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ATTITUDE OF CLEFT CARE SPECIALISTS IN AFRICA TOWARDS PRESURGICAL ORTHOPAEDICS

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ABSTRACT

Objective: To determine the attitude of cleft care specialists working in Africa towards pre-surgical orthopaedics.

Design: A cross sectional study.

Setting: Pan-African conference on cleft lip and palate in Nigeria.

Subjects : Sixty cleft care specialists working in Africa.

Results: The general attitude towards pre-surgical orthopaedics was positive. Majority of the specialists employ pre-surgical orthopaedics before surgical repair. Fifty four (91%) of the specialists use plaster strapping for cases of bilateral cleft, five (8.3%) use nasoalveolar molding and one (2%) use feeding plate. Half of the specialists (50%) felt that pre-surgical orthopaedics is to be managed by orthodontists alone. There were significant difference in attitude towards pre-surgical orthopaedics between providers ($p < 0.05$). Orthodontists had a strong positive attitude towards pre-surgical orthopaedics than other specialists. Younger specialists had a more positive attitude towards pre-surgical orthopaedics than older specialists.

Conclusion. Cleft care specialists in Africa have a positive attitude towards pre-surgical orthopaedics. Majority of them use plaster strapping technique. Younger specialists have a more favorable attitude towards pre-surgical orthopaedics than older specialists.

INTRODUCTION

Management of cleft lip and palate is multidisciplinary and involves many specialists in the field of Medicine and Dentistry. In general, treatment protocol for patients with cleft lip and palate are pre-surgical orthopaedics, surgical repair of the lip, palate and specialist management of associated complications such as speech, otology and dental anomalies. Pre-surgical orthopaedics is said to allow for alignment and correction of the nasal cartilage thereby minimising formation of scar tissue and thus producing a more consistent postoperative result (1,2).

Pre-surgical orthopaedics can also allow for non-surgical lengthening of the columella thereby eliminating the need for secondary columella lengthening in patients with bilateral cleft (3). Advocates for pre-surgical orthopaedics claim that it allows for reduction in the gap between the alveolar and maxillary segment thereby enabling the surgeon to perform gingival perioplasty and ultimately preventing the need for secondary alveolar grafting (4,5).

The advantage of pre-surgical orthopaedics for example, the nasoalveolar molding is that if done in conjunction with surgical lip repair it allows for a single initial surgery to address the lip, nose and alveolar complex thereby reducing the need for secondary surgery (6). Other benefits associated with pre-surgical orthopaedics is that the appliance may serve as a feeding plate for the cleft patients to avoid regurgitation of fluids. There has been much controversy about the role appliances play in the feeding of infants with cleft lip and palate. However, generally speaking, it has now been accepted that most cleft patients can feed very well with feeding bottles thus precluding the need for feeding plates. Therefore, the main benefit of pre-surgical orthopaedics would be to achieve excellent facial aesthetics with minimal scar tissue.

Previous studies on cleft management in Nigeria reported that very few specialists recommend pre-surgical orthopaedics (7,8). One such study reported poor treatment outcome as a result of inability to perfectly reconstruct the lips and nose without compromising aesthetics (7). Failure to recommend

pre-surgical orthopaedics for patients with cleft may be determined by the attitude of the cleft care specialists .

The aim of this study was to determine the attitude of cleft care specialists working in Nigeria and some African countries towards pre-surgical orthopaedics.

MATERIALS AND METHODS

Self administered questionnaires were distributed to all cleft care providers who attended a Pan-African conference on cleft lip and palate in Nigeria. The questionnaire had ten questions that surveyed opinions of cleft care providers to determine their attitude. Specifically, the questionnaire had four main domains;

- (i) Knowledge of cleft care providers on pre-surgical orthopaedics (4 questions);
- (ii) Advantages and disadvantages of pre-surgical orthopaedics (2 questions);
- (iii) Experience and familiarity with pre-surgical orthopedic techniques (2 questions);
- (iv) Factors that may influence the attitude of cleft care providers towards pre-surgical orthopaedics (2 questions).

The questionnaire had construct validity and Cronbachs alpha tested the internal consistency ($\alpha=0.8$). The questionnaire was designed to give "stimulus equivalence" so that some scores were reversed in the analysis .

Participants were asked to respond by ticking the most appropriate answer to all items on the questionnaire which was scored on a 5 point Likert

pattern scale (1 = strongly agree – 5 = strongly disagree). The total score was determined by adding all the scores in each domain together and this was then divided by the number of questions to determine the mean attitudinal scores. Respondents who scored below the mean were regarded as having a negative attitude while those who scored above the mean were regarded as having a positive attitude.

The study was carried out in strict compliance with Helsinki Declaration principle of studies involving human subjects.

The data were entered into SPSS version 10 (SPSS Chicago Illinois). Frequencies were generated and data were analysed using t-tests and one way Anova to determine the differences in attitude. Statistical significance was inferred at $p < 0.05$.

RESULTS

Eighty questionnaires were sent out and sixty questionnaires were filled and returned giving a mean response rate of 75%.

There were specialists represented from eight African countries namely Nigeria, Kenya, Ethiopia, Tanzania, Malawi, Uganda, Ghana and Zambia. Nigeria had the highest representation (83%) (Figure 1). Participants from seven cleft care sub-specialties attended the conference. They were General Surgeons, Plastic Surgeons, Oral and Maxillofacial Surgeons, Orthodontists, Otolaryngologists , Anaesthetists and General Nurses. The greatest proportion of participants were Oral and Maxillofacial Surgeons (31.6%) and General Surgeons (25.0%) (Table 1).

Table 1
Distribution of specialties involved in care of cleft lip and palate patients

Specialty	Sex		Total	Percentage
	M	F		
Anaesthetist	0	1	1	1.7
General Surgeons	15	0	15	25.0
General Nurses	0	3	3	5.0
Plastic Surgeons	10	0	10	16.7
Orthodontists	1	5	6	10.0
Otolaryngologist	5	1	6	10.0
OMF Surgeons	19	0	19	31.6
Total	50	10	60	100.0

Key

OMF= Oral and Maxillofacial Surgeons

Their ages ranged from 33 to 60 years . Forty-nine (81.7%) of the respondents were male, while 11(18.3%) were female. The age and sex distribution of the cleft care specialists is presented in Table 2.

Table 2
Age and sex distribution of the respondents

Age group (years)	Sex		Total	Percentage
	M	F		
30-35	2	1	3	5.0
36-40	8	3	11	18.4
41-45	15	4	19	31.7
46-50	15	2	17	28.3
51-55	7	1	8	13.3
>55	2	-	2	3.3
Total	49	11	60	100.0

Fifty six (93.3%) participants worked in government hospitals, three(5.0%) worked in non-governmental hospitals and 1(1.7%) provider worked in a private clinic. According to Figure 2, thirty-three (55.0%) respondents had less than five years experience in management of cleft patients, 16(26.7%) had between six to ten years experience while four (6.6%) had over

15 years experience in cleft management.

Concerning familiarity of cleft care providers with pre-surgical orthopaedics technique, fifty four of the respondents (90%) employ the use of plaster strapping before surgical repair, five(8.3 %) employ the use of nasoalveolar molding technique while 1(1.7 %) utilised the feeding plate (Table 3).

Table 3
Familiarity of cleft care providers with pre-surgical orthopaedics technique

Pre-surgical orthopaedics	Number of Specialists							Total	%
	Anas	G Surg	GN	Plas Surg	Ortho	ORL	OMF		
Plaster strapping	1	13	2	9	6	6	17	54	90.0
Feeding plates	-	-	-	-	-	-	1	1	1.7
Grayson appliance	-	-	-	-	5	-	-	5	8.3
Mcneil appliance	-	-	-	-	-	-	-	0	0.0
Compression appliance	-	-	-	-	-	-	-	0	0.0
Rubber band	-	-	-	-	-	-	-	0	0.0

n = 60

n = number of respondents

Key :

Anas = Anaesthetists

G Surg = General Surgeons

GN = General Nurses

Plas Surg = Plastic Surgeons

Ortho = Orthodontists

ORL = Otolaryngologist

OMF = Oral and Maxillofacial Surgeons

When asked which classification of clefts pre-surgical orthopedic would be most beneficial, 51 (85.0%) respondents felt that pre-surgical orthopaedics was necessary for all classification of clefts while nine (15.0%) were of the opinion that pre-surgical orthopaedics was essential for only patients with bilateral cleft lip and palate.

When asked which specialist should manage pre-surgical orthopaedics in cleft patients, thirty (50%) of the providers felt that cleft patients should be referred to Orthodontists for management, while 30(50%) of the providers were of the opinion that it should be managed by surgeons (Table 4).

Table 4
Cleft care specialists referral preference for presurgical orthopaedics

Specialty	Managed by Surgeons (n=60)	Refer to Orthodontist
Anaesthetist	1	-
General Surgeons	15	-
General Nurses	1	2
Plastic Surgeons	10	-
Orthodontists	-	6
ENT Surgeons	3	3
OMF	-	19
Total	30(50.0%)	30 (50.0%)

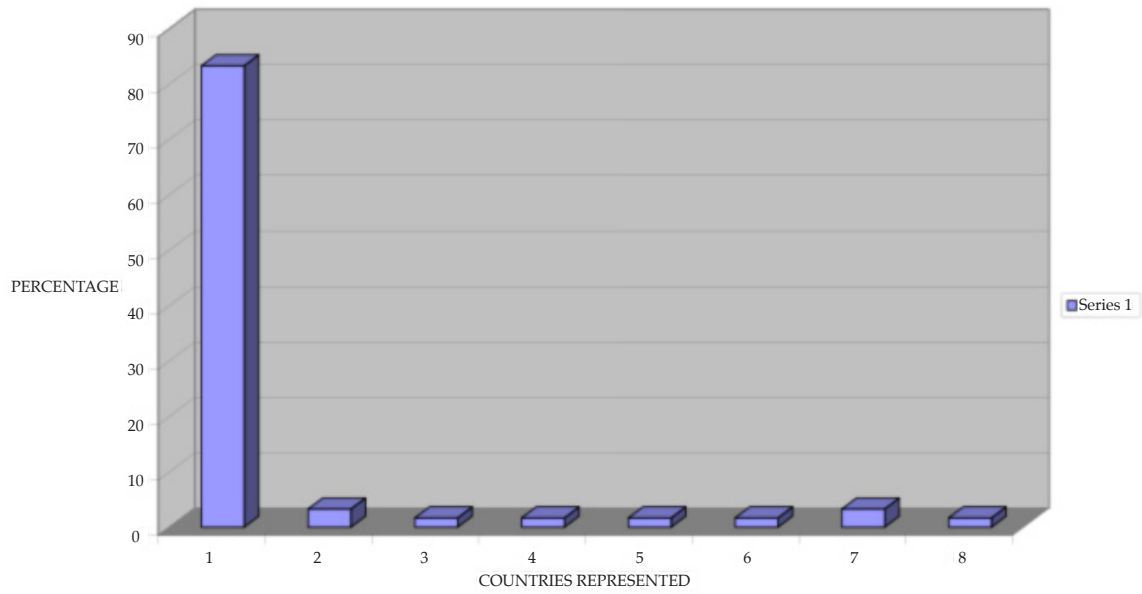
n = number of respondents

The overall attitude towards pre-surgical orthopaedics was positive (Table 5). There were significant difference in attitude towards pre-surgical orthopaedics between the cleft care providers ($p < 0.05$). Young providers had a more positive attitude towards pre-surgical orthopaedics than older ones. In general, orthodontists had a more positive attitude towards pre-surgical orthopaedics.

Table 5
Attitude of cleft care specialists towards pre-surgical orthopaedics

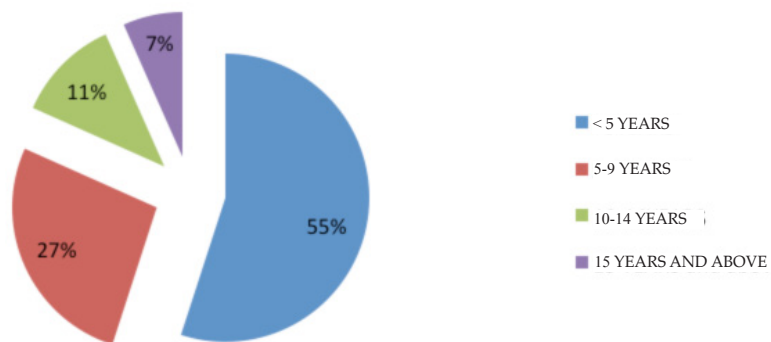
Variable	Otolaryn- gologist (95% C1)	Anaesthetist (95% C1)	General Surgeons (95% C1)	Plastic Surgeons (95% C1)	Orthodontists (95% C1)	Oral and Maxillofacial Surgeons (95% CI)	General Nurses (95% C1)	
Overall attitude	3.53/5 (3.35-3.65)	3.56/5 (3.35-3.75)	3.57/5 (3.25-3.85)	3.12/5 (2.97-3.25)	4.40/5 (4.12-4.75)	3.42/5 (3.22-3.68)	3.81 (3.77-3.85)	$p < 0.05$
Attitude towards pre-surgical orthopaedics	3.15(3.25-3.57)	3.25(3.20-3.60)	3.15(3.10-3.60)	3.55(3.50-3.60)	3.69(3.65-3.87)	3.55(3.50-3.61)	3.69(3.65-3.73)	$p < 0.05$
Experience with pre- surgical orthopaedic technique	2.51(2.40-2.69)	3.56(3.76-3.60)	2.55(2.20-3.60)	3.86(3.81-4.02)	4.02(3.99-4.09)	3.99(4.01-4.08)	3.96(2.92-3.42)	
Influence of update courses on attitude	3.55(3.15-3.60)	3.35(2.65-3.80)	3.55(3.30-3.80)	2.21(2.07-2.36)	2.53(2.37-2.69)	3.23(2.91-3.43)	2.31(2.16-2.45)	
Influence of type of practice on attitude	2.55(2.40-2.85)	3.25(3.18-3.60)	2.55(2.30-3.35)	3.21(3.07-3.36)	3.37(3.21-3.53)	2.79(2.64-2.94)	2.62(2.49-2.75)	
Influence of specialist years of experience on attitude	1.55(1.40-1.85)	3.15(3.20-3.60)	2.35(2.50-3.60)	1.34(1.24-1.43)	1.46(1.37-1.51)	1.56(1.49-1.60)	1.49(1.28-1.69)	$p < 0.05$

Figure 1
Participants countries



- Key
- 1 Nigeria
 - 2 Kenya
 - 3 Ethiopia
 - 4 Tanzania
 - 5 Malawi
 - 6 Uganda
 - 7 Ghana
 - 8 Zambia

Figure 2
Years of experience of cleft care providers



DISCUSSION

There has been much controversy on the role pre-surgical orthopaedics play in the management of cleft lip and palate patients. This is because there are very few evidence based studies on the effect of pre-surgical orthopaedics in the management of cleft patients.

Traditional methods of pre-surgical orthopaedics dates back to the 16th century when a head cup with an extra oral appliance to reduce the gap between the prolabium and the secondary maxilla was developed. In the 17th century, Hufmann (9) designed an appliance with facial extension on the cheeks that could press back the protruding maxilla. In the 18th century the use of bandages over the prolabium to stimulate muscle retraction and invariably compress the pre maxilla was adopted. The 19th century saw the use of compression bandages with a head bonnet and rubber bands with head cap assembly.

Modern methods of pre-surgical orthopaedics however started with the Mcneil acrylic appliance (10). Mcneil used this appliance to reduce the gap between the alveolar and the hard palate. There has been several advances in the design of pre-surgical appliances since then by different individuals (11-13) and even more recently the nasoalveolar molding appliance by Grayson (14). Pre-surgical appliances can be active or passive depending on the indication for its use.

The results of this study reveal that Cleft care providers in Africa have a fairly good knowledge of pre-surgical orthopaedics. Majority of them are familiar with plaster strapping for cleft patients and use it as an adjunct for all categories of cleft. The use of adhesives to approximate the lips of cleft lip and palate patients before surgical repair is a very old technique. The advantages however includes an improvement of incisive point position, narrowing of the cleft and an unchanged saggital dimension (15). The limitations lies in the fact that it may not improve the position of the columella and alar base.

Feeding plates were hardly recommended by the cleft care specialists as only two percent of specialists recommended its use. The main advantage of feeding plates for cleft patients is that it can reduce feeding time and increase the volume of milk taken and this is expected to improve nutrition and increase body weight that is necessary before surgical repair. However, there has been much argument whether use of feeding plates for cleft patients do play any role in feeding. Presently it is now being accepted that most cleft patients can feed very well without feeding plates.

This study reports an overall positive attitude towards pre-surgical orthopaedics by cleft care providers in Africa. There were significant differences in attitude of specialists towards pre-surgical

orthopaedics ($p < 0.05$). Orthodontists had a strong positive attitude towards pre-surgical orthopaedics. The strongly positive attitude of the Orthodontists is significant and may be a strong desire to be involved in management.

Most specialists were able to manage both pre-surgical orthopaedics and surgical repair of the lip and palate themselves rather than referring such patients to specialists. This observation concurs with reports from a previous study (8) which reported individualism in the management of patients with cleft in Nigeria. Multidisciplinary approach to management of cleft lip and palate is however preferred because it allows for team work and can benefit the patient maximally.

There was a significant difference in attitude towards pre-surgical orthopaedics between cleft care providers. Younger specialists had a more positive attitude than older specialists. This observation may be as a result of increasing knowledge and more exposure of younger specialists through updates, conferences and seminars.

In conclusion, cleft lip and palate specialists in Africa had a positive attitude towards pre-surgical orthopaedics. Orthodontists had a strong attitude. Majority of them use plaster strapping technique and hardly recommend feeding plates for cleft patients. The same specialist manages both pre-surgical orthopaedics and surgical repair in cleft patients.

Younger specialists had a more positive attitude towards pre-surgical orthopaedics than older specialists. More studies to determine the effect of pre-surgical orthopedic techniques on the hard and soft tissue before surgical repair is recommended

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