

# An investigation into patient morbidity following oral day case surgery

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## Abstract

**Background:** Spinal anaesthesia is a common technique for day case

**Aim:** To investigate morbidity following oral day case surgery.

**Methods:** 50 patients attending for day stay surgical removal of impacted mandibular third molar teeth completed a nurse led telephone questionnaire at 24hrs., 3 days and 7 days post surgery to characterise their experiences.

**Results:** 48 patients responded at 24hrs., but this fell to 41 at day 3 and to 30 by day 7. Whilst there was a general improvement in post-operative pain, nausea, headache, sore throat and difficulty sleeping during the study period, day 3 was associated with increased pain

experience, a need for 'additional' analgesia, disturbed sleep due to pain and an increase in patients seeking 'additional' medical advice. Overall, 74% of respondents felt their day case experience was 'better than' or 'as expected' with return to normal activity taking around 5 days.

**Conclusion:** Recognition of the need for improved pain management, particularly around the third post-operative day, and the wide range of additional morbidities consequent upon oral surgery has helped develop our clinical and nursing practices to improve the quality of ambulatory care for these patients.

**Keywords:** Oral day case surgery; Post-operative morbidity.

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## Introduction

The Oral Surgery Day Case Unit is a purpose built facility within Newcastle Dental Hospital which provides surgical and dental treatment for approximately 2500 patients annually under general anaesthetic [1,2]. Removal of impacted third molar teeth is one of the more common procedures undertaken in the unit 2.

Morbidity following oral surgery procedures is variable, but previous studies have demonstrated significant pain and discomfort immediately following third molar surgery [3,4,5,6,7]. We have investigated both the use of different analgesic regimes to improve post-operative pain management and also demonstrated the usefulness of telephone questionnaires following day surgery to monitor patient progress [2,3].

Whilst our previous nurse-led telephone study confirmed that as many as half of our day patients reported feeling 'not very well' 24 hours after oral day case surgery, little is known about patients' experiences in the succeeding days following surgery. In particular, little attention has been given to identification of symptoms other than pain.

The aim of this study was therefore to evaluate in more detail patients' experiences and postoperative morbidity during the 7 days following their attendance for oral day case surgery.

## Methods

Following ethical approval, 50 consecutive adult patients attending the day unit for removal of bilateral impacted mandibular third molars were recruited into the study. All patients were of ASA I or II fitness and were asked to give written informed consent to participate in the study. Standardised anaesthetic and surgical protocols were defined and applied by the same anaesthetist (IRF) and surgeon (PJT) in each case (Table 1).

**Table 1** Anaesthetic and Surgical Protocols

### Anaesthetic Protocol

1. Induction- Fentanyl, 1mg per kg body weight  
Mivacurium, 0.1mg per kg body weight  
Propofol, 1.5-2.5mg per kg body weight as required.
2. Nasal intubation, with spraying of vocal cords with 10% lignocaine
3. Gauze throat pack placed in pharynx
4. Maintenance: Spontaneous respiration via CO<sub>2</sub> absorber, N<sub>2</sub>O: O<sub>2</sub>/2:1 Sevoflurane as indicated (1-4%)

### Surgical Protocol

1. Bilateral impacted mandibular third molar teeth
2. "Envelope" mucoperiosteal flap reflection
3. Bone removal and tooth sectioning with burs
4. Irrigation and closure with resorbable sutures

Prior to their surgery, patients were asked to rate the presence or absence of pain from their impacted teeth numerically between 0 to 100 (thereby providing a baseline score) using a visual analogue scale (VAS). Post-operatively, after recovery but prior to discharge, patients were again asked to rate their pain using an identical VAS.

On discharge, patients received a standard post-operative analgesic regime (Table 2), instructions were issued on the safe use of 'additional' analgesics (such as ibuprofen) and a description given of likely post-operative symptoms such as facial swelling, numbness of the lip, chin, or tongue, bleeding and infection.

The study required patients to be available to receive telephone calls on an agreed number at a designated time at 24 hours, 3 days and 7 days post-operatively. The call was made by the day unit nurse who had coordinated the patient's ambulatory care on the day of surgery, using a structured and previously validated questionnaire 2 (Table 3).

**Table 2** Discharge analgesia.

Two tablets of cocodamol 6 hourly (codeine phosphate 8mg, paracetamol 500mg per tablet)

Escape analgesia was available for all patients in the event of post operative discomfort: Ibuprofen 400mg

Antiemetic: Ondansetron 8mg if required.

**Table 3** Post-operative questionnaire given at 24 hours, 3 days and 8 days.

1. How have you felt since your operation	<i>Very well/average/not very well</i>
2. Have you experienced pain from the site of your operation?	<i>Yes/No</i>
3. If Yes, how would you rate the pain on a scale of 0–10?	
4. Have you used the “pain killing” tablets prescribed for you after your operation?	<i>Yes/No</i>
5. If Yes, how effective were they?	<i>Very effective/reasonably effective/not very effective</i>
6. Have you used any “additional” pain killing medication?	<i>Yes/No</i>
7. If Yes, what?	
8. Have you experienced any nausea or vomiting?	<i>Yes/No</i>
9. Have you experienced any headache ?	<i>Yes/No</i>
10. Have you experienced sore throat ?	<i>Yes/No/Yes</i>
11. Have you experienced drowsiness or tiredness ?	<i>Yes/No/Yes/No</i>
12. How well have you slept since we last spoke to you?	<i>Very well/average/not very well</i>
13. If not very well, why?	
14. Have you experienced any other problems since we last spoke to you?	<i>Yes/No</i>
15. If Yes, what?	
16. Have you needed to contact your doctor/dentist or NHS direct for help or advice?	<i>Yes/No</i>
17. If Yes, why?	
<b>Day 7 only:</b>	
18. When did you return to your normal range of activities after your operation?	
19. How would you describe your overall experience of oral day case surgery?	<i>Better than expected/as expected/worse than expected</i>

If there was no reply to the telephone call, the nurse would call again later that day to try to ensure questionnaire completion. If it proved impossible to contact patients at any of the specified study periods, attempts were still made to contact patients at the next time point in order to complete as many questionnaire responses as possible.

After examining normality in distribution of data, statistical comparisons of responses at 24hrs, day 3 and day 7 were carried out using Pearson Chi square analysis and Wilcoxon signed rank tests using SPSS software.

## Results

14 male and 36 female patients participated in the study (mean age = 28.6 years, sd = 8.65). 50 patients successfully completed VAS scores pre- and post-operatively with mean preoperative pain scores recorded as 7.26 (SE = 2.11) and post-operative scores much higher at 50.22 (SE = 3.51). This difference was significant ( $p < 0.01$ ).

48 patients completed telephone questionnaires at 24 hours post-operatively. Of the 2 participants who were not available at 24

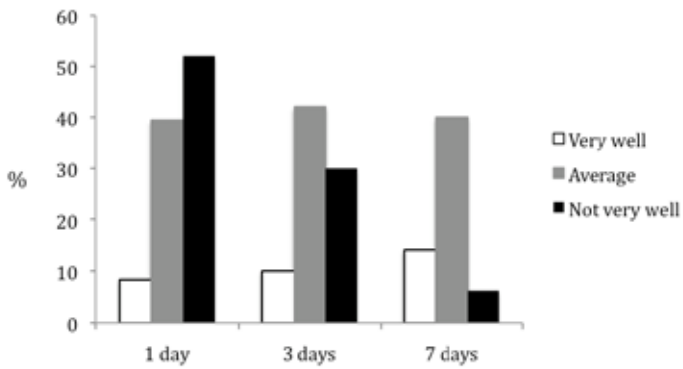
hours, one reported being ‘too unwell’ to answer the 24 hour call when responding on day three, and the other failed to complete any questionnaires.

Questionnaire response fell to 41 patients on day 3 and reduced again to 30 at day 7. All 9 patients that were uncontactable on day 3 were also unavailable on day 7.

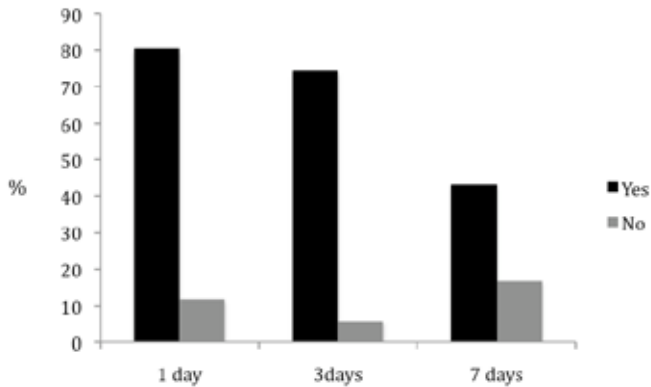
In relation to the question ‘How have you felt since your operation?’, 52% of respondents reported feeling ‘not very well’ at 24 hours, but this dropped to 37% on day 3 and was less than 10% on day 7. These differences were significant between day 1 and day 3 ( $p < 0.01$ ) and also between day 1 and day 7 ( $p = 0.01$ ) (Figure 1).

Between 70 to 80% of patients reported pain from their operation site on days 1 and 3, but this reduced to 40% by day 7 (Figure 2). Analysis of mean VAS pain scores showed a significant fall between 60.1 recorded on day 1, 52.6 on day 3 and 35.3 on day 7 ( $p = 0.05$ ) (Figure 3).

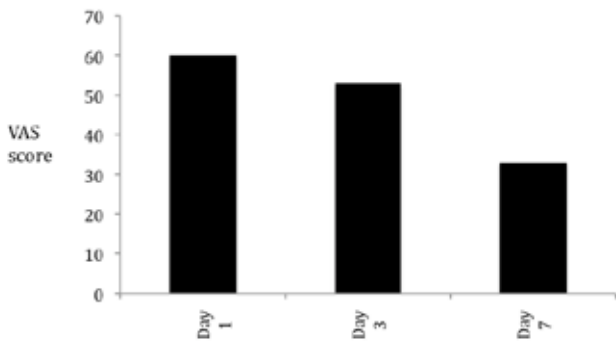
When asked if the prescribed ‘pain killing’ tablets had been used post-operatively, 89% of patients reported using them on day 1 compared with 73% on day 3 and 41% on day 7. A statistically significant



**Figure 1** How have you felt since your operation?



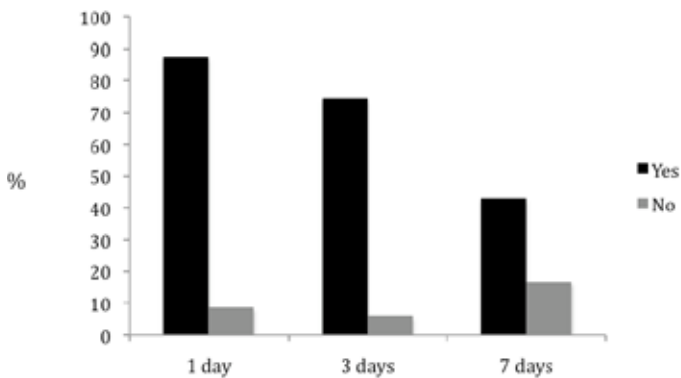
**Figure 2** Have you experienced pain from the site of your operation?



**Figure 3** Mean VAS pain scores (Days 1, 3 and 7).

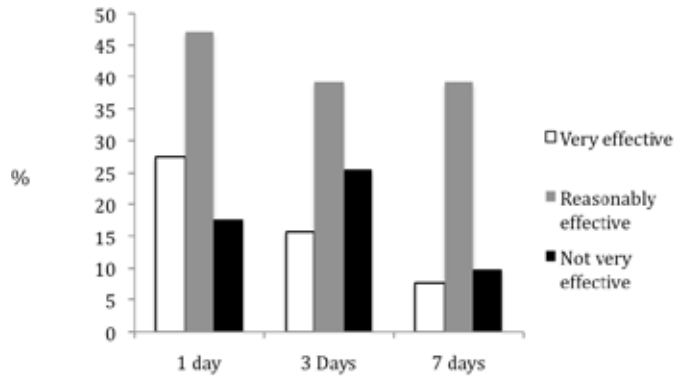
difference in analgesic use was only seen between days 3 and 7 ( $p < 0.05$ ) (Figure 4).

Nearly 30% of patients found the prescribed ‘pain killing’ tablets ‘very effective’ on day 1, but this fell to 15% and 7% on days 3 and 7 respectively. Whilst the majority of patients found their



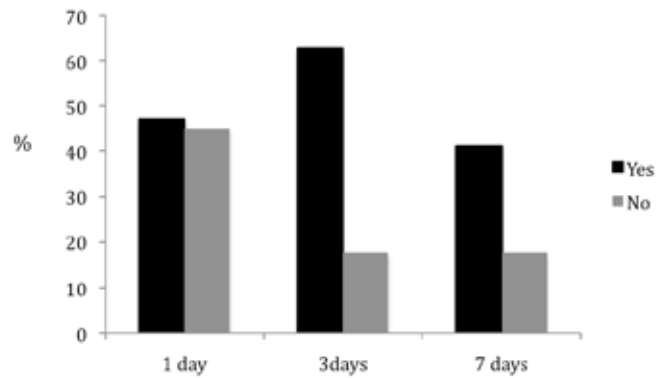
**Figure 4** Have you used the ‘pain killing’ tablets prescribed for you after your operation?

analgesics to be ‘reasonably effective’ throughout the study, there was a rise in reporting ‘not very effective’ between 19% on day 1 to 26% on day 3, before falling back to  $< 10\%$  on day 7. The difference in effectiveness of painkillers was significant between days 1 and 3 ( $p = 0.032$ ) and between days 3 and 7 ( $p = 0.013$ ) (Figure 5).



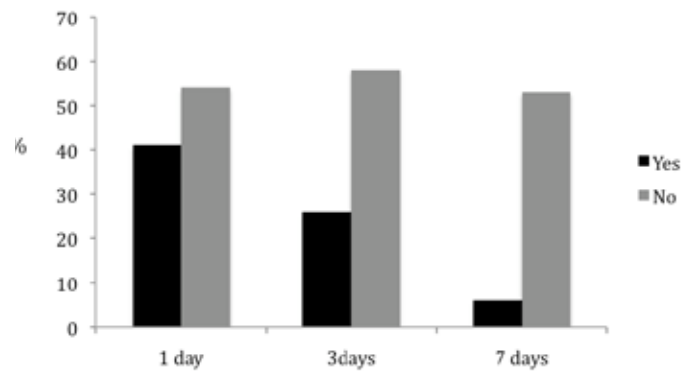
**Figure 5** How effective were the prescribed ‘pain killing’ tablets?

More patients used additional ‘pain killing’ medication on day 3 (62%) compared with days 1 and 7, with ibuprofen the most commonly used additional medication in nearly half of cases (Figure 6).



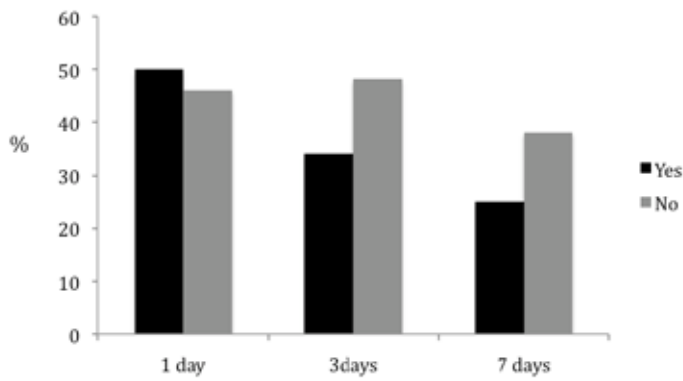
**Figure 6** Have you used any ‘additional’ pain killing medication?

With regards to post operative nausea, there were significantly more patients experiencing nausea at day 1 (40%) than day 3 (24%) or day 7 (4%) and this difference reached statistical significance ( $p = 0.035$ ) (Figure 7). Male patients reported significantly more nausea than female patients ( $p = 0.016$ ).



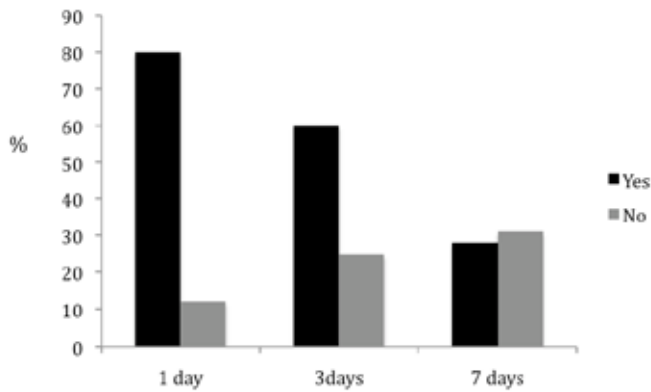
**Figure 7** Have you experienced any nausea or vomiting?

Figure 8 shows that just under 50% of patients experienced headaches at 24 hours, but this fell to 33% on day 3 and 25% by day 7; this was significant between days 3 and 7 and was more apparent in female than male patients ( $p < 0.05$ ).



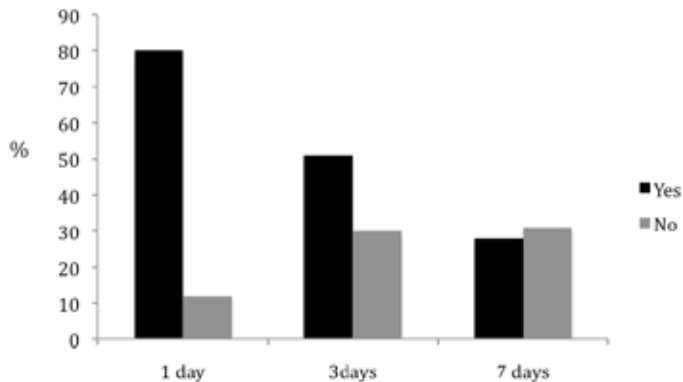
**Figure 8** Have you experienced any headache since we last spoke to you?

Sore throat was most common on day 1 (80% of patients) compared to 60% on day 3 and <30% by day 7 ( $p=0.043$ ) (Figure 9).



**Figure 9** Have you experienced a sore throat?

Drowsiness was experienced most commonly on day 1 (80%), dropping to 50% on day 3 and 28% on day 7; this was particularly significant between days 1 and 3 ( $p<0.01$ ) but also between days 3 and 7 ( $p=0.03$ ) (Figure 10). Drowsiness was more common in patients over thirty years old ( $p=0.042$ ).

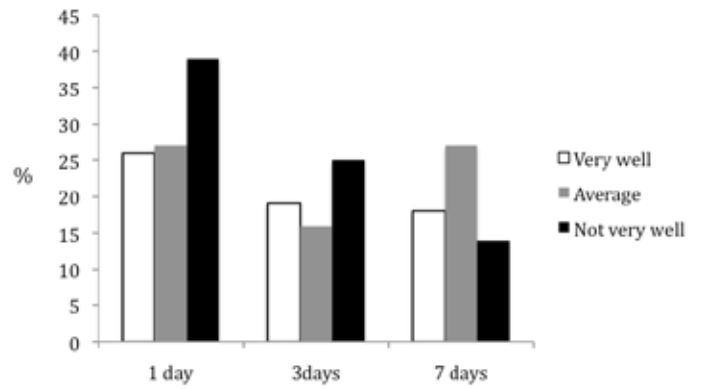


**Figure 10** Have you experienced drowsiness or tiredness since your operation?

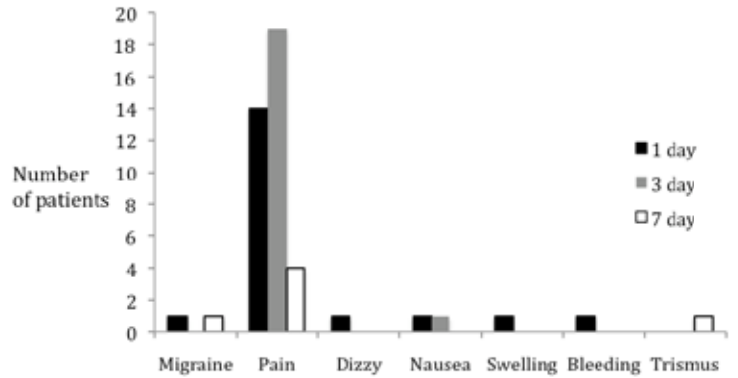
Figure 11 shows that disturbances in patients' sleep pattern was most common on day 1 (nearly 40% not sleeping well) but improved during the study period so that only 14% recorded not sleeping well by day 7 ( $p=0.015$ ). Disturbed sleep was significantly worse in those under 30 years of age ( $p=0.016$ ), with pain the most common reason especially on day 3 (Figure 12).

Relatively few patients reported 'other problems' during the study, although they were most common at day 3 (Figure 13); these were primarily complaints relating to swelling, bleeding or numbness.

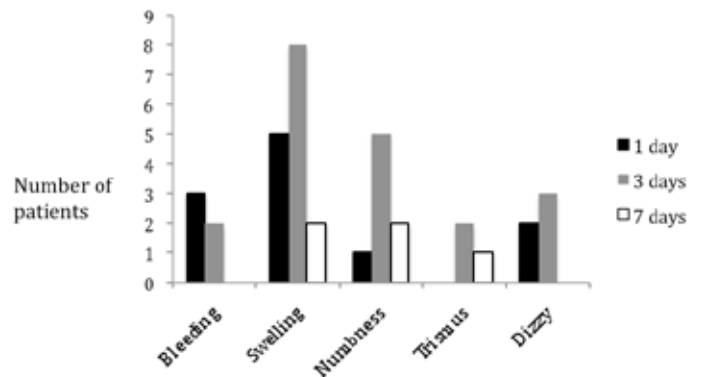
Whilst there were no significant findings related to patient's seeking



**Figure 11** How well have you slept since your operation?

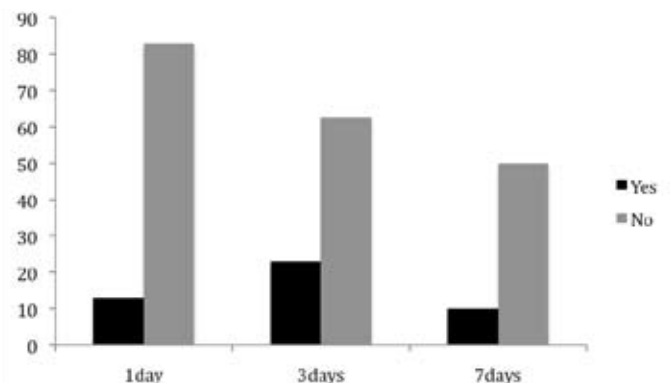


**Figure 12** Patients' reasons for not sleeping well.



**Figure 13** "Other problems" experienced during the course of the study.

additional medical assistance from doctors, dentists or NHS Direct during the study, this was most commonly reported on day 3 and overall, 44% of patients did seek additional medical advice (Figure 14).



**Figure 14** Have you needed to contact your Doctor, Dentist or NHS Direct?

The mean time to return to work or normal activities for patients in this study was 5.03 days. 74% of patients reported that their overall experience of day case surgery was 'better than' or as 'expected'.

## Discussion

Patient involvement in assessing the effectiveness and quality of ambulatory care provision is mandatory in modern health care provision. This study adds significant additional information to our understanding of patients' experiences following oral day case surgery, particularly in relation to symptoms and complications during their first days at home.

When patients are reviewed in clinic to ascertain post-operative progress and to identify surgical complications, it is typically several weeks after surgery and contemporaneous data is usually lost. By contacting our patients at 24 hours, and again on the 3rd and 7th postoperative days we have recorded a unique and accurate summary of their immediate postsurgery course.

Although this is a small cohort study of 50 patients, we have previously demonstrated the reliability of nurse-led telephone questionnaires in patient follow up studies [2]. 20 patients were uncontactable at 7 days, presumably because they had recovered sufficiently to return to their normal work or activities, so questionnaire data at this time may be biased towards the 30 responders. Information obtained at day 1 and 3 (41 to 48 patients) is probably the most representative therefore.

Post-operative VAS pain scores confirmed a significant incidence of pain immediately following surgery and pain was still a common complaint in 80% of patients at 24 hours.

Whilst the severity of pain decreased over the study period, several of the 7 day responders still required regular analgesia.

Ibuprofen was the most commonly used 'additional' analgesia by patients and, assuming no contraindications exist for individual patient use, this may be an important addition to our standard discharge medicine protocol.

It is interesting to note that day 3 in particular was associated with increased pain experience for many patients, with reports of prescribed analgesics being less effective and a need for 'additional' analgesics and more episodes of pain disturbed sleep recorded at this time point. From the patients' perspective, their post-operative period may be associated with significant other morbidities in addition to pain. Facial swelling at the operation site, sore throat, nausea, headache, drowsiness and difficulty sleeping were all commonly experienced. It is also noteworthy that 44% of study patients sought

'additional' medical assistance or advice during the post-operative week, most frequently at day 3 and primarily because of pain, swelling, trismus and concern over post-operative infection. Despite information provided pre-operatively by clinicians during initial consult appointments, and reinforced by nurses in pre-admission clinics, there appears to be a need for improved patient education regarding common post-operative sequelae.

It is encouraging, however, that nearly three quarters of patients reported their oral day case experience as 'better than' or 'as expected' and it is possible this figure might have been higher, because 20 non-responding patients may have already returned early to their normal activities.

The findings of this study have helped us to modify and develop pre-operative and postoperative care pathways, and have proved particularly relevant in better informing and reassuring patients about their impending day surgery experience.

## Conclusions

Information on patients' experiences following nurse-led telephone questionnaires has helped identify a number of new findings in relation to post-operative morbidity in oral day stay surgery. Recognition of the need for improved pain management, particularly around the third post-operative day, and the wide range of additional morbidities consequent upon oral surgery has informed and developed clinical and nursing practices to improve the quality of patient care.

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