

Social Media Exposure and Self-Reported Aesthetic Treatment Demand in Prosthodontics: A Cross-Sectional Study

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Abstract

Original Research Article

Background: Social media repeatedly exposes patients to idealized smiles, digital simulations, and treatment transformations. This study quantified self-reported social-media influence on aesthetic treatment demand among prosthodontic patients and examined whether daily use was associated with encouragement from online smile transformations. **Methods:** In this institution-based cross-sectional survey, 400 adult active social-media users seeking aesthetic prosthodontic treatment completed a 21-item interviewer-administered questionnaire. The primary outcome was any encouragement to seek treatment after viewing online smile transformations. Frequencies, Wilson 95% confidence intervals (CIs), chi-square tests, Cramér's V, and multivariable binary logistic regression were used. **Results:** The sample comprised 244 women (61.0%), 128 men (32.0%), and 28 participants of other genders (7.0%); 331 (82.8%) were aged 18–35 years. Aesthetic or psychosocial motives rather than function alone were reported by 333 participants (83.3%). Frequent or very frequent exposure to aesthetic content was reported by 286 (71.5%), 241 (60.3%) agreed that social media created beauty pressure, and 319 (79.8%; 95% CI 75.5–83.4%) stated that smile transformations encouraged treatment. This proportion increased from 65.8% among participants using social media for <1 hour/day to 86.0% among those using it for >5 hours/day ($\chi^2=8.42$, $df=3$, $p=0.038$; Cramér's $V=0.145$). In the adjusted model, each higher daily-use category was associated with greater odds of transformation-related encouragement (adjusted odds ratio 1.48; 95% CI 1.09–2.00; $p=0.011$). **Conclusion:** Most prosthodontic patients reported that social-media content shaped treatment motivation and expectations concerning the aesthetic results. Greater daily use showed a small but independent association with encouragement from online smile transformations. Clinical consultation should explicitly explore digital reference images, functional priorities, and the attainability of requested outcomes.

Keywords: Aesthetic dentistry; digital smile design; patient expectations; prosthodontics; social media; treatment demand.

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INTRODUCTION

Aesthetic dentistry has progressed from isolated correction of tooth colour or form to interdisciplinary planning that integrates facial, dentolabial, periodontal, restorative, and functional determinants [1]. A pleasing smile can contribute independently to psychosocial well-being, self-confidence, and social appraisal, making appearance a legitimate patient-centred outcome rather than a superficial adjunct [2]. In prosthodontics, however, an aesthetic request must remain compatible with biological preservation, occlusal stability, cleansability, and long-term maintainability.

Social media has changed how patients encounter, compare, and communicate aesthetic ideals. Image-centred platforms deliver a continuous stream of whitened teeth, symmetrical smiles, celebrity references, and treatment before-and-after photographs. Patient surveys have linked this exposure with dissatisfaction about dental appearance and interest in bleaching or other aesthetic procedures [3]. Dental practitioners likewise report rising demand and higher expectations attributed to social-media content [4]. Experimental evidence is particularly relevant: short-term exposure to curated smile images can alter ratings of specific smile features and self-perception [5].

The mechanism may extend beyond information seeking. Appearance-focused viewing encourages upward social comparison, while editing tools obscure the distinction between an attainable clinical result and a digitally enhanced image. Meta-analyses of experimental and longitudinal evidence support a relationship between social-media exposure and body-image concerns, although effect sizes and causal certainty vary by design [6]. Among young adults, heavier appearance-related engagement has also been associated with normalization and intention toward cosmetic procedures [7]. These findings matter in dentistry because irreversible tooth preparation may be requested in response to a transient or unrealistic visual standard.

Digital smile design and augmented-reality previews can counter this uncertainty when used as communication aids. They allow patients and clinicians to examine proportions, tooth display, and treatment alternatives before intervention, and may improve understanding and satisfaction [8]. Conversely, a preview can amplify expectations if presented as a guaranteed outcome rather than a planning simulation. Psychological factors are also pertinent: inclination toward aesthetic dental treatment has been related to self-esteem and previous cosmetic treatment experience [9].

Evidence from Indian prosthodontic patients remains limited, and studies often report platform use without connecting exposure intensity to a treatment-related outcome. This study therefore aimed to describe social-media use, aesthetic motivations, digital-tool awareness, expectations, and post-treatment perceptions among adults seeking aesthetic prosthodontic care. The primary hypothesis was that greater daily social-media use would be associated with a higher probability that online smile transformations encouraged treatment. Secondary analyses examined demographic, digital-exposure, expectation, and clinician-communication variables.

MATERIALS AND METHODS

An institution-based cross-sectional questionnaire study was conducted in the Department of Prosthodontics, Nair Hospital Dental College, Mumbai. The manuscript was prepared in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology statement and the Consensus-Based Checklist for Reporting of Survey Studies [10,11].

Ethical considerations

The protocol was approved by the Institutional Ethics Committee of Nair Hospital Dental College, Mumbai. Participation was voluntary, written informed consent was obtained before administration, and responses were recorded under unique participant identifiers without names in the analytic dataset.

Participants and sampling

Adults aged ≥ 18 years attending the prosthodontic outpatient service were recruited by convenience sampling. Eligibility required ongoing prosthodontic treatment or consultation for an aesthetic concern, use of at least one social-media platform for ≥ 30 minutes/day, engagement with dental or aesthetic content at least weekly, and capacity to consent. Individuals who had never used social media or did not engage with aesthetic content were excluded, as were those with conditions directly affecting oral development or appearance, diagnosed psychological conditions that could substantially alter aesthetic perception, or inability to complete the questionnaire.

Sample-size determination

For estimation of a single proportion, the required sample was calculated as $n = Z^2 p(1-p)/d^2$, using an expected prevalence of 35%, 95% confidence, and 5% absolute precision [12]. The estimate was 349.6, rounded to a minimum of 350 participants. Recruitment continued to 400 complete questionnaires to improve precision.

Questionnaire development and administration

A structured 21-item questionnaire was developed from the study objectives and relevant literature. Five dental experts reviewed the draft for relevance, clarity, and coverage. The revised instrument was piloted in 20 demographically similar individuals; wording and sequence were refined before field administration. Trained fixed investigators conducted direct interviews and recorded responses on paper forms to standardize item presentation.

The instrument covered age, gender, daily social-media use, platforms used, treatment motivation, family and influencer effects, preferred smile characteristics, frequency of aesthetic-content exposure, digital smile design awareness, desired improvements, perceived beauty pressure, smile-makeover searches, effects of transformation images and augmented-reality filters, clinician explanation of aesthetics versus function, satisfaction with guidance, expectation mismatch, confidence, and social interaction. Platform selection permitted multiple responses; all other items used predefined mutually exclusive categories.

Outcomes and variable definitions

The primary outcome was transformation-related encouragement, dichotomized as any encouragement ('yes, absolutely' or 'yes, but not completely') versus no encouragement. Daily social-media exposure was retained in four ordered categories: <1 , 1–3, 3–5, and >5 hours/day. For descriptive estimates, treatment motivation was classified as aesthetic/psychosocial when the selected primary motive was smile aesthetics, self-confidence, or peer/societal influence rather than function alone. Frequent aesthetic-content exposure combined 'frequent' and 'very frequent'; beauty-pressure agreement combined 'agree'

and ‘strongly agree’; and any improvement combined the two positive response levels for confidence and social interaction.

Statistical analysis

Data were checked for duplicate identifiers, missing values, and out-of-range codes before analysis. Categorical variables are presented as frequencies and percentages; Wilson 95% CIs were calculated for key binary estimates. The primary unadjusted association was examined with Pearson’s chi-square test, with Cramér’s V as the effect size. Binary logistic regression estimated the adjusted association between each one-category increase in daily use and transformation-related encouragement. The model included age group, gender, frequent aesthetic-content exposure, influencer inspiration, beauty-pressure agreement, active searching for smile makeovers, and any augmented-reality filter use, selected before modelling as plausible demographic or exposure-related covariates.

Nine secondary chi-square analyses evaluated prespecified demographic, motivational, digital-tool,

expectation, and communication relationships. Sparse response levels were combined into clinically interpretable binary categories before testing. Holm’s sequential procedure controlled the family-wise error rate across these secondary analyses [13]. All tests were two-sided with $\alpha=0.05$. Analyses were performed in Python 3.11 using pandas 2.2.3 and SciPy 1.17.0; no observations were excluded from complete-case analyses.

RESULTS

Participant and social-media profile

The analytic sample comprised 400 unique participants with complete data. Most were women (244; 61.0%) and 331 (82.8%) were aged 18–35 years. Participants represented 25 Mumbai localities. Daily use was 1–3 hours for 176 (44.0%), while 186 (46.5%) reported ≥ 3 hours/day. Instagram was the most frequently selected platform (341; 85.3%), followed by YouTube (277; 69.3%) and Facebook (222; 55.5%) (Table 1).

Table 1: Participant characteristics and social-media profile (N=400)

Variable	Category	n (%)
Gender	Male	128 (32.0)
	Female	244 (61.0)
	Other	28 (7.0)
Age group, years	18–25	197 (49.3)
	26–35	134 (33.5)
	36–50	53 (13.3)
	≥ 50	16 (4.0)
Daily social-media use	<1 hour	38 (9.5)
	1–3 hours	176 (44.0)
	3–5 hours	129 (32.3)
	>5 hours	57 (14.3)
Platform used*	Instagram	341 (85.3)
	YouTube	277 (69.3)
	Facebook	222 (55.5)
	Snapchat	142 (35.5)
	Other	38 (9.5)

*Multiple responses were permitted; platform percentages therefore exceed 100%.

Motivations, aesthetic exposure, and digital tools

Smile aesthetics was the leading primary treatment motive (190; 47.5%), followed by self-confidence (104; 26.0%); 333 (83.3%; 95% CI 79.3–86.6%) therefore selected an aesthetic or psychosocial motive rather than function alone. Family or peer influence was reported by 281 (70.3%), and 329 (82.3%) reported at least some inspiration from influencers or trends. Frequent or very frequent aesthetic-content

exposure was reported by 286 (71.5%), while 241 (60.3%) agreed that social media created pressure to meet beauty standards. Smile transformations encouraged treatment absolutely or partly in 319 participants (79.8%; 95% CI 75.5–83.4%). Digital smile design was known or had been heard of by 320 (80.0%); 291 (72.8%) considered a preview extremely or moderately important. Augmented-reality dental filters had been used by 199 (49.8%) (Table 2).

Table 2: Treatment motivation, aesthetic exposure, and digital-tool responses

Variable	Category	n (%)
Primary treatment motivation	Function	67 (16.8)
	Smile aesthetics	190 (47.5)
	Self-confidence	104 (26.0)

	Peer/societal influence	39 (9.8)
Aesthetic-content exposure	Very frequent	144 (36.0)
	Frequent	142 (35.5)
	Occasional	81 (20.3)
	Rarely/never	33 (8.3)
Perceived beauty pressure	Strongly agree/agree	241 (60.3)
	Neutral	85 (21.3)
	Disagree/strongly disagree	74 (18.5)
Search for smile makeovers	Daily/weekly	192 (48.0)
	Occasionally	171 (42.8)
	Never	37 (9.3)
Transformations encouraged treatment	Absolutely	155 (38.8)
	Partly	164 (41.0)
	No	81 (20.3)
Digital smile design awareness	Know about it	223 (55.8)
	Heard of it/not sure	97 (24.3)
	Unaware	80 (20.0)
Importance of digital preview	Extremely/moderately important	291 (72.8)
	Not important/trust dentist	92 (23.0)
	Not applicable	17 (4.3)
Augmented-reality filter use	Frequently	42 (10.5)
	Occasionally	157 (39.3)
	Never	201 (50.3)

Expectations, clinician communication, and reported outcomes

A clear, detailed explanation of aesthetics and function was recalled by 287 participants (71.8%); 363 (90.8%) recalled at least some explanation. Complete or partial satisfaction with the dentist's guidance was reported by 361 (90.3%). Despite this, 281 (70.3%)

stated that their initial expectations differed very much or slightly from the prosthodontist's recommendation. Post-treatment confidence improved significantly or somewhat in 303 (75.8%; 95% CI 71.3–79.7%), and social interactions improved definitely or slightly in 309 (77.3%; 95% CI 72.9–81.1%) (Table 3).

Table 3: Clinician communication, expectation alignment, and post-treatment perceptions

Variable	Category	n (%)
Explanation of aesthetics vs function	Clear and detailed	287 (71.8)
	Brief	76 (19.0)
	Not discussed	37 (9.3)
Satisfaction with guidance	Completely satisfied	262 (65.5)
	Somewhat satisfied	99 (24.8)
	Not satisfied	39 (9.8)
Expectations vs recommendation	Very different	102 (25.5)
	Slightly different	179 (44.8)
	Matched	119 (29.8)
Confidence after treatment	Improved significantly	111 (27.8)
	Improved somewhat	192 (48.0)
	No change	51 (12.8)
	Too early to assess	46 (11.5)
Effect on social interactions	Definitely improved	129 (32.3)
	Slightly improved	180 (45.0)
	No impact	60 (15.0)
	Not considered	31 (7.8)

Primary association and adjusted analysis

Transformation-related encouragement increased across daily-use categories, from 25/38 (65.8%) among participants using social media for <1

hour/day to 49/57 (86.0%) among those using it for >5 hours/day. The overall association was statistically significant with a small effect size ($\chi^2=8.42$, $df=3$, $p=0.038$; Cramér's $V=0.145$) (Table 4).

Table 4: Daily social-media use and encouragement from online smile transformations

Daily use	Encouraged, n (row %)	Not encouraged, n (row %)	Total
<1 hour	25 (65.8)	13 (34.2)	38
1–3 hours	136 (77.3)	40 (22.7)	176
3–5 hours	109 (84.5)	20 (15.5)	129
>5 hours	49 (86.0)	8 (14.0)	57
Total	319 (79.8)	81 (20.3)	400

Pearson $\chi^2=8.42$, $df=3$, $p=0.038$; Cramér's $V=0.145$. Minimum expected cell count=7.70.

In multivariable analysis, each one-category increase in daily social-media use was associated with 48% higher odds of transformation-related encouragement (adjusted odds ratio [aOR] 1.48; 95% CI 1.09–2.00; $p=0.011$). Age, gender, frequent aesthetic-content exposure, influencer inspiration, beauty-pressure

agreement, active searching, and augmented-reality filter use were not independently associated with the primary outcome (Table 5). None of the nine secondary associations remained significant after Holm correction (all adjusted $p=1.000$; Cramér's V range 0.002–0.078).

Table 5: Multivariable logistic regression for transformation-related encouragement (N=400)

Predictor	aOR	95% CI	p value
Daily-use category (per one-level increase)	1.48	1.09–2.00	0.011
Age group (per one-level increase)	1.11	0.82–1.50	0.512
Female vs male	0.74	0.42–1.30	0.292
Other gender vs male	0.62	0.23–1.68	0.351
Frequent aesthetic-content exposure	1.15	0.66–1.98	0.625
Any influencer/trend inspiration	1.15	0.61–2.16	0.670
Beauty-pressure agreement	0.96	0.58–1.59	0.865
Daily/weekly smile-makeover search	0.74	0.45–1.21	0.226
Any augmented-reality filter use	1.34	0.81–2.20	0.252

Outcome: absolutely or partly encouraged by online smile transformations (319 events). Reference categories: male gender and absence of each binary exposure. aOR, adjusted odds ratio; CI, confidence interval.

DISCUSSION

Four of every five participants reported that online smile transformations encouraged aesthetic treatment, and this outcome became more frequent across higher daily-use categories. The association persisted after covariate adjustment, but its magnitude was modest. This pattern accords with patient surveys from Saudi Arabia, the Arabian Gulf, and Malaysia, as well as practitioner observations that media exposure can increase expectations and demand for whitening or veneers [3,14–16]. It should therefore be interpreted as a graded self-reported association, not proof that time online directly caused treatment seeking.

Instagram and YouTube dominated platform use, while smile aesthetics and self-confidence together accounted for nearly three quarters of primary motivations. Experimental evidence that curated Instagram smiles can shift evaluation of specific smile features offers a plausible perceptual pathway [5]. Recent dental-student data likewise show high Instagram exposure and substantial perceived influence [17]. Yet the most common definition of a perfect smile in this sample was one that suited the face, and natural/neat appearance was chosen more often than a celebrity-like smile. High exposure therefore did not equate uniformly with an artificial ideal.

Beauty pressure was nevertheless common, and half the sample had used an augmented-reality dental filter. Meta-analytic evidence links appearance-focused social-media exposure with body-image concerns, while young-adult studies associate filtering culture with greater acceptance or intention toward cosmetic procedures [6,7]. A systematic review of cosmetic-surgery literature reaches a similar conclusion but emphasizes digitally altered images, cultural context, and heterogeneous evidence [18]. Clinicians should ask how a reference image was created and whether the request reflects a stable preference, without assuming pathology from social-media use alone.

Digital smile design was familiar to most participants and considered important by almost three quarters. Previews can improve communication, acceptance, and satisfaction, although reviews note heterogeneous methods and limited long-term patient-centred evidence [8]. High satisfaction with guidance and reported gains in confidence and social interaction are compatible with relationships between dental appearance, self-esteem, psychosocial impact, and life satisfaction [19,20]. The coexistence of high satisfaction with a 70.3% expectation–recommendation mismatch suggests that initial disagreement can be reconciled through explanation and shared planning rather than reproduction of a digital image.

The clinical priority is to convert digitally generated demand into informed, biologically sound choices. Ethical reviews warn that aesthetic marketing can normalize overtreatment when images omit uncertainty, maintenance, or irreversible tissue loss [21]. The framing of dental posts also influences perceived credibility and willingness to become a patient [22,23]. Elective treatment still requires candid discussion of alternatives, limitations, privacy, and functional risk [24,25]. Complete data, a sample above the prespecified minimum, standardized interviews, effect-size reporting, and adjusted analysis strengthen this study. Convenience sampling of active users at one tertiary clinic, self-report, and the cross-sectional design limit generalizability and causal inference. Longitudinal multicentre studies should link verified exposure with treatment acceptance and clinical outcomes.

CONCLUSION

Social media was closely embedded in the aesthetic treatment context of these prosthodontic patients: most encountered aesthetic content frequently, perceived influence from trends or transformation images, and prioritized smile appearance or confidence over function alone. Higher daily use was independently associated with transformation-related encouragement, although the effect was small. Prosthodontists should routinely elicit patients' digital reference points, distinguish simulations from predictable outcomes, and integrate aesthetic preferences with biological and functional requirements through shared decision-making.

Declarations

Ethics approval and consent to participate: The Institutional Ethics Committee of Nair Hospital Dental College, Mumbai, approved the study. Written informed consent was obtained from all participants.

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Competing interests: The authors declare no competing interests.

Data availability: De-identified data underlying the reported analyses are retained by the investigators and may be shared on reasonable request, subject to institutional and ethical requirements.

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