Exploring the Predictive Value of the Falls Screening Scale for Pediatric Patients in a Medical Center

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ABSTRACT

This study analyzed the fall predictive value of the fall risk screening scale for pediatric inpatients in the generalward of a medical center through retrospective data, hoping to find out more appropriate fall risk factors for sick children and improve the quality of clinical care.

INTRODUCTION

Falls are an important patient safety issue. For children who are still developing physically and mentally, they cannot recognize the danger. If An injury occurs due to falls, it will not only cause pain or prolonged hospital stay, but may also lead to disability in severe cases. Therefore, hospital managers need to establish a good fall prevention plan to effectively reduce fall risk.

METHODS AND MATERIALS

This is a retrospective case control study. Medical records during 2017 and 2021 regarding factors of falls among pediatric inpatients in a medical center in northern Taiwan were collected. Patients were divided into with and without fall groups and predictors of falls were analyzed. The sensitivity and specificity of the scale with the best cut-off point were also examined.

RESULTS

The prevalence of falls was 0.09% (58 out of 63,035). Among the risk predictors in the current Fall Screening Scale, there was no significant differences in "gender“ (p=0.6622) and "fall related medication use" (p=0.6127) between with and without falls.

However, the patient with higher " activity " had significant lower incidence in falls (p=<0.0001).

Therefore we replaced the predictor "gender" with "activity ", and had validated a total score of≧3 as the high risk group of falls. The results revealed that the sensitivity of a score ≥3 was 91.4%, specificity was 55.1% , and the area under curve was .68 by using ROC curve.

DISCUSSION & CONCLUSIONS

Under the current fall prevention intervention provided, we found that the predicting factors have changed. By re-validating the current predictive value of the Pediatric Patient Fall Screening Scale, it is found that " activity " can replace the "gender" as a new risk factor of pediatric falls, and it will achieve better fall prediction results. The results of this study suggest to use the new version of the Pediatric Patient Fall Assessment Scale to improve the quality of care for falls prevention.

GRAPHS AND TABLES

Table 1. The results of logistic regression analysis for the predictive factors of pediatric falls (N=63035)

variables	B	S.E.	Wals	p	Adjusted OR (95%CI)
Age (>3 v.s ≤3 years)	1.48	0.33	20.35	<.001***	4.38 (2.31-8.33)***
Medication use (yes v.s no)	0.03	0.28	0.01	.926	1.03 (0.59-1.80)
Fall experience within 1 year (no v.s yes)	1.11	0.44	6.49	.011*	3.05 (1.29-7.19)*
Patient mobility (normal v.s weakness or bed rest)	1.61	0.36	19.73	<.001***	5.03 (2.47-10.25)***

*p < .05. *** p < .001.

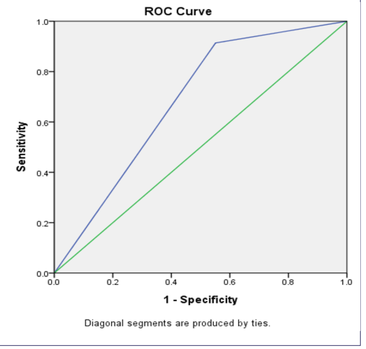
Table 2. The ideal cut-off values for predicting pediatric falls

cut-off values	sensitivity	1-specificity	Youden's index
1.00	0.966	0.867	1.099
3.00	0.914	0.551	1.363
4.00	0.879	0.544	1.335
5.00	0.638	0.397	1.241

Table 3. The Area Under Curve (AUC) and 95% CI for the pediatric falls indicators

Total score	AUC (95%CI)	p	OR (95%CI)
(<3 v.s ≥3)	0.68 (0.63-0.74) ***	<.001 ***	8.63 (3.45-21.59) ***

*** p < .001.



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