BJA

British Journal of Anaesthesia, 117 (6): 758–66 (2016)

doi: 10.1093/bja/aew381
Clinical Practice

Patient reported outcome of adult perioperative anaesthesia in the United Kingdom: a cross-sectional observational study†

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Abstract

Background. Understanding the patient perspective on healthcare is central to the evaluation of quality. This study measured selected patient-reported outcomes after anaesthesia in order to identify targets for research and quality improvement.
Methods. This cross-sectional observational study in UK National Health Service hospitals, recruited adults undergoing non-obstetric surgery requiring anaesthesia care over a 48 h period. Within 24 h of surgery, patients completed the Bauer questionnaire (measuring postoperative discomfort and satisfaction with anaesthesia care), and a modified Brice questionnaire to elicit symptoms suggestive of accidental awareness during general anaesthesia (AAGA). Patient, procedural and pharmacological data were recorded to enable exploration of risk factors for these poor outcomes.
Results. 257 hospitals in 171 NHS Trusts participated (97% of eligible organisations). Baseline characteristics were collected on 16,222 patients; 15,040 (93%) completed postoperative questionnaires. Anxiety was most frequently cited as the worst aspect of the perioperative experience. Thirty-five per cent of patients reported severe discomfort in at least one domain: thirst (18.5%; 95% CI 17.8-19.1), surgical pain (11.0%; 10.5-11.5) and drowsiness (10.1%; 9.6-10.5) were most common. Despite this, only 5% reported dissatisfaction with any aspect of anaesthesia-related care. Regional anaesthesia was associated with a reduced burden of side-effects. The incidence of reported AAGA was one in 800 general anaesthetics (0.12%)
Conclusions. Anxiety and discomfort after surgery are common; despite this, satisfaction with anaesthesia care in the UK is high. The inconsistent relationship between patient-reported outcome, patient experience and patient satisfaction supports using all three of these domains to provide a comprehensive assessment of the quality of anaesthesia care.

Key words: anaesthesia; awareness; health care; outcome; patient satisfaction; quality indicators

†This Article is accompanied by Editorial Aew384.

Editorial decision October 10, 2016; **Accepted:** October 21, 2016

Editor's key points

- Patient perspectives of anaesthesia care quality were assessed in a large-scale survey of adult patients receiving anaesthesia in the UK National Health Service.
- Questionnaires were completed by 15,040 patients from 257 hospitals over a 48 h period.
- Although 35% of patients reported severe discomfort, only 5% reported dissatisfaction.
- Despite high patient satisfaction with anaesthesia, there are opportunities for quality improvement in patient experience.

Safety, effectiveness and patient-centeredness have been defined as three key domains of healthcare quality,[1,2] and performance metrics may assess any of these. Each year, more than 313 million operations take place globally (approximately 42 procedures per 1000 population),[3] the majority of which are supported by anaesthesia providers. In high-income countries, deaths directly attributable to anaesthesia are rare, and intra-operative mortality in patients undergoing general anaesthesia (GA) is very low.[4] However, anaesthesia is associated with other important adverse outcomes including postoperative complications[5,6] and reduced long-term survival.[7,8,9] Furthermore, many postoperative symptoms – for example, acute surgical pain - are distressing to patients,[10,11] can delay hospital discharge,[12] and can lead to chronic health problems,[13] thereby increasing health and social care costs. Thus, measurement of quality in anaesthesia care provides an opportunity to drive improvement that could affect millions of patients each year and promote healthcare efficiency and productivity.

Patient-reported metrics are increasingly viewed as core quality indicators.[2] Measures specific to anaesthesia encompass the three aforementioned domains of quality: effectiveness, by assessing procedural-related discomfort which anaesthesia providers aim to alleviate (e.g. pain, drowsiness, nausea); patient-centeredness, by measuring patient satisfaction with care delivered; and safety, through estimating the incidence of events that can lead to significant or long-term harm, such as accidental awareness during general anaesthesia (AAGA). Using measures encompassing all three of these domains, we conducted this study to determine the quality of anaesthesia care from the patient perspective in a UK multicentre sample, in order to identify risk factors for these adverse outcomes, characterise the relationship between patient reported outcome and patient satisfaction, identify targets for research and quality improvement, and improve the information given to future patients.

Methods

This study is reported in accordance with the "Strengthening the Reporting of Observational Studies in Epidemiology" (STROBE) statement.[14] We undertook a two-day multicentre observational cross-sectional study in the UK National Health Service (NHS). The protocol has been published.[15] Ethics approval was granted by the UK National Research Ethics Service (West Midlands Committee, 14/WM/0043). Hospital and investigator engagement was facilitated through the Quality Audit and Research Coordinator (QuARC) network, which was established by the National Institute of Academic Anaesthesia Health Services Research Centre (NIAA-HSRC) to facilitate health services research in anaesthesia and perioperative care across the UK. All NHS hospitals were invited to participate. The full investigator list can be found in Supplementary document 1. Patient recruitment took place between 00:00 on 13th May 2014 and 23:59 on 14th May 2014. These days of the week were chosen to maximise opportunities for recruitment of patients, outside weekend working hours and potentially busier workloads on Mondays and Fridays. All adults (≥18 yr) undergoing a non-obstetric surgical procedure requiring anaesthesia (local, regional or general) or sedation administered by an anaesthetist were eligible for inclusion; all were provided with information about the study before surgery (see Supplementary documents).

Dataset

The patient report form is presented in the Supplementary documents. The anaesthetist responsible for each patient's perioperative care completed patient, personnel and process details at the time of surgery. Operation names were entered using free-text by anaesthetists, and subsequently coded by members of the central study team, using a UK-based objective categorisation of surgical procedure type and magnitude.[16] Patients subsequently completed the Bauer patient satisfaction questionnaire[17] and a Modified Brice Questionnaire for AAGA. The Bauer questionnaire was previously identified[18] as being a psychometrically developed and validated measure of patient satisfaction and discomfort. The modified Brice questionnaire uses closed-questions and was adapted from a previous study.[19] Two further questions were asked: the NHS "Friends and Family Test" (would you recommend this anaesthetic service to friends and family?) and a question regarding whether the patient expected to be asleep during their procedure. Reasons for non-completion of patient questionnaires were noted. Obstetric and paediatric populations were excluded from this study as the Bauer questionnaire had not been validated in these settings.

Patient involvement

The Participant Information Sheet was reviewed and amended by a member of the Lay Committee of the Royal College of Anaesthetists; members of the lay committee were also invited to provide feedback on study design and conduct. The Bauer questionnaire was originally developed with patient involvement.

Analysis

Continuous variables are presented as mean (SD) when normally distributed and median (range) when not (normality was assessed using the Stata "*sktest*" for skewness and kurtosis in large sample sizes). Categorical variables are presented as n (%). Patients missing core variables (operation name, all patient characteristic data or any outcome data) were excluded from all analyses. Baseline characteristics between patients who declined or were unable to complete follow-up questionnaires were compared against those who did consent and complete questionnaires. Our co-primary endpoints were the 10 domains of discomfort in the Bauer patient satisfaction questionnaire.

We explored the relationship between patient and process-related factors and a poor outcome in each of the 15 domains of the Bauer questionnaire. For each of the ten markers of anaesthesia-related discomfort, a poor outcome was defined as a response of "severe" on a 3-point Likert scale (none, moderate, severe); for each of the five patient satisfaction questions, a poor outcome was defined by a response of either 'Dissatisfied' or 'Very dissatisfied' on a 4-point Likert scale. χ^2 tests were used to