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ORIGINAL RESEARCH

A Survey of current Cleft lip and palate management practices among Specialists in Nigeria

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Abstract

Background: Comprehensive, interdisciplinary cleft care has become the global standard for restoring form and function. This approach draws on a diverse cleft care team to achieve optimal functional, aesthetic, and psychological outcomes.

Objectives: This study evaluated current cleft lip and palate management practices among healthcare specialists in Nigeria, focusing on a comprehensive care approach.

Methods: We conducted a cross-sectional descriptive study that surveyed cleft care providers at the 2024 conference of the Nigerian Association for Cleft Lip and Palate in Kano, Nigeria, using a self-administered questionnaire. We analyzed the data using SPSS version 27.

Results: Thirty-four surgeons (48.6%) and 36 non-surgeons (51.4%) completed the questionnaire. Overall, 69.1% were part of a cleft team. Most surgeons (64.5%) perform cleft lip repair at 12 weeks, while 38.7% perform palatoplasty at 12 months. Surgeons use the Millard technique for lip repair (87%), while Bardach (48.4%) and Von Langenbeck (35.5%) are used for palatoplasty. A significant majority (77.4%) allow feeding within six hours after lip repair, but half allow feeding only after six hours after palatoplasty. Many respondents do not routinely provide adjunctive care or surgery. Reported complication rates were 5% for lip repair (33.3% of surgeons) and 10% after palatoplasty (43.8% of surgeons).

Conclusion: Cleft care in Nigeria is increasingly team-based, yet key components of comprehensive care remain inconsistently available or implemented. Nationally applicable guidance should address team composition, multidisciplinary assessment, surgical protocols, postoperative feeding, speech and hearing services, secondary procedures, definitions of complications, and outcome monitoring.

Keywords: Cleft lip, Cleft palate, Comprehensive cleft care, Healthcare Specialists, Practices

Introduction

Cleft lip and/or palate (CLP) is one of the most common craniofacial birth defects worldwide.[1] It occurs when the lip and/or palate tissues fail to fuse completely during fetal development [1] and is an important cause of lifelong functional, aesthetic, and psychosocial morbidity. Global estimates indicate that millions of people are living with orofacial clefts, with a disproportionate burden in low- and middle-income settings.[2,3] A systematic review of low- and middle-income countries reported a pooled birth prevalence of approximately 1.38 per 1,000 births, though estimates vary substantially across countries and surveillance systems.[3] In Nigeria, pooled data from seven major treatment centers identified 2,197 cases and estimated a prevalence of approximately 0.5 per 1,000 births during the study period, while also highlighting that clefts are under-ascertained in Africa.[4]

Comprehensive interdisciplinary care, a longitudinal journey that begins at birth and continues into early adulthood, has become the global standard for treating CLP.[1,5] This care is essential to restore both form and function in affected areas. A comprehensive cleft care approach integrates the expertise of a diverse cleft team. Multidisciplinary cleft teams may include surgeons, orthodontists, pediatricians, geneticists, speech and language therapists, nutritionists, audiologists, specialist nurses, social workers and psychologists.[1] The precise composition varies with local resources, but coordinated care aims to reduce fragmentation and support appropriate referral and follow-up.[1,5] Some merits of this interdisciplinary approach include increased patient satisfaction, improved clinical outcomes and training, enhanced reporting of critical incidents, the development of clinical guidelines, and better participation in research and audits.[5]

The development of cleft services in Nigeria has been gradual. A review of cleft-care centers identified 39 centers, of which 30 responded; 73.3% reported designated cleft clinic locations, and 66.7% reported interdisciplinary care. However, services such as speech therapy, orthodontics, secondary surgery, and other supportive components were less consistently available, largely reflecting manpower and resource constraints.[6] Subsequent surveys of Nigerian practitioners have documented changes in surgical practice but have also shown continued variation in training, scope of care, and team organization. [7,8]

Earlier Nigerian surveys also show variation in multidisciplinary team participation.

Olasoji et al. reported that 21% of respondents practiced an interdisciplinary team approach[7], whereas Akinmoladun et al. later reported interdisciplinary team care among 78.2% of surgeon respondents in their 2017 survey.[8] An earlier survey of Nigerian specialists reported that 47.6% belonged to cleft teams.[9] These studies used different samples and methods and therefore should not be interpreted as a direct longitudinal series. Nevertheless, they illustrate the changing organization of cleft services in Nigeria.

In many resource-constrained settings, cleft care has traditionally been predominantly surgeon-centered, with primary lip and palate repair receiving greater attention than longitudinal speech, hearing, orthodontic, alveolar, psychosocial, and secondary reconstructive care.[6–8] Nigerian reports similarly describe limited access to some adjunctive services and difficulties related to manpower, hospital administration, theatre access, and other resources.[6]

Against this background, an updated assessment that includes both surgical and non-surgical cleft-care providers is useful for describing current practice and identifying areas needing further development. The present study therefore evaluated current practices among specialists attending a national cleft-care conference, focusing on team organization, timing and techniques of primary surgery, postoperative feeding and discharge, and selected components of comprehensive cleft care.

The goal was to identify areas of consensus, variations in care, and potential barriers to achieving optimal treatment outcomes. This evaluation will serve as a valuable benchmark for improving standards across Nigeria's cleft community.

Methods

Study Design and Setting: This cross-sectional descriptive survey included healthcare professionals involved in cleft lip and palate care who attended the 2024 annual conference of the Nigerian Association for Cleft Lip and Palate in Kano, Nigeria. The conference was held from 10th to 12th of July 2024 at the Afficent Event Center, Kano, Nigeria.

Participants and Eligibility: Eligible participants were healthcare professionals who attended the conference and were involved in assessing, treating, rehabilitating, or following up on patients with cleft lip and/or palate and who voluntarily participated in the survey. We excluded participants not involved in cleft care, those who declined participation, and those who returned questionnaires with substantial missing information.

Questionnaire and Data Collection: We used a structured, purpose-designed, self-administered questionnaire. We developed it around the study objectives and informed it by domains addressed in previous Nigerian surveys of cleft care.[6–8] The questionnaire collected information on professional characteristics and practice setting; cleft-team membership and organization; availability of a dedicated cleft clinic; post-specialty cleft-specific training; nasoalveolar molding; timing of lip and palate repair; operative techniques; primary rhinoplasty; postoperative feeding and discharge practices; monthly surgical volume; selected components of comprehensive care, including alveolar bone grafting, management of velopharyngeal insufficiency, speech evaluation, and secondary nasal reconstruction; and respondents' estimates of complications. We distributed questionnaires to conference participants, who completed them during the conference. We collated completed questionnaires and entered the data for analysis.

Ethical considerations: Participation was voluntary, and we obtained informed consent. We informed respondents about the survey's purpose before administering the questionnaire.

Statistical analysis: We analyzed the data using SPSS version 27 (IBM, New York, USA). We summarized categorical variables using frequencies and percentages. We summarized continuous variables using means and standard deviations. We presented the results in tables and figures.

Results

We distributed 102 questionnaires; 74 were returned, and we excluded four for incomplete responses, leaving 70 completed questionnaires for analysis (attrition rate: 31.4%). Respondents' mean age was 44.1 ± 16.4 years, with 37 males (52.9%) and 33 females (47.1%). The respondents (cleft care providers) included 34 surgeons (48.6%) and 36 non-surgeons (51.4%), practicing across all six geopolitical regions of Nigeria. Most respondents (92.2%) work in a tertiary facility. Figure 1 shows the professional composition. Nineteen respondents (29.7%) reported post-specialty training specifically in cleft care, while 22 (33.3%) had authored at least one publication on cleft lip and palate.

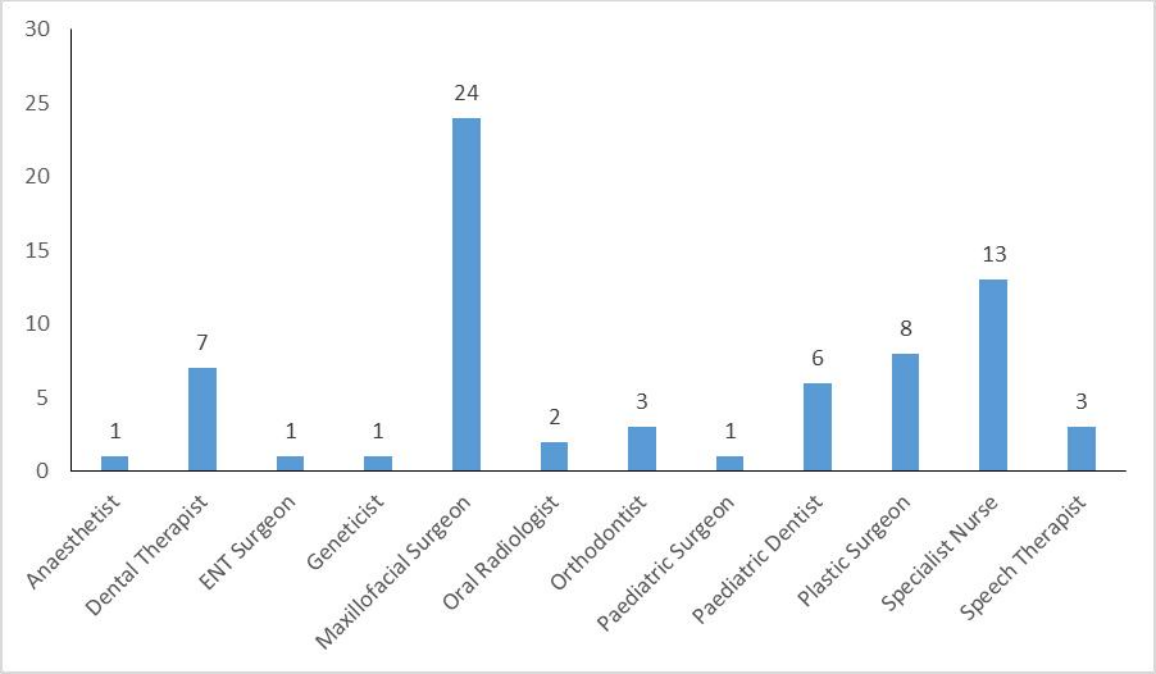

Figure 1. Professional Specialties of Respondents

Overall, 69.1% of respondents reported membership in a cleft team. Forty-five respondents (66.2%) reported that their institutions had a dedicated cleft clinic. The most frequently reported model of care was individual specialist review and planning (51.6%), followed by joint assessment by all specialists (25.0%) and individual specialist assessment followed by team discussion (23.4%). Most respondents agreed that a cleft team was important; seven (10.1%) reported that the team could cause delays in treatment. Team meeting frequency ranged from weekly to rare, as shown in Table I. Among surgeons, 48.4% reported using nasoalveolar molding. Cleft lip repair was performed at 12 weeks by 64.5% of surgeons. One surgeon reported repairing as early as 2 weeks. Palatoplasty was performed at 9 months by 32.3%, and at 10 months by 12.9%. Thus, 71.0% reported performing palatoplasty between 9 and 12 months.

Millard rotation-advancement was the most frequently reported cleft lip repair technique (87.0%). For palatoplasty, Bardach two-flap repair was reported in 48.4%, and von Langenbeck repair in 35.5% (Figure 2). 90.0% of surgeons included primary rhinoplasty in cleft lip surgery. Most surgeons (77.4%) commenced feeding within six hours after cleft lip repair. After palatoplasty, 50.0% allowed feeding at six hours, while 16.7% and 3.3% withheld feeding for 24 and 48 hours, respectively.

Table I: Geographical Distribution of Respondents and Cleft-team Meeting Schedule

Variable	Category	Frequency	Percentage
Geographical Distribution			
	Northwest	34	48.6
	Northeast	11	15.7
	Northcentral	7	10.0
	Southwest	11	15.7
	Southeast	3	4.3
	Southsouth	4	5.7
Cleft-team meeting schedule			
	Weekly	11	25.6
	Fortnightly	6	13.9
	Monthly	12	27.9
	Quarterly	10	23.3
	As required	4	9.3

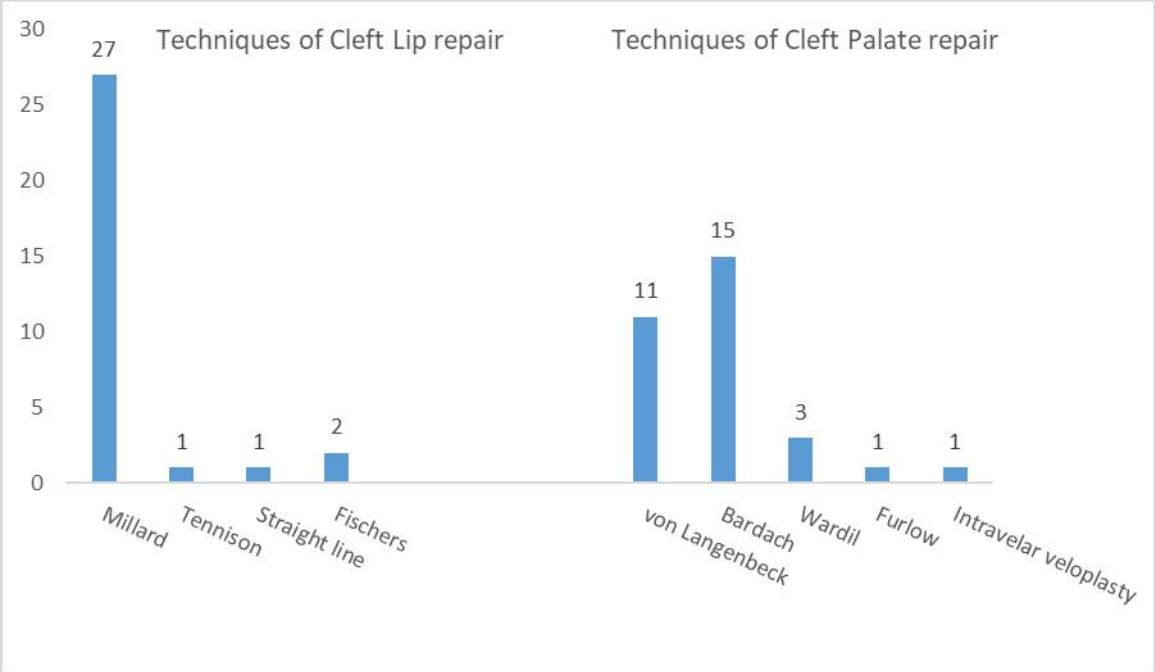

Figure 2. Techniques Reported for Cleft Lip and Palatal Repair

After lip repair, the most commonly reported discharge times were postoperative days 2, 3, and 5. After palatal repair, the most commonly reported discharge times were postoperative days 3, 5, and 7. Among responding surgeons, 89.3% reported performing 10 or fewer cleft operations per month.

Table II: Surgeons' reports of other Selected Components of Comprehensive Cleft Care

Variable	Frequency	Percentage
Alveolar Bone Graft	n =30	(%)
Never	6	20.0
Rarely	4	13.3
Sometimes	7	23.3
Often	9	30.0
Always	4	13.3
Velopharyngeal Insufficiency	n =31	
Never	7	22.6
Rarely	10	32.3
Sometimes	8	25.8
Often	6	19.4
Always	0	0.0
Speech Evaluation	n =32	
Never	5	15.6
Rarely	1	3.1
Sometimes	5	15.6
Often	13	40.7
Always	8	25.0
Secondary Nasal Reconstruction	n =30	
Never	3	10.0
Rarely	5	16.7
Sometimes	10	33.3
Often	9	30.0
Always	3	10.0

N = Number of surgeons who responded to the question

Practice regarding other components of comprehensive cleft care varied (Table II). Speech evaluation was the most frequently reported adjunctive service, with 40.7% of responding surgeons reporting that it was performed often and a further 25.0% reporting that it was always performed. Alveolar bone grafting, correction of velopharyngeal insufficiency, and secondary nasal reconstruction were performed less consistently.

Among 15 surgeons who reported an estimated cleft-lip complication rate, responses ranged from 1% to 10%, with 33.3% reporting 5%. Among surgeons reporting palatoplasty complication rates, 43.8% reported an estimated rate of 10%, while 6.3% reported 15%. The most

common complications reported for cleft lip repair were scar contracture (33.4%) and hypertrophic scar (18.5%), whereas fistula formation (80.8%) was the most common complication for cleft palate repair. Table III presents the reported complication details.

Table III: Complications Reported by the Surgeons

Complications	Frequency	Percentage
Cleft Lip	n = 27	
Wound breakdown	3	11.1
Hypertrophic scar	5	18.5
Surgical site infection	2	7.4
Deviation of the vermilion border	4	14.8
Scar contracture	9	33.4
Columellar malalignment	4	14.8
Cleft Palate	n = 25	
Fistula	20	80.0
Dehiscence	1	4.0
Surgical site infection	3	12.0
Edema	1	4.0

N = Number of surgeons who responded to the relevant complication question. These are counts of surgeons reporting that complication among respondents and are not patient-level complication incidences

Discussion

This study offers an updated overview of cleft-care practices among surgical and non-surgical specialists attending a national cleft-care conference in Nigeria. The findings indicate growing recognition of multidisciplinary care, while also showing persistent variation in access to and delivery of several components of comprehensive cleft management.

Most respondents worked in tertiary facilities, consistent with the resource-intensive nature of cleft care and with previous Nigerian reports [7,8]. The conference-based sampling frame may have overrepresented the northwest, where the meeting was held. Therefore, this geographic distribution should not be interpreted as reflecting the national distribution of cleft providers.

The percentage of respondents who have received cleft-specific training after their professional qualifications or fellowship (29.7%) was lower than the 44.9% reported in a previous survey in Nigeria,[8] despite the availability of certified training programs in the country. This low rate of cleft-specific training may explain the low interest in cleft-related research and publication among respondents in this study. Previous Nigerian work has identified limitations in specialist training and highlighted the need for structured capacity development.[6,10]

Although the respondents' specialties cover most necessary roles in a cleft team, many specialists, such as orthodontists, speech-language therapists, geneticists, and otorhinolaryngologists, were underrepresented. Notably, no psychologists or social workers were among the survey participants. These findings align with past surveys conducted in the country. [6–9] However, a significant number of respondents (69.1%) reported being part of a cleft care team within their institutions, a marked increase from 21%[7] and 47.6%[9] in previous studies. An ideal cleft care team evolves alongside the patient, helping to identify and address issues throughout their journey.[1] Unfortunately, the scarcity of diverse specialists in the country hampers this process, as evidenced by the survey participants' reports of infrequent adjunct and secondary procedures. Cleft team meeting schedules varied widely among respondents. This is similar to an American survey [11], which found that 37% of teams met monthly, 18% met 12-26 times per year, and 28% met more than 26 times per year.

Moreover, more than half of survey participants reported having dedicated cleft clinics, indicating a commitment to cleft care in the country and enabling structured patient evaluation. Consistent with this study, Laub and colleagues [11] noted that only 21% of teams reported that all specialists examined a child with a cleft together. This may reflect practical constraints, including specialist availability and scheduling, as well as interdisciplinary reluctance and professional siloing within cleft teams. However, multidisciplinary care does not require all specialists to be physically present at every consultation; coordinated assessment, communication, and timely referral are essential components of team-based care.

The study showed that surgeons in the country use nasoalveolar molding (NAM) less frequently, with reported usage rates (48.8%) similar to the 38% reported by Sitzman[12] and 41% by Roberts.[13] NAM assists with premaxillary rotation and reduces the cleft fissure. The low adoption rate of NAM may be attributed to potential

difficulties with neonate adaptation, as noted by Paradowska-Stolarz.[14]

The study also notes that repairing cleft lip between 3 and 4 months of age is consistent with previous surveys [6–8] and with global practice.[1,15] This study found that only a few surgeons perform cleft lip repair before 3 months. Early cleft lip repair in the neonatal period is safe and effective, leveraging soft-tissue plasticity to achieve better outcomes than traditional repairs performed between 3 and 6 months. This approach also reduces the need for revision surgeries.[16,17] Furthermore, early cleft lip repair has been shown to ease feeding problems and malnutrition by promoting weight gain compared with the usual timing for cleft lip repair.[18] However, timing should take into account patient condition, cleft phenotype, anesthetic resources, institutional expertise, and established team protocols.[16,17]

In contrast to lip repair timing, the present study found that palatoplasty timing is more variable; however, it aligns with findings from other studies[1], with most surgeons repairing the palate between 9 and 12 months. It appears that cleft surgeons in Nigeria have begun performing palatoplasty at an earlier age. Olasoji[7] reported in 2011 that 84.2% of surgeons repaired the palate by approximately 18 months, while six years later, Akinmoladun[8] noted that 78.3% of respondents performed the procedure at 9 months. The current survey found that only 12.9% of surgeons repaired the palate at 18 months, with most opting for earlier repairs. This may reflect improved pediatric anesthesia care. Patient nutrition, cleft severity, syndromic associations, and access to care may delay palatal repairs.

Techniques for repairing cleft lip and palate vary by cleft type and surgeons' experience[14,19,20]. The Millard rotation-advancement technique remains the most commonly used in its classic form, with various modifications developed over the years. This has been the practice in the country[7,8,19] and globally,[14,15], and was also observed in the current study. However, the Fischer anatomic repair of cleft lip is increasingly adopted by many surgeons[13] and is gradually gaining popularity in Nigeria as well. For palatal repair, the Bardach two-flap technique is slowly replacing the Von Langenbeck repair, which has traditionally been favored for palatal repair in the country, as previously reported.[6,8] This transition was also noted by Michael et al. in their review of cleft surgeries across three tertiary hospitals in Nigeria.[19] Differences in surgeons' experience with various techniques, preferences, cleft types, and cleft widths may complicate direct comparisons of

surgical methods. Existing studies in the literature have yielded varied outcomes regarding the superiority of one technique over another.[20–22]

More surgeons (90.0%) reported performing primary rhinoplasty during cleft lip surgery than the 66.6% reported by Akinmoladun in 2017.[8] Research has shown that primary rhinoplasty during unilateral or bilateral cleft lip repair can yield good outcomes with limited or no effect on nasal growth, while also reducing the need for secondary rhinoplasty.[23,24]

A review of the literature revealed that no standardized postoperative feeding protocol exists, and guidelines vary among cleft teams.[1,25,26] Most surgeons implement some form of feeding restrictions. In this study, 77.4% of surgeons reported feeding patients within six hours after cleft lip repair, while 50% allowed oral intake six hours after palatoplasty. However, the study did not assess the feeding method used (such as direct breastfeeding, cup and spoon, or bottle feeding) or when age-appropriate foods are reintroduced after surgery. Onah demonstrated a significant increase in wound breakdown among patients who commenced semisolid or solid foods within one to three weeks after palatal surgery, compared with those who started these diets later, at one month.[27] Nevertheless, relaxing some of these restrictions to allow cautious feeding in the immediate postoperative period has been reported to be safe and does not compromise patient outcomes.[28,29] Additionally, allowing early licks of honey has been shown to be harmless and may serve as a dressing for the palatoplasty wound.[27]

Most respondents do not routinely practice other components of comprehensive cleft care. Speech evaluations are performed by 40.7% of surgeons, making them the most common adjunctive care reported, followed by alveolar bone grafting, velopharyngeal insufficiency correction, and secondary nasal reconstruction, which are less consistently performed. Akinmoladun and colleagues[8] reported similarly low rates of procedures such as alveolar bone grafts and velopharyngeal insufficiency surgeries. They noted that the main reasons for not performing these procedures are patients' refusal and financial constraints. However, with increased support from non-governmental organizations for cleft care in the country, financial limitations may no longer be a significant barrier to accessing these essential services.

A systematic review by Plankowski et al.[30] reported overall revision rates of 21.2% for primary lip repairs, 32.3% for isolated unilateral cleft lip, 78.6% for isolated bilateral cleft lip, 29.6% for unilateral cleft lip and palate, and 36.7% for bilateral cleft

lip and palate. However, they found no statistically significant differences among these phenotypes, with scar revision the most frequent indication (26.2%). This survey's finding that 26.7% of surgeons reported only 1% seems encouraging compared with these aggregated studies, possibly reflecting under-reporting of minor complications or differences in complication definitions. The listed complications are consistent with the literature, with residual aesthetic imperfections more common than functional deficits.[1,17]

Hardwicke et al.[31] reported, in a meta-analysis, an overall palatal fistula rate of 8.6% (range: 0-35.5%), with lower rates associated with unipedicled flap techniques (6.2%) than with bipedicled flap repair (10.2%). However, the difference was not statistically significant. The current survey's prominent 10% rate closely mirrors this common benchmark. Fistula rates are heavily influenced by surgeon experience, technique, and cleft severity.[1,31,32] Palatal fistulae are more common in cases of cleft lip and palate than in isolated cleft palate.[31] The 43.8% of surgeons reporting a 10% rate in this survey aligns with literature-reported fistula rates,[27,31,32], while the 15% rate reported by 6.3% of surgeons is plausible for those managing wider clefts or using specific techniques associated with higher fistula risk. Sullivan et al.[32] reported that high-volume surgeons and centers consistently achieve lower fistula rates over time, suggesting that centralization of care may be a key factor in optimizing outcomes.

Overall, the findings indicate that cleft services are evolving rather than following a uniform national model. Increased reporting of team membership is encouraging as an indicator of current organizational structures; however, persistent gaps in adjunctive and secondary care suggest that team membership alone does not ensure comprehensive, longitudinal care.

Limitations: This study has important limitations. First, using a convenience sample of conference attendees introduces selection bias, likely overrepresenting providers involved in the academic cleft community. This limits the generalizability of our findings to the broader cleft care workforce. Second, the data are self-reported and may be affected by recall and social desirability biases, reflecting what participants report rather than verified practice. Third, the questionnaire was not validated or psychometrically tested. Lastly, the lack of standardized definitions for key outcomes, such as "complication," and the absence of correlative patient data or case-mix information—such as cleft severity and laterality—further restrict the interpretability of the results.

Conclusion

Cleft lip and palate care in Nigeria is increasingly organized around multidisciplinary teams, and many respondents reported access to dedicated cleft clinics. Nevertheless, substantial variation remains in team organization, pre-surgical orthopedics, surgical timing and techniques, postoperative feeding, and the availability or frequency of adjunctive services.

In particular, alveolar bone grafting, management of velopharyngeal insufficiency, speech evaluation, and secondary nasal reconstruction require greater integration into longitudinal care pathways. These findings support the development and implementation of nationally relevant cleft-care guidance that defines minimum team composition, multidisciplinary assessment and referral pathways, principles for timing and operative management, postoperative feeding and discharge protocols, speech and hearing surveillance, secondary procedures, and standardized definitions for complications and outcomes.

Recommendations: Nationally applicable cleft-care guidance with clearly defined minimum multidisciplinary team functions and referral pathways to promote standardized, coordinated care across institutions. Strengthen structured cleft-specific training and continuing professional development for both surgical and non-surgical providers, and improve access to essential services, including speech and language assessment, hearing care, orthodontic treatment, alveolar bone grafting, velopharyngeal surgery, and secondary nasal reconstruction. Furthermore, centers should establish standardized definitions and reporting forms for surgical complications and functional outcomes to support consistent documentation and comparison across centers. Prospective multicenter audits should be encouraged, using patient-level denominators and documenting cleft phenotype, severity, laterality, age at surgery, and duration of follow-up. Future national surveys should also capture the duration of cleft-care practice, clinical workload, institutional resources, and validated outcome measures to provide a more comprehensive assessment of cleft-care capacity, quality, and outcomes nationally.

Conflict of interest: None to declare

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Authors' contributions: MAA conceptualized the study, designed the methodology, conducted the literature search, and drafted the initial manuscript. IS designed the methodology, conducted the literature search, performed the statistical analysis, and prepared the manuscript. BS conceptualized the study, designed the methodology, conducted the literature search, and performed the statistical

analysis. AUF conceptualized the study, designed the methodology, conducted the literature search, and drafted the initial manuscript. MMY conceptualized the study, designed the methodology, and performed the statistical analysis. All the authors reviewed the manuscript and approved the final draft.

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