

Craniofacial orthodontics and postgraduate orthodontic training in Nigeria

GI Isiekwe, CO Oguchi¹, OO daCosta, IL Utomi

Department of Child Dental Health, Faculty of Dental Sciences, College of Medicine, University of Lagos/Lagos University Teaching Hospital, Idi-araba, Lagos, ¹Department of Child Dental Health, Bayero University, Aminu Kano Teaching Hospital, Kano, Nigeria

Abstract

Introduction: Craniofacial orthodontics has been shown to be a critical component of the care of patients with craniofacial anomalies such as cleft lip and palate. Thus, the purpose of this study was to assess the perceptions and clinical experience in cleft and craniofacial care, of orthodontic residents in Nigeria.

Methodology: Questionnaires were sent out to orthodontic residents in the six Postgraduate Orthodontic Training Centers in the country at that time. The questionnaires were self-administered and covered areas in beliefs in cleft care and the clinical experience and challenges faced by the residents in the provision of craniofacial orthodontic care at their various institutions.

Results: Thirty-three respondents returned completed questionnaires, with a response rate of 97%. All the respondents believed that residents should be involved in cleft and craniofacial care. Postnatal counseling was the clinical procedure in which the residents reported the highest level of clinical experience (47.4%). The least clinical experience was recorded in pre-bone graft orthodontics (7.4%) and orthodontic preparation for orthognathic surgery (5.5%). Some of the challenges highlighted by the residents were low patients turn out for orthodontic care and the absence of multidisciplinary treatment for craniofacial patients in their centers.

Conclusion: Orthodontic residents in Nigeria believe that they should be involved in the management of patients with craniofacial anomalies and cleft lip and palate. However, majority of the residents have limited clinical experience in the management of these patients. A lot more needs to be done, to expose orthodontic residents in training, to all aspects of the orthodontic and multidisciplinary team care required for the cleft/craniofacial patient.

Key words: Craniofacial orthodontics, Nigeria, postgraduate orthodontic training

Date of Acceptance: 21-Jun-2015

Introduction

Craniofacial orthodontics is the subspecialty of orthodontics that deals with the treatment of patients with congenital and acquired deformities of the integument and its underlying musculoskeletal system within the craniofacial area and associated structures. These deformities usually involve skeletal and soft-tissue elements, which affect facial symmetry and esthetics.^[1] The most common craniofacial anomalies in humans are orofacial clefts (OFCs) with a worldwide prevalence of approximately 1.2/1000 live births,

and they remain a prominent health issue in developed and developing countries alike.^[2] A recent study in Nigeria reported a prevalence of OFCs of 0.5/1000 live births.^[3]

The cleft/craniofacial patient presents with a wide range of esthetic and functional problems. Effects on dentition, speech, hearing, appearance, and psychology can lead to long-lasting adverse outcomes for health and social integration. Thus, it is generally recognized that the optimal

Address for correspondence:

Dr. GI Isiekwe,
Department of Child Dental Health, Faculty of Dental Sciences,
College of Medicine, University of Lagos/Lagos University Teaching
Hospital, Idi-araba, Lagos, Nigeria.
E-mail: ikisiekwe@yahoo.com

Access this article online	
Quick Response Code: 	Website: www.njcponline.com
	DOI: 10.4103/1119-3077.179277

approach to the treatment of children born with these anomalies is a multidisciplinary approach. The combined efforts of a pediatrician, pediatric dentist, orthodontist, specialist nurse, mental health professional, medical social worker, speech therapist, and otorhinolaryngologist are needed to provide the expertise to ensure that correct interventions are carried out at the appropriate time for the best functional and esthetic results.^[4]

The past decade has witnessed an exponential increase in awareness and availability of surgical treatment for patients with cleft deformities in Nigeria, due to the intervention of international donor organizations.^[5,6] Thus, resulting in a large number of patients who have received surgical care and who will require other aspects of the multidisciplinary team care required, such as orthodontic care, for their successful management.

Orthodontics is an essential component of the reconstructive process for children with craniofacial disorders. Early and ongoing orthodontic involvement is needed to provide presurgical orthopedics, to monitor facial growth and dental eruption, for appropriate timing of surgical procedures, to position tooth-bearing bony segments as a framework for surgery, and to correct debilitating occlusal abnormalities. Without appropriate orthodontic care, reconstructive surgical outcomes are jeopardized, and may result in unstable or malpositioned oral structures, premature tooth loss, functional deficiencies in chewing, swallowing, respiration, speech, and poor esthetic results.^[7]

As an important component of craniofacial and cleft care, craniofacial orthodontics involves data collection, clinical examination, diagnosis, treatment planning, and orthopedic or orthodontic treatment of the craniofacial disorder. Craniofacial orthodontics has been shown to play an intrinsic role in the care of patients with craniofacial anomalies and cleft lip and palate.^[8] Haven highlighted the importance of orthodontics in the management of patients with OFCs and craniofacial anomalies, it, therefore, implies that craniofacial orthodontics should form an important component of the Postgraduate Orthodontic Training Program in Nigeria. This fact is further underscored by the limited number of orthodontists in the country, with <50 orthodontists serving a population of about 170 million people.

Thus, the purpose of this study was to assess the perceptions and clinical experience in cleft and craniofacial care, by orthodontic residents in Nigeria. The objectives of this study, were to assess the beliefs of orthodontic residents about the management of patients with cleft/craniofacial deformities, to assess their clinical experience in this area of care, and to determine the obstacles as perceived by orthodontic residents (if any) to adequate training in the management of these patients Findings from this study,

will assist postgraduate orthodontic training institutions in the country to assess the level of clinical training in craniofacial orthodontics currently being received by orthodontic residents in the country, with a view to improving the quality of training currently being provided, if necessary.

Methodology

This was a cross-sectional descriptive questionnaire-based study carried out among orthodontic residents in six different postgraduate orthodontic training institutions in the country [Table 1]. The questionnaires were delivered manually and self-administered by the respondents.

A total of 34 questionnaires were sent out to orthodontic residents across the country. Of the 34 questionnaires sent out, 33 questionnaires were returned duly completed, giving a response rate of 97%. At that time, there were 37 orthodontic residents in the country. Thus, the sampled population represented about 89.2% of the total population of orthodontic residents in Nigeria.

This questionnaire had questions covering these three major areas:

- Motivations and beliefs about the need for training in craniofacial orthodontics and cleft care
- Clinical experience of the residents in craniofacial orthodontics, stating procedures they had observed, assisted with or performed. The craniofacial orthodontic procedures surveyed, include counseling, neonatal impressions, presurgical infant orthopedics, construction of feeding plates and definitive orthodontic treatment, among others [Figure 1]. These procedures have previously been reported as the key procedures required for the orthodontic management of the cleft/craniofacial patient^[8,9]
- Challenges faced by the residents in training with respect to craniofacial orthodontics. The questions in this section were open-ended.

Data were analyzed using Microsoft Excel for windows 2012.

Results

The mean age of the residents was 34.75 years while the gender distribution showed that 54.5% of them were male, whereas 45.5% were female. Based on the level of training, 41.67% of them were registrars, 30.56% were senior registrars and 13.89% of them were postfellowship senior registrars. The average orthodontic training duration for each resident was 3.93 years. The distribution of orthodontic residents by the institution of training is as shown in Table 1. The Lagos University Teaching Hospital had the

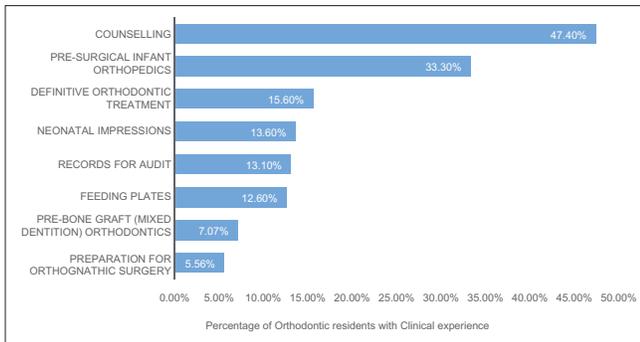


Figure 1: Bar chart showing clinical experience in cleft care of orthodontic residents in Nigeria

Table 1: Distribution of orthodontic residents based on training institution

Orthodontic residency training institution	Percentage of total number of residents (%)
Lagos University Teaching Hospital	42.4
Obafemi Awolowo University Teaching Hospital	18.2
University College Hospital, Ibadan	18.2
University of Benin Teaching Hospital	12.1
Aminu Kano Teaching Hospital, Kano	9.1
University of Nigeria Teaching Hospital	3.0

LUTH=Lagos University Teaching Hospital; OAUTH=Obafemi Awolowo University Teaching Hospital; UCH=University College Hospital, Ibadan, UBTH=University of Benin Teaching Hospital, AKTH=Aminu Kano Teaching Hospital, Kano, UNTH=University of Nigeria Teaching Hospital

largest percentage (42.4%) of orthodontic residents, with 14 residents, while the least percentage (3.0%) of residents was recorded by the University of Nigeria Teaching Hospital, Enugu, with only one resident.

All the respondents believed that orthodontic residents should be involved in the management of patients with cleft lip and/or palate deformities. On a 7-point Likert scale, a mean value of 6.6 was recorded when residents were asked to rate the importance of treating patients with craniofacial anomalies and special needs. Three-quarters (75.8%) of the residents reported the previous experience in the management of these patients and 52% of these were senior registrars.

Of the procedures assessed, postnatal counseling was the procedure with the highest level of experience (47.4%). However, for most other procedures a large percentage of the residents exhibited limited clinical experience. For instance, only 13.6% of the residents, had experience in taking neonatal impressions, while only 2.1% had experience with construction of feeding plates. Only 15.6% of the residents had experience with definitive orthodontic treatment for patients with cleft deformities. The clinical procedures in which the residents recorded the least clinical experience were in pre-bone graft orthodontics (7.4%) and preparation for orthognathic

surgery (5.5%) [Figure 1]. With respect to attendance of workshops or seminars related to craniofacial orthodontics, only 51.5% of the residents had attended such. When asked if the residency training would adequately prepare them to treat patients with these anomalies 65.63% of the residents responded positively while 34.38% responded negatively.

Some of the obstacles reported by the residents, as limiting their exposure to training in craniofacial orthodontics include the fact that there were very few craniofacial patients presenting for orthodontic treatment, either because most of these patients were not aware of the availability of orthodontic treatment or could not afford the cost of treatment. Another challenge highlighted by the residents was that multidisciplinary team care, for cleft/craniofacial patients, was not being practiced at their training centers. Furthermore, some residents reported as an obstacle, the fact that some of the craniofacial orthodontics procedures listed in the survey were not being carried out at their training institutions.

Discussion

Postgraduate Orthodontic Training in Nigeria is coordinated by two colleges namely the National Postgraduate Medical College (NPMC) and the West African Postgraduate Medical College (WAPMC). The two examination bodies offer parallel but similar programs. The training program runs through three levels namely: (1) The primary stage involving the basic medical and dental sciences (2) junior residency (Part 1) designed to equip residents with relevant competence for routine management of all common oral and dental conditions at a level of proficiency higher than that of the undergraduate; and (3) senior residency (Part II) which seeks to produce a specialist dental surgeon with definite expertise in orthodontics.^[10]

Orthodontic care is a critical component of the multidisciplinary care required for the cleft/craniofacial patient. This is because the craniofacial orthodontist is actively involved in the life of the patient born with a craniofacial deformity and/or cleft lip and palate from birth through skeletal maturity. This may include infant presurgical orthopedics, early mixed dentition treatment, dentofacial orthopedics and orthodontics, preparation for alveolar bone graft procedures, adolescent/adult orthodontics, preprosthetic orthodontics and pre- and post-surgical orthodontics.^[8]

The results of this study indicate that orthodontic residents in Nigeria consider orthodontic training in the management of patients with craniofacial anomalies to be very important. This finding corroborates the reports from previous studies carried out among orthodontic residents in other parts of the world, specifically the United States of America and Canada, where similar findings were reported.^[11,12]

There was limited exposure to definitive orthodontic treatment for patients with cleft deformities; the majority had no experience in orthodontic treatment related to secondary alveolar bone grafting or orthognathic surgery for these patients. The findings from this study are similar to that reported for a similar study carried out in the United Kingdom, which reported that some recently appointed consultant orthodontists to cleft teams had no experience in basic procedures such as the taking of neonatal impressions or the provision of definitive orthodontic treatment.^[9] The low level of clinical experience reported in this study may be associated with the low volume of craniofacial patients requesting for orthodontic treatment. Poverty and ignorance are two possible factors responsible for this low patient turnout for orthodontic care, by cleft/craniofacial patients.

Previous studies have highlighted the fact that cleft lip and palate in this environment is associated with low socioeconomic status.^[13-15] Thus, it is not surprising that due to poverty most parents of children with cleft/craniofacial deformities are often unable to access care for their children. However, since 2006, most cleft care centers in Nigeria have continued to receive support for patient care from the Smile Train, an American Non-governmental organization (NGO) and a few other NGOs. This support has mainly been with regard to sponsoring free cleft surgeries for the patients and does not cover other aspects of care.^[5] Thus, while there has been increased access to surgical care for these patients, due to limited resources, these patients are often unable to access other forms of care such as orthodontic care, which are not covered in the sponsorship or treatment grants they receive. Furthermore, a lack of interest regarding orthodontic treatment has also been noted in many of these patients, who are often more interested in the surgical repair of the cleft defect, than in managing the underlying skeletal and dental malalignments. This is further compounded by the relatively high cost of orthodontic care in this environment. Therefore, there is an urgent need for donor agencies to extend their sponsorship/support for cleft patients to include other aspects of care such as orthodontics. There is also a need for increased counseling of patients with craniofacial anomalies on the multidisciplinary nature of the treatment required for their care and the importance of orthodontic treatment as a part of this care.

Lack of awareness is also a major factor contributing to the low patient turnout for orthodontic care, as the perception of most patients appears to be that surgical care alone solves the problems associated with clefts. This position may be a manifestation of a low level of awareness and an overshadowing of the underrepresented specialties such as orthodontics by a relative overrepresentation of the surgical specialties.^[6]

The absence of multidisciplinary team care in some training institutions is also one of the challenges highlighted by the

residents as limiting their clinical experience in craniofacial orthodontics. This fact is reinforced by a recent national survey of cleft care delivery centers which reported that only 60% of the centers carry out multidisciplinary team care.^[6] A different study reported that an interdisciplinary team approach to cleft care is being practiced by about 20% of Nigerian cleft lip and palate providers.^[15] However, multidisciplinary team care for patients with cleft/craniofacial anomalies have been shown to provide better treatment outcomes when compared to individual care.^[16] Thus, there is an urgent need for all centers in Nigeria to adopt the team approach, as this would ensure that that all craniofacial/cleft patients receive the best possible care.

Training consultant orthodontists at the different training centers should also ensure that they are abreast with all the current techniques in orthodontic care for patients with craniofacial anomalies. This is particularly important in highly technique sensitive areas such as prebone graft orthodontics and preparation for orthognathic surgery, which incidentally are areas where the residents recorded the least clinical experience. This is because it is only when the training consultants are up to date, that these skills can be passed on to residents in training. Thus, the need for constant refresher courses and attendance at both local, regional, and international training workshops for both consultant orthodontists and residents in training, cannot be overemphasized.

In order to increase their clinical experience in craniofacial orthodontics, orthodontic residents in Nigeria, need to be exposed to high volume and high-quality orthodontic care for this special group of patients while in training. In addition, orthodontic programs should include didactic and clinical experience in treating these patients in their curriculum. In situations where craniofacial orthodontics is not offered in a training center, residents may obtain the necessary clinical experience by rotating through centers with well-established craniofacial orthodontic clinics, within or outside the country.

Furthermore, the examination bodies of the NPMC and the WAPMC should include craniofacial orthodontics in their clinical requirements for obtaining a Part II fellowship in orthodontics from the respective colleges. In the future, these colleges may consider offering a 1-year fellowship in craniofacial orthodontics, at a few accredited training centers in the country, as is currently done in some centers in the United States.

Conclusion

Orthodontic residents in Nigeria believe that they should be involved in the management of patients with craniofacial anomalies and cleft lip and palate. However, the majority of these residents have limited clinical experience in the

orthodontic management of these patients. A lot more needs to be done, to expose orthodontic residents in the country to all aspects of orthodontic and multidisciplinary team care required for the cleft/craniofacial patient. This would go a long way in equipping future orthodontists in the country, with the knowledge and skills required to provide the best possible care, for the cleft/craniofacial patient.

References

1. Berkowitz S. Developmental biology and morphogenesis of the face, lip and palate. In: Berkowitz S, editor. *Cleft Lip and Palate, Diagnosis and Management*. 2nd ed. Berlin: Springer Verlag; 2006. p. 6.
2. IPDTC Working Group. Prevalence at birth of cleft lip with or without cleft palate: Data from the International Perinatal Database of Typical Oral Clefts (IPDTC). *Cleft Palate Craniofac J* 2011;48:66-81.
3. Butali A, Adeyemo WL, Mossey PA, Olasoji HO, Onah II, Adebola A, *et al.* Prevalence of orofacial clefts in Nigeria. *Cleft Palate Craniofac J* 2014;51:320-5.
4. Mossey P, Little J. Addressing the challenges of cleft lip and palate research in India. *Indian J Plast Surg* 2009;42 Suppl: S9-18.
5. Butali A, Adeyemo WL. An overview of cleft care in Nigeria. *Niger Postgrad Med J* 2011;18:151-3.
6. Oginni FO, Oladele AO, Adenekan AT, Olanbani JK. Cleft care in Nigeria: Past, present, and future. *Cleft Palate Craniofac J* 2014;51:200-6.
7. Lewis CW, Ose M, Aspinall C, Omnell ML. Community orthodontists and craniofacial care: Results of a Washington state survey. *Cleft Palate Craniofac J* 2005;42:521-5.
8. Santiago PE, Grayson BH. Role of the craniofacial orthodontist on the craniofacial and cleft lip and palate team. *Semin Orthod* 2009;4:225-43.
9. Sandy J, Williams A, Mildinhal S, Murphy T, Bearn D, Shaw B, *et al.* The Clinical Standards Advisory Group (CSAG) cleft lip and palate study. *Br J Orthod* 1998;25:21-30.
10. Otuyemi OD. Orthodontics in Nigeria: Journey so far and the challenges ahead. *J Orthod* 2001;28:90-2.
11. Brown BR, Inglehart MR. Orthodontists' and orthodontic residents' education in treating underserved patients: Effects on professional attitudes and behavior. *J Dent Educ* 2009;73:550-62.
12. Noble J, Schroth RJ, Hechter FJ, Huminicki A, Wiltshire WA. Motivations of orthodontic residents in Canada and the United States to treat patients with craniofacial anomalies, cleft lip/palate, and special needs. *Cleft Palate Craniofac J* 2012;49:596-600.
13. Olasoji HO, Adeosun OO, Adesina BC. Socioeconomic and cultural background of patients with non-syndromic cleft lip and/or palate children in Northeastern Nigeria. *Pak Oral Dent J* 2005;25:139-43.
14. Omo-Aghoja VW, Omo-Aghoja LO, Ugboko VI, Obuekwe ON, Saheeb BD, Feyi-Waboso P, *et al.* Antenatal determinants of oro-facial clefts in Southern Nigeria. *Afr Health Sci* 2010;10:31-9.
15. Olasoji HO, Hassan A, Adeyemo WL. Survey of management of children with cleft lip and palate in teaching and specialist hospitals in Nigeria. *Cleft Palate Craniofac J* 2011;48:150-5.
16. Austin AA, Druschel CM, Tyler MC, Romitti PA, West II, Damiano PC, *et al.* Interdisciplinary craniofacial teams compared with individual providers: Is orofacial cleft care more comprehensive and do parents perceive better outcomes? *Cleft Palate Craniofac J* 2010;47:1-8.

How to cite this article: Isiekwe GI, Oguchi CO, daCosta OO, Utomi IL. Craniofacial orthodontics and postgraduate orthodontic training in Nigeria. *Niger J Clin Pract* 2016;19:375-9.

Source of Support: Nil, **Conflict of Interest:** None declared.

