Edmonton Frail Scale in elective total hip and knee arthroplasty: a predictor for increased length of stay.

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Background

- The Edmonton Frail Scale (EFS) is a valid and reliable tool for defining frailty.
- EFS has been used to predict increased length of stay (LOS) and morbidity in elective cardiac and colorectal surgery.
- The role of EFS in predicting increased LOS and complications in elective total hip arthroplasty (THA) and total knee arthroplasty (TKA) remains to be studied.

Objective

To evaluate EFS as a predictor for increased post-operative LOS and complications in elective THA and TKA.

Methods

- Retrospective review of consecutive patients with completed EFS scores who underwent elective THA and TKA between October 2016 to March 2017 was conducted.
- Following power analysis, EFS score, ASA grade, co-morbidities, LOS, high dependency unit (HDU) admission and post-operative complications were collected.
- SPSS software (version 23.0) was used for statistical analysis. A two tailed p value of less than 0.05 were considered as statistically significant.
- Chi-square test, independent sample T-tests and one way ANOVA were used in determining statistical significance among grouped variables were appropriate.
- Area under the curve (AUC) and Receiver operator curve (ROC) analysis were used to measure the accuracy of frailty scores in predicting (LOS) and post operative complications.

Results

- 100 patients each who underwent THA and TKA
- 106 of them were non frail patients (EFS less than or equal to 5) and the remaining 94 were classed as frail patients (Table 1).
- The mean LOS was 3.7 days (0-24 days) in the non-frail group and 8.4 days (1-70 days) in the frail group ($p < 0.001$).
- Frail patients experienced significantly more post-operative complications than the non-frail patients ($p < 0.001$) (Table 2).
- The AUC for the ROC analysis was 0.753, with EFS greater than 6 being associated with LOS more than 4 days (Figure 1).
- EFS of 6 or more had a positive predictive value of 74% and a negative predictive value of 70% with respect to LOS greater than 4 days.
- Logistic regression analysis did not show any association between EFS score and post-operative complications.

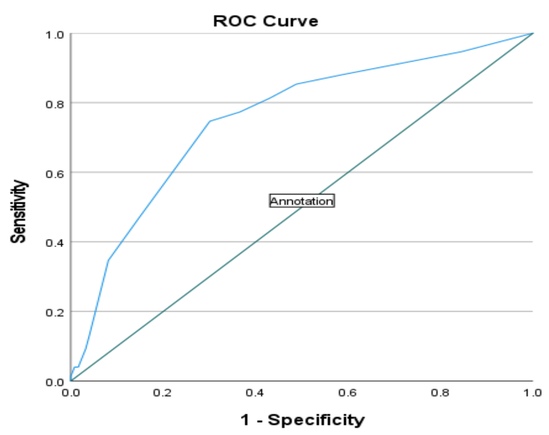
Table 1- Demographics

		Non-Frail	Frail
Total number of patients		106	94
THA		54	46
TKA		52	48
Mean age (years)(range)		74 (65-91)	77 (59-94)
Co-morbidities (%)	*None/ one*	62	23
	Two or more	38	77
ASA grade (%)	*One*	13	4
	Two	65	39
	Three	22	57

Table 2- Outcomes

		Non-Frail	Frail
Mean LOS (days) (range)		3.7 (0-24)	8.4 (1-70)
HDU stay	**% of patients**	8	26
	LOS days	1.6	1.6
Post-operative complications (%)	**Surgical**	8	16
	Medical	28	65
	Total	36	81

Figure 1- ROC for LOS



Conclusions

- EFS is an acceptable predictor for increased LOS, but not for post-operative complications in elective hip and knee arthroplasty.
- The use of EFS should be considered in pre-operative clinics for elective THA and TKA.
- A score of 6 or more should trigger pre-operative interventions to optimise these patients

Implications

To the best of our knowledge this is the first study to look at EFS as a predictor for increased LOS in elective THA and TKA patients. This could be used to target pre-operative patient optimisation, better discharge planning and more accurate bed modelling

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