

Perception and Practice of Nepalese Adult and Adolescent Patients towards Orthodontic Treatment

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ABSTRACT

Introduction: Patient's perception and practice on ongoing treatment is very important to evaluate the practice management.

Objective: To assess the perception and practice of Nepalese orthodontic patients towards orthodontic treatment and to find the difference between adolescent and adult.

Materials & Method: A structured questionnaire with 3-point Likert scale was used among 536 orthodontic patients at eight orthodontic centers. The data were rescored based on their views and depicted on good, moderate and poor levels. The difference in perception and practice between adolescent and adult patients was analyzed using Mann-Whitney U test.

Result: More than 80% patients feel that, orthodontist's dealing and skill is good, while more than two-third feel that orthodontic treatment is expensive. More than half adolescent and two-third adult patients restrict certain food due to braces; about one-third adolescent and one-fourth adult patients are careless on appliance breakage. More number of adult patients consume analgesics compared to adolescents. There was significant difference in perception about 'duration of treatment' and 'chance of relapse', and practice on 'food restriction' and 'carelessness of appliance' between adolescent and adult patients.

Conclusion: Nepalese orthodontic patients possess good perception about orthodontist's dealing and skill, and good practice on regular brushing habits. Adolescent patients lack positive perception about duration of treatment and majority of patients feel that orthodontic treatment is expensive. Adult patients have better perception and practice about the orthodontic treatment than adolescent in all parameters studied except for 'cost of treatment' and 'use of analgesics'.

Key words: adolescent, adult, orthodontic patient, perception, practice

INTRODUCTION

World Health Organization defines an adult as a person older than 19 years of age unless national law defines a person as being an adult at an earlier age. An adolescent is a person aged 10 to 19 years inclusive.¹ According to the Labour Act of Nepal (1992); 'adult' means a person who is above the age of 18 years.²

Proffit further classified adult orthodontic patients as younger adults and older adults. Younger adults are under 35 years of age; often in 20's; and older adults are between 40's and 50's. Younger adults like adolescent patients generally go for comprehensive orthodontic treatment with esthetic and functional treatment goals, while older adults generally undergo adjunctive orthodontic treatment as a part of restorative or periodontal treatment plan.³

Traditionally, orthodontic service is rendered to adolescents. In recent years, the ratio of adults seeking orthodontic treatment is in rise. According to Keith and Gootleib; the percentage of adult patients has raised from 3% in 1970 to 19% in 2003. After 1990's decade, adult orthodontic patients raised remarkably up to 25% in USA.⁴ According to the survey

by American Association of Orthodontists; the number of adult patients increased by 14% from 2010 to 2012.⁵ In Nepal, the percentage of adult orthodontic patient accounts up to 23%.⁶

Prevalence of malocclusion is more or less same in adults as in adolescents. Various reasons have been cited by various authors for the rise in the number of adult orthodontic patients. The advancement in appliance design and techniques led to the development of esthetic and tooth colored brackets, which appealed adult patients. On the other hand, orthognathic surgery could treat many adult patients with dentofacial skeletal discrepancies; which yielded them fast and dramatic results. In present days; increased public awareness and media have led to the esthetic consciousness in the society, which has created social acceptance of the braces. The internal and external motivation from oneself, family and peers have contributed to the rising number of adult orthodontic patients. Moreover, there is economic independence with the adult people; who can pay of their own without relying on parents or others; and fulfill their childhood desire of wearing braces which could never be materialized before.⁷

Table 1: Questionnaire sample

| Question | | Scale | | |
|------------|--|-----------|---------------|--------------|
| Perception | Duration of orthodontic treatment is long. | Agree (-) | Neutral (±) | Disagree (+) |
| | Orthodontist's dealing is fine. | Agree (+) | Neutral (±) | Disagree (-) |
| | Orthodontist is skillful. | Agree (+) | Neutral (±) | Disagree (-) |
| | Orthodontic treatment is expensive. | Agree (-) | Neutral (±) | Disagree (+) |
| | Chance of relapse is low after treatment. | Agree (+) | Neutral (±) | Disagree (-) |
| Practice | I restrict certain hard food due to braces. | Yes (+) | Sometimes (±) | No (-) |
| | I brush regularly to clean teeth and braces. | Yes (+) | Sometimes (±) | No (-) |
| | I use special cleansing aids to clean braces. | Yes (+) | Sometimes (±) | No (-) |
| | I am careless on appliance breakage. | Yes (-) | Sometimes (±) | No (+) |
| | I often use of pain-killers to avoid orthodontic pain. | Yes (-) | Sometimes (±) | No (+) |

The objective of the present study was to assess the perception and practice of adult and adolescent Nepalese orthodontic patients about ongoing orthodontic treatment and compare the findings between them.

MATERIALS AND METHOD

The perception and practice of Nepalese orthodontic patients were assessed using a self-administered questionnaire. The study was conducted at seven orthodontic departments/centers of Kathmandu and one in Dhulikhel. The sample size was calculated based on the prevalence of orthodontic problem of the Nepalese sample; which was calculated to be 395 (including 10% permissible error). A total of 536 orthodontic patients including 240 adults and 296 adolescents responded in the study.

The age of the adult patient was determined as 20 years and above, and age of the adolescent patient was determined as 10-19 years according to the WHO criteria.¹ The study was conducted among patients undergoing comprehensive orthodontic treatment using fixed appliance for at least six months duration. The study was conducted during October 2013 – March 2014, after receiving permission from Institutional Review Committee and informed consent from respective orthodontic departments and the respondents.

The study was based on structured questionnaire comprising of five questions each on perception and practice referring to Orthodontic Attitude Questionnaire.⁸ The reliability of the questionnaire was pretested on 50 samples. The perception

and practice of orthodontic treatment were assessed on 3-point Likert scale. The questionnaire is listed in Table 1.

The data of the self-administered questionnaire was entered according to respondent's perception and practice on their agreement, disagreement, or neutral position. The positively formulated view was rescored 1, neutral view was rescored 2 and negatively formulated view was rescored 3. The score 1.0-1.60 was considered good level, score 1.61-2.30 was considered moderate level and score 2.31-3.0 was considered poor level. The difference in perception and practice between adult and adolescent respondents was tested using Mann-Whitney U test. The level of significance was adjusted at $p < 0.05$. The data were analyzed using SPSS software Version 17.0.

RESULT

The distribution of respondents in the present study is given in Table 2.

According to the study, 62.5% adolescent and 54.6% adult patients feel that duration of orthodontic treatment is too long. 83.8% adolescent and 84.6% adult patients feel that orthodontist's dealing is fine; and 89.9% adolescent and 93.3% adult patients feel that orthodontist is skillful. 64.2% adolescent and 73.8% adult patients feel orthodontic treatment is expensive. 52.5% adult and 40.2% adolescent patients think that chances of relapse is low i.e. teeth will not come back to previous position after orthodontic treatment.

Table 2: Distribution of subjects

| | Age range (in years) | Mean age (in years) | Standard deviation | Frequency (N=536) | Percent (%) |
|------------|----------------------|---------------------|--------------------|-------------------|-------------|
| Adolescent | 12-19 | 15.87 | 1.91 | 296 | 55.2 |
| Adult | 20-36 | 23.87 | 3.35 | 240 | 44.8 |

Among the practices; 51.4% adolescent and 67.9% adult patients restrict certain food due to braces. 79.9% adolescent and 85.4% adult patients brush regularly, and 36.5% adolescent and 42.1% adult patients use special cleaning

aids to maintain oral hygiene. Likewise, 33.1% adolescent and 23.8% adult patients are careless on appliance breakage. 6.1% adolescent and 11.3% adult orthodontic patients usually take analgesics to alleviate orthodontic pain (Table 3).

Table 3: Distribution of patients towards perception and practice of orthodontic treatment

| Questionnaire | | | Adolescent (N=296) | | Adult (N=240) | | Total (N=536) | |
|---------------|------------------------------------|--------------|--------------------|-------|---------------|-------|---------------|-------|
| | | | n | % | n | % | n | % |
| Perception | Duration of treatment is long | Disagree (+) | 82 | 27.70 | 87 | 36.30 | 169 | 31.50 |
| | | Neutral(±) | 29 | 9.80 | 22 | 9.20 | 51 | 9.50 |
| | | Agree (-) | 185 | 62.50 | 131 | 54.60 | 316 | 59.00 |
| | Orthodontist's dealing is fine | Agree (+) | 248 | 83.80 | 203 | 84.60 | 451 | 84.10 |
| | | Neutral (±) | 28 | 9.50 | 24 | 10.00 | 52 | 9.70 |
| | | Disagree(-) | 20 | 6.80 | 13 | 5.40 | 33 | 6.20 |
| | Orthodontist is skillful | Agree (+) | 266 | 89.90 | 224 | 93.30 | 490 | 91.40 |
| | | Neutral (±) | 24 | 8.10 | 9 | 3.80 | 33 | 6.16 |
| | | Disagree (-) | 6 | 2.00 | 7 | 2.90 | 13 | 2.40 |
| | Treatment is expensive | Disagree (+) | 30 | 10.10 | 30 | 12.50 | 60 | 11.20 |
| | | Neutral (±) | 76 | 25.70 | 33 | 13.70 | 109 | 20.30 |
| | | Agree (-) | 190 | 64.20 | 177 | 73.80 | 367 | 68.50 |
| | Chance of relapse is low | Agree (+) | 119 | 40.20 | 126 | 52.50 | 245 | 45.70 |
| | | Neutral (±) | 156 | 52.70 | 105 | 43.80 | 261 | 48.70 |
| | | Disagree (-) | 21 | 7.10 | 9 | 3.80 | 30 | 5.60 |
| Practice | Food restriction | Yes (+) | 152 | 51.40 | 163 | 67.90 | 315 | 58.80 |
| | | Sometime (±) | 108 | 36.50 | 58 | 24.20 | 166 | 31.00 |
| | | No (-) | 36 | 12.10 | 19 | 7.90 | 55 | 10.20 |
| | Regular brushing | Yes (+) | 236 | 79.70 | 205 | 85.40 | 441 | 82.30 |
| | | Sometime (±) | 49 | 16.60 | 23 | 9.60 | 72 | 13.40 |
| | | No (-) | 11 | 3.70 | 12 | 5.00 | 23 | 4.30 |
| | Use of special cleansing aids | Yes (+) | 108 | 36.50 | 101 | 42.10 | 209 | 39.00 |
| | | Sometime (±) | 65 | 22.00 | 54 | 22.50 | 119 | 22.20 |
| | | No (-) | 123 | 41.50 | 85 | 35.40 | 208 | 38.80 |
| | Carelessness on appliance breakage | No (+) | 101 | 34.10 | 110 | 45.80 | 211 | 39.40 |
| | | Sometimes(±) | 97 | 32.80 | 73 | 30.40 | 170 | 31.70 |
| | | Yes (-) | 98 | 33.10 | 57 | 23.80 | 155 | 28.90 |
| | Use of pain-killers | No (+) | 229 | 77.40 | 175 | 72.90 | 404 | 75.40 |
| | | Sometimes(±) | 49 | 16.60 | 38 | 15.80 | 87 | 16.20 |
| | | Yes (-) | 18 | 6.10 | 27 | 11.30 | 45 | 8.40 |

Positively formulated (+), neutral (±), negatively formulated (-)

Table 4: Difference between adolescent and adult patients towards perception and practice of orthodontic treatment

| Question | | Adolescent | | | Adult | | | p-value |
|------------|------------------------------------|------------|------|----------|------------|------|----------|---------|
| | | Mean Score | SD | Level | Mean Score | SD | Level | |
| Perception | Duration of treatment is long | 2.35 | 0.88 | Poor | 2.18 | 0.93 | Moderate | 0.042* |
| | Orthodontist's dealing is fine | 1.23 | 0.56 | Good | 1.21 | 0.52 | Good | 0.763 |
| | Orthodontist is skillful | 1.18 | 0.56 | Good | 1.10 | 0.41 | Good | 0.137 |
| | Treatment is expensive | 2.54 | 0.67 | Poor | 2.61 | 0.70 | Poor | 0.059 |
| | Chance of relapse is low | 2.13 | 0.96 | Moderate | 1.91 | 0.98 | Moderate | 0.002* |
| Practice | Food restriction | 1.61 | 0.70 | Moderate | 1.40 | 0.63 | Good | 0.000* |
| | Regular brushing | 1.24 | 0.51 | Good | 1.20 | 0.51 | Good | 0.117 |
| | Use of special cleansing aids | 2.05 | 0.88 | Moderate | 1.93 | 0.88 | Moderate | 0.126 |
| | Carelessness on appliance breakage | 1.99 | 0.82 | Moderate | 1.78 | 0.81 | Moderate | 0.003* |
| | Use of pain-killers | 1.29 | 0.57 | Good | 1.38 | 0.68 | Good | 0.157 |

*Statistically significant at $p < 0.05$

The level of perception in both adolescent and adult patients were similar for study variables 'orthodontist's dealing', 'orthodontist's skill', 'chances of relapse' and 'treatment cost'. However, there was difference of perception about 'duration of treatment' between adolescent and adult; the level of perception was poor in adolescent and moderate in adult patients.

The level of practice of adolescent and adult patients were similar for study variable 'regular brushing', 'use of special cleansing aids', 'carelessness on appliance breakage', and 'use of pain-killers'. There was difference in level of practice on 'food restriction'; the level of practice was moderate in adolescent and good in adult patients (Table 4).

There was statistically significant difference in perception on study variables 'duration of treatment' and 'chances of relapse', and in practice on 'food restriction' and 'carelessness on appliance breakage' between adolescent and adult orthodontic patients (Table 4).

DISCUSSION

There are various differences between adult and adolescent orthodontic patients; the growth potential is significant in adolescent; whereas there is no growth potential in adults. Hence growth modification is possible with adolescent, whereas orthognathic surgery is required to treat skeletal discrepancies in adults. The orthodontic treatment goal is generally idealistic in adolescent while the treatment goal is realistic in adults.

Various treatment considerations should be made while treating adult orthodontic patients; such as: biological, biomechanical, pharmacological, periodontal etc. General and oral health conditions are major concern in adult orthodontic patients. Systemic, metabolic, renal and liver diseases can affect orthodontic tooth movement (OTM).

Osteoporosis affecting Vitamin D/ Calcium metabolism can complicate OTM and uncontrolled diabetes affect periodontal health, causing alveolar bone loss.^{9,10}

Many studies cited difference in practice management in treating adolescent and adult patients. Cooperation and compliance are normally considered better with adult patients. Generally they present good appreciation to the operator, but usually demand high expectations of treatment outcome.^{11,12,13} A study on Chinese adult orthodontic patients reported the improvement in patients' esthetics, self-confidence and self-esteem following the treatment.¹⁴ According to the present study; in all issues adults had better perception about ongoing orthodontic treatment. The patients were satisfied with orthodontist's dealing and skill; except for cost of the treatment. More number of adult patients felt that the orthodontic treatment is expensive; it could be because of the reason that adult patient pay the treatment bill of their own. Also, adults had better level of practice on oral hygiene and appliance maintenance compared to the adolescent. Similar study on Nepalese orthodontic patients showed good knowledge and practice related to orthodontic treatment but lacked good attitude.¹⁵

Generally, adults have low pain threshold, they might take more time to adjust the appliance; requiring more use of analgesics. Another report suggest that the adolescents are more vulnerable to undesirable pain due to orthodontic treatment.¹⁶ Report of the present study suggests that adult patients consume more analgesics (11.3%) as compared to adolescent patients (6.1%). Another study suggests that, the level of anticipated pain before orthodontic treatment is higher than the real pain experienced after orthodontic procedures in Nepalese patients.¹⁷

Many studies report longer treatment duration in adults.^{18,19} The reasons cited to be because of decreased vascularity

and low cellular response for OTM.²⁰ However, duration in many adult orthodontic cases can be lesser because of their non-comprehensive type of treatment with lesser treatment goals. Adjunctive orthodontic treatment normally takes 6-months duration only.³ According to a study; the mean treatment duration of Nepalese adult was 28.83 months and adolescent was 30.38 months; the difference was however statistically non-significant.²¹

CONCLUSION

Nepalese orthodontic patients possess good perception about orthodontist's dealing and skill, and good practice on regular brushing habits. Adolescent patients lack positive perception about duration of treatment and majority of patients feel that orthodontic treatment is expensive. Adult patients have better perception and practice about the orthodontic treatment than adolescent in all parameters studied except for 'cost of treatment' and 'use of analgesics'.

It could be a matter of concern to practicing orthodontists that more than 25% patients are careless about their appliance breakage and about same number of patients consume analgesics for orthodontic pain.

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