Impact of interventions to improve recovery of older adults following planned hospital admission on quality-of-life following discharge: linked-evidence synthesis

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Disclaimer: This report contains transcripts of interviews conducted in the course of the research, or similar, and contains language that may offend some readers.

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Scientific summary

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Scientific summary

Background

The Office for National Statistics predicts that in England the proportion of people aged 65 years and over will increase from 18.2% to 20.7% of the total population between mid-2018 and mid-2028. There has been a steady increase in the number and age of patients admitted for overnight hospital stays for planned or elective procedures, such as hip and knee replacements. Older patients are at increased risk of peri- or post-operative complications such as falls, hospital-acquired infections and cognitive decline, which can impede recovery and require additional support.

The COVID-19 pandemic has had a huge impact on waiting lists for elective procedures. Prior to the pandemic, NHS hospitals were under considerable pressure to maintain or improve their provision of care and ensure the cost-effective delivery of services. These pressures have only increased. The British Medical Association suggest the number of people waiting for elective treatment has increased from 4.24 million in March 2020 to 6.84 million in July 2022. Furthermore, NHS monitoring data suggest that between December 2021 and August 2022 the number of patients facing delays in leaving hospital increased by 30%. Many hospital-led, multicomponent organisational strategies have been developed to optimise the time that older people stay in hospital after a planned admission. A recent systematic review of the effectiveness and cost-effectiveness of these interventions showed they were associated with improved clinical outcomes in terms of, for example, length of stay (LOS), readmissions, complications and mortality, or at least performed as well as standard care.

However, the subsequent impact on patient outcomes, such as experience, quality of life and participation in meaningful occupations, is largely unknown. Given the ongoing crisis in hospital capacity in the United Kingdom, there is an urgent need to identify, appraise and synthesise the findings from studies considering the influence of multicomponent interventions to enhance recovery on longer-term patient outcomes.

Objectives

We aimed to address the following research questions:

1. What is the impact of multicomponent interventions to enhance recovery and/or reduce LOS for older adults admitted overnight for planned procedures on patient-reported outcome measures and service utilisation?
2. What are the experiences of patients receiving multicomponent interventions to enhance recovery and/or reduce LOS, their family and carers and staff involved with delivering care within these interventions?
3. Which aspects of multicomponent interventions to enhance recovery and/or reduce LOS are associated with better outcomes for older adults admitted to hospital for planned procedures?

Expert clinical advisors and patient and public involvement and engagement

Expert clinical advisors were involved throughout the project, from development of the funding application and protocol, to interpreting results, identifying messages for dissemination, and supporting the preparation of the final report and other outputs. We also consulted regularly with a group of older

adults with experience of being admitted to hospital overnight for a planned procedure and a group of adults with experience of caring informally for a patient aged 60 or over following a planned procedure.

Summary of systematic review of quantitative evidence

This systematic review addressed Research Question 1.

Methods

Data sources
Methods to identify and select evidence followed best practice. We identified studies by searching bibliographic databases including MEDLINE ALL, Embase and the Health Management Information Consortium (HMIC) (all via Ovid), CENTRAL (via the Cochrane Library), and Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Allied and Complementary Medicine Database (AMED) (both via EBSCO) and forward and backward citation-searching included studies. Bibliographic database searches were run in May 2021 and updated in April 2022.

Study selection
The following eligibility criteria were independently applied to the title and abstract of each citation by two reviewers, with disagreement resolved through discussion. This was repeated for each full text.

Population
Older adults (mean or median age of at least 60 years), undergoing planned hospital admission for surgical procedures admitted to hospital for an overnight stay.

Intervention
Any multicomponent hospital-based intervention or strategy for patients receiving planned care as an inpatient, which either explicitly aimed to reduce LOS or aimed to improve recovery.

Comparator
Any comparator.

Outcomes
Any metric of LOS, and any patient-reported outcome or experience measure (PROM or PREM), or service utilisation measure.

Study design
Randomised and non-randomised controlled clinical trials (RCTs and non-RCTs), controlled and uncontrolled before-and-after studies and interrupted time series.

Geographical context
Any high-income country.

Data extraction
Summary data were extracted for all included studies by one reviewer, checked by a second and used to prioritise studies for full data extraction, quality appraisal and synthesis. We prioritised RCTs from any high-income country and UK-based non-RCTs for full data extraction and synthesis.

Full data extraction included relevant details on the study population, intervention, comparator and outcomes.

Quality assessment

Quality appraisal was conducted by one reviewer and checked by a second, using the Effective Public Health Practice Project Quality Assessment Tool for Quantitative Studies. Disagreements were resolved through discussion.

Synthesis methods

Studies were grouped by procedure and intervention category and the findings tabulated and summarised.

Categories were informed by discussion with clinical stakeholders and based on the anatomical location of the surgical procedures: colorectal, lower-limb arthroplasty (LLA), cardiac, pelvic, upper abdominal, abdominal and removal of tumours at various sites. Interventions were classified into broad categories:

- enhanced recovery protocol (ERP) – a broad category capturing interventions with components at multiple stages of the pathway
- Prehab
- Rehab
- discharge planning
- preoperative assessment with care plan.

Comparators were grouped in the same way, with an additional category of 'usual care'.

Outcomes were categorised as follows: LOS, readmissions, complications, mortality, quality of life, mental health, physical function, physical activity, patient satisfaction, pain, fatigue, social function, service utilisation.

Between-group differences were analysed where possible, with data imputed where appropriate. A random-effects meta-analysis was performed with data from randomised controlled trials when the procedure, intervention, comparator and outcomes were similar, with data available. The relative effectiveness of different interventions was explored further with narrative synthesis, including data from studies not suitable for meta-analysis.

Key findings

In total, 125 papers met the inclusion criteria for the review. Forty-nine studies reported in 53 papers, containing data for 936,859 patients, met the criteria for further synthesis. Fourteen (seven RCTs) of these studies were conducted in the UK, the remaining 35 RCTs were conducted outside the UK. The remaining 72 studies were tabulated and summarised.

Reasons for admission included LLA (n = 22), colorectal surgery (n = 12), cardiac surgery (n = 6), upper-abdominal surgery (n = 3), abdominal surgery (n = 2), tumour removal (various location) (n = 2), pelvic surgery (n = 1), thoracic surgery (n = 1). The most evaluated category of intervention was ERP (n = 29) followed by Prehab (n = 16).

Lower-limb arthroplasty: ERP interventions were associated with reduced LOS without detriment to other outcomes. There was some minimal evidence that PROMs may also be improved. Prehab interventions had minimal effect on LOS, other clinical outcomes, or PROMs.

Colorectal surgery: Studies were poorly reported, offering few opportunities to pool data. Some evidence indicated that ERP interventions were associated with small reductions in LOS and some improvement in PROMs. Prehab interventions had minimal effect on outcomes compared to usual care.

Other procedures: A few individual trials of other interventions showed improvements across outcomes; however, there was not sufficient evidence to recommend particular interventions.

Trials of interventions to enhance recovery and expedite discharge from hospital do not routinely follow patients to evaluate their mid- to long-term outcomes. Furthermore, when they do evaluate patient outcomes, we observed several limitations to their approaches, including incomplete reporting of outcomes, using a limited range of PROMs, lack of longer-term or repeated evaluation of patient outcomes, asking the wrong people or asking the wrong questions.

Summary of systematic review of qualitative evidence

This systematic review addressed Research Question 2.

Methods

Data sources
As for quantitative review, using a qualitative search filter and with the addition of searching reference lists of topically similar systematic reviews identified by the searches. Bibliographic database searches were run in June 2021.

Study selection
As for systematic review of quantitative evidence.

Population
As for systematic review of quantitative evidence with the addition of families, carers and health and social care staff.

Phenomenon of interest
Experiences of, or attitudes towards, multicomponent interventions which aim to enhance recovery and/or reduce length of hospital stay of older adults following admission for a planned procedure.

Study design
Empirical studies based on interviews and focus groups.

Geographical context
As for systematic review of quantitative studies.

Data extraction
Summary data were extracted for all included studies by one reviewer, checked by a second and used to prioritise studies for full data extraction, quality appraisal and synthesis. We prioritised studies based on the voices represented, richness of first- and second-order data available for synthesis and breadth of coverage of procedures and interventions.

First- and second-order construct data were extracted from the results and discussion sections of each prioritised article.

Quality assessment
Quality appraisal of the prioritised studies was conducted by one reviewer and checked by a second using an adapted version of the Wallace Checklist.

Synthesis methods
Descriptive data summarising characteristics of participants, interventions and study methodology were tabulated and described narratively.

Synthesis of the first- and second-order data representing experiences of patients, families, carers and/or staff followed the principles of meta-ethnography. First- and second-order construct data were used to develop a list of descriptive ideas and concepts seen within each study. Similar concepts and ideas were merged in an iterative process to form themes. Conceptually similar themes were grouped together to form overarching constructs and used to create a Line of Argument.

Key findings

In total 43 papers were eligible for inclusion in the review. Thirty-five were prioritised for full data extraction, quality appraisal and synthesis.

Sixteen of the included studies were conducted in the UK. Patient views were the most frequently provided, with the most common reason for patient admission being for hip and/or knee replacement (n = 17); the most common interventions that patients received were ERP or ERAS pathways (n = 27). Overall, interventions received were poorly described, with 11 studies providing no, or minimal, description.

Six overarching constructs were identified across the 35 studies prioritised for synthesis. The first construct, 'Home as the preferred environment for recovery', highlights the benefits, and challenges, of recovering at home for patients and carers. This construct impacts the other five constructs. 'Feeling safe' explores the importance of ensuring the emotional and physical needs of patients and their family/carers are met, and that they are supported through provision of information, pre-operative care and accessible, appropriate follow-up care. 'Individualisation of a structured programme' discusses the importance of tailoring structured programmes, such as ERPs, to the needs of individual patients. It highlights the challenges that comorbidities, complications and weekend staffing levels can pose to patient-centred individualisation processes. 'Taking responsibility' raises questions around roles and responsibility for the recovery process, including after discharge, exploring the role of the active patient, expert versus generalist staff and staff/service co-ordination. 'Essential care at home' highlights the vital role of informal caregivers in supporting patients within their own home post discharge. It also highlights the need to ensure caregivers are provided with adequate support to enable them to perform their caregiving role. The final construct, 'Outcomes', examines how patients may not always be asked about aspects of their care or recovery that are most meaningful to them, at the right time, and that they may mask or overlook negative aspects of their care.

Summary of the overarching synthesis

Methods

We developed a logic model representing perspectives of interventions represented in the qualitative evidence synthesis. This was used as the focus of a qualitative comparative analysis (QCA) to integrate the findings of the quantitative and qualitative systematic reviews.

Fourteen quantitative studies examining LOS following lower-limb arthroplasty surgery (LLA studies) and 24 quantitative studies examining LOS following abdominal cavity surgery (i.e. combining remaining procedural groups) were allocated into successful and unsuccessful sets based on estimates of effectiveness in terms of LOS and patient-reported outcomes. These sets were used to develop three data tables showing relevant characteristics of the studies based on the logic model and their outcomes. From these, initial truth tables were created using R. A truth table displays the possible configurations of study characteristics, and which studies contain said configurations. We then developed revised truth tables, having taken a logical and considered approach to the studies and characteristics that were included and excluded from revised tables. After undertaking essential quality checks, we used our knowledge of the evidence base and discussions with stakeholders to interpret the solution.

Findings

A complex balance of intervention components triggers successful interventions: these represent both individualised approaches that allow patients to understand their treatment (e.g. through providing information in different formats), to ask questions about their treatment (through spending additional time with patients) and building supportive relationships (through having a consistent point of care), with strategies that facilitate patients to monitor their own progress (goal-focused) and challenge themselves in recovery (through early mobilisation).

Strengths and limitations

Our findings represent a comprehensive search and synthesis strategy, incorporating quantitative and qualitative evidence on interventions to reduce LOS and/or improve recovery. We used best-practice methods to identify, select, appraise and synthesise the evidence and incorporated the views of clinical experts and patients with experience throughout the review process. Our findings are based on the highest-quality and most relevant evidence for the UK.

The high number of studies eligible for inclusion meant we needed to prioritise studies for inclusion in the syntheses. Despite this, some interventions and procedures remain under-researched. The impact of interventions on longer-term patient outcomes or implications on the wider health system were often not reported in a format that enabled pooling of data.

Conclusions

Implications for policy and practice

Overall, interventions intended to reduce hospital LOS for older adults following planned surgery are effective, without detriment to other patient outcomes. However, our findings highlight the need to reconsider how best to evaluate patient recovery from the perspective of the patient following planned hospital admissions. Findings from the qualitative evidence and overarching synthesis may help inform policy-making regarding commissioning and delivering optimal services to support patients, carers and families before, during and after a planned admission to hospital.

Research recommendations

- Establish a core set of PROMS which more accurately capture aspects of recovery which are meaningful to patients.
- Develop a rigorous approach to assessment of PROMs, including capturing the views of key parties such as carers, and evaluating at multiple time points after hospital discharge.
- Develop protocolised interventions to meet the needs of patients admitted to hospital for a planned procedure who have complex needs.

Study registration

This trial is registered as PROSPERO registration number CRD42021230620.

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