		5(1.3)	28(7.1)	58(14.8)	6(1.5)	8(2.0)	60(15.3)	12(3.1)	177(45.2)
no		14(3.6)	21(5.4)	53(13.5)	9(2.3)	4(1.0)	64(16.3)	10(2.6)	175(44.6)
not sure		2(0.5)	3(0.8)	12(3.1)	2(0.5)	2(0.5)	16(4.1)	3(0.8)	40(10.2)
Brushing daily	X²=.877	df=6	p=0.990						
yes		17(4.3)	44(11.2)	103(26.3)	13(3.3)	12(3.1)	118(30.1)	21(5.4%)	328(83.7)
no		4(1.0)	8(2.0)	2(05.1)	4(1.0)	2(0.5)	22(5.6)	4(1.0)	64(16.3)

Note: values in parenthesis are percentages.

About participants'dental experiences; 36.0% had had tooth decay, gum bleeding (18.6%), dry mouth (45.2%), while 83.7% reported brushing daily and 46.2% previous dental visit. Concerning check-up being necessary, about two- third (66.1%) were positive. Similarly 65.3% used toothbrush and paste while over one -third (35.5%) had correct knowledge of routine annual check-up. (Table 5).

Table 6 Impact of chronic medical conditions on oral functionality(*N=392*

	NR	1	2	3	4	5
	N(%)	N(%)	N(%)	N(%)	N(%)	N(%)
Food type eaten	5 (1.3)	70(17.9)	1(0.3)	16(4.1)	29(7.4)	**271(69.1)**
Biting or chewing	0(0)	29(7.4)	23(5.9)	21(5.4)	41(10.5)	**278(70.9)**
Limit of social contact	0(0)	18(4.6)	11(2.8)	61(15.6)	6(1.5)	**296(75.5)**
Happy oral health	1(0.3)	**330(84.2)**	22(5.6)	2(0.5)	18(4.6)	19(4.8)
Use medication	1(0.3)	37(9.4)	11(2.8)	19(4.8)	20(5.1)	**304(77.6)**
Sensitivity	4(1.0)	(8.7)	2(0.5)	2(8.2)	10(2.6)	**310(79.1)**

Note: values in parenthesis are percentages.

NR = 'No response', "Always" (code =1), "often" (code = 2), "sometimes" (code = 3), "seldom" (code = 4), and "never" (code = 5).

Concerning the perceived impact of chronic medical condition on oral functionality, in general limiting the kinds or amounts of food (69.1%), trouble biting or chewing (70.9%), limiting contact with people (75.5%), using medication to relieve pain (77.6%) and sensitive teeth or gums (79.1%) were the main negative issues of oral function but being happy with dentition (84.2%) was a positive perception. (Table 6)

Discussion

Chronic diseases may be a major issue for the elderly affecting their oral health-related quality of life. [16] Oral health may deteriorate because it shares some common determinants with chronic diseases.[17]

Our study showed that hypertension was more prevalent in the 60-70 years age group among those who reported chronic disease (14.5%).In a study conducted in six European countries, USA and Canada the prevalence of hypertension was 28% in the North American countries and 44% in the European countries[18] but contrasts with the study by Mahajan et al which reported 90.3% prevalence in the 40-60 years group, corresponding to the age of retirement.[19] In the present study, no significant relationship was however observed between the presence of a chronic medical condition and age group.

The current study reported a previous dental visit (46.2%) among the respondents which was less than average but still higher than finding by Taiwo et al in a study (33.4%) [13] and Al-Sharbatti et al in a UAE study (31.5%).of the elderly in Ajman. [20] Although two-thirds of the respondents

perceived that check-up was necessary (66.1%) only 46.2% actually visited, which is in line with Taiwo et al study report that desire to visit the clinic does not translate to actual visit to the dental clinic or regular dental clinic attendance. [13] There was no significant relationship between the presence of the chronic medical condition and previous dental visit . The burden of ageing alluded as a risk factor for low dental service utilization. Other possible reasons may include socioeconomic status, level of education and ease of transportation.[21] Knowledge of annual dental check-up (35%) as recommended by the government was a significant finding.

In the present study, none of the respondents reported tobacco smoking habit. Ehizele et al[22] in their study reported a very low prevalence of tobacco smoking (4.25%) and poor knowledge of tobacco effect on both general and oral health[23]. This contrasts the study by Gupta et al which reported (60.25%) tobacco consumption among hypertensive patients in India and demonstrated a significant correlation of smoking or tobacco use with hypertension prevalence.[24]

With regards to alcohol consumption, our study showed an 18.4% rate which is lower than the prevalence reported by Kinra et al (28.4%) in an Indian study[25]. Concerning the knowledge of consequences of tobacco use predisposing to some diseases, halitosis (40.8%) periodontal diseases (24.5%) and cancer (40.8%) were reported respectively. There was no significant relationship between chronic medical condition and risky habits but

an earlier study identified alcohol as a problem in elderly which demands attention from policy-makers[26]

The daily tooth brushing practice from our study (83.7%) was higher than reported by a similar Chinese study (71%). [19]More than half of the respondents (65.3%) used toothbrush and paste to clean teeth which was comparable to a Swedish finding [27]. There was no statistical difference in the knowledge of tobacco and alcohol consumption causing chronic conditions.

A limitation of the present study is the respondents being recruited from only one health facility which may not represent the views of the community-dwelling older adults.

Conclusion

The study demonstrated good oral health knowledge, attitudes and dental practices, low consumption of alcohol and tobacco concerning chronic medical conditions among elderly patients. There is however need for continuous health education, health promotion and surveillance. Dental professionals and policymakers need to pay greater attention to oral health associated with chronic medical conditions.

Acknowledgment

The study has been completed successfully with support from GPC Medical Officers Dr Adesuwa Aletor and Dr Otaigbe Okonofua.

Conflict of interests

The authors declare that they have no conflict of interests.

No funding received

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