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**Experiences, Expectations, Attitudes
and Perception of Orthodontic Resi-
dents Towards Orthodontic Training
Programme in Nigeria**

**An Assessment of Awareness of
Medical Doctors to Malocclusion and
Orthodontic Services in a Nigerian
Teaching Hospital**

**Occlusal Characteristics Of
Orthodontic Patients Seen At A
Tertiary Health Facility In Bamako,
Mali**

**Frequency And Pattern Of
Orthodontic Extractions:
A 5 Year Review**

**Comparison of the Shear Bond
Strength of an Orthodontic Adhesive
with a Restorative Adhesive**



Experiences, Expectations, Attitudes and Perception of Orthodontic Residents Towards Orthodontic Training Programme in Nigeria

Adesina BA.^a, Adebayo ET.^b

Abstract

Background: The practice of orthodontics in Nigeria has witnessed gradual but steady development since its introduction over three decades ago. Despite significant increase in the number of orthodontic training institutions in Nigeria, there are relatively few orthodontists and even orthodontic residents in training for the population. This is to evaluate the experiences, expectations, attitudes and perception of Nigeria orthodontic residents towards their training.

Methods: This was a cross-sectional study conducted among Orthodontics residents at all the accredited Nigerian teaching hospitals. The instrument used was a self-administered, closed anonymous 46-items questionnaire. Data from the questionnaires were collated and entered into Microsoft Excel version 10, 2002 (Microsoft, Redmond, WA, USA) and processed using STATA software (StataCorp LLC, Texas, USA). Fischer's exact test was done where necessary. Statistical significance was set at $p \leq 0.05$ and tests were two-sided.

Results: Out of 41 orthodontic residents in 9 accredited training institutions in Nigeria, 34 participated in the study, representing 82.9%. Most residents (79.4%) chose orthodontics because of the quest for knowledge while a few (2.9%) were mentor guided. Majority (41.2% and 44.1 %) expressed low level of satisfaction with the quality of residency training and the didactic teaching in the program respectively.

Conclusion: The study concluded that most of the identified factors affecting orthodontics residency training program in Nigeria are trainee, trainer and curriculum related and will require the dental faculty of the postgraduate colleges to proffer solutions.

Key words: Professional experiences, Residency training, Attitudes, Expectations, Orthodontics, gender.

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Introduction

Orthodontia, also known as Orthodontics and Dentofacial Orthopedics, was the first specialty created in the meadow of dentistry¹. It is one of the foremost specialties in dentistry that is becoming more popular across the globe with increasing awareness in West Africa especially in Nigeria². Also, orthodontic practice in Nigeria has

witnessed a gradual but steady development since its introduction over three decades ago². Several studies have shown that most dental undergraduates intend to specialize later in their careers^{3,4}. Specialist training which is commonly acquired through the residency programme is not all together rosy⁵. Various reasons have been adduced as motivating factors in the choice of specialty. The most common reasons for Nigerian residents choosing orthodontics as a career are passion for orthodontics, intellectual stimulation and challenge, workload flexibility and predictability alongside future job satisfaction⁶.

Postgraduate orthodontic training in Nigeria and West Africa began over forty years ago with about nine accredited postgraduate orthodontic residency training institutions presently in the country⁷. predictability alongside future job satisfaction⁶. Postgraduate orthodontic training in Nigeria and

West Africa began over forty years ago with about nine accredited postgraduate orthodontic residency training institutions presently in the country⁷. Despite this significant number of orthodontic training institutions in Nigeria, the number of orthodontists remains low, so also orthodontic residents in training. A previous Nigerian study mentioned 'perceived phobia' for the residency programme by students and doctors alike with most resident doctors complaining that consultants contributed less than 50% to their training and other challenges including poor state of training facilities and low remuneration package⁸.

Nigeria with a population of over 200 million has only 55 orthodontists with 51 practicing in the country as at present. There are few studies on the challenges associated with orthodontics residency worldwide, hence the aim of this study was to evaluate the experiences, expectations, attitudes and perception of orthodontic residents towards their training. The specific objectives of the study were (1) to determine the demographics of orthodontic residents; (2) to assess their experiences, expectations, attitudes and perception towards residency training and (3) to evaluate the relationship between some socio-demographic characteristics to selected features of (2). Finally, the study was to recommend measures to improve orthodontic residency training in Nigeria. It is believed that the findings would contribute to the literature by outlining factors to improve the training of orthodontists in Nigeria and worldwide.

Materials and Methods

Study Design and Sample

This cross-sectional study was conducted among Orthodontics residents at all the accredited Nigerian teaching hospitals in 2017. The sample comprised all dental surgeons undergoing orthodontic residency training in the country. Questionnaires were distributed through a dental surgery resident (site coordinator) at the training institutions to encourage freedom of expression. Each site coordinator was briefed about the study especially about the study tool. The coordinator distributed the survey material and retrieved both blank and filled questionnaires at the end of the survey. These were sent back to the principal investigator. The questionnaire had an explanatory note on the rationale for the study and the confidentiality of the responses. Acceptance and completion of the questionnaire was taken as implied consent. The research protocol was approved by the Ministry of Defence Health Research Ethical Committee. A sample of the questionnaire has been published previously⁵.

Survey Instrument

The survey was conducted through a self-administered closed anonymous questionnaire adapted from Yeo et al⁹ for United States of America general survey residents. The questionnaire inquired about the technical, human and professional domains of the expectations, attitudes and perceptions of residents according to Herbella et al¹⁰. The adapted questionnaire had two parts. The first part had 10 questions on demographics while the 2nd part had 46 questions. The 2nd part was subjected to further discussions among orthodontic residents and their trainers (consultants) in 3 Nigerian teaching hospitals before it was finalized. The Cronbach's alpha for the 46-items was 0.751 which indicated they had good internal consistency (reliability).

The final 46-items questionnaire was tested on 70 dental residents; the data generated was subjected to principal factor analysis with a Varimax orthogonal rotation. An examination of the Kaiser-Meyer-Olkin measure of sampling adequacy showed that the sample was factorable (KMO=0.956). The first part of the questionnaire had 10 questions for demographic data such as training centre, age group, sex, marital status, specialty, number of years in residency training, last exam passed (yet to pass any exam-nil, passed primaries, passed part one and passed part two), sponsorship and main reason for choosing orthodontic residency training. Residents who are yet to pass part one, were classified as junior residents while the others were classified as senior residents. The 2nd part with 46 questions sought information on professional experiences, ethical issues, motivating factors, attitudes and opinion on the future of their specialty. The questions were structured as statements while the respondent indicated level of agreement using a 5-point Likert-type response scale, made up of strongly agree (5), agree (4), no opinion (3), disagree (2) and strongly disagree (1). for the 46-items was 0.751 which indicated they had good internal consistency (reliability). The final 46-items questionnaire was tested on 70 dental residents; the data generated was subjected to principal factor analysis with a Varimax orthogonal rotation.

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primaries, passed part one and passed part two), sponsorship and main reason for choosing orthodontic residency training. Residents who are yet to pass part one, were classified as junior residents while the others were classified as senior residents. The 2nd part with 46 questions sought information on professional experiences, ethical issues, motivating factors, attitudes and opinion on the future of their specialty. The questions were structured as statements while the respondent indicated level of agreement using a 5-point Likert-type response scale, made up of strongly agree (5), agree (4), no opinion (3), disagree (2) and strongly disagree (1).

Data Analysis

Data from the questionnaires were collated and entered into STATA software (Version 13; Stata Corp; College Station, TX, USA). The strongly agree/agree and disagree/strongly disagree responses were merged during data analysis. Categorical variables were calculated as proportions and percentages with 95% corresponding intervals. χ^2 -test was used to analyse the association between selected demographic characteristics and some of the responses. Fischer's exact test was done where necessary. Statistical significance was set at $p \leq 0.05$ and tests were two-sided.

Table 1a: Socio-demographic variables

Variable	Frequency	Percent
Age (years)		
25 – 29	4	11.8
30 – 34	15	44.1
35 – 39	9	26.5
≥ 40	6	17.6
Mean ± SD	34.50 ± 4.65	
Sex		
Male	15	44.1
Female	19	55.9
Marital status		
Single	7	20.6
Married	24	70.6
Divorced	1	2.9
Widowed	2	5.9
Number of children		
None	10	29.4
1 – 2	20	58.8
3 – 4	4	10.8

Results

Out of 41 orthodontic residents in 9 accredited training institutions in Nigeria, 34 participated in the study, representing 82.9%. The residents who did not participate were not available during the period of the study, but no available resident declined participation. This Organisations definition of a complete survey as that which is in line with the Council of American Survey Research with >80% items completed.

Table 1a summarizes the demographic variables of the respondents. Most respondents were females (n=19, 55.9%); aged between 30-34 years of age (n=24, 44.1%) and married (n=24, 70.6%).

Table 1b represents the duration, sponsorship characteristics and reason for residency. There were more junior residents yet to pass part One (n=17, 55.9%) while a few (n=5, 14.7%) had spent > 6 years in the residency program. Majority of the residents were university/teaching hospital staff (n=28, 82.4%), and a few were supernumeraries (n=5, 14.7%). Most residents (n=27, 79.4%) chose orthodontics because of the need for knowledge, n=2, 5.9% for better pay and n=1, 2.9% was mentor guided. The remaining (n=4, 11%) had orthodontics as the only available option.

Table 1b: Duration, sponsorship and reasons for residency

Variable	Frequency	Percent
Number of years		
< 1	11	32.4
1 – 3	7	20.6
4 – 6	11	32.4
> 6	5	14.6
Exams passed		
None	2	5.9
Primaries	17	50.0
Part 1	15	44.1
Sponsorship		
Self	1	2.9
University	28	82.4
Supernumerary	5	14.7
Reasons for residency		
Mentor guided	1	2.9
For knowledge	27	79.4
Better pay	2	5.9
No other option	4	11.8

Table 2 shows the experiences, expectations attitudes and perceptions of the study participants towards residency training. Majority expressed low level of satisfaction with the quality of residency training (n=14, 41.2%; 95% CI 28.1- 58.8) and even with the didactic teaching in the program (n=15, 44.1 %; 95% CI 28.1- 64.7). Greater number of orthodontic residents (n=18, 52.9%; 95% CI 32.4 – 68) believed the program had adequate support structures for struggling residents, thirty one (91.2%; 95% CI 82.4 – 100.0) claimed to have adequate support from departmental/faculty members while struggling in the program. Very few residents (n=2, 5.9%; 95% CI 0- 100.0) felt the residency program took too long to complete while some (n=15, 44.1%; 95% CI 82.4-100.0) agreed that the hours of working are causing a strain on family life. Also, few (n=2, 5.9%; 95% CI 0-14.7) were worried that orthodontics was going to become obsolete but most (n=31, 91.2%; 95% CI 82.4-98.3) agreed that post-residency specialist training was necessary. Specialist training for a dentist was considered a necessity for success by

most respondents (n=27, 79.4%; 95% CI 64.7 – 91.2) and 22(64.7%; 95% CI 48.7 – 80.7) agreed that expectation for good financial compensation informed their choice of orthodontics. Considering performance of tasks, majority of the residents felt their consultants/senior residents accommodate them if they ask for help when they don't know how to perform certain procedure (n=24, 70.6%; 95% CI 58.8-85.3) or manage a patient (n=24, 70.6%; 95% CI 55.9-86.6) while a few (n= 4, 11.8%; 95% CI 4.6 – 23.5) were worried that they would not have enough confidence to operate independently before the end of training. As regard stress and concern of residents, 24 (70.6%; 95% CI 54.6-83.6) were eager to come to work daily but about one fifth (n=7, 20.6%; 95% CI 8.8 – 35.3) had considered leaving the training program in the last one year. Most (n=33, 97.1%; 95% CI 88.2 - 100) really cared for their patients while 17(50%; 95% CI 34.0 – 67.6) were worried about hurting their patients.

Table 2: Experiences, expectations, and attitudes towards residency training

Variable	Agree	Neutral	Disagree
	n (95%CI)	n (95%CI)	n (95%CI)
Overall, I am very satisfied with the training program	13 (23.5 -51.3)	7 (11.8 -35.3)	14 (28.1 -58.8)
As a dental resident, my opinions are important	18 (34.0 -67.6)	12 (20.6 -52.9)	4 (2.9 – 24.8)
look forward to coming to work everyday	24 (54.6 -83.6)	6 (4.6 -2.4)	4 (2.9 -26.5)
I am satisfied with the didactic teaching in my program	12 (19.3 -50.0)	7 (8.8 -6.6)	15 (28.1 -64.7)
The program has support structures in place that provide me with someone to turn to when I am struggling	18 (32.4 -68.9)	5 (2.9 -9.4)	11 (16.4 -48.3)
I feel I can turn to members of the department/faculty when I have difficulties in the program	21 (42.8 -4.8)	7 (8.8 -6.6)	6 (4.6 -32.4)
Residency training is too long	16 (26.5 -1.8)	16 (32.4 -7.6)	2 (.0 -100.0)
The hours I am working are causing a strain on my family life	15 (28.1 -58.8)	7 (8.8 -32.4)	12 (17.6 -51.3)
I worry that my specialty is going to become obsolete	2 (.0 -14.7)	5 (4.6 -26.5)	27 (66.4 -92.5)
I will need to complete additional specialty training after I complete my residency training in order to be competitive in the job market	31 (82.4 -98.3)	2 (.0 -14.7)	1 (.0 -11.8)
- If I complete specialty training, I will have a better lifestyle	27 (64.7 -91.2)	5 (2.9 -6.5)	2 (.0 -16.0)

Variable	Agree	Neutral	Disagree
	n (95%CI)	n (95%CI)	n (95%CI)
Good financial compensation influenced my decision to be	22 (48.7 -80.7)	3 (.0 -18.9)	9 (13.4 -42.5)
My consultants will think worse of me if I ask for help when I do not know how to manage a patient	6 (7.5 -32.4)	4 (2.9 -3.5)	24 (55.9 -86.6)
-My consultant will think worse of me if I ask for help when I do not know how to do a procedure	6 (5.9 -29.4)	4 (.0 -23.5)	24 (58.8 -85.3)
I worry that I will not feel confident enough to perform procedures by myself before I finish training	4 (4.6 -23.5)	1 (.0 -8.8)	29 (73.5 -94.1)
-I have considered leaving my program in the last year	7 (8.8 -35.3)	6 (5.9 -32.4)	21 (44.5 -73.5)
I get a tremendous amount of satisfaction working with patients	20 (42.8 -77.7)	12 (19.3 -51.3)	2 (.0 -17.6)
I worry about hurting patients	17 (34.0 -67.6)	5 (2.9 -26.5)	12 (19.3 -54.2)

Tables 3a-c respectively analysed selected items for association with age groups, sex and exam passed. In Table 3a, orthodontic residents were placed into 2 age groups under categories < 35years and ≥ 35years. The level of satisfaction with residency training program was higher with residents with age less than 35yrs (42.1%) compared with those ≥ 35yrs (33.3%) but the difference was not statistically significant (p=0.631). Most of the younger age group

(89.5%) looked forward to come to work every day as against 46.7% of ≥ 35years group, the difference was very significant (p= 0.019). More (40%) of the older orthodontics residents (age group ≥ 35years) than the younger residents (5.3%) felt been disrespected by the consultants and trainers, this difference was also statistically significant (p=0.039).

Table 3a: Relationship between age and experiences, expectations, and attitudes towards residency training

Variable	Age (years)		χ^2	p value
	< 35 n (%)	≥ 35 n (%)		
Overall, I am very satisfied with the training program	8 (42.1)	5 (33.3)	0.273	0.601
As an orthodontic resident, my opinions are important	11 (57.9)	7 (46.7)	0.424	0.515
I look forward to coming to work everyday	17 (89.5)	7 (46.7)	5.48 ^Y	0.019*
I am satisfied with the didactic teaching in my program	7 (36.8)	5 (33.3)	0.045	0.832
I have considered leaving my program in the last year	2 (10.5)	5 (33.3)	1.454 ^Y	0.227
The hours I am working are causing a strain on my family life	7 (36.8)	8 (53.3)	0.925	0.336
I really care about my patients	19 (100.0)	14 (93.3)	0.014 ^Y	0.905
I worry about hurting patients	8 (42.1)	9 (60.0)	1.074	0.300
The program has support structures in place that provide with someone to turn to when struggling	10 (52.6)	8 (53.3)	0.002	0.968
I do not feel respected by my consultants	1 (5.3)	6 (40.0)	4.244 ^Y	0.039*
Residency training is too long	8 (42.1)	8 (53.3)	0.424	0.515
I worry that I will not feel confident enough to perform procedures by myself before I finish training	2 (10.5)	2 (13.3)	0.081 ^Y	0.775
If I complete specialty training, I will have a better income	13 (64.8)	12 (80.0)	0.136 ^Y	0.712

χ^2 : Chi square test; Y: Yates corrected Chi square; *: p value <0.05

Table 3c was the analysis on the basis of last exam passed (nil, Primaries and Part One). It showed mixed responses to the selected items. The level of satisfaction with the training program was found to be higher among those yet to pass any of the fellowship examinations (50%) followed by those who had passed Part One (46.7%) and those who had passed Primaries examination (29.4%) but the differences were not statistically significant ($p=0.754$). However, those with primary were worried about performing poorly in front of senior residents and the difference

was statistically

significant (0.003). Junior residents below 2 years in the program were more worried (68.8%) than those who had stayed longer than 2 years ($p= 0.006$) as shown in table 3d. It was also discovered that more orthodontic residents who had spent between 3 – 6 years in the training program (53.8%) believed that orthodontists do not make money now as they used to as compare to those who had spent less than 3 years on the residency program. This difference was quite significant statistically ($p= 0.01$).

Table 3c: Association between exams passed and experiences, expectations, and attitudes towards residency training

Variable	Exams passed			χ^2	p value
	None n (%)	Primaries n (%)	Part 1 n (%)		
Overall, I am very satisfied with the training program	1(50.0)	5(29.4)	7(46.7)	0.563 ^Y	0.754
As an orthodontic resident, my opinions are important	0(0.0)	10(58.8)	8(53.3)	0.738 ^Y	0.691
I look forward to coming to work everyday	1(50.0)	13(76.5)	10(66.7)	0.092 ^Y	0.955
I am satisfied with the didactic teaching in my program	1(50.0)	7(41.2)	4(26.7)	0.341 ^Y	0.843
I have considered leaving my program in the last year	1(50.0)	4(23.5)	2(13.3)	0.165 ^Y	0.920
The hours I am working are causing a strain on my family life	2(100.0)	8(47.1)	5(33.3)	1.111 ^Y	0.573
The program has support structures in place that provide me with someone to turn to when I am struggling	1(50.0)	9(52.9)	8(53.3)	0.502 ^Y	0.778
I feel I can turn to members of the department/faculty when I have difficulties in the program	1(50.0)	12(70.6)	8(53.3)	0.563 ^Y	0.754
Residency training is too long	0(0.0)	7(41.2)	9(60.0)	1.005 ^Y	0.605
I worry that I will not feel confident enough to perform procedures by myself before I finish training	1(50.0)	3(17.6)	0(0.0)	1.506 ^Y	0.470
I worry about performing poorly in front of my senior residents	1(50.0)	12(70.6)	1(6.7)	11.153 ^Y	0.003
I worry about performing badly in front of my consultant	1(50.0)	13(76.5)	5(33.3)	4.690 ^Y	0.095
I worry that my specialty is going to become obsolete	0(0.0)	0(0.0)	2(13.3)	2.045 ^Y	0.359
Each year my expectations for the amount of money I am going to make when I finish training seem to go down	0(0.0)	2(11.8)	4(26.7)	0.509 ^Y	0.775
One of the factors that influenced my decision to be an Orthodontist was the expectation of good financial compensation	1(50.0)	10(58.8)	11(73.3)	0.341 ^Y	0.843

χ^2 : Chi square test; Y: Yates corrected Chi square; *: p value <0.05

Variable	Age (years)		χ^2	p value
	<35 n(%)	≥35 n(%)		
My consultant will think worse of me if I ask for help when I do not know how to do a procedure	4 (21.1)	2 (13.3)	0.018 ^Y	0.893
My consultants will think worse of me if I ask for help when I do not know how to manage a patient	3 (15.8)	3 (20.0)	0.018 ^Y	0.893
The modern specialist in my field must become specialty trained in order to be successful	12 (63.2)	10 (66.7)	0.045	0.832
Each year my expectations for the amount of money I am going to make when I finish training seem to go down	4 (21.1)	2 (13.3)	0.018 ^Y	0.893
One of the factors that influenced my decision to be an Orthodontist was the expectation of good financial compensation	14 (73.7)	8 (53.3)	1.520	0.218

χ^2 : Chi square test; Y: Yates corrected Chi square; *: p value <0.05

Other selected items analyzed by sex in table 3b had more females than male in agreement but the differences were not statistically

significant except that more males (73.3%) than females (36.8%) felt their opinions are important and also expressed satisfaction with the operative experience in the program with statistically significant difference (p=0.034) for both items.

Table 3b: Relationship between sex and experiences, expectations, and attitudes towards residency training

	Sex		χ^2	p value
	Male	Female		
Overall, I am very satisfied with the training program	7 (46.7)	6 (31.6)	0.808	0.369
As an orthodontic resident, my opinions are important	11 (73.3)	7 (36.8)	4.480	0.034*
I look forward to coming to work everyday	11 (73.3)	13 (68.4)	0.004 ^Y	0.949
I am satisfied with the didactic teaching in my program	6 (40.0)	6 (31.6)	0.260	0.610
I am satisfied with the operative experience in my program	11 (73.3)	7 (36.8)	4.480	0.034*
I have considered leaving my program in the last year	5 (33.3)	2 (10.5)	1.454 ^Y	0.227
The hours I am working are causing a strain on my family life	7 (46.7)	8 (42.1)	0.071	0.790
I really care about my patients	15 (100.0)	18 (94.7)	0.014 ^Y	0.905
I worry about hurting patients	9 (60.0)	8 (42.1)	1.074	0.300
The program has support structures in place that provide me with someone to turn to when I am struggling	6 (40.0)	12 (63.2)	1.804	0.179
I do not feel respected by my consultants	4 (26.7)	3 (15.8)	0.124 ^Y	0.724
Residency training is too long	8 (53.3)	8 (42.1)	0.424	0.515
If I complete specialty training, I will have a better income	12 (80.0)	13 (68.4)	0.136 ^Y	0.712
My consultant will think worse of me if I ask for help when I do not know how to do a procedure	2 (13.3)	4 (21.1)	0.018 ^Y	0.893
My consultants will think worse of me if I ask for help when I do not know how to manage a patient	2 (13.3)	4 (21.1)	0.018 ^Y	0.893
Each year my expectations for the amount of money I am going to make when I finish training seem to go down	3 (20.0)	3 (15.8)	0.018 ^Y	0.893
One of the factors that influenced my decision to be an Orthodontist was the expectation of good financial compensation	10 (66.7)	12 (63.2)	0.045	0.832
Orthodontists do not make as much money now as they used to	3 (20.0)	5 (26.30)	0.001 ^Y	0.974

Discussion

This study consisted of 34 orthodontic residents from the accredited postgraduate training institutions in Nigeria with the aim to evaluate their experiences, expectations and attitudes towards their training. Our study in table 1a showed there were female (55.9%) than males (44.1%), a ratio of 1.3:1 in the orthodontic residency program. This agrees with previous studies that underscored feminization of dentistry especially orthodontics.^{4,8,11}

A survey of gender distribution of dentists in Nigeria revealed that, over a twenty-year period, there has been a consistent rise in female dental practitioners from 15.3 percent in 1981 to 35.1 percent at the end of 2000¹². This is also corroborated by another Nigerian study that women in orthodontic training outnumbered men⁶. This increase in female participation should improve public perception of dentistry and orthodontics in particular. Most (70.6%) of the orthodontic residents were between the ages of 30–39 years which is in contrast to similar studies in the United state¹³ and Canada¹⁴ where majority of residents were between the ages of 25 to 34 years. However, it is similar to the earlier study of Nigerian dental residents⁵. This implied that Nigerians in orthodontics commence residency training at an older age compared to residents in the USA and Canada. Possible reasons such as commencement of undergraduate training at older ages, stay too long as undergraduates due to incessant strikes and other disruptions of academic work and prolonged interval before residency training due to paucity of slots.⁵ These may also explain why most of the participants (70.6%) were married. There is a need to improve on the undergraduate training calendar to reduce duration of stay while also assessing the causes and effects of entering residency training at an older age in Nigeria as well as its impact on quality of training and coping ability.

In an earlier Nigerian study, senior residents in orthodontics (61.5%), were more than junior residents (38.5%),⁷ our study in table 1b showed a different result (44.1 and 55.9% respectively). High proportion of senior residents could be indicative of stagnation after passing Part One examinations. Stagnation at the senior dental residency level was also reported by Adebayo et al,⁵ but our study found only 14.6% of orthodontics residents had stayed beyond the maximum 6years as compared to 44.5% in the earlier study⁵. It is advisable that trainees and trainers in other dental specialties evaluate the factors creating a disproportionate number of senior residents and those yet to pass Part Two examinations of the residency resulting in stagnation after passing Part One. Table 1b showed that most orthodontic residents (79.4%) chose the specialty because of the

quest for knowledge which was similar to the finding of Yemitan et al⁶. However, 'Enjoyment of providing care' in a specialty or field was identified as the single most important factor in choosing a specialty career in Harvard School of Dental Medicine¹⁴. A few (5%) expressed the opinion that expectation for good financial compensation informed their choice of orthodontics while 2.9% were mentor guided. This underscored the need for mentorship particularly during undergraduate training to help students make career decisions based on interest in the specialty and desire to gain more knowledge which could be more satisfying¹⁵.

Evaluation of experience, expectations, attitudes and perceptions of the orthodontic residents towards their training in table 2 showed that most respondents (41.2%) were dissatisfied with the quality of their training especially the aspect of didactic teaching. This contrasts with reports from other studies from the United States of America¹⁶ and Canada¹⁷. While 52.9% of orthodontic residents in Nigeria from table 2 agreed that they had appropriate level of operating skill from their training; a similar proportion (52.9%) agreed there was adequate support structures for struggling residents and 91.2% claimed to have adequate support from departmental/faculty members while struggling in the program. There is need to address the factors causing dissatisfaction of the orthodontic residents in Nigeria with their training. A few residents (5.9%) ; 95% CI 0- 100.0) felt that the residency program took too long to complete, while a good proportion (44.1%) agreed that the hours of working were causing a strain on family life. The training curriculum could be explored to make it 'family-life friendly'.

Table 3a showed that orthodontic residents of age category < 35yrs showed high level of satisfaction in their training program compared to those with age 35 and above though there was no significant difference. This may inform the reason why the younger age group in this study is always looking forward to come to work every day. However, larger percentage of age group ≥ 35yrs felt not being respected by their consultants than those younger than 35years (p= 0.039). Conduct and attitudinal behaviour of the trainers and trainees are to be considered in this regard. It could be that the relatively older trainees had more expectation for respect from their trainers or the trainers were not emotionally sensitive to the needs of this population of trainees.

Other selected items analyzed by sex had more

Table: 3d Association between number of years spent and experiences, expectations, as well as attitudes towards residency training

Variable	Number of years spent			χ^2	p value
	< 2 n (%)	3 – 6 n (%)	> 6 n (%)		
Overall, I am very satisfied with the training program	4(25.0)	8(61.5)	1(20.0)	6.784	0.128
I look forward to coming to work everyday	12(75.0)	10(76.9)	2(40.0)	4.233	0.322
I am satisfied with the didactic teaching in my program	6(37.5)	5(38.5)	1(20.0)	1.688	0.894
I have considered leaving my program in the last year	3(18.8)	3(23.1)	1(20.0)	6.891	0.104
The hours I am working are causing a strain on my family life	8(50.0)	6(46.2)	1(20.0)	4.379	0.357
I really care about my patients	15(93.8)	13(100.0)	5(100.0)	1.524	1.000
The program has support structures in place that provide me with someone to turn to when I am struggling	9(56.3)	7(53.8)	2(40.0)	4.077	0.397
I feel I can turn to members of the department/faculty when I have difficulties in the program	11(68.8)	9(69.2)	1(20.0)	5.505	0.200
I do not feel respected by my consultants	2(12.5)	3(23.1)	2(40.0)	3.070	0.569
Residency training is too long	7(43.8)	5(38.5)	4(80.0)	2.795	0.736
I worry that I will not feel confident enough to perform procedures by myself before I finish training	3(18.8)	1(7.7)	0(0.0)	2.994	0.551
My consultants will think worse of me if I ask for help when I do not know how to manage a patient	3(18.8)	1(7.7)	2(40.0)	2.847	0.621
I worry about performing poorly in front of my senior residents	11(68.8)	3(23.1)	0(0.0)	12.550	0.006
The modern specialist in my field must become specialty trained in order to be successful	10(62.5)	8(61.5)	4(80.0)	1.407	0.928
Each year my expectations for the amount of money I am going to make when I finish training seem to go down	2(12.5)	3(23.1)	1(20.0)	4.571	0.306
One of the factors that influenced my decision to be a surgeon was the expectation of good financial compensation	9(56.3)	10(76.9)	3(60.0)	3.142	0.583
Orthodontists do not make as much money now as they used to	1(6.3)	7(53.8)	0(0.0)	11.584	0.010

χ^2 : Chi square test; *: p value <0.05

Discussion

This study consisted of 34 orthodontic residents from the accredited postgraduate training institutions in Nigeria with the aim to evaluate their experiences, expectations and attitudes towards their training. Our study in table 1a showed there were female (55.9%) than males (44.1%), a ratio of 1.3:1 in the orthodontic residency program. This agrees with previous studies that underscored feminization of dentistry especially orthodontics.^{4,8,11}

A survey of gender distribution of dentists in

Nigeria revealed that, over a twenty-year period, there has been a consistent rise in female dental practitioners from 15.3 percent in 1981 to 35.1 percent at the end of 2000¹². This is also corroborated by another Nigerian study that women in orthodontic training outnumbered men⁶. This increase in female participation should improve public perception of dentistry and orthodontics in particular. Most (70.6%) of the orthodontic residents were between the ages of 30 – 39 years

females than male in agreement but the differences were not statistically significant except that more males (73.3%) than females (36.8%) felt their opinions are important and also expressed satisfaction with the operative experience in the program with statistically significant difference ($p=0.034$) for both items. This agrees with the finding among dental residents by Adebayo et al.,⁵ and it could be due to the influence of gender on responses by orthodontic residents.

There was mixed responses to selected items in table 3c on the basis of last exam passed by the respondents. The level of satisfaction with the training program was found to be 50%, 46.7%, 29.4% in among residents yet to pass any examinations, Primaries and Part One respectively though the differences were not statistically significant. Most junior residents (70.6%, $p=0.003$) especially those who had not spent more than 2 years in the program (68.8%, $P=0.006$) were worried of performing poorly in the presence of the senior residents. This could result to lack of confidence in clinical performances and even in the exams. There is the need to bridge the gaps between junior and the senior residents to create conducive learning atmosphere.

This study also revealed that orthodontic residents especially those who had spent between 3 – 6 years in the training program (53.8%) felt that orthodontists do not make money now as they used to compared to others ($p=0.010$). It revealed the change in perception of how lucrative orthodontics is as residents progress in the training program. There is also need for entrepreneurship training as part of the orthodontics residency to broaden financial horizons beyond looking for government employment so as to improve financial satisfaction after training.

Conclusion

Orthodontics is a foremost dental specialty that is becoming more popular across the globe with increasing awareness in West Africa especially in Nigeria. In this study, it was revealed that females are more in the residency training program compared to males and most of the orthodontic residents were between the ages of 30 – 39 years. The level of satisfaction with the training program was found to be higher than earlier reported among other dental surgery residents in Nigeria. Most orthodontic residents chose the specialty out of quest for more knowledge but some were worried that post-specialty practice may not be as financially rewarding as expected. Other dental specialist training

programmes could learn from the orthodontics specialty to improve satisfaction with training and reduce stagnation after residents have passed the Part One examinations. There is also need for the inclusion of entrepreneurship training in the curriculum of orthodontic residency to reduce reliance on government employment and embrace private practice for financial satisfaction.

Contributors

Adesina B.A was partly responsible for the study design, analysis and interpreting the data, writing and final approval of the study. Adebayo E.T was partly responsible for the concept, study design, acquisition of data and writing editing

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Conflict of Interest

None declared

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