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Home recovery following day surgery

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ABSTRACT

Aim: To evaluate the experiences of patients and caregivers in the early transition phase of recovery at home following day surgery.
Background: A global increase in elective day surgery has taken place over the last two decades. This has arisen from enhanced surgical and anaesthetic techniques, healthcare cost containment and patient preference. Minimal hospital stay ensures meticulously managed medical practices dominate leaving nursing-based knowledge limited room for expression. However, patients may require much help once discharged hence providing nurse-led involvement much potential.
Data sources: Five databases from 2000-2011 were searched including MEDLINE, CINAHL, British Nursing Index, PsychINFO and Cochrane Database of Systematic Reviews. Reference and citation tracking was performed on included publications.
Review methods: One reviewer screened titles and abstracts for possible inclusion over a 10 month period. Data synthesis involved thematic analysis informed by the findings of the included literature.
Results: Twenty-five studies were included in the review. Common themes were pain, information provision and anxiety. Pain management was a concern exacerbated by reduced information. Much information had been forgotten due to latent effects of anaesthesia, limited opportunity on the day of surgery or information booklets lacking a problem-solving approach. Anxiety was associated with inadequate information, unexpected events or by carers striving to supervise a successful recovery.
Conclusions: Recovery at home with limited access to healthcare professionals presented a number of challenges mostly relating to inadequate knowledge/ information. Future research should explore continued nurse/ patient contact, nurse-led support services and patient and carer information booklet content.

Key words: Literature review, day surgery, ambulatory surgery, recovery, caregivers, carers, nurses and nursing.

INTRODUCTION

A global transformation has taken place in elective surgery over the last 20 years as a result of innovations in minimally invasive surgical techniques (1).This trend will continue as the level and diversity of surgical procedures able to be undertaken on a day-case basis grows (2).The reasons for such reforms concern advances in laparoscopic surgical techniques (3), improved anaesthetic practices (4), increase use of short acting/regional anaesthesia (5), healthcare cost containment (6,7) and patient preference (8).

Nursing has been central to such change managing day surgery units (9), conducting nurse-led pre-assessment clinics (10), undertaking nurse specialists roles (11) and implementing enhanced recovery practices (12). However, meticulous surgical/anaesthetic practices and limited patient stay have restricted the opportunity for the wider expression of nursing-based knowledge (13,14). Nursing has adapted to these developments with little advancement of nursing-based knowledge aside from practices derived from descriptive studies or expert opinion. For example, Bothe & Donoghue (15) describe the organisation of care following the introduction of two new surgical procedures, Marley & Swanson (16) nursing management of post- operative complications and Roberts & Fenech (17) implementation of an enhanced recovery protocol. As a result nursing knowledge may need to broaden to investigate the complete patient experience of surgery, especially as many challenges arise for patient and carer following discharge (13). Flanagan (18) states "Despite much health care being shifted from in-patients to out-patient settings,

with much of the actual care being conducted in the home, nurses have not shifted their focus of care from the hospital setting." (p. 50).

Criteria for acceptance for day surgery covers three domains i) medical (fitness for anaesthesia), ii) surgical (operation possible in day surgery) and ii) social (adult escort, adult support for 24 hours and suitable domestic circumstances) (19). If all criteria are met, surgery can be undertaken and the patient duly discharged. Consequently, minimal surgical stay obliges nurses to ensure patients adhere to a relatively inflexible schedule of admission, treatment and discharged (20,21). Information is offered during the whole process to assist home recovery but largely the day surgery unit has no further contact with patients. However, patients have not fully regained all pre-operative functions at discharge (22), can experience problems once discharged (23), recovery can take longer than expected (24), numerous unforeseen events can arise (25,26) and contact the General Practitioner or District Nurses can be minimal (27).

The brief time for nurse/patient interaction inherent in all stages of the patient's journey has ensured information provision (28) and its timely delivery (29) are central to the nurses' role (30). However, information provision for home recovery is not always adequate (31) and post-operative telephone contact in the United Kingdom sporadic (8). Following a study by Moran et al (32) concerning telephone support, the most valued aspects for patients were reassurance, information provision and the opportunity to ask questions. All patients considered such support to be the responsibility of the day surgery unit. Carer responsibility and arrangements before and after surgery can be extensive (33) and as more complex surgery is undertaken such responsibility may increase (34). For example, a recent thoracic day surgery study required carers to manage patients discharged with an ambulatory chest drain (Heimlich valve which removes air from a pneumothorax) *in situ* for 2 weeks (35). Amid such innovation, the profession may need to broaden its focus on surgical recovery, establish a more co-ordinated hospital/ community ethos (18) and consider the wider psycho-social implications (36).

REVIEW

Aim

This literature review seeks to describe, evaluate and summarise the pertinent published material (37,38) and content guided by the PRISMA Statement (39). A number of literature reviews have been undertaken previously on home recovery following day surgery but these have been medically orientated (post-operative morbidity focus and subsequent revision of treatment) (40,41), focussed purely on nursing management of pain (42) or care during hospitalisation (43-45). Rosén et al (46) has more recently undertaken a review largely concerned with post-operative symptom management and states "As more surgery is undertaken in day surgery, it is necessary to map out symptoms, experiences and management, at home, in a much more detailed manner that recognises and addresses individual and social consequences." (p.16).The purpose of this review is to identify studies from the literature expressly focussing on recovery at home following day surgery with a view to uncovering the wider nursing support required. The aim is therefore to evaluate the experiences of patients and caregivers in the early transition phase of recovery at home following day surgery.

Search methods

Initial databases searched were MEDLINE, CINAHL, Cochrane Database of Systematic Reviews, British Nursing Index and PsychINFO between March - December 2011.The search terms used were day/ ambulatory surgery and recovery, day/ ambulatory surgery and caregiver$/ carer$ all with 'adults only'. Additional papers accessed from reference and citation tracking, British Association of Day Surgery website (www.daysurgeryuk.org) and International Journal of Ambulatory Surgery website (www.iaas-med.com). Analysis was undertaken by a single researcher over a 10 month period. Each citation was considered for possible inclusion viewing first the title, followed by the abstract where necessary.Those found to be unrelated were discarded. A total of 803 studies meeting the initial criteria were uncovered (569 in MEDLINE, 207 in CINAHL, 18 in Cochrane, 5 in British Nursing Index and 4 in PsychINFO) (Fig. 1).

Inclusion/ exclusion criteria

All articles included were written in English between 2000 – December 2011. To be included, the focus had to be wholly and solely on adult patients' experiences of recovery at home following day surgery and raise nurse-led support issues. Thereby, home recovery needed to be a sustained focus. However, studies focussing on return to work or contact with healthcare professionals were included as they contained informative aspects of the recovery process. Studies were excluded for several reasons. Many medical studies had a predominant morbidity focus associated with improvement in practice (47-49), rate of surgical recovery (50), in-patient surgery (51), management of medical treatment in day surgery (52) or assessment of hospital- based recovery (53). Studies with an ophthalmic (54), dental (55) or oncology focus (56) were excluded as these were regarded as areas perhaps requiring separate reviews because of the possible additional issues associated with such surgery. Mixed sample studies examining possible differences between day, 23 hour and in-patient surgery (24,57) were excluded as they were undertaken largely to examine the feasibility of converting in-patient surgery into day-case surgery. Studies concerning the development of validated tools to measure recovery were of relevance (58-63) although were excluded as their focus

was not specifically on recovery but on validating tools to assess recovery. Five studies were reported twice. Brattwell et al (64) and (65) were included as one reported recovery at 4 weeks, the other at 6 months. Dewar et al (66) and (67) are included as the second reporting had a differing focus. Mottram (68) and (69) are included as the second paper had a unique focus on the sociological impact of day surgery. Markovic et al (70) was reported twice as the first focused on quality of care and the second on pain management (71). Finally, Rosén et al (72) reported post-operative discomfort and Rosén et al (73) examined level of discomfort over a sustained period.

Search outcome

Twenty five studies are included in this review. Thirteen studies employed quantitative research methods and nine a qualitative approach. Three had an experimental design thus providing some comparative data (Table 1). Although three studies used an intervention in the design, Dewar et al (66) and (67) describe the same intervention in both papers. In Wasowicz-Kemps et al (74) the treatment group were provided with a post-operative exercise plan together with an accelerometer (device clipped to the trousers to measure and display distance walked).The control group received no post-operative exercise plan only the accelerometer.

After examining the abstracts, 692 studies were excluded for many reasons but mainly a lack of day surgery focus. Thus 111 full-text articles were considered for review. After retrieving and reading the full papers, a further 86 were excluded for a number of reasons but mainly a wider medical focus (Fig. 1). Finally, 25 articles were included and reviewed. The final number included 13 quantitative research studies, 9 qualitative research studies and 3 quasi-experimental research design studies. Analysis was undertaken by a single researcher.

Sample and setting

The setting for each study was patients who had undergone elective day surgery and discharged home. Seven studies

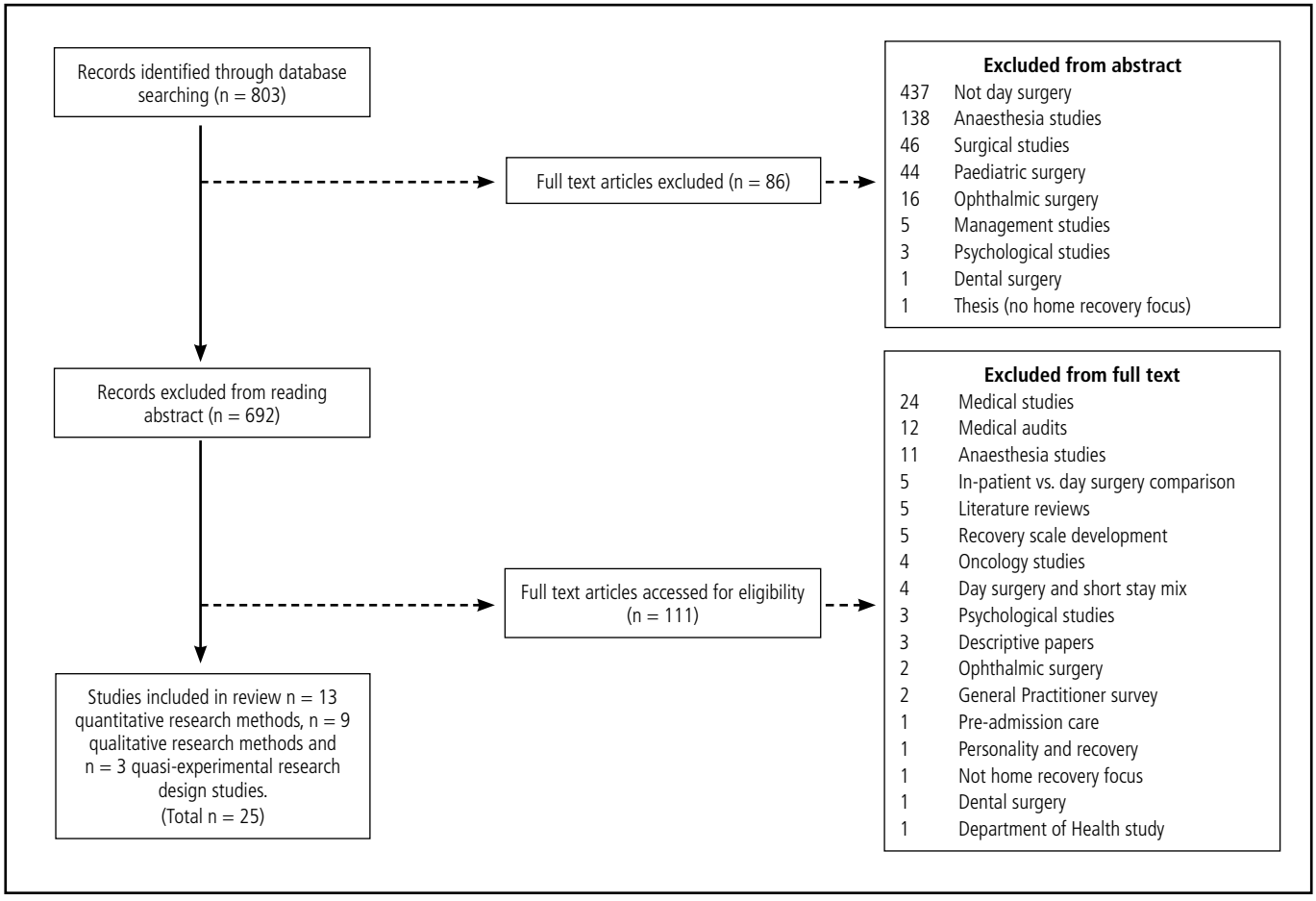

Fig. 1. Screening Process.

TABLA I

DAY SURGERY STUDIES EXAMINING PATIENTS' EXPERIENCES OF HOME RECOVERY (2000 – ECOVER) (continues overleaf)

	AUTHOR	PURPOSE	DESIGN/TIME FRAME	SAMPLE/SETTING	MEASURES	MAJOR FINDINGS
1	Bandyopadhyay et al (2007)	To investigate pain following discharge.	Telephone tape- recorded and face-to-face interviews (August - October 2000).	n = 315 Australian patients having GA for breast surgery, D&C, termination and 'other procedures' (numbers in groups not provided). in public and private hospitals surveyed with an additional n = 10 face-to- face interviews.	Researcher-designed telephone questionnaire regarding pain experience, management and information. Interviews also explored pain management strategies.	70 % reported pain following discharge and more than half were in pain after 48 hours. Easy to understand patient information helped pain management. Younger patients (< 35 years), those with prior day surgery experience and patients with limited information were more likely to report pain. However, some of the patients underwent breast biopsy and termination of pregnancy which may again have influenced the level of pain and anxiety.
2	Barthelsson et al (2003a)	To explore patients experiences of day surgery.	Open-ended, face-to-face, tape- recorded interviews (Study period February 2000 - October 2001).	n = 7 Swedish patients having GA for laparoscopic fundoplication interviewed 1 week after surgery for 60 minutes.	Interviews commenced with one question "What was your experience of having 'keyhole' fundoplication as a day surgery procedure?"	Four themes emerged relevant to the surgery - anxiety and memory loss, pain and dysphagia, desire for delayed discharge and returning to normal activities. Patients desired more information and a desire to talk to surgeon prior to discharge on the day of surgery. However, data was gathered from a small sample.
3	Barthelsson et al (2003b)	To explore patients experiences of day- case laparoscopic cholecystectomy.	Open-ended, face-to-face, tape- recorded interviews (Study period May 1999 - June 2000).	n = 12 Swedish patients having GA for laparoscopic cholecystectomy interviewed for 45 minutes 1 week after surgery.	Interviews commenced with one question "How did you experience having 'keyhole' cholecystectomy at the day surgery department?"	Four main themes emerged – living with gallstones, experiences of day surgery, experiences during first week and returning to activities of daily living. Living with gallstones - anxiety regarding when attack would come, socially disabling. Experiences of day surgery - not meeting the surgeon, anxiety regarding surgery and forgetting information. Experiences during first week - varying degrees of pain and nausea and vomiting, many questions arising on how to manage aspects of care, abdominal symptoms, telephone support. Returning to activities of daily living - managing young children, hospital staff's casual attitude to recovery, normal activities in approx. 1 week and preferring to remain in hospital although feeling good about being home.

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	AUTHOR	PURPOSE	DESIGN/TIME FRAME	SAMPLE/SETTING	MEASURES	MAJOR FINDINGS
4	Berg et al (2011)	To describe post- operative recovery on post-operative days 1, 7 and 14 after differing orthopaedic day surgery procedures.	Post-operative postal survey (Study period not provided).	n = 238 Danish patients having GA for knee arthroscopy (n = 140), hand/ arm (n = 128), foot/ leg (n = 71) and shoulder orthopaedic surgery (n = 19) surveyed at 1, 7 and 14 days post-surgery.	Post-operative self- reported questionnaires - Swedish Post-discharge Surgery Recovery (S-PSR), Quality of Recovery-23 (QoR-29), Perceptions of Health and demographic data.	In comparison, shoulder surgery patients experienced slower rate of recovery and were more physically dependent. Recovery took at least 2 weeks for shoulder surgery patients. Higher age and positive emotional state may have a beneficial influence on recovery. Recommends investigating recovery and emotional status. However, many younger patients in the sample did not return their questionnaires at 14 days post-surgery which may have influenced the results.
5	Bisgaard et al (2001)	To explore recovery following uncomplicated laparoscopic cholecystectomy.	Pre- and postoperative postal survey (October 1997 - June 1999).	n = 200 Danish patients having GA for laparoscopic cholecystectomy completed pre- and postoperative questionnaires on physical recovery.	Pre-operative self-reported questionnaire regarding expected duration of convalescence. Postoperative self-reported questionnaire completed on day of return to work/ main recreational activity. VAS for fatigue and verbal rating scale for PONV.	For younger patients in less physical employment the recommended period of convalescence was 2 days but was actually 6 days (range, 0-28 days). For patients in more physical employment the recommended period of convalescence was 7 days but was actually 10 days (range, 0-52 days). Absence from main recreational activity was a result of pain and fatigue. It would appear the estimated period of convalescence suggested by the medical team was optimistic.
6	Bisgaard et al (2002)	To analyze recovery following uncomplicated laparoscopic cholecystectomy. uncomplicated laparoscopic cholecystectomy.	Diary completion and bio-physical testing for 1 week prior to surgery and for 1 week after surgery (September 1998 - April 1999).	n = 20 Danish patients having GA for laparoscopic cholecystectomy underwent pre and postoperative bio-physical testing plus post-operative diary completion.	Wrist-worn physical movement monitor for 1 week before/ 1 week after surgery; sleep pattern diary for 1 week before/ 1 week after surgery; treadmill exercise test 1 day before surgery/ post-operatively day 2 and 8; nocturnal pulse oximetry 1 night (1 week before surgery)/ postoperative nights 1, 2 and 3; pulmonary function test 1 day before surgery/ postoperative at 3 hours then on day 1, 2, 3 and 8; pain/fatigue self-assessment 6 hours after surgery then for 30 days and date of return to work recorded.	Recovery measures suggest patients returned to normal levels of functioning on 2nd or 3rd post-operative day. Physical motor ability was normalised after 2-3 days and sleep by 2nd night. Post-operative cardio-respiratory function was normalised after 3 and 10 days. Pulmonary peak flow measurements returned to normal by post-operative day 1 and fatigue levels normalised within first few post-operative days. However, it is recognised the close professional attention this group received may have contributed to swift recovery. Concludes recovery can be 2-3 days following laparoscopic cholecystectomy as opposed to previous in-patient open cholecystectomy recovery of 2-3 weeks. However, the postoperative management of this group was quite extensive.

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	AUTHOR	PURPOSE	DESIGN/TIME FRAME	SAMPLE/SETTING	MEASURES	MAJOR FINDINGS
7	Brattwall et al (2010a)	Exploration of the longitudinal changes in health profile following discharge.	Postal survey (Autumn 2006 - Spring 2008).	n = 355 Swedish patients having GA for hernia repair (n = 107), arthroscopy (n = 122) and breast augmentation (n = 126) surveyed pre-operatively and again at 1, 3 and 6 months.	Euro-Quality of Life (EQoL) questionnaire which has 5 dimensions (mobility, self-care, usual activities, pain/ discomfort and anxiety/ depression) plus extra items regarding sleep, sexual activity and analgesia use.	40 % reported pain and immobility issues and this was significantly greater in hernia repair and arthroscopic procedure patients. Patients undergoing arthroscopic procedures experienced a slower recovery. Majority of patients satisfied although information provision and pre-operative preparation viewed as important. Many expected a faster recovery, especially arthroscopic procedure patients. Patients voluntarily undergoing cosmetic breast augmentation were included in the sample which may have influenced the overall findings.
8	Brattwall et al (2011) (2nd Reporting)	Explore self-assessed recovery and restitution of symptoms after day surgery during the first 4 weeks.	Postal survey (Autumn 2006 - Spring 2008).	n = 355 Swedish patients having GA for hernia repair (n = 107), arthroscopy (n = 122) and breast augmentation (n = 126) surveyed pre-operatively and again at 24 hours then 1, 2 and 4 weeks.	Pre-operative interview regarding demographics and symptoms. Four questionnaires given to complete at the arranged date concerning pain, mobility problems, depressed mood, sleep disturbance, need for analgesia, satisfaction with procedure, support required, unplanned visits to hospital and other need for health care contact.	No serious complications or sequelae stated. 32 % (n = 9 %) had unscheduled contact with the hospital (visit/ telephone)during first post-surgery week. n = 15 patients with pain, n = 5 with swelling, n = 5 wound dressings and mobilisation/ questions n = 7. n = 38 patients contacted hospital during weeks 3 and 4 for mainly pain and wound related issues. The majority needed help from a relative during the initial period at home. 13 % of hernia repair patients and 13 % of arthroscopic surgery patients would have preferred longer in hospital. 43 % of breast augmentation would have preferred longer in hospital although these patients were already 23 hours stay.
9	Briggs et al (2009)	Safety and acceptability of day-case laparoscopic cholecystectomy.	Telephone survey (May 2005 - May 2008).	n = 106 United Kingdom patients having GA for laparoscopic cholecystectomy surveyed at 2, 5 and 14 post- operative days.	Researcher-designed questionnaire regarding pain, nausea and vomiting, analgesia use, wound care, diet, mobility, satisfaction and contact with primary healthcare providers.	94 % satisfied with day surgery. Mild pain and nausea reported by vast majority 2nd day. 90 % back to normal activity after 14 days. 33 % of patients gained advice from primary healthcare providers during first 14 days with wound care most common reason for contact. 6 % preferred an overnight stay. Improved information regarding wound healing recommended and education of staff and patients very important. Study largely concerned with introduction of day- case laparoscopic cholecystectomy.

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	AUTHOR	PURPOSE	DESIGN/TIME FRAME	SAMPLE/SETTING	MEASURES	MAJOR FINDINGS
10	Cheng et al (2002)	To investigate compliance with post-operative instructions.	Telephone survey (Study period not provided).	n = 102 United Kingdom patients having GA for wide variety of surgery surveyed at 24 hours.	Researcher-designed questionnaire regarding travel home, time arrived, carer details/ time/ place in attendance, activities after 24 hours (driving, alcohol, cooking, cleaning, childcare). Questionnaire in appendix.	All but three escorted home by carer (taxi driver escorted others). All patients remembered instructions regarding avoidance of certain tasks for 24 hours. n = 29 had no carer for 24 hours, n = 3 leaving them on home arrival. 70 % of cares slept in same room, 4 % drove a vehicle within 24 hours, half with passengers. Over a quarter went out of the house with n = 5 visiting their General Practitioner. n = 10 % admitted to cooking, cleaning and caring for children. However, over 50 % of the original sample were lost and could not be contacted by telephone.
11	Cox & O'Connell (2003)	To investigate experiences of home recovery.	Postal and telephone survey. (Study period 6 months although date not provided).	n = 80 Australian patients having GA for gynaecological surgery surveyed regarding experiences of recovery during first 10 days.	Researcher-designed post-operative symptoms diary for days 1 to 4 of recovery. Patients' who returned the diary by post were telephoned after 10-15 days regarding problems - carer support, information and contact with healthcare professionals.	Main problems day 1 to 4 mobility, tiredness, pain and diet with mobility, tiredness and pain the most difficult to manage. Main problems on day 10 pain (60 %), mobility issues (30 %) and tiredness (25 %). 45 % contacted healthcare professionals for suture removal, pain management, medical problems and emotional support. Carer for 3 days viewed as very important. 18% stated they would have preferred in-patient stay for 'professional monitoring'. However, the findings relate to a specific surgical - diagnosis and treatment of endometriosis.
12	Dewar et al (2003)	To determine if telephone interviews with patients during home recovery improved outcomes.	Postal dairy completion and telephone survey (Study period 1-5 days over a 5 month period although date not provided).	n = 222 American patients having GA for anal surgery (n = 85), hernia repair (n = 32), arthroscopy (n = 69) and breast augmentation or breast reduction (n = 36) surveyed at 1-5 post-operative days.	Sample divided into intervention and control group. Intervention group given pre-operative pain management teaching and telephoned daily for first 3 post-operative days. Both groups telephone on day 5 for pain assessment. Pre-operative State-Trait Anxiety Inventory and pain measured using Brief Pain Inventory (Visual Analogue Scale 1 - 10).	During first 3 days intervention group had statistically significantly less pain than control group and also at day 5. Further, from day 1-2 the intervention group had statistically significantly less pain moving than control group. No difference established between two groups regarding nausea and vomiting, constipation, fatigue, dizziness and grogginess. By day 2 intervention group had statistically significantly greater ability to concentrate and have relations with others. There was no statistically significant difference between the groups regarding analgesia consumption. Patients appeared to benefit considerably from post-operative telephone advice. Patients voluntarily undergoing cosmetic breast augmentation were included in the sample which may have influenced the overall findings.

TABLA I

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	AUTHOR	PURPOSE	DESIGN/TIME FRAME	SAMPLE/SETTING	MEASURES	MAJOR FINDINGS
13	Dewar et al (2004) (2nd Reporting)	To describe telephone interviews with patients during home recovery.	Postal dairy completion and telephone survey (Study period 1-5 days over a 5 month period although date not provided).	n = 222 American patients having GA for anal surgery (n = 85), hernia repair (n = 32), arthroscopy (n = 69) and breast augmentation or breast reduction (n = 36) surveyed at 1-5 post-operative days.	Sample divided into intervention and control group. Intervention group given pre-operative pain management teaching and telephoned daily for first 3 post-operative days. Both groups telephone on day 5 for pain assessment. Pre-operative State-Trait Anxiety Inventory and pain measured using Brief Pain Inventory (Visual Analogue Scale 1 - 10).	Many patients had misconceptions regarding pain management and required additional information. Patients unable to absorb information on discharge and some also unable to grasp information via telephone on day 1 and 2. Patients developed unforeseen questions during recovery. Many reluctant to take analgesia due to side-effects, fears of addiction or viewed pain as something to be endured. Some anal surgery patients too embarrassed or somewhat reluctant to discuss problems. No discussion regarding differences between intervention and control groups provided. Patients voluntarily undergoing cosmetic breast augmentation were included in the sample which may have influenced the overall findings.
14	Flanagan (2009)	To investigate experiences of home recovery.	Telephone, tape- recorded interviews. (Study period 6 months although date not provided).	n = 77 American patients having GA for knee arthroscopy interviewed at 12, 24 and 72 post- operative hours.	Researcher-designed post-operative open-ended interview schedule with an additional demographic details section.	Experiences at 12 hours concerned relief that event was over, satisfaction but much nausea, vomiting and sore throat. At 24 hours much pain and a lack of preparation to manage pain. A good deal of anxiety concerning pain, swelling, immobility and wound management. At 72 hours pain continued and also fatigue with the realisation that one day surgery does not equal to one day recovery. Patients welcomed the therapeutic element implicit in the telephone calls. However, all patients were only undergoing one type of investigative orthopaedic surgery.
15	Gilmartin (2007)	To investigate patients' perceptions of discharge planning and home recovery.	Open-ended, face-to-face, tape- recorded interviews. (Study period 6 months although date not provided).	n = 30 United Kingdom patients having GA for gynaecological (n = 14), urological (n = 12) and general surgery (n = 4) surveyed between 7-10 post-operative days in the home.	Researcher-designed post-operative open-ended interview focussing on the lived experience for the first week of recovery. Interviews began by asking to "relate their experiences of discharge preparation".	Discharge planning was considered by the majority to be well organised. However, many problems arose from the communication of information. Being given information whilst recovering from general anaesthesia, lack of opportunity to speak with the surgeon post-operatively, absence of relatives to listen to instructions, limited ability regarding symptom management and little awareness of potential problems. However, this was a small purposive day surgery patient sample.

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	AUTHOR	PURPOSE	DESIGN/TIME FRAME	SAMPLE/SETTING	MEASURES	MAJOR FINDINGS
16	Horvath (2003)	To investigate patients' physical recovery once home.	Postal survey (Study period not provided).	n = 91 American patients having GA for gynaecological surgery surveyed for 1 to 6 post-operative days.	6-page pack with daily log of pain (1-10), fatigue (Rhoten Fatigue Score) and function (Katz Index of Activities of Daily Living). Telephoned on post- operative day 3 and 5 to prompt questionnaire completion.	40.7 % reported moderate pain 1st post-operative day. Not until day 6 did 90 % report mild pain. Moderate to severe fatigue experienced by almost half of patients at day 3. Informed by staff they would be active by day 3 although more than half needed 5/ 6 days. Pain significant factor in delayed recovery. However, some patients were undergoing diagnosis and treatment for infertility which may have caused additional concern. Telephone support recommended for late on day 1 to aid recovery. Pre-operative information should state assistance with activities of daily living needed for 4 to 6 days following surgery.
17	Lau et al (2001)	To identify significant factors influencing recovery and return to work.	Telephone survey (Study date 1999).	n = 149 Hong Kong patients having GA for hernia repair surveyed (Post-operative period of survey not provided).	Age, gender, occupation, duration of convalescence, date of return to work, type of hernia/ method of surgical repair.	Heavy duty workers returned to work significantly later than sedentary workers. Also, patients aged 50 years or below returned to work sooner although this just failed to reach a statistically significant level. Although this paper was published in 2001, data was collected between 1995 to 1998.
18	Markovic et al (2002)	To identify informal support during convalescence at home.	Telephone survey (Study date August - October 2000).	n = 312 Australian patients having GA for gynaecological surgery surveyed at 48 hours.	Researcher-designed post-operative open and closed item questionnaire focussing on information requirements, hospital admission, home recovery and advantages/ disadvantages of day surgery.	Private patients (28 % of sample) statistically significantly less satisfied with information provision. Carer's responsibility looking after the patient while undertaking domestic duties was demanding. Quality of care greater for patients sharing the household with the carer. 12 % of patients had to care for other family members once home. Day surgery described as convenient although emotional support limited. A number of patients underwent investigative breast surgery or termination of pregnancy which may have adversely influenced their views of recovery.
19	McIntosh & Adams (2011)	To examine the association between pre and post operative anxiety its influence on recovery after 48 hours.	Postal survey (2008)	n = 54 United Kingdom patients having GA for minor (n = 7), intermediate (n = 39) and major (n = 8) surgery (specific surgery not detailed).	Demographic details, Hospital Anxiety and Depression Scale (HADS) on admission. Further copy of HADS and Quality of Recovery Scale (QoR-40) for home completion after 48 hours.	Female patients found to be more anxious than males although no statistically significant relationship was established between anxiety and quality of recovery. However, only a small timeframe of recovery was examined and the measures employed were possibly inappropriate. The HADS was originally developed for measuring anxiety in psychiatric patients and the QoR-40 scale used to measure recovery is not refined for day/ short stay surgical recovery (see Idvall et al 2009).

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	AUTHOR	PURPOSE	DESIGN/TIME FRAME	SAMPLE/SETTING	MEASURES	MAJOR FINDINGS
20	Mottram (2011a)	To explore patients' experiences of day surgery using a sociological framework of analysis.	Semi-structure, telephone interviews (2004-2006).	n = 145 patients and n = 100 carers in the United Kingdom. Patients underwent GA for general, ENT and orthopaedic surgery (numbers in groups not provided).	Two interviews at 48 hours and 4 weeks following surgery. Open-ended, taperecorded interview which commenced with the question "How are you feeling since you had your surgery?"	Parson's sick role examined. Patients experiences could be divided into three themes i) Resisting sick role (72 %) - incapacity forced individuals to grudgingly accept resting, anxiety for carers as patients would not accept temporary disability, ii) Limited ascription to the sick role (24 %) – by accepting the sick role they gained some protection from employers, iii) Actively seeking the sick role (4 %) - some felt the sick role was denied them by the process of day surgery. Western culture of efficiency has pervaded health care leaving little room for convalescence.
21	Mottram (2011b) (2nd Reporting)	To explore patients' experiences following discharge from day surgery.	Semi-structure, telephone interviews (2004-2006).	n = 145 patients and n = 100 carers in the United Kingdom. Patients underwent GA for general, ENT and orthopaedic surgery (numbers in groups not provided).	Two interviews at 48 hours and 4 weeks following surgery. Open-ended, taperecorded interview which commenced with the question "How are you feeling since you had your surgery?"	Three themes emerged all under the category of 'limited professional support following discharge' - i) unexpected occurrences, ii) lack of perceived support and, iii) nostalgia for times past. Unexpected occurrences concerned access to a healthcare professional for correct advice. Lack of perceived support concerned limited professional advice and reduced district nursing insight into their problems. Nostalgia was associated with less personalised, local care being replaced by a standardised more global service. Anxiety arose from a modern NHS which encourages self-reliance and self-care.
22	Rosén et al (2010)	To describe perceived causes of discomfort during home recovery.	Postal survey (May 2006 - May 2007).	n = 298 Swedish patients having GA for urological, orthopaedic and general surgery surveyed at 48 hours (n = 118), 7 days (n = 110) and 3 months (n = 46) post-surgery.	One open-ended item on a questionnaire "If you are still experiencing discomfort related to your surgery, what is the reason, in your opinion."	Frequency of discomfort due to pain and wound problems most prominent feature at 48 hours, 7 days and 3 months. Cause of discomfort rated as type of surgery, incorrect treatment, insufficient access to healthcare providers and limited information. Patients dissatisfied with information provision regarding what symptoms to expect and how best to treatment these symptoms should they occur. However, the patients experienced a wide range of surgical procedures.

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DAY SURGERY STUDIES EXAMINING PATIENTS' EXPERIENCES OF HOME RECOVERY (2000 – ECOVER) (continues overleaf)

	AUTHOR	PURPOSE	DESIGN/TIME FRAME	SAMPLE/SETTING	MEASURES	MAJOR FINDINGS
23	Rosén et al (2011) (2nd Reporting)	To describe patients' perception of pain, their return to normal activities and daily function overtime.	Postal survey (May 2006 - May 2007).	n = 298 Swedish patients having GA for urological, orthopaedic and general surgery surveyed at 48 hours (n = 283-286), 7 days (n = 268-271) and 3 months (n = 190-239) post-surgery.	Swedish version of Brief Pain Inventory-Short Form. This examines pain in relation to daily function. Additional 'yes/no' items asked also relating to activity and work.	55 % of patients rated worst pain experienced at 48 hours, 43 % at 7 days and 34 % at 3 months. General activity, normal work and ability to walk particularly affected by pain. Pain interfered with return to work at 7 days. Consequently only 57 % had returned to usual activities after six days. However, orthopaedic patients were employed in the survey and such chronic healthcare conditions have the potential for persistent longer term pain.
24	Suhonen et al (2008)	To describe day- case surgery patients' Health-Related Quality of Life.	Postal survey (March - August 2004).	n = 131 Finnish patients having GA for mainly orthopaedic surgery surveyed 2 weeks before and 2 weeks after surgery.	European Quality of Life- 5D - a Health-Related Quality of Life instrument with five dimensions (mobility, self-care, usual activities, pain/discomfort and anxiety/depression). A Visual Analogue Scale for 0-100 worst and best imaginable health state.	Pre-operatively, 41 % reported some problems with mobility and 79 % moderate pain. 51 % had no problems with usual activities prior to surgery and this decreased to 35 % after surgery. Patients with underlying chronic health issues had lower EQ-5D scores than patients with no underlying chronic health issue. Self-care activities disturbed following surgery although many patients had underlying chronic orthopaedic conditions. As the prevalence of people with musculoskeletal disorders increases with growth of an older population, recovery issues relating to level of home care required may increase.
25	Wasowicz-Kemps et al (2009)	To assess resumption of physical activity following day surgery.	Diary of daily activity and accelerometer (November 2005 - October 2006).	n = 64 Dutch patients having GA for laparoscopic cholecystectomy monitored using accelerometer device for 7 days before surgery and 7 days after surgery (accelerometer device clipped to trousers to measure and display the distance walked). Diary of daily activity for 7 post-operative days.	Sample divided into intervention and control group. Intervention group given post-operative recovery exercise plan and accelerometer. Control group just given accelerometer and they could not view the amount of activity undertaken display. Diary given to both groups for recording of pain, nausea, wound, fatigue and other factors limiting activity.	Most patients not fully recovered after 1 week. No statistically significant difference established between the two groups regarding physical activity levels. Women in intervention group showed a statistically significant difference in physical activity levels than women in the control group after 1 week. Patients who were encouraged to mobilise quickly felt less hindered by pain during physical activity. For all patients pain limited activity (80 %) and they experienced fatigue (63 %) together with many wound management issues (72 %). However, the practical application of patients being fitted with an exercise monitoring device may limit this approach.

were conducted in Sweden, six in the United Kingdom, four in the USA and three in Australia, two in Demark and one each in Hong Kong, Finland and Holland. Sample sizes ranged from 7 (75) to 358 (76). Participants' treatment included gynaecological, urological, orthopaedic, Ear Nose and Throat, cosmetic surgery and general surgery.

One study used purposive sampling and the remainder convenience sampling. Response rates, where available, ranged from 68 to 91 %.The techniques for data collection varied with eleven studies gathering data by tape-recorded telephone interviews, eight by postal questionnaire, four by tape-recorded face-to-face interviews, two by postal diary and two by biological measures/ physical testing and diary completion. Twelve studies used more than one data collection technique (64-67, 74, 76-82) and data was collected in the patients' home in two studies (77,83).

Measures

Only two studies (53,64) used the same post-operative measure of recovery although the European Quality of Life-5D instrument is not day surgery specific (84). McIntosh and Adams (79) employed the Quality of Recovery instrument (QoR-40) (85) and Hospital Anxiety and Depression Scale (86). Berg et al (76) used the validated Swedish Post-discharge Recovery Scale (62) and Quality of Recovery-29 Scale (87) modified scales of the original by Kleinbeck (63) and Myles et al (85) per se. Rosén et al (72,73) utilised the Swedish version of the Brief Pain Inventory (BPI-SF) (88). Six studies used open-ended questioning and in all cases one question commenced the interviews (68,69,72, 75,83,89).

Seven studies used research-designed open and closed questionnaires regarding experiences during convalescence such as morbidity, wound management, diet, contact with healthcare providers, activity and return to work (3,18,70, 71,78,90,91).There was little information, if any, provided in the papers regarding testing for validity and reliability of the researcher-designed questionnaires. A number of studies (66,73,76,79-82,92) used validated measures such as Visual Analogue Scales for pain, State-Trait Anxiety Inventory (93), European Quality of Life measure (84), post-operative nausea and vomiting scale (94) and an activity level scale (95).

Five studies used patient diaries (mostly for 1 to 5 post-operative days) to record symptoms such as pain, nausea, fatigue, wound management and other factors limiting activity (66,67,74,77,78). A further study (77) utilised a battery of exercises and recorded physical movement on a wrist-worn movement monitor for one week before and after surgery. A similar quasi-experimental study involved a leg-worn physical movement monitor for one week before and after surgery (74) where the treatment group were provided with a post-operative exercise plan. In total nine methods of measurement of recovery were used - morbidity, activity level, anxiety, quality of life, open/ closed researcher-designed questionnaires, diaries, healthcare provider contact, biometric assessment and physical monitoring.

The measures of recovery used were largely researcher-designed, non-validated measures or not day surgery specific. Two systematic reviews of recovery measures (40, 58) recommend using the Quality of Recovery Scale (85) but this scale is anaesthesia orientated and not day surgery specific (ambulatory surgery only 14 % of sample). However, Idvall et al (87) have produced a validated day surgery specific scale (QoR-29), adapted from the recovery scale originally by Myles et al (85) (QoR-40).The Post-discharge Surgical Recovery Scale by Kleinbeck (63) provides a broad approach and is day surgery specific (58,62) likewise the comprehensive 24-Hour Functional Ability Questionnaire by Hogue et al (61) for anaesthesia recovery. The Functional Recovery Index by Wong et al (59) is brief and simple to administer but largely examines pain and activity level. Flanagan and Jones (60) studied the feasibility of the Symptom Distress Scale (96) and Functional Health Pattern Assessment Screening Tool (97) but these measures are not day surgery specific.

RESULTS

The themes to emerge from this review concern pain management, information provision and post-discharge anxiety. Thirteen quantitative studies measured recovery by patient's experiences of returning to 'normal' routine, level of morbidity, level of activity and returning to paid employment. The experience of pain and its management were perceived as challenging. The degree of pain was greater than had been anticipated and had lasted longer than patients had been informed. In conjunction, a lack of guidance regarding unexpected situations gave cause for concern. For example, delayed wound healing, prolonged pain, continued fatigue and prolonged convalescence were aspects not covered by the information offered.

In an experimental study by Dewar et al (66) patients in the treatment group benefitted statistically significantly from pre-operative teaching regarding pain management and daily telephone calls. In the second reporting, Dewar et al (67) determined patients required post- operative encouragement to take analgesia due to fear of side-effects and addiction. Further, many patients had unforeseen questions arising during recovery. In the experimental study by Wasowicz- Kemps et al (74) no statistically significant difference was established for the patients in the treatment group who were given a post- operative recovery exercise plan. However, a statistically significant difference was established with regard to gender. Future studies need to consider assessment of recovery with a validated day surgery specific instrument.

The nine qualitative studies measured recovery using the patient's personal experiences of surgery and convalescence. Pain was deemed to be more common in younger patients, those with limited post- operative information and thus made recovery more challenging. Anxiety was associated with limited information, unexpected events and by carers attempting to ensure their relative gained adequate rest. Relatives were largely absent at the point of discharge hence much information was forgotten due to the latent effects of anaesthesia or not gained due to a lack of opportunity to speak prior to discharge.

DISCUSSION

Pain Management

Approximately half of the studies suggest pain management to be a challenging issue. Cox and O'Connell (78) surveyed 80 patients undergoing gynaecological surgery and established, on post-operative day ten, 60 % were still experiencing pain. The remaining 40 % had been experiencing pain for an average of 7 days. Many women accessed other healthcare professionals for advice as they had been experiencing symptoms longer than informed. The estimated period of recovery suggested by the doctors was viewed as optimistic and not recovering at the stated pace gave rise to concern (78,80). However, these findings relate to a specific surgical procedure (diagnosis and treatment of endometriosis) a condition which may have wider implications for patients. Horvath (81) uncovered 15 % of patients were experiencing severe pain during the first post-operative day with 41 % experiencing moderate pain. Pain was found to be statistically significantly related to delayed recovery and concerned many patients who were informed recovery would take 2 or 3 days. Suhonen et al (82) surveyed 131 orthopaedic patients for 2 weeks and 79 % reported experiencing moderate levels of pain. However many participants were undergoing treatment for chronic orthopaedic conditions. Bandyopadhyay et al (71) interviewed 315 women and established 54 % were still experiencing pain after 48 hours. It was suggested factors leading to an inability to manage pain were being younger (<35 years), having previous experience of day surgery and limited information. However, some of the patients underwent breast biopsy and termination of pregnancy which could prompt a more emotive response.

In a study by Rosén et al (72) pain was experienced by 56 % of patients after 48 hours, 38 % after 7 days and 25 % after 3 months. Persistent discomfort was attributed to incorrect treatment, insufficient access to healthcare provision and lack of information. In a 2nd reporting by Rosén et al (73), 55 % of patients rated worst pain at 48 hours, 43 % at 7 days and 34 % at 3 months although the patients surveyed experienced a wide range of conditions. Flanagan (18) interviewed 77 patients undergoing knee arthroscopy and reported participants to be pain free after 12 hours. However, after 24 hours not only were patients experiencing much pain but had made no preparations for its management. The sudden onset frightened many as they had initially been pain free leading to the conclusion something was 'wrong'.The long-acting local anaesthetic nerve block, used during surgery had ceased to work and this aspect of treatment had been poorly understood. Many patients held misconceptions regarding pain management and required follow-up support (67), viewed pain as a symptom that must be endured and did not request help from their families or General Practitioner despite increasing levels of discomfort.

Brattwall et al (64) revealed patients undergoing arthroscopic procedures and inguinal hernia repair experienced statistically significantly more pain than patients having breast augmentation. After 4 weeks, 33 % of arthroscopic procedure patients stated they were still experiencing pain, 11 % of inguinal hernia repair patients and 10 % of breast augmentation patients. However, comparing patients undergoing voluntary cosmetic surgery with patients undergoing treatment-centred surgery may be a problematic comparison. Brattwall et al (65) (2nd reporting) stated many patients needed carer support during the first week with pain being the most challenging issue. Berg et al (76) surveyed patients undergoing differing types of orthopaedic surgery (knee arthroscopy, hand/arm, foot/leg and shoulder surgery) and established shoulder surgery patients to experience a slower, less comfortable recovery. Barthelsson et al (89) suggested patients experienced quite differing degrees of pain following laparoscopic cholecystectomy although the sample size was somewhat limited. Analgesia was provided for the first 48 hours and pain management good but on the 3rd day when the prescribed analgesia was complete for some, the pain returned.

Information provision

Gilmartin (83) interviewed a small purposive sample of patients in their homes after 7-10 days and found discharge to be well organised although aspects of information provision were challenging. Some patients felt drowsy following general anaesthesia and could not absorb the information adequately prior to discharge. In a study by Briggs et al (3) of patients following laparoscopic cholecystectomy it was established 33 % contacted a healthcare professional within 14 days for an unplanned consultation and in the majority of cases this was for advice on wound management. In a small study of 7 patients undergoing laparoscopic fundoplication (surgical repair of hiatus hernia) information provision (written and oral) was deemed thorough (75) but not perceived to be sufficient. A number of studies likewise highlight an information deficit especially with regard to handling unforeseen events (67,69,89).

Bandyopadhyay et al (71) recommend information provision should be improved as patients who had a good under-

standing of their treatment experienced a better recovery. Lau et al (90) studied patients returning to work following inguinal hernia repair (data collected 1995 to 1998) and it was uncovered younger patients who had sedentary jobs returned to work statistically significantly sooner. Bisgaard et al (80) suggested absence from recreational activities for 2 days following laparoscopic cholecystectomy and return to work after 1 week. Cheng et al (91) established reasonable compliance with post- surgery instruction although 4 % drove, 3.3 % consumed alcohol, 28 % went out and 10 % cooked food, did ironing and cared for children all within 24 hours of surgery. However, over 50 % of the original sample was unable to be contacted.

Dewar et al (66) conducted a quasi-experimental study where the treatment group were provided with pre-operative teaching on pain management and the control group with no such intervention. Although no difference was established between the two groups with regard to analgesia consumption, the treatment group experienced statistically significantly less pain during the first 5 days. However, all patients were telephoned each day for 3 days and both groups benefitted from the advice offered. In a quasi-experimental study by Wasowicz-Kemps et al (74) the treatment group received a post-operative recovery exercise plan prior to surgery and the control group no additional information. The level of physical activity in both groups was monitored by an accelerometer (device clipped to the trousers to measure and display the distance walked). No statistically significant difference was established between the two groups although the planned physical activity with an accelerometer resulted in a reduction of subjective pain and a faster recovery, especially for females. Female participants in the treatment group were found to be statistically significantly more active than females in the control group. However, the practical application of patients being fitted with such an exercise monitoring device may limit its clinical application.

Post-discharge Anxiety

Mottram (69) interviewed 145 patients and 100 carers and uncovered much anxiety associated with a contemporary healthcare system that encouraged self-reliance and self care with limited professional help. Many reflected on a National Health Service that once offered a more personal and local approach. Rosén et al (72) suggested the lack of access to healthcare providers and limited information was a cause of concern and dissatisfaction. Barthelsson et al (89) studied patients following laparoscopic cholecystectomy and many experienced pre-operative anxiety and expressed a desire for pre-operative sedation. Additionally, the latent effects of anaesthesia gave rise to many patients forgetting information leading to much apprehension once home. McIntosh and Adams (79) surveyed 54 patients concerning anxiety and home recovery but established no relationship. However, the timeframe examined was only 48 hours and the measures employed possibly inappropriate as the Hospital Anxiety and Depression Scale (HADS) was originally developed for anxiety in psychiatric patients (86) and the Quality of Recovery Scale (QoR-40) (85) not refined for minimal stay surgery.

Markovic et al (70) interviewed 315 females following discharge and suggested the lack of a supportive person during admission, no medical supervision at home, domestic responsibilities and role of the carer to be challenging issues. However, a number of patients underwent investigative breast surgery or termination of pregnancy both of which may have a strong influence on recovery. In a second reporting by Mottram (68) using a sociological framework for analysis, three themes emerged with regard to the 'sick role' (98). Firstly, 72 % of patients actively resisted the sick role causing much anxiety for the carers who were concerned about adequate rest.
For this group of patients 'one day surgery' equated to 'one day recovery'. Secondly, 24 % gave limited acknowledgment of the sick role but by accepting the role recognised they would gain some protection from their employers. "This group of people, although not actively seeking the sick role, seemed to feel that the day surgery process minimised their condition in the eyes of their employers and families" (68 p. 144). In the final theme 4 % of patients were actively seeking the sick role and regretted the demise of a period when they would have been an in-patient, receiving cards, flowers, visitors and communicating more fully with the doctors and nurses. Brattwall et al (65) reported 43 % of patients undergoing breast augmentation deemed even a 23 hours stay in hospital to be too short.

Bisgaard et al (77) studied patients recovering from laparoscopic cholecystectomy who underwent a challenging exercise plan and biological measurement. A wristband was wore to monitor movement, treadmill exercise 1 day prior to surgery then again on post-operative days 2 and 8, pulmonary function testing 1 day prior to surgery then again on post-operative days 1, 2, 3 and 8. In addition, biological measures were taken together with some subjective data. For one week prior to surgery patients' experienced sleep disturbance but following surgery sleeplessness was statistically significantly reduced. In a further quasi-experiment design by Dewar et al (66) all patients were telephoned during the post-operative period and judged to benefit from advice regarding pain management. Likewise, Flanagan (18) stated patients welcomed the telephone interview (undertaken as part of the research process) as it offered a therapeutic element to recovery.

Limitations

The review is open to English publication bias and thereby possibly excludes a number of studies from the Scandinavian countries where research in this area is prominent (99,100). A limitation also occurred from the varied meth-

ods of data collection employed by the studies (low morbidity rates, resumption of 'normal' activity level, return to work, time) and limited use of validated day surgery specific measures of recovery. Furthermore, many studies (especially medical) do not always stipulate from which group of patients data is collected. For example, an aspect of surgery can be examined with no clear expression of in-patient or day-case treatment. Finally, an international review can create problems with terminology as day surgery in America is defined 23 hour stay but this is not the case in Europe. In addition, some studies employ the term 'out-patient surgery' and must be read carefully to determine if this is day surgery or indeed a brief outpatient's department procedure.

CONCLUSION

The opportunity for the expression of nurse-led knowledge in fast- paced, contemporary surgery has been limited by innovations in surgical and anaesthetic practice, healthcare emphasis on controlling cost/ time and a lack of contemporary surgical nursing evidence on which to base innovative care and education. This review has established patients require a degree of professional insight beyond the acute setting in the form of telephone support and/ or personal contact to offer information with regard to pain management, dealing with unforeseen events and anxiety. More nurse-led interventional studies focussing on the challenges arising from this review are required using validated measures of recovery, specific to minimal stay surgery. Without such evidence, nursing-based knowledge may remain under-represented in modern elective surgery.

Surgeon/patient and anaesthetist/patient contact has remained relatively unchanged in this new surgical era but nurse/patient contact has become more fragmented. Nursing contact now takes place during brief interactions in the out-patient clinic, pre- assessment clinic, day surgery unit and community with little or no interaction on a professional basis between these groups (13,101). However, a more co-ordinated approach to communication and information provision is also required to establish a greater hospital/community nursing ethos (13) especially with the possible increase in the number of elderly patients undergoing day surgery (46). Modern elective surgical nursing must adapt to the meticulous medical practices of minimal stay surgery and seek to develop its unique contribution to modern surgery by further investigation into the hospital/home transition.

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