Prognostic capacity of Orebro Musculoskeletal Pain – Short Questionnaire in predicting recovery following non-fatal RTIs: results from an inception cohort study

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Abstract

Poor prognosis following non-fatal road traffic injuries (RTIs) contributes to unnecessary health care utilisation and high costs. We aimed to assess prognostic capacity of the Orebro Musculoskeletal Pain – Short Questionnaire (OMPSQ) in predicting recovery following non-fatal RTIs. Using data from an inception cohort study of non-fatal RTIs in NSW, we found statistically significantly higher proportions of fully recovered (GPE >4) 6 months after the injury in the low (OMPSQ score <50) than the high (OMPSQ score ≥50) risk groups. OMPSQ would have a potential to be used as a stratification tool for non-fatal RTIs into groups with distinct recovery.

Background

Road traffic injury (RTI) is a major public health problem worldwide, contributing to a large burden of mortality, disability and significant economic loss. In Australia, with decreasing trend of fatal RTIs, non-fatal RTIs is still on the rise and their associated costs are significant. An important contributor to the high costs of non-fatal RTIs is associated with poor prognosis, which leads to unnecessary health care utilisation. Using risk based stratification to direct health care service delivery according to prognostic sub-grouping is gaining favour musculoskeletal health care, including those resulted from RTIs. Our study aims to assess prognostic capacity of the Orebro Musculoskeletal Pain – Short Questionnaire (OMPSQ) in predicting recovery following non-fatal RTIs.

Method

This is an inception cohort study conducted with participants recruited from emergency department of 2 metropolitan hospitals, 3 rural health services, general practitioners, physiotherapists, police crash data and Motor Accidents Authority Registry in New South Wales, Australia. Participants were 17 years or older, sustained an unintentional RTI within 28 days of the crash, English speaking and a resident of NSW with a valid Medicare number. Participants with non-fracture injuries with principal injury region at the neck, lower back and lower limbs were stratified using the OMPSQ score at baseline into low (score <50) and high (score ≥50) risk. We assessed the changes in short-form 12-item (SF12) physical, and mental health scores between baseline and 6-month follow-up, and the proportions of participants reported fully recovered measured by Global Perceived Effects scale (GPE >4) between low and high risk groups. Paired t-test was used to compare changes in SF12 physical and mental, and chi-square test was used to assess the significance of the risk ratio of fully recovered between low and high risk groups.

Results

Of 2019 participants recruited, there were 166 non-fracture injuries with principal injury region at the neck, 78 in the lower back and 254 lower limbs. Between baseline and 6-month follow-up, there are statistically significant improvements in SF12 physical scores in both low and high risk groups across all three injuries.

Improvements appear to be larger in the low than in the high risk group, however, they were not statistically significant (Table 1). In terms of mental score, while there seems to be some improvements in all injuries and in low and high risk group, statistically significant improvement was observed in the high risk lower limb injury (change of 7.2, 95% CI: 2.6-11.9) (Table 1). Regarding the proportions of fully recovered, they were significant higher among those in the low than those in the high risk group. The trend was consistent and statistically significant across all three injury. Specifically, the proportions of recovered were 2.63 times (95% CI: 1.29-5.35) among those sustained neck injury, 3.96 (95% CI: 1.31-11.97) among lower back, and 3.59 times (95% CI: 1.60-8.06) among lower limb injury (Table 2).

Table 1. **Mean and change (95% CI) of SF12 physical and mental scores between baseline and 6 month follow-up of neck, lower back and lower limb injuries stratified by high and low risk using OMPSQ**

		Neck		Lower back		Lower limb	
		Mean	Change (95% CI)	Mean	Change (95% CI)	Mean	Change (95% CI)
SF12 physical score							
Low risk	Baseline	39.4		34.5		32.4	
	6 months	47.9	*8.5 (5.3-11.6)**	47.4	*12.9 (7.1-18.8)**	48.4	*16.1 (14.0-18.1)**
High risk	Baseline	31.9		24.4		26.2	
	6 months	38.6	*6.7 (1.9-11.5)**	33.4	*9.0 (2.8-15.1)**	38.8	*12.6 (8.4-16.8)**
SF12 mental score							
Low risk	Baseline	52.2		48.2		52.6	
	6 months	53.6	1.4 (-0.8-3.5)	49.6	1.4 (-3.6-6.4)	54.5	2.0 (-0.1-4.0)
High risk	Baseline	32.0		38.9		39.7	
	6 months	37.4	5.4 (-0.2-10.9)	39.6	0.6 (-6.0-7.3)	46.9	*7.2 (2.6-11.9)**

*statistically significant (p-value < 0.05)

Table 2. Recovery measured by Global Perceived Effects scale at 6 months

	Neck		Lower back		Lower limb	
	%*	RR (95% CI)	%*	RR (95% CI)	%*	RR (95% CI)
High	26.1		14.3		17.2	
Low	68.5	*2.63 (1.29-5.35)^*	56.5	*3.96 (1.31-11.97)^*	61.9	*3.59 (1.60-8.06)^*

*% recovered = % GPE ≥ 4; ^statistically significant (p-values < 0.01)

Conclusion

OMPSQ would have a potential to be used as a stratification tool for non-fatal RTIs into groups with distinct recovery. However, variations in recovery pattern exist between risk groups when different measurements of recovery are used.

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