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Knowledge, Attitude, and Practice Regarding Post-operative Care After Tooth Extraction Among Patients in North Maharashtra, India: A Cross-sectional Study

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Abstract

Background: Tooth extraction is one of the most common minor oral surgical procedures performed in dental practice, yet how well the socket heals depends less on the surgery itself than on what the patient does afterward; adherence to postoperative instructions matters more than extraction technique.

Aim: To assess the knowledge, attitude, and practice (KAP) regarding postoperative care after tooth extraction among patients in North Maharashtra, India.

Materials and Methods: A descriptive, questionnaire-based cross-sectional study was conducted among 100 patients who had undergone tooth extraction. A structured, pre-validated questionnaire covering demographic details and knowledge, attitude, and practice domains related to postoperative care was administered, and responses were summarised using descriptive statistics.

Results: Knowledge of postoperative instructions was largely satisfactory, ranging from 66% to 88% correct across items, and attitude toward postoperative care was consistently positive, with 80–85% agreement across items. Practice lagged behind knowledge for several items: although all participants maintained the pressure pack as advised, only 69% performed saline rinsing and 62% completed the prescribed medication course, indicating a clear knowledge–practice gap.

Conclusion: This North Maharashtra cohort demonstrated satisfactory knowledge and a positive attitude toward postoperative care, but actual compliance, particularly with medication completion and saline rinsing, fell short of what patients knew. Structured verbal counselling supported by plain-language written material and follow-up contact may help narrow this gap and reduce avoidable complications.

Keywords: Tooth extraction; Postoperative care; Knowledge, attitude and practice; Patient compliance; Oral surgery; Patient education

Introduction

Tooth extraction, or exodontia, is among the most common procedures in general dental practice and oral and maxillofacial surgery, performed for indications ranging from non-restorable caries and periodontal disease to impacted teeth and orthodontic needs. In trained hands, the surgical procedure itself is rarely the limiting factor; whether a socket heals without complications such as prolonged bleeding, dry socket, infection, or delayed healing depends largely on events after the patient leaves the chair, particularly adherence to postoperative instructions.

These instructions typically cover the duration of pressure-pack placement, avoidance of vigorous rinsing and straw use, timing of warm saline rinses, avoidance of hot or hard foods, smoking cessation, completion of prescribed medication, and recognition of warning signs such as persistent bleeding, worsening swelling, or fever. Because such instructions are usually delivered verbally, often while the patient is still anxious or under residual local anaesthesia, both retention and subsequent adherence are frequently suboptimal.

This knowledge-to-practice gap has been documented across populations. General-population surveys in Riyadh, Saudi Arabia, and Kerala, India, reported mean knowledge scores of 5.12 and 5.4 out of 10 respectively for post-extraction instructions, with older age and higher education associated with better scores.[1,2] Studies specific to third molar surgery have found that a substantial proportion of patients misunderstand key elements of their perioperative instructions, including prescribed medication,[3] and that publicly available written postoperative materials vary considerably in content, accuracy, and readability.[4]

In India, where tooth extraction remains one of the commonest reasons for a dental visit and where distance or cost can delay follow-up, patients' understanding of and adherence to postoperative advice has a direct bearing on complication rates and repeat visits. India-specific data quantifying this knowledge-to-practice gap remain limited, and existing studies largely report knowledge in isolation, without corresponding attitude and practice data from the same cohort. This study therefore assessed knowledge, attitude, and practice regarding postoperative care after tooth extraction among patients in North Maharashtra, with particular attention to where knowledge fails to translate into practice, so that patient-education efforts can be better targeted.

Aim

To assess the knowledge, attitude, and practice regarding postoperative care after tooth extraction among patients in North Maharashtra.

Materials and Methods

Study Design and Setting

A descriptive, cross-sectional, questionnaire-based study was conducted to assess the knowledge, attitude, and practice regarding postoperative care after tooth extraction among patients in North Maharashtra, India. The study was carried out at the Department of Public Health Dentistry, SMBT Dental College and Hospital.

Study Population and Sampling

Since this was a descriptive cross-sectional study conducted within the available study period, a consecutive/convenience sampling technique was used. All eligible patients who reported to the Department of Public Health Dentistry following tooth extraction during the study period and fulfilled the inclusion criteria were invited to participate until the desired sample size of 100 participants was achieved.

Inclusion and Exclusion Criteria

Inclusion criteria:

- Patients aged 18 years and above.
- Had undergone tooth extraction within the preceding period defined for the study.
- Willing to participate and provide informed consent.
- Able to read and/or understand Marathi, Hindi, or English.

Exclusion criteria:

- Cognitive or communication impairment precluding questionnaire completion.
- Extraction performed under general anaesthesia with a substantially altered postoperative course.
- Medically compromised status independently affecting healing (e.g., uncontrolled diabetes, patients on bisphosphonate therapy).
- Declined consent.

Study Instrument

Data were collected using a structured, close-ended questionnaire developed after a review of the relevant literature, drawing on standard sample-size methodology for descriptive studies,[5] established oral and maxillofacial surgery references,[6] and comparable post-extraction knowledge and behaviour studies.[7] The questionnaire, available in English and Marathi versions, was divided into five sections: (A) demographic characteristics; (B) clinical details of the extraction (tooth extracted, indication, type of extraction, and whether local anaesthesia and sutures were used); (C) knowledge of postoperative instructions; (D) attitude toward postoperative care; and (E) actual postoperative practices followed.

Data Collection Procedure

After obtaining written informed consent, eligible patients were administered the questionnaire by a trained investigator under standardised conditions to minimise interviewer bias and ensure uniform interpretation of items. Participants were assured of the confidentiality and anonymity of their responses. The questionnaire required approximately 10–15 minutes to complete.

Statistical Analysis

Data were entered into Microsoft Excel and analysed using descriptive statistics. Frequencies and percentages were computed for demographic and clinical variables and for each knowledge, attitude, and practice item. Results are presented as proportions (n, %) for individual items, and the knowledge–practice gap was

calculated as the percentage-point difference between the proportion of participants correctly answering a knowledge item and the proportion reporting the corresponding compliant practice. Reporting of this cross-sectional study was guided by the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) recommendations.[8]

Results

A total of 100 patients who had undergone tooth extraction completed the questionnaire. Of the clinical and behavioural variables that were tabulated, 30% of participants reported current tobacco use and 70% reported no tobacco use, a proportion broadly comparable with national tobacco-use estimates for Maharashtra.[9] Section B of the questionnaire recorded the tooth extracted, indication for extraction (caries, periodontal disease, or impaction), and procedural details (simple versus surgical extraction, use of local anaesthesia, and suture placement).

Knowledge

Overall knowledge regarding postoperative care was satisfactory across the items assessed (Table 1). Awareness was highest for the correct response to heavy postoperative bleeding, with 88% of participants stating they would approach a dentist immediately, while 6% would wait 2–3 days and 6% would not seek care at all. Most participants (85%) knew that hot food and beverages should be avoided in the first 24 hours, and 81% correctly identified that saline mouth rinsing should be delayed until 24 hours after extraction. Awareness that use of a straw is unsafe in the first two days after extraction was present in 79% of participants, and 77% were aware that forceful spitting should be avoided. Regarding the duration of pressure-pack placement, responses were more evenly distributed: 44% believed the pack should be kept in place for one hour, 40% for 2–3 hours, and 16% for 30 minutes only, indicating some inconsistency in this specific item. Awareness of the need to complete prescribed medication was present in 72% of participants, and 66% were aware that rest or reduced physical activity is recommended in the first 24 hours.

Table 1. Knowledge regarding postoperative care after tooth extraction (N = 100)

Knowledge item	**Response**	**n (%)**
Duration of pressure-pack placement after extraction	30 minutes / 1 hour / 2–3 hours	16 (16%) / 44 (44%) / 40 (40%)
Timing of saline mouth rinsing	After 24 hours / Immediately / Never	81 (81%) / 11 (11%) / 8 (8%)
Safety of straw use in the first 2 days	Yes (considered safe) / No (considered unsafe)	21 (21%) / 79 (79%)
Timing to seek dental consultation for heavy bleeding	Immediately / After 2–3 days / Not at all	88 (88%) / 6 (6%) / 6 (6%)
Avoidance of hot food/drink in first 24 hours	Yes (would avoid) / No (would not avoid)	85 (85%) / 15 (15%)

Knowledge item	Response	n (%)
Awareness that forceful spitting should be avoided	Yes (avoids) / No (does not avoid)	77 (77%) / 23 (23%)
Awareness of need to complete prescribed medication	Yes / No	72 (72%) / 28 (28%)
Awareness that rest/reduced activity is recommended (first 24 h)	Yes / No	66 (66%) / 34 (34%)

Postoperative Experience / Complications

Beyond knowledge of instructions, participants were also asked about complications they had personally experienced. Severe pain not relieved by analgesics was reported by 27% of participants, while 73% reported no such pain. Swelling or infection requiring additional dental care was reported by a notably higher proportion, 69% of participants, with only 31% reporting no such complication (Table 2); such complications have similarly been linked to modifiable risk factors such as smoking and post-extraction wound care in community-based cohorts.[10,11]

Table 2. Postoperative complications experienced by participants (N = 100)

Item	Yes, n (%)	No, n (%)
Severe pain not relieved by analgesics	27 (27%)	73 (73%)
Swelling/infection requiring additional dental care	69 (69%)	31 (31%)

Attitude

Participants demonstrated a consistently positive attitude toward postoperative care (Table 3). The great majority agreed that postoperative care prevents complications (80%) and that a dentist should be contacted if pain worsens (85%). Agreement was similarly high that taking medications as prescribed helps prevent postoperative complications (84%) and that application of a cold pack reduces swelling (83%). Disagreement with these statements was uncommon, ranging from 3% to 11% across items, with the remainder expressing a neutral position.

Table 3. Attitude toward postoperative care after tooth extraction (N = 100)

Attitude statement	Agree, n (%)	Neutral, n (%)	Disagree, n (%)
Postoperative care prevents complications	80 (80%)	9 (9%)	11 (11%)
A dentist should be contacted if pain worsens	85 (85%)	5 (5%)	10 (10%)
Taking medications as prescribed prevents postoperative complications	84 (84%)	7 (7%)	9 (9%)
Application of a cold pack reduces swelling	83 (83%)	14 (14%)	3 (3%)

Practice

Practice scores were, for several items, lower than the corresponding knowledge scores (Table 4). All participants (100%) reported keeping the pressure pack/gauze in place, and the great majority (97%) did not smoke within two days of extraction. However, only 69% of participants reported actually performing saline mouth rinsing as recommended, and only 62% reported completing the full course of prescribed medication, a shortfall consistent with low reported adherence to prescribed antibiotic regimens among dental patients elsewhere.[12] Regarding straw use, 82% reported not using a straw in the first two days, a proportion that slightly exceeded the 79% who had correctly identified straw use as unsafe, suggesting that avoidance in practice may also be driven by discomfort rather than knowledge alone. With regard to diet in the first 24 hours, 42% of participants consumed soft or liquid foods as generally recommended, while 38% resumed a normal diet and 20% consumed solid food.

Table 4. Practice of postoperative care after tooth extraction (N = 100)

Practice item	**Response**	**n (%)**
Kept gauze/pressure pack in place for the recommended time	Yes / No	100 (100%) / 0 (0%)
Rinsed mouth with saline water after 24 hours	Yes / No	69 (69%) / 31 (31%)
Used a straw in the first 2 days	Yes / No	18 (18%) / 82 (82%)
Smoked within 2 days of extraction	Yes / No	3 (3%) / 97 (97%)
Took medicines as prescribed	Yes / No	62 (62%) / 38 (38%)
Diet followed in the first 24 hours	Soft/liquid / Solid / Normal	42 (42%) / 20 (20%) / 38 (38%)

Knowledge–Practice Gap

A consistent gap was observed between awareness and actual practice on several items (Table 5). Although 72% of participants recognised the importance of completing the prescribed medication course, only 62% reported doing so, a gap of 10 percentage points. Similarly, while 81% were aware that saline rinsing should be delayed by 24 hours, only 69% reported following the recommended rinsing regimen, a gap of 12 percentage points. By contrast, the proportion who avoided straw use in practice (82%) exceeded the proportion who identified straw use as unsafe on knowledge testing (79%), indicating that for this item, practice was not limited by a knowledge deficit. Overall, these findings indicate that awareness of correct postoperative behaviour did not consistently translate into full adherence, and that the size of the gap varied by item.

Table 5. Comparison of knowledge and corresponding practice

Item	Knowledge, %	Practice, %	Gap, percentage points
Saline mouth rinsing after 24 hours	81%	69%	12
Completion of prescribed medication	72%	62%	10
Avoidance of straw use (first 2 days)	79%	82%	−3 (practice exceeded knowledge)

Discussion

Overall, patients undergoing tooth extraction in this North Maharashtra cohort knew their postoperative instructions reasonably well, with awareness ranging from 66% to 88% depending on the item, and felt positively about following them. Where things broke down was in actually doing so for certain behaviours. This finding is consistent with previous reports. Among the general public in the Riyadh region of Saudi Arabia, the overall mean knowledge score was 5.12 out of 10, and awareness on individual items, such as the correct duration of gauze placement and the use of cold packs to prevent swelling, varied considerably, with fewer than half of participants aware of the role of cold packs. A comparable general-population survey from Kerala similarly reported an overall mean knowledge score of 5.4 out of 10, with only about a third of participants aware of the correct duration for avoiding mouth rinsing. Set against those general-population figures, this cohort, patients who had actually been through an extraction and received chairside instruction, scored numerically higher on comparable items, such as saline-rinsing timing and the correct response to heavy bleeding. That finding is consistent with expectations: recent, direct counselling from the treating clinician tends to be retained better than awareness measured in a general population that has not just undergone the procedure.

Why did compliance lag behind knowledge for medication completion (62%) and saline rinsing (69%)? Studies of perioperative counselling before third molar removal offer one clue: a substantial share of patients misunderstand parts of what they are prescribed even after receiving preoperative counselling. Readability may be part of the answer too; written instruction sheets are often pitched above what a meaningful proportion of patients can actually follow, which limits how useful they are once the patient has left the clinic.[13] Low oral health literacy has been documented among adult dental patients in India as well, which strengthens the case for plain-language, locally appropriate written material.[14] Patients may also encounter postoperative information on their own outside the dental office: an appraisal of publicly available post-minor-oral-surgery instructions found the content and quality varied considerably, which could easily dilute whatever message the treating clinician gave.

One item actually went the other way: 82% of participants avoided straws in practice, more than the 79% who identified this as necessary when asked. That is a useful clue: for behaviours tied to immediate discomfort or visible bleeding, patients seem to get it right even without being able to explain why, whereas behaviours with no immediate downside, such as finishing a medication course once the pain has faded, are more prone to being dropped even when the patient knows better. The broader perioperative-education literature has flagged this same pattern, where behaviour tends to follow symptoms rather than instructions once the acute pain passes. A similar disconnect between what patients know and what they do after extraction has also been reported among patients at a dental college clinic in Madinah, Saudi Arabia.

Swelling or infection needing additional dental care was reported by a notably large share of this cohort (69%), far more than severe unrelieved pain (27%). This may partly trace back to the same shortfalls in saline rinsing and medication completion, both of which matter directly for infection control and swelling, and it is consistent with evidence elsewhere that smoking and poor postoperative self-care independently raise the risk of swelling and delayed healing after extraction. That said, this is a cross-sectional study, so it cannot establish that any specific non-adherent behaviour actually caused the complications reported.

Taken together, these findings do not point to a single fixable cause behind the knowledge–practice gap seen here. Rather, several factors appear to be involved: instructions given verbally under time pressure or while the patient is still anxious, written material (when used at all) pitched above the patient's comprehension level, and, once the patient is home, competing priorities together with a tendency to follow symptoms rather than instructions once the acute pain fades. Standard oral and maxillofacial surgery teaching emphasises that postoperative patient management is an integral, not incidental, part of the extraction procedure, and that the manner of instruction delivery materially affects compliance and healing outcomes. These findings support pairing verbal counselling with plain-language written instructions, ideally in the patient's own language, and, where practical, a structured follow-up, in person or by phone, to reinforce the key points at a time when the patient is more likely to retain them. A randomised trial has shown that this kind of follow-up improves compliance compared with written or verbal instruction alone.[15]

Limitations

- The sample size (n = 100) was modest and drawn from a single centre/region; findings may not be generalisable to the wider population of North Maharashtra or to other regions of India.
- The cross-sectional design precludes assessment of causal relationships between knowledge, attitude, and practice, and does not capture how these parameters might change over the course of healing.
- Practice data were based on patient self-report and were not independently verified, introducing the possibility of recall bias and social desirability bias (over-reporting of compliant behaviour).
- A formally validated, standardised KAP instrument specific to post-extraction care was not used; the questionnaire was developed and pilot-tested for this study, which may limit direct comparability with other published KAP surveys.

- Potential confounding variables, such as age, gender, education, type of extraction (simple versus surgical), operator, and mode of instruction delivery, were recorded on the proforma but were not statistically analysed in relation to KAP scores in the present dataset; sub-group analysis is recommended for future work.

Conclusion

This North Maharashtra cohort came into the extraction knowing what they should do and feeling positively about it, but their actual compliance, particularly completing medication and rinsing with saline, fell short of what they knew. Clearer verbal counselling, backed up by simply worded written instructions in the patient's own language and a structured follow-up, could help close that gap and reduce preventable complications such as infection and swelling.

Clinical Significance

Clear communication and standardised postoperative instructions, backed up by written material and follow-up contact where possible, can genuinely improve compliance and healing after extraction. However, clinicians should not assume that satisfactory knowledge automatically translates into adherent behaviour; this assumption tends to break down precisely for instructions such as completing a full medication course, which do not carry the immediate symptomatic feedback that reinforces behaviours like keeping the gauze in place or avoiding straws. Postoperative counselling and review should be planned with that distinction in mind.

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