Patients’ perspectives on recovery from day surgery

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To my family
Sören, Martin and Henrik
# CONTENTS

**ABSTRACT** .................................................................................................................. 1

**LIST OF PAPERS** ........................................................................................................... 3

**ABBREVIATIONS** ......................................................................................................... 5

**INTRODUCTION** ............................................................................................................. 7

**BACKGROUND** ............................................................................................................. 8
   The day surgery context ..................................................................................................... 8
   The day surgery patient ....................................................................................................... 10
   Postoperative recovery ....................................................................................................... 12
      Self-care in day surgery .................................................................................................... 13
      Health-related quality of life ............................................................................................ 14
   Assessment of postoperative recovery .............................................................................. 14
   Rationale of this thesis ....................................................................................................... 16

**AIMS** ............................................................................................................................. 17

**METHODS** ..................................................................................................................... 18
   Design .................................................................................................................................. 18
   Participants .......................................................................................................................... 20
      Analysis of non-participants ............................................................................................ 22
   Data collection .................................................................................................................... 23
      The Post-discharge Surgical Recovery scale ..................................................................... 23
      The Quality of Recovery-23 scale ............................................................................... 24
      The Postanesthesia Recovery Score for Ambulatory Patients ...................................... 25
      The EuroQol-5D ............................................................................................................. 25
      The interviews ............................................................................................................... 26
   Procedures ......................................................................................................................... 26
   Data analysis ..................................................................................................................... 27
      Statistical analyses ......................................................................................................... 27
## Contents

- Phenomenographic analysis ................................................. 29
- Ethics ................................................................................. 32

**RESULTS** ........................................................................... 34
- Demographic variables .................................................. 34
- Psychometric properties of the Post-discharge Surgical Recovery scale 35
- Prerequisites for postoperative recovery ......................... 37
- Return to ordinary life .................................................... 38
- Day surgery in a chain of care ......................................... 40

**DISCUSSION** ................................................................... 42
- Assessment of recovery .................................................. 42
- The importance of self-care ............................................ 43
- Symptom management .................................................... 44
- Attention to special groups of patients .......................... 44
- The continuity of patient care ........................................ 45
- A model for comprehensive understanding of recovery .... 47

**Methodological considerations** ........................................ 49
- Design ............................................................................... 50
- Sample ............................................................................. 50
- Assessments .................................................................... 51
- Interviews ......................................................................... 53
- Data analysis ..................................................................... 54
- Generalization .................................................................. 54
- Trustworthiness ................................................................ 55

**Clinical implications** ........................................................ 55
- Future research .............................................................. 57

**CONCLUSIONS** ................................................................. 58

**SAMMANFATTNING** ........................................................ 59

**ACKNOWLEDGEMENTS** ...................................................... 61

**APPENDIX 1** ................................................................... 64
REFERENCES ............................................................................................................ 65

ORIGINAL PAPERS I-IV
ABSTRACT

A large number of elective surgical patients in Sweden and elsewhere have their surgical procedure performed in a day surgery context. The surgical care event, with its postoperative surveillance, is brief at the surgery unit and patients are discharged home with the intention that they should manage postoperative recovery mainly themselves. However, several patients attest to being in an exposed situation when assuming responsibility for recovery at home. The overall aim of this thesis was to attain comprehensive knowledge of postoperative recovery following day surgery from a patient perspective.

A questionnaire, the Post-discharge Surgical Recovery scale, was translated into Swedish and evaluated regarding its psychometric properties in a Swedish context. A sample of 607 day surgery patients who had undergone orthopaedic, general or gynaecological surgery self-rated their recovery at postoperative Days 1, 7 and 14 using the Post-discharge Surgical Recovery scale and the Quality of Recovery-23. Health-related quality of life was assessed before and 30 days after the surgical procedure, using the EQ-5D. In a second sample, 31 patients were interviewed in their homes regarding their recovery after day surgery. The interviews were conducted on postoperative Days 11-37, and focused on the meaning of recovery, self-care and perceptions of recovery. Data were explored by means of a phenomenographic analysis.

The Post-discharge Surgical Recovery scale showed satisfactory psychometric properties when used among Swedish day surgery patients. Following discharge, recovery included both physical and emotional perspectives. Recovery varied, and influencing factors were found to be type of surgery, age, perceived health and emotional status on the first postoperative day. Orthopaedic patients had a more protracted recovery process compared to general surgery and gynaecological patients, along with more postoperative pain and lower health-related quality of life. Patients perceived that postoperative recovery comprised different internal and external factors and a large amount of responsibility regarding their recovery and surgical outcome. To be prepared for recovery at home, patients wanted knowledge and understanding about the normal range of recovery following their specific surgical procedure, and needed support from different sources in their surroundings.
This thesis provides insight into day surgery patients’ postoperative situation. Based on the studies, individualized and well thought-out support appears favourable in order to have confident and well prepared patients at home. In contrast to smooth and easy patient care at the surgery unit, the postoperative phase seems to be a weak link in the day surgical continuity of patient care. Postoperative care needs to be further improved to increase quality and patients’ overall satisfaction with the day surgical experience. Attention should be paid to patients’ physical and emotional resources and needs.

Keywords: ambulatory surgical procedures, continuity of patient care, recovery of function, self care, qualitative research, quality of life, questionnaires, validation studies
LIST OF PAPERS

This thesis is based upon the following papers, which will be referred to in the text by their Roman numerals (I, II, III and IV):


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## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AORN</td>
<td>Association of perioperative registered nurses</td>
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<tr>
<td>ASA</td>
<td>American society of anesthesiologists</td>
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<tr>
<td>AUC</td>
<td>Area under the curve</td>
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<tr>
<td>EQ-index</td>
<td>A score assigned to the health states using the EQ-5D</td>
</tr>
<tr>
<td>EQ-VAS</td>
<td>A visual analogue scale recording self-rated health in the EQ-5D</td>
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<td>HRQoL</td>
<td>Health-related quality of life</td>
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<tr>
<td>PAF</td>
<td>Principal axis factoring</td>
</tr>
<tr>
<td>PARSAP</td>
<td>Postanesthesia recovery score for ambulatory patients</td>
</tr>
<tr>
<td>PONV</td>
<td>Postoperative nausea and vomiting</td>
</tr>
<tr>
<td>PROM</td>
<td>Patient-reported outcome measure</td>
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<tr>
<td>PSR</td>
<td>Post-discharge surgical recovery scale</td>
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<tr>
<td>QoR-23</td>
<td>Quality of recovery-23 items</td>
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<tr>
<td>ROC</td>
<td>Receiver operating characteristics</td>
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<tr>
<td>S-PSR</td>
<td>Swedish post-discharge surgical recovery scale</td>
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<tr>
<td>SRM</td>
<td>Standardized response mean</td>
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</table>
INTRODUCTION

Due to advances in surgical and anaesthetic techniques, along with economic initiatives, day surgery has increased in number and today represents often more than 50% of elective surgery in many Western countries [1]. In Sweden 80% of elective surgery is performed as a day surgical procedure [1], and it is increasing in some developing countries as well [2, 3]. Day surgery implies that the patient is admitted, operated on and discharged on the same working day. However, the day surgery concept is ambiguous and a 23-hour stay may be regarded as a day surgery procedure in some countries (e.g. the US and the UK) [4]. The term used for day surgery varies in the literature, with several terminologies such as ambulatory surgery as well as day-case, day-care and same-day surgery. In this thesis, the term day surgery is used.

Day surgery is regarded as an important medical reform in terms of resource utilization, customer satisfaction and value for money [5]. However, it is not a new idea. In fact, successful paediatric day surgery was described early in the previous century [6], but day surgery activity was low until the 1970s when the field started to develop towards today’s activity level. Day surgery is the preferred choice for most patients [7-10]. Regarding clinical quality indicators recommended by the International Association for Ambulatory Surgery (i.e. reoperation the same day, unplanned overnight admission or readmission within 28 days), day surgery is indicated to be safe [11]. Besides these quality indicators, postoperative recovery ought to be assessed from the patient perspective, even following discharge [12].

My interest in postoperative recovery began when I worked as a nurse anaesthetist and observed how different the patients’ recovery from day surgery procedures was. In spite of similar surgical, anaesthesiologic and personal prerequisites, postoperative recovery before home discharge was different, not only in time but in its features as well. This often led to thoughts about the patients’ situation and how they managed their recovery at home. This thesis focuses on day surgery patients’ postoperative recovery after discharge.
BACKGROUND

The day surgery context

Day surgery has increased due to medical advances, sophisticated technologies and financial conditions. With minimally invasive surgical techniques tissue trauma is reduced, resulting in less blood loss, pain and surgical morbidity [13]. Over the years several studies have compared in-hospital and day surgical procedures, often inguinal hernia repair [14, 15] or laparoscopic cholecystectomy [16-18], with satisfying results for the day surgery alternative. In Sweden many procedures have changed from in-hospital procedures to mainly day surgical ones. Laparoscopic cholecystectomy, anterior cruciate ligament repair, shoulder surgery, hernia repair in the elderly and tonsillectomy, as well as transvaginal procedures for urinary incontinency and minor gynaecological prolapse are examples of such procedures [19]. The limit for day surgery seems to have not yet been reached, with successful thyroid surgery [20], major ear surgery [10] and prostatectomy [8] now being reported.

Several potential anaesthetic techniques are available, and the development of short-acting anaesthetic agents, offering a rapid on- and offset of anaesthesia with fewer side effects, has facilitated an early home discharge [21], which is favourable in day surgery. General anaesthesia is the most widely used technique [21], and is also the most common choice in Sweden [19]. Regardless of anaesthetic technique, routines for complementary strategies for postoperative pain management, such as local anaesthetics administered either locally in the wound or as a regional nerve block or used continuously in a wound infusion pump, have also enabled home discharge following day surgery [22].

Political incentives to meet waiting list targets and cost containment have strongly promoted the growth and development of day surgery. The development of day surgery facilities is influenced by the availability of hospital beds: a lower availability of hospital beds increases the number of day surgical procedures [23].
In Sweden the majority of health care is organized within the public sector, mostly assigned to the county councils. However, private providers are also allowed in the arena as long as they meet national requirements for health care, and the population can choose between private and public health care. Health care is mostly financed through the county council’s tax rate, and only to a small degree through transfers from the government [24]. Day surgery is delivered at various types of facilities. A hospital-integrated facility entails that day surgery patients to varying extents share inpatient facilities, i.e. beds, operating theatre, and pre- and postoperative care, and a host of local organizational solutions on this theme exist. A self-contained unit on the hospital site is a day surgery unit located at a hospital, but totally separate from the inpatient care. In addition to the perioperative care provided, the staff and management of the unit are also separated from the inpatient organization. Self-contained units may also be freestanding, i.e. located anywhere else outside the hospital site but otherwise identical. A self-contained unit is considered to be the most cost effective alternative [25]. In Sweden the majority of day surgery units are self-contained, but are mostly located within a major surgical department [19].

Different professionals are needed at the day surgery unit [26]. The staff body ought to be composed of professionals, with each profession’s competence taken advantage of to meet patient care needs [27], i.e. surgeons, anaesthesiologists, specially trained registered nurses and assistant nurses. A multiprofessional category of personnel is the most common at Swedish day surgery units, whereby the surgeon and the anaesthesiologist is responsible for the medical care [28] and nurses, chiefly those specialized in anaesthesia or post-anaesthetic care, and assistant nurses are included on the team [29].

Surgical in-hospital nursing focuses on reducing the body’s stress response, supplying pain relief, promoting comfort and giving counsel [30]. However, in day surgery the rapid turnover of patients and the rapid delivery of care have led to changed prerequisites for conducting traditional nursing care [31, 32]. The role of the nurse in ensuring a safe and efficient throughput of patients has gained much focus [33]. This carries the risk of losing other values of importance for the patient, such as safety [34], the relationship with the nurse [35], feeling like a unique person [36], psychological support [31] and a sufficient knowledge base for managing their day surgery visit [37]. More comprehensive care is needed by some patients, when they reveal a limited understanding of the surgical preparation and postoperative information [38],
anxiety [39] and a sense of abandonment [34] during their day surgery visit. In these areas nurses may take on more active roles and thereby contribute to the development of the contemporary day surgical care [31]. For instance, preoperative information, screening of patients and information at discharge are suggested as high-priority nursing interventions in the day surgery context [28].

The day surgery patient

In concurrence with the view in this thesis, a day surgery patient is a person with individual needs of physical, psychological, social and spiritual natures [40]. Day surgery offers an efficient service with minimal disruption of personal habits and routines, which is especially beneficial to the elderly and children as it only minimally disrupts their ordinary life and allows them to recover in familiar surroundings [41]. In Western society people want minimal disruption of their ordinary lives, this is no less true in terms of their surgical treatment [42], making day surgery a preferable choice for many [7, 9]. For many patients, families and employers, a day surgical procedure is synonymous with a minor one and an expected rapid return to normal life [43]. However, when recovery is not accomplished as expected, frustration and conflict regarding role functions in family and professional life may arise [42-44]. Acceptance of the sick role is bisectional. Many patients resist this role due to expectations for a rapid recovery and a quick return to ordinary life in terms of work in or outside the home. However, the sick role is also a privilege and an argument for being noticed by family, employer and community health care [43]. When the sick role continues to be non-acknowledged by the surroundings, disappointment and dysphoria may emerge [45].

The day surgery patient does not have the advantage of health care professionals monitoring and facilitating his/her recovery following discharge [46]. Instead, the postoperative care is transferred to the patient and the family [35, 47]. Even if studies of patient satisfaction demonstrate that day surgery is a popular choice for most patients [7-10], research also indicates that patients and their families are insecure in managing postoperative recovery at home [38, 48-50]. Lack of professional support [50], lack of information and insufficient preparation for autonomous care at home [48], non-functional cooperation between day surgery and community care [49] and over
optimistic expectations that post-surgical discomforts will fade away quickly [38, 42] may contribute to this insecurity.

Major complications following day surgery are extremely low [11, 51, 52] but post-discharge symptoms are common [53-55], sometimes persisting longer than both patients and professionals expect [45, 54]. Post-discharge symptoms are known to have a great impact on patients and their activities of daily living [45]. Pain is the most common post-discharge complaint both in Sweden [19, 56] and elsewhere [38, 57-59]. Pain is also a common reason for hospital admission [19]. Another troublesome symptom is postoperative nausea and vomiting (PONV) [28, 60, 61], affecting patients' ability to resume normal activities [62]. When patients were asked to rank their preferences for avoiding a postoperative symptom, PONV was highly ranked [63, 64]. Cognitive discomforts also appear post-discharge. Fatigue and tiredness were problematic among gynaecology [38, 44] and urology patients [38, 65], and drowsiness, dizziness and amnesia affected patients in connection with discharge and afterwards [60, 66, 67]. A changed body image and appearance might be bothersome to some patients [38, 68]. For instance, patients with hernia repair or hydrocele repair might experience anxiety if they are unprepared for the discoloration, swelling and bruising that might occur postoperatively [38]. Women felt a high level of anxiety regarding altered body image after an excisional breast biopsy [68]. Psychological changes like mood swings and anxiety have been identified post-discharge, and might be due to disturbed nocturnal sleep [38], non-resumed role functions [44] or psychological stress waiting for a diagnosis [68]. One cannot say whether these symptoms and discomforts are more profound in day surgery than if the patient is hospitalized; however, lacking the surveillance and support from health care personnel puts the patient and the family in a vulnerable situation [44].

Many factors can influence the postoperative course of the day surgery patient. Patient characteristics (age, comorbidity, body mass index (BMI), smoking), surgery and anaesthesia (site and duration of operation, degree of invasiveness, type of anaesthesia) and social factors (social conditions, adult company during both the ride home and the first day at home) are examples [5]. Further, with more complex procedures transferred to the day surgery area and with more patients with co-morbidities it cannot be excluded that peri- and postoperative morbidity will increase in the coming years [5]. Identifying patients who are suitable for a day surgical procedure thus seems
Background

important, but the literature regarding patient selection is not univocal [5, 13, 69-71]. In Sweden, patients’ appropriateness for day surgery is mainly based on the American Society of Anesthesiologists’ (ASA) classification, type of anaesthesia and the patient’s BMI [28]. The ASA classification is a score of the patient’s preoperative health, ranging from I (healthy patient) to IV (the patient has a heavily incapacitating disease) [72].

Postoperative recovery

The concept of postoperative recovery is commonly used in the medical and nursing literature, its characteristics not always pointed out but rather taken for granted. Its application is wide, and a broad concept runs the risk of being diffuse and hard to discuss. In a concept analysis, postoperative recovery was suggested to be an energy-requiring process until the preoperative level of normality and wholeness regarding physical, psychological, social and habitual functions had been resumed [73]. The physical dimension is suggested to be separated into physical symptoms and physical function instead, and the habitual dimension is relabelled activity due to its focus on activity in ordinary life [45]. This view on postoperative recovery corresponds with the intention of this thesis. Other descriptions of the concept are found in the literature as well. Kleinbeck [46] describes recovery after day surgery as the patient’s perception of a 100% return to his/her usual self. This description is shared by Royse et al. [74], who state that postoperative recovery is a return to a pre-surgical state or better. Zalon [75] proposes that recovery from surgery is an improvement in functional status and a perception that recovery has occurred. Postoperative recovery is also seen as the period of time during which the patient undergoes measurable and dynamic changes in health status, attributable to the surgical procedure [76].

The recovery process after day surgery can be divided into three phases: early, intermediate and late [77, 78]. The early phase lasts only minutes, and comprises the time from discontinuation of anaesthesia until the patient has stable protective reflexes. This phase is followed by the intermediate phase, during which the patient awaits readiness for home discharge (hours). The late phase comprises the time from discharge until the patient reaches the level of preoperative health and well-being (days) [77]. There is no consensus in the literature regarding this vocabulary, and various definitions exist. In this
thesis the focus is on the late phase, i.e. the time from discharge to regained preoperative health and well-being.

Postoperative recovery is individual and a composite of different physical and psychological issues [79]. Particularly in the late phase, the patient’s perception of his/her own health prior to surgery is essential. This perception creates an internal standard influenced by a variety of factors, including experiences of prior illness, the surgical procedure itself, expectations regarding recovery, the intensity of symptoms and exposure to external stimuli (e.g. a medical condition or postoperative distress highlighted in media) [80, 81]. Recovery is complete when a state of equilibrium between the postoperative condition and the internal standard is accomplished [82]. Improvements from the specific effects of surgery and general effects on other bodily functions are in focus. The effects of the surgical intervention may lead to diffuse boundaries between postoperative recovery and concepts of convalescence [73], rehabilitation [83] and recuperation [84], which in some studies are used interchangeably with postoperative recovery [47, 76, 84]. In other studies, these concepts focus on the patient’s ability to resume common activities such as work, activities of daily life (ADL), recreation [85, 86] or limitation in activity [87] in relation to surgery.

Self-care in day surgery

Postoperative recovery is not always straightforward [41], and to manage recovery at home a high degree of self-care is necessary. However, not all patients are prepared for this [38]. When discharged following day surgery, the patient and the family may be at a loss for what to do when managing self-care [48]. Self-care is multi-faceted and the literature regarding the concept is extensive, focusing mostly on chronic illness. In this context, self-care refers to involvement in promoting health through the augmentation of internal and external resources and the prevention of adverse sequelae [88]. Those perspectives might, at least on a general level, be possible to transfer to day surgery. Successful self-care develops over time, since valuable skills are based on perceived experiences [89, 90]. To manage self-care and prevent patients from having to make mistakes in order to learn, education in necessary skills is needed [89]. Self-care in a day surgery context could be seen as the capability to manage symptoms and treatment, as well as physical, psychosocial, cultural and spiritual consequences related to the surgical procedure [91]. Autonomy is
vital in deliberate self-care in respect to the patient’s intention to make healthful choices and interventions. Patient autonomy is an ambiguous term often used in nursing. In day surgery, it may be seen as a self-governing ability in the patient’s control of self-care during recovery [92]. The nurse can support the patient in being autonomous in self-care decisions by identifying the patient’s resources and needs. In a day surgery context, this can be accomplished through a preoperative assessment. Day surgery patients’ autonomy is then expressed through their self-care actions [93].

**Health-related quality of life**

Health-related quality of life (HRQoL) following day surgery can be considered an individual evaluation of preoperative health and the impact and effects of surgery. Patients in day surgery have varying degrees of preoperative HRQoL, and in connection with the multifaceted concept of postoperative recovery, factors affecting HRQoL following day surgery are important to identify [94]. Although HRQoL is an important outcome of health care, there is no consensus on its definition [95]. The terms quality of life (QoL) and HRQoL are very closely related, and the literature on the two terms is vast. QoL is a broad concept, suggested to represent life satisfaction [96] as a result of physical and material well-being, relations with others, social and public activities, personal independence and fulfilment, and the possibility for recreation. HRQoL, underlying the broader QoL concept, comprises the perception of illness, medical treatment and interventions concerning an individual’s health status [97]. Non-related health aspects such as cultural, political and societal aspects are consequently excluded in the HRQoL concept. Even though no uniform definition regarding HRQoL exists, it can be considered a composite of biological function, symptoms, functional status, subjective health and well-being [98], and it is often defined in different aspects of health [99]. HRQoL following day surgery is rarely reported, but sleep problems, pain [100] and impaired mobility [94] have been found to be associated with reduced HRQoL in day surgery patients.

**Assessment of postoperative recovery**

Patient-reported outcome measures (PROMs) are measures of a patient’s health status or HRQoL, and are usually in the form of self-completed
questionnaires. From a patient perspective, PROMs offer insight into how aspects of the surgical procedure are perceived regarding the construct under assessment i.e. health status, HRQoL and satisfaction [101]. Patient satisfaction is an important outcome of day surgery, and is commonly used in evaluation of recovery [7, 9, 102, 103], along with patients’ perceptions of the quality of recovery [104, 105]. The patient’s ability to resume normal activities postoperatively is an important indicator of a successful day surgery procedure [106], and assessment of his/her experiences is a principal end-point after day surgery [94]. There are several ways to assess postoperative recovery after day surgery [107]. Clinically oriented endpoints are frequently used, with pain and PONV the most commonly reported [41, 61, 67]. Clinical endpoints are also used for the evaluation of different anaesthetic agents or anaesthetic techniques, for the assessment of early and intermediate [84, 108-110] as well as late recovery [110-112]. Typical clinical endpoints in early recovery related to the type of anaesthesia are the time until the patient can follow commands, is extubated, and is oriented to place and date [108, 109, 113]. In the intermediate recovery phase, the patient’s experience of symptoms [84, 109] and different cognitive measurements (e.g. the digit-symbol substitution test) [109] are frequently used. Evaluation of the effects of anaesthesia during the late recovery phase uses patients’ experiences of symptoms and adverse effects [110-112]. Experiences of the ride home [111] and feelings of concentration and forgetfulness at home [112] are also used. Process of care measures, such as time to home readiness and discharge [84, 108, 110, 112-114] and unanticipated admission after discharge [115-119], are other often-used measures of the quality and outcome of day surgery.

Although the evaluation of day surgery patients’ subjective recovery is essential for acquiring knowledge to facilitate their progress of well-being, as well as for developing the health care organization, few validated methods are available. In Sweden formal follow-ups are infrequent, and when they are used this usually occurs by telephone on postoperative Days 1-2 [19]. In order to emphasize evidence-based health care and in connection to the increase in day surgery, patients’ self-reporting of postoperative recovery has become more important [94]. The use of questionnaires as a method of data collection has increased in recent years [120]. For the evaluation of patient-reported outcomes and the period of recovery, standardized and valid instruments are needed [121]. Questionnaires designed to measure postoperative recovery can be general, or disease- or site-specific. An advantage of general recovery questionnaires is that they can be used in a wide range of surgeries [122].
Background

Questionnaires for the assessment of postoperative recovery have been developed during the past decade [44, 46, 47, 105, 106, 123, 124] and more recently [74]. Two instruments, the Post-discharge Surgical Recovery (PSR) scale [46] and the Quality of Recovery-40 (QoR-40) [105], are reported to have the most satisfactory psychometric properties [122, 125]. The PSR scale has not been used or tested in a Swedish sample, in contrast to a modified version of the QoR-40 [104, 126].

Rationale of this thesis

There is a great deal of research on postoperative recovery after day surgery relating to home discharge or the first postoperative days. This research focuses mostly on patients’ symptoms and more seldom on recovery from an overall perspective. As recovery is a multifaceted phenomenon involving different aspects which may persist longer than expected, knowledge of patients’ perspectives regarding their postoperative recovery over time is needed. The knowledge and research in HRQoL among many different groups of patients is extensive. In contrast, studies exploring HRQoL in day surgery patients are rare, but are needed for the evaluation of day surgical care. Following discharge the patient is in a vulnerable position, managing recovery on his/her own; thus it is important to identify exposed patients. To assess recovery adequately on a clinical basis, validated questionnaires for use in a Swedish day surgery context are needed, as well as a more thorough understanding of patients’ perspectives on postoperative recovery over time.
Aims

The overall aim of this thesis was to attain comprehensive knowledge of postoperative recovery following day surgery from a patient perspective.

The specific aims were:
I. To evaluate the psychometric properties of a translated version of the PSR scale in a Swedish day surgery sample in terms of data quality, internal consistency, dimensionality and responsiveness.

II. To describe postoperative recovery on postoperative Days 1, 7 and 14 after different orthopaedic day surgical procedures and to identify possible predictors associated with postoperative recovery two weeks after surgery.

III. To prospectively describe postoperative recovery and HRQoL among different groups of day surgery patients and to explore the association between postoperative recovery and HRQoL 30 days after discharge.

IV. To explore day surgery patients’ perceptions of postoperative recovery.
METHODS

Postoperative recovery is a multifaceted phenomenon, experienced differently by patients depending mainly on individual and surgical reasons. To obtain comprehensive knowledge of patients’ perspectives on recovery post-discharge, two different methodological approaches were used. Initially extensive research methods were used, and these were complemented with an intensive method to further enrich the phenomenon of recovery. An overview of the methods used in this thesis is presented in Table 1.

Design

In Papers I-III the intention was to assess patients’ recovery using systematically gathered and analysed data from a representative sample. In Paper IV the intention was to deepen the understanding of results attained in previous papers using an intensive methodological approach. Patients’ perceptions were described through analysis of their own words regarding recovery in their lived environment [127].

A multicentre study design was used, with the study sample reported in different constellations in Papers I-III. In Paper I, a validation study was conducted when evaluating validity, reliability and responsiveness in an instrument for the assessment of recovery used in the subsequent Papers II and III. In Papers II and III, prospective-correlational study designs were used in an aim to evaluate recovery over time and factors of importance among patients following different day surgical procedures. The last paper (IV) was explorative and constituted a new sample, aiming to expand the understanding of postoperative recovery in relation to day surgery. The use of extensive and intensive methodologies can be viewed from a situational perspective, i.e. each method is appropriate for its purpose and as a complement to the other [128]. This combination in methodologies is shown in Figure 1, stipulating one method as principal and the other as additional in the sequence of the two methodologies [129]. The use of two different approaches was valuable in the triangulation of patients’ perspectives on recovery [130].
Table 1. Overview of methods used in this thesis

<table>
<thead>
<tr>
<th>Paper</th>
<th>Study design</th>
<th>Inclusion criteria</th>
<th>Participants</th>
<th>Data collection</th>
<th>Postoperative days</th>
<th>Data analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Description of validity, reliability and responsiveness of the S-PSR scale</td>
<td>Validation study</td>
<td>DS ≥ 18 years old Swedish-speaking (Sample 1)</td>
<td>525 patients</td>
<td>Demographic data, ASA classification, PSR, Patients ability to work, Self-rated health</td>
<td>1 and 14</td>
</tr>
<tr>
<td>II</td>
<td>Postoperative recovery and potential predictors among orthopaedic patients</td>
<td>Prospective, correlational study</td>
<td>DS ≥ 18 years old Swedish-speaking (Sample 1)</td>
<td>358 patients</td>
<td>Demographic data, ASA classification, S-PSR, QoR-23, Self-rated health</td>
<td>1, 7 and 14</td>
</tr>
<tr>
<td>III</td>
<td>Postoperative recovery and its association with HRQoL in different types of surgery</td>
<td>Prospective, correlational study</td>
<td>DS ≥ 18 years old Swedish-speaking (Sample 1)</td>
<td>607 patients</td>
<td>Demographic data, ASA classification, S-PSR, QoR-23, EQ-5D (three levels), PARSAP</td>
<td>1, 7, 14 and 30</td>
</tr>
<tr>
<td>IV</td>
<td>Perceptions of postoperative recovery</td>
<td>Explorative study</td>
<td>DS ≥ 18 years old Swedish-speaking (Sample 2)</td>
<td>31 patients</td>
<td>Semi-structured interviews, Face-to-face</td>
<td>11-37</td>
</tr>
</tbody>
</table>

S-PSR = Swedish Post-discharge Surgical Recovery scale, DS = Day surgery, PAF = principal axis factoring, SRM = standardized response mean, ROC = receiver operating characteristics curve, QoR-23 = Quality of Recovery 23 items, ANOVA = analysis of variance, HRQoL = Health-related quality of life, PARSAP = Postanesthesia Recovery Score for Ambulatory Patients
Participants

Patients in the first sample were recruited during three periods during the years 2003-2005 (I-III). Patients scheduled for a day surgical procedure, aged 18 years or older and able to understand and read Swedish, qualified for participation. Eight-hundred and fifty-one patients were eligible to be invited to participate in the study and of these, 135 declined participation and 76 missed being asked, resulting in 640 patients who gave informed consent to participate. Patients were recruited from two hospital integrated units one at a county hospital (n=100) and the other at a university hospital (n=270) as well as from a freestanding, self-contained private unit (n=270). Patients were included consecutively at each data collection site. The exclusion was 33 patients, mainly due to postoperative hospitalization. The included patients had undergone orthopaedic surgery (n=358), general surgery (n=182) and gynaecological surgery (n=67) (Figure 2).

The second sample was recruited from June to December 2011 (IV). The inclusion criteria were the same as in Papers I-III, i.e. patients scheduled for a day surgical procedure, aged 18 years or older and able to understand Swedish. The sampling was strategic regarding surgical procedure, age and gender, and 37 patients were invited to participate by a study-committed nurse. Patients who gave consent were contacted by telephone to determine an interview appointment. However, four patients were not able to be contacted and two were hospitalized. Thirty-one patients were thus included, 16 from a freestanding self-contained private unit and 15 from a self-contained unit at a county hospital. In this sample 18 patients had undergone orthopaedic surgery, nine general surgery and four urologic surgery (Figure 2).
Figure 2. Overview of patients included in this thesis (I-IV)
Methods

Analysis of non-participants

The analysis of non-participants is conducted by comparing participating patients with those who declined participation or missed being asked in the first sample (I–III). No difference existed in age or gender between participating patients (n=607) and those patients who declined participation or missed being asked (n=211). Significantly more general surgery patients and fewer orthopaedic patients were among the non-participants. From inclusion to Day 30, 147 patients decided to withdraw from the study. Among these patients, there were significantly more younger persons and men. No difference existed in type of surgery or ASA classification between the patients who completed study participation and those who did not (Table 2). In Paper IV, a strategic sampling was used and an analysis of participants/non-participants was not appropriate.

Table 2. Comparison between participants and non-participants at study inclusion and at Day 30 (Papers I – III)

<table>
<thead>
<tr>
<th>Start of the study</th>
<th>Included participants n=607</th>
<th>Non-participants n=211</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males/females</td>
<td>303 (50)/304 (50)</td>
<td>110 (52)/101 (48)</td>
<td>0.579a</td>
</tr>
<tr>
<td>Age, years</td>
<td>49.7 (±15.6)</td>
<td>51.3 (±17.5)</td>
<td>0.225b</td>
</tr>
<tr>
<td>Type of surgery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>orthopaedic</td>
<td>358 (59)</td>
<td>96 (45)</td>
<td>&lt; 0.001a</td>
</tr>
<tr>
<td>general</td>
<td>182 (30)</td>
<td>101 (48)</td>
<td></td>
</tr>
<tr>
<td>gynaecologic</td>
<td>67 (11)</td>
<td>14 (7)</td>
<td></td>
</tr>
<tr>
<td>Day 30</td>
<td>Included participants n=460</td>
<td>Non-participants n=147</td>
<td>p-value</td>
</tr>
<tr>
<td>Males/females</td>
<td>214 (47)/246 (53)</td>
<td>89 (61)/58 (39)</td>
<td>0.003a</td>
</tr>
<tr>
<td>Age, years</td>
<td>52.4 (±15.1)</td>
<td>41.3 (±14.1)</td>
<td>&lt; 0.001b</td>
</tr>
<tr>
<td>Type of surgery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>orthopaedic</td>
<td>265 (58)</td>
<td>93 (63)</td>
<td>0.335a</td>
</tr>
<tr>
<td>general</td>
<td>140 (30)</td>
<td>42 (29)</td>
<td></td>
</tr>
<tr>
<td>gynaecologic</td>
<td>55 (12)</td>
<td>12 (8)</td>
<td></td>
</tr>
<tr>
<td>ASA classification</td>
<td></td>
<td></td>
<td>0.164a</td>
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<tr>
<td>1</td>
<td>327 (71)</td>
<td>114 (78)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>119 (26)</td>
<td>32 (22)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>13 (3)</td>
<td>1 (1)</td>
<td></td>
</tr>
</tbody>
</table>

Continuous data (age) are presented as mean (±SD) and categorical data as n (%).
ASA: American Society of Anesthesiologists, a chi2, b Student’s t-test
Data collection

The data collection was coherent for Papers I-III. Postoperative recovery at home was assessed using two self-rated questionnaires, the Post-discharge Surgical Recovery (PSR) scale [46] (II, III) and the Quality of Recovery-23 (QoR-23) scale (II, III) [104]. Before discharge from the surgery unit, home readiness was assessed using the Postanesthesia Recovery Score for Ambulatory Patients (PARSAP) [131] (III). HRQoL was assessed with the EuroQol-5D (EQ-5D) (three levels) [132] (III). Psychometric properties of the PSR scale were evaluated in Paper I.

Further, two supplementary questions were used to assess recovery and health, respectively. One regarded the patient’s ability to work or handle daily activities at home, rated on a five-point scale (1 = not at all, 5 = all the time) (I), and the other regarded the patient’s global health on a self-rated ten-point scale (1 = very poor health, 10 = excellent health) (I, II).

To assess the patients’ background data (age, gender, smoking, residence, employment and education) and the preoperative physical ASA classification, a structured questionnaire and patient records were used (I-III). In Paper IV, background data were collected in connection to the interview.

Complementary to the instruments, patients were interviewed face-to-face about postoperative recovery (IV).

The Post-discharge Surgical Recovery scale

The PSR scale is a questionnaire developed for the assessment of recovery post-discharge after a day surgical procedure [46]. Five aspects are included in the questionnaire - the patient’s health status, activity, fatigue, work ability and expectations - resulting in an overall picture of recovery. The PSR scale comprises 15 items rated on a ten-point (1-10) semantic differential scale. The item’s anchor words are constructed in both a negative and positive direction, but when computed all items are directed positively. A score is computed using the individual sum score, divided by total possible score and multiplied by 100. The possible score range is 10-100, with higher scores indicating a more favourable postoperative recovery. The PSR scale exhibited satisfactory
Methods

Internal consistency (Cronbach’s alpha coefficient 0.88–0.91) and validity (factor analysis as well as concurrent and construct validity) when tested by its constructor [46].

A Swedish modified version of the PSR scale was constructed after permission was received from the constructor. A translation/back-translation procedure with native translators at every occasion was undertaken [133]. To ensure the items’ relevance in a Swedish day surgery context, the research group evaluated all items as well as the correspondence between the original and back-translated versions. An adjustment was made to the original scale: one item was split into two in order to obtain both an emotional and a general dimension of the patient’s ‘normal self’. Further, two original items were excluded in the Swedish version and placed outside the scale: one item concerned time to recover and the other time to return to work. This change made it possible for the respondents to approximate the number of days until they had recovered or were back at work. The adjustments that were made resulted in the use of a 14-item modified version of the PSR scale: the Swedish Post-discharge Surgical Recovery (S-PSR) scale (Appendix 1) with a Cronbach’s alpha coefficient of 0.89.

The Quality of Recovery-23 scale

The QoR-23 originates from the QoR-40, a self-rating questionnaire developed for the assessment of quality of recovery after anaesthesia and surgery. The original questionnaire consists of 40 items distributed on five dimensions (emotional state, physical comfort, psychological support, physical independence and pain) with satisfactory validity, reliability and responsiveness [105]. The QoR-40 was not developed entirely for day surgical patients, and has been modified into a Swedish 23-item version, the QoR-23, for this group of patients [104]. Following psychometric testing, the QoR-23 was found valid and reliable in a Swedish day surgery context with items distributed in three of the original dimensions: eight items in the dimension of emotional state, ten in physical comfort and five in physical independence. All items are rated on a five-point scale (1-5). The ratings are summed, and higher scores indicate better quality of recovery. Totally, scores may vary between 23 and 115, and the maximum scores in the dimensions are 40 (emotional state), 50 (physical comfort) and 25 (physical independence). In the QoR-23, pain was assessed outside the questionnaire but was later incorporated [126]. The
Cronbach’s alpha coefficient was 0.82, 0.79 and 0.63, respectively, for the dimensions emotional state, physical comfort and physical independence the first postoperative day in this sample.

**The Postanesthesia Recovery Score for Ambulatory Patients**

The PARSAP is a further development of an instrument originally constructed by Aldrete and Kroulik for the assessment of postanaesthesia recovery [134]. When day surgical procedures increased, the need became apparent for a revised version to allow for the assessment of patients’ physical status and readiness for home discharge. The PARSAP consists of ten items (activity, respiration, circulation, consciousness, oxygen saturation, dressing, pain, ambulation, fluid intake and micturition), rated by the staff on a three-point scale (0-2). The score is summed and a score ≥ 18 is regarded as sufficient for home discharge [131].

**The EuroQol-5D**

The EQ-5D is a frequently used self-rating and generic instrument designed to measure HRQoL. The instrument consists of two parts, a descriptive system and a visual analogue scale (EQ-VAS). The descriptive system includes five dimensions: mobility, self-care, usual activities, pain/discomfort and anxiety/depression on a three-level (1-3) scale representing no problems (1), some problems (2) and severe problems (3) [132]. In analysis of the descriptive system, 243 unique health states can be identified. A score, varying from 1 (perfect HRQoL) to -0.595 (worst possible HRQoL), is assigned to each of these health states (the EQ-index) [135]. The EQ-VAS reflects health on a 20 cm vertical analogue scale anchored on 100 (best imaginable health) and 0 (worst imaginable health) [132]. The EQ-5D has reported satisfying validity and reliability [136, 137].
Methods

The interviews

To further describe postoperative recovery and to expand the understanding of patients’ perspectives on the phenomenon, an interview study was conducted in which patients reflected on their recovery.

The interview is a valuable method when research seeks to explore meaning and perceptions in order to gain a better understanding of a phenomenon. This method for data collection is built on the person’s ability to obtain information while listening and encouraging another person to speak [138]. A common format of the interview is the face-to-face format, and a semi-structured interview guide is often used. A semi-structured format implies that predetermined areas are elicited, but the sequencing of questions differs among the participants [139]. In Paper IV, all interviews were conducted face-to-face and the interview was initiated with a broad question regarding the patient’s perception of postoperative recovery: What does recovery after a day surgical procedure mean to you? Thereafter, a conversation followed in which the interviewer used a semi-structured interview guide complemented with follow-up and probe questions to stimulate the respondent to give rich and comprehensive answers. The interviews lasted from 16 to 49 minutes, and were audio-recorded and transcribed verbatim (including conversational pauses and listener support) by a professional. The transcriptions were validated against the audio-recordings.

Procedures

Papers I-III

On arrival at the day surgery unit, each patient was asked about participation and given verbal and written information about the research project. Before surgery, demographic and baseline data were collected and a physician or specially trained nurse assessed the patient’s ASA classification. At baseline, ten items from the S-PSR scale i.e. the patient’s alertness, pain, tiredness, activity, need for a day time nap, mobility, living situation, physical exercise, bowel conditions and personal care were assessed, as was their experience of health during the preceding 12 months. Also patients HRQoL was assessed using the EQ-5D before surgery. When the patients were discharged from the surgery unit, home readiness was assessed using the PARSAP and they
received the S-PSR scale, the QoR-23 and the supplementary questions in a postage-paid envelope to be filled out on the first postoperative day. In advance of postoperative Days 7 and 14, identical questionnaires were sent to the patients’ homes to be answered on the seventh and fourteenth days after surgery. The EQ-5D was sent to the patients along with a postage-paid envelope to be filled out on postoperative Day 30 (I, II, III).

**Paper IV**

In Paper IV patients were selected from the surgery unit’s operation schedule in advance. When admitted to the surgery unit, they received both verbal and written information about the study from a study specific nurse and were invited to participate. Patients were contacted by telephone within ten postoperative days, and during this call the information was repeated and time and place for the interview were determined. All interviews except one (which was held in a room at the patient’s workplace) were conducted in the patient’s home from June to December 2011, on the 14th-30th postoperative day. Three patients, due to their practical circumstances, were interviewed on Days 11, 32 and 37.

Data collection undertaken in relation to the surgery is presented in Table 3.

| Table 3. Data collection in relation to the surgery used in this thesis |
|-----------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                             | Preop           | Home discharge  | Day 1            | Day 7            | Day 14           | Day 30          | Days 11-37      |
| Demographics                | x               |                 |                 |                 |                 | x               |                 |
| ASA                         |                 | x               |                 |                 |                 |                 |                 |
| S-PSR                       | x               |                 |                 |                 | x               | x               |                 |
| QoR-23                      |                 |                 |                 |                 |                 | x               |                 |
| PARSAP                      |                 |                 |                 |                 |                 | x               |                 |
| EQ-5D                       |                 |                 | x               |                 |                 |                 |                 |
| Interview                   |                 |                 |                 |                 |                 |                 | x               |

**Data analysis**

**Statistical analyses**

A summary of the statistical methods used is presented in Table 1. Categorical variables are presented as numbers and percentages, and continuous variables are presented as mean and standard deviations (SD) (I-III). The chi square test
was used to investigate differences in gender and surgical procedure between participants and non-participants, and between those who remained in the study and the drop-outs (I-III). The chi square test was also used to investigate differences in patient characteristics (anaesthesia, ASA classification, residence, employment, education) when the sample was divided into groups of orthopaedic, general and gynaecological surgery (III). Differences in age were investigated using Student’s t-test between genders (II), participants and non-participants (I-III), and using one-way ANOVA between the surgical groups (III). The Mann-Whitney U test was used to investigate differences in ASA classification between participants and non-participants (I).

To investigate postoperative recovery over time (postoperative Days 1, 7 and 14), Friedman’s ANOVA followed by Wilcoxon’s signed rank post hoc test in cases of significance were used (II). Investigations between the different orthopaedic surgical groups were conducted using the Kruskal-Wallis test (II). A repeated measure ANOVA (III) was used to investigate whether significant changes existed in scores (S-PSR, QoR-23, EQ index, EQ-VAS) at different time points, and to test for differences between surgical groups. The models were built on a between-subject variable (surgical group), a within-subject variable (postoperative recovery or HRQoL) and an interaction variable (time x group). The assumption of sphericity (i.e. equality of variances of the differences between the measures) was controlled for and, if violated, the Greenhouse-Geisser correction was applied [140]. Factors associated with postoperative recovery (II) or HRQoL (III) were investigated using multiple linear regression analysis. The independent variables were put into the equations as one block (II) or in hierarchical blocks (III). The independent variables were: age, gender, residence, education, ASA classification, type of surgery (II, III), smoking and employment (II). Additional independent variables were: health and the dimensions of the QoR-23 (emotional state, physical independence, physical comfort) on postoperative Day 1 (II), total S-PSR and QoR scores on Day 7 and preoperative EQ index or EQ-VAS (III). The dichotomous variables gender (female/male), residence (cohabitating/single) and degree from university (yes/no) were dummy coded. In the dummy coding regarding the variables, type of surgery and ASA classification, orthopaedic surgery and ASA class 1 were reference categories (III). The coefficient of determination ($R^2$) was used to illustrate model development (II, III). To avoid the risk of biasing the regression models through multicollinearity, i.e. strong correlations among independent variables, assessments of the tolerance and the variance inflation factor (VIF) were performed (II, III). The tolerance varies between 0 and 1,
with 1 meaning totally uncorrelated variables. The VIF indicates a linear relationship between variables and should preferably have a value < 2 [141]. As a consequence of multicollinearity between the dimensions of emotional state and physical comfort in one of the regression models, the dimension of physical comfort was excluded (II).

An exploratory factor analysis (principal axis factoring, PAF) and an oblique rotation were conducted to evaluate the dimensionality of the S-PSR scale (I). The analysis was preceded by tests of sampling adequacy [142]. Data quality was evaluated through the number of missing items and an assessment of floor and ceiling effects (I). Floor and ceiling effects were defined as items having > 15% of respondents on the lowest or highest answering alternative (I) [143]. To evaluate the S-PSR’s internal responsiveness, i.e. the scale’s ability to change over time, the standardized response mean (SRM) was used. The external responsiveness, i.e. corresponding changes in questionnaire scores and an external criterion, the area under the receiver operating characteristics (ROC) curve (AUC) was used [144]. For the ROC analysis, the patient’s ability to work or handle daily activities at home was used as a dichotomized external criterion. The AUC was interpreted as the probability of the S-PSR scale to distinguish improved from non-improved patients according to the external criterion. Pearson’s product moment correlation was used to investigate whether changed scores in the S-PSR scale were correlated to changed scores in the patient’s self-rated health (I) as an assessment of external responsiveness [145] and for the assessment of item homogeneity (inter-item and item-total correlations) (I). Internal consistency was estimated with Cronbach’s α coefficient (I, III).

The level of statistical significance was set at p<0.05. When multiple comparisons were done, the Bonferroni correction was used to establish a more conservative significant level to reduce the risk of making a type I error (II, III) [146]. SPSS, versions 14.0–19.0, (SPSS Inc, Chicago, IL, USA), was used to analyse the data.

Phenomenographic analysis

In order to additionally reveal conceptions of postoperative recovery, the method of phenomenography was deemed appropriate. Phenomenography aims to seek understanding of people’s ways of experiencing phenomena in
the surrounding world. From a phenomenographic perspective this means a description of people’s perceptions about the reality and the world in which they are participating, so called the second-order perspective. In contrast, the first-order perspective is a description of reality and its factors of influence described from the researcher’s point of view [147]. In phenomenography, the researcher withholds prejudice and his/her own understanding of the phenomenon to fully focus on the respondent’s perception and how he/she describes the phenomenon [148]. Further, the established assumption is that what people perceive regarding a phenomenon in their surrounding world varies, and expressed perceptions are preserved when described. The result in a phenomenographic study is thus described as the outcome space, comprising a set of qualitatively different categories describing the various ways people perceive a phenomenon [149]. In this thesis, perceptions of postoperative recovery following day surgery are studied. Consequently, the result in a phenomenographic study explains how something is conceived in a particular way. When individual data are obtained they are handled as one set, with findings related to the group of day surgical patients rather than to separate individuals. Therefore, descriptions of a certain person’s understanding of the phenomenon are less rich and thick in a phenomenographic study than in a phenomenologic study [150]. Phenomenography as an approach to research originated in the pedagogical field, but has been widely acclaimed in nursing research for examining how patients perceive their states and needs [151].

To become familiar with the content in the interviews the analysis began with listening to, together with a careful and repeated reading of, the interviews. Each interview was then condensed into significant excerpts from the transcriptions, which were compared to find variations or agreements among them. Similar statements were grouped together and described in categories, which were revised until they had been satisfactorily assessed and were then labelled and, finally, compared to one another. The work went back and forth due to intertwined relationships between the different stages of the analysis, as recommended by Dahlgren and Fallsberg [149]. Variation in conceptions and the attached subcategories in one main category is illustrated in Table 4. A qualitative research software program was used when the data were analysed (NVivo version 9, QSR, International Pty, Ltd, Doncaster, Australia). The program provides support to users in organizing and analysing non-numerical data.
Table 4. Examples of variations in patients’ conceptions of postoperative recovery following day surgery, the attached subcategories and the denoting main category (IV)

<table>
<thead>
<tr>
<th>Illustration of contrasting excerpts</th>
<th>Subcategories</th>
<th>Main descriptive category (1/3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I talked to people and read some books so I knew what it was”. No, I just thought now I’m going, now I’m going to have surgery and it’ll get better”</td>
<td>Preparing oneself for surgery</td>
<td>Conditions for recovery at home</td>
</tr>
<tr>
<td>“And sort of as a person, you have to see the positive side of it all. It’s going to get better”. I guess I’m a bit of a fatalist, I exercise and then whatever happens happens”</td>
<td>The impact of personal traits during the recovery process</td>
<td></td>
</tr>
<tr>
<td>“It might be the case that you don’t play sports at all and you don’t have this exercise setup whatsoever. Then I’m sure it’s really hard to set up the exercise”. It was so creepy to look at it. It was like a hole there. And also you don’t know what you are supposed to do, should you be careful or should you spray water on it or not”.</td>
<td>Useful knowledge for managing recovery</td>
<td></td>
</tr>
<tr>
<td>“It’s just actually common sense for me. Because what else do you have to go by? Then it’s really just to feel your own signals and I guess the only signals you have in principle are the pain”. When I took the bandage off the sore opened, thanks to this Waran I’m on, and it bled pretty well. But it was just a matter of fiddling it together myself, it wasn’t a problem”</td>
<td>Individual strategies for the post-discharge management of self-care</td>
<td></td>
</tr>
<tr>
<td>“But then you think, like, you don’t really know. Is it too early or is it stupid, is it too hard? Because it’s a bit hard to know”. You felt secure knowing it was just a matter of picking up the telephone and ringing”</td>
<td>Feeling secure post-discharge</td>
<td></td>
</tr>
</tbody>
</table>
As in all research, the question regarding quality and the reader’s possibility to scrutinize its findings demands consideration in phenomenography. In a phenomenographic context, quality means how well the perceived reality is depicted, i.e. the study’s trustworthiness including its credibility, dependability, transferability, and confirmability [152]. A wide range of participants, steps taken to ensure honestly delivered answers from participants (e.g. probing questions) and the researcher’s familiarity with the study context are factors that enhance credibility [152]. If the process is described in enough detail it may be possible to repeat, if not necessarily to attain the same result [153]. If information about the study context is sufficiently provided, this may allow for others to transfer the findings to a similar context. A close relationship between formulated descriptive categories and the data [151], further strengthened by quotations [154], confirms the findings. In other words, trustworthiness is achieved if findings are valid and truly reflect the participants’ perceptions, are consistent and accurate, are possible to transfer to another context and, finally, are linked to their original source [139].

**Ethics**

The studies followed common ethical principles for clinical research regulated by the World Medical Association Declaration of Helsinki [155], and were approved by the Regional Ethical Review Board, Linköping, Sweden (study codes 03-333, 2011/86-31). Each participant received both verbal and written information about the study, and was also informed that participation was voluntary. The participants were clearly informed about the possibility to withdraw from the study whenever they wanted without giving any explanation. Verbal (I, II, III) and written (IV) consent to participate was obtained before the first questionnaire was responded to or the interview commenced. The participants were guaranteed confidentiality, maintained through coded questionnaires and transcriptions. Patient materials were stored safely and were only available to the research team.

A patient is in an exposed position before undergoing a surgical procedure, which can have had an impact on the decision to participate in the studies. No risks were identified for taking part in the studies, but some people might find that answering personal question feels threatening to their integrity. All participants received information on how to contact the investigator if they
Methods

had questions during their study commitment. Following the interview (IV), the patients had the opportunity to ask questions about their recovery.
RESULTS

The results can be summarized as follows:

- The S-PSR scale demonstrated satisfactory psychometric properties when tested in a Swedish day surgery context (I).
- Orthopaedic day surgery patients (III) and patients undergoing shoulder surgery (II) experienced a protracted postoperative recovery process with more pain and lower HRQoL (III).
- Factors affecting recovery following orthopaedic day surgery were type of procedure, age, perceived health and emotional status on the first postoperative day (II).
- Day surgery patients perceived recovery comprising internal and external prerequisites with varying changes in ordinary life and levels of support (IV).
- Patients wanted more knowledge and understanding of what to expect during recovery in order to autonomously manage self-care and the responsibility for recovery and surgery outcome (IV).

Postoperative recovery following day surgery will be presented in a comprehensive way, with results from the extensive (I, II, III) and intensive (IV) studies presented together. First demographic variables are described, and thereafter the results are described in the following headings: Psychometric properties of the S-PSR scale; Prerequisites for postoperative recovery; Patient’s return to ordinary life; and, finally, Day surgery in a chain of care.

Demographic variables

In Sample 1 (I, II, III) ages ranged between 18 and 86 years, and in Sample 2 (IV) the range was 21 to 80 years. The gender proportion was 50/50 in Sample 1 with slightly older females compared to the men. In both samples the majority of patients were classified in ASA Class 1 or 2, were cohabiting and had an education up to secondary school level. In Sample 1 most of the patients were in employment, and in Sample 2 the proportions were equal regarding employment and retirement. The surgical procedures were common
in day surgery but comprised a wide range, and orthopaedic surgery was the most common in both samples.

Regarding the demographics in Sample 1 (I, II, III), no difference was found between the genders except in employment, with more men working and more women being retired or assigning their employment as “other”, e.g. on sick leave or at home. More men than women were also scheduled for a general surgical procedure. No comparisons between the genders were performed in Sample 2 due to strategic sampling applied in the intensive study. The demographics in both samples are presented in Table 5.

**Psychometric properties of the Post-discharge Surgical Recovery scale**

For identifying patients’ recovery at home, the S-PSR scale was regarded as valid. An explorative factor analysis (PAF) was found to be the most appropriate, and psychometric properties (data quality, item homogeneity, dimensionality and responsiveness) were deemed satisfactory after the deletion of two items: bowel function and personal care. When these items were excluded, the questionnaire’s homogeneity was strengthened. Besides these items a ceiling effect (>15% of the respondents answered with highest possible score), but to a lesser magnitude, was shown for the items’ expectations on recovery and frame of mind. Two additional items, mobility and normal life, showed a very small floor effect (>15% of the respondents answered with lowest possible score). The items showing a minor ceiling effect (expectations on recovery, frame of mind) or floor effect (mobility, normal life) showed satisfactory internal consistency in regard to item-total correlation and Cronbach’s alpha if the item was deleted. It was determined that these items would to remain in the questionnaire (I).

The assessment of internal responsiveness in the S-PSR scale was valued to be satisfactory. The external responsiveness varied depending on patients’ S-PSR score the first postoperative day. The scale’s accuracy in distinguishing improved from non-improved patients in relation to the external criterion (ability to work or handle daily activities at home) decreased when the S-PSR score on Day 1 increased (I).
### Results

Table 5. Demographics of participants in Samples 1 and 2

<table>
<thead>
<tr>
<th></th>
<th>Sample 1 (I, II*, III)</th>
<th>Sample 2 (IV)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=607</td>
<td>N=31</td>
</tr>
<tr>
<td>Gender</td>
<td>male/female</td>
<td>male/female</td>
</tr>
<tr>
<td></td>
<td>303 (50)/304 (50)</td>
<td>23 (74)/8 (26)</td>
</tr>
<tr>
<td>Age m (SD)</td>
<td>48.4 (16.3)/51.0 (14.8)</td>
<td>56.2 (16.4)/49.5 (18.1)</td>
</tr>
<tr>
<td>ASA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>225 (37)/216 (36)</td>
<td>11 (35)/3 (10)</td>
</tr>
<tr>
<td>2</td>
<td>73 (12)/78 (13)</td>
<td>9 (29)/5 (16)</td>
</tr>
<tr>
<td>3</td>
<td>5 (1)/9 (1)</td>
<td>3 (10)/0</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cohabiting</td>
<td>229 (38)/230 (38)</td>
<td>16 (51)/7 (23)</td>
</tr>
<tr>
<td>Single</td>
<td>71 (12)/69 (11)</td>
<td>7 (23)/1 (3)</td>
</tr>
<tr>
<td>Missing</td>
<td>8 (1)</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hired/entrepreneur</td>
<td>222 (37)/169 (28)</td>
<td>10 (32)/3 (10)</td>
</tr>
<tr>
<td>Student</td>
<td>12 (2)/8 (1)</td>
<td>3 (10)/2 (6)</td>
</tr>
<tr>
<td>Retired</td>
<td>49 (8)/85 (14)</td>
<td>10 (32)/2 (6)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>10 (2)/11 (2)</td>
<td>0/1 (3)</td>
</tr>
<tr>
<td>Other</td>
<td>6 (1)/24 (4)</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>11 (2)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compulsory school</td>
<td>87 (14)/89 (15)</td>
<td>10/2</td>
</tr>
<tr>
<td>Secondary school</td>
<td>134 (22)/110 (18)</td>
<td>8/5</td>
</tr>
<tr>
<td>Degree from university</td>
<td>77 (13)/96 (16)</td>
<td>4/1</td>
</tr>
<tr>
<td>Missing</td>
<td>14 (2)</td>
<td></td>
</tr>
<tr>
<td>Type of surgery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orthopaedic</td>
<td>189 (31)/169 (28)</td>
<td>12 (39)/6 (19)</td>
</tr>
<tr>
<td>General</td>
<td>114 (19)/68 (11)</td>
<td>7 (23)/2 (6)</td>
</tr>
<tr>
<td>Gynaecologic</td>
<td>0/67 (11)</td>
<td></td>
</tr>
<tr>
<td>Urologic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 (13)/0</td>
<td></td>
</tr>
<tr>
<td>Type of anaesthesia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>190 (31)/177 (29)</td>
<td>21 (68)/6 (19)</td>
</tr>
<tr>
<td>Regional</td>
<td>36 (6)/41 (7)</td>
<td>1 (3)/1 (3)</td>
</tr>
<tr>
<td>Local</td>
<td>53 (9)/72 (12)</td>
<td>1 (3)/1 (3)</td>
</tr>
<tr>
<td>Sedation</td>
<td>12 (2)/9 (1)</td>
<td>0</td>
</tr>
<tr>
<td>Missing</td>
<td>17 (3)</td>
<td></td>
</tr>
</tbody>
</table>

*Participants in Paper II consist of orthopaedic patients recruited from Sample 1. Continuous data (age) are presented as mean (±SD) and categorical data as n and (%). ASA: American Society of Anesthesiologists
Prerequisites for postoperative recovery

Postoperative recovery following day surgery implied a migration of care from the surgery unit to the patients themselves in their homes. Recovery comprised prerequisites of different characteristics (I, II, III, IV). Many patients began preparation for recovery before the surgery was undertaken, which included knowledge collection about the surgical procedure. Different sources were used, mainly reading and inquiring about other people’s experiences of the surgical procedure and subsequent recovery. Patients also addressed as many practical details as they could before surgery and stocked up on the medical accessories they believed would be necessary after surgery. Some patients did not prepare themselves at all, since they expected a day surgical procedure to be minor with no particular post-surgical impact (IV). However, the surgical procedure had a significant effect on expectations on recovery, with orthopaedic and general surgery patients having lower expectations on recovery compared to the gynaecological patients two weeks after the procedure (III).

Pain (II, III, IV), together with reduced emotional well-being (II, IV) and deficits in self-care (IV), contributed to emerging feelings of insecurity, worry and loneliness at home. These feelings emerged when patients had to relate to biological healing and what passed for safe behaviours regarding the tissue trauma as well as adequate medication (IV). Moreover, patients who had had surgery on their shoulder experienced a significantly lower emotional state one and two weeks after the surgery compared to orthopaedic patients who had had surgery on their hand/arm, foot/leg or knee (ACI) (II). Positive personal traits and positive thinking were strategies for encouragement before surgery, and were believed to benefit the recovery process and surgical outcome (IV).

A lack of knowledge about the surgery as well as about what to expect concerning recovery had consequences on patients’ recovery and required self-care regarding, for instance, wound care and everyday issues (IV). Further, significant predictors of patients’ recovery on Day 14 were among orthopaedic patient’s age, perceived health and emotional state on the first postoperative day and type of surgery. Shoulder surgery seemed to have the most negative impact on patients’ recovery (II).
Results

Return to ordinary life

A return to ordinary life implied that the consequences of surgery had faded and that there was no need of support. When patients’ ordinary life and habits were back to how they had been before surgery, recovery was regarded as completed (IV). Included groups of patients (orthopaedic, general surgery and gynaecologic) significantly improved in recovery, assessed using the S-PSR or QoR-23 questionnaires (III). Although improved, orthopaedic patients (III) and particularly those having shoulder surgery experienced a significantly lower level of postoperative recovery regarding total scores of S-PSR and QoR (II) compared to general surgery and gynaecological patients (III). In addition, patients having shoulder surgery showed significantly lower emotional state and frame of mind the first two weeks following their procedure (II). During recovery, patients assessed bodily signs and adjusted their activity in relation to this (IV). Orthopaedic patients had significantly more pain and poorer mobility than the general surgery and gynaecological patients seven days following surgery (III) as well as on Days 1 and 14 (Table 6). Further, orthopaedic patients could not maintain their usual activities or normal life to the same extent as the other groups of patients could during the first two postoperative weeks (Table 6).

When return to ordinary life did not occur as expected, it came as a surprise and could be accompanied by emotions of dysphoria, grumpiness and anxiety. Complications from a procedure considered to be minor could even raise existential emotions regarding future earning potential and parenthood. Although the patients had been informed about symptoms and physical restrictions, this bothered them more than expected (IV).

When orthopaedic patients were studied specifically, the patients who had undergone shoulder surgery improved only in usual activity and mobility, and worsened in their expectations on recovery during the first two weeks postoperatively. Other aspects of recovery remained significantly unchanged the two first postoperative weeks among this group of patients (II). However, recovery is mostly a dynamic process, and patients improved in recovery from the first postoperative day to the 14th (I, II, III). Orthopaedic patients, however, experienced a protracted recovery process and were not recovered to the same extent as the general surgery and gynaecological patients two weeks following surgery (III).
Table 6. Item mean score (±SD) in the Swedish Post-discharge Recovery scale in orthopaedic, general surgery and gynaecological day surgery patients on postoperative Days 1, 7 and 14

<table>
<thead>
<tr>
<th>Item (score 1-10)</th>
<th>Orthopaedic patients (n=250)</th>
<th></th>
<th>General surgery patients (n=130)</th>
<th></th>
<th>Gynaecological patients (n=50)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day 1</td>
<td>Day 7</td>
<td>Day 14</td>
<td>p-value</td>
<td>Day 1</td>
<td>Day 7</td>
</tr>
<tr>
<td>1. Alertness</td>
<td>6.4 (2.4)</td>
<td>7.3 (2.3)</td>
<td>7.8 (2.2)</td>
<td>&lt;0.001</td>
<td>6.2 (2.4)</td>
<td>7.5 (2.2)</td>
</tr>
<tr>
<td>2. Pain</td>
<td>5.6 (2.2) A, B</td>
<td>6.8 (2.3) A, B</td>
<td>7.3 (2.3) A, B</td>
<td>&lt;0.001</td>
<td>6.2 (2.2)</td>
<td>7.4 (2.2) C</td>
</tr>
<tr>
<td>3. Tiredness</td>
<td>5.9 (2.1)</td>
<td>7.1 (2.1)</td>
<td>7.3 (2.1)</td>
<td>&lt;0.001</td>
<td>5.9 (2.1)</td>
<td>6.8 (2.2)</td>
</tr>
<tr>
<td>4. Usual activity</td>
<td>3.9 (2.3) A</td>
<td>5.7 (2.6) A, B</td>
<td>6.8 (2.4) A, B</td>
<td>&lt;0.001</td>
<td>4.6 (2.5)</td>
<td>7.0 (2.5)</td>
</tr>
<tr>
<td>5. Daytime nap</td>
<td>5.9 (2.7)</td>
<td>7.3 (2.6)</td>
<td>8.2 (2.4)</td>
<td>&lt;0.001</td>
<td>5.3 (2.6)</td>
<td>7.2 (2.6)</td>
</tr>
<tr>
<td>6. Mobility</td>
<td>3.5 (2.3) A, B</td>
<td>5.5 (2.5) A, B</td>
<td>6.5 (2.4) A, B</td>
<td>&lt;0.001</td>
<td>4.2 (2.5) C</td>
<td>6.5 (2.5)</td>
</tr>
<tr>
<td>7. Stay at home</td>
<td>6.0 (2.8)</td>
<td>7.9 (2.3)</td>
<td>8.6 (2.0)</td>
<td>&lt;0.001</td>
<td>5.6 (2.9)</td>
<td>8.1 (2.3)</td>
</tr>
<tr>
<td>8. Physical exercise</td>
<td>6.0 (2.5)</td>
<td>6.6 (2.3)</td>
<td>7.4 (2.4)</td>
<td>&lt;0.001</td>
<td>5.6 (2.4)</td>
<td>7.2 (2.4)</td>
</tr>
<tr>
<td>9. Expectations</td>
<td>7.3 (2.2)</td>
<td>7.3 (2.5)</td>
<td>7.6 (2.3) A</td>
<td>0.023</td>
<td>7.2 (2.5)</td>
<td>7.1 (2.5) C</td>
</tr>
<tr>
<td>10. Recovery</td>
<td>6.0 (2.6)</td>
<td>6.9 (2.4)</td>
<td>7.7 (2.0)</td>
<td>&lt;0.001</td>
<td>5.8 (2.5) C</td>
<td>7.2 (2.4)</td>
</tr>
<tr>
<td>11. Normal life</td>
<td>4.5 (2.8) A, B</td>
<td>5.6 (2.9) A, B</td>
<td>6.8 (2.9) A, B</td>
<td>&lt;0.001</td>
<td>4.9 (2.7)</td>
<td>6.8 (3.0)</td>
</tr>
<tr>
<td>12. Frame of mind</td>
<td>7.4 (2.7)</td>
<td>8.0 (2.6)</td>
<td>8.4 (2.6)</td>
<td>&lt;0.001</td>
<td>7.6 (2.6)</td>
<td>8.2 (2.5)</td>
</tr>
</tbody>
</table>

*Sample sizes varied slightly
Significant Bonferroni posthoc tests at comparisons between groups per postoperative day represented by: ^ = orthopaedic – gynaecological patients; B = orthopaedic – general surgery patients; C = gynaecological – general surgery patients.
In general, postoperative recovery on Day 7 was related to patients’ HRQoL 30 days following their surgical procedure. Orthopaedic patients experienced significantly lower HRQoL before and 30 days following surgery compared with the general surgery and gynaecological patients, but all groups increased in HRQoL over the course of a month. Although there was an increase in HRQoL for the orthopaedic patients, they did not reach the same levels as either of the other groups did (III). Recovery was tiring, and patients wanted emotional support from their family in addition to the necessary practical support. The practical support consisted mostly of ordinary home tasks and wound management, and the emotional support focused on emboldening the patient. Encouragement was also received from external sources, mainly the physio- or occupational therapist (IV).

During return to ordinary life, positive emotions were also present. Patients expressed gratitude at having completed a long-awaited procedure and at the possibility to restore their energy during their sick leave (IV).

**Day surgery in a chain of care**

The perioperative continuity of patient care was of importance for patients’ postoperative recovery. Being a patient at the day surgery unit was perceived as being part of an effective organization. This experience contained two distinct qualitatively different perceptions: on the one hand it was negative, as it caused emotions of not being seen as the person they were but rather as simply an object on the conveyor belt; on the other hand, it was positive as the staff seemed very close-knitted within their teams and everyone knew what to do, which sent signals of competence and security to the patient. At discharge the close attention to the patient was reduced, and patients felt that the effective organization caused the staff to be in a hurry and to not sufficiently consider patients’ individual recovery needs (IV). Regarding the criterion for home readiness, some patients (n=32) were discharged without this criterion having been fulfilled, i.e. scoring < 18 on the PARSAP scale. Pain and voiding inability, were to the same extent (80%), the most common reasons for this scoring (III). Patients’ perceptions varied about the information they received regarding their recovery. Some lacked information or did not remember its content due to residual effects of the anaesthesia, and information regarding normal healing and recovery was desired. Likewise, patients wanted improved and differently delivered postoperative information, presuming that
this would increase their emotional well-being and safety at home (IV). When the surgical procedure had been completed, the role as the most central person ceased and patients perceived that they were left alone to manage self-care and the responsibility for the recovery process and surgery outcome, and desired a more tailored perioperative clinical pathway (IV).
DISCUSSION

The main focus in this thesis was to describe patient’s perspectives on postoperative recovery after leaving the surgery unit. Although the majority of patients were recovered within two weeks regarding measurement scores, the results showed that recovery following a day surgical procedure was complex to manage and in some cases demanding.

Assessment of recovery

From the perspective of the psychometric analyses (I), the unanimous results with the original instrument [46] and previous international studies [122, 125], the S-PSR scale showed promising properties of being a valid and reliable questionnaire for the assessment and evaluation of postoperative recovery among Swedish day surgical patients. However, further evaluation is needed regarding, for instance, redundancy of items (Cronbach’s alpha 0.90) as well as floor and ceiling effects, which run the risk of affecting content validity [143]. Valid and reliable questionnaires for assessing postoperative recovery are desired [12], but the areas to include in such questionnaires are debated. In this study, a general assessment of recovery was acquired with the questionnaires that were used. General postoperative questionnaires like the S-PSR and the QoR-23 scales have grown in popularity as outcome measures [122]. There are advantages and disadvantages associated with a general perspective. Using a short general questionnaire quickly indicates a patient’s overall well-being and may also offer some focus on troublesome issues (e.g. the pain item). However, in a specific population a general questionnaire might be too diffuse, thus calling for more focused and directed items. Despite the advantages of using questionnaires, patients mean different things by recovery [156], which is not easily captured in a questionnaire. Hence, communication with patients for follow-ups should not be forgotten in order to obtain more in-depth experiences. For instance, the interviews conducted in Paper IV elucidated the importance of talking with patients to understand the meaning of recovery. According to Royse et al.’s [74] definition of recovery (recovery scores equal to or higher than those before surgery), the majority of patients were recovered within the first two post-surgical weeks (II, III). The S-PSR contains only one domain, but if a questionnaire consists of more than
Discussion

one domain a definition like Royse’s ought to be applied to each domain to obtain as many nuances in recovery as possible.

Besides biological recovery, emotional postoperative consequences appeared (II, IV). Desires for comfort and reassuring contact emerged, and the need to be cared for at home cannot be disregarded, even if the medical intervention has been successful. Psychological factors may have an impact on postoperative recovery [157, 158] but are rarely investigated following day surgery [159, 160], which constitutes a gap in the knowledge that needs to be filled. Minor parts of the S-PSR and QoR-23 questionnaires include items regarding emotional recovery which could be extracted for analysis from the overall recovery assessment.

The importance of self-care

The results showed that the included patients had difficulties with self-care from the perspective of resumption of normal life (II, III, IV) and management of recovery (IV). The core of self-care is the performance of routine daily behaviours and making healthy decisions based on the patient’s current status [89] aiming to promote or maintain health [161, 162]. Symptom recognition, knowledge and skills in self-care performance, as well as confidence in the situation, are essential in successfully managing self-care [162]. These aspects of self-care are also applicable in postoperative recovery following day surgery but in contrast to chronic illnesses a self-care deficit following day surgery is temporary. To attain a positive outcome of postoperative recovery, it is beneficial for patients to have an early awareness regarding being well prepared for expected self-care activities. For the current patients, self-care referred to the prerequisites of normal life, i.e. everyday issues such as personal hygiene, shopping, meal preparation and food intake. These routine behaviours were stated as being quite problematic. Further, self-care comprised wound care, postoperative pain and level of physical activity related to the tissue trauma. Day surgery research lacks an explicit description of the self-care concept. However, as observed in this thesis, self-care is often reported implicitly [38, 45, 50, 53] and needs to be further elucidated.
Discussion

**Symptom management**

Few, but indeed some, patients were discharged with moderate to severe postoperative pain (III), which may have put an extra burden on the patient at home. Pain differed between the surgical groups (II, III), was reported in the interviews (IV) and was of concern to many of the included patients, and sufficient analgesia was thereby an unsatisfied need. Management of pain is an important quality indicator in health care environments [163]. Patients’ decisions about analgesics and pain management are largely influenced by preconceptions, attitudes and previous experiences [164, 165]. To attain pain relief as a quality criterion, interventions are needed to overcome some of the erroneous beliefs held by day surgery patients. Reigning beliefs may also be based on individual reasons for enduring pain. The provision of pain management information with enclosed analgesic packages at discharge is suggested to be insufficient. A revelation of the patient’s beliefs should enable health care providers to meet his/her needs regarding pain management [165]. PONV and tiredness are other common symptoms reported following day surgery [59, 67], but did not appear in these studies. Patients having shoulder surgery scored equally on the “alert item” during the first two post-surgical weeks (II), and no difference between surgical groups existed (Table 6). The QoR-23 includes PONV as an item. The evaluation of PONV might be concealed in the dimension of physical comfort when the QoR-23 is used.

**Attention to special groups of patients**

Orthopaedic patients were found to have a more extended recovery period compared to general surgery and gynaecological patients (III), which is in concordance with other studies [60, 166, 167]. Patients’ recovery is individual according to their resources and needs, as well as type of surgery [73]. Due to its nature, orthopaedic surgery often involves surgery in bones and joints [168] with an expected protracted time for biological recovery [60]. Pain [56, 164, 167, 168], often impaired mobility [94, 168, 169] and a necessary period of sick-leave and rehabilitation [170] are therefore common following an orthopaedic day surgical procedure. Moreover, patients in this thesis who had had shoulder surgery had lower levels of recovery compared to other orthopaedic patients (II). In our study orthopaedic patients reported impaired HRQoL following day surgery (III), and recovery on postoperative Day 7 was found to be associated with patients’ HRQoL one month following surgery (III).
Patients’ HRQoL has gained increased interest as an outcome measure in clinical care, research [101] and peoples’ management of health [171]. In day surgery, research on patients’ HRQoL is not very common [94, 172]. However, patients’ mobility postoperatively has been found to be advantageous in HRQoL in day surgery patients [94, 172]. In the present study patients reported impaired mobility (II, III), which might have contributed to the lower HRQoL (III). Mobility is only one aspect of the multifaceted state of recovery, and further studies on HRQoL in day surgery patients are needed.

The patient’s age was negatively associated with recovery two weeks after surgery (II). In the literature, the importance of day surgery patient’s age is an issue of debate [5, 70, 116, 173-175]. It may not only be the chronological age that is the key factor for recovery; other individual medical and social factors need to be taken into account in determining older patients’ suitability for day surgery [174, 176]. The day surgery concept is nevertheless beneficial to older patients, due to its minimal disruption of normal habits and routines [41], provided that they are supported at home.

The emotional status of the patients was also associated with recovery (II). Items included for assessment of emotional state were related to patients’ feeling of well-being and control, and comfort with the situation, mood and sleep. Factors affecting the patient’s emotional state may be related to insufficient preparation for self-care at home and/or worries about the clinical care [48], or sleep being affected by pain. Some factors affecting the patient’s emotional status may be strengthened through increased knowledge about and understanding of the recovery process. Due to time restrictions on the day of surgery it may be a challenge to deliver adequate patient education [177, 178], and there is a need to evaluate when information is best delivered [179].

The continuity of patient care

Patients’ preoperative preparation varied and included reading up on the surgical procedure, completing various tasks and emboldening themselves. Besides the judgment of a patient’s appropriateness for day surgery by the surgeon, a more comprehensive preoperative assessment was seldom undertaken in the health care regime. Preoperative assessment provides the patient with an opportunity to discuss the planned procedure and the health care professional with an opportunity to assess the patient’s fitness for surgery
Discussion

[180]. The assessment includes not only medical issues [181] but also patient education [182], psychological preparation [32, 183] and identification of the patient’s expectations on postoperative support [50]. An interdisciplinary team is crucial in high qualitative preoperative care [174]. Nurses are valued at the preoperative appointment [184], and in cooperation with an anaesthesiologist run high-quality preoperative appointment clinics in the UK [180-182]. A thorough preoperative preparation may facilitate the transfer from the decision about surgery to admittance. Waiting one’s turn on the operating list on the day of surgery can be worrying and disturbing [42, 185], and may provoke feelings of not being seen and of being abandoned [34]. A core dimension in nursing is communication [35], and verbal and non-verbal communication might be a strategy for alleviating patients’ anxiety in the waiting area [186]. However, finding a cost-effective frame to prepare patients for surgery is a challenge [174].

To strengthen patients’ readiness to act as autonomous performers of care at home (IV) the discharge situation should be optimized to include a mutual assessment of whether the patient is ready for discharge [187]. At this moment identified needs should be addressed [188-190], sufficient knowledge for the management of self-care confirmed [191] and, if necessary, contacts established with community care and/or the community nurse [49, 50]. A tailored discharge plan reduces the risk of sending patients home unprepared for the home situation [188] and supports patients in making adequate health decisions during the recovery period [192]. Relevant decisions regarding recovery and patient satisfaction are supported if discharge plans are distinctly related to specific procedures [193]. Many patients are drowsy following the anaesthesia, and may have difficulty remembering information delivered at discharge [194]. The discharge planning ought to start at the preoperative appointment, when the patient’s mind is clear [33]. The professionals at the surgery unit may further support patients’ management of recovery at home through telephone follow-ups, preferably on the first or second postoperative day [195, 196] to meet initial needs, for instance, pain relief. However, recovery continues and support may be needed later during the process as well. Postoperative follow-up calls on Days 1-2 are conducted at approximately 40% day surgery units in Sweden [28]. To ensure a satisfying surgical experience, a more pronounced patient-centred care at the day surgery unit is recommended [31, 32], possibly developed within a distinct nursing theoretical framework [36].
A model for comprehensive understanding of recovery

A person’s health behaviour during postoperative recovery and self-care depends on both individual and contextual systems and the interdependent relations between them. An ecological model considers the environmental and policy context as well as social and psychological influences and guides for broad approaches to health behaviour [197]. An ecological perspective might be useful in further understanding recovery since patients’ recovery and day surgery involve different levels of society. Management of recovery assumes that the surgery unit and the patient interact and that resources from different levels, from the government to the individual, are utilised. From an ecological perspective, health behaviour may include resources such as: individualized assessment, collaborative goal setting, skill enhancement, follow-up and support, access to resources in daily life and continuity of patient care [198, 199]. The role to be the responsible part for recovery and surgical outcome might be perceived as a burden to the patient and his/her family. Lack of knowledge about postoperative care and of understanding of the natural recovery process, in connection to feelings of abandonment and distance to health professionals, may cause this experience (IV). In an ecological approach, an assumption is that people are dependent on and act based on the environmental context in which they are included, referring to both physical and sociocultural surroundings [198]. A well preoperatively prepared patient [180, 182], good interaction between the health professionals and the patient, and appropriate interventions at discharge [28, 188, 192, 195, 196] may prevent troubled feelings at home.

Salient features of an ecological model are the numerous levels of influence the health behaviour is affected by and dependent on: the intrapersonal level (biological and psychological), the interpersonal level (social, cultural) and the organizational, community, environmental and public policy levels. From an ecological health behaviour perspective, recovery is expected when people are motivated and sufficiently educated to make healthy choices, when social and cultural norms permit these choices and when the environment and policy facilitate people’s possibilities to manage their recovery [199]. To succeed, the person integrates his/her own skills with support from the social environment and resources delivered from the community and the government [198]. Deficits in recovery and self-care, i.e. on the intrapersonal level (II, III, IV), may be prevented through an increased knowledge of postoperative care, received
through patient education programmes on an interpersonal level. Face-to-face information and booklets are common, but interactive websites [37, 200] are alternatives as well. Short education programmes, easy to incorporate into everyday clinical work, have also been shown to have a positive impact on recovery [201]. From a social perspective on health education and patient communication, patients’ health literacy has to be noted. Being health literate means that one holds such communication skills (listening and speaking) that decisions can be determined from the health information one receives. Multiple definitions of health literacy exists [202] stipulating an individual’s possibilities to obtain, process, understand and communicate the health-related information necessary to make informed health decisions. Low health literacy is a multifaceted problem including not only a lack of education and communication hindrances, but also non-targeted educational material to the patient as well as professional jargon that is difficult for patients to understand [203].

A participating and active patient is a necessary component to attain high quality of clinical outcomes with respect to reoperation or readmission, complications (e.g. pain, PONV, wound infection) and patient satisfaction [11, 204]. The patients in this thesis participated in an effective flow of care during their operation at the surgery unit, raising both positive and negative experiences (IV). Positive experiences were the focused care and the high level of cooperation among the staff in the operating room. Negative ones included the feeling of ‘time saving’ hanging in the air, which was especially clear when it came to postoperative care and home readiness. Society has taken a low-cost approach to modern health care, focusing on efficient production, and day surgery is no exception. However, the structural organization needs to be considered, as high patient turnover in day surgery may affect the quality performance [205].

An ecological model regarding postoperative recovery following day surgery can be illustrated through patient assessments regarding physiologic and emotional recovery, negotiated goals and sufficient education to manage recovery at home. Further, at discharge patients leave the surgery unit with a known level of support and follow-ups, and thereby attain high qualitative recovery and patient satisfaction following day surgery (Figure 3).
The ecological model’s strength might be its broad approach using multiple levels of influence, resulting in various choices of interventions. Its weakness may be its lack of specificity about the most important influence [199]. The model can help us to see day surgery in a broader context, allocate resources and understand how support and follow-up can be organized from different levels. The goals of ecological models are to engage patients in their own care, attain high quality in established clinical outcomes, and enhance perceived health-related quality of life [199].

**Methodological considerations**

Different methods were used to obtain day surgery patients’ perspectives on postoperative recovery. Extensive methods were complemented with an
intensive method to increase the potential of a comprehensive understanding of postoperative recovery following day surgery.

**Design**

Combining extensive and intensive research methods may generate deeper insight into a phenomenon than either method used alone. Triangulation, a way to collect data in which evidence is sought from different sources and often using different methods [206], was applied in this thesis. Different study designs have been used. The research work started with a validation study of the S-PSR scale (I) to validate subsequent measurements carried out in the prospective and correlational studies (II, III), and was completed with an exploratory study (IV). To evaluate the clinical usefulness of a questionnaire applied in a non-original context there is a need to consider language factors, cultural issues [133] and psychometric properties [207, 208]. Correlational analyses are common in nursing research for studying relationships between variables [209]. However, correlational research does not reveal causal relationships due to its non-experimental nature [209, 210]. A prospective design may increase indications of evidence, with the understanding that the dependent variable proceeds in time [210]. An experimental study design is often not possible to conduct in nursing research because of the nature of the research topic, and in a best-case scenario other methods are more appropriate. To further reveal how postoperative recovery was manifested, an exploratory study with a phenomenographic approach was carried out. A phenomenographic approach seeks variations in how people conceive a phenomenon [147], a stance assumed to be valuable as different perspectives on postoperative recovery were sought.

**Sample**

To reduce selection bias, the participants were consecutively included based on explicit inclusion and exclusion criteria. Following study inclusion, a number of patients chose not to complete their study assignment: 12% (I), 23% (II), 24% (III) and 11% (IV). This might be due to an age-related factor, as younger patients were more inclined to leave the studies. One possible explanation could be that the younger patients had a more rapid recovery process and were more or less back at work and ordinary life, and therefore
did not deem it important to complete the study assignment. More general surgery patients declined study participation or missed being asked than those included. This could have had an effect on the results, both from the perspective on recovery related to the procedure but also in general, since included general surgery patients were proportionally more classified in ASA Class 2. In the paired analyses some patients did not fill out the questionnaire for one of the days of assessment, which resulted in slightly varying sample sizes in the analyses.

The sample size of participants in Papers I-III was not preceded by an a priori power calculation [146], which could be regarded as a study limitation. Instead, the sample size was calculated on sufficient participants for psychometric testing of the S-PSR (I) [142, 211, 212] and was later confirmed with a post hoc power analysis (III) [213]. In Paper IV the sample size is not uncommon as phenomenographic studies often have 20 to 30 participants [214], but it might be regarded as relatively small according to Thorne [215]. The sample size in research using intensive methods depends on the research question and presumed richness in data [139, 215]. The interviews provided rich and thick data (IV), and from this perspective the sample size may be regarded as sufficient.

Assessments

When this doctoral work was outlined, few questionnaires for post-discharge recovery were available. The PSR scale was developed and validated for day surgery patients, measuring patients’ recovery from an overall perspective following discharge [46]. This was deemed appropriate for our focus on recovery at home. Instruments developed in other countries need to be accurately translated and valued regarding cultural qualification in the target population [133]. The S-PSR scale seemed valid to use in a Swedish context following the translation/back-translation procedure, the assessment of semantic equivalence [216], and the noting of similarities in reliability and validity regarding psychometric properties between the original PSR scale and the S-PSR scale (I) [217]. Two items in the original questionnaire were excluded in the S-PSR scale, which may be a study limitation. However, the factor analysis supported the S-PSR scale’s validity [142]. A reliable questionnaire possesses a high degree of internal consistency, and common measurements of this property are inter-item correlations, item-total
correlations and Cronbach’s alpha coefficient [142, 143, 207, 208, 211], properties which were satisfactory on the S-PSR scale. Another aspect is the questionnaire’s stability over time [143]. Postoperative recovery is a dynamic process, including observations that are not possible to keep stable; thus test-retests are complicated. Consensus is lacking regarding what constitutes a responsive measure or how responsiveness should be quantified [144, 218]. The internal responsiveness analysis showed that the S-PSR scale had a high ability to detect changes in postoperative recovery during the two first postoperative weeks. However, this clinical change was not surprising since the recovery process after day surgery moves in a positive direction for most patients. An assessment of patients’ own judgements of what constitutes important changes in recovery would further strengthen the internal responsiveness [218]. The external responsiveness, assessments of S-PSR scores in relation to external criteria, became more accurate when initial S-PSR values were clustered in more homogenous groups [143, 144] with improved sensitivity and specificity. Measurements of internal and external responsiveness indicate that the S-PSR scale is a responsive questionnaire (I).

The results of the intensive study (IV) support the content validity of the S-PSR scale. However, the comprehension of patients’ self-care was divergent in the questionnaire and the interviews. Patients’ trouble with managing self-care at home was substantial (IV), but did not obviously emerge in previous papers (I-III). No item on the S-PSR explicitly elucidates self-care. Instead, one item concerns return to normal life, which may implicitly include self-care. Further, the item regarding personal care was excluded in the S-PSR following the psychometric testing. Managing personal care was stated to be a self-care deficit in Paper IV, and results from Papers I and IV are contradictory regarding this issue. Self-care comprises more than personal care, but a lack of items regarding self-care following surgery may be regarded as a weakness of the S-PSR. It is possible that self-care following day surgery is a dimension of recovery which ought to be measured separately.

The QoR-40 [105] was seen as a complement to the S-PSR scale due to its dimensional construction including, for instance, specific symptoms. The QoR-40 was not developed for day surgical patients only, and has been modified for this group with satisfying psychometric results [104]. Today the QoR-40 is increasingly used in the evaluation of postoperative recovery, but to evaluate its best practice in a day surgery context, further application would be beneficial. An individual’s health, including both physical and emotional
components, might be used as an overall perspective on recovery [125]. HRQoL is an important outcome measure [219], even following day surgery [94], and the EQ-5D with its focus on patients’ physical and mental health [132] was deemed appropriate. The choice of instrument was based on content but also on patients’ response burden in total [220]. The EQ-5D is commonly used in observational studies with satisfying validity and reliability [136, 137], but psychometric criticism is also conveyed [221]. The PARSAP was used for the assessment of home readiness [131]. The PARSAP is widely used in clinics, but publications of applications are notably rare [222]. The PARSAP contains a criterion of voiding before discharge but relevance of this in low-risk patients is debated in the literature [223, 224], as is the criterion of fluid intake before home discharge [223].

**Interviews**

As the interview most often constitutes the working tool for collecting data in a phenomenographic study, its quality is of great importance. This can be guarded through different taken arrangements [214]. The semi-structured format was looked over several times in collaboration with experienced phenomenographic researchers before the first pilot interview was conducted. Three pilot interviews were carried out and evaluated in order to test the interview format and the audio-recording technique, as well as to prepare the interviewer for the interview situation. To control for participants focusing on the same phenomenon, i.e. postoperative recovery, they were all introduced to the interview in the same way: following an opening trivial conversation, the same question began the interview. The interviewer also concealed her own relations to the phenomenon and was conscious not to make any comments, positive or negative, which might have changed the direction of the interview or, at worst, affected the participant’s perception regarding postoperative recovery. To obtain the most possible information in the transcripts, the interviews were transcribed in a broad format including pauses, expressed emotions and listener support [225]. To facilitate elaborations on the phenomenon, all interviews were conducted in places where the participants felt safe and relaxed [226].
Data analysis

Several statistical analyses were performed. The methods were chosen in view of sample size, data level and distribution of data, and based on what is possible to do with the data [140]. It can be discussed whether or not scores from the self-rating scales should be treated as continuous. When possible, non-parametric methods have been used (e.g. the Kruskal-Wallis test, Paper II), but parametric methods have also been used (e.g. multiple linear regression analysis, Papers II, III). Further, data are mostly presented as means and standard deviations, in line with the questionnaires’ constructors [46, 105]. The sample size may in total be regarded as sufficient in relation to the statistics conducted [140, 142, 146]. However, on group level the sample size varied. Although few in number, the recovery experienced by patients having shoulder surgery (n=19) was unambiguously significant (II). Further, the group of women who underwent gynaecological surgery was relatively small (n=67) compared with the others (orthopaedic (n=358) and general surgery (n=182) patients), which may have had a statistical impact on results (III). The type II error chiefly occurs due to insufficient sample size. The opposite, the type I error, was guarded against using the Bonferroni correction in multiple comparisons [146]. The level of significance was set to p < 0.05, meaning the probability of having observed the data is less than 5% if the null hypothesis is true.

To be faithful to the phenomenographic analysis, the researcher strove for openness and awareness of conveyed perceptions, and to keep her own relations to the phenomenon in the background [214]. Before the outcome space had been established, the steps in the analysis went back and forth [149] and the analysis was continuously peer reviewed by the research team [148].

Generalization

The patients included in the studies had experiences of postoperative recovery following a wide range of surgical procedures (I-III), but were all common in day surgery according to Toftgaard [1] and may thereby reflect common experiences of recovery in a day surgery population. The proportion of orthopaedic patients was the largest, which also may reflect the population on account of the high frequency of orthopaedic day surgeries in Sweden [227] and many other countries [228]. Data were consecutively collected from
different data collection sites, and the genders were equally represented. The attrition of younger men may have had an impact on the results. The attrition is not extensive, and might depend on a more rapid recovery. However, the attrition should be kept in mind when interpreting the results. Several years have passed since the data were collected in Sample 1, and some types of surgery have supervened in the common day surgery arsenal, for instance some prostate and urine bladder surgery. There are no other obvious differences in types of surgery in Samples 1 and 2, and there are no substantial differences in the patients’ care.

**Trustworthiness**

In a phenomenographic study, credibility deals with how well the respondents’ perceptions of a phenomenon correspond with the outcome space [148, 214]. In Paper IV, credibility was confirmed through the researcher’s familiarity with the day surgery context and the fact that data were collected from two day surgery units, ensuring a pool of respondents for strategic sampling. Further, the respondent’s honesty during the interview was taken into account through confirmation of the interviewer’s independent status in relation to the surgery unit and by using a rephrasing and probing question technique. Peer review of the findings was conducted all the way from the most premature analysis to the established categories [229]. Empirical data, illustrated in excerpts from the interviews, were presented in relation to the descriptive categories (IV) [151]. In intensive studies the transferability of findings from one context to another requires a detailed audit trail of all steps of the research process, including inclusion of participants, data collection and analysis as well as the presentation of any existing deviations from original methodological plans [150, 152]. The transferability of intensive studies depends not only on a thorough description but also on the reader deciding whether findings apply in a context known to them [230]. In Paper IV the sample is suggested to be representative of day surgery patients, and some transferability to another context may be possible.

**Clinical implications**

To prevent feelings of abandonment upon discharge, well-developed perioperative continuous patient care is advantageous. The weak links are
Discussion

patients’ preoperative preparation, but above all the discharge situation including the patient’s readiness for the responsibility for self-care at home. To strengthen these areas, a preoperative medical and nursing assessment is recommended. There should be adequate time for discharge communication and a mandatory and attentive evaluation of recovery, preferably using a validated questionnaire. The evaluation ought to be repeated if specific issues are identified. A postoperative contact may offer the patients security and confirmation.

Orthopaedic patients are a particularly vulnerable group in day surgery, and often experience unexpected self-care deficits. The recovery trajectory differs within this group, which ought to be considered in the planning of patient education programmes. Shoulder patients in particular need to know in advance what to expect regarding the recovery process.

Postoperative pain is still a problem. Patients undergoing procedures that are known to be painful might benefit from a deeper preoperative exploration of preconceptions, former experiences and attitudes toward pain as a complement to the set of medical interventions.

Unexpected emotions may emerge postoperatively, which patients and their families ought to be aware of. A caring and promoting approach may strengthen patients’ emotional well-being.

Day surgery patients enter the day surgical arena with individual needs and resources. A shortage of knowledge in postoperative care emerged. This has consequences on a patient’s confidence and prerequisites for self-care management.

No gold standard of recovery exists. The assessment of postoperative recovery using a questionnaire at different times in the recovery process can identify an average recovery score for a particular procedure. If a patient does not reach this average score, he/she can be followed more closely by the nurse or referred elsewhere in the health care organization. The assessments could also offer the day surgery unit important information regarding the development of care programmes for recovery at home and the evaluation of the surgery unit’s quality work.
Future research

In the future, many patients will have their surgical procedures performed in a day surgery context. To support the individual patient’s recovery and self-care, monitoring will be needed. The development and testing of questionnaires therefore need to continue, in order to increase the knowledge about recovery in the clinical and research society. It seems important to investigate day surgery patients’ self-care needs. Different strategies may be possible for this: the development of specific instruments for the assessment of self-care or the incorporation of self-care assessment into existing questionnaires. Further, it seems that the continuous patient care ought to be studied to evaluate patients’ readiness for recovery at home. Due to an expected growing number of day surgery procedures, it is necessary to identify particularly vulnerable groups. There is a gap in knowledge regarding day surgery patients’ emotional well-being and HRQoL, and it would be of interest to investigate whether an improved evaluation of patients would have an impact on these areas.
CONCLUSIONS

- The patients are well cared for at the surgery unit, but when discharged are burdened by the transfer of the responsibility for recovery and surgical outcome to themselves. This is a weak link in postoperative recovery following day surgery.

- The S-PSR scale seems promising for use in the assessment of overall post-discharge recovery. Further refinement of items might be considered in the future.

- Postoperative recovery varies among patients, but orthopaedic patients in general and patients having shoulder surgery in particular seem to have a greater need of support in postoperative care than other common day surgical patients.

- Patients’ HRQoL one month following surgery was associated with experienced recovery one week after the procedure.

- Patients’ emotional well-being following day surgery seem to be an insufficiently studied dimension of recovery.
SAMMANFATTNING

Återhämtning efter dagkirurgisk operation

I Sverige genomgår årligen cirka 750 000 personer en dagkirurgisk operation och antalet förväntas öka. Att bli dagkirurgiskt opererad innebär operation och utskrivning under en och samma dag. Patientens återhämtning efter operationen sker i huvudsak i det egna hemmet. Det övergripande syftet med denna avhandling var att utifrån ett patientperspektiv studera återhämtningen efter en dagkirurgisk operation.

Ett frågeformulär för bedömning av återhämtning utvecklades och testades i svenska förhållanden. Återhämtningen studerades genom att 607 dagkirurgiska patienter besvarade frågeformulär dag 1, 7 och 14 efter genomförd ortopedisk, allmänkirurgisk eller gynekologisk operation. Patienterna skattade också sin livskvalitet före och en månad efter genomförda operationer. för att fördjupa kunskapen om patienters återhämtning intervjuades ytterligare 31 patienter som genomgick dagkirurgisk operation 2-4 veckor efter operationstillfället.

Patienterna var nöjda med dagkirurgi som vårdform fram till utskrivningen från operationsavdelningen. De uppfattade att vården var fokuserad på dem och att de befann sig i ett effektivt vårdflöde. Den svaga länken i vårdkedjan var den efterföljande vården i hemmet. En del patienter överraskades av operationens inverkan på det dagliga livet och det i många fall stora behov av stöd som uppstod. Många blev uppmärksammade också på den egna rollen i det dagkirurgiska vårdflödet. Återhämtningsprocessen varierade och påverkades av patientens ålder, typ av operation, upplevd hälsa och känslomässigt välbefinnande första dagen efter operationen. Resultaten visade att ortopediska patienter, i synnerhet patienter opererade i axeln, upplevde längre återhämtningstid, mer smärtan och sämre livskvalitet under återhämtningens två första veckor jämfört med patienter som genomgått allmänkirurgiska eller gynekologiska dagkirurgiska operationer. Generellt visade också resultaten att grad av återhämtning en vecka efter genomförda operation påverkade upplevd livskvalitet en månad efter operationen.
Sammanfattning

För att hantera situationen hemma på ett tryggt och säkert sätt är det väsentligt att patienter är förberedda för utskrivning till hemmet samt har kunskap och förståelse för återhämtningen. Patienten bör inför operationen förberedas på hur efterförloppet kan förväntas vara, t.ex. vad gäller fysisk aktivitet, sårvård, smärta och hur närstående kan underlätta situationen hemma. Ökad kunskap kan bidra till att förebygga komplikationer i hemmet och vidareutveckla vårdens rutiner med avseende på patienternas egenvård. Detta kan ge ökad vårdkvalitet och ökad säkerhet och trygghet för patienterna.
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The items in the original PSR scale and in the S-PSR scale after the translation process and after evaluation of the items’ relevance to Swedish day surgery patients.

<table>
<thead>
<tr>
<th>The original PSR scale</th>
<th>The S-PSR scale</th>
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<tbody>
<tr>
<td>15 items</td>
<td>14 items</td>
</tr>
<tr>
<td>Right now I feel:</td>
<td>Just nu känner jag mig:</td>
</tr>
<tr>
<td>1. drowsy vs. alert</td>
<td>1. slö vs. pigg</td>
</tr>
<tr>
<td>2. worst possible pain vs. free of pain</td>
<td>2. mycket smärtpåverkad vs. smärtfri</td>
</tr>
<tr>
<td>3. very tired vs. full of energy</td>
<td>3. mycket trött vs. full av energi</td>
</tr>
<tr>
<td>4. not able to do much activity vs. able to do usual activities</td>
<td>4. inte alls kapabel att göra det som jag brukar göra vs. helt kapabel att göra det som jag brukar göra</td>
</tr>
<tr>
<td>5. a need for a daytime nap vs. no need for a daytime nap</td>
<td>5. ha ett stort behov av vila på dagtid vs. inte alls i behov av vila på dagtid</td>
</tr>
<tr>
<td>6. it’s difficult to move around vs. able to move around like normal</td>
<td>6. inte alls lika rörlig som vanligt vs. precis lika rörlig som vanligt</td>
</tr>
<tr>
<td>7. the need to stay at home vs. ready to get out of the house and do something</td>
<td>7. så dålig att jag bara vill vara hemma vs. bra och kan vistas utanför hemmet</td>
</tr>
<tr>
<td>8. my bowels are in poor condition vs. no problem with diarrhoea, gas, or constipation</td>
<td>8. ha stora besvär av gaser, diarré eller förstoppning vs. inte alls ha stora besvär av gaser, diarré eller förstoppning</td>
</tr>
<tr>
<td>9. unable to do much exercise vs. like doing more exercise</td>
<td>9. helt utan kraft/ork att fysiskt anstränga mig vs. ha kraft/ork att fysiskt anstränga mig</td>
</tr>
<tr>
<td>10. a need for help in caring for myself vs. able to handle all my own personal care</td>
<td>10. ha stort behov av hjälp med min personliga hygien vs. inte alls ha behov av hjälp med min personliga hygien</td>
</tr>
<tr>
<td>11. worse than I thought I would vs. better than I thought I would</td>
<td>11. sämre än jag trodde att jag skulle göra vs. bättre än jag trodde att jag skulle göra</td>
</tr>
<tr>
<td>12. need more recovery time vs. recovered from surgery</td>
<td>12. inte alls återhämtad efter operationen vs. helt återhämtad från operationen</td>
</tr>
<tr>
<td>13. very different from my normal self vs. almost back to my normal self</td>
<td>13. inte alls tillbaka till min vanliga livsföring vs. helt tillbaka till min vanliga livsföring</td>
</tr>
<tr>
<td>14. it’s going to take a long time to get well vs. it’s only going to take 1 or 2 more days to get well</td>
<td>14. inte alls tillbaka till mitt vanliga själsliga tillstånd vs. helt tillbaka till mitt vanliga själsliga tillstånd</td>
</tr>
<tr>
<td>15. unable to work at all vs. ready to get back to work</td>
<td>-</td>
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</tbody>
</table>
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