



Knowledge, Attitude, and Practices of Orthodontic Treatment among Urban and Rural Patients in Nizamabad

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Abstract

Aim: To investigate the knowledge, attitude, and practise of orthodontic treatment among both urban and rural patients.

Methodology: The study employed a structured questionnaire consisting of fifteen questions categorised into three sections. The questionnaire was administered to a sample of 536 orthodontic patients across twelve orthodontic treatment centres. The Likert scale was utilised to evaluate the knowledge, attitude, and practise. The data underwent a process of being re-evaluated according to positive, neutral, or negative perceptions and subsequently presented at a specific level. The Mann-Whitney U test was employed to examine the variance in perception among urban and rural patients.

Results: Approximately half of orthodontic patients are oblivious of retainers, despite the fact that 85% of patients are well-versed in ongoing orthodontic treatment. 82% of patients are pleased with the treatment outcome, despite the fact that 35% believe that people with braces do not look good, 59% experience lengthy waiting times, 25% believe that the time spent on the procedure is insufficient, and 68% believe that orthodontic treatment is expensive. The majority of patients brush and rinse with greater care, but 28.9% are careless with their braces and 12.0% neglect their appointment dates.

Conclusion: The orthodontic patients residing in Nizamabad exhibit a satisfactory level of knowledge regarding orthodontic treatment. However, their attitude and practise towards the treatment are found to be inadequate. It is imperative for healthcare professionals to provide patients with comprehensive information regarding the use of retainers, while also taking into account factors such as waiting periods, treatment duration, and associated costs.

Keywords: Knowledge; Attitude; Practice; Fixed Orthodontic Appliance; Orthodontic Patients

Introduction

Numerous theories on patient compliance have been expounded by social psychologists. Several elements of the 'Health Belief Model' can be applied to the context of orthodontic treatment. Factors such as treatment-seeking behaviour, personality traits, and obstacles to action are closely associated with patient compli-

ance [1,2]. A patient who adheres to good oral hygiene practises, follows a suitable diet, properly maintains their orthodontic appliance without causing damage, attends scheduled appointments, and follows the instructions of their orthodontist may be classified as a compliant orthodontic patient. The collaboration of the patient is instrumental in expediting the achievement of treatment

objectives. The identification of a compliant patient may involve an assessment of personal and demographic factors, including age, gender, personality traits, and social status. Due to its essential nature as a variable, sex is commonly included in numerous research studies [3-6].

The KAP study investigates alterations in the knowledge, attitude, and practise of a specific group in relation to a pre-established domain. The Knowledge, Attitudes, and Practises (KAP) study is utilised as an evaluative instrument to gauge the level of knowledge, attitudes, and behaviours pertaining to a specific task within a given community. This facilitates the effective evaluation process.

This enables customization of the procedure to suit the specific requirements of the community [7].

The clinical procedure of orthodontic treatment is characterised by a high degree of sensitivity to technique and is known for its time-consuming nature. The comprehension of patients in the technical dimension and their adherence to the upkeep of appliances are crucial factors for the effective management and favourable outcome of treatment. The objective of this study is to assess the prevailing attitudes of orthodontic patients in Nizamabad towards orthodontic treatment, irrespective of the practitioner and treatment centre, and to examine any variations in perceptions between urban and rural patients.

Materials and Methods

The study was carried out subsequent to obtaining authorization from the Institutional Review Board. The research was carried out on a sample of 536 individuals who were receiving orthodontic treatment through the use of a fixed appliance for a minimum of six months. The study excluded individuals with dentofacial deformities, such as cleft palate, from the patient population. The research cohort consisted of 348 urban and 188 rural participants aged between 12 and 30 years, with a mean age of 19.45 years.

The study was carried out between September 2022 and February 2023 at a number of orthodontic treatment facilities that provide specialised orthodontic care.

The Dental Attitude Questionnaire is the structured questionnaire on which the study is based [9,10]. The questionnaire was altered to accommodate the Indian context. The questionnaire has fifteen questions in three sections of five each on knowledge, attitude, and practise. On 50 samples, the questionnaire’s validity was validated beforehand.

On a binary scale of agreement or disagreement, the patients’ understanding of orthodontic treatment was rated. It included five

often occurring facts about orthodontic treatment, including “the purpose of braces (K1),” “the length of treatment (K2),” “the necessity of adhering to instructions (K3),” “the repercussions of not completing treatment (K4)” and “wearing of retainer (K5”).

On a 3-point Likert scale, the attitude and practise portions were evaluated. The attitude portion included five items that discussed the patient’s views on social aesthetics of people wearing braces (A1), waiting times (A2), orthodontic procedures (A3), treatment outcomes (A4), and orthodontic treatment costs (A5). The practise segment included five hoped-for performances.

on how to maintain an orthodontic appliance, including “food restriction (P1),” “oral hygiene maintenance (P2),” “use of special cleaning aids (P3),” “carefulness on appliance (P4)” and “regular appointment (P5).”

The self-administered questionnaire was written in English and included any necessary explanations. According to the patient’s opinion of their level of agreement, disagreement, or neutrality, the data were submitted. Items in the knowledge component were given new scores, with the positively constructed perspective receiving a 1, and the negatively formulated impression receiving a 2. For the Attitude and Practise components, positively formed perceptions were rescored 1, neutrally formed perceptions were rescored 2, and negatively formed perceptions were rescored 3. Table 1 shows the score criteria and level determination. The Mann-Whitney U test was used to examine the perceptual gap between male and female patients. The 95% confidence interval was used to adjust the level of significance to 0.05. Version 25.0 of SPSS software was used to analyse the data.

Table 1: Scoring criteria.

	Score	Level	Score	Level	Score	Level
Knowledge	1.0-1.50	Good	1.51-2.0	Poor		
Attitude	1.0-1.60	Good	1.61-2.30	Moderate	2.31-3.0	Poor
Practice	1.0-1.60	Good	1.61-2.30	Moderate	2.31-3.0	Poor

In accordance with the analysis of patients’ attitudes towards orthodontic treatment, 49.3% of patients disagreed that people wearing braces do not appear good in terms of social aesthetics (A1). Patients disagreed with 31.5% of the time spent in the waiting room (A2), 47.8% of the time spent having orthodontic work done during the visit (A3), and 82.2% of the treatment’s overall results (A4). Patients believe that the cost of orthodontic care is expensive in 68.5% of cases (A5) (Table 3).

58.5% of patients routinely restrict hard foods and alter dietary habits (P1), 82.3% brush and rinse more thoroughly (P2), and 39%

Table 2: Distribution of patients according to their knowledge of orthodontic treatment.

Knowledge		Urban (N = 348)		Rural (N = 188)		Total (N = 536)	
		n	%	n	%	n	%
K1: Braces correct teeth and jaw irregularities	Agree (+)	295	84.8	162	86.2	457	85.3
	Disagree(-)	53	15.2	26	13.8	79	14.7
K2: Duration of orthodontic treatment takes long time	Agree (+)	288	82.8	171	91.0	459	85.6
	Disagree(-)	60	17.2	17	9.0	77	14.4
K3: It is necessary to follow instructions on oral hygiene and food habits	Agree (+)	334	96.0	179	95.2	513	95.7
	Disagree(-)	14	4.0	9	4.8	23	4.3
K4: If you leave the treatment incomplete, the problem will worsen	Agree (+)	319	91.7	164	87.2	483	90.1
	Disagree(-)	29	8.3	24	12.8	53	9.9
K5: You need to wear 'retainer' after completion of the treatment	Agree (+)	178	51.1	67	35.6	245	45.7
	Disagree(-)	170	48.9	121	64.4	291	54.3

Table 3: Distribution of patients according to their attitude on orthodontic treatment.

Attitude		Urban (N = 348)		Rural (N = 188)		Total (N = 536)	
		n	%	n	%	n	%
A1: People wearing braces do not look good	Agree (+)	120	34.5	70	37.2	190	35.4
	Neutral (±)	47	13.5	35	18.6	82	15.3
	Disagree(-)	181	52.0	83	44.2	264	49.3
A2: It is often very long time at waiting room	Agree (+)	200	57.47	116	61.7	316	59.0
	Neutral (±)	35	10.06	16	8.51	51	9.5
	Disagree(-)	113	32.47	56	29.79	169	31.5
A3: Time spend for orthodontic procedure is too less	Agree (+)	80	22.99	56	29.79	136	25.4
	Neutral (±)	97	27.87	47	25.0	44	26.9
	Disagree(-)	171	49.14	85	45.21	256	47.8
A4: I am happy with the treatment outcome so far	Agree (+)	287	82.47	157	83.51	444	82.8
	Neutral (±)	41	11.78	13	6.91	54	10.1
	Disagree(-)	20	5.75	18	9.57	38	7.1
A5: Orthodontic treatment is expensive	Agree (+)	225	64.66	142	75.53	367	68.5
	Neutral (±)	82	23.56	27	14.36	109	20.3
	Disagree(-)	41	11.78	19	10.11	60	11.2

use special cleaning aids (P3), according to an analysis of patient practises. In contrast, 28.9% confess that their carelessness causes brackets or wires to break frequently (P4), while 12.7% frequently forget appointment dates (P5) (Table 4).

The score for the knowledge, attitude, and practise components, as well as the determination of level, are displayed in Table 5. Except for retainers, Nepalese orthodontic patients possessed a high level of knowledge regarding all aspects of orthodontic treatment. The donning of retainers was well understood by females but not by males or the entire sample. The attitude of orthodontic patients regarding treatment outcome satisfaction was positive. Moderate attitudes were held regarding the social aesthetics of braces wearers, the duration of orthodontic treatment, and the duration of the

waiting period. The attitudes of male patients regarding waiting time and all respondents regarding the cost of orthodontic treatment were negative. The orthodontic patients' practises regarding dietary restriction, oral hygiene maintenance, and appointment frequency were excellent, while their practises regarding the use of special cleaning aids and appliance care were average.

The statistical analysis revealed significant differences between female and male patients in their knowledge regarding the duration of orthodontic treatment (K2) and the use of retainers (K5), their attitude regarding the cost of orthodontic treatment (A5), and their practise of brushing and rinsing their teeth more thoroughly (P2), as shown in table 6.

Table 4: Distribution of patients according to their practice on orthodontic treatment.

*positively formulated (+), neutral (±), negative (-).

Practice		Urban (N = 348)		Rural (N = 188)		Total (N = 536)	
		n	%	n	%	n	%
P1: Restrict food and alter dietary habits to maintain braces	Yes (+)	200	57.47	115	61.17	315	58.5
	Sometimes (±)	113	32.47	53	28.19	166	31.0
	No (-)	35	10.06	20	10.64	55	10.3
P2: Brush and rinse mouth more carefully so that food does not stuck in the braces	Yes (+)	298	85.63	143	76.06	441	82.3
	Sometimes (±)	43	12.35	29	15.42	72	13.4
	No (-)	7	2.01	16	8.51	23	4.3
P3: Use special cleaning aids like orthodontic brush, inter-dental brush, mouthwash	Yes (+)	139	39.94	70	37.23	209	39.0
	Sometimes (±)	83	23.85	36	19.15	119	22.2
	No (-)	126	36.21	82	43.62	208	38.8
P4: Brackets/wires often break due to my carelessness	Yes (-)	99	28.45	56	29.79	155	28.9
	Sometimes (±)	105	30.17	65	34.57	170	31.7
	No (+)	144	41.38	67	35.64	211	39.4
P5: Often forget or miss regular ap- point- ment date	Yes (-)	45	12.93	23	12.23	68	12.7
	Sometimes (±)	99	28.45	62	32.98	161	30.0
	No (+)	204	58.62	103	54.79	307	57.3

Table 5: Scoring and levels of Knowledge, Attitude and Practice of Orthodontic patients.

		Urban		Rural		Total	
		Score	Level	Score	Level	Score	Level
Knowledge	K1: Purpose of braces	1.15	Good	1.14	Good	1.15	Good
	K2: Treatment duration	1.17	Good	1.09	Good	1.14	Good
	K3: Importance of following instructions	1.04	Good	1.05	Good	1.04	Good
	K4: Consequence of incomplete treatment	1.08	Good	1.13	Good	1.10	Good
	K5: Wearing of retainer	1.49	Good	1.64	Poor	1.54	Poor
Attitude	A1: Social aesthetics on braces wearers	1.82	Moderate	1.93	Moderate	1.86	Moderate
	A2: Waiting time	2.25	Moderate	2.32	Poor	2.27	Moderate
	A3: Time spend for orthodontic procedure	1.74	Moderate	1.85	Moderate	1.78	Moderate
	A4: Satisfaction on treatment outcome	1.23	Good	1.26	Good	1.24	Good
	A5: Cost of orthodontic treatment	2.53	Poor	2.65	Poor	2.57	Poor
Practice	P1: Food restriction	1.53	Good	1.49	Good	1.51	Good
	P2: Oral hygiene maintenance	1.16	Good	1.32	Good	1.22	Good
	P3: Use of special cleaning aids	1.96	Moderate	2.06	Moderate	2.00	Moderate
	P4: Carefulness on appliance	1.87	Moderate	1.94	Moderate	1.90	Moderate
	P5: Regular appointment	1.54	Good	1.57	Good	1.55	Good

		Total		Urban		Rural		p-Value
		Mean	SD	Mean	SD	Mean	SD	
Knowledge	K1	1.15	0.355	1.15	0.36	1.14	0.34	0.663
	K2	1.14	0.351	1.17	0.37	1.09	0.28	0.010*
	K3	1.04	0.203	1.04	0.19	1.05	0.21	0.677
	K4	1.10	0.299	1.08	0.27	1.13	0.33	0.101
	K5	1.54	0.499	1.49	0.50	1.64	0.48	0.001*
Attitude	A1	1.86	0.911	1.82	0.91	1.93	0.90	0.175
	A2	2.27	0.912	2.25	0.91	2.32	0.90	0.381
	A3	1.78	0.826	1.74	0.80	1.85	0.85	0.180
	A4	1.24	0.571	1.23	0.53	1.26	0.62	0.928
	A5	2.57	0.685	2.53	0.69	2.65	0.65	0.017*
Practice	P1	1.51	0.675	1.53	0.67	1.49	0.68	0.501
	P2	1.22	0.508	1.16	0.42	1.32	0.62	0.003*
	P3	2.00	0.883	1.96	0.87	2.06	0.89	0.206
	P4	1.90	0.820	1.87	0.82	1.94	0.80	0.320
	P5	1.55	0.708	1.54	0.71	1.57	0.70	0.510

Table 6: Mann-Whitney U Test statistics to assess the difference between female and male subjects.

*Statistically significant at $p < 0.05$.

Discussion

Egolf, *et al.* [11] examined compliance-related factors such as belief, attitude, perceptions, and reasoning. These factors were viewed as a combination of personality type, negative motivations (pain, inconvenience, dysfunction), and positive motivations (health awareness, specific dental knowledge, personal oral disgrace). Bos, *et al.* [12] found no correlation between compliance and satisfaction among orthodontic patients in their study. The present study assessed patient-specific orthodontic treatment compliance and maintenance information. The evaluation of the patient’s attitude was based on the patient’s perceptions of the treatment service and cost, while queries about the patient’s practise were concerned with the patient’s oral hygiene techniques and attentiveness. The present study did not evaluate impediments to action because the queries did not focus on the reasons for non-cooperation. The study also failed to account for patients’ pain perception and braces-related discomfort.

Studies have shown that rural orthodontic patients are more cooperative than their urban counterparts [3-6]. Patients in rural Nizamabad possessed superior comprehension and perceptions of ongoing orthodontic treatment, according to the findings of the present study.

Through an epidemiological survey, Siddegowda and Rani [14] determined that Indian schoolchildren have a moderate level of knowledge and awareness regarding orthodontists and irregular teeth, but a low level of awareness regarding orthodontic treat-

ment. Bos, *et al.* discovered substantially more favourable attitudes towards orthodontists among previously treated subjects than among untreated subjects. The orthodontically treated subjects’ attitudes towards treatment outcome satisfaction and follow-up appointment experiences were positive [10]. It is presumed that the general public has a favourable view of the orthodontic profession; former orthodontic patients are more likely to approve orthodontic treatment for their children [17,18].

It is encouraging to discover that orthodontic patients in Nizamabad possess a high level of knowledge about orthodontic treatment. However, only 45.7% of patients had information regarding retainer use. This would make it difficult to prescribe retainers after treatment and compromise the results’ stability. The orthodontic patients’ oral hygiene, dietary restrictions, and appointment frequency were excellent; however, their use of special cleansing aids was moderate. The current report on the oral hygiene maintenance of orthodontic patients in Nizamabad is consistent with a previous study conducted on the same population [19].

These details are pertinent for service providers to improve their clinical management. It can assist in enhancing their service and rapport with patients. In fact, the orthodontist’s interpersonal behaviour and role in patient motivation are also essential components of effective orthodontic treatment. The orthodontist should provide constructive feedback and communicate with the patient regarding issues of patient cooperation and discomfort. The orthodontist should clarify the appliance, including retainers,

and offer tips on oral hygiene, dietary restrictions, and appliance maintenance. Patients who are dissatisfied with the treatment and interpersonal aspects tend to avoid care, putting the orthodontic practise and the practitioner’s reputation at risk.

Conclusion

Orthodontic patients in Nizamabad have a high level of knowledge regarding orthodontic treatment, but a limited understanding of retainers. About half of patients believe that wearing orthodontics is unattractive; however, over 80% of patients are pleased with the treatment outcome. Two-thirds of orthodontic patients believe treatment is costly. Although orthodontic patients observe excellent oral hygiene, dietary restrictions, and regular appointments, they are only moderately cautious about appliance breakage.

Despite having a solid understanding of orthodontic treatment, the majority of patients have a moderate attitude and level of practise. It is essential for practising orthodontists to educate patients about retainers and appliance maintenance, as well as establish rapport with them. The practitioners must improve the patient attitude by reducing the length of time patients spend in the waiting room, devoting sufficient time to procedures, and charging more reasonable prices for care.

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