More than physical healing- A perspective on determinants of postoperative patient experience in elderly hip fracture patients

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INTRODUCTION:
Hip fracture injury is a singular traumatic experience with serious health and socioeconomic repercussions for an increasingly ageing population. Apart from objective clinical performance indicators and functional scores, patient experience is also important. However, factors influencing patient satisfaction and expectations after osteoporotic hip fracture surgeries remain poorly defined. Accordingly, this study aims to determine factors that influence overall postoperative satisfaction and patient expectation.
METHODS:
Retrospective analysis of a prospectively followed up cohort was conducted on surgically treated hip fracture patients (n=257) from 1st of January to 31st of December 2023. Significance of patient demographics, co-morbidities, pre and post-morbid (PROMs) scores obtained via validated instruments (EQ5D, NPRS, HHS and SF36) were correlated against 6 months postoperative satisfaction (6-point Likert scale) and expectation (7-point Likert scale) ratings. Normality testing of continuous variables was done using the Shapiro-Wilk test with results corroborated via evaluation of histograms and Q-Q plots. Univariate analysis (Mann-Whitney U and Kruskal Wallis) and ordinal logistic regression were performed using SPSS (v30.0.0.0) with two-tailed significance level of 0.05 or 0.01. Spearman's rank biserial correlation and odds ratios were obtained for significant variables identified in logistic regression.
RESULTS:
The study cohort comprised 74 males and 183 females (mean age =78.97 years), of which 152 (59.1%) sustained NOF fractures and 105 (40.9%) sustained IT fractures. Due to skewed distribution of postoperative satisfaction and expectation ratings, all ratings were dichotomized (Table 1) to facilitate interpretation. This was done by defining the top 3 categories for each respective variable as being "satisfied" or having "expectation met".
Overall patient satisfaction (Table 1) was 95.0% (96.7% intra-NOF group and 92.4% intra-IT group) and overall expectation met (Table 1) was 90.2% (93.4% intra-NOF group and 85.7% intra-IT group). Within gender, higher satisfaction (96.2%) and higher expectation met (90.7%) ratings were observed in females.
18 variables were found to have significantly impacted 6 months postoperative satisfaction levels during univariate analysis. Ordinal logistic regression analysis of these variables revealed that Gender (OR=0.49, 95% CI 0.278-0.862, p=0.013), 6 months scores for EQ-Health (mean= 71.01±17.13; OR=1.032, 95% CI 1.012-1.053, p=0.002) and mental health (MH) (mean= 82.60±16.19; OR=1.023, 95% CI 1.001-1.046, p=0.044) significantly impacted postoperative satisfaction. Rank biserial correlation showed moderate positive correlation of EQ-Health and MH and a weak positive correlation of Gender with satisfaction level.
Univariate analysis identified 20 variables that significantly influenced meeting of expectation 6 months after surgery. Multivariate logistic regression established that 6 months NPRS (mean=0.92±1.83, p=0.029; OR=0.79 95% CI 0.639-0.976) and EQ-Health (mean=71.01±17.13, p=0.009; OR=1.027 95% CI 1.007-1.048) scores have significantly impacted expectation met. Rank biserial correlation demonstrated moderate positive correlation of EQ-Health and moderate negative correlation of NPRS with expectation met.
DISCUSSION AND CONCLUSION:
Overall, gender and 6 months postoperative scores (EQ-Health and MH) significantly impacted overall satisfaction while 6 months postoperative NRPS and EQ-Health scores significantly influenced meeting of patient expectations.
Gender associated odds-ratio indicated that males are half as likely to be satisfied than females. However, the rank biserial score (Rrb=0.152) suggests that the association is weak and likely indeterminate as other psychosocial or cultural factors could have shaped gender dependent interpretation of satisfaction.
Odds ratio (>1) for EQ-Health and MH demonstrated a greater likelihood of better satisfaction with positive correlation scores further evincing both domain's association with higher satisfaction ratings. This underscores the significance and utility of domains like subjective health status and psychological support in postoperative rehabilitation for optimal functional recovery and patient outcomes.
Odds ratio (<1) and negative correlation scores for 6 months postoperative NPRS connotes that postoperative pain should be effectively managed and minimized through appropriate peri-operative pain management protocols after surgery for better expectation met. Crucially, NOF patients reported higher satisfaction and expectation met due likely to hemiarthroplasty conferring immediate stability for NOF fractures with more predictable functional recovery.
Collectively, this demonstrated that the physical (pain and health) and mental (MH) domains of health were intricately involved in shaping of patient experience after hip fracture surgery. Ultimately, incorporating these findings into developing

inclusive care pathways would enable focused and efficacious healthcare delivery to improve postoperative satisfaction and expectation.

Table 1: Figures of overall 6 months postoperative patient satisfaction and expectation and figures obtained after dichotomising by gender.

	Mean (SD)	Frequency/ Percentage	Overall	Female		Male	
Satisfaction				**Frequency (%)**	**Mean (SD)**	**Frequency (%)**	**Mean (SD)**
6 (Excellent) **5 (Very Good)** **4 (Good)** **3 (Fair)** **2 (Poor)** **1 (Terrible)**	4.71 (0.87)	6 (52/20.2%) 5 (94/36.6%) 4 (98/38.1%) 3 (10/3.9%) 2 (3/1.2%) 1 (0/0%)	95%	176/183 (96.2%)	4.79 (0.83)	65/74 (87.8%)	4.50 (0.94)
Expectation							
7 (Yes, totally) **6 (Yes, almost totally)** **5 (Yes, quite a bit)** **4 (More or less)** **3 (No, not quite)** **2 (No, far from it)** **1 (No, not at all)**	5.64 (1.04)	7 (60/23.3%) 6 (80/31.1%) 5 (92/35.8%) 4 (15/ 5.8%) 3 (9/3.5%) 2 (1/0.4%) 1 (0/0%)	90.2%	166/183 (90.7%)	5.70 (1.02)	66/74 (89.1%)	5.47 (1.08)

Table 2: Multivariable ordinal logistic regression of significant variables with 6 months postoperative satisfaction and expectation levels

‡ Ordinal logistic regression
Rrb= Rank biserial correlation

*** Significant at 0.05**
****Significant at 0.01**

Satisfaction levels (6- point Likert)							
	Mean	**SD**	**Odds Ratio (OR)**	**95% CI**		**P-value (‡)**	**Effect Size (Rrb)**
				Lower	**Upper**		
Gender, n (%)	-					**0.013***	**0.152*(Weak)**
Male	-	-	**0.49**	0.278	0.862	-	-
Female	-	-	1	-	-	-	-
6 months post-op							
EQ-HEALTH	71.01	17.13	**1.032**	1.012	1.053	**0.002***	**0.405**(Moderate)**
MH	82.60	16.19	**1.023**	1.001	1.046	**0.044***	**0.355**(Moderate)**
Expectation levels (7-point Likert)							
	Mean	**SD**	**Odds Ratio (OR)**	**95% CI**		**P-value (‡)**	**Effect Size (Rrb)**
				Lower	**Upper**		
6 months post-op							
NPRS	0.92	1.83	**0.79**	0.639	0.976	**0.029***	**-0.272**(Moderate)**
EQ-HEALTH	71.01	17.13	**1.027**	1.007	1.048	**0.009***	**0.424**(Moderate)**