

“ Can prehabilitation improve outcomes in patients after TAVI (transcatheter aortic valve implantation)? A scoping review.”

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BACKGROUND

What is TAVI?:

Transcatheter aortic valve implantation (TAVI) is a minimally invasive surgical treatment method for aortic stenosis (AS) demonstrated to be suitable for patients with varying risk levels (1). Surgical procedures, such as TAVI have increased exponentially in the last few years (2).

Why is it important?

TAVI outcomes are comparable to, or better in high-risk patients compared to those undergoing a traditional, surgical, aortic valve replacement (SAVR) (1). A high number of patients undergoing TAVI are elderly and have varying levels of frailty and other comorbidities. As such, outcomes from the procedure can vary depending on these coexisting factors, not just the success of the surgery alone (3).

What is Prehabilitation?

Prehabilitation is an evolving intervention which focusses on reducing the decline in the patient's pre-operative function, thereby improving post operative outcomes (4).

Why do we need to understand prehabilitation in TAVI?

Patients awaiting TAVI are vulnerable due to multiples co morbidities (5). Preoperative age, frailty, comorbidities are significant risk factors (2) alongside lifestyle related risk factors such as physical inactivity and obesity that negatively influence outcomes following cardiac surgery (6). Primary care is in a unique position to identify and manage frailty due to its early involvement with the patient (7). Frailty management, a focus of prehabilitation (2), requires a proactive, interprofessional, long term approach especially in conjunction with primary care (8).

National Cardiac Audit Programme UK (9), reports that TAVI is offered in 32 centres across the UK. In 2022-23, 7669 cases were performed, a 13% rise from the previous years. Median length of stay is 3 days. It is important to note, that currently there is no recording of functional outcomes in the national UK registry for TAVI.

This Study: This scoping review aims to identify the current evidence for prehabilitation in patients for TAVI and identify any gaps in knowledge. This information will be useful in designing a feasibility study in the future. **Research Question:** What is the role of prehabilitation in patients with Aortic Stenosis undergoing a TAVI procedure?

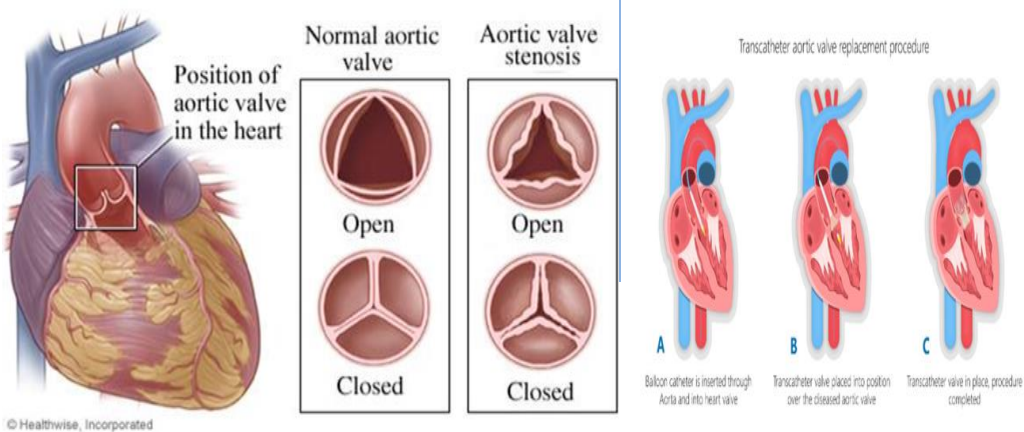


Image taken from - The British Heart Foundation (19)

METHOD:

Articles were sourced from 4 databases as shown in the PRISMA diagram. 2 reviewers reviewed titles and abstracts. Full texts of the articles were independently assessed by 2 reviewers based on a predetermined criteria. Any disagreements were resolved by consensus.

Objectives:

- To identify the current evidence regarding the role and usefulness of prehabilitation in patients undergoing a TAVI.
- To identify the gap in evidence around the use of prehabilitation programmes in TAVI.

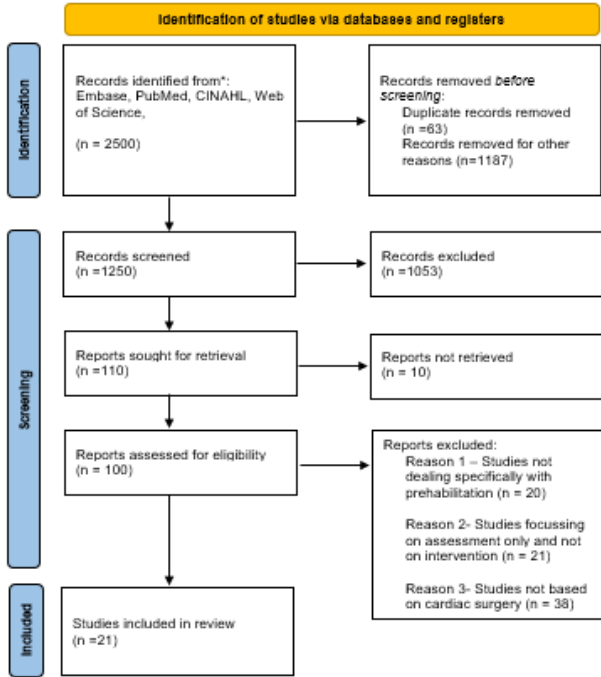
Inclusion Criteria:

- Published within the past 5 years (2019-2024).
- Written in English language
- Published in academic journals
- Peer reviewed

Exclusion Criteria:

- Papers detailing surgical technique of TAVI or its comparisons.
- Papers that are not peer reviewed
- Papers not published in academic journals.
- Papers not written in English

PRISMA FLOW CHART



RESULTS:

- Data in this field is limited, especially in TAVI, however current evidence identifies several benefits of prehabilitation prior to cardiac surgery.
- Prehabilitation should be multimodal in nature: Components include Physical strengthening (skeletal and respiratory muscles), Nutritional advice, Psychological health optimisation and reduction of comorbidities.
- Prehabilitation reduces peri and post-surgical morbidity and improves functional outcomes.
- Prehabilitation needs to be individualised to patient needs.
- A hybrid approach to the delivery of prehabilitation programmes, incorporating face to face and digital solutions, is required to improve access and optimise costs.

CONCLUSION:

Research Implications: This review shows that prehabilitation is likely to be beneficial in cardiac surgery including TAVI. Future research should explore feasibility, components and the duration of prehabilitation in the TAVI population due to their high risk of surgery and increased frailty markers. Interprofessional management approaches in conjunction with primary care can be an important area to explore managing the complex presentations. Moreover, the role of the wider multidisciplinary team in prehabilitation also warrants further exploration. Better understanding of digital solutions to the delivery of prehabilitation programmes can provide cost-effective solutions whilst providing increased patient choice.

Clinical Implications: Modern cardiac surgical centres should incorporate prehabilitation programme for cardiac surgery to optimise outcomes and reduce length of hospitalisation.

Service Implications: Consider digital solutions to provide more cost-effective solutions for the cash strapped health economy. Finally, the current UK TAVI registry does not record any functional outcomes after surgery. New evidence in this area will help draw more attention to this outcome.

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