Developing a Taxonomy to Categorize Patient Falls

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Abstract

A patient fall can result in life-threatening injuries. In order to reduce or mitigate the negative impact of patient falls, a number of risk assessment tools have been developed to identify patients who are likely to sustain a fall. The following study describes the development of the KU Patient Fall Taxonomy. It was derived from four patient fall risk assessment tools. Nine concepts emerged from the fall assessment tools as specific risk factors. Formation of the taxonomy hierarchy is based on Rosch's three-tiered hierarchy of events. The taxonomy will be utilized to systematically analyze patient fall error reports. The taxonomy is the first step in developing an ontology of patient falls.

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Background

- Patient falls in hospitals continues to be a patient safety issue.
- A fall in any setting is a life-threatening event for an older person because of the catastrophic consequences such as fractures or death.
- In an effort to reduce falls, a number of fall risk assessment tools have been developed to prospectively identify patients at risk to sustain a fall.
- Therefore the purpose of this study was to develop a patient fall taxonomy derived from the four risk assessment tools.

Background

Morse Fall Risk, Morse 1985	Fall Risk Assessment Tool (FRAT), Peninsula Health Fall Prevention Service, 1999	Hendrich II Hendrich, Bender, Nyhuis, 2003	STRATIFY, Oliver, Britton, Seed, Martin, Hopper, 1997
History of falling immediate or within the last 3 months	Recent falls	Confusion/ Dis-orientation	Did the patient present to hospital with a fall or has fallen or has she or he fallen on the ward since admission?
Presence of secondary diagnosis	Medications	Depression	Do you think the patient is agitated?
Use of ambulatory aid	Psychological	Altered elimination	Visually impaired to the extent that everyday function is affected?
IV/Heparin lock	Cognitive Status	Dizziness/ vertigo	In need of especially frequent toileting
Gait/ Trans-ferring	Vision	Gender (male)	Transfer and mobility score of 3 or 4?
Mental status	Mobility	Any administered antiepileptics (anti-convulsants)	
	Behaviors	Any prescribed benzo-diazapenes	
	Activities of daily living (A.D.L.)	Get-up-and-go Test	
	Environment		
	Continence		
	Other		

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Methods

- Design: A retrospective analysis of four previously published risk assessment tools.
- Data Analysis: Each criterion was inductively analyzed using line-by-line coding and constant comparison.
  - Data analysis was supported using NVivo.
  - If a new risk concept was identified it was coded and added to the list of categories.
  - The iterative process was carried out until no new risk concepts were identified.

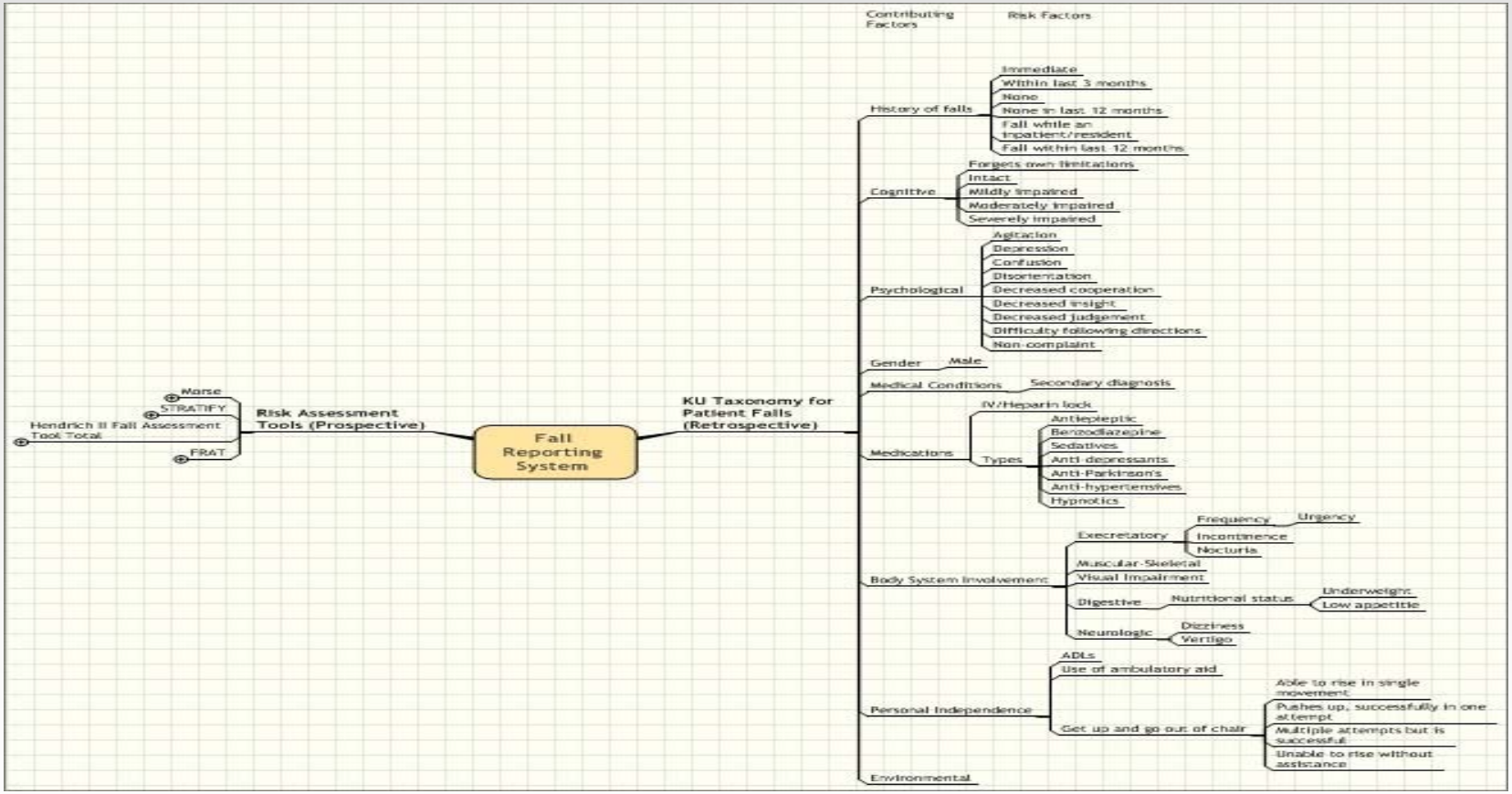
Findings

- Nine concepts emerged from the fall assessment tools as specific risk factors.
- The categories of risk factors are as listed:
  - History of fall
  - Cognitive status
  - Psychological status
  - Medical conditions
  - Medications
  - Body system involvement
  - Personal independence
  - Environmental conditions

KU Patient Fall Taxonomy

Contributing Factors	Risk Factors
History of Falls	Immediate Within last 3 months None Home in last 3 months Fall while an inpatient/resident Fall within last 12 months
Cognitive	Forgets own limitations Intact Mildly impaired Moderately impaired Severely impaired
Psychological	Agitation Depression Confusion Disorientation Decreased cooperation Decreased insight Decreased judgment Difficulty following directions Non compliant
Gender	Male
Medical Conditions	Secondary diagnosis
Medications	IV/heparin lock Type
Body System Involvement	Excretory Musculo-Skeletal Visual impairment Digestive Neurologic
Personal Independence	ADLs Use of ambulatory aid Get up and go out of chair
Environmental	

Patient Fall Risk Taxonomy



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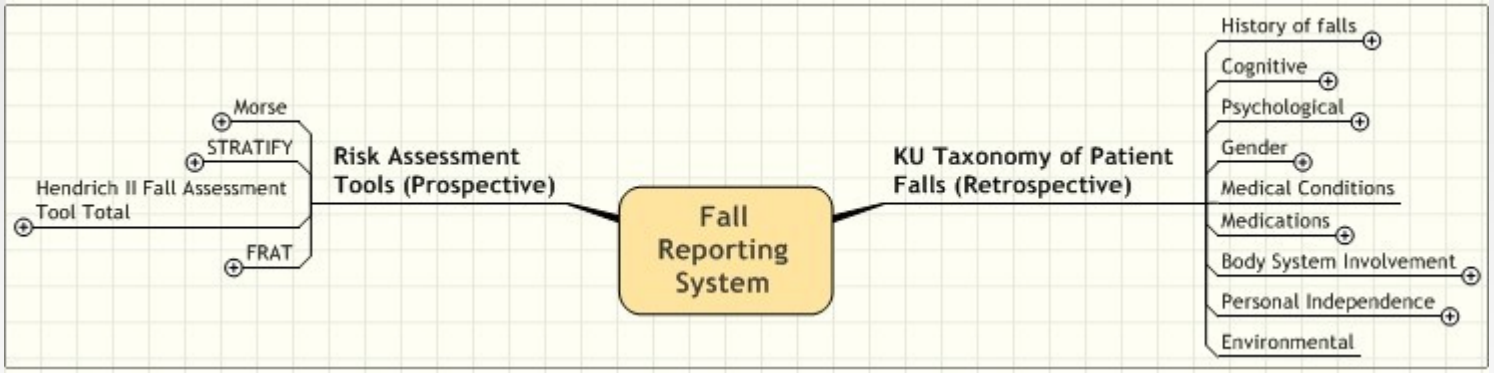
Future Studies: Patient Fall Reporting System



Discussion

- An inductive method of identifying and structuring the risk factors categories into a taxonomy was enhanced using Rosch's hierarchical structure for concepts.
- The hierarchy is a two dimensional structure composed of:
  - a vertical axis which corresponds to the level of abstraction.
  - a horizontal axis depicts the typicality of members represented in the category.

Conclusion

- Nine concepts emerged from the fall assessment tools as specific risk factors.
- The taxonomy is the first step in developing an ontology of patient falls.
- The taxonomy would be utilized to systematically analyze patient fall error reports.

Acknowledgements

- **References**

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