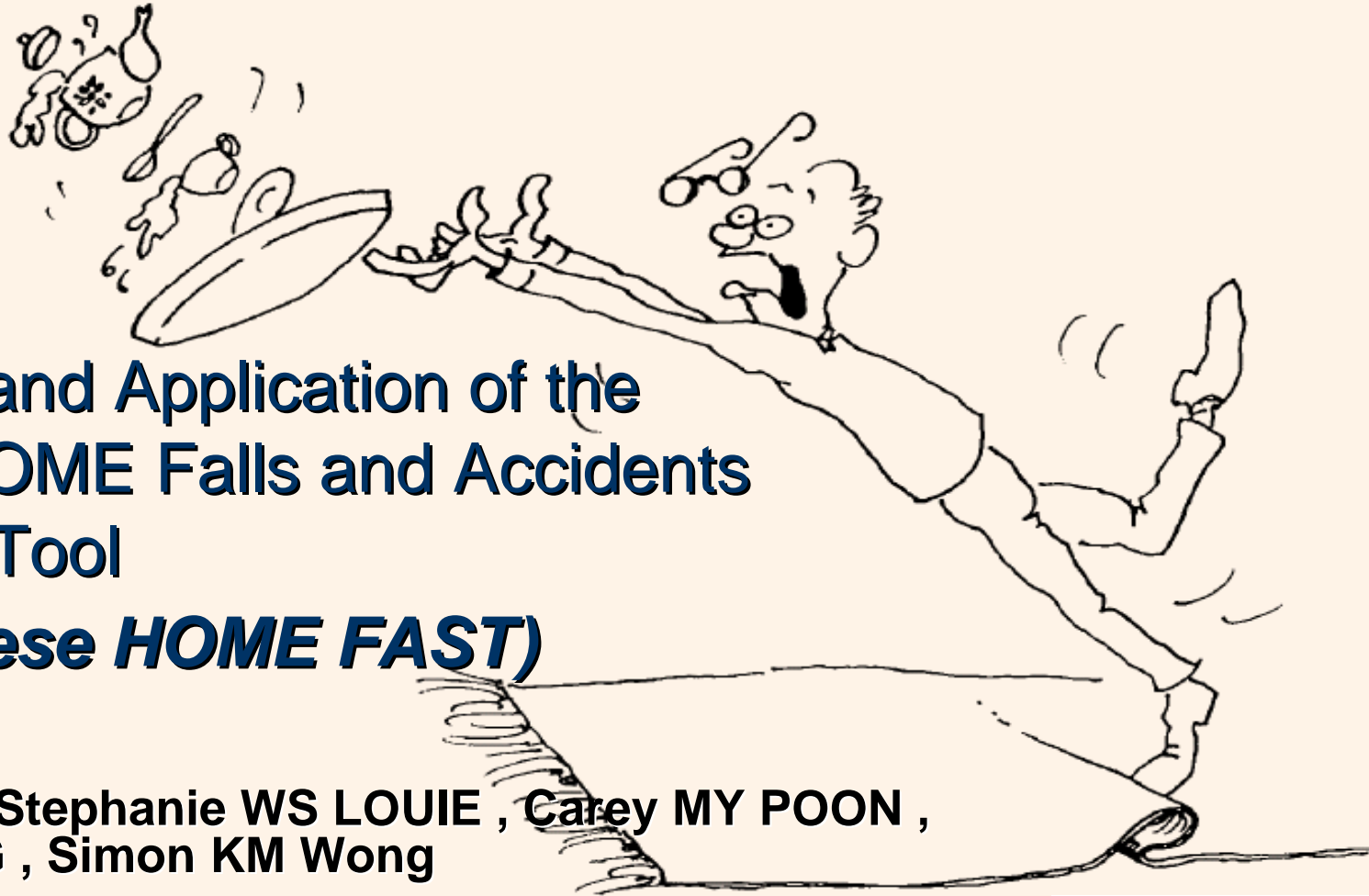


Evaluate the Effectiveness of a Home Safety Screening Tool to Assess Fall Risk at Home for Elderly with Fragility Fracture

Validation and Application of the Chinese HOME Falls and Accidents Screening Tool (The Chinese HOME FAST)

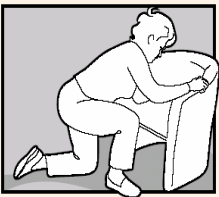
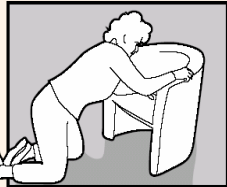
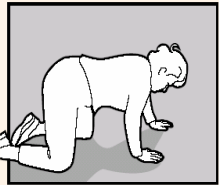
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Background

- Fall is common health hazard among the elderly (Clemson, Roland and Cumming 1997), and has become a major cause of disabilities in the elderly.



Background

- With an aging population, in Hong Kong and many Asian countries, problems related to falls have greatly raised the demands for rehabilitation services (Rodriguez, Baughman & Sattin *et al.*, 1995, Sattin, Rodriguez & DeVito *et al.*, 1998; Gillespie, Gillespie and Cumming *et al.*, 1999)

Background – HK Perspective

- 16-19 % of **elderly** fall annually (Ho et al., 1994; Chan et al., 2004; Chu et al., 2005)
- **Incidence rate** of fall-related A&E admission
 - Male: 23, Female: 56 (per 1000 person year)
 - 40000 new fall-related A&E admission per year (Chan et al., 2004)
- **Mortality**: 30% in one year
- 150,000 **hospital bed day occupancy**
- Forth leading **cause** of hospitalization (Ho et al., 2003)
- HK\$1.35 billion **medical expenditure**

Background

- Most assessments and interventions of falls in elderly mainly focused on improving the physical abilities aspects (McLean & Lord 1996; Sattin, Rodriguez & DeVito et al., 1998) related to fall, but there is relatively less attention to the **environmental** (such as community barriers or home hazards) and **functional** dimensions (risks when performing certain daily activities).



Background



There is a lack of culturally specific environmental / functional-oriented assessments or interventions on fall in elderly (Department of Veteran's Affairs 2000, Letts, Law & Rigby et al 1994, Letts, Scott & Burtney et al 1998, Sattin, Rodriguez & DeVito et al., 1998, MacKenzie, byles and Higginbotham 2000).

This study is to assess whether this Chinese HOME FAST can be used for screening of home falls and accidents.

HOME FAST – The Original

- The original Home Falls and Accidents Screening Tool (HOME FAST) was developed in Australia as a screening instrument to be included in a preventive health assessment.
- It was specifically designed to identify older people living at home in the community who are at risk of falls due to environmental issues in their home (Mackenzie 2007).

HOME FALLS AND ACCIDENTS SCREENING TOOL (HOME FAST)

INSTRUCTIONS: PLEASE CIRCLE RESPONSES AS EITHER: YES, NO OR NOT APPLICABLE (N/A)

1. Are walkways free of cords and other clutter?

YES NO

Definition: no cords or clutter across or encroaching on walkways/doorways. Includes furniture and other items that obstruct doorways or hallways, items behind doors preventing doors opening fully, raised thresholds in doorways.

Comments:

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2. Are floor coverings in good condition?

YES NO

Definition: carpets/mats lie flat/no tears/not thread-bare/no cracked or missing tiles – including stair coverings.

Comments:

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3. Are floor surfaces non slip?

YES NO

Definition: score "no" if lino or tiles are in the kitchen, bathroom or laundry, in addition to any polished floors or tiled/lino surfaces elsewhere. Can only score "yes" if, in addition to other rooms, the kitchen, bathroom and laundry have non slip or slip resistant floor surfaces.

Comments:

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4. Are loose mats securely fixed to the floor?

YES NO

N/A (there are no loose mats in house)

Definition: mats have effective slip resistant backing/are taped or nailed to the floor.

Comments:

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5. Can the person get in and out of bed easily and safely?

YES NO

Definition: bed is of adequate height and firmness. No need to pull self up on bedside furniture etc.

Comments:

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6. Can the person get up from their lounge chair easily?

YES NO

N/A (person uses wheelchair constantly)

Definition: chair is of adequate height, chair arms are accessible to push up from, seat cushion is not too soft or deep.

Comments:

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7. Are all the lights bright enough for the person to see clearly?

YES NO

Definition: no globes to be less than 75W, no shadows thrown across rooms, no excess glare.

Comments:

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8. Can the person switch a light on easily from their bed?

YES NO

Definition: person does not have to get out of bed to switch a light on – has a flashlight or bedside lamp.

Comments:

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9. Are the outside paths, steps and entrances well lit at night?

YES NO

N/A (no outside step, path, or entrance, ie: door opens straight onto footpath)

Definition: lights exist over back and front doors, globes at least 75W, walkways used exposed to light – including communal lobbies.

Comments:

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10. Is the person able to get on and off the toilet easily and safely?

YES NO

N/A (person uses commode constantly)

Definition: toilet is of adequate height, person does not need to hold onto sink/towelrail/toilet roll holder to get up, rail exists beside toilet if needed.

Comments:

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11. Is the person able to get in and out of the bath easily and safely?

YES NO

N/A (no bath in home, or bath never used)

Definition: person is able to step over the edge of the bath without risk, and can lower themselves into the bath and get up again without needing to grab on to furniture (or uses bath board or stands to use shower over bath without risk).

Comments:

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12. Is the person able to walk in and out of the shower recess easily and safely?

YES NO

N/A (no shower in home)

Definition: person can step over shower hob, or screen tracks without risk and without having to hold onto anything for support.

Comments:

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13. Is there an accessible/sturdy grab rail/s in the shower or beside the bath?

YES NO

Definition: Rails that are fixed securely to the wall, that are not towel rails, and that can be reached without leaning enough to lose balance.

Comments:

14. Are slip resistant mats / strips used in the bath/bathroom/shower recess?

YES NO

Definition: Well maintained slip resistant rubber mats, or non-slip strips secured in the base of the bath or shower recess.

Comments:

15. Is the toilet in close proximity to the bedroom?

YES NO

Definition: no more than two doorways away (including the bedroom door) – does not involve going outside or unlocking doors to reach it.

Comments:

16. Can the person easily reach items in the kitchen that are used regularly without climbing bending or upsetting his or her balance?

YES NO

Definition: cupboards are accessible between shoulder and knee height – no chairs or step ladders are required to reach things.

Comments:

17. Can the person carry meals easily and safely from the kitchen to the dining area?

YES NO

Definition: meals can be carried safely, or transported using a trolley to wherever the person usually eats.

Comments:

18. Do the indoor steps/stairs have an accessible/sturdy grab rail extending along the full length of the steps/stairs?

YES NO

N/A (no steps/stairs inside house)

Definition: grab rail must be easily gripped, firmly fixed, sufficiently robust and available for the full length of the steps or stairs.

Comments:

19. Do the outdoor steps/stairs have an accessible/sturdy grab rail extending along the full length of the steps/stairs?

YES NO

N/A (no steps/stairs outside house)

Definition: Steps = more than two consecutive steps (changes in floor level). Grab rail must be easily gripped, firmly fixed, sufficiently robust and available for the full length of the steps or stairs.

Comments:

20. Can the person easily and safely go up and down the steps/stairs inside or outside the house?

YES NO

N/A (No steps/stairs exist)

Definition: steps are not too high, too narrow or too uneven for feet to be firmly placed on the steps (indoors and outdoors), person is not likely to become tired or breathless using steps/stairs, and has no medical factors likely to impact on safety on stairs, e.g. foot drop, loss of sensation in feet, impaired control of movement etc.

Comments:

21. Are the edges of the steps/stairs (both inside and outside the house) easily identified?

YES NO

N/A (No steps/stairs exist)

Definition: no patterned floor coverings, tiles or painting which could obscure the edge of the step, adequate lighting of steps/stairs.

Comments:

22. Can the person use the entrance door/s safely and easily?

YES NO

Definition: locks and bolts can be used without bending or over-reaching, there is a landing so the person does not have to balance on steps to open the door and/or screen door.

Comments:

23. Are paths around the house in good repair, and free of clutter?

YES NO

N/A (no garden, path or yard exists)

Definition: no cracked/loose pathways, overgrowing plants/weeds, overhanging trees, garden hoses encroaching on walkways.

Comments:

24. Is the person currently wearing well fitting slippers or shoes?

YES NO

Definition: supportive, firmly fitting shoes with low heels and non-slip soles. Slippers which are not worn and support the foot in a good position. No shoes scores "no".

Comments:

25. If there are pets – can the person care for them without bending or being at risk of falling over?

YES NO

N/A (there are no pets/animals)

Definition: pets = any animals that the person has responsibility for. To score "yes" person does not have to feed pets when they are jumping up or getting under foot, person does not have to bend to the floor to refill bowls/dish or clean pets, pets do not require a lot of exercise.

Comments:

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HOME FAST

- The HOME FAST consists of **25 items** covering a range of environmental and functional home safety CONCERNS (Mackenzie, Byles & Higginbotham 2000).
- Each item is **scored dichotomously** (present or absent) or as not applicable for the home being assessed.
- **Definitions** are given of what the hazard item includes and what constitutes an item being not applicable.

Methods

This project is going to

- (a) to determine the level of ***inter-rater agreement*** in the use of The Chinese-HOME FAST;
- (b) to identify items on The Chinese-HOME FAST with ***lower levels of agreement***,
- (c) to determine ***number of hazards*** in the home influences the degree of inter-rater agreement in scoring The Chinese-HOME FAST; and
- (d) to identify ***potential improvements*** in home environment in both functional and environmental context.

Procedures

- Development of this Chinese HOME FAST involved several studies using methods like: **systematic literature reviews, field testing, expert panels, inter-rater reliability studies, factor analysis** to determine construct validity, **longitudinal studies** to examine predictive validity and **focus group qualitative studies** to assess the clinical utility of the tool.

Translation

(forward and backward translated)



Linguistic Validation

Assess on “Clear Presentation” and “Content Understandability”



Bilingual Expert Panels (7 members)

(Medical Officer, Nurses and Therapists with 10 years or more experience in rehabilitation)

Factor Analysis



Test-Retest Reliability



Face & Content Validation

Results - Parametric and Statistical Findings

- In linguistic validation, we studied the degree of clarity, comprehensiveness and comprehensibility of this Chinese HOMEFAST, and a **stringent cut-off mean score (~ 80 % agreement)** of clear presentation or understandability was set.
- After collection on preliminary findings through the use of the survey questionnaire, **10 items** (1,2,5,7,9,10,11,12,18,19) were minorly-refined in semantics meaning. **Inter-rater reliability testing** using kappa scores (**kappa scores = 0.623**) indicated appropriate agreement between raters (Fleiss 1981).

Results - Parametric and Statistical Findings

- A group of **elderly** were recruited. More than **85.7% of elderly subjects showed their understandability** in both **content relevancy and representativeness** with the Chinese version.
- Important in HK situation (Lives with spouse only).

Results - Parametric and Statistical Findings

- Another group of 50 subjects were then recruited in pilot trial. In **test-retest reliability**, a **very good reliability coefficient ($\alpha = 0.892$)** was noted.
- This good reliability coefficient implied there is a stable response from time to time interval, as reflected by the nature of **self-perceived home environment will not be changed rapidly with time** (Ottenbacher & Tomchek 1993).
- **A stable platform in assessing home environment.**

Results - Clinical Findings

- A number of ***potential hazards*** were reported in this pilot review.
- And among those measured areas, ***“Flooring”***, ***“Furniture”***, ***“Lighting”***, ***“Bathroom”*** and ***“Mobility”*** were the ***top five reported potential hazard areas***.



Results - Clinical Findings

1st Priority : Flooring

- - Home floor-coverings were in **fair condition**, and nearly **20%** reported their home with “**slippery**” surface.
- - More than 40 % of respondents reported with slippery surface in **toilet entrance** or **with loose mats** in entrance of their floor.
- - In addition, about 20 % of respondents reported they were **bare-footed** in their home.
- - The “Flooring” area required more attention to work up prior to patients’ discharge home. This potential hazards is similar to other findings (Clemson, Roland and Cumming 1992, Clemson, Fitzgerald & Heard et al 1999).

Results - Clinical Findings

2nd Priority : Furniture

- Most respondents reported they have **no arm-rested chair** at home, which may hinder their sit-to-stand transfers.
- Respondents with **double-decked-bed** reported with difficulties in getting in-and-out from their bed, despite with the use of monkey-pull.
- Respondents mentioned their furniture was already used for more than 25 years, and some of them reported with the **wear-and-tear** in their “old” furniture. and potential safety issues may arouse. Condition of these **old furniture** should be considered.

Results - Clinical Findings

3rd Priority : Lighting

- When get up at night, more than half of respondents reported they **seldom** switch-on their light from bed, as the switch is far away, most respondents reported they **can not reach and switch** on their light from bed easily.
- The “Lighting” condition deserved more concern in order to prevent further fall risks (El-Faizy & Reinsch 1994). Moreover, nearly **NO** respondent reported with the use of “**Always-On**” or “**Condition-On**” **lighting** at night.

Results - Clinical Findings

4th Priority : Bathroom

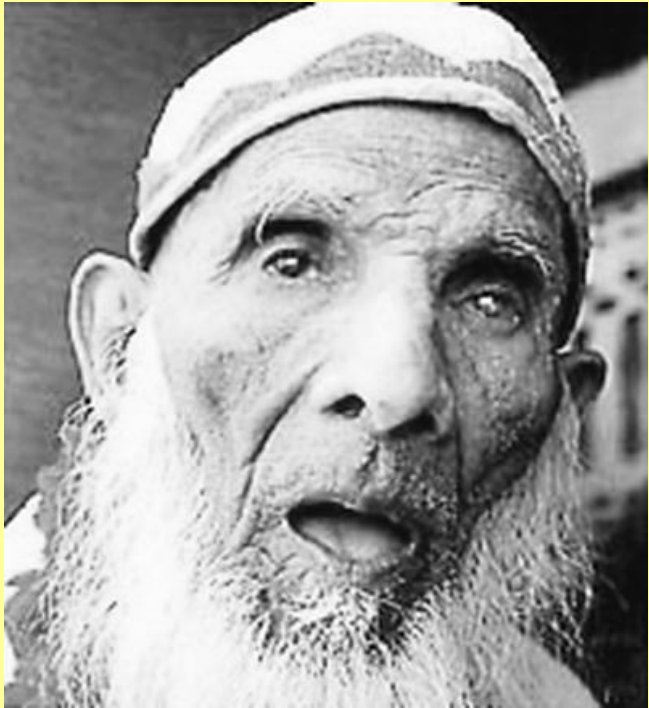
- About 1/3 of respondents reported they can **easily** walk in-and-out of their **shower recess**. However, most reported there was **no proper handrail**, and they relied on their water pipes / sinks in getting their shower recess transfers if they needed assistance.
- Some (about 10 %) respondents (mostly were village house residents) reported they still use the **squatted-type toilet**, and some (less than 5 %) **even visit public toilet for toileting and bathing**.

Results - Clinical Findings

5th Priority : Mobility

- >70 % of respondents reported their perceived home environment was **crowded**.
- Most respondents reported they have good use of **mobility aids** in their home. Most respondents reported they **prefered** to use quadripod or stick, rather than using walking frame or rollator for their indoor mobility.
- Most respondents reported they **cannot** use wheelchair at home.

Discussion



- Particular attention should be noted in these identified potential hazardous areas.
- Occupational therapists can provide subsequent environmental and functional interventions in these areas.

Conclusion

- This Chinese HOME FAST composed of questions that were understandable by elderly, and could facilitate the application of this screening tool.
- Chinese HOME FAST reviewed a number of common home areas like floors, furniture, lighting, bathroom, storage, stairways/ steps, and mobility.
- By making these areas safer ***not only reduces the number of falls and accidents***, but also make it ***easier for elderly in managing their daily living activities***.

Don't fall for it. Falls can be prevented!

A guide to preventing falls
for older people.



The END

Thank You