Compliance in Review Attendance among Orthodontic Patients attending a Tertiary Level Health Care Centre

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Abstract

Objectives: Estimating patient compliance during orthodontic treatment cannot be overemphasized as timely and successful outcome of orthodontic treatment is dependent on it. This study assessed patients' compliance to orthodontic reviews at a tertiary care orthodontic clinic as well as explored various factors that may influence review attendance.

Materials and Methods: Data were collected retrospectively from 133 patients' case notes as well as the clinic daily attendance records. Socio-demographic data and type of appliance used by patients was extracted. The pattern of punctuality (in days) to clinic attendance as prescribed by the managing orthodontist was also ascertained. Data were analysed using the SPSS version 22. Level of significance was set at $p < 0.05$.

Results: The mean age was 14.65 ± 5.98 years. Sixty-two (46.6%) patients were males while 71(53.4%) were females. Sixteen patients (12%) had removable appliances, 116(87.2%) had fixed appliances while only one person (0.8%) had both fixed and removable appliances. Eighty (60.2%) attendees were resident within the state of the clinic's location while 53(39.8%) resided outside the state. At the first review visit after treatment commenced, 92(69.2%) presented on time for review while 41(30.8%) defaulted with a mean lag time of 49.0 ± 49.0 days before presenting at the clinic. The total default time varied significantly with the number of visits and length of treatment time ($p < 0.001$).

Conclusion: Rate of default to orthodontic reviews was found to increase gradually from the 2nd visit and imparted negatively on treatment time.

Key words: Compliance, Review attendance, Orthodontics.

Introduction

Despite revolutionary advances in all fields of dentistry, a critical factor in the success of any treatment programme is patient compliance. There are probably few other areas of oral health care subspecialties that require patient cooperation to the extent that orthodontics does. This is because orthodontic care is time consuming and thus attended by a high patient fatigue rate especially in environments where awareness is low. The basic condition for carrying out successful orthodontic treatment involves patient awareness, motivation and cooperation[1,2]. The attempt at estimating compliance attainable by patients is done at the initial clinic visit and is guided by general impression garnered from the encounter with the patient and his or her family[3]. However, this is often hampered by the fact that assessment of patient compliance is largely subjective[4] and pre-treatment assessment does not always translate to the reality observed once treatment commences. In fact, it has been suggested that patient compliance is a complex issue related to variables which are most times not modifiable[2]. In addition, patient compliance must address different areas of orthodontic treatment such as oral hygiene, clinic attendance, correct use of the different types of appliances and their auxiliaries in terms of time prescription and proper appliance care[5,6].

Effective communication between the orthodontist and the patient in form of patient education and motivation as well as general information about orthodontic treatment are some of the important factors involved in encouraging and ensuring the expected patient cooperation and compliance [2,7]. This compliance is in turn manifested as adherence to oral hygiene instructions, dietary modifications and post-operative instructions given at clinic visits[5]. It is also exhibited as prompt attendance for orthodontic reviews which usually hold every four to six weeks[6]. Once treatment has been commenced however, other factors come into play in moulding patient compliance. These factors include the type of appliance used by the patient, patients' age and gender as well as intrinsic personality of individual patients[8,9,10]. Discomfort, presence of pain and poor

aesthetics also impart negatively on patient compliance[1,3]. The above factors may even result in termination of treatment.

Orthodontic review visits are an important aspect of orthodontic treatment, and apart from its possible effect on treatment time and outcome has been reported to affect even the clinical experience of dentists in training[11].Thus,assessing patients' compliance towards treatment reviews from the onset is imperative. This will help in instituting measures to combat poor patient compliance.

The objectives of this study were to determine the level of compliance to review attendance among orthodontic patients in a tertiary care level orthodontic clinic as well as to explore the factors that may influence it.

Materials and methods

In this retrospective descriptive study, 133 orthodontic patients' case records and the clinic daily attendance record book between July 2011 and April 2014 were retrieved and assessed. The study was carried out in the University College Hospital Ibadan, which is located in South Western Nigeria and serves as a major referral centre for orthodontic treatment in the country. All data obtained were in keeping with ethical standards for human studies.

Information on the socio-demographic variables and type of appliance used by patients was extracted from patients' case notes. The pattern of punctuality (in days) to individual clinic visits as prescribed by the managing orthodontist was also calculated. The time difference between the appointment date given to the patient and the actual date the patient presented for the appointment was calculated as the 'lag time' and was scored as follows:

- Presentation on or within 7 days of the appointment was accepted as having met up with the appointment.
- Presentation between 8 - 21 days later was regarded as a delay in presentation
- Presentation between 22 - 84 days after accepted a default
- Presenting more than 85 days after the set appointment was accepted as absconding.

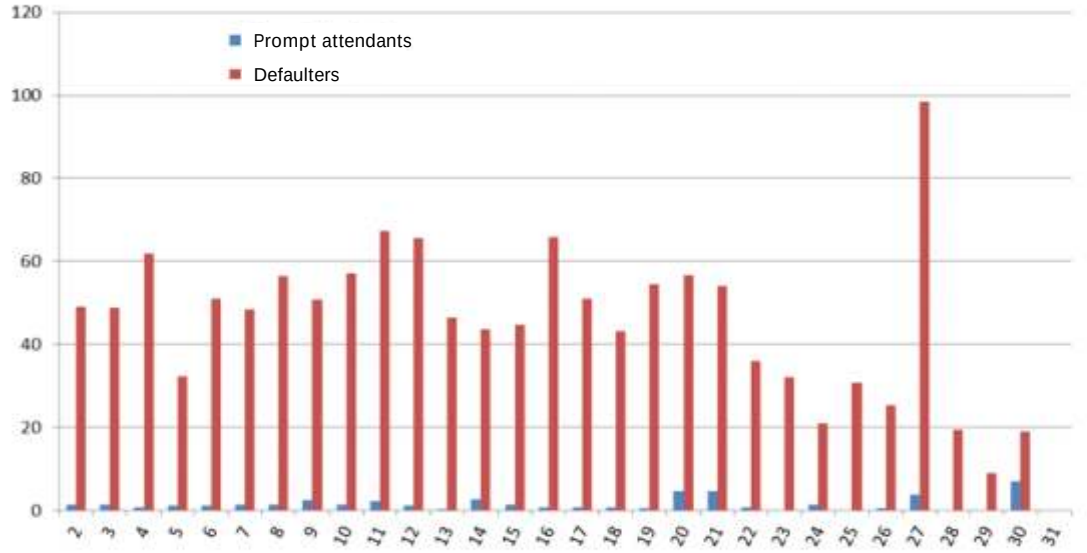
The data were analysed using Statistical Package for the Social Sciences (SPSS) software version 22 and results presented in the form of tables and charts.Level of statistical significance was set at $p < 0.05$.

Results

The total number of patients seen in the period under review was 641 with age range between 3 and 57 years. One hundred and thirty three (20.75%) of these patients either commenced or had been on treatment either with removable or fixed appliances for at least three months before the time of data collection. These patients had therefore been reviewed at least twice after treatment commenced. The mean age of the study participants was 14.6 ± 5.9 years. Sixty-two (46.6%) patients were males while 71(53.4%) were females. Sixteen patients (12%) had removable appliances, 116(87.2%) had fixed appliances while only one person (0.8%) had both fixed and removable. Ninety-five (71.4%) of the patients were in the paediatric age group($\leq$16years), while the rest were adults. Eighty (60.2%) attendees were resident within the state, while 53(39.8%) resided outside the state. Among the paediatric patients, the mother was the primary care attendant for 61(64.2%) patients, father for 8(8.4%), both parents for 10(10.5%) and other persons including drivers, and office assistants for 3(3.2%) patients. The primary care giver could not be ascertained from the records of 13(13.7%) of the paediatric age patients.

At the first review visit, after treatment commenced, 92 patients (69.2%) presented on time for review with a mean presentation time within 1.4 days of the appointment date, while 41(30.8%) presented varying degrees of default with a mean lag time of 49.0 ± 49.0 days before defaulters presented at the clinic. The mean presentation time at subsequent visits is as shown in Figure 1 and there was significant difference in the mean presentation time of prompt attendees and defaulters up till the twenty-second visit($p < 0.05$).

Figure 1: The mean presentation time among participants (in days)



The mean default time per patient was 227.1±231.4days. The default time increased significantly with the number of visit (positive correlation with rho value 0.851: $p<0.001$) and length of treatment time (positive correlation with rho value 0.647: $p<0.001$).

Although the mean default time was higher among patients in the paediatric age group, this difference was not statistically significant ($p=0.14$).The mean default time did not show any significant difference on the basis of gender, place of domicile or type of appliance used by the patient as presented in Table 1.

In the period under review, 43(32.6%) patients had their treatment completed with a mean treatment period of 24.29±12.43 months for those on fixed appliances and 10.13±7.00 months for removable appliances treatment.

Mean cumulative default time among patients who completed treatment was 232.77±198.44 days. The cumulative default and treatment time did not vary significantly on the basis of gender ($p=0.55$ and 0.82 respectively), age ($p=0.14$ and 0.76 respectively) or appliance type ($p=0.086$ and 0.093 respectively) for those who completed treatment.

As at the time of data collection, after excluding the 43(32.3%) patients who had completed their treatments, 2(1.5%) who terminated treatment against medical advice, 1(0.8%) who relocated to continue treatment elsewhere,2(1.5%) who requested transfer to other facilities and 2(1.5%) whose parents requested treatment discontinuation, the default status of patients currently being treated in the clinic is as shown in Table 2.

Table 1: Relationship between default pattern and different variables among adult and child patients.

		Paediatric					Adult				
		Mean ± standard deviation (in days)	F - test	P - value	Confidence interval		Mean ± standard deviation	F - test	P - value	Confidence interval	
Gender	Male	212.0 ± 199.3	3.25	0.08	147.1	44.5	170.5 ± 224.3	0.30	0.59	205.0	106.4
	Female	263.3 ± 267.9					219.8 ± 224.6				
Type of appliance	Removable	160.3 ± 131.2	3.66	0.06	-228.9	50.6	340.0 ± 384.6	2.71	0.11	22.0	419.74
	Fixed	249.4 ± 247.6					191.1 ± 208.6				
Place of domicile	Within town	238.6 ± 249.2	0.11	0.74	-101.7	107.1	157.3 ± 172.2	2.54	0.12	225.1	74.6
	Out of town	235.9 ± 209.8					232.6 ± 249.5				
Total default time		247.5 ± 211.7					168.4 ± 113.0	2.23	0.14		

Table 2: Attendance status of active patients at the time of data collection

	N (%)	Current compliance status ± standard deviation (in weeks)
Within normal review time	53 (66.3)	2.5 ± 1.5
Currently delaying	9 (11.3)	8.6 ± 0.7
Currently defaulting	12 (15.0)	15.1 ± 3.4
Presumed to have absconded from treatment	6 (7.5)	67.9 ± 47.4
Total	80 (100.0)	

Discussion

This study has established that total review defaults increased as the number of visits and treatment time increased. This is because orthodontic treatment is lengthy compared to procedures in other fields of dentistry. It has been reported that duration of treatment may deter patients from receiving treatment. It also results in increased non-compliance and patients aborting their treatment prematurely[12].

A previous report has shown that Medicaid patients (who pay less) miss appointments more often than non-Medicaid patients[6]. Also patients attending private facilities have been observed to be more compliant that those in public sector facilities[8]. The high default rate in the present study carried out in a public health facility where treatment is 66.6% cheaper than in private practice agrees with the aforementioned studies and does not allow for efficiency in the public dental health system. Indeed as at time of data collection a third of the patients were not prompt for their review visits.

Default to review attendance was observed to be high among patients even as early as the 2nd visit. A reason for this high default rate as treatment progresses may be an appreciable improvement in aesthetics or appearance of the occlusion noticeable by patients and their parents. The default rate in this study was higher among paediatric patients who rely on their parents/guardians whose busy schedule may clash with their children's/ ward's appointments. Since the younger patients' attendance is then evidently in adult hands, this may be responsible for the lack of significant differences in default rate between adult and child patients. On the other hand, since most young orthodontic patients are teenagers undergoing various stages of psycho-social development, issues such as rebellion to any figure of authority including their dentist, cannot be overlooked as a reason for the increased default rate among them[7]. Higher review default was also observed among females in contrast to the general expectation. Female patients who are known to be more particular about aesthetics[13] are expected to be more punctual to clinic attendance for a procedure that has a high impact on aesthetics. The above findings are consistent with a previous report that age and gender in isolation have no direct bearing on patient compliance in orthodontic practice[10].

With respect to place of domicile, the present study found no significant difference in the average default time both in adult and child patients. However, while the mean default time for paediatric patients whether they lived within or out of state did not differ at all, adult patients living out of the state appeared to be less compliant to review visits than those living within.

Orthodontic patients show positive attitude towards treatment at the beginning but this study highlights that they do not keep to this positive motivation as the treatment progresses in relation to their review visits. This may indicate a hypothesis that participants are generally more interested in the commencement of their treatment rather than the subsequent reviews which in truth are equally important in achieving a holistic improvement in their occlusion and smile.

With respect to treatment completion, the average completion time in this study did not differ from that observed in a previous report[14] but was less than that reported in a Nepalese study[15]. The present study did not observe a difference in treatment time between the age and gender groups in agreement with previous findings[12,14]. This is not astonishing as it has been noted that expected treatment time is often significantly shorter than the actual time observed[12]. However, when one considers the magnitude of default time of about eight months per patient observed in the present study, it becomes obvious that an even shorter treatment time could have been achieved otherwise.

From this study, the single fact one can be sure of is that default to orthodontic reviews prolongs treatment time. There appears to be no singular contributing factor, and the clinician must settle with doing the best at every point in time to keep the patient well motivated so as to attain satisfactory treatment in an acceptably prompt time.

Conclusion

This study highlights the fact that default to orthodontic reviews increased as treatment progresses and impacted negatively on treatment time. Since reliable predictors of patient compliance to the various aspects of orthodontic care are currently lacking, patients must be constantly well motivated so as to attain timely and satisfactory treatment outcomes.

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