Research to Practice in the NIDILRR Community

Individual tools for assessing risk of unintentional injuries among those with spinal cord injury

KTER•CENTER

Knowledge Translation for Employment Research

Individual tools for assessing risk of unintentional injuries among those with spinal cord injury

Yue Cao, PhD

Chao Li, PhD

Acknowledgment

Purpose

Our purpose is to (1) describe a study on unintentional injuries and spinal cord injury, (2) describe the development of tools to make individualized predictions of risk for unintentional injuries, and (3) how to use the tools.

Background

- Spinal cord injury (SCI) is a traumatic injury that generally results in permanent sensory and motor loss.

- Unintentional injuries (UI) are a leading cause of healthcare utilization, disability, and mortality in the United States.

- Most traumatic SCIs are the result of UI. The risk of UI after SCI still remains high, because a pattern of high-risk behaviors often leads to SCI and these behaviors may continue after SCI onset.

Method

- 4,670 participants: 2,516 were identified from a specialty hospital and 2,154 from population-based state surveillance systems.

- Participants completed a self-report assessment during years 2012-2016.

- Number of times in the past year they had been injured seriously enough to receive medical care in a clinic, emergency room, or hospital.

- Demographic, SCI, socioeconomic, and behavioral predictors.

Method

- The definition of UI: "Injuries happen as the result of some type of mishap or event, such as a fall, collision, motor vehicle crash, or act of violence. They include dislocations, broken bones, burns, or cuts." Based on the information, we classified participants into three categories: (1) not injured at all, (2) injured with at least one fall-related UI, and (3) injured with no injury related to a fall.

- We developed a multinomial logit model to identify the risk factors associated with the three-category UI outcome.

Results

- 23% of participants reported at least one UI in the past year.
  - Among these participants, the average number of times injured was 1.82.
- 11% of participants had at least one injury related to a fall.
- 12% of participants had at least one injury not related to a fall.

	At least one fall-related injury vs. noninjury		
	OR	OR 95% CI	p-value
Midwestern cohort (ref=clinic cohort)	1.09	0.82 1.44	0.55
Southeastern cohort (ref=clinic cohort)	1.38	1.05 1.80	0.02
Male (ref=female)	0.73	0.58 0.91	<.01
Current age	1.00	1.00 1.01	0.24
Years post injury	1.00	0.99 1.01	0.69
Walk without assistance (ref=nonambulatory)	1.64	1.28 2.10	<.01
Walk with assistance (ref=nonambulatory)	3.01	2.00 4.54	<.01
Cervical-level injury (ref=other levels)	0.74	0.55 0.99	0.05
Thoracic-level injury (ref=other levels)	0.90	0.65 1.25	0.52
Hispanic (ref=NH-White and others)	0.69	0.32 1.49	0.35
NH-Black (ref=NH-White and others)	0.96	0.73 1.28	0.80

	At least one fall-related injury vs. noninjury		
	OR	OR 95% CI	p-value
Income 25K-75K (ref=less than 25K)	0.82	0.64 1.05	0.12
Income 75K or more (ref=less than 25K)	0.91	0.67 1.23	0.53
Underweight (ref=others)	1.27	1.01 1.61	0.04
Overweight (ref=others)	1.24	0.91 1.70	0.17
Binge drink 1-5 times (ref=no binge drink)	1.22	0.90 1.63	0.20
Binge drink 6 times or more (ref=no binge drink)	1.58	1.03 2.40	0.03
At least one nonmedical substance (ref=no)	1.57	1.24 1.99	<.01
Frequency of drug usage for spasticity	1.06	0.98 1.15	0.16
Frequency of drug usage for sleep	1.02	0.92 1.12	0.73
Frequency of drug usage for pain	1.24	1.13 1.36	<.01
Frequency of drug usage for depression	1.21	1.12 1.32	<.01
Using any medication for other symptoms (ref=no)	1.47	1.17 1.84	<.01

	Nonfall injuries vs. noninjury		
	OR	OR 95% CI	p-value
Midwestern cohort (ref=clinic cohort)	1.46	1.14 1.88	<.01
Southeastern cohort (ref=clinic cohort)	1.30	1.00 1.68	0.05
Male (ref=female)	1.08	0.86 1.35	0.52
Current age	0.98	0.97 0.99	<.01
Years post injury	1.01	1.00 1.03	<.01
Walk without assistance (ref=nonambulatory)	0.77	0.60 0.98	0.03
Walk with assistance (ref=nonambulatory)	0.76	0.43 1.34	0.34
Cervical-level injury (ref=other levels)	0.86	0.63 1.17	0.35
Thoracic-level injury (ref=other levels)	0.93	0.67 1.30	0.68
Hispanic (ref=NH-White and others)	0.87	0.45 1.67	0.67
NH-Black (ref=NH-White and others)	1.39	1.09 1.78	<.01

	Nonfall injuries vs. noninjury		
	OR	OR 95% CI	p-value
Income 25K-75K (ref=less than 25K)	1.04	0.83 1.30	0.72
Income 75K or more (ref=less than 25K)	0.82	0.61 1.10	0.19
Underweight (ref=others)	1.16	0.93 1.44	0.18
Overweight (ref=others)	1.34	1.02 1.75	0.03
Binge drink 1-5 times (ref=no binge drink)	1.11	0.85 1.44	0.43
Binge drink 6 times or more (ref=no binge drink)	1.46	0.99 2.15	0.05
At least one nonmedical substance (ref=no)	1.26	1.01 1.56	0.04
Frequency of drug usage for spasticity	1.05	0.97 1.13	0.22
Frequency of drug usage for sleep	0.93	0.84 1.02	0.13
Frequency of drug usage for pain	1.17	1.07 1.27	<.01
Frequency of drug usage for depression	1.07	0.99 1.16	0.11
Using any medication for other symptoms (ref=no)	1.64	1.33 2.02	<.01

Summary of study results

- Ability to walk was significantly related to both fall-related and nonfall-related unintentional injuries, but in opposite directions, so there are distinctive implications for each.

- Modifiable behaviors are one of the keys to injury prevention.

- Another set of risk behaviors that require further awareness training is related to the use of prescription medications to treat pain, spasticity, sleep, and depression; and the misuse of these medications by treating conditions other than for what they were prescribed.

Links

- Tools: https://chp.musc.edu/research/help/tools
- Life expectancy calculator: https://chp.musc.edu/research/help/tools/life-expectancy-calculator

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🌐 kter@air.org

✉️ kter.org

📍 4700 Mueller Blvd, Austin, TX 78723

☎️ 800.266.1832