

## Title Page

# FEEDBACK IN ORTHODONTICS RESIDENCY TRAINING: THE NIGERIAN EXPERIENCE

## Abstract

**Background:** Feedback is an integral aspect of medical education necessary to promote better performance and improve self-regulation in learning. It is a two-way process of communication between an observer and the observed. Presently in Nigeria, there is insufficient information regarding feedback practices in dental residency training.

**Objective:** To assess the perception of Nigeria dental residents on the practice of feedback in their training generally; and particularly in Orthodontics.

**Material and Method:** A survey was carried out among dental residents with clinical experience in orthodontics with a view to assessing their perception of feedback practices in the training. The study instrument was a 24- item structured self- administered questionnaire presented in google form. Data collected were subjected to descriptive statistical analysis.

**Results:** Ninety-nine participants with a mean age of  $33.5 \pm 8$  were involved in the study, Forty-seven (47.5%) admitted to have heard of feedback concept. Out of 23 (23.2%) that received feedback in orthodontics, 15(65.2%) received only sometimes. Forty-four

participants (44.44%) had offensive feedback. Over half 14(60.9%) of participants that received feedback in orthodontics said the feedback they received met their learning needs. Verbal feedback and one-on-one feedback were preferred by 56(57%) and 51(52%) respondents respectively. Majority considered peer feedback as important and Most of the respondents recommended the integration of regular period of individualized, interactive, and constructive feedback in their training.

Conclusion: Generally, the practice of feedback in dental specialty training in Nigeria is unsatisfactory. Less than a quarter of participants received feedback in orthodontics and verbal and one-on-one feedback protocols were preferred.

Keywords: Nigerian residents, Orthodontics, feedback, Dental education

INTRODUCTION: Feedback is an integral aspect of medical education needed to promote better performance and improved self-regulation learning skills among learners. The process of feedback involves giving, receiving and seeking feedback [1, 2]. Though, feedback is mainly given by teachers; receiving and seeking feedback is regularly carried out by students that are active learners [1,3]. Feedback has been seen as one of the most important ways to facilitate learning interactions between the teacher and the learner. It has been described as “a specific information concerned about comparison between a trainee’s observed performance and a given standard with the intent to improve the trainees’ performance within the health professional education” [4]. Some features of effective feedback have been highlighted as follows: i. trainer and trainee should have a common goal in mind, ii. it should be well timed

and planned, iii. should be based on first hand data, iv. should be regulated in quantity and limited to behaviours that are remediable, v. should deal with specific performance, not generalized, and vi. should deal with decisions and actions, rather than assumed intentions [5,6].

Feedback is a two-way process of communication between an observer and the observed; usually, trainers and trainees. Active learners must regularly commit to seeking and receiving feedback in order to attain their instructional goals. Orthodontics is a clinical specialty of dentistry that requires sound theoretical knowledge and hand dexterity to be acquired during training. It is therefore important that residents have regular feedback during their training in order to ensure the desired clinical competencies. Presently in Nigeria, there is insufficient information regarding feedback practices in dental residency training in general and orthodontics in particular. In Nigeria, young doctors enroll into the residency programme for various reasons: for some, it is a way to secure a job or a stop gap before exploring better career or job opportunities, and for others, it is for the purpose of training to become a specialist in their areas of interest. To make the residency training worthwhile for those who are motivated and focused, feedback should really be an integral part of the residency programme as a way of making the trainees attain competency fully and early enough. This will make the training more effective and fulfilling particularly if the feedback is done professionally and devoid of hurt and discouragement. Orthodontics as a specialty requires dexterity, so, it is very important that residents have quality, effective and regular feedback that will ensure that the expected learning outcomes are achieved during their residency training. The aim of this study therefore was to assess the perception of dental residents on

the practice of feedback in postgraduate residency training, especially in relation to Orthodontics in Nigeria.

**Materials and Methods:** This was a descriptive survey carried out among orthodontic residents and residents from other dental specialties who have undergone or undergoing posting in orthodontics specialty at accredited institutions in Nigeria. A 24- item structured self- administered questionnaire was prepared in google form and administered online to participants. This instrument was modified from a previously validated and used feedback assessment questionnaire by Bing You R et al. [7]. The modification involved adjustment of some questions to focus on orthodontics training in Nigeria. The questionnaire had three sections: Section A recorded socio-demographic data, Section B contained Likert-scale type questions on feedback practices while Section C involved open-ended question on types of feedback preferred and ways feedback could be carried out in orthodontic training. Distribution was by emails and other social media platforms, majorly, groups WhatsApp. Reminders were sent three times to the residents' group WhatsApp platforms of the various training institutions. The questionnaire was designed to collect data on socio-demographic variables, whether the respondents have heard about feedback and has had feedback experiences generally and specifically in orthodontics, sought feedback from fellow residents, and also how comfortable they are when in a feedback session. Their perception on other critical areas of feedback was also enquired. Only properly completed and returned questionnaires were adopted for analysis.

**Data Analysis:** The data obtained were imputed on an excel spreadsheet and transferred to SPSS version 26 for descriptive statistical analysis including frequencies, proportions and mean ( $\pm$ standard deviation).

**Result:** Ninety-nine participants returned a properly completed survey instrument of whom 67(67.7%) were males, and 32(32.3%) were females. The mean age of the respondents was  $33.5 \pm 8.8$  years and modal age group of 30 - 39 years. Majority, 63(63.6%) had no feedback during orthodontic rotation while 23(23.2%) claimed that they had feedback during orthodontic rotation. Out of the 23 respondents who had received feedback during the orthodontic rotation, majority 15(65.2%) claimed that they were not asked of their self-assessment before the feedback was provided. (Table 1)

**Table 1: Questionnaire responses on Feedback in Orthodontic rotation**

Item	Yes	No	_Not Sure	Total
<b>Did you have feedback in Orthodontics rotation?</b>	<b>23 (100.0)</b>	<b>63 (63.6)</b>	<b>13 (13.1)</b>	<b>99(100)</b>
Before the feedback in orthodontics, were you asked about self-assessment of your performance?	8 (34.8)	15 (65.2)	0 (0.0)	<b>23(100.0)</b>
Did the feedback contained specific details of your performance	12 (52.2)	5 (21.7)	6 (26.1)	<b>23(100.0)</b>
The feedback prompted you to reflect on your performance	23 (100.0)	0 (.0)	0 (0.0)	<b>23(100.0)</b>
The feedback included suggestions to help you improve	21 (91.3)	2 (8.7)	0 (0.0)	<b>23(100.0)</b>
Were you given feedback on how to improve?	21 (91.3)	2 (8.7)	0 (0.0)	<b>23(100.0)</b>
Time was set aside to give me feedback	14 (60.9)	5 (21.7)	4 (17.4)	<b>23(100.0)</b>
I received the feedback in time for me to act on it	16 (69.6)	6 (26.1)	1 (4.3)	<b>23(100.0)</b>
The feedback I received was based on direct observation of	21 (91.3)	0 (.0)	2 (8.7)	<b>23(100.0)</b>

my performance

The feedback helped me improve on my performance	23 (100.0)	0 (.0)	0 (.0)	<b>23(100.0)</b>
The feedback I received in the Orthodontic rotation helped me identify my strengths and weaknesses	21 (91.3)	2 (8.7)	0 (.0)	<b>23(100.0)</b>
The learning environment in Orthodontic rotation helped me to try out the feedback I received	18 (78.3)	0 (.0)	5 (21.7)	<b>23(100.0)</b>
I understood the purpose of the feedback I received during the Orthodontic rotation	23 (100.0)	0 (.0)	0 (.0)	<b>23(100.0)</b>
I received reinforcing (what I should keep doing) and corrective (what I need to work on) feedback	19 (82.6)	2 (8.7)	2 (8.7)	<b>23(100.0)</b>
There was follow up in the feedback I received in other to review my progress	8 (34.8)	5 (21.7)	10 (43.5)	<b>23(100.0)</b>
The amount of feedback I received met my learning needs	14 (60.9)	2 (8.7)	7 (30.4)	<b>23(100.0)</b>

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Twelve respondents (52.2%) claimed that the feedback contained specific details about their performance while all 23(100%) claimed that the feedback prompted them to reflect on their performance. Twenty-one (91.3%) respondents indicated that the feedback contained suggestions that would help them improve their performances.

Furthermore, majority, 14(60.9%) of those who claimed that they have received feedback in orthodontics, said that time was set aside for the feedback exercise. Sixteen (69.6%) respondents indicated that the feedback was received in time and 21(91.3%) admitted that the feedback was based on direct observation of their performance. Twenty-three(100%) claimed that the feedback helped them improve on their performance. As concerning the learning environment, 18(78.3%) claimed that the learning environment enabled them try out the feedback they received and all 23(100%) indicated that they understood the purpose of the feedback they received. Nineteen respondents (82.6%) agreed that they received both reinforcing and corrective feedback while 2(8.7%) respondents each were either not sure or did not find the feedback reinforcing or corrective. Furthermore, as many as 10(43.5%) respondents claimed that they were not sure whether there was any follow up on the feedback they received in order to monitor their progress and more than half, 14 (60.9%) of the respondents who claimed that they had received feedback during their orthodontic rotations stated that the feedback met their learning needs. Generally, Forty-seven (47.5%) of the participants admitted to have heard of feedback since they started the residency training and 34(34.3%) were not sure whether they have heard of it (Table 2). Only forty two, 42.4% respondents indicated that they had experienced feedback exercises since they commenced their residency training and 19(19.2%) were not sure whether they had received any feedback.(Table 2). In the residency training, forty-four (44.44%) respondents claimed that they have received offensive feedback during their training while 82(82.83%) considered peer feedback important (Table 2).

Table 2: Responses on Feedback generally on residency training

QUESTIONS	Yes	No	Not Sure	Total
Have you heard of feedback during your training so far?	47 (47.5)	18 (18.2)	34 (34.3)	99(100.0)
Generally, have you had a feedback exercise?	42 (42.4)	38 (38.4)	19 (19.2)	99(100.0)
Did you have feedback in Orthodontics rotation?	23 (23.2)	63 (63.6)	13 (13.1)	99(100.0)
Have you ever received offensive feedback?	44 (44.4)	37 (37.4)	18 (18.2)	99(100.0)
Do you consider peer feedback important?	82 (82.8)	6 (6.1)	11 (11.1)	99(100.0)

The quality of the feedback received by the residents during their residency rotations was rated excellent by only 4(4.0%) residents, good by 20(20.2%). On the frequency of the feedback received in orthodontics, 15(65.2%) representing the majority had it sometimes, and this was followed by 6(26.1%) respondents who claimed that they often received feedback. Two(8.7%) respondents, representing the least frequency, claimed that they received feedback rarely.

Written feedback would be preferred by 56(57%) respondents as against 43(43%) who would prefer verbal feedback. Regarding preference for individualized, group or both types of feedback, 51 (52%) participants would prefer one-on-one, while only 4 (4%) would prefer group feedback. (Fig 1).

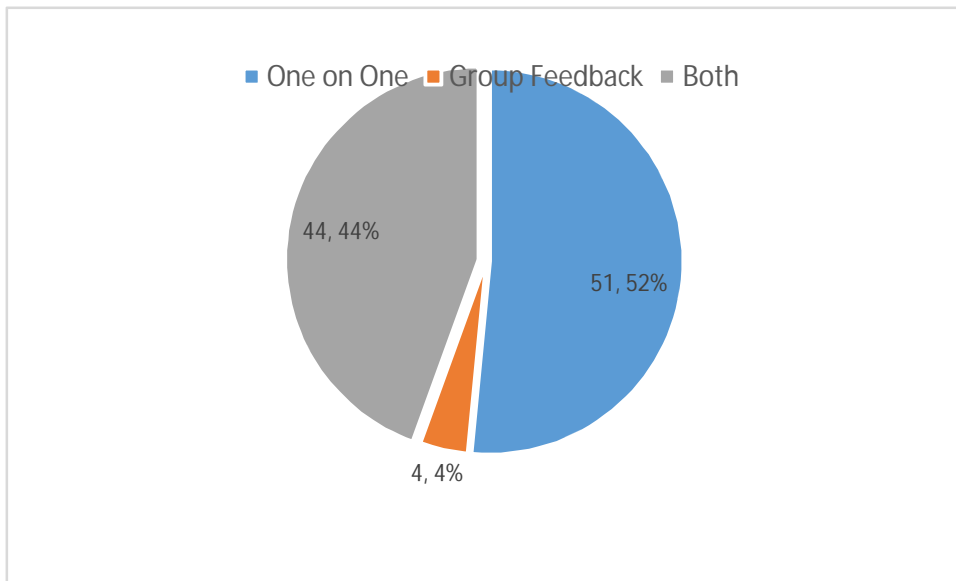


Figure 1: Preference for individualized, Group or both types of feedback

As concerns how feedback could be improved in orthodontics dental training, 45(45%) of the respondents suggested a regular period to have individualized, interactive and constructive feedback, 18(18%) said mentorship and 12(12%) indicated that the intent and plan for feedback should be expressed during the rotation, as seen on table 3.

**Table 3 : How can feedback be improved in Orthodontic dental training?**

S/No.	Suggestions	Frequency(n)	Percent (%)
1.	Regular period to have individualized, interactive, and constructive feedback should be created	45	45
2.	Better practice	2	2
3.	Through mentorship	18	18
4.	By incorporating summative assessment	8	8
5.	Expressing the intent and plan for a feedback during the rotation	12	12
6.	Feedback suggestions should be implemented	5	5
7.	Given by trainers and peers	2	2
8.	I am not sure	8	8
	<b>TOTAL</b>	100	100

## Discussion

In the clinical setting, students receive feedback following formative and summative assessments but the quality, frequency and timeliness vary between institutions and players [8]. Ideally, feedback is a two- way process but traditionally in practice, it is often unidirectional, usually from teacher to learner. The learner-centered models support a more active role for the student in the feedback process [8].

As important as feedback is in medical training, less than half of the studied participant had heard about feedback in their residency training and more than a third had opportunity to have the exercise done in their residency training. Surprisingly, less than a fourth of the

studied population had feedback exercise done during their orthodontic training as revealed by this study. This needs to be improved upon so that trainees could appreciate their progressive learning achievements and make prompt remediation across all the three domains of learning (knowledge, skill and conduct) where necessary. Feedback should indeed extend beyond the training period as orthodontic skills may be honed both during the residency training and even after specialization.

Majority of the participants in this study were not asked about their self-assessment before the feedback sessions during their orthodontic rotations, yet, self-assessment of residents before feedback session has been said to soften the perception of harshness and help make it sensitive, corrective and more acceptable [9]. Though self-assessment of trainees is necessary to be done before a feedback session, it was not the practice among participants of this study, which clearly shows lack of understanding of the rudiments of feedback as a desired component of the orthodontic training. Orthodontics involves hands-on practices, so, feedback on behaviour based on direct observation is necessary. In this survey, most participants alluded to having feedback based on direct observation of their performances. This corroborates Ende [10] and Van Hell et al. [11] that reported that feedback based on direct observation done by the teacher is more acceptable and instructive to trainees than feedback based on second hand reporting. Some residents even tended to discount feedback if they did not believe that the statements arose out of first -hand observation [7,12].

Although it has been widely reported that resident doctors and other health professional trainees are directly observed and given feedback during their clinical exposures by Burgess et al.[13] , it is not yet clear whether these trainees are actively involved in the expected two-way process.

Most of the studied residents who had feedback in their orthodontic rotation alluded to the feedback they received helping them identify their strengths and weaknesses. This finding corroborates study by Hewson et al [14] that revealed that learners found it helpful if feedback was even-handed (addressed both strengths and mistakes) and was given gently, supportively, caringly and with concern for their situation. The finding in our study could suggest a good feedback practice in the orthodontic specialty. About a third of the participants who had feedback in orthodontics alluded to having follow-up to the feedback received to review their progress. Though follow-up after a feedback session is expected, as stated by Ramani et al. [15], showing that the important purpose of feedback is formative and it allows a trainee to make the needed changes. The finding in this study however shows that the import of feedback in this regard was lost; giving the small number of participants that admitted to having been followed up on the feedback received. The finding of this survey that more than half of the participants who experienced feedback in orthodontics said the feedback they received met their learning needs lends credence to the likelihood of good feedback practice in orthodontic specialty training in Nigeria. The essence of feedback is to help the trainees discover their potentials, so, the situation where many affirmed to having feedback that met their learning needs could imply effective feedback delivery by the trainers. The import of this observation is in its potential to enhance outcome-based training which would ultimately facilitate efficient and competent clinical practice. On the contrary, some participants noted of offensive feedback in this study. Generally, offensive feedback should be discouraged from the residency programme because it has a counterproductive effect by eroding recipients' self-esteem, reducing their productivity rather than stimulating their potentials.

The fact that most participants agreed that peer feedback is good corroborated a previous observational study by Snyderman *et al.* [16] that reported that peer observation and feedback among residents' during clinical session is both feasible and rewarding, and should be encouraged. Peer feedback should therefore be encouraged in the dental residency programme in Nigeria. Furthermore, a good number of participants in this study preferred verbal, face to face feedback in a friendly environment. This finding is in line with the assertions of some researchers [17,18] who said that 'face to face', verbal feedback is known to be more beneficial as it allows discussion and explanation which ensures optimal communication and understanding. The result on preference of one-on-one feedback in a friendly environment is also supported in some studies [19,20]. Feedback given in a friendly atmosphere will be more effective and easily appreciated by the trainees and the desired goal will be better achieved. Effective feedback is better given in a private setting and in a constructive manner [7,18].

However, with a contrast finding, Bruning *et al* [21] asserted that written feedback is more useful and makes trainees get motivated to perform their task very well. Written feedback could be said to be long lasting since it provides a chance for revisiting the highlighted deficiencies for improvement and for re-iterating and reinforcing the strong points [21].

In relation to how feedback can be improved upon in orthodontic dental training, some participants suggested a regular period to have individualized, interactive, and constructive feedback. This was followed by those who advanced mentorship as a way of improving feedback. In some studies [22,23,24], mentoring was described as an interpersonal relationship in which a mentor is an experienced person who provides professional knowledge and skills to guide his/her mentee. The suggestion is consistent with findings by

some researchers [25,26] whereby collaboration between mentor and a prospective professional was recognized as being key for the mentee's development of professional knowledge and skills. When feedback by mentoring is improved upon, quality training is the outcome as demonstrated in previous studies [27,28] where mentoring outcomes in higher education was associated with improving quality of education.

Feedback initiated solely by learners or jointly with trainer was seen as being more instructive than that initiated solely by teachers[11,29]. Observations in this study in which some participants felt their self-assessment was not inquired or that some feedback were found offensive underscores the essence of understanding feedback as characterized by Mandhane *et al.* [30] who stated that: "feedback should be delivered in an appropriate setting and with non-judgemental language used. When the characteristics of an effective feedback is adhered to, a feedback session will be most welcomed by trainees and it will be most educationally productive". Hence, it is important to actively engage and integrate the trainees into the feedback planning and execution so that they will begin to see the exercise as a needed and much desirable aspect of their training.

## Conclusion

In this study, most participants were both unaware and had not experience feedback in their dental residency training. For the minority who had experienced feedback, it was notable that some components of standard feedback protocol were not followed. Less than a fourth of the respondents received feedback in orthodontics and most of them found the feedback useful. However, most participants believed that feedback in orthodontics training can be improved

by setting a regular period to have individualized, interactive, and constructive sessions and by adopting a mentorship system. In general, peer, and one-on-one verbal feedback protocol was preferred by most.

### Recommendation

This study exposes the dearth in the knowledge and awareness of feedback practices among dental residents and orthodontics trainees in Nigeria. It also suggests that trainers might be unfamiliar with the appropriate standards for delivering feedback. It is therefore recommended that emphasis be laid on feedback practices in postgraduate dental and clinical orthodontics training for both trainers and trainees. Periodic survey to monitor improvements in this respect is desirable. More survey in the future will be necessary to investigate the progress made in the feedback knowledge and practices in our various residency training institutions.

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### **Consent**

Only participants who gave their consent and willingly completed the google forms and returned were included in the study.

### **Ethical Approval**

Ethical approval was sought and obtained from the ethics committee of the University of Port Harcourt Teaching Hospital with number UPTH/ADM/90/S.II/VOL.XI/1286.

#### Competing Interest

Authors have declared that there is no known competing interest.

#### Author's Contribution

Author A: Designed the study, performed the statistical analysis, wrote the protocol and first draft of the manuscript.

Author B: Managed the analysis of the study, managed the literature search.

All authors read and approved the final manuscript.

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