Original Article

Non-clinical factors and predictors of self-rating of oral health among young adolescents in a rural Nigerian population

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Aim: The aim of the study was to assess the non-clinical predictors of self-rating of oral health among young adolescents in a Nigerian rural population. **Methods:** A cross-sectional survey was conducted among adolescents of 11-13 years old in Igboora, Nigeria. Information on self-rating of oral health, self-assessed satisfaction with oral health condition and tooth appearance, pain history, consultation with the dentist and oral hygiene measures were obtained using structured questionnaires translated to the local language. Data were analysed using SPSS version 23; Chi Square and logistic regression were used to establish associations between variables and predictors with p value < 0.05 statistically significant. **Results:** A total of 400 respondents participated in the study. Most 346 (86.5%) rated their oral health positively. Those who expressed dissatisfaction with the appearance of their teeth, 17 (44.7%) dissatisfaction with their oral health condition, 25 (45.5%) had toothache in the preceding six months, 44 (19.7%) perceived a need for dental treatment, 43 (16.7%) or cleaned their teeth once daily or less frequently, 37 (20.9%), rated their oral health poorly (p < 0.001, p < 0.001, p = 0.001, p = 0.012, p < 0.001, respectively). The significant predictors of self-rating of oral health were self-assessed satisfaction with oral health condition, toothache in the preceding six months and frequency of tooth cleaning. **Conclusion:** Satisfaction with oral health condition, toothache in the preceding six months and frequency of tooth cleaning are factors that predict self-rating of oral health in young adolescents in the rural community studied.

Keywords: Adolescent health. Global self-rating. Non-clinical factors. Self-perception. Predictors.

Introduction

Self-rating of oral health (SROH) subjectively evaluates oral health and has been used in clinical, epidemiological and public health settings[1-7]. It is a useful tool for oral disease screening, assessment of oral health needs and disease surveillance[2,4]. It also complements clinical evaluation of oral health in planning, monitoring and evaluation of oral health intervention programmes[2,4]. SROH has been found valid in distinguishing between individuals with or without oral health problems; poor self-rating of oral health has been associated with oral diseases such as dental caries[7-11]. In addition, simplicity of SROH as a single item tool and its ability to evaluate the overall oral health of an individual amongst others makes it a valuable tool in underserved regions like rural communities. SROH is however influenced by and associated with non-clinical factors[1,8,10,12,13].

In spite of the advantages of the SROH especially in rural communities in developing countries where dentists are rarely found, very little is known regarding the utility of this tool among adolescents. This is pertinent in view of the need to get preventive oral health across to adolescents at an age when habits are formed or cemented. This becomes important as contributory effects of cultural norms, more prevalent in rural communities, to validity of self-rating of oral health has been documented in a previous study[5].

Furthermore, identification of predictors of self-rating of oral health could also help in stratifying target groups for oral health intervention, especially in rural settings in developing countries where the disproportionately poorer allocation of resources to oral health is more obvious. The aim of the study was to assess the non-clinical predictors of self-rating of oral health of young adolescents in a rural Nigerian population.

Materials and Methods

This was a descriptive cross-sectional survey conducted among adolescents aged 11 to 13 years in Igboora, a rural agrarian town in South-western Nigeria. Following ethical approval from the State's Ethical Review Committee (AD/13/479/649), 400 consenting adolescents were recruited from schools selected through simple random sampling technique from the town between January and June 2015. Three primary schools were randomly selected from the list of 23 primary schools obtained from Ibarapa Central Local Government Schools' Board.

All the pupils in the sixth grade of the selected schools aged 11 to 13 years were then approached in the three schools and those who gave consent, and whose parents did not give a negative consent were approached consecutively until 400 students were recruited. A sample size of at least 384 was arrived at based on a probabilistic prevalence of 50% in the absence of prevalence values from the literature[14], an allowable error (d) of 5% and z statistic of 1.96 (confidence interval of 95%) - all inputted into the formula to calculate sample size in cross-sectional studies[15].

Structured interviewer administered questionnaires were used to obtain information from the students. The biodata of the respondents and basic information about the parents' tribes, religious beliefs and occupational status were recorded. Information

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was also obtained on self-rating of oral health, self-assessed satisfaction with oral health condition and tooth appearance, history of dental pain, perception of need for dental treatment, prior consultation with the dentists and oral hygiene measures.

The self-rating[7] of oral health was recorded using a Likert scale with responses scored from 1 "very poor", 2 "poor", 3 "neither good nor poor", 4 "good" to 5 "very good". The responses were subsequently recoded on the computer as "poor" (very bad, bad and neither good nor bad) or "good" (good and very good). Self-assessed satisfaction with appearance of the teeth and satisfaction with oral health condition were also graded using a Likert scale with responses from 1 "dissatisfied", 2 "dissatisfied", 3 "neither dissatisfied nor satisfied", 4 "satisfied" to 5 "very satisfied". The responses were recoded in each case for the two variables as "dissatisfied" (very dissatisfied, dissatisfied and neither dissatisfied nor satisfied) or "satisfied" (satisfied and very satisfied). The history of dental pain was asked with a single question: "have you experienced toothache in the last six months that was serious enough for you to mention to your parents?" The response was either "Yes" or "No".

An independent translator translated the questionnaire to the local language, with a back translation having confirmed retention of test questions in spite of linguistic differences by another independent translator. The questionnaire was pre-tested and transculturally adapted among 30 school going pupils in another town. Only pupils who understood the local language and who consented were included in the study. Those with special needs were excluded from the study. The questionnaire was self-administered under supervision of a trained dentist.

Data were analyzed using the Statistical Package for the Social Sciences version 23 (Armonk, NY: IBM Corp). Univariate analysis was presented using proportions, percentages and means (with standard deviations) as appropriate. Chi square statistics was used to test for associations between variables with non-clinical factors considered as independent variables and self-rating of oral health as the dependent variable with the reference category being poor rating. Row percentages were presented for clarity. Logistic regression was done by considering independent variables that were significant during bivariate analysis in order to identify predictors of self-rating of oral health among the respondents. Wald test was used to test for the statistical significance of the predictors. A p value < 0.05 was considered to be statistically significant for this study.

Results

Four hundred adolescents with a mean age of 12.4 (SD = 0.7) years were recruited into the study of which 205 (51.3%) were females. The predominant occupations of the fathers were: commercial motorcycling (81, 20.3%), trading (63, 15.8%) and farming (60, 15.0%) and those of the mothers were: trading (261, 65.3%) and teaching (43, 10.8%). They were mostly of the Yoruba tribe (379, 94.8%), the dominant tribal group in southwest Nigeria.

Most of the respondents (346, 86.5%) rated their oral health positively, 362 (90.5%) were satisfied with the appearance of their teeth and 345 (86.3%) were satisfied with their oral health condition. A total of 223 (54.8%) respondents have had significant toothache in the preceding six months. Only 81 (20.3%) had been to a dentist before. The majority (258, 64.5%) perceived a need for dental treatment and the main

treatment thought to be required were scaling and polishing (74, 18.5%) and relief of tooth/gum ache (51, 12.8%). More than half of the respondents (223, 55.8%) cleaned their teeth twice each day, the rest did so once a day or on most days of the week.

A higher proportion of the respondents who expressed dissatisfaction with the appearance of their teeth self-rated their oral health as poor compared to those who were satisfied with the appearance of their teeth and rated their oral health similarly (44.7% vs. 10.2%, p < 0.001). The proportion of those who rated their oral health poorly and were dissatisfied with their oral condition (45.5%) was higher than that of the respondents who rated their oral health poorly and were satisfied with their oral health condition (8.4%), p < 0.001. Similar relationships were observed between reporting toothache in the preceding six months, perception of need for dental treatment and frequency of tooth cleaning on one hand and self-rating of oral health on the other hand (Table 1).

Table 1. Relationship between non-clinical factors and self-rating of oral health status of the respondents

| Non-clinical factors | Self-rating of oral health | | | χ^2 | p value |
	Poor No (%)	Good No (%)	Total No (%)		
Appearance of teeth					
Dissatisfied	17 (44.7)	21 (55.3)	38 (100.0)	35.085	< 0.001*
Satisfied	37 (10.2)	325 (89.8)	362 (100.0)		
Oral condition					
Dissatisfied	25 (45.5)	30 (54.5)	55 (100.0)	55.760	< 0.001*
Satisfied	29 (8.4)	316 (91.6)	345 (100.0)		
Toothache in the past 6 months					
Yes	44 (19.7)	179 (80.3)	223 (100.0)	10.376	0.001*
No	10 (5.6)	167 (94.4)	177 (100.0)		
Perceived need for treatment					
Yes	43 (16.7)	215 (83.3)	258 (100.0)	6.241	0.012*
No	11 (7.7)	131 (92.3)	142 (100.0)		
Cleaning of teeth					
Once daily or less	37 (20.9)	140 (79.1)	177 (100.0)	14.904	< 0.001*
Twice daily	17 (7.6)	206 (92.4)	223 (100.0)		
Total	54 (13.5)	346 (86.5)	400 (100.0)		

* - Statistically significant (p < 0.05)

The respondents who were dissatisfied with their oral condition were nearly eight times more likely to self-rate their oral health status as poor (OR = 7.69, 95% CI: 3.16, 18.75, p < 0.001). Poor rating of oral health status was nearly three times higher in those who had reported toothache in the preceding six months than in those who had not (OR = 2.54, 95% CI: 1.10, 5.82, p = 0.028). Respondents who cleaned their teeth once daily or less frequently were three times more likely to rate their oral health negatively than those who cleaned their teeth at least twice daily (OR = 3.20, 95% CI: 1.74, 5.91, p < 0.001). Satisfaction with appearance of the teeth (p = 0.124) and perception of dental treatment need (p = 0.050) could not predict the self-rating of oral health status (Table 2).

Table 2. Logistic regression analysis of relationship between non-clinical factors and self-rating of oral health status of the respondents

Variable	Categories of variable	OR	95% CI	p value
Satisfaction with tooth appearance	Dissatisfied	2.26	0.80 − 6.41	0.124
	Satisfied			
Satisfaction with oral condition	Dissatisfied	7.69	3.16 − 18.75	<0.001*
	Satisfied			
Toothache in preceding 6 months	Yes	2.54	1.10 − 5.82	0.028*
	No			
Perceived treatment need	Yes	2.40	1.00 − 5.75	0.050
	No			
Tooth cleaning	Once daily or less	3.20	1.74 − 5.91	<0.001*
	Twice daily			

*Statistically significant; reference category on logistic regression = poor self-rating of oral health

Discussion

The present study conducted amongst adolescents in a rural town in a developing country showed a very favourable rating of oral health by individuals. There was significant relationship between non-clinical factors and self-rating of oral health condition. These findings have impact on the utility of self-rating as a subjective measure of oral health status in underserved communities where access to dentists and clinical tools to diagnose oral conditions may be inadequate. The self-rating of oral health is a single item summary tool that has been validated for evaluation of oral health[7]. It is easy to administer and does not have the limitation imposed by inadequate oral health professionals. It is a subjective assessment of oral health by individuals and is comparable to quality of life measures like OHIP-14, which has been evaluated and found appropriate in determining the unmet dental treatment needs of adolescents in similar settings[16].

This study found that the majority of the participants rated their oral health positively as very good and good, similar to previous studies[5,17-19]. Contrasting findings to this, was however noted by Jiang et al. [8], and Yamane-Taukechi et al.[20], where 39% and 36.8% of the study participants rated their oral health as good or very good respectively. The differences in self-rating of oral health as reported by the studies may be attributed to varying perception of oral health that may occur among individuals.

Bivariate analysis showed that positive rating of oral health was associated with self-perceived satisfaction with appearance of teeth and oral condition, this is in line with previous findings that subjective assessment of oral health correlate strongly with each other as reported by authors of previous studies[21-24]. However, on multivariate analysis, only the relationship of satisfaction with oral condition was statistically significant. This finding may due to the fact that satisfaction with teeth appearance may vary extensively among individuals more so that it ultimately does not result in dysfunction of the dentition. Moreover, perception of tooth appearance is highly subjective and influenced by what an individual considers as ideal[25]. In addition, the strong association of satisfaction rating of oral health condition and SROH may be contributory to their relevance as validation tools for other instrument of subjective assessment of oral health[26,27].

Many of the respondents perceived a need for dental treatment and scaling and polishing (oral prophylaxis) was the main treatment mentioned. This is a probable reflection of self-awareness of the significance of poor oral hygiene among this study group, which is commendable. Perceived need for treatment by the adolescents was significantly associated with rating of their oral health as poor in this study on bivariate analysis, similar to reports by other authors[19,28,29]. The presence of oral disease and conditions, which has been associated with poor rating of oral health, hence, perceiving a need for treatment, may be an explanation for this. Perceived need for treatment was however, not a significant factor on multivariate analysis, thus not a determinant of SROH in this study.

Participants with history of toothache rated their oral health poorly more often than those without toothache in the last six months. This finding has been corroborated by others[29] who reported the impact pain has on subjective assessment of oral health. Pain is a significant factor that impacts negatively on the quality of life of individuals[30]. In addition, adolescents' perception of oral health has been defined as presence or absence of disease or pain[31].

More than half of the students cleaned their teeth twice or more often daily, a reflection of good oral health practices among the study participants, which may be partly attributable to the school outreach programs previously conducted in the community. Multivariate analysis, furthermore, confirmed that twice or more daily tooth cleaning was significantly associated with SROH as good or very good in this study. Significant relationships between good oral health behaviour and self-perceived oral health have been documented in previous studies[8,9]. In addition, tooth cleaning described as one of the action-based definition of oral health concept in a qualitative study among adolescents in a rural county in Sweden[31] is a strong supportive evidence for this finding. The importance of good oral hygiene behaviour in achieving good oral health is therefore to be promoted among the studied group in view of it being a determinant of positive rating of oral health among adolescents in a rural setting. A major limitation of this study was the inability to establish a cause and effect relationship between the self-rating of oral health and oral health status of the adolescents, which is inherent in the study design.

In conclusion, satisfaction with oral health condition, twice daily tooth cleaning and pain are factors that predict self-rating of oral health in young adolescents in rural communities.

Acknowledgement

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