

Use of teachers as agents of oral health education: Intervention study among public secondary school pupils in Lagos

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ABSTRACT

Background: Common oral diseases are preventable and if detected early are reversible and schools provide a setting in which the oral health behavior of pupils can be influenced. We aimed to assess the effectiveness of using teachers in place of oral health professionals to deliver oral health education (OHE) in public secondary schools in Lagos State. **Methods:** This quasi-experimental study was conducted in four phases from September 2016-April 2017. A multistage sampling method was adopted to enlist the research participants from four enlisted schools, which were randomly assigned into two groups. Trained dentists delivered OHE in the first group of schools while trained teachers did in the second group and the impact of the intervention was assessed over six months. *P* values for significant differences were set at 0.05. **Results:** At the 3 months evaluation, the mean oral health knowledge (OHK) scores were higher among pupils in the Teachers Intervention Schools (TIS) (71.3 ± 19.3) than that in the Dentist Intervention Schools (DIS) (61.3 ± 17.7) ($P = 0.023$). Subsequent evaluation sessions from baseline revealed a gradual increase in the proportion of pupils with positive oral health attitude scores; with a higher proportion of pupils in the DIS (34.5%) compared to the TIS (34.0%) at 6 months assessment time. At 6 months evaluation, the proportion of pupils with poor oral health practices decreased in both groups of schools ($P = 0.104$). **Conclusion:** The proportion of pupils with good OHK was higher in the TIS at post-intervention periods; this difference was statistically significant at 3 months. This result suggests that teachers are as effective as dentists in delivering OHE.

Keywords: Dentists, teachers, pupils, oral health education, schools.

Introduction

A range of dental diseases occur in Nigerian children, and these include periodontal diseases, dental caries,^[1] traumatic dental injuries, and human immunodeficiency virus-related

dental problems.^[2] Dental caries and gingivitis are however the commonest oral diseases affecting over 80% of school children in some countries.^[3,4] The role of plaque, microorganisms, immunological and genetic factors in the etiology of periodontal diseases and dental caries have been documented.^[5] It is believed that good oral hygiene practices play a significant role in the prevention and control of these major oral diseases.^[6,7]

Untreated dental caries remains the principal oral health burden for Nigerian children due to barriers in accessing dental care

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despite identified oral health needs.^[8-10] Low utilization of medical services is linked with cultural norms that associate hospital visits with ill health.^[11] This traditional view may prevent people from using hospital-based dental clinics, preferring to visit chemists for dental care services.^[12] Furthermore, orphans and children from single-parent homes are less likely to access dental care due to their inability to afford the treatment.^[13] Folayan *et al.*^[14] similarly observed that low utilization of dental services was more related to a low perceived need rather than the absence of dental pain or discomfort. Patients with no previous dental visits are more likely to see no need for a dental care and to perceive their oral health as good.^[15]

The oral health challenges affecting the Nigerian nation as highlighted above is reflected in Lagos as well because of multiethnic nature.^[16] Previous studies have documented that children in Lagos State have a higher prevalence of dental caries than other regions in Southwestern Nigeria notwithstanding the similarities in their culture and diet.^[17,18] The state has a caries incidence of 9.9 per 100 children^[19] with relatively higher severity of early childhood caries.^[20] Untreated dental caries in children is often associated with an increased risk of developing new carious lesions.^[19] Unfortunately, however, very few children with caries are treated, with the proportion of untreated caries ranging between 77.2% and 98.6% in various populations in Nigeria.^[11]

Traditionally, oral health education (OHE) has largely been given in schools by the dentist or the dental hygienist.^[21] The cost-effectiveness, efficiency, widespread effect, and sustainability of this method in Lagos State^[22] is limited. This is due to the shortage of trained dental personnel and uneven distribution of dental facilities in the state to adequately meet the needs of her teeming population. Thus, there is a need to identify new approaches for school oral health promotion. A major thrust of the preventive program is the need to focus on increasing awareness and promote the adoption of healthy oral health behaviors. A good and efficiently run school oral health program can be a cost-effective way of delivering OHE.^[23] An oral health-promoting school will therefore not only improve the oral health and wellbeing of the pupils but that of the teachers, families, and the community at large.^[24]

Teachers play key roles in effective oral health-promoting schools. They influence many of their pupils because they spend most of their time together in school and can, therefore, contribute significantly to the planning and implementation of preventive oral health programs. Teachers can provide the necessary skills about oral health care to children and also help in the early detection of oral diseases.^[23] Studies have shown that teachers can effectively deliver OHE in schools.^[24,25] This study was thus implemented to assess the effectiveness of using teachers compared to oral health professionals in providing OHE in public secondary schools in Lagos state.

Subjects, Materials, and Methods

Study setting

The study was conducted in Lagos State. Lagos is a metropolitan state of a heterogeneous population of Nigerians. It is about 3,577 square kilometers and is bounded by Ogun State to the north and east, the Bight of Benin to the south and the Republic of Benin to the west. It has been and remains a commercialized and industrial state.^[26] There are 20 local government areas and 37 local council development areas.^[26] As of 2009, there were 626 public secondary schools with 594,048 pupils and 18,152 teachers.^[26]

Study design/Study period

It was a quasi-experimental study used to estimate the causal impact of OHE on a population of secondary school pupils. Schools served as treatment and control groups without randomization. The study was divided into four phases and done over a period of eight months. (September 2016–April 2017).

Sample size calculation

The sample size calculation for pupils participating in this study was determined by using the formula for comparing the difference in proportions.^[27] A statistical power of 80% and β error of 20%, $z_{\beta} = 0.84$; utilizing a change in proportion from a reference study from India,^[28] a sample size of 155 was calculated. Assuming an attrition rate of 20%, the calculated minimum sample size was 193. Two hundred pupils aged 9-14 years were thus selected in each group.

Sampling technique

Six school teachers and two dentists on specialist training rotating through the department of Preventive Dentistry, LASUTH were recruited for the study. The pupils were selected through a multistage sampling technique. Two local government areas were randomly selected from the list of the twenty local government areas by the balloting method. Two secondary schools were randomly selected in each local government area, utilizing a list of government registered public secondary schools.^[26,29] One school in each local government area was randomly assigned to teacher-led and dentist-led groups, respectively. A systematic random sampling method was used to select pupils for the study with the nominal roll of pupils in the selected schools serving as the sampling frame.

Inclusion criteria

Pupils between ages 9–14 years, with no history of dental diseases requiring emergency dental treatment, who gave their assent (for pupils less than or equal to 12 years), given their consent (for pupils 13 years and older), and had parental consent (for all pupils)^[30] were selected for this study.

Exclusion criteria

This encompassed pupils who were less than 9 years or more than 14 years of age; pupils with obvious oral diseases requiring

emergency dental treatment were excluded and referred; physically, mentally, or medically challenged pupils, as well as those who recently received any form of OHE, were excluded from the study.

Ethical considerations

Approval for the study was obtained from the Health Research and Ethics Committee of the Lagos State University Teaching Hospital.

Study procedure

Pilot study

The pretest of the module designed based on the health belief model^[31,32] was done among 20 pupils as that was not part of the main study. The pretest checked for comprehension ensured practicability, validity, and interpretation of the questionnaire by the pupils and teachers.

Study questionnaire

The modified pretested questionnaire adapted from Petersen *et al.*^[33] and Stenberg *et al.*^[34] was used for data collection. Its first section consists of the socio-demographic information of the dentists, teachers, and pupils. The second part of the questionnaire consisted of 8 questions that assessed the respondents' oral health knowledge. The third part had 15 questions that assessed the respondents' attitude and practice of oral health.

Data collection

All assenting/consenting pupils received a baseline Knowledge, attitude and Practice (KAP) assessment. A week after the baseline assessment of the oral health-related KAP of the recruited pupils, calibration of the dentists and teachers were done by the principal investigator. The learning objectives were outlined in an adapted training manual.^[35,36] Kappa statistics was used to assess the reliability of understanding of the OHE lectures with the acceptable reliability score set at 0.7. Two dentists trained pupils in case of schools while six teachers trained pupils in the control schools. Training was conducted for 30 minutes, twice weekly for four weeks.

Post intervention assessment

Post-intervention evaluation of the oral health KAP was conducted for the pupils in the two groups immediately after the four weeks training session, then at 1 month, 3 months, and 6 months post-intervention.

Assessment of knowledge, attitude, and practice

Correct answers were scored one, while the wrong answers were scored zero. The total score was determined by adding the individual scores and converting them into percentages. The final scores were dichotomized based on previously established criteria into poor or good knowledge/practice or negative or positive attitude.^[37]

Data analysis

Data entry was carried out using Microsoft excel (2007 version) and analysis was done using the statistical software package for

social sciences (SPSS IBM) version 20.0. Means and standard deviation of numerical variables were determined. Proportion and percentages of categorical variables were also calculated. Association between categorical variables was done using the chi square test. Paired *t*-test was used to compare means before and after the intervention while independent *t*-test was used to compare means in DIS and TIS. A *P* value of less than 0.05 was accepted to be statistically significant.

Results

Socio-demographic characteristics of study participants

Two female dentists aged 30 and 35 years, respectively (mean 32.5 ± 3.5 years) participated in the study. Both dentists were undergoing postgraduate training and had an average of five years of working experience. Six (4 males and 2 females) teachers participated in the study. Their ages ranged from 33–57 years (mean 44.5 ± 8.3 years); teaching experience ranged from 3–29 years (mean 16.7 ± 7.2 years), and 3 (50.0%) were university graduates. The socio-demographic characteristic of the pupils is shown in Table 1, their ages ranged from 9–14 years (mean 11.8 ± 1.3 years). There was no statistical significance in the age group ($P = 0.902$), gender ($P = 0.419$), and ethnic group ($P = 0.958$) of the pupils in the DIS and TIS groups.

Comparison of oral health knowledge grading of pupils in DIS and TIS

At baseline, 16.5% of the pupils in the DIS had good mean oral health knowledge (OHK) (56.0 ± 16.1) scores compared to 12.0% (52.8 ± 15.7) in TIS [Table 2]. Immediately after training and evaluation, there was a significant improvement in the proportion of pupils with good mean OHK scores in the two groups of schools [DIS: 47.0% (69.2 ± 18.4); TIS: 50.5% (69.1 ± 19.7)]. At 3 months post-intervention, there was a drop in the TIS (31.5%; 61.3 ± 17.7) in contrast to the significant increase in the TIS (53.0%; 71.3 ± 19.3) ($P < 0.001$). At 6 months, there was a drop in the proportion of pupils with good OHK scores in both schools, [DIS: 28.0% (59.5 ± 16.80); TIS: 31.0% (62.0 ± 17.1)]. The pupils in the TIS however still had better OHK scores at 6 months than pupils in the DIS. ($P > 0.05$) [Table 3].

Comparison of oral health attitude scores of pupils in DIS and TIS

At baseline, the proportion of pupils with positive mean oral health attitude score (OHAS) was 30.5% (32.2 ± 9.5) in the DIS and 29.0% (27.5 ± 7.3) in the TIS; this improved marginally to 32.5% (36.6 ± 8.4) in DIS and 32.0% (32.8 ± 6.0) in TIS immediately after training. It improved further to 33.5% (35.4 ± 9.8) in DIS and 32.5% (32.6 ± 5.8) in TIS at 1-month post-intervention [Table 4]. At 3 months evaluation, there was an improvement of 34.0% (35.3 ± 9.2) in DIS and 33.0% (33.3 ± 5.4) in TIS ($P = 0.022$). There was a further significant increase in the proportion of the pupils having a positive attitude towards oral

Table 1: Socio-demographic characteristics of pupils

	DIS Frequency n (%)	TIS Frequency n (%)	Total Frequency n (%)	χ^2	df	P
Age-Group (Years)						
9-10	38 (19.0)	35 (17.5)	73 (18.2)			
11-12	106 (53.0)	110 (55.0)	216 (54.0)	1.032	4	0.902
13-14	56 (28.0)	55 (27.5)	111 (27.8)			
Gender						
Male	82 (41.0)	90 (45.0)	172 (43.0)	2.211	2	0.419
Female	118 (59.0)	110 (55.0)	228 (57.0)			
Ethnic Group						
Yoruba	138 (69.0)	138 (69.0)	276 (69.0)			
Igbo	56 (28.0)	55 (27.5)	111 (27.8)	0.876	4	0.958
Others	6 (3.0)	7 (3.5)	13 (3.2)			
Location						
Rural	100 (50.0)	100 (50.0)	200 (50.0)			
Urban	100 (50.0)	100 (50.0)	200 (50.0)	0.000	2	1.000
Total (n)	200 (100.0)	200 (100.0)	400 (100.0)			

n=frequency, DIS: Dentist Intervention Schools, TIS: Teacher Intervention Schools

Table 2: Comparison of oral health knowledge grading of pupils in DIS and TIS

Knowledge score	DIS n (%)	TIS n (%)	Total n (%)	Statistics
Baseline				
Poor	51 (25.5)	59 (29.5)	110 (27.5)	$\chi^2=2.007$
Fair	116 (58.0)	117 (58.5)	233 (58.3)	df=2
Good	33 (16.5)	24 (12.0)	57 (14.2)	P=0.367
Immediate post-intervention				
Poor	29 (14.5)	19 (9.5)	48 (12.0)	$\chi^2=2.329$
Fair	77 (38.5)	80 (40.0)	157 (39.2)	df=2
Good	94 (47.0)	101 (50.5)	195 (48.8)	P=0.302
One-month post-intervention				
Poor	33 (16.5)	25 (12.5)	58 (14.5)	$\chi^2=1.548$
Fair	79 (39.5)	78 (39.0)	157 (39.2)	df=2
Good	88 (44.0)	97 (48.5)	185 (46.3)	P=0.461
Three-months post-intervention				
Poor	38 (19.0)	21 (10.5)	59 (14.8)	$\chi^2=19.769$
Fair	99 (49.5)	73 (36.5)	172 (43.0)	df=2
Good	63 (31.5)	106 (53.0)	169 (42.2)	P<0.001*
Six-months post-intervention				
Poor	43 (21.5)	27 (13.5)	70 (17.5)	$\chi^2=4.434$
Fair	101 (50.5)	111 (55.5)	212 (53.0)	df=2
Good	56 (28.0)	62 (31.0)	118 (29.5)	P=0.104
Total (n)	200 (100.0)	200 (100.0)	400 (100.0)	

*Statistically significant at P<0.05

health at 6 months post-intervention DIS (34.5%; 37.7 ± 8.5) and TIS (34.0%; 34.8 ± 7.8) ($P = 0.013$) [Table 5].

Comparison of oral health practice categories of pupils in dentist-intervention schools and teacher-intervention schools

The oral health practice scores of pupils in DIS and TIS are shown in Tables 6 and 7. At baseline, oral health practice

scores of 85.5% (34.3 ± 4) of pupils in DIS was poor, which was higher when compared to the score of 83.5% (33.3 ± 9) recorded in pupils in the TIS. Significantly more pupils in TIS (77.5%; 40.1 ± 7.6), however, had poor oral health practice scores than pupils in the DIS (70.5%; 44.3 ± 7.9) at 1-month post-intervention. ($P = 0.044$). At 3 months evaluation, the number of pupils with poor oral health practice dropped to 65.5% (41.2 ± 7.9) in the DIS but there was a slight increase in the number of pupils with poor oral health practice in the TIS to 78.0% (40.0 ± 6.4) ($P = 0.033$). At 6 months evaluation, there was a further increase in the proportion of pupils with poor oral health practice in the group of schools: 73.0% in DIS and 79.0% (41.4 ± 7.8) at the TIS (39.5 ± 5.9) ($P = 0.048$).

Discussion

Several studies on OHE have been published^[38-40] but it seems the effectiveness of using teachers to deliver OHE in schools has not been ascertained in the Nigerian population based on the available data. This quasi-experimental study aimed at addressing this information gap by assessing the effectiveness of using teachers in place of oral healthcare professionals to provide OHE in public secondary schools in Lagos state. Schools are critical to the attainment of public health goals and they can enable the adoption of sustainable healthy living among children and adolescents. The significance of a good and efficient school health program as a component of primary care in the total development of children and the populace cannot be overstated. Teachers, who spend a considerable amount of time with children can through training, be enlisted as proxy agents for health promotion for the primary care system. Primarily in Low to middle income countries (LMIC) with a great burden of diseases and an acute shortage of healthcare personnel, teachers can be trained to recognize common diseases in children, recognize children requiring urgent referrals, provide hygiene motivation, and promote adequate nutrition. This strategy can reduce the burden of medical and dental disease.

Table 3: Mean oral health knowledge scores of pupils in dentist intervention schools and teacher intervention schools

Baseline (mean±SD)	Post Intervention (Mean±SD)				
	Immediate	One-month	Three-months	Six-months	
DIS					
56.0±16.1	69.2±18.4	67.7±19.7	61.3±17.7	59.5±16.8	
TIS					
52.8±15.7	69.1±19.7	68.3±19.7	71.3±19.3	62.0±17.1	
<i>P</i>	0.421	0.932	0.748	0.023*	0.132

*Statistically significant. $P < 0.05$ **Table 4: Overall attitude of pupils on oral health in dentist intervention schools and teacher intervention schools**

	Baseline <i>n</i> (%)	Immediate <i>n</i> (%)	Post Intervention		
			1 month <i>n</i> (%)	3 months <i>n</i> (%)	6 months <i>n</i> (%)
DIS					
Positive	61 (30.5)	65 (32.5)	67 (33.5)	68 (34.0)	69 (34.5)
Negative	139 (69.5)	135 (67.5)	133 (66.5)	132 (66.0)	131 (65.5)
TIS					
Positive	58 (29.0)	64 (32.0)	65 (32.5)	66 (33.0)	68 (34.0)
Negative	142 (71.0)	136 (68.0)	135 (67.5)	134 (67.0)	132 (66.0)
Total	200 (100.0)	200 (100.0)	200 (100.0)	200 (100.0)	200 (100.0)
<i>P</i>	0.763	0.647	0.740	0.611	0.812

Table 5: Mean oral health attitude scores of pupils in dentist intervention schools and teacher intervention schools

Baseline (Mean±SD)	Post Intervention (Mean±SD)				<i>F</i>
	Immediate	1 month	3 months	6 months	
DIS					
32.2±9.5	36.6±8.4	35.4±9.8	35.3±9.2	37.6±8.5	5.411
TIS					
27.5±7.3	32.8±6.0	32.6±5.8	33.3±5.4	34.8±7.8	5.311
0.037	0.076	0.094	0.022*	0.013*	

*Statistically significant $P < 0.05$

All the enlisted participants were available for the recall visits and completed the study, which was in agreement with the study conducted by Janz and Becker,^[41] but contrasts with the results of Tubert-Jeannin *et al.*^[42] Åström and Mashoto^[43] who had a follow-up rate of 73%. On comparing the pupils in the two study groups, baseline OHK assessment showed that a higher proportion of pupils in the DIS had good OHK scores compared to the pupils in the TIS. At the initial and second review appointments, there was a significant increase in the number of pupils with good OHK scores in both schools, but this observation was higher in the TIS. The pupils in TIS had a four-fold increase, in contrast to the pupils in the DIS who had a three-fold increase compared to baseline values. This increase in OHK is likely a direct effect of the OHE intervention that took place as the teachers made more impact on the pupils' knowledge than the dentists. Teachers were more effective in

delivering OHE as evidenced by the checklist, where it was observed that they mentioned more points to their pupils than the dentists did. This further gave credence to the ability of the teachers to teach OHE in schools.^[44]

At 3 months evaluation time, more pupils in the DIS answered correctly that regular tooth brushing can protect against gum bleeding and that carious or decayed teeth can affect one's appearance negatively when compared to the number of pupils in the TIS. Pupils in the TIS, however, fared better on the other questions assessing oral health knowledge. At 6 months assessment period, a higher proportion of the pupils in the DIS still performed better than pupils in TIS in answering questions on the benefit of regular tooth brushing and the detrimental effect of frequent intake of carbonated drinks on which they initially performed poorer at the 3 months evaluation. There was a decrease in knowledge among the pupils in DIS regarding question 5. The overall improvement in knowledge recorded by the pupils in the TIS may be a direct effect of the key oral health messages given by the teachers during the pupils' intervention program as revealed in the checklist.

Regarding the oral health attitude of the pupils in the DIS and TIS, evaluation at baseline, 1, 3, and 6 months showed that a higher proportion of pupils in TIS had a positive oral health attitude compared to the pupils in DIS. Assessments at baseline, immediately, 1 and 6 months post-intervention showed that the proportion of pupils that answered correctly the questions identifying the relationship between general body health, oral health, and dental diseases was higher amongst pupils in TIS when compared to the proportion of pupils in the DIS.

At baseline, a higher proportion of pupils in DIS had better oral health practice scores in some aspects of oral health than their counterparts in the TIS. They visited the dentist more regularly, even though only a few visited within the last 6-12 months. There was little improvement with regards to the proportion of pupils that had improved practices at the immediate post-intervention evaluation. However, there was a decrease in the number of pupils using herbal toothpaste and an increase in the number of pupils brushing their teeth with fluoridated toothpaste in the DIS at the immediate post-intervention assessment. There was however no change in the number of pupils using herbal toothpaste in the TIS. This observed improvement in the DIS may have been due to the impetus and drive by the dentists in their group of schools.

The proportion of pupils that claimed to have visited the dentist within the last 6-12 months in the DIS increased at 1 month, 3 months, and 6 months post-intervention assessment period; while the number of pupils in the TIS was stable through these evaluation times.

There were more pupils in TIS brushing their teeth twice daily (morning and before going to bed) at baseline, 1 month, 3 months, and 6 months post-intervention evaluation times

Table 6: Oral health practice scores of pupils in dentist intervention schools and teacher intervention schools

	Baseline n (%)	Immediate n (%)	Post Intervention		
			One month n (%)	Three months n (%)	Six months n (%)
DIS					
Poor	171 (85.5)	171 (85.5)	141 (70.5)	131 (65.5)	146 (73.0)
Good	29 (14.5)	29 (14.5)	59 (29.5)	69 (34.5)	54 (27.0)
TIS					
Poor	167 (83.5)	155 (77.5)	155 (77.5)	156 (78.0)	158 (79.0)
Good	33 (16.5)	45 (22.5)	45 (22.5)	44 (22.0)	42 (21.0)
Total (n)	200 (100.0)	200 (100.0)	200 (100.0)	200 (100.0)	200 (100.0)
P	0.687	0.044*	0.033*	0.031*	0.048*

*Statistically significant $P < 0.05$ **Table 7: Mean oral health practice scores of pupils in dentist intervention schools and teacher intervention schools**

Baseline (mean±SD)	Post Intervention (Mean±SD)				F
	Immediately	1 month	3 Months	6 Months	
DIS					
34.3±4	42.9±7.6	44.3±7.9	41.2±7.9	41.4±7.8	4.091
TIS					
33.3±9	41.8±7.0	40.1±7.6	40.0±6.4	39.5±5.9	4.322
0.456	0.075	0.047*	0.311	0.217	

*Statistically significant at $P < 0.05$

than the pupils in the DIS. Though there were more pupils in TIS brushing their teeth twice daily, this practice increased in the pupils in the DIS immediately post-intervention, further supporting the role of the dentist in motivating their pupils towards improved oral hygiene practices. A higher proportion of pupils in the TIS used fluoridated toothpaste at baseline and at the immediate post-intervention evaluation period compared to the proportion of pupils in the DIS. A higher proportion of pupils in the DIS however used fluoridated toothpaste at subsequent evaluation periods. This was similar to the results obtained by Esan *et al.*^[45] who found that exposure to a regular series of oral health education sessions increased the use of fluoride-containing toothpaste, as well as the frequency of tooth brushing.

These results show that OHE can be carried out seamlessly across schools in Nigeria since it has been successfully piloted in four schools. The selected schools and teachers were able to accommodate the extra lectures excellently without any disruption of the existing lecture time table in their schools. Future exercises can incorporate oral health screening to identify pupils requiring dental care promptly and referring them appropriately. Our findings on the effectiveness of OHE programs in schools can be further validated in future studies in Nigeria and the West Africa subregion.

Conclusion

The proportion of pupils with good OHK and positive attitude was higher in the TIS at post-intervention periods; this difference was statistically significant at 3 months for OHK. More pupils in DIS, however, had better practices than pupils in TIS after the

OHE program. This result suggests that teachers are as effective as dentists in delivering OHE.

Limitations of the Study

The study only provided information on OHE to the teachers and pupils and there was no oral examination, which could have been a more objective way of assessing the effect of the OHE program. This study also relied on self-reported data derived from teachers and school-age children with varying levels of understanding.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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