

Motivation trends among Orthodontic patients in the Capital Territory of Islamabad

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Abstract

Introduction: Motivation serves as the driving force behind all human action so it is important to correlate this aspect of human psychology with orthodontic treatment. Not only will this give dentists insights as to how to increase patient compliance, but it will also serve as an effective tool for improved treatment planning.

Methodology: A pre-validated structured questionnaire was used for this study, conducted across a period of 5 months, dated April to August 2025, at the government hospital, School of Dentistry, SZABMU, Islamabad to determine intrinsic or extrinsic motivation tendency. Participants were classified according to the predominant motivation type, determined by the higher subscale score. Group differences were analyzed using the Wilcoxon signed-rank test.

Results: Our study concluded that among the sample size of 1500 participants the majority (912) inclined towards intrinsic motivational patterns as indicated by Wilcoxon Signed Rank Test. Furthermore, demographic factors such as increasing age and female gender were more likely to be associated with intrinsic motivation whereas factors such as unemployment and lower academic level were closely associated with extrinsic motivational trends.

Conclusions: The findings revealed a significant relationship between motivational patterns and demographic factors. Orthodontists are advised to consider these factors to enhance the effectiveness and success of their treatments.

Keywords: Malocclusion; Patient Compliance; Patient Satisfaction; Health Knowledge, Attitudes.

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Introduction

Human psychology and its impact on human behavior have been the subject of debate for the past few centuries. Complex interactions of biological, psychological, socio-economic, and cultural factors determine how humans react to various stimuli in their day-to-day lives.¹

“Motivation is the driving force within an individual that impels them to pursue their goals”.² Several minds, like those of Maslow in 1943 and Herzberg in 1959, have tried to

explain what motivates the actions of man.^{3,4} However, in 1959, Robert White argued that humans are naturally motivated to explore, master, and interact effectively with their environment, not just to reduce drives like hunger or thirst. Building on this theory, Edward L. Deci presented his self-determination theory, which laid the framework for distinctly marking intrinsic and extrinsic motivations.⁵

When a task is performed for the sake of fulfillment and personal satisfaction, the motivation behind it is referred to as intrinsic. On the contrary, if something is done under the influence of environmental pressures or approached with the intention of seeking

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external rewards or validation, it is termed an extrinsically motivated task.⁶

Orthodontic treatment in one form or another has been recorded in prehistoric times, according to sources as far back as 400 BC.⁷ The driving force behind pursuing such treatment depends upon a multitude of factors including improved functionality and esthetic enhancement - ancient physicians themselves stated in their reports that irregular teeth were displeasing in women.⁸ Despite the fact that data states orthodontic treatment to be uncomfortable for patients it is still widely pursued with demand increasing day by day.⁹ The desire to undergo orthodontic treatment has been attributed to esthetics, improved quality of life and sociocultural influences.¹⁰⁻¹²

This aim of this research is to study motivation trends among orthodontic patients in the capital territory of Islamabad. The secondary objective is to associate the findings with patient compliance and overall treatment satisfaction. It is expected that by delving into intrinsic and extrinsic influences, the clinicians will be better equipped to plan their treatment according to the patients psyche, socioeconomic background and other demographics.

Methodology

The study was cross-sectional in design, spanning over a five months at the School of Dentistry, SZABMU, Islamabad. The inclusion criteria entailed all patients reporting to the outpatient department of the Department of Orthodontics who were willing to partake in study. Patients who had been previously treated, did not give consent, or had systemic illnesses that affected their sense of judgement were excluded from this study.

A Consecutive sampling strategy was utilized, enrolling all eligible patients (n=1500) who presented for treatment over a period of five months. A priori sample size was not calculated, A Post-Hoc evaluation confirms that a simple size of 1500 patients exceed

minimum threshold required to achieve the standard 80% statistical power at 95% confidence level minimizing the risk for a type-II error.

After providing written consent, the participants gave insights to their basic demographics such as age, gender, socioeconomic status, education level, before proceeding to fill out a pre-validated structured questionnaire "The Dental Treatment Motivation Scale" which comprises of 15 items in which 7 (Q no: 1, 2, 5, 7, 10, 13 & 15) and 8 (Q no: 3, 4, 6, 8, 9, 11, 12 & 14) questions assess intrinsic and extrinsic motivation respectively. Answers are organized on a Likert scale of 1 to 5, ranging from "strongly disagree" to "strongly agree".¹³ This study was ethically approved by the ethical review board of the School of Dentistry, dated 14 March 2025, under Approval number SOD/ERB/2025/70. Confidentiality of participants was maintained and written consent was sought.

Statistical Analysis:

The data was analyzed using SPSS version 22. Frequencies of string variables were calculated, Internal consistency of the scale and its subscales was evaluated using Cronbach's alpha reliability analysis. This study made use of the Wilcoxon Signed-Rank Test to investigate intrinsic and extrinsic motivational trends. Mann-Whitney U Test and Kruskal-Wallis Test was applied for determining gender and educational association respectively. The influence of employment status and age was analyzed via non-parametric tests with a 95% confidence level and p value < 0.05.

Result

Among the 1500 participants of this study majority of the patients seeking orthodontic treatment were female 996 (66.4%), while only 504 (33.6%) were male. Young adults between the ages of 16 to 20 constituted a major bulk

(35.4%) which corresponds to high school students (35.2%) as shown in Table-I.

Demographic details	
Age	>10 years = 30 (2%)
	10-15 years = 522 (34.8%)
	16 to 20 years = 531 (35.4%)
	21 to 25 years = 288 (19.2%)
	25years <= 129 (8.6%)
Gender	504 males (33.6%)
	996 females (66.4%)
Education Status	Secondary school student 315(21%)
	High school student 528 (35.2%)
	University student 408 (27.3%)
	Graduate 249 (16.6%)
Employment	Unemployed 1128 (75.2%)
	Employed 366 (24.4%)
	Self-employed 6 (0.4%)

Table-I: Demographic analysis of patients

The Dental Treatment Motivation Scale (DTMS) showed internal consistency ($\alpha=0.802$). Participants had greater intrinsic

motivation (mean = 3.35 ± 0.85) than extrinsic motivation (mean = 2.92 ± 0.83). Wilcoxon signed rank test confirmed this statistical significance.

Parameter	Intrinsic Motivation	Extrinsic Motivation
Mean Score (5-point scale)	3.35 ± 0.85	2.92 ± 0.83
Total Mean Score	23.45	23.39

Table-II: Motivation scores among Orthodontic patients

Mann-Whitney U test showed a significant difference between extrinsically motivated males and intrinsically motivated females. Kruskal-Wallis results linked intrinsic motivation with higher education levels and age. Participants in the lower income and education bracket were more extrinsically motivated. Refer to Table IV for details of statistical analysis.

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel that I want to take responsibility for my own health.	126 (8.4%)	279 (18.6%)	254 (16.9%)	543 (36.2%)	298 (19.9%)
Others would be furious if I did not do it.	201 (13.4%)	461 (30.7%)	346 (23.1%)	340 (22.7%)	152 (10.1%)
I have carefully thought about it and believe it is very important for various aspects of my life.	147 (9.8%)	310 (20.7%)	228 (15.2%)	490 (32.7%)	325 (21.7%)
My dentist asked me to do so	228 (15.2%)	477 (31.8%)	306 (20.4%)	307 (20.5%)	182 (12.1%)
I personally believe that it is the best thing for my dental health.	164 (10.9%)	302 (20.1%)	199 (13.3%)	503 (33.5%)	332 (22.1%)
I feel pressure from others to do so.	279 (18.6%)	401 (26.7%)	319 (21.3%)	307 (20.5%)	194 (12.9%)
I would feel guilty if I did not do it.	177 (11.8%)	300 (20.0%)	200 (13.3%)	503 (33.5%)	320 (21.3%)
I want others to approve of me.	255 (17.0%)	458 (30.5%)	295 (19.7%)	305 (20.3%)	187 (12.5%)
I want the dentist to think that I am a good patient.	207 (13.8%)	444 (29.6%)	340 (22.7%)	295 (19.7%)	214 (14.3%)
It is easier to do it rather than think about it.	150 (10.0%)	306 (20.4%)	225 (15.0%)	480 (32.0%)	339 (22.6%)
I don't want others to be disappointed in me.	228 (15.2%)	469 (31.3%)	328 (21.9%)	306 (20.4%)	169 (11.3%)
It improves my social acceptability.	195 (13.0%)	460 (30.7%)	340 (22.7%)	311 (20.7%)	194 (12.9%)
I would feel bad about myself if I did not do it.	156 (10.4%)	328 (21.9%)	174 (11.6%)	506 (33.7%)	336 (22.4%)
I want others to see that I can do it.	201 (13.4%)	395 (26.3%)	381 (25.4%)	314 (20.9%)	209 (13.9%)
It feels good to keep my oral cavity as clean as possible.	18 (1.2%)	100 (6.7%)	513 (34.2%)	431 (28.7%)	438 (29.2%)

Table-III: Responses on the DTMS scale

Variable/Test	Findings	Statistical Results	Interpretation
Reliability (Cronbach's α)	0.802	$\alpha > 0.70$	Both subscales showed good internal consistency.
Motivation Scores	Intrinsic = 3.35 ± 0.85 Extrinsic = 2.92 ± 0.83	NA	Participants were more intrinsically motivated (personal responsibility, oral health) than extrinsically (appearance, social factors).
Wilcoxon Signed-Rank Test	912 higher intrinsic 587 higher extrinsic 1 equal	$p < 0.001$	Intrinsic motivation significantly higher overall.
Gender (Mann-Whitney U Test)	Females \rightarrow higher intrinsic Males \rightarrow higher extrinsic	Intrinsic: $U = 219,878.5, p < 0.001$ Extrinsic: $U = 213,736.5, p < 0.001$	Females motivated by internal factors; males by external rewards/social approval.
Academic Level (Kruskal-Wallis Test)	Intrinsic \uparrow with higher education Extrinsic \downarrow with higher education	$p < 0.001$	Graduates most intrinsically motivated; secondary school participants most extrinsically motivated.
Employment Status	Employed participants more intrinsically motivated	$p < 0.001$	Employment linked to stronger internal motivation.
Age	Older participants more intrinsically motivated	$p < 0.001$	Age associated with higher intrinsic motivation.

Table-IV: Results of Various Statistical Analysis

The high frequency of statistically significant findings can be explained by the large sample size, which is 1500 participants. Moreover, the questionnaire was pre-validated and designed for the purpose of specifically gauging motivational trends. As always with research, a need is felt to distinguish between statistical and clinical significance when interpreting results.

Discussion

Among the 1500 participants of this study, the majority were female. This is similar to other studies conducted in 2023.¹⁴ These results can be explained by the fact that women are typically more aesthetically conscious of their smile, as proven in previous studies.¹⁵ The results of our study align with these findings of previous literature.¹⁶

Most of the patients seeking orthodontic treatment were adolescents in the age bracket of 16-20 years. This statistic can be attributed to the fact that during this time period not only is compliance increased due to easier bone remodeling but also individuals are subject to

greater peer pressure and scrutiny.¹⁷ It was observed in our study that with increasing age, motivational trends shifted towards intrinsic motivation as previously reported in other studies.¹⁸ This can be attributed to the fact that with growing age, the motivation behind the actions one takes is usually based on principles of self-satisfaction and self-fulfillment. Similarly, more educated and employed individuals were observed to be intrinsically motivated. When cross tabs were run of these demographic factors against motivation, the results came out to be statistically significant ($P < 0.05$).

As the study was conducted in the Capital territory of Islamabad, which is primarily inhabited by educated people who are exposed to global standards and well-aware of their autonomy, the intrinsic outcome is not surprising. One potential explanation is that younger individuals are increasingly influenced by social media and are more likely to adopt intrinsically motivated standards of self-care. Intrinsic motivation is more likely to

lead to improved quality, whereas extrinsic motivators can only increase the quantity of work without improving the quality.¹⁹

The results of our study are comparable to those of preceding studies. For example, a study in Brazil found that orthodontic knowledge and financial stability increased with age, resulting in more adolescents seeking orthodontic treatment.²⁰ This conforms with intrinsic motivation trends increasing with an increase in age.

Similarly, a study conducted in 2021 stated that attractiveness was a major deciding factor while opting for orthodontic treatment, which conforms to the dominating patterns of intrinsic motivation.¹⁷ Another study conducted stated that Family relationships and parental perspective have a low influence.²¹

Similar to our study, previous studies conducted in Pakistan improvement of dental health was the primary motivator behind males seeking orthodontic treatment, whereas improvement of the esthetic component was the main motivator among females.²²

A study conducted in 2016 conforms to this pattern, stating that improvement in dental aesthetics was the principal motivational factor for the adolescents seeking orthodontic treatment.²³ Another study stated that a strong correlation exists between self-perceived dental aesthetics and its psychosocial impact on an individual.²⁴

The clinical implications of these results are that orthodontists might improve patient compliance for treatment after a better understanding of what typically motivates different demographic groups. Younger patients' treatment planning is heavily influenced by parental factors, whereas older patients are intrinsically motivated, hence ensuring their compliance is not a pressing issue.

The strengths of this study are its large sample size (1500 participants) and the use of a validated questionnaire (DTMS) for determining motivation. To the best of our knowledge, this is the first study conducted to determine motivational trends of orthodontic patients of Islamabad.

Limitations of this study include involvement of only a single center for data collection and the use of non-probability consecutive sampling which increases the risk of bias. A cross-sectional study design was used, which only gives a snapshot of the current situation without investigating causality. This institutional setting somewhat limits the external validity of the results as patients reporting to government hospitals are frequently from low income bracket as compared to private clinics.

Further research is required to analyze deeper cultural and social impacts upon orthodontic treatment across multiple centers and longitudinal designs.

Conclusion

Results indicate stronger tendency of intrinsic motivation as compared to extrinsic among the participants of this study. Gender differences portrayed females as being intrinsically driven while males displayed greater tendency of extrinsic motivation. Moreover, higher academic level, employment status, and older age were all linked to stronger intrinsic motivation trends.

These results enable orthodontists to better understand their patients motivating factors and alter their treatment plan accordingly hence impacting patient compliance, ultimately leading to long-term success.

Ethical Approval

The study was approved by the Ethical Review Board of the School of Dentistry, (Approval number SOD/ERB/2025/70).

Funding Declaration

This study received no grant from any funding agency, commercial, or not-for-profit sectors.

Conflict of Interest

It is declared that the authors don't have any conflict of interest.

Authors' Contribution

FH: conceptualization of study design and write-up

NMA: Literature search and proof reading

AI: Data collection and data analysis

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