



DRAFT REPORT

Promoting a Safer Household Environment: A Volunteer-based Home Visit Programme

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Interim research report

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Introduction

Injury was the leading cause of death among children age one to fourteen in Hong Kong between 1996 and 1997 (Department of Health, 1998). Particularly, it has been reported that approximately a half of unintentional injuries took place at home (Chan et al., 2000; Chow, Chan, & Chiu, 1993). The need to prevent home injury, thus, is immense.

Internationally, countless effort has been made in preventing unintentional residential childhood injuries (URCI). Several findings concerning the methodology in devising injury prevention programs were observed. First of all, regarding evaluation of injury prevention effort, it has been suggested that using proxy measures such as safety equipment utilization or knowledge gain could be a dangerous move since such phenomena do not necessarily warrant reduction of injury (Dowswell, Towner, Simpson, & Jarvis, 1996; Guyer et al., 1989; Kelly, Sein, & McCarthy, 1987). Thus, an injury prevention programme should be implemented with careful considerations in outcome measures for evaluation purpose. Injury rate, though difficult to be effective in injury research for its low base-rate, should be included when feasible. Alternatively, secondary outcome such as observed behavior or environmental changes, when employed, should be clearly defined and analyzable (Dannenberg & Fowler, 1998).

Belief and efficacy among programme recipients are mediating factors to the success of an injury prevention programme. One of the models to assess such effects is the Health Belief Model (HBM) (Becker, 1974; Janz & Becker, 1984). Specifically, three components of the HBM, namely health motivation, perceived benefit, and perceived barrier, have been empirically related to injury prevention behaviors (Kendrick, 1994; Peterson, Farmer, & Kashani, 1990; Williams-Avery & MacKinnon, 1996; Wortel, de Geus, & Kok, 1995). It is hence suggested that a URCI prevention programme could integrate assessment of the aforementioned HBM components as a screening and evaluation tool in terms of beliefs concerning URCI before, during, and after the intervention.

The present study provides descriptive baseline data and preliminary analysis of a secondary prevention program that promotes prevention of childhood injury with paraprofessional home visitations.

Method

Participants

A total of 56 families in the Kwai Tsing districts with new-born to 3-year-old children, who were admitted into A&E department of Princess Margaret Hospital or Prince of Wales Hospital for URCI episode in the 3-month case accumulation period, were recruited for this study. Participating families were randomized and assigned to either the intervention (n=25) or



control (n=31) group. Two of the intervention families were excluded from the analysis because of loss-to-follow-up.

Control group: Procedure and material

Printed and video materials developed locally by the research team were presented to control group participants.

Home visitors visit the control families at the beginning and end of the data collection period. Control families are assessed on all instruments but the home visitors give no further advice or follow-up.

Intervention group: Procedure and material

Procedure:

On top of traditional intervention (provision of printed and video materials), participants in this group receive 4 quarterly home visits and monthly telephone follow-ups. Thirty five paraprofessional home visitors have been recruited and trained for this study. These home visitors, working in pairs, assess the participant families according to the steps recommended in the childhood injury prevention handbook prepared by the researcher group. At the initial visit the home visitors completed all measurements at the baseline. Upon completion of baseline assessments and in subsequent visits, home visitors proceed to focus on specific domains of residential injury prevention by household partition, namely the living room, kitchen, bathroom, and bedroom. General advice on injury prevention and circumstantial advice on household modification are disseminated to participants throughout the visitation period, based on participants' endorsements on the instruments. In addition, home visitors are encouraged to provide other solutions to the participant families, such as demonstration (of specific safety practices/behavior), or assistance (provision of safety devices along with appropriate instruction of operation) with regards to the areas that the participants show potentials to URCI. Progress in modification of environment and behavior are being evaluated with the programme instruments.

Apart from the 4 scheduled home visits, home visitors call the participants whom they are assigned to for regular telephone follow-ups. During each telephone follow-up, home visitors are required to update the participant's progress in recommended behavioral or environmental modifications regarding URCI.

Six supervisors including A&E nurses from participating hospitals, and research nurse in this programme, are responsible for the training and evaluation of volunteers. Each nurse supervisor handles an average of 4-6 volunteers, with regularly meeting on the months following each home visit and general advice on demand throughout programme implementation. This



format of support and supervision was found to be critical in volunteer maintenance in the home visitation programme by the ACA (Chan, Lam, Ho, & Wong, 1999).

Evaluation Measures

1) Injury belief questionnaire (IBQ)

The IBQ is a 20-item 5-point scale on injury beliefs. Complete questionnaire is attached as appendix 2. Similar study on testing such instrument has reported high consistency, with Cronbach alphas (.83 to .98) (Russell, 1991).

2) Household environment checklist (HEC)

The 51-item HEC serves to assist home visitor to assess behavioral and environmental hazards in the household. The checklist comprises a sketch of the home being visited, and lists of potential hazards on a room-by-room basis. HEC items are rated on a 5-point interval scale. A “5” denotes highest safety rating assigned by the home visitor while a “1” is assigned when the hazard item was deemed most unsafe by the visitor. Lists of hazards were drawn from injury scenarios reported in the researchers’ study at three major local hospitals (Chan et al., 2002).

Results

Fifty four families, 23 in the intervention and 31 in the control group, were included in the analysis. Gender and age were similar between participants in both groups with no statistically significant differences observed.

Of all injured children in participant families, 37% were infants while 1-year-old and 2-3-year-old accounted for 31.5% each. The mean age in days is 548.9 (approximately 1.5-year-old) with a standard deviation of 315.3 days.

Household Environment Checklist (HEC)

Hazard item analysis

For the item analysis, mean item ratings are calculated by averaging HEC scores across cases for each item. Parents demonstrated highest safety ratings on precautionary actions related to eradicating slippery surface, a common hazard for household falls. Staggering furniture arrangement was associated with the lowest HEC rating among all observed hazards.

Insert Table 1 here



HEC score analysis

HEC score is compiled by dividing the sum of endorsed HEC items over the maximum HEC score, which is the product of valid HEC responses and the maximum item score of 5. Participant families average 74.8 on the HEC score. HEC scores were not significantly different between genders, assigned groups, or families with children in different age groups (Infants, 1-year-old, 2-year-old or older).

Injury Belief Questionnaire (IBQ)

Scores on Injury belief questionnaire (IBQ), out of a maximum total of 100, were normally distributed with a mean of 71.5 and a standard deviation of 6.9. The 20 IBQ items demonstrated moderate internal consistency with a Cronbach Alpha of 0.63. Caregivers of boys are found to report lower IBQ scores (69.3) than counterparts with girls (73.7), and the observed difference was statistically significant ($t = 2.46$, $df = 52$, $p = 0.017$).

Relationship between household environment hazards and injury belief

Two behavioral hazard items, prohibiting unsupervised climbing onto upper bunk bed and fastening doors with rubber or magnetic stoppers, were positively associated with the IBQ, with Spearman correlation coefficient of 2.85 ($p=0.32$) and 2.71 ($p=0.26$) respectively. Overall correlation between IBQ score and HEC score was 0.12. The observed coefficient was not statistically significant.

Discussion

Lowest safety ratings were assigned to structure-dependent hazards, such as staggering furniture arrangement and corner bumper installation for furniture with sharp edges. The demonstrated relationship between ease of implementation and safety rating is consistent with previous work in the field (Bablouzian, Freedman, Wolski, & Fried, 1997; Dershewitz, 1979; King et al., 2001).

Families with boys reported a significantly lower IBQ scores than those with girls. The observed gender difference is congruent to parallel findings in the injury research literature (Morrongiello & Dawber, 1998; Morrongiello & Rennie, 1998). In further analyses in the study, it would be interesting to see if this gender difference extends influence to how parents are responding and implementing prevention initiative.

Baseline data suggested certain relationship between injury belief and hazards modification behaviors. Despite the lack of overall correlation between IBQ and HEC scores, the IBQ score was positively associated with two behavioral hazards.



Table 1 Household Environment Checklist - Hazard Item ratings

Hazard Item Description	Mean rating
Keeping tiled floors constantly dry	4.49
Immediate drying of spilled liquid on the floor	4.43
Leaving children under age 12 home alone	4.38
Installing anti-slip pads or mat in bathtub	4.31
Watching out for your infants or toddlers when opening or closing windows	4.15
Securing safety belt and wheel lock while moving infants and toddlers in high chair or mobile	3.96
Is the guard rail around infant's bed appropriately put up every time the infant is put in	3.9
Are the gaps in mesh-thread stretch bed wide enough for infants and toddlers to climb on	3.86
Is the guard rail around infant's bed thicker than 6 cm	3.8
Is the guard rail around infant's bed higher than 75% of the infant's height	3.79
Is window guards installed on every window and balcony door? Are these guards locked up?	3.69
Having an appropriately equipped first aid box	3.68
Fixating doors with stopper or magnetic stoppers	3.56
Constantly clearing cluttering objects on the floor (e.g. toys, newspaper, magazine, clothes)	3.43
While out of sight, temporarily leaving infants and toddlers on bed, table, or any surface higher than the infant's height	3.27
Allowing children to climb on / stay on upper-bunk bed without adult supervision?	3.23
First aid knowledge on fishbone asphyxiation, burn & scald, and blunt injuries / fall care?	3.11
Covering sharp corners of furniture with bumpers or other shock absorbing material	2.8
Staggering arrangement of furniture allowing children and toddlers to climb	2.76



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