Project Title

Patient Reported Outcome Measures (Proms) In Total Knee Replacement: Our Journey And Initial Results

Project Lead and Members

Project lead: Asst Prof Wang Lushun

Project members: Fione Gun, Teh Su Fern, Angelina Eswari, Christine Wu Xia, Tai Kai Pik, Tang Min Yee, A/Prof Fareede Kagda

Organisation(s) Involved

Ng Teng Fong General Hospital, Jurong Community Hospital

Healthcare Family Group(s) Involved in this Project

Medical, Healthcare Administration

Applicable Specialty or Discipline

Orthopaedic Surgery, Clinical Research

Project Period

Start date: Oct 2020

Completed date: 2021

Aims

- To set up a team of patient coordinators for effective data collection, database management and analysis of PROMs for patients undergoing TKR surgery.
- To complement the existing TKR Value Driven Outcomes (VDO) Project helping us combine clinical indicators with PROMs.
- Analysis of these results can lead to interventions that improve effective value-based care.
- Spur scientific research with a high quality database.

Background

See poster appended / below

Methods

See poster appended / below

Results

See poster appended / below

Lessons Learnt

- Significant improvements in PROMs were noted after TKRs at 6 months. In particular, statistically and clinically significant improvements were found in pain, functional and physical domains.
- Continued long term follow up and funding will be vital in long term analysis of our TKR patients to help identify critical interventions that can help patient outcomes after TKRs.

Conclusion

See poster appended / below

Project Category

Care & Process Redesign, Value Based Care, Patient Reported Outcome Measures, Applied/ Translational Research, Quantitative Research

Keywords

Total Knee Replacement Surgery, Value Driven Outcomes, Oxford Knee Score, Knee Society Score, NGEMR

Name and Email of Project Contact Person(s)

Name: Fione Gun

Email: Fione_Gun@nuhs.edu.sg

PATIENT REPORTED OUTCOME MEASURES (PROMS) IN TOTAL KNEE REPLACEMENT: OUR JOURNEY AND INITIAL RESULTS

☐ SAFETY   ☐ PRODUCTIVITY
☑ QUALITY   ☐ COST
☑ PATIENT EXPERIENCE

MEMBERS: ASST PROF WANG LUSHUN (CLINICIAN LEAD), FIONE GUN, TEH SU FERN, ANGELINA ESWARI, CHRISTINE WU XIA, TAI KAI PIK, TANG MIN YEE, A/PROF FAREED KAGDA (SPONSOR)

Define Problem, Set Aim

Background
- Total Knee Replacements (TKRs) are increasing indicated for severe knee osteoarthritis due to our rapidly aging population in Singapore.
- Patient-reported Outcomes Measures (PROMs) for TKR patients are questions that patients answer to inform their healthcare providers of their progress after surgery.
- PROMs are useful in demonstrating the effectiveness of TKR surgery in an objective manner from the patients' perspective.

Opportunity for Improvement
- PROMs will aid clinicians in optimizing treatment and improve patient outcomes after TKR surgery.

Aim
- To set up a team of patient coordinators for effective data collection, database management and analysis of PROMs for patients undergoing TKR surgery.
- To complement the existing TKR Value Driven Outcomes (VDO) Project helping us combine clinical indicators with PROMs.
- Analysis of these results can lead to interventions that improve effective value-based care.
- Spur scientific research with a high quality database.

Establish Measures

Methodology

Condition/ Disease Specific PROMs	
Oxford Knee Score (OKS)	Scores specially designed to measure pain and function after TKR surgery.
Knee Society Score (KSS)	

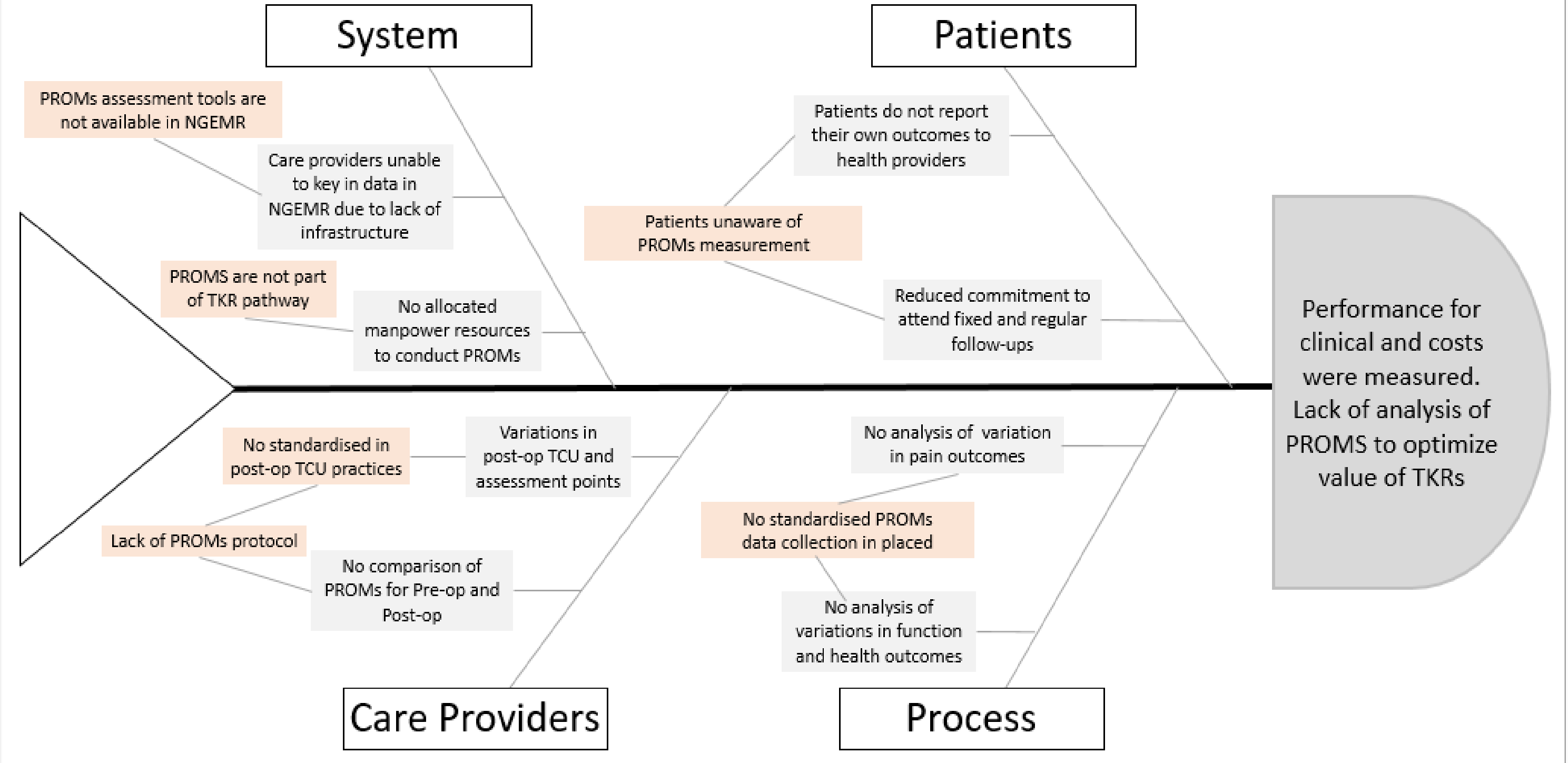| Generic PROMs	
SF-36v2	Health related quality of life measures for 8 domains of health
EQ-5D-5L	Health related quality of life measures for 5 domains of health

Patient Cohort
The patient cohort comprises of 58 patients underwent TKR surgery that scheduled from October 2020 to December 2020 were enrolled in the TKR PROMs study. The Pre-op and 6-month PROMs data collection was performed by the dedicated Care-Coordinators through face-to-face interview or telephonic follow-up.

No of Patients	58	Gender	Female	31
Age (Mean ± SD)	67.8 ± 6.2		Male	27

Analyse Problem

Root Cause Analysis
Targeted areas of improvements were:

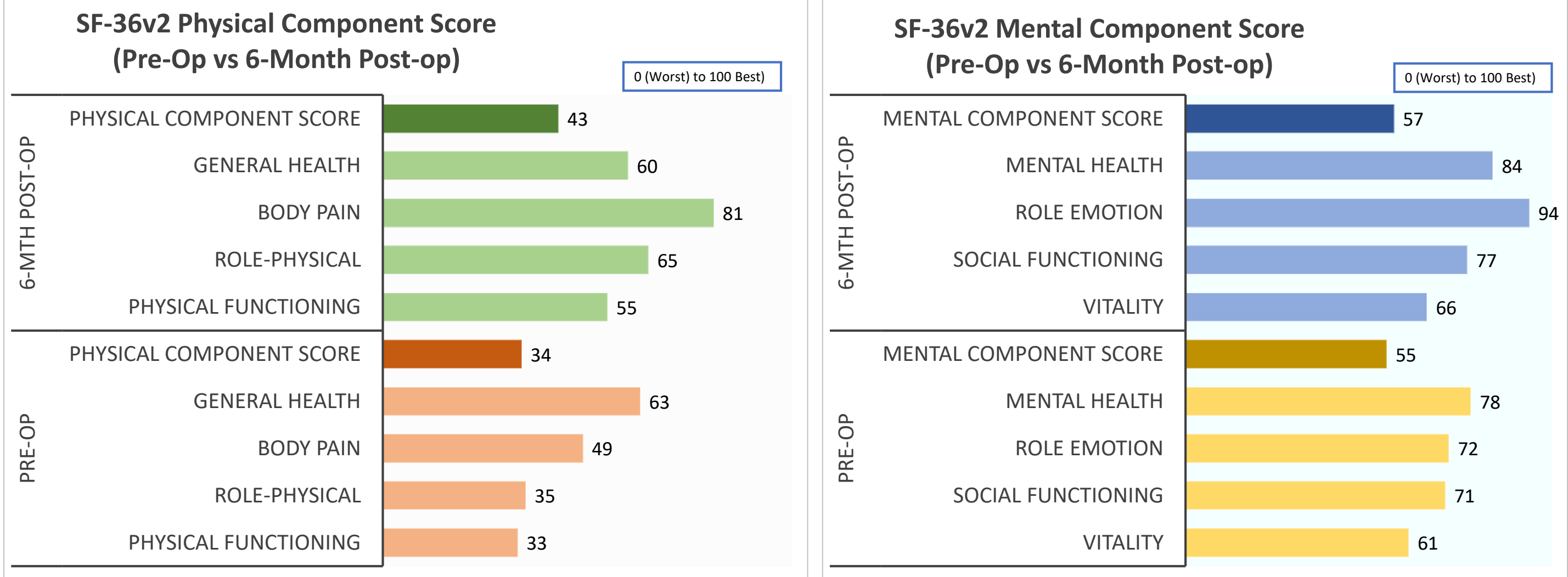## Test & Implement Changes

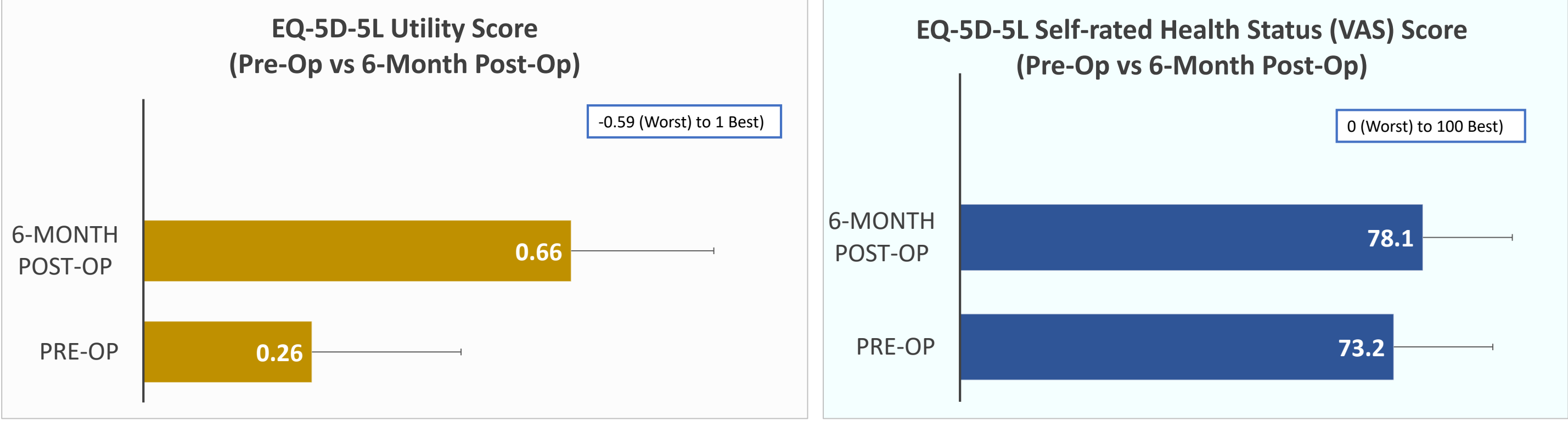| Cycle	Plan	Do	Study	Act
1.	Explored external funding to support the recruitment of PROMs Care-coordinator	The PROMs Programme grant was awarded by JurongHealth Fund	Development of the funded programme	Programme update to JHF Board on quarterly basis
2.	Development of TKR PROMs methodology and NGEMR build for data collection	Established methodology for DSRB application and NGEMR built for TKR PROMs	Robust data collection system	Enhancement of data collection
3.	Development of TKR PROMs data collection clinical workflow	Implementation of TKR PROMs data collection for Pre-op and Post-op (6, 12 and 24-month)	Improvement in performance and decease in variance	Regular tracking and monitoring on performance
4.	TKR PROMs data analysis	Review care redesign and/or interventions	Improvement in patient outcomes	Enhancement and regular monitoring of performance

Comparison of Results (Pre-Op vs 6-Month Post-Op)
There were **statistically significant improvements in both OKS and KSS scores (p<0.01)** (OKS overall score, OKS pain, OKS function, KSS symptoms, KSS Satisfaction and KSS Functional domains) at 6 months post-op.

PROMs (n = 58)	Components	Pre-op	6-Month Post-op	P-value	Preferred Direction
OKS	OKS Overall Score	24.2 ± 7.9	38.5 ± 7.2	< 0.01	⬆
	OKS (Pain Domain)	51.2 ± 18.2	89.1± 15.5	< 0.01	⬆
	OKS (Function Domain)	49.1 ± 17.1	67.6 ± 18.0	< 0.01	⬆
KSS	Symptoms	14.6 ± 4.5	7.1 ± 3.6	< 0.01	⬇
	Patient Satisfaction	18.5 ± 6.3	30.9 ± 6.1	< 0.01	⬆
	Patient Expectation	14.8 ± 0.7	13.4 ± 2.6	0.03	⬆
	Functional	38.6 ± 15.6	63.9 ± 19.0	< 0.01	⬆

There was **statistically significant improvement in SF-36v2 Physical Component Score (p<0.01)** at 6 months post-op.

There was **a statistically significant improvement in EQ-5D-5L Utility Score (p<0.01)** at 6 months post op.

Spread Changes, Learning Points
- The early PROMs results from our TKR patients in NTFGH have been very encouraging with high uptake and follow-up rates.
- Significant improvements in PROMs were noted after TKRs at 6 months. In particular, statistically and clinically significant improvements were found in **pain, functional and physical** domains.
- Continued long term follow up and funding will be vital in long term analysis of our TKR patients to help identify critical interventions that can help patient outcomes after TKRs.

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