Hospital Authority Convention 2025

Topic:
Effectiveness of Occupational Therapy Pre-Operative Rehabilitation for Patient with Lumbar Spinal Fusion in ERAS Program: A Retrospective Study

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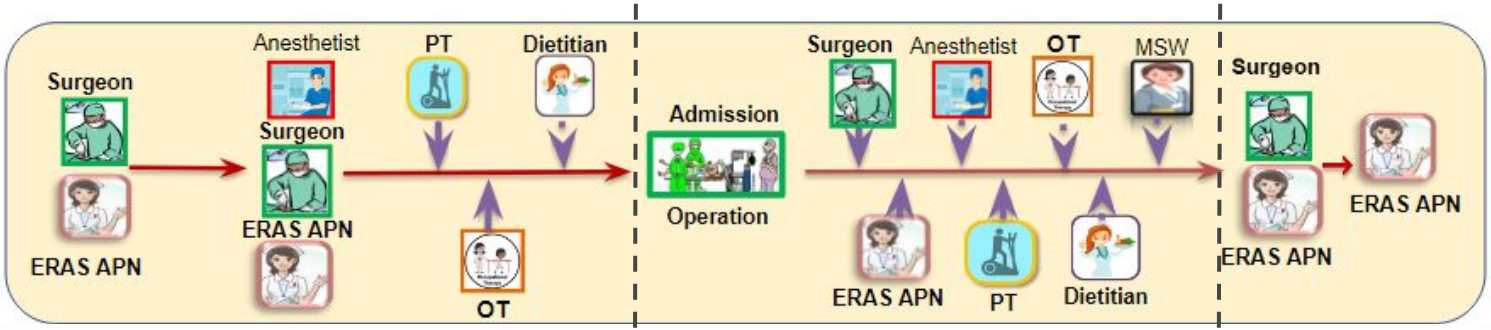
Enhanced Recovery After Surgery (ERAS) program

- Inspired by **Total Joint Replacement program in YCH**
    - Enhance the perioperative care with **multidisciplinary** approach to the patient after surgery

- **Enhanced Recovery After Surgery (ERAS) program**
    - Initiated since **April 2020** in Kowloon West Cluster (KWC)
    - Enhance the **perioperative care** of KWC patients who are going to have major ENT, General Surgery and **Orthopaedic Surgery**

Flow of ERAS



Referral → Pre-operation in OPD → Post-operation in-patient → Post-discharge in OPD

OT services

- Perform ADL assessment
- Screening for preoperative home visit
- Provide information on assistive device as appropriate
- **Education** on techniques in ADL tasks

- ADL and Caregiver training
- assistive devices prescription
- Post-op home visit if indicated
- **Ensure Safe Early Discharge**

- Fast track OPD rehabilitation program
- Scar management

TELE?

Objectives

- To evaluate the effectiveness of Occupational Therapy pre-operative education on length of stay, pain level, and functional outcome of patients after lumbar spinal fusion in the ERAS program
- Provide insight for developing a comprehensive guideline on whether pre-operative education is recommended to be included
- Enhances the clinical practice in the ERAS program

Study design

- A retrospective cohort study
- Recruited patients with lumbar spinal fusion done within ERAS program in Yan Chai Hospital from 2022-2023

Education group

- **Occupational Therapy Pre-Operative Education Class**
  - Initiated in OPD since **4/2023**
  - **4-6 weeks** before operation
  - **One-hour** session
  - Patients +/- caregivers

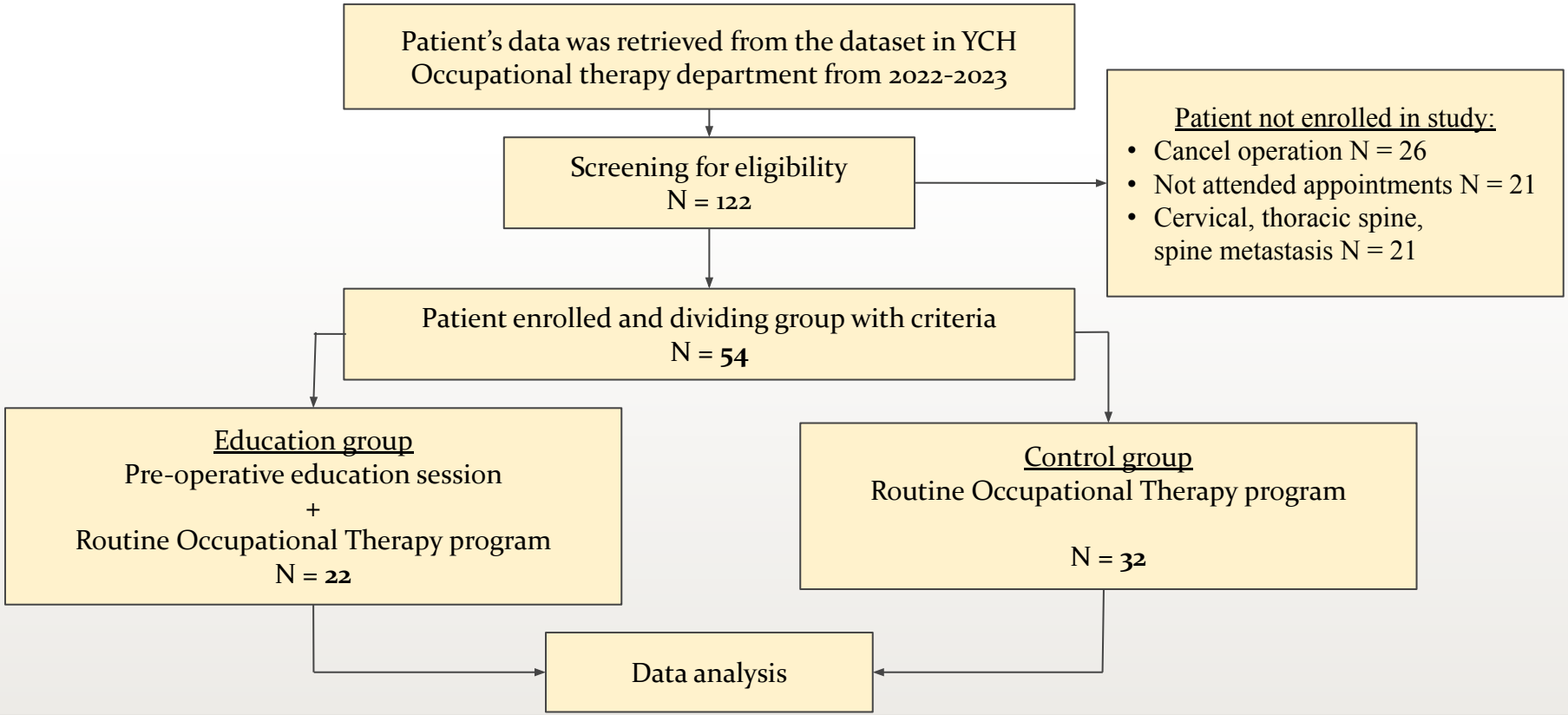
+

- **Routine Occupational Therapy program**

Control group

- **Routine Occupational Therapy Program** (1/2022 - 3/2023)
  - Pre-operative baseline assessment
  - Post-operative in-patient ADL training and rehabilitation
  - Out-patient clinic post-operative assessment and rehabilitation

Study Design

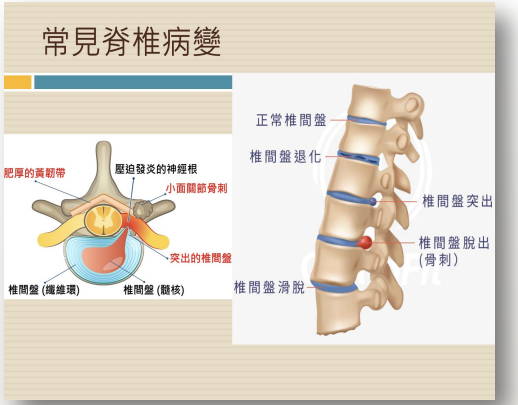


OT Intervention

Prepare Patient and Caregiver
Prepare Home Environment

⇨ **Facilitate Safe and Early Discharge**

Pre-operation Class



Spine pathology

ADL adaptive strategies

OT Intervention

Prepare Patient and Caregiver
Prepare Home Environment

⇨ **Facilitate Safe and Early Discharge**

Home Visit and suggestions on home modification

Adaptive aids recommendation and prescription

Post-operation rehabilitation

Outcome measures

- Primary outcomes
  - Length of stay in hospital (retrieved from CMS)
  - Oswestry Disability Index (ODI)
  - Pain level (NRS)
- Secondary outcomes
  - ADL performance (Modified Barthel Index)
  - Patient's wellbeing (Chinese version of WHO-5)
- Assessment performed at pre-op, post-op 6 weeks, post-op 3 months

Results

Demographics data		Education group	Control group
Number		22	32
Gender			
	Male	10	11
	Female	12	21
Mean age ± SD		69.00 ± 7.00	65.16 ± 8.99
Number of levels operated on	Average ± SD	2.64 ± 0.73	2.53 ± 0.57
	2	11	16
	3	6	16
	4	5	0
Living setting			
	Home alone	2	6
	Home with family, daytime alone	9	4
	Home with family/carer	11	22
Discharge destination			
	Home alone	2	5
	Home with family, daytime alone	7	4
	Home with family/carer	13	20
	Institutional / respite care	**0**	**3**

All D/C home!

Results

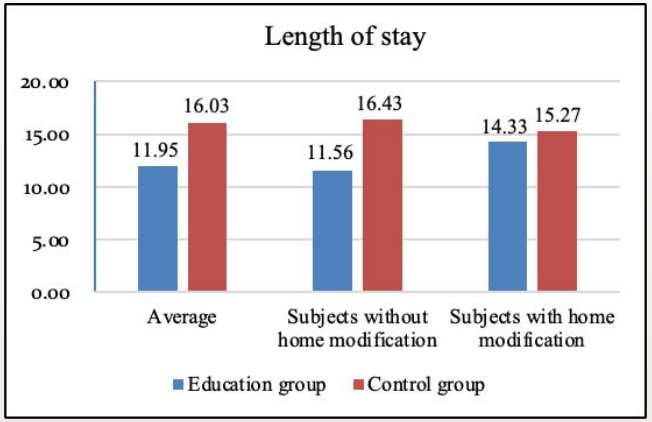
Pathology types		Education group	Control group	p-value
				0.117
Spinal stenosis		20 (90.91%)	30 (93.75%)	
Level involved	L2/3	5 (22.73%)	2 (6.25%)	
	L3/4	12 (54.55%)	16 (50.00%)	
	L4/5	**20 (90.91%)**	**26 (81.25%)**	
	L5/S1	2 (9.09%)	5 (15.625%)	
Prolapsed disc		1 (4.545%)	2 (6.25%)	
Spondylolisthesis		1 (4.545%)	0 (0.00%)	

Chi-Square = 15.447

Results

Means of outcome measures	Education group	Control group	p-value
Length of stay (days)	11.95 (N = 21*)	16.03 (N = 32)	0.048*
Subjects without home modification (N = 39)	11.56 (N = 18)	16.43 (N = 21)	0.042
Subjects with home modification (N = 14*)	14.33 (N = 3*)	15.27 (N = 11)	0.875

*1 outlier was eliminated
By Mann-Whitney U test



Length of stay

- Education group has significantly shorter LOS than the control group (Z = -1.981, Effect size: r = 0.270)
- Same result was found in subjects without home modification, but not in subjects with home modification (Z = -2.037, Effect size: r = 0.277)

Results

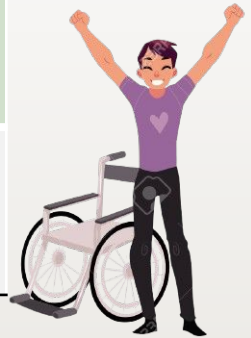
Means of outcome measures		Education group	Control group	p-value
Pain level (NRS)				0.255
	Pre-op	5.27	5.91	
	6 weeks post-op	3.09	2.88	
	3 months post-op	2.86	2.50	
ODI				0.105
	Pre-op	42.80	44.06	
	6 weeks post-op	36.53	34.08	
	3 months post-op	35.52	30.48	
MBI				0.867
	Pre-op	95.32	95.44	
	6 weeks post-op	92.55	93.28	
	3 months post-op	93.82	94.50	
WHO-5				0.904
	Pre-op	52.73	56.75	
	6 weeks post-op	65.45	68.50	
	3 months post-op	65.82	68.88	

- Pain level, ODI, MBI, and WHO-5 have no significant difference in time x group interaction between the education group and control group ($p > 0.05$)

Results

Subgroup analysis of outcome measures by time intervals	Education group (t-value)	p-value	Control group (t-value)	p-value
Pain level (NRS)				
Pre-op vs 6 weeks post-op	3.464	0.002	6.365	< 0.001
Pre-op vs 3 months post-op	3.804	0.001	7.480	< 0.001
6 weeks post-op vs 3 months post-op	1.418	0.171	1.879	0.070
ODI				
Pre-op vs 6 weeks post-op	3.319	0.003	3.817	0.001
Pre-op vs 3 months post-op	3.943	0.001	5.479	< 0.001
6 weeks post-op vs 3 months post-op	1.688	0.106	2.909	0.007
MBI				
Pre-op vs 6 weeks post-op	2.159	0.043		0.019
Pre-op vs 3 months post-op	1.342	0.194		0.294
6 weeks post-op vs 3 months post-op	-1.826	0.082		0.015
WHO-5				
Pre-op vs 6 weeks post-op	-5.024	< 0.001	-6.512	< 0.001
Pre-op vs 3 months post-op	-5.125	< 0.001	-6.803	< 0.001
6 weeks post-op vs 3 months post-op	-1.000	0.329	-0.722	0.476

Returned to premorbid ~ 3m post-op



Discussion

- Length of stay can be effectively shortened with ~ 4-day reduction by providing pre-operative education to the patients and caregivers

Improved **adaptive skills** in daily task

Improved **readiness** for operation, reduced anxiety

Aids and **home modification** ready before operation

Increased capability of **caregiver, reduced caring stress**

Increased knowledge and **managed expectation** before operation

Enhanced recovery

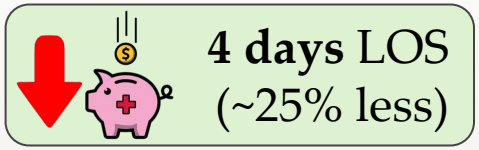
Reduced hospitalization

Less institutional needs

(Eastwood et al., 2019)
(Edwards et al., 2022)

Discussion

- Pre-operative education can increase the cost-effectiveness of routine clinical practice in ERAS program



4 days LOS
(~25% less)

One day O&T in-patient cost per patient treated in 2009/10:
~ $21,630

- Low cost in implementation
- More efficient by utilization of group-based delivery

(Louw et al., 2014)

Discussion

- Content of pre-operative education lacked a consensus in terms of **mode of delivery, specific topics, optimal timing**, and **interventions** to be included
  - Delivery mode: talks, education booklet, **TELE**, prehabilitation training?
  - Topics:
    - Biophysiological, function, cognitive and social
    - Pain management?
  - Further research to identify the essential content and feasible mode of education delivery

(Burgess et al., 2019)
(Debono et al., 2021)

Conclusion

- Occupational Therapy pre-operative education can be included in the routine service for patients with lumbar spinal fusion in the ERAS program
- It is a cost-effective measure that can significantly reduce the length of stay of the patients by enhancing their readiness to the operation and learning adaptive skills in ADL tasks
- Further research is recommended to identify the essential contents of education, optimal mode and timing of delivery for pre-operation interventions in the ERAS program
- Apply to services in other scheduled operation

Acknowledgements

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Thank You!