

Impact of Postoperative Instruction Delivery Methods on Patient Compliance After Minor Oral Surgeries: A Systematic Review

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Background: It has been demonstrated that giving precise postoperative instructions reduces the possibility of adverse events after surgery. Adherence to postoperative instructions during recovery is impacted by patient comprehension, which is influenced by the approach of instruction delivery. This systematic review's main goal was to critically assess the available data regarding the association between the methods of introducing postoperative instructions and patients' compliance after minor oral surgeries.

Methods: In accordance with the Cochrane Handbook for Systematic Reviews of Interventions, a systematic review was conducted. Four databases (PubMed, Web of Science (WOS), Scopus, and Google Scholar) were thoroughly searched up to October 31, 2025. Covidence software was used by two independent reviewers to screen the material. The methodological quality and risk of bias in included studies were systematically assessed using the Quality Assessment Tool in Covidence. Ten studies were included: seven Randomized Controlled Trials, one cross-sectional, and two cohort studies.

Results: Two studies reported a statistically significant positive association between phone call follow-up and adherence to postoperative instructions, showing that phone follow-up had higher scores of compliance level (9.7 ± 0.5 and 9.14 ± 0.78) compared to extended written instructions (7.9 ± 2.1) and to verbal and printed instructions combined (7.64 ± 0.83), respectively. Pictorial instructions or Android-based mobile applications were found to significantly improve patient compliance in two other research studies. Another study demonstrated that audiovisual (A-V) aids for postoperative instructions had a higher median comprehension score (12 ± 2) than the verbal (9.5 ± 3) and written (10 ± 2) methods. However, findings from three studies on verbal and written instructions were inconsistent.

Conclusion: The use of enhancement techniques of postoperative instruction, such as multimedia, mobile applications, phone calls, and pictorial instructions, particularly when combined with baseline verbal explanations, demonstrated superior efficacy in enhancing patient comprehension, information retention, and compliance across diverse patient populations who had undergone minor oral surgeries.

Keywords: compliance, surgical extraction, postoperative instructions, oral surgery, tooth extraction

Introduction

Clear patient education following oral surgery is associated with increased satisfaction and reduced postoperative complications. Such education typically includes information regarding postoperative expectations, medication regimens, and wound care instructions. Patients may receive these instructions in either written or verbal formats.¹ Minor oral surgeries are outpatient procedures performed under local anesthesia, occasionally with sedation, by oral surgeons or general dentists. These procedures are less invasive than major surgeries and generally involve a more straightforward

recovery; however, patient cooperation remains essential. Examples of minor oral surgeries, usually performed by the dentist, include removal of impacted teeth (particularly wisdom teeth), simple and surgical extractions, pre-prosthetic surgeries such as alveoloplasty or tori removal, biopsies of oral lesions, minor cyst removal, dental implant placement, and apicoectomy.²⁻⁴

Providing clear postoperative instructions has been shown to reduce the risk of legal complications following surgery.⁵⁻¹⁰ The mode of instruction delivery influences patient comprehension, which, in turn, affects adherence to postoperative care during recovery.¹¹ Postoperative instructions may be delivered verbally, in writing, pictorially, via multimedia, by telephone, or through interactive applications.

Traditionally, postoperative information is provided orally by the surgeon or nursing staff immediately following the procedure. Although this approach enables patients to ask questions and receive individualized guidance, verbal instructions alone are frequently inadequate, as patients may struggle to retain information, particularly when experiencing postoperative stress.^{5,12}

Written instructions provide patients with a tangible reference for review after discharge from the clinic. This is especially valuable for complex care regimens, such as managing multiple medications or pain, where recalling all verbal information may be challenging. Additionally, research indicates that comprehensive written instructions can enhance patient compliance more effectively than brief verbal instructions alone.^{5,13}

Despite the availability of both verbal and written instructions, patients often do not fully comprehend or recall postoperative guidance. Studies have shown that written dental instructions can be confusing if they contain excessive technical terminology or ambiguous language. As a result, many experts recommend combining verbal and written instructions to enhance patient understanding and compliance.¹⁴

Sociodemographic characteristics of patients could affect their adherence to postoperative instructions. Low socioeconomic status remains a significant barrier, as financial constraints, limited transportation, and the inability to take time off work frequently compromise follow-up care and medication adherence. Beyond economic status, higher education levels correlate with better comprehension and retention of complex medical instructions.¹⁵⁻¹⁸ Furthermore, age-related variables ranging from the risk-taking tendencies and lower compliance of younger patients to the cognitive decline and polypharmacy challenges faced by the elderly can significantly hinder therapeutic adherence.^{15,19} Additionally, biological sex influences engagement with delivery methods, with evidence suggesting that men may benefit more from targeted educational interventions.²⁰ Recognizing how these variables intersect is essential for developing tailored instructional strategies that ensure equitable and successful recovery outcomes across diverse patient populations.

A prospective study conducted in Nigeria found that respondents who received instructions through both oral and written routes were more compliant with post-extraction instructions (75.3%) than those who received instructions only verbally (71.3%). The overall mean compliance rate among respondents was 72.8%. Although there was no statistically significant difference between the instructional methods ($t = 1.16$, $p > 0.254$).¹

A study from Israel evaluating patient compliance found that 40% of patients did not recall receiving both written and verbal postoperative instructions, while 36% remembered only the written instructions, indicating potential gaps in integrated delivery or patient retention.⁵ However, a randomized clinical trial investigating compliance with postoperative instructions after lower third molar extraction for patients who were treated in the Hospital Odontology de Bellvitge, University of Barcelona, Spain found no statistically significant differences in compliance based on the manner of instruction presentation (verbal, written, or additional information), preoperative anxiety, or sociocultural level.¹¹

Integrating verbal, written, and pictorial instructions has been shown to be especially effective in promoting adherence to postoperative care plans.^{12,21} Pictorial instructions, whether incorporated into written materials or presented digitally, facilitate patient understanding by providing visual cues that transcend language and literacy barriers. Visual aids can simplify complex concepts, illustrate correct techniques such as mouth rinsing or ice pack application, and reinforce verbal explanations. Research indicates that pictorial instructions significantly enhance patient recall compared to verbal instructions alone.¹²

Multimedia and interactive mobile applications, particularly those quizzes or feedback mechanisms, have demonstrated considerable effectiveness in improving patients' comprehension of postoperative care. Follow-up telephone calls further reinforce instructions and address patient questions, thereby enhancing adherence to care plans. Adherence to

postoperative instructions is essential for successful recovery, especially in minor oral surgeries where patients are primarily responsible for self-care. Non-adherence may lead to complications such as infection, delayed healing, increased pain, dry socket, swelling, trismus, and re-interventions, thereby impacting patient well-being and healthcare resource utilization.^{13,22}

While previous systematic reviews have explored patient education in dentistry, most focus on general care and fail to account for the recent rise in digital health tools for communicating postoperative instructions, such as mobile applications and interactive multimedia. Furthermore, evidence specifically addressing minor oral surgery remains scarce and inconsistent, leaving the impact of different delivery methods on patient compliance and clinical outcomes unclear. This review addresses these gaps by providing an updated synthesis of the literature. Our research objective is structured using the PICO framework: (P) Population: patients undergoing minor oral surgical procedures; (I) Intervention: standardized instructional methods (eg., multimedia, apps, or pictorial aids); (C) Comparison: traditional verbal or simple written instructions; and (O) Outcomes: primary measures of patient compliance and understanding, alongside secondary clinical outcomes like pain, infection, and dry socket. Ultimately, our review aims to assess the available data regarding the association between the methods of introducing postoperative instructions and patients' compliance after minor oral surgeries for clarifying these gaps and providing insights that could inform best practices and improve patient outcomes.

Materials and Methods

Study Registration

Using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) 2020 Checklist (<https://www.prisma-statement.org/prisma-2020-checklist>), as indicated in [Supplementary Table 1](#). We followed the recommendations of the Cochrane Handbook for Systematic Reviews of Interventions. The project's number had been recorded into the International Prospective Register of Systematic Reviews (PROSPERO): CRD420251230308.

Eligibility Criteria

The following criteria were used to select studies for this systematic review: Population: Research on adults (≥ 18 years old) having any kind of minor oral surgery, Exposure & Outcome: Receipt of postoperative instructions following minor oral surgery and explicit measurement or reporting of patient compliance, adherence, or concordance with any type of postoperative instruction, Publication Format: English-language full-text studies; Study Design: RCT, cross-sectional, and cohort studies. Research that satisfied any of the following requirements was eliminated: Population: Research with children or animals as subjects; Data Availability: Research with insufficient or missing data; and Study Design: Case series, qualitative research, and narrative reviews.

Information Sources and Search Strategy

PubMed, Google Scholar, Scopus, and Web of Science (WOS) were the study's search engines. Up until October 31, 2025, we looked for published human studies with RCT, cohort, or cross-sectional designs that were written in English. The literature search strategy integrated "OR" and "AND" with all Medical Subject Headings (MeSH) terms and the textual terms for every search topic. All databases were searched using the following mix of keywords and Medical Subject Headings (MeSH) search phrases, utilizing Boolean operators: "patient compliance," "patient adherence," "postoperative instructions," "post-surgery care," "oral surgery," "minor oral surgery," "dental surgery," "impacted tooth extraction," "third molar extraction," "dental implant," "patient education," and "follow-up." An example search string used in PubMed was: ((("patient compliance"[MeSH Terms] OR "adherence"[MeSH Terms] OR "patient education"[MeSH Terms]) AND ("postoperative care"[MeSH Terms] OR "postoperative instructions" OR "after surgery care") AND ("oral surgery"[MeSH Terms] OR "dental surgery" OR "tooth extraction" OR "third molar" OR "dental implant"). The collected studies were transferred to the Mendeley citation manager. The completed folder of collected studies was then imported into Covidence software as a Research Information System (RIS) file.

Selection Process

Two independent reviewers, Dr. HM and Dr. AK, screened the literature. Disagreements were settled through consensus, with a third reviewer, Dr. MF, consulted if needed. There were two steps in the screening process: evaluating abstracts and titles and then reviewing the complete text, both conducted through Covidence software.

Data Collection Process and Data Items

After the studies were finally chosen for the review, HM extracted data from each study and AK verified it. The “Table of Study Characteristics (Table 1)” then contained the extracted data, which included the author, year of publication, nation, study design, participant data (number and age), inclusion and exclusion criteria, type of minor oral surgeries and intervention, follow-up period, confounders, the method of compliance assessment, and measured outcomes.

Study Risk of Bias Assessment

The Covidence software’s Quality Assessment Tool was used to properly evaluate each included study’s methodological quality and potential bias. This evaluation took into account a number of important RCT concerns, such as the possibility of selection bias (for example, because of sampling techniques), sequence generation, or concealed assignment), information bias (due to the absence of blinding of participants and personnel for intervention and outcomes), non-response bias. The evaluation also considered the possibility of reporting bias, particularly with regard to incomplete outcome data, confounding bias, and the validity and reliability of the measurement tool for observational studies. After careful analysis of these characteristics, each study was finally classified as having a high, unclear, or low risk of bias.

Overall Confidence Assessment

Employing AMSTAR 2 (A Measurement Tool to Assess Systematic Reviews), a popular tool for critically appraising systematic reviews, we rated the overall confidence in the results of the review. Although it was published in 2007, we modified its 16-item checklist to fit our review. In particular, we eliminated three items pertaining to meta-analysis and selected 13 items suitable for both randomized and non-randomized designs (the whole checklist was presented in [Supplementary Figure 1](#)).²⁷

Rating the overall confidence in the findings of the review was assessed as: High: There was no or just one non-critical flaw, and the systematic review gave a precise and comprehensive overview of the body of research on the subject, Moderate: Several non-critical weaknesses but no serious defects. It probably gave a precise synopsis of the existing research that was part of the assessment, Low: One significant defect, whether or not there are non-critical flaws. The review may not provide a complete and accurate evaluation of the available papers due to one critical flaw, and Critically Low: Multiple significant flaws, whether or not they are non-critical, or the review had multiple critical flaws and cannot be relied upon to provide an accurate and thorough evaluation of the available studies.

Results

Study Selection

One hundred forty pertinent studies were found in the first search across four electronic databases: Scopus, Google Scholar, WOS, and PubMed ([Supplementary Table 2](#)). 129 relevant studies were left for title and abstract screening after Covidence software automatically eliminated duplicates.

After a preliminary screening, 32 research papers were identified for full-text evaluation after 97 studies were eliminated for being unrelated to the research issue. Ten studies were finally included in this evaluation after an additional twenty-two were eliminated due to the full-text screening method (wrong outcomes ($n = 11$), incomplete data ($n = 2$), incorrect indication ($n = 1$), incorrect intervention ($n = 3$), and incorrect patient population ($n = 5$). Seven of included studies ($n=7$) were RCTs.^{6,11–14,23,24} and three were observational (two were prospective cohort and one was a cross-sectional) ($n=3$).^{1,25,26} The PRISMA flow diagram ([Figure 1](#)) shows the entire research selection procedure.

Table I Summary Findings of the Review Studies (N= 10 Studies)

No	C. Author and Year of Publication	Country	Study Design	Population Description	Inclusion Criteria	Exclusion Criteria	Type of Minor Oral Surgeries and Interventions	Total Number of Participants	Follow Up	Confounders	The Method of Compliance Assessment	Outcome
1	Shenoi 2021 ¹²	India	Randomized controlled trial	Forty patients scheduled for surgical extraction of impacted lower third molars under local anesthesia were randomly allocated to two groups.	Patients between the ages of 18 and 60 who were either healthy (ASA I) or had minor systemic disease without functional limitation (ASA II), gave their agreement, and had no trouble comprehending and adhering to the postoperative care instructions were included in the study.	The patients below 18, ASA III or more, with any psychological disorder, who did not report for their scheduled appointments for follow 'up and had difficulty in comprehension of these postoperative care instructions were excluded from the study.	Surgical extraction of impacted lower third molars under local anesthetic. Following the surgical extraction of impacted lower third molars, a prescription for medication was issued to Group A (verbal postoperative care instructions) and Group B (verbal + pictorial postoperative care instructions).	40	7 days	The confounders were not identified in the study.	Questionnaire to assess the compliance of patients after surgical removal of impacted third molars on 7th postoperative day.	Group B had a mean of 14.50 and a t-value of 6.39. Patients who received both verbal and pictorial instructions showed noticeably higher levels of compliance. Group A's mean was 10.85. Patients in Group B (Pictorial + Verbal) were more compliant with mouth opening exercises and gargling with lukewarm water.
2	Matijevic 2013 ²³	Croatia	Randomized controlled trial	At the Osijek University Hospital Center in Osijek, Croatia's Department of Maxillofacial Surgery, 108 individuals had their lower third molars extracted.			Lower third molars extraction. 108 adults were randomly selected for the study and split into two groups: the test group and the control group. Patients in the test group were given comprehensive written and spoken instructions for their post-operative care, whereas patients in the control group were only given comprehensive written instructions.	108	7 days	Operator experience and patient sex influenced postoperative pain intensity	The intensity of postoperative pain in the first seven days after lower wisdom tooth extraction	The kind of information, whether or not it was delivered orally, had no bearing on the degree of discomfort following surgery. Regardless of the amount of information given to patients, the median values of postoperative pain severity were the same (about 2.85).
3	Alvira-González 2015 ¹¹	Spain	Randomized controlled trial	Ninety individuals were chosen who had an impacted lower third molar that needed to be surgically extracted for the first time.	The participant selected for the study either had mild systemic disease without functional limitation (ASA II) or were in good health (ASA I). Every patient had their impacted lower third molar surgically extracted.	Individual with low IQs, psychological disorders, or mental illnesses, as well as language comprehension issues, were unable to attend the scheduled sessions.	Extraction of an impacted lower third molar. Using a sequence created by www.randomization.com , patients were randomized to one of the following three study groups: • Verbal: a prescription document for the postoperative medication was provided along with verbal postoperative instructions. • Written: Both the postoperative medication and the standard postoperative instructions were provided both orally and in writing. • Extra information: written and spoken instructions and postoperative medication were supplied, along with extra written information regarding the postoperative period.	90	7 days	There were no statistically significant differences in following postoperative instructions according to sociocultural level or age. In addition, gender is not a factor associated with a greater non-adherence to postoperative instructions, with exception of following the guidelines that prohibit the consumption of alcoholic/ carbonated beverages within the seven days after surgery.	Patients were interviewed about their adherence to the instructions one week after the surgery, at the time of suture removal.	Adherence to postoperative care recommendations for antibiotics, mouthwash, smoking, soft food, and hygiene did not differ statistically significantly. There were no differences in the groups' compliance with postoperative instructions regarding the presentation of postoperative instructions, the sociocultural level, or the degree of preoperative anxiety.

(Continued)

Table 1 (Continued).

No	C. Author and Year of Publication	Country	Study Design	Population Description	Inclusion Criteria	Exclusion Criteria	Type of Minor Oral Surgeries and Interventions	Total Number of Participants	Follow Up	Confounders	The Method of Compliance Assessment	Outcome
4	Vallerand 1994 ⁶	United States of America	Randomized controlled trial	Under conscious anesthesia, 40 dental patients—15 men and 25 women—were planned to have two to four impacted third molars surgically extracted.	Ages ranged from 18 to 27 years		Surgical extraction of two to four impacted third molars under conscious sedation. Members of the therapy group received postoperative instructions that included specific information on the use of analgesics as well as descriptive information about possible side effects (such as discomfort, edema, trismus, and nausea). Members of the control group received simple, open-ended instructions for wound care following surgery.	40	45 hours	No significant differences existed between groups for the age, sex, number of teeth extracted, difficulty of extractions, and length of operation variables.	Patients were given a packet of questionnaires to be filled out at 1 hour postoperatively in the clinic (baseline) and then at 3-hour intervals at home for the next 45 hours.	In the course of treatment, patient satisfaction with pain management was noticeably higher. Between 12, 18 hours, and 24 hours after surgery, patients in the therapy group reported noticeably reduced discomfort. This difference was statistically significant, according to a worldwide study of total discomfort during the postoperative course using a repeated measures ANOVA (F statistic = 4.48, P < 0.05).
5	Adebayo 2005 ¹⁴	Nigeria	Randomized controlled trial	Between November 1, 2002, and October 31, 2003, 225 consecutive patients received minor oral surgical procedures at the outpatient clinic of the Department of Dental Surgery, Military Hospital, Port Harcourt, Nigeria, including dental extractions, biopsies, and enucleations.	They all stated that they had received official English language instruction for at least six years.		Minor oral surgical procedures such as dental extractions, biopsies, and enucleations at the outpatient clinic of the Department of Dental Surgery, Military Hospital, Port Harcourt, Nigeria between 1st November 2002 and 31st October 2003. Thirty to sixty minutes after minor oral surgery, patients received written and spoken instructions (group A), only verbal instructions (group B), or written alone instructions (group C). There were 150 patients in group A and 50 in group B due to the sequential recruitment of individuals. There were twenty-five patients in Group C.	225	7 days	The confounders were not identified in the study.	One week postoperatively, information was sought, through questionnaire administration, from all study patients who came for review on remembrance of form of postoperative instructions given, compliance, expectations from procedure and level of satisfaction with treatment.	Compared to groups A and C, patients in group B complied considerably better with the advice to use warm saline mouthwash (p=0.04). Group A patients were substantially more likely than other patients to not comply with antibiotic medication (p=0.03), but there was no significant difference in analgesic noncompliance (p=0.9). There was no discernible difference in postoperative expectations across the three patient groups. Although the difference was not statistically significant, patients in group A expressed greater satisfaction with their care (76%) than other patients (63–67%).

6	Sybil 2022 ²⁴	United States	Randomized controlled trial	The study included ninety individuals undergoing minor oral surgical procedures at the oral and maxillofacial surgery department.	Adult patients (aged >18 years)	The study excluded patients with medical illnesses that left them vulnerable to postoperative complications as well as those with psychological disorders or mental abnormalities that made language comprehension difficult. Furthermore, neither group contained patients who lacked a smartphone (Group C) or those who were unable to understand the instruction brochure (Group B).	Tooth extraction Following tooth extraction, participants were divided into three groups: verbal (Group A), verbal plus written (Group B), and Exo Dont app-based delivery (Group C).	90	7 days	The confounders were not identified in the study.	Each patient was called to the outpatient department of oral and maxillofacial surgery for follow-up 1 week after the extraction, and their responses to a group-specific feedback form were obtained.	Group C had the highest rate of drug compliance, with 25 (83%) and 28 (93%) of the 30 patients taking their antibiotics and analgesics as recommended, respectively. Group C showed greater adherence to postoperative instructions when it came to following dietary restrictions ($P=0.001$), not washing for 24 hours ($P<0.001$), and using warm saline rinses after 24 hours ($P=0.001$).
7	Aloy-Prosper 2020 ¹³	Spain	Randomized controlled trial	Patients who had an impacted mandibular or maxillary third molar surgically extracted between January 2016 and January 2017 at the University of Valencia's Oral Surgery Unit.	Healthy patients over the age of eighteen who completed an informed consent form and consented to participate in the study met the inclusion criteria.	Patients who were unable to attend their planned appointments or who had mental illnesses or psychological disorders that prevented them from understanding and following the postoperative instructions were excluded.	Surgical extraction of an impacted mandibular or maxillary third molar. Depending on how the post-operative instructions were given—short written instructions, written extended instructions, or brief written instructions plus a phone follow-up at the three-day postoperative period—patients were randomly allocated to one of three test groups. One week following surgery, patients were questioned regarding their compliance with the guidelines.	69	7 days	No significant differences existed between groups for the age, sex, and difficulty of extractions.	Patients were interviewed about their adherence to the instructions one week after the surgery, at the time of suture removal. Questionnaire was conducted to assess the compliance of postoperative instructions following the third molar surgery.	The phone call follow-up instructions group had a higher level of compliance score (9.7 ± 0.5) than the brief written instructions (8.5 ± 1.2) and written extended instructions (7.9 ± 2.1) groups; this difference was statistically significant (ANOVA $p=0.001$).

(Continued)

Table I (Continued).

No	C. Author and Year of Publication	Country	Study Design	Population Description	Inclusion Criteria	Exclusion Criteria	Type of Minor Oral Surgeries and Interventions	Total Number of Participants	Follow Up	Confounders	The Method of Compliance Assessment	Outcome
8	Ramalingam 2022 ²⁵	Saudi Arabia	Cross sectional study	Saudi adults undergoing extraction who signed an informed consent form and consented to participate in the study were eligible.	patients above 18 years of age	Patients with mental illnesses or psychiatric disorders that prevented them from independently comprehending and adhering to postoperative instructions were excluded.	Dental extraction (surgical and non-surgical). Using an open-source computer tool (Random Sequence Generator, https://www.random.org/), all participating patients were randomly assigned to one of three study groups according to how the phone follow-up was reinforced and the postoperative instructions were given: Group A received only verbal and printed instructions; Group B received verbal and printed instructions along with a phone follow-up to reinforce instructions on the first postoperative day; and Group C received verbal and printed instructions along with a phone follow-up to reinforce instructions on the first and third postoperative days.	135	7 days	There was no significant statistical relationship between the secondary predictors (Age, gender, and type of extraction (surgical or non-surgical)) and the compliance scores.	After seven days, all patients answered a questionnaire to quantify the level of compliance on a score out of 10, which was the outcome variable.	Compared to Group B (8.48 ± 1.01, n = 40) and Group A (7.64 ± 0.83, n = 53), Group C (9.14 ± 0.78, n = 42) showed a substantially greater level of compliance (one-way analysis of variance (ANOVA) F = 34.937; p < 0.001). In a similar vein, Group B's compliance level was considerably greater than Group A (p < 0.01).

9	Osadolor 2021 ¹	Nigeria	A prospective study	Individuals who visited Central Hospital Oleh's dental department and whose course of treatment called for a dental extraction.	Participants were chosen for the study if they were in good health or had a mild systemic illness without functional limits and gave their agreement to take part.		Dental extraction (Central incisors, Lateral incisors, Canines, First premolars, Second premolars, First molars, Second molars, and Third molars). Through a straightforward randomization procedure, participants in this study were given a certain kind of post-extraction instructions (verbal instructions only or verbal and written instructions).	52	2 weeks	The confounders were not identified in the study.	The data collection instrument was an interviewer administered questionnaire that consisted of three sections. The first section sought information on socio-demographics and bio data of the participants, the second section assessed information on questions concerning post-extraction instructions and compliance, and the third clinically assessed the extraction socket.	Although there was no statistically significant difference between the instruction routes ($t = 1.16$, $p > 0.254$), respondents who received instructions from both routes were more compliant with post-extraction instructions (75.3%) than their counterparts who received verbal instructions alone (71.3%).
10	Akshaya 2024 ²⁶	Bangladesh	A prospective study	After gaining informed consent, the responses of ninety consenting participants were collected. The study included 49 girls (55%) and 41 males (45%).	The study included individuals who were undergoing their first tooth extraction between the ages of 20 and 50, as well as those who were either healthy or had minor systemic disease according to ASA (American Society of Anesthesiologists) 1 and 2.	Patients with mental retardation, those who reported from urban areas and patients who were not literate were all excluded from the study.	Extraction of teeth for the first time. Following the extraction, Group 1 patients received the conventional post-operative instructions orally, Group 2 patients received them in writing, and Group 3 patients received them using the A-V approach.	90	1 day	The confounders were not identified in the study.	The responses were recorded using a standard questionnaire after 24 hours of extraction.	Group 1 had a median comprehension score of 9.5 $\pm$ 3, but groups 2 and 3 had scores of 10 $\pm$ 2 and 12 $\pm$ 2, respectively. It was determined that this difference was statistically significant. ($p < 0.001$)

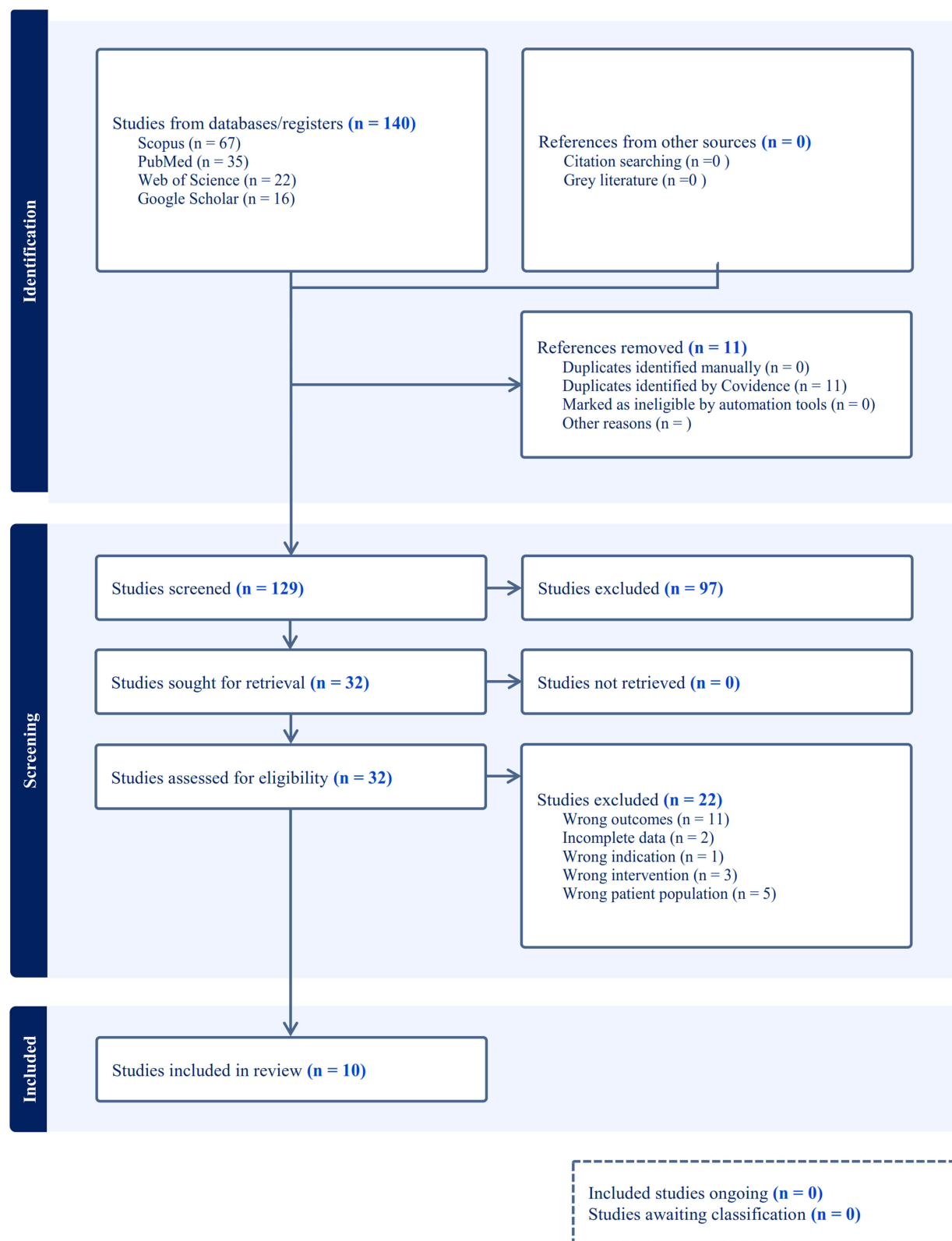


Figure 1 PRISMA diagram flow illustrating the selection process of the included studies (n=10 studies).

Study Characteristics

Table 1 presents the features of the ten included studies, which were carried out across Spain, Croatia, India, Nigeria, Saudi Arabia, Bangladesh, and the United States of America (USA). Of these, seven were RCTs, two were cohort studies, and one was a cross-sectional study. The total number of subjects in all of the included studies was 939 individuals. This figure comprised 662 participants from RCTs and 277 from observational studies.

Regarding intervention assessment, two studies assessed the phone call as a tool for communicating postoperative instructions besides verbal and written instructions.^{13,25} An Indian study implemented pictorial postoperative instructions.¹² Interestingly, researchers from the United States evaluated an android mobile application for conducting postoperative instructions.²⁴ The audio-visual aids were tested by a prospective cohort study.²⁶ The remaining studies focused on evaluating the association between the compliance of patients with postoperative instructions and the methods of introducing the instructions, either verbal or written. All of the reviewed studies included adults over the age of 18. For outcome reporting, the relationship between compliance with postoperative instructions and the method of introducing them was primarily presented as a statistically significant difference among the included studies.

Risk of Bias in Included Studies

A modified Covidence quality evaluation technique was used to thoroughly evaluate the quality and potential for bias in the ten included studies (seven RCT, two cohort, and one cross-sectional), which are shown in Table 2. Five domains were used to evaluate RCTs: Selection bias (Random Sample), Selection bias (Sequence generation in allocation assignment), Information bias (Blinding of participants and personnel for intervention and results), Selection bias (Allocation concealment), and non-response bias. Several areas of concern were found in this evaluation: One study was deemed at high risk for selection and non-response bias, because their participants were not selected randomly and consequently assigned to study groups. In addition, the non-response bias was high due to the missing of 18% of participants, potentially limiting the representativeness of the general population.¹⁴ Furthermore, one observational study lacked clear identification of confounders and the validity and reliability of the measurement tool.¹ In contrast, Four studies were deemed to have a low degree of bias in most of the quality assessment criteria.^{11,12,25,26} Overall, two studies were found to have high bias concerns.^{1,14}

Findings and Overall Confidence Assessment

Table 1 presents the results regarding the association between the methods of introducing post-operative instructions after minor oral surgeries and the compliance of participants with them.

Findings of Studies Examining the Phone Call Follow-Up and Audiovisual Aids, and the Compliance with Post-Operative Instructions

Two studies^{13,25} indicated a statistically significant positive association between the phone call follow-up and compliance with post-operative instructions. The results from the first study demonstrated that the higher score for the level of compliance was identified in the group for phone follow-up instructions (9.7 ± 0.5) compared to the short written instructions (8.5 ± 1.2) and the extended written instructions (7.9 ± 2.1) groups, with this difference statistically significant (ANOVA $p=0.001$).¹³ The second study indicated that the participants of Group C who received verbal and printed instructions and a phone call follow-up to reinforce instructions on the first and third postoperative days had a significantly higher level of compliance (9.14 ± 0.78 , $n = 42$) than Group B who have got verbal, printed instructions, and a follow-up phone call on the first postoperative day to reiterate instructions (8.48 ± 1.01 , $n = 40$); and Group A who have practiced verbal and printed instructions only (7.64 ± 0.83 , $n = 53$) (one-way analysis of variance (ANOVA) $F = 34.937$; $p < 0.001$).²⁵

The third study from Bangladesh demonstrated that audiovisual aids in conducting postoperative instructions have a statistically significant positive association with compliance to postoperative instructions in comparison with verbal and written methods. The median comprehension score for the verbal group was 9.5 ± 3 , while it was 10 ± 2 for the written group and 12 ± 2 for the A-V group, and This difference was determined to be statistically significant. ($p < 0.001$).²⁶

Table 2 Quality Assessment Tool of Review Studies (n=10)

RCT Study ID	Selection Bias (Random Sample)	Selection Bias (Sequence Generation in Allocation Assignment)	Information bias (Blinding of Participants and Researchers for Intervention and Outcomes)	Selection Bias (Allocation Concealment)	Non Response Bias	Overall Risk of Bias
Shenoi 2021 ¹²	Low	Low Patients were allocated according to a sequence generated to overcome selection bias.	Low The patients were blinded by keeping the same time duration for the instructions to be provided, whether verbal alone or verbal with pictures	Low Another investigator did the allocation concealment by using a sealed envelope with case papers of the respective patients within it, following which; patients were allocated according to the sequence generated to overcome selection bias.	0/40	Low risk of bias
Matijevic 2013 ²³	Low	Low The study involved 108 adults who were randomly chosen and divided into two groups: a test group and a control group.	Unclear	Unclear	0/108	Unclear risk of bias
Alvira-González 2015 ¹¹	Low	Low Sequence generated by www.randomization.com .	Low All surgeons involved in the study were blinded to which group each patient belonged	Unclear	6/90	Low risk of bias
Vallerand WVP 1994 ⁶	Low	Low Forty patients scheduled to undergo surgical extraction under local anesthetic and intravenous conscious sedation were randomly assigned to one of two groups.	Unclear	Unclear	3/40	Unclear risk of bias
Adebayo 2005 ¹⁴	High	High All patients seen during the study period were consecutively assigned to group A or group B. Group A patients were given verbal, then written instructions postoperatively while group B patients were given only verbal instructions.	Unclear	High	41/225	High risk of bias
Sybil 2022 ²⁴	Low	High A sample size of 90 patients was recruited, and the patients were assigned to 3 different groups based on the methods of dissemination of postoperative instructions as per the eligibility criteria.	Unclear	Unclear	0/90	Unclear risk of bias
Aloy-Prosper 2020 ¹³	Low	Low Sequence generated by a computer program (IBM SPSS v21; IBM Corp) macro (!RNDSEQ; Domenech JM, Granero R).	Unclear	Unclear	9/69	Unclear risk of bias
Observational Study ID	Non response bias	Incomplete outcome data	Identification of confounders	Selection bias	Validity and Reliability of measurement tool	Overall risk of bias
Ramalingam 2022 ²⁵	Low	Low	Unclear	Unclear	Low	Low risk of bias
Osadolor 2021 ¹	Low	High	Unclear	High	High	High risk of bias
Akshaya 2024 ²⁶	Low	Low	Low	Unclear	Unclear	Low risk of bias

Association Between Visual Illustration and Modern Technology, and the Compliance of Patients with Postoperative Instructions

Two studies^{12,24} showed a statistically significant positive association between pictorial instructions and android-based mobile application for postoperative care, and the patients' compliance with postoperative instructions. The first study indicated that compliance was found significantly more among patients receiving pictorial plus verbal instructions, the mean compliance of Group B who received verbal and pictorial postoperative care instructions was 14.50 with a t-value of 6.39, whereas, the mean of Group A who got verbal postoperative care instructions was 10.85 and patients in Group B were more compliant with mouth opening exercises and gargling with lukewarm water.¹² Regarding the second study, it indicated that compliance to prescribed drug was found to be the highest in participants who were assigned to Exo Don, mobile based application, furthermore, they were more likely to follow dietary guidelines ($P=0.001$), not rinse for 24 hours ($P<0.001$), and rinse with warm saline after 24 hours. ($P=0.001$) than that of other groups who received verbal and verbal plus written instructions.²⁴

Findings from Studies Examining the Difference Between Verbal, Written, and Descriptive Postoperative Instructions

The findings from three studies regarding verbal and written postoperative instructions were contradictory.^{6,11,23} The first study tested the post-operative instructions in the form of descriptive information and found that patient satisfaction with pain management was much higher in the treatment group who received postoperative preparatory instructions. Patients in the treatment group reported considerably decreased discomfort between 12 and 18 hours, as well as 24 hours postoperatively. This difference was statistically significant, according to a worldwide examination of overall discomfort during the postoperative course using a repeated measures ANOVA test. (F statistic = 4.48, $P < 0.05$).⁶ The second study demonstrated that there were no statistically significant differences regarding adherence to postoperative care instructions, either verbally or in writing, regarding antibiotics, mouthwash, smoking, soft diet, and hygiene.¹¹ Additionally, the results from the third study indicated that the type of information, irrespective of being given verbally or not, had no effect on postoperative pain intensity.²³

Results from Studies of High-Risk Bias

The results from two studies, which carry a considerable risk of bias, showed that patients who received verbal guidance on using warm saline mouthwash had notably better adherence compared to those who were given both verbal and written instructions, as well as those who only received written instructions ($p=0.04$) according to the first study.¹⁴ The second study found that respondents who received both verbal and written guidance (75.3%) were more compliant with post-extraction instructions than those who were given only verbal instructions (71.3%). However, the two methods of instruction did not show a statistically significant difference. ($t = 1.16$, $p > 0.254$).¹

Results of Factors That Might Influence Compliance

The findings from four studies of the current review demonstrated that there was no significant statistical relationship between the secondary predictors (Age, gender, type of extraction (surgical or non-surgical), and sociocultural level) and the compliance with postoperative instructions after minor oral surgeries.^{6,11,13,25} However, only one study reported that operator experience and patient sex influenced postoperative pain intensity.²³

Rating the Overall Confidence

According to AMSTAR 2 appraisal tool, the overall confidence in the results of the review was moderate.

Discussion

Our main goal was to critically assess the current evidence on the association between the method of introducing postoperative instructions and patients' compliance with them after minor oral surgeries. On the basis of this aim, we conducted a systematic review, including 10 studies, to synthesize the results. The results of this study indicated

a statistically significant association between the phone call follow-up and compliance with post-operative instructions. This finding aligns with a previous systematic review of 24 studies, which concluded that patient care improvement in a neurosurgical practice was possible by implementing a postoperative phone call.²⁸ Moreover, it supports the evidence from a prospective cohort study, which indicated that parents prefer a follow-up phone call as a safe and economical postoperative treatment strategy for pediatric patients who have had adenotonsillectomy.²⁹

These findings suggest that verbal instructions, when reinforced by a follow-up phone call; often in addition to written instructions; significantly improve patient comprehension and adherence to care plans. This reinforcement is particularly important, as patients may be drowsy or overwhelmed with information at the time of discharge.

The results of the current systematic review demonstrated that pictorial instructions and an Android-based mobile application for postoperative care significantly improved patient compliance with postoperative instructions.^{12,24} These findings coincide with results of a review of research on the role of pictures in enhancing health communication which found that in comparison to text alone, images closely associated with spoken or written material can significantly improve attention to and remember of health education content³⁰ and with Indonesian study³¹ which revealed a difference in the degree of compliance between the control group (53.35%) and the intervention group (80%) following education through interactive website media, and the Mann–Whitney U analysis revealed that the provision of interactive website media affected patient compliance with post-odontectomy instructions (p -value = 0.049; $p < 0.05$). These findings could be interpreted as the guidance by pictorial instructions could improve the understanding, especially for those with low health literacy or language barriers, visualized concepts, and enhanced understanding of complex medical information. Moreover, digital tools provide patients with on-demand access to educational materials, including interactive tutorials, videos, and FAQs, available at any time. This multimedia approach helps demystify the recovery process, improves the patient's understanding and retention of complex information, and improves communication and support.

The present study demonstrated that audio visual aid was effective method in improving the compliance of patients with postoperative instructions after minor oral surgeries, which accords with the results from Indian study which indicated that patients who used the audiovisual assistance scored far higher on knowledge retention (mean $\pm$ SD = 7.56 $\pm$ 2.31) when compared with patients receiving verbal instructions (mean $\pm$ SD = 5.73 $\pm$ 2.94; p value = 0.01).³² Furthermore, it supports the evidence from a randomized controlled study which evaluated how well a multimedia program and an informational pamphlet informed patients about third molar surgery. Following the intervention, the multimedia alternative was assessed as much more preferred than the pamphlet group (75% versus 15%, respectively). At follow-up, the multimedia group's self-rated third-molar extraction knowledge score increased significantly (from 19% to 63%) and was nearly twice as high as the pamphlet group's (39%).³³ This suggests that in daily dental practice, audio-visual aids can be a useful tool for patient education.

The findings from three studies in this review regarding verbal and written instructions were contradictory,^{6,11,23} two studies indicated no statistically significant difference between verbal and written instructions in terms of compliance.^{11,23} These results suggest that traditional methods of delivering postoperative instructions are not standardized and may vary according to factors such as patient population, educational background, and sociocultural context. Therefore, standardized enhancement techniques such as multimedia, mobile applications, and pictorial instructions should be prioritized.

A critical challenge in evaluating postoperative adherence is the lack of a “gold standard” for measuring compliance. In clinical practice, dentists often utilize postoperative complications as indirect indicators of non-compliance; for instance, the development of alveolar osteitis (dry socket) or surgical site infection is frequently correlated with a failure to adhere to smoking cessation, oral hygiene, or protective clot-management protocols. Beyond these clinical indicators, research in this field frequently employs direct assessment tools, such as patient-reported outcome measures, structured adherence diaries, and validated self-report scales. These tools allow for a more meticulous analysis of which specific instructions, such as medication timing versus dietary restrictions, patients find most difficult to follow. However, the reliance on self-reporting introduces potential recall and social desirability biases.^{11–14,23–26} Therefore, we can extract some guidelines from the previous research to maximize patient compliance. Clinicians should adopt a hybrid communication protocol that utilizes structured verbal instruction as the baseline standard of care. This foundational baseline must be delivered in a quiet environment and follow a logical sequence covering five core areas: (1) Hemostasis and

bleeding control; (2) Pain and medication management; (3) Management of swelling; (4) Oral hygiene and surgical site care; and (5) Dietary restrictions. To enhance information retention, these verbal instructions should be immediately reinforced with digital or physical adjuncts, such as multimedia videos or mobile applications, which allow patients to memorize the information at home.^{1,6,11–14,23–26}

This study demonstrates several strengths. First, the research was chosen and its quality evaluated by two independent reviewers. Second, the study evaluated compliance with postoperative instructions following minor oral surgeries, in contrast to previous research that focused exclusively on patient education and general care in dentistry. Additionally, the diverse sample, which includes participants from various economic and sociocultural backgrounds across the Middle East, Africa, Western, and Asian countries, supports the robust generalizability of the findings.

However, some limitations should be acknowledged. The included studies varied in design and outcome measurement, which precluded the possibility of conducting a meta-analysis and required a narrative synthesis. Moreover, patient compliance was assessed using diverse methods, such as observation and self-reported questionnaires, both of which are susceptible to recall bias. Besides, the varying follow-up periods across studies limit the strength of our conclusions regarding the long-term sustainability of information retention. Finally, the predominance of studies focused on third molar extractions may limit the generalizability of our findings to other minor oral surgical procedures.

Conclusion

The use of enhancement techniques of postoperative instructions, such as multimedia, app-based methods, phone calls, and pictorial instructions, particularly when combined with baseline verbal or written instructions after minor oral surgeries, has significantly improved patient understanding, information retention, and compliance. For these findings to be effectively applied within health facilities clinicians and administrators should integrate these multi-dimensional tools into routine discharge protocols, ensuring that high quality, reproducible information is provided to every patient. Such implementation bridges communication gaps, standardizes the quality of follow-up care, and directly enhances clinical outcomes by reducing pain, swelling, infection, and dry socket. However, caution is needed when translating these results into clinical mandates, as the current evidence relies on a limited number of heterogeneous studies with a predominance of third molar extractions. Consequently, while these strategies facilitate faster recovery and better public health outcomes, future studies should focus on varied surgical contexts, the cost-effectiveness of institutional adoption, and methods to overcome individual barriers to patient engagement.

Data Sharing Statement

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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