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Assessing the Role of Gender on Parents' Decision on Orthodontic Treatment for their Children

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Abstract

Background: To determine the influence of gender on parents' decision to bring their children for orthodontic treatment.

Methods: This was a questionnaire-based descriptive cross-sectional study of 85 parents aged 20 to 62 years, who brought their children for orthodontic treatment at a tertiary hospital in Enugu, Nigeria. Data on sociodemographic profile and its association with gender preference for orthodontics treatment was collected.

Results: Eighty-five participants aged 20 to 62 years were involved in the study with mean age of 43.18 ± 9.23 years. Forty-three (50.6%) of the participants were between 40-49 years. Fifty-one (60%) were females, 35(41.2%) were civil servants and 73(85.9%) believed that orthodontic treatment was necessary in both genders. Married parents were significantly (p-value 0.043) more likely to prefer orthodontic treatment for female children than the males. Seventy-five (88.2%) will attend to their female child first if finances at a particular time would be sufficient to attend to only one child. More female children 51(60%) were brought to the clinic than the males 34(40.0%).

Conclusion: Most participants preferred that their female children got orthodontic treatment than the males if their finance was sufficient to attend to only one child. but this was not significant. Greater awareness of the need for equal attention to be paid to the correction of malocclusion in both male and female children should be encouraged

Keywords: Orthodontics; Gender Identity; Malocclusion; Child

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Introduction

Gender identity bias in developing countries has not gone unnoticed. Previous studies have documented disparities in within-the-house resource allocation of parents between sons and daughters especially in developing countries.[1,2] In general, findings suggest that parents spend less on girls' education and females have a lower probability of being enrolled in school than males.[3,4] Similarly, studies suggest gender identity differences in nutrition, health status, mortality rate, and access to healthcare which are skewed against the female child.[5,6] This study contributes to the literature by examining whether the gender identity bias of parents predicts their real-life decision-making regarding their allocation of money for the treatment of malocclusion for either their male or female child when their finances are able to pay for a child per time.

Malocclusion which is defined as an abnormality of the teeth or a mal-relationship of the dental arches beyond the variety of exactly what is accepted as regular[7] is a common healthcare need in both males and females.[8] It has a range of descriptions including, scattered teeth, underbite, overbite open bite, spaces and crowding. It has a growing prevalence in most parts of the world.[9] In 2020 Lombardo et al.[10] reported a world prevalence of malocclusion of 56% with Africa having the largest prevalence of 81%. In Nigeria, Ajayi[11] reported a prevalence of malocclusion of 84.1% among secondary school children.

Numerous complications are associated with the presence of malocclusion. It affects appearance,

chewing, swallowing and sometimes the temporomandibular joint functions.[12,13] Rebelo et al.[14] had reported that malocclusion predisposed children to taunting by peers thereby dampening their morale to be regular at school. Similarly, the presence of malocclusion has been linked to unemployment especially where the job description required social interaction.[15] The choice of friends, including whether a person is considered for marriage or not has also been linked to the presence or absence of malocclusion and so is the risk of developing mental disorders.[15,16]

These complications combine to form the factors that drive a patient's desire for orthodontic treatment. However, cultural, socioeconomic and family backgrounds also form factors associated with the desire and readiness to commence orthodontic treatment.[17] In parts of Africa where there is little or no insurance cover for the correction of malocclusion through orthodontic treatment, most patients have to pay out of pocket. The average cost of orthodontic treatment in Nigeria as at 2024, using an exchange rate of 511.23 Naira to 1-dollar,[18] is $1956. With a minimum wage of about $708 per annum for Nigerian civil servants, it is obvious that the decision to undergo the correction of malocclusion by commencing orthodontic treatment must be carefully thought through by parents. This is made worse by the hereditary nature of malocclusion, where in some families, more than one child may present with malocclusion. In such cases there must be factors that guide the decision of parents in deciding which child gets the treatment.

Despite the similar reported improved quality of life in males and females after orthodontic treatment[19] and the increasing call for equity and justice[20], in Africa, parents often make treatment decisions regarding their children based on gender identity.[21] One study had reported that female children were given priority by parents when it concerns orthodontic treatment need.[22]

There is a dearth of information on the influence of gender of child on parent's choice in bringing them for orthodontic treatment when their finance would be sufficient to attend to only one child per time.

Materials and methods

The study was carried out in Enugu State which is one of the 36 states in Nigeria. It is located in the south eastern region of Nigeria. It is bounded by Kogi and Benue states to the North, Ebonyi to the East, Abia to the south and Anambra to the West. It is situated on latitude 6° 27` 10`` north of the equator and 7° 30` 40`` East of the Greenwich Meridian.

The study participants were parents who brought their children to the University of Nigeria Teaching Hospital (UNTH), Ituku-Ozalla for orthodontic treatment. UNTH is the only tertiary health institution that offers orthodontic services in the region. Patients are therefore referred to UNTH for orthodontic care from other health care facilities in the region. The study design was descriptive cross-sectional study. All parents who brought their children for orthodontic treatment at the UNTH and gave written consent to participate in the study were recruited consecutively. The dependent variable was sex preference for orthodontic treatment, while age, sex, education level, marital status and occupation were the independent variables.

The sample size of 85 was calculated using the formula; N=t2x p (1-p)/m2.[23] Where N is the required sample size, p is the prevalence (5.8%) of malocclusion.[24] M is the margin of error at 5% standard value of 0.05, t is the confidence level at 95% precision, while standard value is 1.96. Thus, N= 1.962 x 0.058 (1-0.058)/0.0025 =84. However, 85 participants were recruited into the study.

Prior to the study, ethical approval was obtained from the “000” Health Research and Ethics Committee. Approval number is: UNTH/HREC/2024/01/642. The structured self-administered questionnaire was given to the participants to fill in the waiting room. The questionnaires were collected immediately after completion.

The collected data were entered into a computer and subjected to statistical analysis using the Statistical Product for Service Solution (SPSS) version 25.0. Descriptive statistics which entailed frequency, percentage, mean and standard deviation was used. Association between sociodemographic characteristics of the parents and perceived gender identity preference for orthodontics treatment, was also conducted. Test of significance was done at 0.05 level of significance using Chi-square test.

Results

Eighty-five participants participated in the study. 43(50.6%) of the study participants were between 40-49 years with a mean age of 43.18 ± 9.23 years. As shown in figure 1, seventy-three (85.9%) participants believed that orthodontic treatment was necessary in both genders. More female 51(60%) than males 34(40.0%) children, were brought to the clinic to access orthodontic treatment as shown in figure 2. Table 1 shows that more than half of the study participants; 51 (60%) were females, 35 (41.2%) were civil servants and married parents were significantly (p=0.043) more likely to prefer orthodontic treatment for their female children than the males. As shown in table 2, seventy-five (88.2%) participants said they will attend to their female child first if their finances at a particular time would be sufficient to attend to only one child. The need to "look fine" topped 52(61.2%) the reason for their decision.

Table 1: Association between Sociodemographic Characteristics of the Parents and perceived sex preference for Orthodontics treatment

Sociodemographic variables	Sex preference for Orthodontics treatment				Chi-square	p-value
	Male n(%)	Female n(%)	Equality n(%)	Total n(%)		
Age group(years)						
20-29	0(.0)	0(.0)	4 (100.0)	4(4.7)		
30-39	0(.0)	2(9.5)	19 (90.5)	21(24.7)		
40-49	0(.0)	7(16.3)	36 (83.7)	43(50.6)	2.71	0.608
50-59	0(.0)	3(23.1)	10 (76.9)	13(15.3)		
>60	0(.0)	0(.0)	4 (100.0)	4(4.7)		
Parent's sex						
Male	0(.0)	7(20.6)	27 (79.4)	34(40)	1.95	0.162
Female	0(.0)	5(9.8)	46 (90.2)	51(60)		
Level of education						
Primary	0(.0)	0(.0)	1 (100.0)	1(1.2)		
Secondary	0(.0)	1(33.3)	2 (66.7)	3(3.5)	1.08	0.576
Tertiary	0(.0)	11(13.6)	70 (86.4)	81(95.3)		
Marital status						
Married	0(.0)	11(15.3)	61 (84.7)	72(84.7)		
Single	0(.0)	0(.0)	11 (100.0)	11(12.9)	8.13	0.043*
Divorced	0(.0)	0(.0)	1 (100.0)	1(1.2)		
Separated	0(.0)	1(100.0)	0 (.0)	1(1.2)		
Occupation						
Civil servant	0(.0)	7(20.0)	28 (80.0)	35(41.2)		
Clergyman	0(.0)	0(.0)	2 (100.0)	2(2.4)		
Farmer	0(.0)	0(.0)	1 (100.0)	1(1.2)	4.86	0.433
Healthcare worker	0(.0)	2(6.7)	28 (93.3)	30(35.3)		
Self employed	0(.0)	3(25.0)	9 (75.0)	12(14)		
Student	0(.0)	0(.0)	5 (100.0)	5(5.9)		

*Statistically significant

Table 1 shows that marital status of parents also had a significant association on the preferred gender (X^2=8.13, P=0.043).

Table 2: Influence of limited resources on choice of sex for treatment of malocclusion with reasons

Variables	Sex preference for Orthodontics treatment				Chi-square	p-value
	Male n(%)	Female n(%)	Equality n(%)	Total n(%)		
With Limited resources which sex will receive attention first						
Male	0(.0)	0(.0)	10(100.0)	10(11.8)	1.83	0.172
Female	0(.0)	12(16.0)	63(84.0)	75(88.2)		
Factors considered by parents in the choice of child to receive treatment when financial resources are limited						
Need to look fine	0(.0)	8(15.4)	44(84.6)	52(61.2)	0.21	0.900
It will improve their chance of getting married	0(.0)	1(14.3)	6(85.7)	7(8.2)		
Other reasons	0(.0)	3(11.5)	23(88.5)	26(30.6)		

Table 2. On the possibility of the role of limited resources playing a role in influencing the sex that gets treated first, the results show that though 88.2% of the study participants opted to attend to the orthodontic need of the female child first, this choice was not significantly associated with the availability of resources (X^2= 1.83, P=0.172).

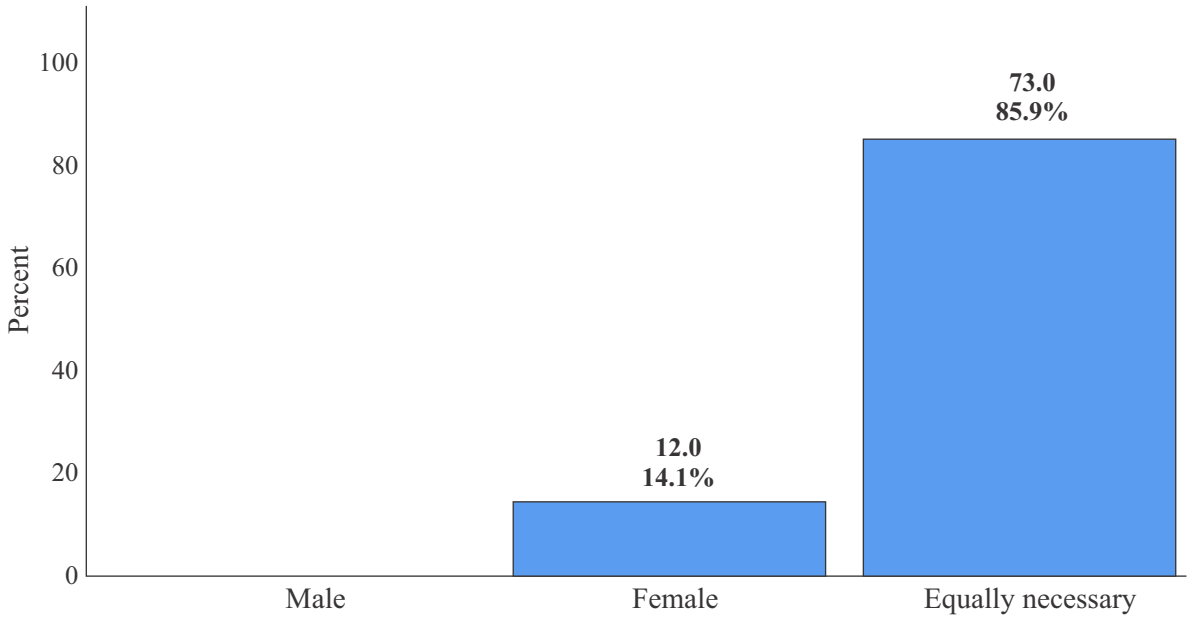

Figure 1: Gender Preference for Orthodontic Treatment

Indicates that 73 (85.9%) study subjects believed that orthodontic treatment was necessary in both gender while 12 (14.1%) believed it was more necessary in females.

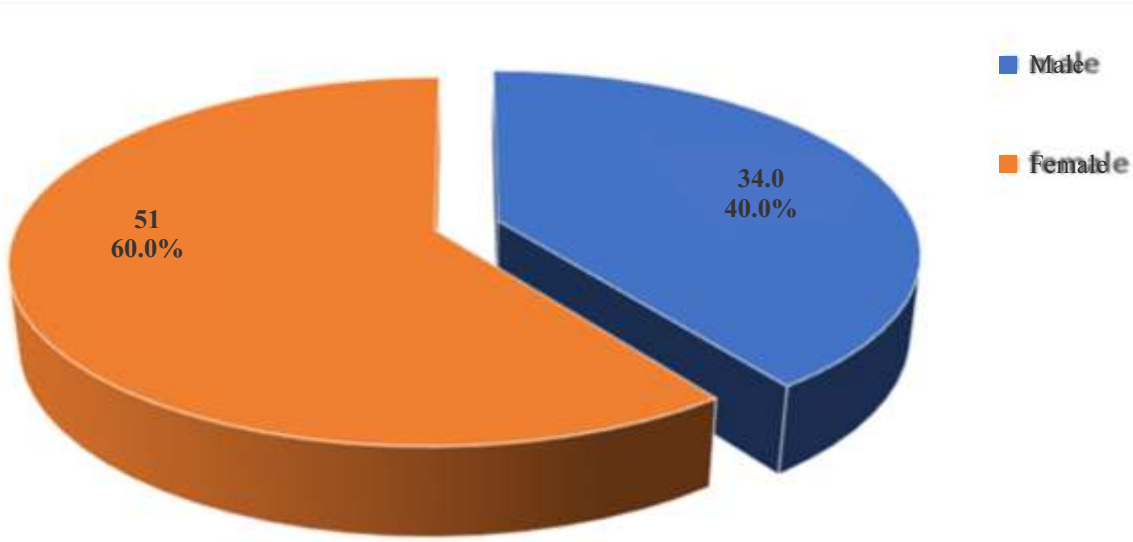

Figure 2: Gender identity of the child brought to the orthodontic clinic

Shows that 51 (60%) children brought to the clinic were females while 34 (40%) were males

Discussion

Gender identity-based bias is reported across a large spectrum of healthcare including emergency, inpatient, outpatient and preventive care mostly in Asia, Africa and South America.[25] Gender based discrimination has been linked to various cultural and socioeconomic factors.[26]

Similarly, reasons for initiating orthodontic treatment varies across cultural and socioeconomic backgrounds,[27] as seen by the various approaches to treatment or non-treatment for different forms of malocclusion including midline diastema.[27]

Initiating orthodontic treatment may also be influenced by parent's age, gender, level of education and the availability of resources or a lack of it.[28,29] In the present study however, age and gender identity of participants had no effect on the choice of gender of child to be treated. The highest number of respondents was seen within the 4th decade of life, unlike in Asia where Felemban et al.[30] reported that 65.6% of parents who brought their children to the orthodontic clinic were aged 18–30 years. The finding in the present study may be because the women in the southern part of Nigeria were the study was carried out are not known to marry early as compared with their Northern counterparts.[31]

The greater number of female parents who brought their children to the clinic in the present study is similar to the finding in a previous study[29] carried out in Nigeria in which about two-thirds of the parents who brought their children to the clinic were female parents. This may be due to the more child keeping role of mothers in the study environment. It may also be an indication of the greater concern of female parents about aesthetics more than their male counterparts, especially since the females were more social media users than their male counterparts.[32] Parental motivation especially that of the mother has also been reported to be a key motivation in initiating orthodontic treatment in children.[29,33]

Most of the respondents who came to the clinic with their children had a tertiary education. This may be as a result of a higher level of awareness about orthodontic treatment among the more educated and is similar to the report from a previous systematic review.[27] However, level of education of participants had no effect on the choice of gender of child to be treated. This is contrary to the report from Ganatra & Hirve[34] in which parents bias towards the boy child was not influenced by level of education.

Likewise, occupation had no effect on the parents' favoured gender for treatment unlike the report from

a previous study conducted India where occupation had no impact on preferred gender for healthcare.[34]

In assessing for the role of a child's gender identity in influencing his/her being brought to the orthodontic clinic by the parents, we note that specific studies pertaining to the impact of gender identity as it concerns which child is brought for orthodontic care is scarce in the literature. In the present study, majority of the participants said that gender identity would not influence their decision to bring their children for orthodontic treatment. As such, they would bring their children to the clinic once they felt a need irrespective of the child's gender. However, previous studies reported gender identity bias in access to healthcare which are skewed against the female child.[5,6]

When asked about the influence of a child's gender in bringing him/her for orthodontic treatment in a situation where finances at a particular time would be sufficient to attend to only one child, most stated that they will chose to attend to the female child. The above finding may be as a result of a lack of government's provision of definite free health and social care facilities in the environment where the present study was carried out, as the availability of money had been reported in a previous study[29] as a factor in parents' decision to seek healthcare for their children. The finding in this study validates that which was previously reported by Rose, (2000)[35] in which poverty or resource constraint was a source of parental gender identity bias in time allocation. Similarly, the report from a previous study[22] also stated that though there is an equal need for orthodontic treatment in males and females, even in wealthy homes, females were more likely to get treatment because the parents and their female children set the standard for beauty.

When the participants were asked the reason for which they will prefer the treatment of their female child before the male, more than half of them said it was because the female child had more need to look fine. This finding also relates with the report of a previous study in Nigeria which reported that malocclusion can reduce the chance of a female getting a spouse.[15]

Conclusion

Many participants showed preference for the female children having orthodontic treatment than the males if their finance was sufficient to attend to only one child at a particular time. Married parents are more likely to prefer orthodontic treatment for their female children than the males. Greater awareness of the need for equal attention to be paid to the correction of malocclusion in both male and female children should be encouraged.

Authors' Contributions

This work was carried out in collaboration among all authors. Okeke, Azubuike C. was involved with Conceptualization, Original Draft Preparation, Writing, Methodology and Investigation. Ndukwe, Anne N. contributed to the Conceptualization, Original Draft Preparation and Formal Analysis. Onyejaka, Nneka K.was involved with Conceptualization, Methodology, Review and Editing. All authors read and approved the final manuscript.

All authors declare that they contributed to critical review of intellectual content and approval of the final version to be published.

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Conflict of Interest: The authors declare no conflicts of interest.

Data Availability: The data used to support the findings of this study can be made available upon request to the corresponding author.

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