

# Emerging trends in dental specialty choice in Nigeria

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Asymmetry in the distribution of dental specialists in Nigeria has the potential to negatively affect dental education at all levels. There is a dearth in Nigerian studies on the trends of influencing factors on the choice of dental specialty in Nigeria. Past efforts have not resulted in policy change thus necessitating the current study. One hundred and twelve (51 male, 61 female) Nigerian dental graduates aged 23–55 years with a mean age of  $35.21 \pm 8.21$  years completed self-administered questionnaires to assess the impact of 16 influencing factors on their choice of dental specialty. The graduation period of respondents, which ranged between 0 and 30 years was recoded into three decades and cross-tabulated against 16 influencing factors to assess their relative impact on specialty choice. Diagnostic challenge, predictable work hours and patient type appeared to have maintained a consistent popularity while affluence and income, although less popular influences three decades ago are becoming increasingly relevant while length of programme, prestige and level of crowding exerted less influence on choice of specialty than other factors. The potential influence of incentives such as career counselling and grants for overseas training to encourage enrolment in less popular programmes was assessed based on recommendations from previous studies. However, these measures appeared to be unpopular among Nigerian dental graduates. Diagnostic challenges and predictable work hours remain popular as influencing factors on choice of dental specialty among Nigerian dental graduates. Affluence and income, although previously unpopular are now gaining popularity among Nigerian dental graduates.

**Key words:** Dental specialty training, choice, Nigeria, trends

## INTRODUCTION

Arowojolu *et al.*<sup>1</sup> highlighted concerns about the asymmetrical distribution of dental specialists and its potential harmful impact on dental education in Nigeria. The number of dental schools in Nigeria has since increased with no commensurate increase or equitable distribution of specialists, especially within ‘endangered’ specialties.

Economic influences often have an impact on many aspects of private and public life, but to what extent have such influences affected specialty choice among Nigerian dental graduates? Are Nigerian dental graduates more interested in postgraduate dental education or in making money?

As the study by Arowojolu and co-workers<sup>1</sup> was carried out about 15 years ago, the authors of the current study decided to investigate evolving trends in dental specialty choice among Nigerian dental graduates in

order to answer new questions: What has changed in the last decade? Have research findings in the area of speciality training choices translated into policy change? Are influences on specialty choice evolving or stagnant and what are the postgraduate medical colleges doing to address the evolving trends?

Answering these questions will help us to understand current trends. Further, we believe that researchers should go beyond a mere understanding of trends to influence positive action towards policy change. This will require constructive engagement with decision makers in dental education at both undergraduate and postgraduate levels.

## Aim of study

To identify trends in factors influencing postgraduate specialty choice among Nigerian dental graduates with a view to effecting a change in policy.

## METHODS

### Study setting

Participants were attendees at continuing dental education events of the Nigerian dental association and dental specialty conferences. These attract representatives from various cadres of dental personnel working in Nigeria.

### Sampling

Non-random, convenience sampling using a captive audience was used. All attendees at the stated events were approached to respond to questionnaires.

The chosen sampling technique provided a quick method of obtaining opinions on the subject matter. All participants fulfilled the required inclusion criteria (being dentists). Many participants were also consultants and postgraduate trainers. This at least partly eliminated the bias often associated with a 'captive' audience.

All respondents were Nigerian dentists. The response rate for completed questionnaires was 112 of 131 (85.5%). Of this total, 51 were males and 61 were females with ages ranging from 23 to 55 years, a mean age of 35.21 years  $\pm$  8.21 and a modal age of 33 years.

### Study instrument

The study instrument used was a self-administered questionnaire requesting demographic information, opinions on interesting or stressful undergraduate subjects and information on choice of speciality using a graded (Likert) scale for relative importance of factors influencing choice of speciality.

A total of 16 influences on choice of speciality were assessed:

- Possession of special skills
- Intellectual content of speciality
- Challenging diagnostic problems
- Predictable working hours
- Specific interest in patient type
- Affluence of residents in the programme
- Length of residency
- Good income within speciality
- Private practice opportunities
- Prestige
- Few specialists
- Pre-dental school career plans
- Career counselling
- Availability of spaces
- Pass rate in department
- Grants for overseas training.

The research questions were:

- To what extent have economic influences affected speciality choice in dentistry?
- Are dental graduates more or less interested in postgraduate education or in making money?
- What has changed in the last decade?
- Are influencers of specialty choice evolving or stagnant?
- How are the postgraduate medical colleges responding to evolving trends in specialty choice?

### Consent and confidentiality

Compliance in filling in the questionnaire was taken as implied consent while refusal to fill in all part of questionnaire was taken as consent not given. Names and other personal identifiable information were omitted from the questionnaire to ensure confidentiality.

### Ethical consideration

Every aspect of the research was in full accordance with the World Medical Association Declaration of Helsinki and was approved by the committee on dental education of the Nigerian dental association.

### Data analysis

Data were analysed using PASW (SPSS) statistics<sup>2</sup>. Univariate analysis for frequencies of parameters were performed. Multivariate analysis and cross-tabulations were employed for dependent (outcome) variables against several covariates (explanatory variables).

Variables in crosstabs yielding invalid chi-square figures (expected count more than 20%) were recoded and appropriately recategorised. Such data included, but were not limited to, age, year of graduation and all responses on the three-point Likert scale.

Coding of years since graduation was carried out using three bands where 0–10 years = 1, 11–20 years = 2 and 21–30 years = 3. Three-point Likert responses were coded as 1 = not important/recoded, 2 = minimally important/Important and 3 = very important/extremely important recoded.

For the purpose of meaningful statistical analysis, subjects and specialties were also regrouped, as reflected in the Tables.

To assess the relative strengths of the opinions assessed through the Likert scale, recoded responses assessed through the scale served as influencers, which were entered into a binary logistic regression model, while dichotomous responses such as gender, marital status, etc., served as dependent(outcome) variables.

Relative strengths of association were based on resulting odds ratios (Exp B) and *P*-values at 95% CI; *P*-values  $\leq$  0.05 were considered statistically significant.

Inferences on trends were based on differences observed over three decades based on responses of participants who had graduated over the last three decades.

## RESULTS

Sixty respondents graduated 0–10 years ago, 28 graduated 11–20 years ago and 15 graduated 21–30 years ago.

### Diagnostic challenges, predictable working hours and patient type

The relative changes observed in the percentage of respondents whose choice of specialty was influenced by the relative diagnostic challenge of their chosen specialties were inconsistent over the three decades. The greatest percentage of respondents considered diagnostic challenges as extremely important over the last three decades (50.0%, 79.3% and 46.7%, respectively). The observed trends did not achieve statistical significance ( $P = 0.07$ ; *Table 1*).

**Table 1** Cross-tabulation of specialty choice influences by years since graduation

Graduation (years)	Challenging diagnostic problems			Total (N)
	Not important	Important	Extremely important	
0–10				
<i>n</i> (%)	6 (8.8)	28 (41.2)	34 (50.0)	68 (100.0)
11–20				
<i>n</i> (%)	2 (6.9)	4 (13.8)	23 (79.3)	29 (100.0)
21–30				
<i>n</i> (%)	2 (13.3)	6 (40.0)	7 (46.7)	15 (100.0)
$\chi^2 = 8.53$ , $df = 4$ , $P = 0.07$				
Predictable working hours				
0–10				
<i>n</i> (%)	5 (7.4)	24 (35.3)	39 (57.4)	68 (100.0)
11–20				
<i>n</i> (%)	2 (6.9)	10 (34.5)	17 (58.6)	29 (100.0)
21–30				
<i>n</i> (%)	3 (20.0)	4 (26.7)	8 (53.3)	15 (100.0)
$X^2 = 2.71$ , $df = 4$ , $P = 0.61$				
Specific interest in patient type				
0–10				
<i>n</i> (%)	12 (17.6)	27 (39.7)	29 (42.6)	68 (100.0)
11–20				
<i>n</i> (%)	3 (10.3)	15 (51.7)	11 (37.9)	29 (100.0)
21–30				
<i>n</i> (%)	3 (20.0)	4 (26.7)	8 (53.3)	15 (100.0)
$X^2 = 2.98$ , $df = 4$ , $P = 0.56$				
Affluence of residents in the programme				
0–10				
<i>n</i> (%)	19 (27.9)	30 (44.1)	19 (27.9)	68 (100.0)
11–20				
<i>n</i> (%)	15 (51.7)	13 (44.8)	1 (3.4)	29 (100.0)
21–30				
<i>n</i> (%)	7 (46.7)	6 (40.0)	2 (13.3)	15 (100.0)
$\chi^2 = 10.24$ , $df = 4$ , $P = 0.04$				

Influencing factors: challenge, working hours, patient type, affluence.

Over the three decade ranges, more respondents were influenced by an assurance of predictable working hours than those who considered it unimportant (57.4%, 58.6% and 53.3%, respectively). However the intra-decade percentages did not reflect across decades, as changes were inconsistent and consequently not statistically significant ( $P = 0.61$ ). Similarly, trends in the influence of patient type on specialty choice showed inconsistencies both within and across decades and minor changes observed did not achieve statistical significance ( $P = 0.56$ ; *Table 1*).

### Affluence and income

A sharp difference was noticed in the importance of affluence of current residents in specialties. While about 50% of respondents who graduated three decades ago considered affluence important or extremely important, this figure has risen to over 70% within the last decade. The observed differences were statistically significant ( $P = 0.04$ ; *Table 1*). Similarly, the influence of income was strong within and across decades, reflecting a steep statistically significant increase (73%, 89% and 95%, respectively) in the percentage of respondents who considered income as either important or extremely important over the last three decades ( $P = 0.04$ ; *Table 2*).

### Length of programme, prestige and number of specialists

The influence of the length of residency programme on specialty choice appeared to be less than previously discussed influencing factors as the figures revealed that the percentages of respondents graduating over the last three decades who considered length of residency extremely important were only 32.4%, 13.8% and 26.7%, respectively, and the observed differences did not achieve statistical significance ( $P = 0.34$ ; *Table 2*).

The increasing importance accorded to prestige by respondents graduating over the last three decades was reflected in the percentages of respondents who considered it important enough to rate it as either important or extremely important, rising from 73% three decades ago to 86% two decades ago to 91% in the last decade. As steep as the increase appears, the differences were not statistically significant ( $P = 0.33$ ) and neither was the number of specialists ( $P = 0.08$ ; *Table 2*).

### Other influencing factors

Trends observed among respondents over the last three decades revealed that pre-dental school career plans ( $P = 0.31$ ), career counselling ( $P = 0.16$ ), availability of spaces ( $P = 0.63$ ), pass rate ( $P = 0.47$ ) and grants for overseas training ( $P = 0.22$ ) showed a

**Table 2** Cross-tabulation of influences on choice of specialty by years since graduation

Time since graduation (years)	Length of residency			Total (N)
	Not important	Important	Extremely important	
0–10 <i>n</i> (%)	12 (17.6)	34 (50.0)	22 (32.4)	68 (100.0)
11–20 <i>n</i> (%)	9 (31.0)	16 (55.2)	4 (13.8)	29 (100.0)
21–30 <i>n</i> (%)	4 (26.7)	7 (46.7)	4 (26.7)	15 (100.0)
$\chi^2 = 4.56, df = 4, P = 0.34$				
Good income within specialty				
0–10 <i>n</i> (%)	3 (4.4)	21 (30.9)	44 (64.7)	68 (100.0)
11–20 <i>n</i> (%)	3 (10.3)	12 (41.4)	14 (48.3)	29 (100.0)
21–30 <i>n</i> (%)	4 (26.7)	6 (40.0)	5 (33.3)	15 (100.0)
$\chi^2 = 10.27, df = 4, P = 0.04$				
Prestige				
0–10 <i>n</i> (%)	6 (8.8)	26 (38.2)	36 (52.9)	68 (100.0)
11–20 <i>n</i> (%)	4 (13.8)	9 (31.0)	16 (55.2)	29 (100.0)
21–30 <i>n</i> (%)	4 (26.7)	6 (40.0)	5 (33.3)	15 (100.0)
$\chi^2 = 4.59, df = 4, P = 0.33$				
Few specialists				
0–10 <i>n</i> (%)	7 (10.3)	37 (54.4)	24 (35.3)	68 (100.0)
11–20 <i>n</i> (%)	8 (27.6)	15 (51.7)	6 (20.7)	29 (100.0)
21–30 <i>n</i> (%)	2 (13.3)	5 (33.3)	8 (53.3)	15 (100.0)
$\chi^2 = 8.32, df = 4, P = 0.08$				

Influencing factors: length, income, prestige, specialists.

consistent trend of non-significance as influencing factors for specialist dental careers (*Table 3*).

**DISCUSSION**

While most of the studies cited were carried out among medical graduates, the authors of the current study found no studies on trends in influencing factors on dental specialty choice in Nigeria. Therefore, the focus of the current study was not merely to report influencing factors but to analyse how these influences have evolved over the years.

Arowojolu *et al.*<sup>1</sup> examined factors affecting choice of dental specialty but did not consider trends. Bearing in mind that that their study was carried out about 15 years ago, it was pertinent to consider emerging trends, vis-à-vis their observations, predictions and recommendations.

**Diagnostic challenges, predictable working hours and patient type**

The lack of statistical significance ( $P = 0.07$ ) in the influence of diagnostic challenges on specialty choice

**Table 3** Cross-tabulation of influences on choice of specialty by years since graduation

Time since graduation (years)	Pre-dental school career plans				Total (N)
	Not important	Important	Extremely important		
0–10 <i>n</i> (%)	17 (25.0)	33 (48.5)	18 (26.5)		68 (100.0)
11–20 <i>n</i> (%)	6 (20.7)	17 (58.6)	6 (20.7)		29 (100.0)
21–30 <i>n</i> (%)	4 (26.7)	4 (26.7)	7 (46.7)		15 (100.0)
$\chi^2 = 4.80, df = 4, P = 0.31$					
Career counselling					
0–10 <i>n</i> (%)	13 (19.1)	36 (52.9)	19 (27.9)		68 (100.0)
11–20 <i>n</i> (%)	9 (31.0)	16 (55.2)	4 (13.8)		29 (100.0)
21–30 <i>n</i> (%)	5 (33.3)	4 (26.7)	6 (40.0)		15 (100.0)
$\chi^2 = 6.62, df = 4, P = 0.16$					
Availability of spaces					
0–10 <i>n</i> (%)	11 (16.2)	30 (44.1)	27 (39.7)		68 (100.0)
11–20 <i>n</i> (%)	8 (27.6)	13 (44.8)	8 (27.6)		29 (100.0)
21–30 <i>n</i> (%)	2 (13.3)	7 (46.7)	6 (40.0)		15 (100.0)
$\chi^2 = 2.57, df = 4, P = 0.63$					
Pass rate in department					
0–10 <i>n</i> (%)	15 (22.1)	33 (48.5)	20 (29.4)		68 (100.0)
11–20 <i>n</i> (%)	11 (37.9)	13 (44.8)	5 (17.2)		29 (100.0)
21–30 <i>n</i> (%)	3 (20.0)	8 (53.3)	4 (26.7)		15 (100.0)
$\chi^2 = 3.53, df = 4, P = 0.47$					
Grants for overseas training					
0–10 <i>n</i> (%)	14 (20.6)	30 (44.1)	24 (35.3)		68(100.0)
11–20 <i>n</i> (%)	9 (31.0)	16 (55.2)	4 (13.8)		29 (100.0)
21–30 <i>n</i> (%)	5 (33.3)	5 (33.3)	5 (33.3)		15 (100.0)
$\chi^2 = 5.76, df = 4, P = 0.22$					

Influencing factors: plans, counselling, availability, pass rate.

among respondents is quite clear from the results. However, this factor was highly rated among respondents (87%, 93% and 91%, respectively, over the three decades) and was rated as either as ‘important’ or ‘extremely important’. Diagnostic challenges, therefore, appears to be a strong influence on specialty choice among Nigerian dental graduates.

The same phenomenon was observed for the influence of predictable working hours as about 80%, 92% and 92% of respondents rated this as ‘Important’ or ‘Extremely Important’, respectively. Similarly, 80%, 90% and 82% of respondents considered interest in a specific patient type as either ‘important’ or ‘extremely important’.

These three influencing factors on choice of dental specialty have enjoyed consistent popularity over the last three decades. Their failure to achieve statistical

significance therefore reflects a consistency in trend rather than being insignificant as the statistical analysis suggests. The findings corroborate those of Saeed *et al.*<sup>3</sup> and partly corroborate findings by Al-Ansani and co-workers<sup>4</sup> who reported a difference in specialist choice influencers between medical graduates seeking to pursue careers in general medicine as opposed to surgery. They observed that both diagnostic challenges and consideration of patient type were popular among aspirants to medicine while aspirants to a surgical specialty were influenced more by prestige and work hours<sup>4</sup>.

### Affluence, income and prestige

Unlike the three influencing factors discussed above, there has been a generational shift in the impact of affluence and income on choice of dental specialty over the last three decades. The figures, rising from 50% to 70% for affluence and 73% to 95% for income show a trend that is statistically significant ( $P = 0.04$  and  $0.04$ , respectively). These findings partly corroborate previous studies<sup>3</sup>, but with subtle differences.

While affluence maintains an intermediate position as a moderately important factor, as reflected in their study, income appears to be the most important consideration among current dental graduates in Nigeria corroborating several studies<sup>5-8</sup>.

Again, while prestige has also enjoyed increasing popularity among dental graduates, the differences in the figures (73%, 86%, 91%, respectively, for the three decades) did not attain statistical significance, corroborating findings of Scott *et al.*<sup>9</sup> who observed that income had a greater influence on males. Such comparison is, however, outside the scope of the current study.

The influence of income on career speciality choice and career plans appear to cut across continental borders, as shown by an American<sup>4</sup> and a British study<sup>10</sup>.

One of these studies reported that medical students wishing to pursue a career in primary care were not influenced by prestige and income<sup>4,11</sup>. A perceived lack of prestige was positively correlated with rejecting a career in family medicine<sup>12</sup>. However, it is not clear how this influence affects dental specialties.

### Length of programme and fewer specialists

The popularity of this group of influences on choice of specialty among Nigerian dental graduates has remained quite high over the years. The percentages of respondents who considered these influences as either 'important' or 'extremely important' were about 73%, 69%, 82%, respectively (for the three decades), for programme length and 89%, 82% and 90%, respectively, for fewer specialists, respectively.

Unlike elsewhere in the world, there are no differential lengths across residency training specialties in Nigeria. This probably explains why this important factor appears to be considered inconsequential among Nigerian dental graduates.

While the importance accorded these factors is clear from the results, their lack of statistical significance stems from the absence of obvious trend changes among different generations of Nigerian dental graduates.

### Other influencing factors

Influences such as pre-dental school career plans, career counselling, availability of spaces and grants for overseas training showed trends that were not great enough to achieve statistical significance. They exerted a moderate to high influence on choice of specialty among dental graduates but there is a dearth of studies considering these variables in their assessment of influences on career choice. This makes it difficult to compare current findings with those of previous workers. There is therefore a need for more research on the influence of these factors.

### LIMITATIONS OF THE STUDY

Three-point Likert scale responses recoded for statistical comparisons could have affected inferences. In addition, some respondents who graduated two to three decades ago may have decided to specialise within the last decade. It is also possible that the 112 participants might not fully reflect the views of the over 4000 Nigerian practising dentists.

A dearth of comparable literature has resulted in a relatively small number of references cited in this study.

### CONCLUSIONS

While diagnostic challenge, predictable work hours and patient type have remained popular influences on specialty choice, affluence and income, which were less popular three decades ago, are now becoming increasingly popular influences on choice of specialty among Nigerian dental graduates. In view of our results, the study should now be replicated within a larger group of participants.

### Competing interest

None declared.

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