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Roles of teachers in promoting oral health in schools: a cross sectional survey in Ibadan, Nigeria

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Abstract

Background: The paucity of formal oral health promoting activities in schools in sub-Saharan Africa has not been properly addressed partly because of failure to integrate teachers with their roles. The study aimed to determine the roles of elementary school teachers in promoting oral health in schools in Ibadan, Nigeria.

Methods: A questionnaire-based study was conducted among a representative sample of 338 teachers randomly selected from elementary schools in Ibadan.

Results: The majority, 308 (91.1%), believed that teachers should play important roles in promoting oral health in schools. Tooth cleaning by 272 (80.5%) and inspection of their pupils' mouths by 206 (60.9%) teachers were the only oral health promotion activities the teachers were engaged in. Many, 258 (76.3%), were satisfied with their roles in promoting oral health in their schools while 29.0% were satisfied with the roles of dentists. Main reason mentioned by teachers for inadequate oral health promotion in schools was "dentists not doing enough" by 200 (59.2%) while the most commonly suggested solution to improve the situation was frequent school visitation by dentists, 261 (77.2%). Most, 297 (87.9%) were willing to be involved if oral health promoting activities are formally instituted.

Conclusion: Many of the teachers believed they play important roles in promoting oral health in schools and are satisfied with their present activities in achieving this, despite very few oral health promotional activities existing in schools. Nonexistence of formal school oral health promotion activities were believed to be caused, majorly, by dentists not doing enough in schools.

Keywords: *Dental first aid, health promotion, oral health, pupils, school, teachers*

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Résumé

Contexte: La rareté des activités formelles de promotion de la santé orale dans les écoles en Afrique sub-saharienne n'a pas été convenablementadressée en partie à cause de l'échec à intégrer les enseignants avec leurs rôles. L'étude visait à déterminer les rôles des enseignants des écoles élémentaires dans la promotion de la santé bucco-dentaire dans les écoles à Ibadan, Nigeria.

Méthodes: Une étude par questionnaire a été conduiteparmi un échantillon représentatif de 338 enseignants choisis au hasard dans les écoles primaires à Ibadan.

Résultats: La majorité, 308 (91,1%), pensait que les enseignants doivent jouer un rôle important dans la promotion de la santé bucco-dentaire dans les écoles. Le nettoyage dentairepar 272 (80,5%) et l'inspection de la bouche de leurs élèves par 206 (60,9%) des enseignants étaient les seules activités de promotion de la santé bucco-dentaire dont les enseignants y étaient engagés. Beaucoup, 258 (76,3%), étaient satisfaits de leur rôle dans la promotion de santé bucco-dentaire dans leurs écoles tandis que 29,0% étaient satisfaits avec les rôles des dentistes. La principale raison mentionnée par les enseignants pour l'insuffisance de promotion de la santé bucco-dentaire dans les écoles était "les dentistes ne font pas assez"par 200 (59,2%), tandis que la solution la plus couramment proposée, 261 (77,2%), pour améliorer la situation était lafréquentevisite de l'école par les dentistes. La plupart, 297 (87,9%) étaient prêts à participer si les activités de promotion de la santé bucco-dentaire sont formellement engagées.

Conclusion: La plupart des enseignants croyaient qu'ils jouent un rôle important dans la promotion de la santé bucco-dentaire dans les écoles et sont satisfaits de leurs activités actuelles dans la réalisation de ceci, en dépit de très peu activités de promotion de la santé bucco-dentaire existantdans les écoles. L'inexistence des activitésformelles de promotion de la santé bucco-dentaire dans les écoles ont été censé être causé, en majeur, par les dentistes ne faisant pas assez dans les écoles.

Mots clés: *Premiers soins dentaires, promotion de la santé, santé bucco-dentaire, élèves, école, enseignants*

Introduction

Promoting oral health in schools is one of the basic ways of preventing oral diseases and maintaining good oral health among children worldwide [1]. This

however, has been suboptimal in many developing nations, including in sub-Saharan Africa, where very little or nothing is being done in the context of promoting oral health in schools. Possible reasons for this include poor oral health knowledge, attitude and practices demonstrated among school teachers [2-6]. This led to the organization of training workshops among other interventions designed for teachers [7,8] In addition, integration of basic principles of oral health and oral health activities into the academic curriculum were highly recommended as a result of limited engagement in school oral health activities by educational professionals [9].

After a decade of these findings and subsequent intervention: organizing workshops for teachers and conduct of oral health education in schools, recent evaluation of oral health, knowledge and practices among elementary school teachers still remains suboptimal [5]. This thus necessitates further investigation and exploration of other factors such as perceptions of teachers about their roles in promoting oral health in schools. This becomes imperative as little or no priority is given to oral health lessons in many schools [10]. Furthermore, the almost nonexistence of formal oral health promoting activities in schools may be a pointer to the fact that the right supportive attitude has not yet been established among teachers, which may make all the interventions meaningless if not adequately addressed. This study therefore assessed teachers' beliefs about their roles in promoting oral health in schools, evaluated school oral health related activities that exist and how satisfied teachers were with their roles in promoting oral health in schools. Findings from this study will supplement other efforts that will assist in appropriately directing the focus of public health professionals and policy makers in developing nations and similar settings.

Materials and methods

This was a questionnaire based study; cross sectional in design conducted among elementary school teachers who were selected from schools within the metropolis of Ibadan, the capital city of Oyo State in South West Nigeria over a period of three months. A minimum sample size of 245 teachers was estimated to be adequate at a power of 90% and degree of error of 3% using sample size formula by Kish [11] at a prevalence rate of 93.9% obtained from a previous study [2]. A total of 21 schools were selected using simple random sampling technique by balloting sealed envelopes containing the names of each of the schools from a total number of 148 elementary schools in Ibadan North and Ibadan North West Local Government Areas. In each school, one half of the total number of teachers from the information obtained from the schools boards were approached consecutively until the sample was complete in each school. A total of 21 schools were estimated to be adequate given the average number of teachers in each school being 24 i.e. 12 teachers to be recruited. Each school eventually had 12 to 42 teachers i.e. 6 to 21 were recruited from each school. Ethical approval was obtained from the joint University of Ibadan and the University College Hospital Ethics Review Board. Approval was also obtained from the school boards of each Local Government as well as each head of school prior to conduct of the study. Only teachers who were available at the time of the study and who consented to participate in the study were recruited. A pretest was also conducted prior to the study in schools that were not selected for the main study.

Survey instrument

A 21 item self-administered questionnaire consisting of open and close ended questions was used to obtain information on the sociodemographic characteristics of the study participants and their roles in promoting oral health in schools. The age, gender, marital status and years of teaching experience of the teachers were obtained. Other questions that were asked included their perceived role in promotion of oral health in schools, the activities they engaged in to promote oral health in the school, what they would do if a pupil bled from the mouth as a result of trauma to the mouth, if they had ever heard of dental first aid kit and what the contents should be, if they had one in their school and if they were satisfied with their role in promoting oral health in the school. The teachers were also asked about perceived reasons for the suboptimal oral health promotion programme in schools and suggested ways of improving the situation. The responses were coded after data collection and subjected to statistical analysis.

Statistical analysis

Data obtained was analyzed using SPSS version 22. Frequencies and percentages were generated for categorical variables while means and standard deviations were used to summarize numerical variables. Chi-square statistics was used to test for associations between categorical variables and the level of significance was set at < 5%.

Results

The response rate for the study was 100.0%. Of the 338 that participated in the study, 27 (8.0%) were males and the majority, 322 (95.3%), was married. Their ages ranged from 30 to 50 years with a mean

age of 48.8 ± 5.8 years. The majority of respondents, 308 (91.1%), believed that teachers should be involved in oral health promotion and play key roles, 4 (1.2%) mentioned that teachers should not be involved and 26 (7.7%) were not sure if they should or should not be involved. The reason stated by the four teachers for non-involvement in school oral health promotion was that it should be the sole duty of the dentists since teachers have suboptimal knowledge, whereas 26 (7.7%) had no reason for not being involved. Inadequacies in oral health promoting activities in schools was attributed to

Table 1: School oral health activities and first aid management of trauma cases sustained by pupils in school by teachers

Variable	Frequency	%
School oral health promoting activities engaged in by the teachers		
Class lessons on tooth cleaning	272	80.5
Inspection of the oral cavities of the pupils	206	60.9
Frequency of inspection of pupils' mouth by the teachers (n = 206)		
Seldom	9	4.4
Occasionally	82	39.8
Frequently	115	55.8
First aid management of a pupil with bleeding from the mouth		
Rinse mouth with water only	62	18.3
Rinse mouth with water and salt	48	14.2
Take pupil to the hospital	36	10.7
Clean the mouth with TCP	33	9.8
Rinse mouth with hydrogen peroxide	14	4.1
Send the pupil home	1	0.3
No idea	143	42.3
First aid management of an avulsed tooth		
Throw on the roof	77	22.8
Rinse mouth with water and salt only	66	19.5
Take the child to the dentist	30	8.9
Clean mouth with cotton wool	4	1.2
Send pupil home	2	0.6
No idea	159	47.0

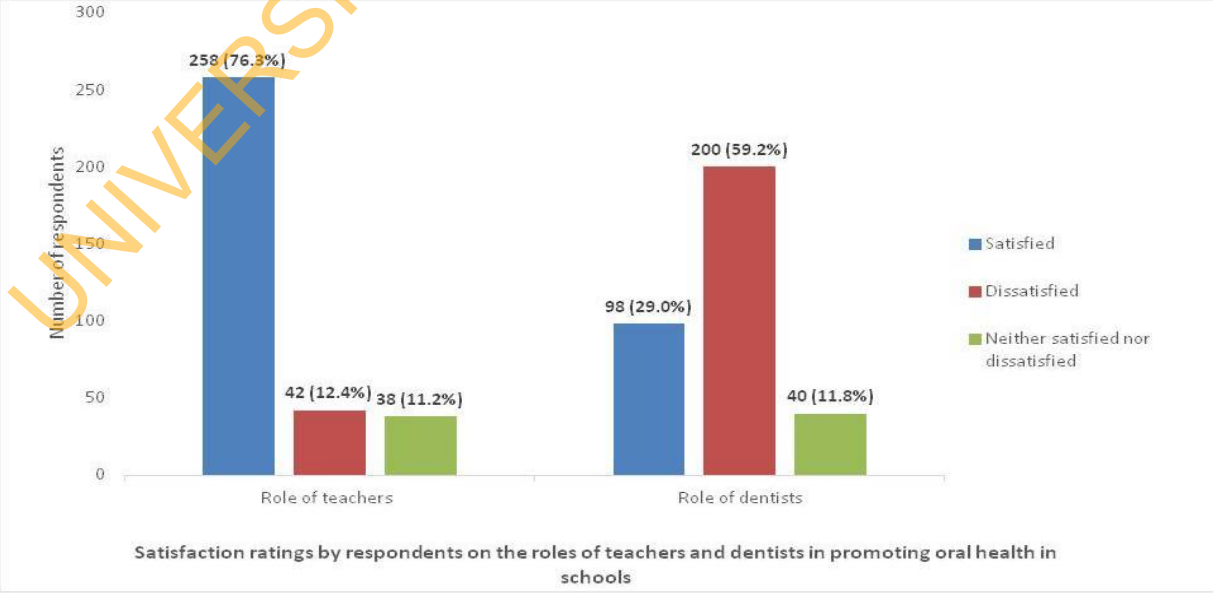

Fig. 1: Satisfaction ratings by respondents on the roles of teachers and dentists in promoting oral health in schools

"dentists not doing enough" by 200 (59.2%) respondents, while 138 (40.8%) gave no reason.

A major way of promoting oral health in schools mentioned by 272 (80.5%) teachers was by engaging in oral health activities that will involve the pupils only, 62 (18.3%) had no suggestion while 4 (1.2%) did not respond to the question. The school oral health activities engaged in by the teachers were: class lessons on tooth cleaning by 272 (80.5%) and inspection of the oral cavities of the pupils by 206 (60.9%), of which 115 (55.8%) teachers inspected their pupils' mouths frequently.

None of the schools had a dental first aid kit and only 53 (15.7%) teachers had heard of a dental first aid kit before. If a pupil sustained trauma and bled from the mouth, 143 (42.3%) had no idea of what to do (Table 1). If a tooth was avulsed from a pupil's mouth in school, 159 (47.0%) would not know what to do while 77 (22.8%) would "throw it onto the roof of a building" (Table 1).

both teachers and pupils as ways of instituting formal oral health promoting activities in schools (Figure 2).

The majority, 297 (87.9%), were willing to be involved if oral health promoting activities are formally instituted in schools, while 10 (3.0%) teachers were not and 31 (9.2%) were undecided. Presumed ways of improving oral health of school pupils according to the respondents included frequent education by dentists, 85 (25.2%), government support, 81 (24.0%), free dental checkup and treatment, 12 (3.6%) and mass media, 4 (1.2%) while 156 (45.2%) had no suggestion.

No statistically significant association was found between sociodemographic characteristics and teachers' beliefs regarding their roles in promoting oral health in schools, satisfaction with respondents' role or that of dentists in promoting oral health in schools or their willingness to participate in instituted oral health promoting programmes in schools ($p > 0.05$).

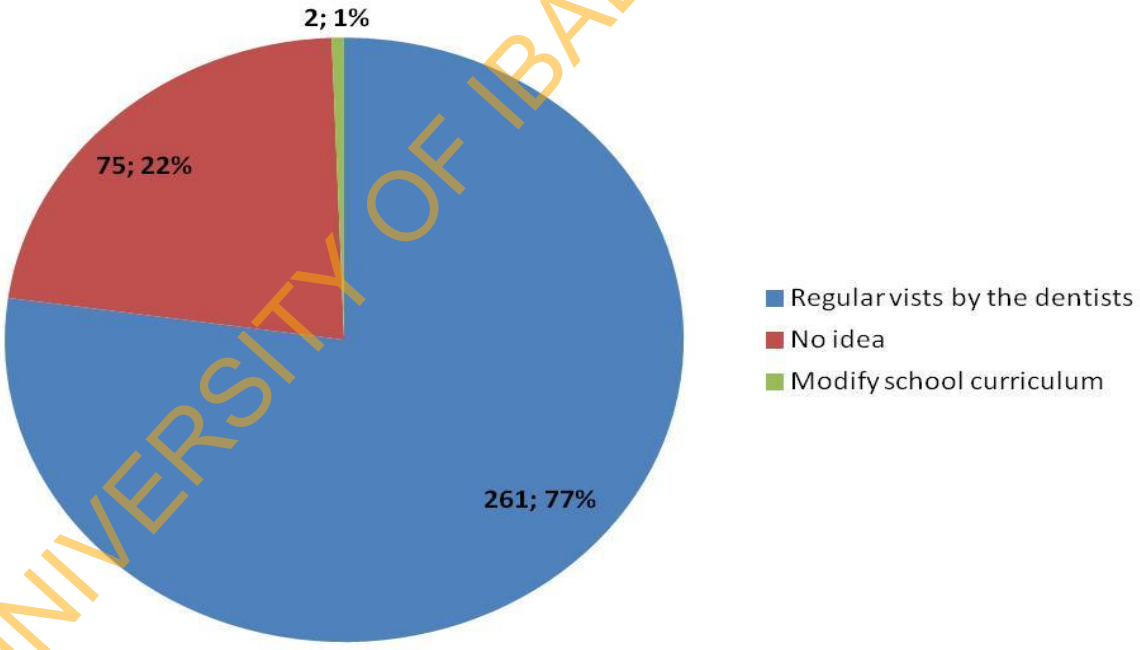

Fig. 2: Suggested ways by the teachers of instituting formal oral health activities in schools

Many, 258 (76.3%), teachers were satisfied with their roles in promoting oral health in schools while 98 (29.0%) were satisfied with the present role of dentists in promoting oral health in schools (Figure 1). Many of the respondents, 261 (77.2%), suggested that dentists should visit schools regularly to educate

A higher proportion of respondents that were satisfied with the roles of dentists in promoting oral health in schools mentioned that teachers played key roles in promoting oral health in schools ($p = 0.048$), were satisfied with their roles in schools ($p < 0.001$) and were willing to be involved in oral health

promoting activities if formally instituted in schools ($p < 0.001$) than those who said that teachers do not play key roles, were dissatisfied with the roles of teachers or were unwilling to be involved in oral health promotion respectively (Table 2). A higher proportion of teachers willing to be involved in formal school oral health promotion than those not willing to do so inspected the mouth of their pupils (187 i.e. 63.0% vs. 19 i.e. 46.3%, $\chi^2 = 4.182$, $p = 0.041$).

that educational professionals engaged in oral health activities involving the families of the school children [9]. Involvement of the families of the pupils has been found to be more effective in behavior change when compared with pupils-only directed health activities [14]. Class lessons on tooth cleaning and inspection of the mouth of school children were the major oral health activities the teachers engaged in, similar to reports by other authors [2,9]. Nwangosi [15] also reported engagement of primary school

Table 2: Satisfaction with roles and involvement of teachers and dentists in promoting oral health in schools

Variable	Roles of dentists in oral health promotion in schools				
	Satisfied N (%)	Dissatisfied N (%)	Total N (%)	χ^2	p value
Teachers play key roles in promoting oral health in schools					
Yes	94 (30.5)	214 (69.5)	308 (100.0)	3.992	0.048*
No	4 (13.3)	26 (86.7)	30 (100.0)		
Total	98 (29.0)	240 (71.0)	338 (100.0)		
Role of teachers in promoting oral health in schools					
Satisfied	91 (35.3)	167 (64.7)	258 (100.0)	20.863	<0.001*
Dissatisfied	7 (8.8)	73 (91.3)	80 (100.0)		
Total	98 (29.0)	240 (71.0)	338 (100.0)		
Willing to be involved in formal oral health promotion activities in schools					
Yes	96 (32.3)	201 (67.7)	297 (100.0)	13.181	<0.001*
No	2 (4.9)	39 (95.1)	41 (100.0)		
Total	98 (29.0)	240 (71.0)	338 (100.0)		
Inspection of pupils' mouth					
Yes	53 (25.7)	153 (74.3)	206 (100.0)	2.773	0.098
No	45 (34.1)	87 (65.9)	132 (100.0)		
Total	98 (29.0)	240 (71.0)	338 (100.0)		

Discussion

The aim of the present study was to assess the perceived roles and activities of teachers regarding promotion of oral health in schools, which became imperative due to nonexistence of formal school oral health promoting activities in schools in this part of the world, more so that oral health is important and integral to general health [12]. This study revealed that many of the teachers believed that they played key roles in the promotion of oral health in schools in concordance with findings from Brazil [9] but contrary to findings from the United Kingdom where promotion of oral health among children was considered to, solely, be the responsibility of parents [13].

School oral health activities directed solely at pupils formed the only component of promoting oral health by teachers in this study. This finding differs from reports by other authors who observed

teachers in oral health education in Tanzania. This is however considered limited as other activities such as diet, use of music, games and reading about oral health have been used for oral health promotion in schools in other countries [9,16].

Only a few of the teachers had heard of dental first aid kits and none of the schools had a dental first aid kit. A large number of the teachers did not have any clue on the management of a child who bled from the mouth while in school. This may suggest a knowledge gap on the appropriate first aid treatment to pupils involved in trauma to the dental tissues. The teachers had poor knowledge of management of dental trauma that occurred in schools as had been documented previously [7,17]. The poor knowledge was further corroborated by a high proportion of the teachers mentioning that they would throw the avulsed tooth on the roof of a building. This act is usually common with exfoliation

of deciduous teeth and the cultural myths surrounding the belief in this environment that throwing it with stones onto the roof of a building would ensure stress free eruption of the succedenous tooth. This suggests that an intervention programme is required among the teachers in addition to provision of first aid kits to minimize morbidity associated with dental trauma in schools.

Many of the teachers were satisfied with their roles in promoting oral health in schools, however more than half were dissatisfied with that of dentists. This was not surprising as the main reason given for suboptimal school oral health promoting activities was that "dentists were not doing enough". Of major concern was the fact that teachers were satisfied with their roles despite the nonexistence of formal school oral health promoting activities whereas nearly 60% noted that dentists were not doing enough in this respect. This is a major factor that has not been addressed and has probably contributed to the failure of previous interventions in similar settings with relative lack of dental public health personnel. The self-perceived assessment of the roles of teachers versus the professional assessed roles of teachers, which was noted to be incongruous in the present study, should be adequately addressed before further planning is carried out. This study therefore, has identified a major concept in dental public health practice in developing countries that should be addressed for proper institution of formal school oral health promotion. Oral health promotion in schools in developing countries is unlikely to be successful if the only actors are the public health dentists since they are very few in nearly all of such countries and the school based oral health programme is one out of the many activities conducted by this group of dentists. In addition, deploying other members of the dental team is also not feasible in view of this [18], considering the limited resources in such countries, thus a large input is required from the school staff.

A major consideration for this inherent problem is by initiating interventions to encourage teachers not to focus on dentists as the only ones who could promote oral health activities in schools while improving their roles and responsibilities in oral health promotion. This is likely to engender positive change since many of the teachers in this study were willing to be involved in promotion of oral health activities in schools. In addition, a higher proportion of the teachers who were satisfied with the roles of dentists in promoting oral health in schools were also satisfied with their activities in doing so themselves as well as willing to be involved in school oral health activities totally reflecting positive attitude towards oral health. This is similar to a report from China that showed that teachers involved in oral health programmes are either very satisfied or satisfied with their involvement in oral health promotion activities [19]. This is further corroborated by the fact that respondents from this study willing to participate in oral health activities in schools if formally instituted were more involved with the inspection of their pupils' mouth, a positive behaviour that is commendable. A limitation of this study was the non-inclusion of private primary schools due to difficulty in accessing a true sampling frame. It may thus be difficult to generalize the findings to private schools.

In conclusion the oral health activities engaged in by teachers is limited although they were satisfied with their roles but dissatisfied with that of the dentists. The inadequacies that exist in these activities have been attributed to the irregular school visits by dentists although many teachers were willing to participate if formal school oral health programmes are instituted in their schools. Our recommendations include incorporation of the teachers as important stakeholders in instituting school oral health education programmes, training them on simple oral hygiene measures and first aid management of dental emergencies while ensuring that dental kits are available in schools and enlightenment on their roles as more important than those of supervising dental health personnel. Further research is also required to address the incongruity observed between the professional assessed and self-perceived roles of teachers in school oral health promotion.

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