

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 even 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?

Whilst there is evidence for prehabilitation in conditions such as cancer and transplant surgery, it is not clearly known if it can produce in TAVI. Patients awaiting TAVI are vulnerable due to multiples co morbidities (5). Preoperative age, frailty and comorbidities are significant risk factors that negatively influence outcomes following cardiac surgery (2). Additionally, lifestyle related risk factors such as physical inactivity and obesity are significant challenges for cardiac surgery (6).

National Cardiac Audit Programme UK (7), reports that TAVI is currently offered in 32 centres across the UK. In 2022-23, there were 7669 cases performed, a 13% rise from the previous years. Median length of stay is 3 days. 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 for 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?

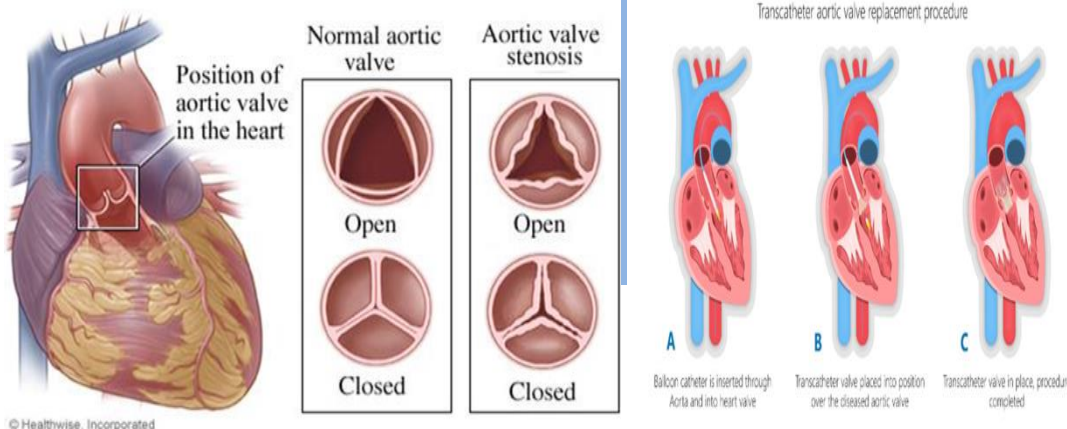


Image taken from - The British Heart Foundation (17)

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.

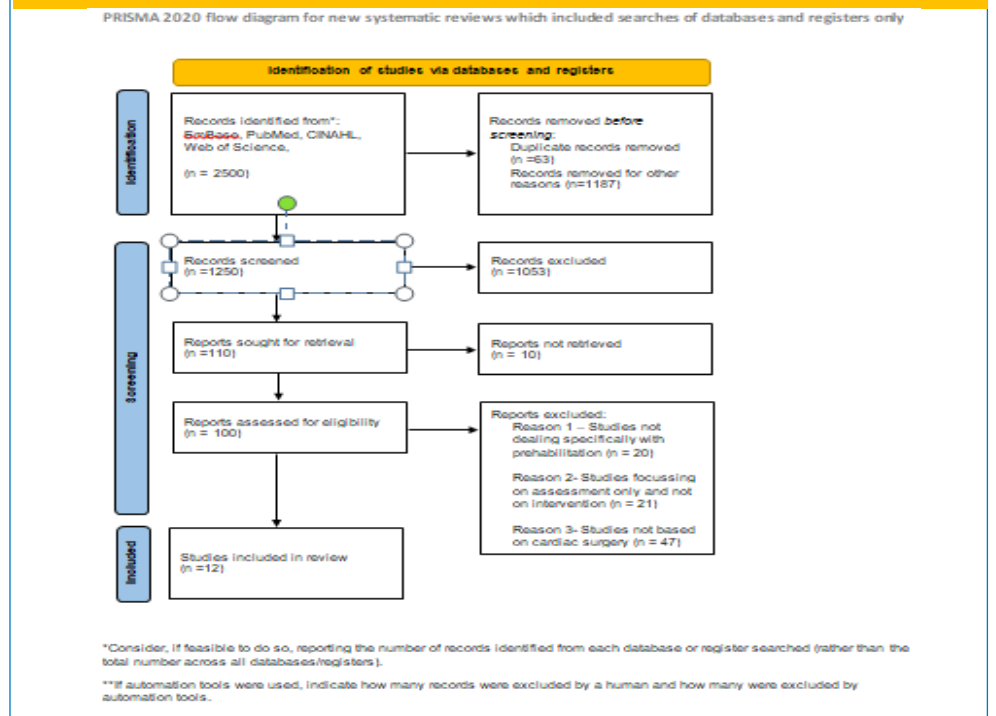
Inclusion Criteria:

- 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 should 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: An exponential increase in the number of TAVI cases performed, necessitates the need to improve outcomes. This review has shown 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 because of their high risk of surgery and increased frailty markers. Comparative studies showing cost effectiveness of care with and without prehabilitation would also add value.

Clinical Implications: In keeping with research evidence, it is imperative that modern cardiac surgical centres incorporate prehabilitation programmes regularly for cardiac surgeries to optimise outcomes and reduce length of hospitalisation.

Service Implications: It is also important to consider digital solutions to the delivery of prehabilitation programmes. As shown in this review, this will provide more cost-effective solutions to the current cash strapped health economy. Finally, the current 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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