ORIGINAL ARTICLE

SOME SOCIO-DEMOGRAPHIC ATTRIBUTES AS COVARIATES IN TOOTH WEAR AMONG MALES IN A RURAL COMMUNITY IN NIGERIA

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ABSTRACT

BACKGROUND: Association between some socio-demographic attributes and tooth wear among adult male population in a rural community of Igbo-ora, Southwestern Nigeria was investigated in this cross-sectional study.

METHODS: Cross-sectional study among 200 consenting adult males in Igbo-ora was carried out using a 10-item semi-structured questionnaire to obtain data on socio-demographics. Oral examination to establish the presence of tooth wear lesions was carried out by two examiners. Frequencies and percentages of relevant variables were generated. Multivariate analysis was used to test associations between categorical variables at P<0.05.

RESULTS: The mean age of participants was 35.6±11.7 years. One hundred and six (53.0%) subjects had one form of tooth wear lesion. Sixty eight (34.0%) of the subjects had attrition only and 96 (48.0%) had multiple tooth wear lesions. There was an association between age group, marital status, level of education and tooth wear (p<0.05). However, the association between occupation and tooth wear was not statistically significant (p>0.05). After adjusting for marital status, occupation and level of education, the association between age group and tooth wear was still significant. Though marital status was found to be associated with tooth wear, this association was not significant after adjusting for age, occupation and level of education. The association between some of the socio-demographic factors studied and the types of tooth wear was statistically significant (p<0.05).

CONCLUSION: Age group was the only independent predictor of tooth wear.

KEY WORDS: Socio-demographic, Rural Community, Tooth Wear, Nigerian

INTRODUCTION

Tooth wear describes the non-carious loss of tooth tissue resulting from the interaction of three processes which may occur in isolation or in combination; attrition, erosion and abrasion (1-3). It is a complex biological process of solid dental tissue loss which can significantly affect the functions of chewing and speech, as well as facial appearance. Loss and excessive wear of hard dental tissues is a permanent problem of the dentition that affects all age groups. Tooth wear is an inherent part of the aging process and therefore occurs continuously but slowly throughout life. In some individuals tooth wear can also result in severe morphological and functional damages to the teeth which could result into temporomandibular disorder (4).

Prevalence of tooth wear varies from one geographical location to another, a trend that may be due to several factors namely: congenital anomalies; bruxism and other parafunctional habits; dietary practices; constant exposure to dust and grit; unglazed porcelain; castable ceramic materials; consumption of acidic drinks and foods; continuous regurgitation; continuous exposure to airborne acids or chlorinated swimming pool water; and loss of posterior support (5-7). Some studies (8-11) have reported that sex and age have

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associations with prevalence of tooth wear. In Nigeria, studies (9,12) reported that males and older age group tend to develop tooth wear lesions more than females. It is however important to note that there is paucity of studies that have reported the relationship between other socio-demographic factors and tooth wear in Nigeria. Studies among Nigerians have linked some of these factors with the prevalence, pattern and rate of other dental diseases (13,14). There is a need for information on the influence of these factors on tooth wear among Nigerians living in rural community. The information will have relationship with clinical practice at rural settings because the knowledge of the socio-demographic background of patients with tooth wear will aid diagnosis and prevention of further lesions. It will also help to halt the progression of lesions already present. In addition, treatment will be ineffective in the long term unless these factors are carefully considered. The aim of this study therefore was to document the association between some socio-demographic variables such as age, marital status, occupation, level of education and tooth wear among adult males in a rural community of Igbo-ora, southwestern Nigeria. Adult was operationally defined in this study as individuals who are 20 years and above.

MATERIALS AND METHODS

The target population for this cross-sectional study was adult males aged 20 years and above who have been living in Igbo-ora community for 5 consecutive years preceding the time of this study. Igbo-ora, a rural community of about 60,000 people is the headquarters of Ibarapa Central Local Government Area situated about 80 km south of Ibadan, the capital city of Oyo State, South-Western Nigeria (15). Majority of the residents are the native Yorubas, the other residents being made up of other nationals. Partly because of its rural nature, the main occupations are farming and trading (15).

A sample size of 208 was calculated using the Leslie and Kish Formula (16) for determining sample size for cross-sectional study at a prevalence rate of 17% from a previous report of prevalence of tooth wear among adults (17). However, 200 adult males honoured an invitation to attend an oral health outreach programme at the Igboora town hall. After the oral health campaign they were informed about the study and its benefits. All the 200 convenient sample of residents consented to participate and written informed consent was obtained from them before the commencement of the study. Prior to the commencement of the study, permission to conduct the study was obtained from the Local Government Authority and community leaders. The study was carried out in strict compliance with Helsinki Declaration principles on studies involving human subjects.

A 10-item semi-structured questionnaire which was divided into two sections on socio-demographic data and presence of tooth wear was researcher-administered. The questionnaire was pretested in Igangan, a community with similar socio-demographic characteristics as Igboora. Information on socio-demographic attributes such as age, marital status, occupation and level of education attained were documented. For the purpose of this study, a standard occupational classification system designed by Office of population Census and Surveys, London (OPCS 1991) (18) was used to categorize participants into three socioeconomic groups:

Class 1= Skilled worker e.g. professionals and managerial officers and retirees of this cadre.

Class 2= Unskilled workers e.g. Artisans and traders

Class 3= Dependents e.g. Retirees of class 2, those not on pensions, house wives of class 2 cadre, students whose parents are unskilled workers.

Oral examination was carried out in the town hall using gloved hands, wooden spatulas and dental probes to remove food debris under natural light so as to establish presence of tooth wear lesions by two examiners. To enhance vision in the mouth, the teeth were dried using cotton wool rolls. Teeth with gross accumulation of calculus were excluded. Prior to the oral examination, one day training on the diagnostic criteria for attrition, abrasion and erosion was carried out among the examiners. This was carried out using the guidelines of Kelleher and Bishop (19) by examining the four surfaces namely cervical (C), buccal (B), occlusal (O) or incisal (I) and palatal (P) or lingual (L) of all permanent teeth. For Attrition, the occlusal and incisal surfaces were used; Abrasion, the cementoenamel junction was

used and for Erosion, the labial, buccal, palatal and lingual surfaces of the tooth were used.

Subject was seated on a chair, with the examiner seated behind and the research assistant in front of the subject taking records. In order to monitor the inter- and intra – examiner reproducibility in assessing the wear status throughout the study, duplicate examinations were carried out during the study. The reliability was assessed by using the unweighted kappa statistic and gave a value of 0.87 for inter-examiner reproducibility and the values of 0.89 and 0.91 for the intra-examiner agreement of examiners 1 (AOO) and 2 (OMT) respectively.

Data was cleaned and entered into SPSS version 15 (20). Frequencies and percentages of relevant variables were generated. Chi-square test was used to test associations between categorical variables at 5% level of significance.

RESULTS

The age range of the participating adult males was between 20 and 64 years with a mean age of 35.6±11.7 years.

The majority 110 (55.0%) of the subjects were in the age group 20 – 34 years while 28 (14.0%) were in the age group 50 – 64 years. One hundred and thirty two (66.0%) were married, divorced or widowed while 68 (34.0%) were single. One hundred and thirty nine (69.5%) were skilled workers while 61 (30.5%) were either unskilled or dependent. One hundred and fifty (75.0%) had formal education while 50 (25.0%) had no formal education (Table 1).

Table 1: Socio-demographic characteristics of study participants (n=200), Igboora, 2010.

Socio-demographic characteristics	***No***	***%***
Age group (years)		
20 – 34	110	55.0
35 – 49	62	31.0
50 – 64	28	14.0
Marital Status		
Single	68	34.0
Married	127	63.5
Divorced	4	2.0
Widowed	1	0.5
Occupation		
Unskilled/Dependent	61	30.5
Skilled	139	69.5
Level of Education		
None	50	25.0
Primary	60	30.0
Secondary	60	30.0
Tertiary	30	15.0

One hundred and six (53.0%) study subjects had one form of tooth wear lesion or the other. Of these, 68 (34.0%) of the subjects had attrition only, 23 (11.5%) had abrasion only, 13 (6.5%) had erosion only and 96 (48.0%) had multiple tooth wear lesions.

As shown in Table 2, there was a statistically significant association between age, marital status, level of education and tooth wear ($p \leq 0.05$). However, the association between occupation and tooth wear was not significant ($p \geq 0.05$).

Table 2: Relationship between socio-demographic characteristics and tooth wear, Igboora, 2010.

Socio-demographic characteristics		***Tooth wear***		**p value**
		Yes	**No**	
		No (%)	**No (%)**	
Age group (years)	20 – 49	80 (46.5)	92 (53.5)	
	50 – 79	26 (92.9)	2 (7.1)	0.00
Marital status	Single	25 (36.8)	43 (63.2)	
	Married/divorced/widowed	81 (61.4)	51 (38.6)	0.00
Occupation	Unskilled/dependent	37 (60.7)	24 (39.3)	
	Skilled	69 (49.6)	70 (50.4)	0.15
Level of education	One form of education	34 (68.0)	16 (32.0)	
	No formal education	72 (48.0)	78 (52.0)	0.01

In Table 3, there was a significant association between age group and tooth wear, with participants aged 50 to 64 years being about 10 times more likely at risk compared with those who were aged 20 to 34 years after adjusting for marital status, occupation and level of education. Though marital status was found to be associated with tooth wear, this association was not significant after adjusting for age, occupation and level of education.

Table 3: Socio-demographic predictors of tooth wear

Variables	***Unadjusted***			***Adjusted***		
	OR	**95% CI**	**p**	**OR**	**95% OR**	**p**
Age group (years)						
20 – 34	1	-	-	1	-	-
35 – 49	5.025	2.5,9.8	<0.001	3.68	0.58,23.08	0.164
50 – 64	26.72	6.0, 118.8	<0.001	9.87	1.48, 65.72	0.018
Marital status						
Single	1	-	-	1	-	-
Married/divorced/widowed	2.73	1.4,5.0	0.002	0.915	0.15,5.34	0.922
Occupation						
Unskilled/dependent	1	-	-	1	-	-
Skilled	0.63	0.3,1.1	0.200	0.763	0.19,2.92	0.694
Level of education						
Formal education	1	-	-	1	-	-
No formal of education	0.43	0.2,0.8	0.022	0.597	0.15,2.26	0.449

Occupation of participants had no statistically significant relationship with types of tooth wear ($p>0.05$). Age and level of education of participants had a statistically significant relationship with types of tooth wear ($p<0.05$). Marital status had a statistically significant relationship with presence of attrition ($p<0.05$) but no significant relationship with presence of erosion ($p>0.05$) (Table 4).

Table 4: Relationship between socio-demographic characteristics and types of tooth wear

Socio-demographic characteristics	**Types of tooth wear**								
	Attrition		**p**	**Abrasion**		**P**	**Erosion**		**P**
	Yes No (%)	**No (%)**		**Yes No (%)**	**No (%)**		**Yes No (%)**	**No (%)**	
Age group(years)									
20 – 49	43(25.0)	129(75.0)	0.00	36(20.9)	136(79.1)	0.00	30(17.4)	142(82.6)	0.00
50 – 64	25(89.3)	3(10.7)		20(71.4)	8(28.6)		18(64.3)	10(35.7)	
Marital status									
Single	16(23.5)	52(76.5)	0.02	28(41.2)	40(58.8)	0.00	20(29.4)	48(70.6)	0.20
Married/divorced/ widowed	52(39.4)	80(60.6)		28(21.2)	104(78.8)		28(21.2)	104(78.8)	
Occupation									
Unskilled/dependent	25(41.0)	36(59.0)	0.17	22(36.1)	39(63.9)	0.09	19(31.2)	42(68.8)	0.12
Skilled	43(30.9)	96(69.1)		34(24.5)	105(75.5)		29(20.9)	110(79.1)	
Level of education									
No formal education	40(80.0)	10(20.0)	0.00	36(72.0)	14(28.0)	0.00	34(68.0)	16(32.0)	0.00
One form of education	28(18.7)	122(81.3)		20(13.3)	130(86.7)		14(9.3)	136(90.7)	

DISCUSSION

Tooth wear, a complex biological process of hard dental tissue loss, can significantly affect the function of chewing, speech and facial appearance. These are the most common complaints when patients present at the clinic (21). Sometimes treatment is sought for acute or chronic pain or hypersensitivity to changes in temperature, pressure and chemical stimuli (22). It is important to recognize that the aetiology of tooth wear is multifactorial and failure to recognize this fact may lead to failure in restorative care (22). It is therefore necessary to consider some socio-demographic information in the early diagnosis of tooth wear. This, together with information on oral and dietary habits, will help in reversing the current trend of high prevalence of tooth wear and providing a comprehensive management of tooth wear.

This present study was carried out among males living in a rural community in South-Western Nigeria. The choice of male gender include the fact that other studies (8,9) reported that more males tend to develop tooth wear lesions than females in environments with similar socio-demographic characteristics as the present one. One study (8) reported that males had 92% more odds of developing tooth wear than females. This may be due to males having a higher bite force than females (23) and different dietary patterns (24). In this study, the prevalence of tooth wear lesions was high as in other studies (12,25) and mixed lesions were observed. Attrition has been reported to be more important than erosion in the aetiology of tooth wear among Nigerians (9,12). This trend was observed in this study where about one-third of the participants had attrition only and equal number had attrition in combination with erosion and abrasion.

Smith et al (26) and Murray (2) reported that there was a relationship between socioeconomic status and tooth wear. In this present study, participants who were older, married or divorced or widowed had tooth wear lesions more than those who were not. They had more attrition, abrasion and erosion on their teeth than those who were younger. However, age group was the only independent predictor of tooth wear. This is similar to the finding in a previous study (27) where age is the single most determinant of attrition. This may be the reason why Ball (28) in the critique of age estimation using attrition as the sole indicator, stated that in certain cases microscopic examination of the teeth may not be possible and the age estimation is then often determined by tooth wear caused by attrition. The finding is further supported by the findings is a previous study where the frequency, localization and depth of tooth wear was related to age (29). Association between age and tooth wear observed implies that as one gets older incidence of tooth wear increases. It has been reported that tooth wear is an age dependent process (30,31). A study on effect of age on the friction and wear behaviors of human teeth reported that permanent teeth at the young and middle ages have better wear resistance (32). Older people are exposed to the risk factors of tooth wear over a long period of time and they also tend to indulge in bad oral health practices that result into tooth wear.

Males who were married at one time or the other had more tooth wear lesions particularly more attrition on their teeth than those that were single. Being married at one time appear to be related to incidence of tooth wear lesions. This might suggest that sometimes reported stressful situation in marriages may be the linking factor of marital status and tooth wear lesions. According to Da Silva (33) and Emodi-Perlmen (34), there is a positive linear relationship between stress and tooth wear. This is at variance with the findings in the study by Kovacevic and Belojevic (23) who reported no significant association between marital status and tooth wear. In this study, males that were single had more abraded teeth that those who had been married at one time or the other. The reason for the presence of more abraded teeth in singles might be due to the application of too much pressure on tooth surface when cleaning the tooth in a bid to appear attractive to opposite sex. Also, those who had no formal education had more tooth wear lesions than those who had one form of education. This might be due to the fact that those who had one form of education might be better informed and cautious about practicing habits that could destroy their teeth. Such oral habits may include, improper tooth brushing technique and using hard materials to clean the teeth. Occupational factors are one of the factors related to occurrence and pattern of wear (35). Donachie and Walls (10) stated in their study on

assessment of tooth wear in an ageing population that there was little variation between subjects of different social class backgrounds; this is similar to findings from this present study where there was no significant difference in the presence of tooth wear between skilled and unskilled workers. Similarly in this present study, there was no association between occupation and types of tooth wear lesions.

In conclusion, this study highlighted the occurrence of tooth wear lesions among this rural population by providing data on the prevalence of tooth wear lesions. Age group was the only independent predictor of tooth wear. This has implication in public health campaign aimed at reducing the incidence of and progression of tooth wear lesion among the people in the rural community. Oral health education on the prevention of tooth wear should be focused on individuals as they get older since the wear resistance decreases with age. Tooth wear is an ever-increasing problem in the elderly therefore they should be encouraged to eat soft diet and less of abrasive or coarse diets.

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Competing interests

The author(s) declare that they have no competing interests.

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