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Orthodontic treatment motivation and cooperation: A cross-sectional analysis of adolescent patients' and parents' responses

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Abstract:

INTRODUCTION: Motivation for orthodontic treatment among adolescents has been linked with patients' response during treatment. Parents have also been seen to be influencing factors in patient motivation. This study investigates the motivation for orthodontic treatment among patients and their parents/guardians.

MATERIALS AND METHODS: Data were obtained from 100 orthodontic children (41 boys, 59 girls), with a mean age of 11.9 years, in the age range of 7–17 years, and with parents/guardians from three public hospitals. Recruitment focused on patients and their parents at their initial screening appointment and those scheduled for regular orthodontic treatment. Data were collected by the use of survey forms for both patients and parents. Data were analyzed using Epi info™ version 3.5.1.

RESULTS: Children were more motivated to have orthodontic treatment than their parents before treatment, however parents showed greater motivation for their children to have orthodontic treatment than did the children during treatment. Children on treatment were less motivated than those who have not started treatment. Using braces was more important to children than their parents. Parents of children on treatment were more motivated for their children to have orthodontic treatment than parents of children who were not yet on treatment. Children undergoing orthodontic treatment were not willing to have extractions as part of their treatment, while parents did not have much objections ($P = 0.001$). Parents were willing to comply with dietary instructions imposed on their children. ($P = 0.45$). Pretreatment, children were more willing to brush after meals than the ones undergoing treatment (0.010).

CONCLUSION: Parents of children on treatment were more motivated for their children to have orthodontic treatment than parents of children who were not yet on treatment. Children on treatment were less motivated during treatment.

Keywords:

Motivation, orthodontics, treatment

Introduction

The orthodontist must determine the patient's motivation for seeking treatment before the treatment begins. When this preliminary step is taken, the chances for a mutually satisfying result

increase.^[1] Patient cooperation has been found to be an essential factor in timely and successful treatment outcome of orthodontic treatment.^[2] The length of time a patient must wear orthodontic appliances is significantly affected by the cooperation of the patient.^[3] Patient cooperation with the use of orthodontic accessories such as rubber bands and

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headgears has shown significant differences from previous studies.^[4]

There are many factors that may significantly predict patients' cooperation with treatment mainly which include patient's attitude toward the treatment immediately before and during treatment and the patient's ability to cope with pain and any other discomfort or stressful situation during treatment.^[1] The other factors are the attitude of the parents/guardian toward the orthodontic treatment, before commencing treatment and during the treatment. Parental concern most likely stems from the parents' hope that their children will conform to their own and society's ideals of facial attractiveness.^[5] It has been suggested that parental influence based on dental esthetics – not necessarily malocclusion severity – may be the main motivating factor for children to seek orthodontic treatment.^[6]

Parents of orthodontic patients expected orthodontic treatment to enhance their children's oral health and self-esteem^[7-9] Tung and Kiyak^[10] found that children's perceived reasons for treatment were constituent with their parents' reports.

In the African society, it is believed that parents largely determine the health choices of their children unlike in advanced countries where children are given more flexibility in making choices. It is, therefore, not surprising that previous behavioral researches in advanced countries have focused on the factors of treatment motivation associated with adolescents. However, in this environment, the centrality of the parent-child bond and its impact on treatment motivation and cooperation should not be underestimated. As a result of this, both parents' motivation for their children to receive treatment and patients' motivation to receive orthodontic treatment will give more insight into factors influencing treatment cooperation.

To achieve success in orthodontic treatment, it is important that the child is well motivated; there are many changes in the dietary life style of the patient and other instructions that the patient must obey in the course of treatment and there are also responsibilities that the parents have to bear to ensure the success of their children's treatment. Relationship between parents and adolescent patients is critical to ensuring success as the former may serve as model to the latter.^[2]

Motivation is strongly associated with patients' overall treatment cooperation.^[4] Previous research has shown that parental influence is instrumental to treatment motivation; even when a child first experiences interest in receiving treatment, research has also shown that a

mother's influence is more instrumental in treatment motivation than that of a father's.^[1]

The aim of this study was to assess orthodontic treatment motivation and cooperation among the patients and their parents before and during orthodontic treatment.

Materials and Methods

This study was a questionnaire-based study carried out among 100 children between the ages of 7 and 17 years and their parents/guardians from three public hospitals in Lagos state using a self-administered questionnaire [Appendix 1].

Data were collected from 100 orthodontic children (41 males, 59 females). A similar questionnaire was issued to parents or guardians.

Of these 100 children, 42 (42%) were new patients while 58 (58%) were children undergoing treatment. The mean age of the children was 11.9 years. All the children were Nigerians. Of the 100 parents, 27 (27%) were males while 73 (73%) were females.

Participant recruitment was based on initial screening appointment and regular orthodontic treatment.

The participants were included in the study based on the following criteria.

- Parental/guardian and patients' informed consent
- The participants should be patients about to commence treatment or patients undergoing orthodontic treatment
- The participants must have accompanying guardian
- The patients' age must be between 7 and 17 years.

Four sets of survey questionnaires were administered:

1. Survey for future orthodontic patients
2. Survey for parents of future orthodontic patients
3. Survey for present orthodontic patients
4. Survey for parents of present orthodontic patients.

The survey included four sets of questions:

It included the patients'

1. Demographic background (sex, age, ethnicity)
2. Dental and orthodontic history
3. Motivation for treatment
4. Treatment cooperation.

The patients' and parents' responses to treatment motivation were broadly categorized into two: "motivated and not motivated."

1. The three responses "not at all, indifferent, and do not know were classified as not motivated"

2. The two responses "a little and very much were classified as motivated"
3. The three responses "strongly disagree, disagree, and do not know were classified as not motivated"
4. The two responses "agree and strongly agree were classified as motivated."

The patients' and parents' responses to treatment cooperation were broadly categorized into two: Yes and No OR NEGATIVE and POSITIVE.

Data were analyzed using Epi info™ version 3.5.1 (Center for Disease Control, Art Institute of Chicago, Chicago, Illinois, USA). The frequency distribution and percentage frequency of the variables were determined. Chi-square test was done to determine the association between variables. The critical level of significance was set at $P < 0.05$.

The subjects and their parents were asked the following questions.

- How much do/did you like to have braces?
- How much do you want these braces for your child?
- It is very important for me to have braces
- It is very important for my child to have braces.

See Appendix 1.

Results

Participants' demographics

The age, ethnicity, and gender distribution of the study population are shown in Table 1. Data were collected from 100 orthodontic children (41 males, 59 females). Of these 100 children, 42 (42%) were new patients while 58 (58%) were children undergoing treatment. Children seen had a mean age of 11.9 years. All the children were Nigerians. Nearly 54 (54%) of the children were of Yoruba origin while 40 (40%) were Ibo and 6 (6%) were

Table 1: Sociodemographic characteristics of parents and patients

Variables	Parents (%)	Patients (%)
Age range	19-65	7-17
Mean age (SD)	38.1 (11.7)	11.9 (4.5)
Sex		
Male	27 (27.0)	41 (41.0)
Female	73 (73.0)	59 (59.0)
Total	100 (100.0)	100 (100.0)
Ethnicity		
Yoruba		54 (54.0)
Ibo		40 (40.0)
Others		6 (6.0)
Phase		
Before treatment		42 (42.0)
During treatment		58 (58.0)

SD – Standard deviation

from other ethnic groups. Of the 100 parents, 27 (27%) were males while 73 (73%) were females. The age of the parents ranged from 19 to 65 years (mean, 38 years; standard deviation, 11.7). Female children were slightly more than the male children, however the female parents made up two-thirds of the study population.

Assessment of the child's and parent's motivation

This was carried out using the following two questions.

1. How much do/did you like to have braces
2. Is it very important for you to have braces?

The parents were also assessed using these two questions mentioned above.

Parents showed greater motivation for their children to have orthodontic treatment (69%) than did the children (58.6%) during the treatment. Parents of children undergoing treatment reported greater levels of treatment motivation than parents of children yet to commence orthodontic treatment. Children on treatment were less motivated (66.7%) during treatment than the pretreatment children (58.6%).

Using braces was more important to children undergoing treatment than their parents [Table 2]. This difference was however statistically insignificant ($P = 0.3$).

Concerning the relationship between the patients' treatment motivation and their treatment cooperation ($P = 0.010$) [Tables 3 and 4], the findings showed that parents of children undergoing treatment were more willing to let their children undergoing treatment have extractions than the children themselves.

Parents were more willing to have their children restricted toward eating certain types of food ($P = 0.045$) when compared to their children's willingness.

Pretreatment children are more willing to brush after meals than children undergoing treatment.

Discussion

Concerning the relationship between the patients' treatment motivation and their treatment cooperation, the findings showed that parents of children undergoing treatment were more willing to let their children undergoing treatment have extractions than their children themselves. Children are known to have aversion for extraction because of the fear of injection. Treatment mechanics that limit the need of extractions to the barest minimum will encourage treatment cooperation.^[11-13]

Parents were more willing to have their children stop eating certain types of food compared to the children

Table 2: Comparison of parents and patients motivation before and during treatment

Variables	Pretreatment (n=42)				During treatment (n=58)			
	Parents (%)	Patients (%)	χ^2	P	Parents (%)	Patients (%)	χ^2	P
Wants braces								
Motivated	25 (59.5)	28 (66.7)	0.8	0.374	40 (69.0)	34 (58.6)	3.0	0.084
Not motivated	17 (40.5)	14 (33.3)			18 (31.0)	24 (41.4)		
Braces very important								
Yes	27 (64.3)	28 (66.7)	1.20	0.282	41 (70.7)	49 (84.5)	0.90	0.354
No	15 (35.7)	14 (33.3)			17 (29.3)	9 (15.5)		

Table 3: Comparison of parents and patients level of motivation before and during treatment

Variables	Parents		χ^2	P	Patients		χ^2	P
	Pretreatment (%)	During treatment (%)			Pretreatment (%)	During treatment (%)		
Wants braces								
Motivated	25 (59.5)	40 (69.0)	2.4	0.122	28 (66.7)	34 (58.6)	0.8	0.373
Not motivated	17 (40.5)	18 (31.0)			14 (33.3)	24 (41.4)		
Total	42 (100.0)	58 (100.0)			42 (100.0)	58 (100.0)		
Braces very important								
Yes	27 (64.3)	41 (70.7)	4.9	0.027	28 (66.7)	49 (84.5)	4.4	0.037
No	15 (35.7)	17 (29.3)			14 (33.3)	9 (15.5)		
Total	42 (100.0)	58 (100.0)			42 (100.0)	58 (100.0)		

Table 4: Comparison of treatment cooperation of parents and patients before and during treatment

Variables	Pretreatment (n=42)				During treatment (n=58)			
	Parents (%)	Patients (%)	χ^2	P	Parents (%)	Patients (%)	χ^2	P
Do everything to have successful treatment								
Positive	39 (92.9)	41 (97.6)	0.70	0.393	58 (100.0)	56 (96.6)	1.50	0.321
Negative	3 (6.1)	1 (2.4)			0	2 (3.4)		
Do what orthodontist tells me								
Positive	38 (90.5)	41 (97.6)	1.30	0.254	58 (100.0)	57 (98.3)	0.80	0.569
Negative	4 (9.5)	1 (2.4)			0	1 (1.7)		
Wear rubber band								
Positive	37 (90.4)	34 (81.0)	1.70	0.188	54 (90.9)	51 (87.9)	0.30	0.442
Negative	5 (9.6)	8 (19.0)			4 (9.1)	7 (12.1)		
Brush after meals								
Positive	38 (92.3)	41 (97.6)	1.30	0.454	54 (90.9)	47 (81.0)	1.90	0.132
Negative	4 (7.7)	1 (2.4)			4 (9.1)	11 (19.0)		
Wear retainer								
Positive	37 (90.4)	39 (92.9)	0.20	0.483	56 (95.5)	53 (91.4)	0.70	0.347
Negative	5 (9.6)	3 (7.1)			2 (4.5)	5 (8.6)		
Have extractions								
Positive	34 (84.6)	31 (73.8)	1.70	0.195	55 (93.2)	38 (65.5)	10.90	0.001
Negative	8 (15.4)	11 (26.2)			3 (6.8)	20 (34.5)		
Stop eating certain food								
Positive	36 (85.6)	33 (78.6)	0.60	0.450	51 (87.9)	42 (72.4)	4.00	0.045
Negative	6 (14.4)	9 (21.4)			7 (12.1)	16 (27.6)		

themselves. Utomi IL^[14] suggested that diet restriction was the most common reason for desiring to stop treatment (29.2%). It has been known that orthodontic treatment demands a great deal of dietary restriction which a child might not be prepared to comply with unless previously counseled adequately.

In this study, pretreatment patients were more willing to brush after meals than children undergoing treatment. In a previous study, it was reported that parents rated

their children as relatively independent in the care of their teeth.^[15] However, children may not be able to cope with the increased demand for brushing and oral hygiene practices. In a previous study, 8% of children undergoing treatment found maintaining the oral hygiene, the worst aspect of treatment.^[14]

The patients were more motivated before treatment than the children undergoing treatment. The initial motivation of children might be due to peer influence, while reduced

motivation may be due to pain, discomfort, and stress experienced during treatment.^[1] The children's responses suggest greater concern about their need for orthodontic treatment.

Facial attractiveness has been found to be the main motivating factor for orthodontic treatment.^[16-19] Esthetic concerns were rated as 91.6% and 93.4% by parents and children, respectively, as the most important factor in the study carried out by Daniels *et al.*^[1] This was in agreement with the studies of Wedrychowska-Szulc and Syrynska^[2] which reveal esthetics as the main reason why children seek treatment while <5% is due to peer influence. However, 77% of their parents seek treatment due to irregular positioning of the teeth, 54% of parents want their children to look nice, and 64% due to fear of being accused that they neglected their parental duties. This findings is contrary to the study by Otuyemi and Kolawole^[19] and also that by Marques *et al.*^[20]

Previous studies show that parents are usually more motivated for orthodontic treatment than their children,^[1,2,14] In a study carried out by Tung and Kiyak,^[19] interest on the part of the parents plays a large role in treatment motivation and cooperation. Pratelli *et al.*^[21] reported that parents who had been treated themselves or who desired treatment or regretted not being treated or were dissatisfied with their own occlusion perceived orthodontic need in their child.

Parental motivation was found to be greater during treatment than pretreatment as parents are more optimistic about positive treatment outcomes and have great consideration for their investment of money and time. It has also been shown that parents' motivation, especially that of the mother, is the most important factor for initiating orthodontic treatment.^[1,2,22] This has also been further confirmed in this study as about two-thirds of the parents who brought their children to the clinic were mothers. There is a need for children to remain highly motivated during treatment to reduce the occurrence of discontinuation of treatment and to ensure the best possible outcome for the presenting malocclusion.

Conclusion

Parents of children on treatment were more motivated for their children to have orthodontic treatment than parents of children who were not yet on treatment. Children on treatment were less motivated during treatment than the pretreatment children.

The orthodontist should give adequate information to both the parents and the children on what to experience during treatment and also encourage

the parents to be more involved in their children's treatment by giving them medication to relieve their pain when necessary.

The information in this study will motivate practitioners to consider factors of treatment motivation and cooperation when working with adolescent patients and do appropriate counseling of parents and patients not only before treatment but also during the different treatment phases. The psychosocial evaluation of the new patient should therefore be carried out as this helps to define the patient's motivation and expectations in seeking treatment.

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Conflicts of interest

There are no conflicts of interest.

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Appendix 1¹

Survey for Present/ Future Orthodontic patients

Sex M() F()

1. Age
2. Ethnicity
3. Grade in school
4. Dental and orthodontic history.

Section A

Patients' response about orthodontic treatment motivation

Questionnaire item					
How much do/did you like to have braces?	<input type="checkbox"/> Not at all	<input type="checkbox"/> Indifferent	<input type="checkbox"/> Don't know	<input type="checkbox"/> A little	<input type="checkbox"/> Very much
It is very important for me to have braces	<input type="checkbox"/> Strongly disagree	<input type="checkbox"/> Disagree	<input type="checkbox"/> Don't know	<input type="checkbox"/> Agree	<input type="checkbox"/> Strongly agree

Patients' responses concerning treatment cooperation

Questionnaire items	Strongly disagree	Disagree	Don't know	Agree	Strongly agree
I will do whatever it takes to have a successful treatment					
I will do what the orthodontist tells me					
If the orthodontists ask me to wear rubber band, I would do as instructed					
If the orthodontist ask me to brush after every meal, I would do as instructed					
If the orthodontist ask me to wear a retainer, I would do as instructed					
If the orthodontists ask to have extractions, I would do so as instructed					
If the orthodontists ask me to stop eating certain food, I would do so as instructed					

Survey for Present/ Future Orthodontic parents

Sex M() F()

1. Age
2. Ethnicity
3. Relationship to patient
4. Dental and orthodontic history.

Parents' response about treatment motivation

Questionnaire items					
	Not at all	Indifferent	Don't know	A little	Very much
How much would/did your child like to have braces?					
It is very important for my child to have braces	Strongly disagree	Disagree	Don't know	Agree	Strongly agree

Parents' responses concerning treatment cooperation

Questionnaire item	Not at all	Indifferent	Don't know	A little	Very much
How much do/did you like to have braces?					
It is very important for me to have braces	Strongly disagree	Disagree	Don't know	Agree	Strongly agree
