



Original contribution

Measuring satisfaction and anesthesia related outcomes in a surgical day care centre: A three-year single-centre observational study☆



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ARTICLE INFO

Article history:

Received 5 June 2017

Received in revised form 1 September 2017

Accepted 24 September 2017

Available online xxxx

Keywords:

Ambulatory care

Outpatient surgery

Patient satisfaction

Patient reported outcome measures

ABSTRACT

Study objective: To evaluate patient satisfaction and patient reported anaesthesia related outcome parameters after outpatient surgery.

Design: A three-year (2013–2016) observational study.

Setting: A surgical day care centre embedded in a tertiary care, university hospital.

Patients: Adult Dutch-speaking patients who underwent surgery under general or regional anaesthesia on an outpatient basis ($n = 5424$).

Interventions: A questionnaire was developed to evaluate patients' satisfaction with care during their hospitalisation in the surgical day centre, as well as to assess their reports of anaesthesia related outcomes.

Measurements: Various aspects of care were measured, including care by nurses, care by doctors, organisational and safety items. Variation in satisfaction and surgery and anaesthesia related outcomes as a function of different categories (gender, age, education, type of anaesthesia, discipline and era) were also investigated.

Main results: Confirmatory factor analysis showed an excellent fit to the hypothesized factors of the survey. Satisfaction scores were very high for different aspects of care, resulting in 98% of patients being (very) satisfied (59.1% very satisfied, 38.9% satisfied). Male ($p = 0.0003$), higher educated ($p < 0.0001$) and older patients ($p < 0.0001$) were more likely to be very satisfied. Postoperative nausea and vomiting (PONV) were frequent (nausea: 13.9%, vomiting: 3.3%), and more present in female than in male patients ($p < 0.0001$). Pain scores at the PACU differed among disciplines ($p < 0.0001$) were higher in female patients compared to male patients (3.41% versus 2.54%, $p < 0.0001$) and after general anaesthesia compared to regional anaesthesia (3.25% versus 0.39%, $p < 0.0001$) and decreased with higher age ($p = 0.0001$) and education level ($p = 0.0033$).

Conclusions: Whereas satisfaction with all aspects of care is generally high, the results regarding pain and PONV should inspire quality improvement initiatives. The questionnaire developed in this study can be a vehicle to assess and improve the quality of care in surgical day care centres.

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1. Introduction

Patient satisfaction is an important parameter in healthcare and an established indicator to evaluate the quality provided by an ambulatory surgical centre [1]. A clinical audit is a valuable tool in the quest towards quality improvement of healthcare.

However, patient satisfaction is a complex and subjective concept, determined by many different variables such as the organization of

care, the quality of provided care, the perceived outcomes and patient expectations [2–5].

During the last few years various authors have investigated satisfaction with anaesthesia and several questionnaires have been developed, but there is no universally accepted method [6–8]. All existing approaches have important strengths and weaknesses [9]. Because of the multiple influencing factors the questionnaire needs to be multidimensional and include questions probing for aspects of information, communication, professional competence, physical comfort/discomfort and adverse anaesthesia outcomes [10–12].

Ambulatory surgery has grown exponentially over the last several decades. Whereas most quality investigations focus on inpatients, the quality of ambulatory anaesthesia and care also needs a critical

☆ Conflicts of interest: none declared.

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evaluation. The aim of this study was to measure patient satisfaction and specific anaesthesia related outcomes. A questionnaire was developed and validated to survey various aspects of ambulatory care. Not only satisfaction with aspects of care delivered by nurses and doctors but also organisational and safety items were evaluated. We measured different anaesthesia or surgery related outcome factors. Also differences between specific patients groups with regard to satisfaction and anaesthesia outcomes were examined. A special focus was on pain and postoperative nausea and vomiting (PONV) which are the most important outcome measures of ambulatory surgery [13,14].

2. Methods

2.1. Setting

The surgical day care centre, that is embedded in the University Hospitals Leuven, in Flanders the Dutch speaking part of Belgium, operates independently with an own entrance, waiting room, surgical theatre, Post Anaesthesia Care Unit (PACU) and Day Care Ward (DCW). About 7500 ambulatory interventions are performed annually of which 65% are in adults. 90% of patients receive general anaesthesia and 10% regional anaesthesia. A large majority of our patients (2014: 95.04%; 2015: 95.08%; 2016: 95.06%) have Dutch as their native language.

Between May 1, 2013 and April 30, 2016, 5820 questionnaires were distributed.

2.2. Participants

Patients aged 18 years and older, undergoing surgery under general or regional anaesthesia, were invited to fill in the questionnaire voluntarily. Patients, who had a low level of proficiency in Dutch, suffered from mental illness or for whom it was impossible to complete the questionnaire themselves or by one of the accompanying relatives, were excluded.

For this observational study, in which no participants were exposed to any physical or psychological intervention, patient informed consent was not mandatory according to Belgian legislation. [Belgian Legislation of May 7, 2004: “Wet inzake experimenten op de menselijke persoon” (“Law on experiments involving the human subject”); Article 8, 2°; Article 3, §1]. All surgeons providing care at the surgical day care centre and the chief physician of the University Hospitals approved the questionnaire and agreed to ask the patients to collaborate. All questionnaires were analysed confidentially and anonymously according to the Belgian legislation on privacy [15]. The questionnaire was handed over in the preoperative box and explained by the attending nurse along with an explanatory letter. Patients were given the option to leave the questionnaire in a locked box at discharge and be contacted by phone about pain scores at home, or to alternatively send the questionnaires back by regular mail 24 h after discharge. A reply paid envelope was provided for returning the questionnaire if needed.

2.3. Study outcomes

The primary outcome parameter of the study was to develop a validated questionnaire to measure patients' satisfaction with all aspects of care within a surgical day centre. Second, anaesthesia or surgery related outcomes were evaluated. We examined differences across patients' gender, age, education, and type of anaesthesia, across disciplines, and over time.

2.4. Questionnaire development

The questionnaire was developed by the Department of Quality Control and modified from the HCAHPS® questionnaire [16]. Questions regarding care delivered by nurses and doctors, discharge, hospital environment and overall rating were retained while other questions

were deleted for not being applicable to our context (ethnic origin, race, native language). It was also adapted for the outpatient setting because some of its original items were not applicable to ambulatory care and a specific ambulatory surgery questionnaire was not available. Questions regarding help with the use of the bedpan or bathroom and those evaluating emotional, mental or general health were omitted. Other items were added: waiting times, postoperative pain, occurrence of PONV, type of anaesthesia, indications for awareness and incidence of readmission [17]. These items are factors affecting patient satisfaction and/or are clinical indicators of anaesthesia outcome.

In the final version, the questionnaire contained 62 questions for 8 dimensions: ‘Your hospitalisation and reception at the day care centre’, ‘Care by doctors’, ‘Care by nurses’, ‘Communication concerning care and treatment’, ‘Your Anaesthesia’, ‘Safety in UZ Leuven’, ‘Discharge from the hospital’, ‘Accessibility, logistics and hotel services’. Some of the items were dichotomous questions (‘yes’, ‘no’), other items were scored on a 4 point Likert scale (‘very dissatisfied’, ‘dissatisfied’, ‘satisfied’, ‘very satisfied’ or ‘never’, ‘sometimes’, ‘usually’, ‘always’) or a 3 point scale (‘none’, ‘mild’, ‘serious’). Pain scores were evaluated with a numeric rating scale (NRS: 0 = no pain, 10 = unbearable pain). (See Appendix A: English translation of the questionnaire).

Patients were not only asked to score the different items but could also give their opinion via free-form text or could point out suggestions to change practice.

2.5. Validity of the questionnaire

First, confirmatory factor analysis (CFA) was applied to assess construct validity of the surgical day care survey. CFA implies an evaluation of whether the hypothesized dimensionality fits our sample. The dimensions are referred to as factors. Each factor contains a set of factor indicators, which are questions from the questionnaire. This relationship between factors and factor indicators is assessed through factor loadings, with loadings closer to 1 representing a stronger relationship. Our CFA relies on an independent cluster model (ICM) in which it is assumed that each factor indicator loads on the targeted factor only, meaning that that cross-loadings between factor indicators and non-target factors are assumed to be exactly zero. We applied this assumption to 49 questions related to the following 7 factors: ‘Your hospitalization and reception at the day care centre’, ‘Care by doctors’, ‘Care by nurses’, ‘Communication concerning care and treatment’, ‘Safety in UZ Leuven’, ‘Discharge from the hospital’, and ‘Accessibility, logistics and hotel services’. The domain of ‘Anaesthesia’ was not included in this analysis because not all items were relevant to all patients. All 49 items included in this analysis are shown in Table 2. Responses for the questions ‘Did you receive any contradictory information from nurses’, and ‘Did you receive any contradictory information from doctors’ were reverse coded so that a higher score reflects the best possible score for the hospital, in line with the other questions. All indicators were treated as categorical. Because of the mix of response categories, we applied both a CFA model in which the original response categories were used as well as a model in which response categories were dichotomized. The latter implies collapsing into ‘(very) dissatisfied’ versus ‘(very) satisfied’ and ‘never/sometimes’ versus ‘usually/always’. Model fit evaluation was based on Hu and Bentler's [18] cut-off criteria for the Comparative Fit Index (CFI, ranges between 0 and 1; acceptable if >0.90, preferably >0.95) [19], the Tucker–Lewis Index (TLI, ranges between 0 and 1; acceptable if >0.90, preferably >0.95) [20], and the Root Mean Square Error of Approximation (RMSEA, ranges between 0 and 1; acceptable if <0.05) [21]. Factor loadings <0.5 were considered for removal [22]. Generally, a sample size of at least 300 participants is required for confirmatory factor analysis [23].

Second, descriptive statistics for the factors that resulted from CFA are provided. Factors were calculated as the percentage of top box scores (i.e. patients responding ‘always’, ‘very satisfied’, and ‘yes’/‘no’ (depending on the nature of the question, see earlier)) of the items

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