

Home Living Environment Design and Perceptions of Safety of Older Malaysians

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Abstract - A living environment that is safe and comfortable is especially important for older persons to avoid injuries and other related problems. Studies have shown that diminishing physical and functional capabilities of the elderly have made them more vulnerable to accidents in the home. Reduced visual, hearing, strength and other physical capabilities require special considerations if the elderly were to maintain self-sufficiency and independence. The home is a place where the elderly should feel secure, comfortable and safe from accidents and injuries. If accidents in the home are frequent, it is physically and mentally more distressing the older we get. Thus, certain precautions should be taken to prevent accidents from occurring. A study was conducted to identify safety problems of the living spaces in the home environment and to determine the perceptions of the elderly on the safety of their home environment. A total of 386 respondents comprising of 168 males and 218 females aged 60 years and above were identified through purposive sampling. The homes represent the various races in Malaysia and reside in three urban areas of Kuala Lumpur, Shah Alam and Johor Bahru. Data was obtained through the completion of self-administered questionnaire. The results showed that the mean age of subjects was 68.89, primarily, female (56.5%), and married (60.7%). Most participants have primary school education (51.4%), stay in detached and semi-D type housing (54.6%) and owned their houses (66.8%). Generally the respondents did not have speech, hearing and physical impairment. However over 70% had sight impairment, with presbyopia (short sighted) being the most common type. Though eighty one percent of the respondents perceived that their home living environment as safe, the study found that the majority of the homes did not install or have safety appliances such as smoke detectors, peep-holes, alarms, emergency numbers near the telephone, fire extinguishers

and first aid box. Among factors that cause fear or insecurity identified by the elderly were fear of intruders, fire, flood and fainting. The common occurrences of accidents were in the toilets and bathrooms. Most of the toilets and bathrooms were not installed with grab bars, the use of squat toilets and slippery floors are major problems in their home environment. Even though, the majority of the respondents feel comfortable with their six living areas in the home, the results of the study clearly showed that the home living environment of the elderly respondents require considerable improvements to increase their safety and comfort.

I. INTRODUCTION

Home accidents are a major source of injuries and can cause death. The elderly are especially vulnerable to serious injuries from home accidents. Older bones are often less dense and more brittle, causing them to break more easily. A simple fall can become a serious, disabling injury that limits independence. As we age, our senses of sight, touch, hearing and smell tend to decline. Our physical abilities are reduced, making it more difficult for us to perform certain tasks such as stretching, lifting and bending. In addition to these declines, we also experience a slowing of judgement and reaction time. As a result, we cannot respond as quickly as when we were younger. These normal changes in perception, physical abilities and judgement make us more prone to accidents.

The home environment has been found to be a contributory factor in most falls [2],[4],[13],[14]. Uneven or

slippery floor surfaces (including the presence of rugs and mats), tripping obstacles, inadequate lighting, poorly designed or maintained stairs without handrails and inappropriate furniture are cited as increasing the risk of falling, tripping or slipping for older person. A National survey showed that falls are common problems faced by older persons in their home environment [11]. In Australia between half and two-thirds of falls in older persons occur in their homes [2],[6]. In the United States, falls are a leading cause of injury death in people aged 65 years old and over, accounting for one-third to two-third of all accidental deaths [4],[7]. Studies also found that around one in three of older person aged 65 years and older and living in community fall at least once each year [1],[5],[9],[14].

Most of us regard the home as a safe place, but accidents and injuries often occur in and around the home. 80% of homes inspected had at least one hazard [12]. Therefore, homes need to be designed to promote familiarity and orientation with the environment that are suitable for older persons. An Ergonomic approach and gerontechnology would improve the relationship between the ageing user and the home environment. It is usually easier to change the design of homes based on the human factors approach from the perspective of person – environment interaction, which emphasizes on design of environments to fit the capabilities of older users, termed as ergonomic design. Ergonomic design is a way of considering design options to ensure that people’s capabilities and limitations are taken into account. Along with gerontechnology, it can help reduce the effects of age related impairments with technological devices thus improving the home environment.

Much less is known about the specific difficulties faced by the elderly in their present home environment, especially in Malaysia. Some previous surveys showed that older persons with limited physical abilities reported the need for home repairs and modifications of which they feel are necessary to support daily activities [8],[10]. Little is also known about the factors associated with problems faced by the elderly in their home environment. Thus, it is important to identify these factors or hazards that may put the elderly at risks to perform their daily routines or activities in their home. A study was conducted to identify safety problems of the living spaces in the home environment and to determine the perceptions of the elderly on the safety of their home environment. Findings of the research will be used to recommended adjustments to improve comfort and safety of the elderly.

II. METHODOLOGY OF STUDY

A total of 386 respondents comprising of 168 males and 218 females aged 60 years and above were identified through purposive sampling. The respondents chosen were generally healthy without obvious disability. The homes represent the various races in Malaysia and reside in three urban areas of Kuala Lumpur, Shah Alam and

Johor Bahru. Respondents were interviewed face to face at their own homes using a structured interview protocol. Data was obtained through the completion of self-administered questionnaire. General questions regarding the socio-demographic information, perceived general health, safety and security in home environment and problems faced in home environment. Also included were questions regarding their level of satisfaction with the six areas in the home. Data was analyzed using SPSS (Statistical Package for Social Sciences).

III. RESULTS

Demographic data

Table 1 show that the mean age of subjects was 68.89, primarily, female (56.5%), and married (60.7%). Most participants have primary school education (51.4%), stay in detached and semi-D type housing (54.6%) and owned their own house (66.8%).

Table 1. Demographic Background of Respondent

Items	Number (n)	Percentage (%)	Mean	S.D
Gender (N=386)				
i. Male	168	43.5		
ii. Female	218	56.5		
Age (N=386)				
60 and above			68.89	6.46
Marriage status (N=384)				
i. Married	233	60.7		
ii. Couple Pass away	143	37.2		
iii. Others	8	2.1		
Level of Education (N=385)				
i. No formal education	119	30.9		
ii. Primary school	198	51.4		
iii. Others	68	17.7		
Type of Housing (N=384)				
i. Detached & Semi-D	210	54.6		
ii. Terrace house	102	26.6		
iii. Condominium/ apartment/flat	72	18.8		
House Ownership (N=386)				
i. Own house	258	66.8		
ii. Living with children	76	19.7		
iii. Renting	41	10.6		
iv. Living with relatives/friends	8	2.1		
v. Others	3	0.8		
Household (N=385)				
i. Living alone	25	6.5		
ii. With spouse	52	13.5		
iii. Others	308	80.0		
Monthly Income (N180)				
i. Below RM500	112	62.2		
ii. RM500 – RM2,000	56	31.1		
iii. Above RM2,000	12	6.7		

Perceived general health

Generally the respondents did not have speech, hearing and physical impairment. However over 70% had sight impairment, with presbyopia (short sighted) being the most common type (Table 2).

Items	Number (n)	Percentage (%)
Hearing Problems		
Yes	59	15.3
No	327	84.7
Eye/Sight Problems		
Yes	283	73.3
No	103	26.7
Speech Problems		
Yes	13	3.4
No	373	96.6
Physical Impairment		
Yes	21	5.4
No	365	94.6

Safety and security in home environment

Though eighty one percent of the respondents perceived that their home living environment as safe (Figure 1), the study found that the majority of the homes did not install or have safety appliances such as smoke detectors, peep-holes, alarms, emergency numbers near the telephone, fire extinguishers and first aid box (Table 3). Among factors that cause fear or insecurity identified by the elderly were fear of intruders, fire, flood and fainting (Figure 2).

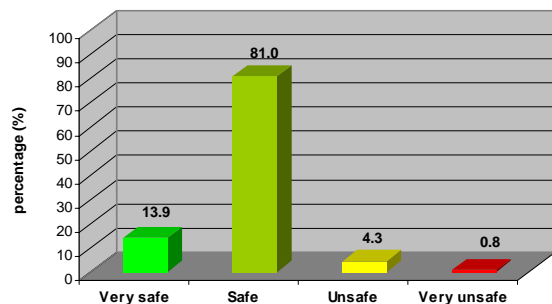


Fig. 1. General Perception of Home Environment (N=374)

Items	Number (n)	Percentage (%)
Windows have grill		
Yes	283	73.3
No	103	26.7
Smoke detector installed in home		
Yes	4	1.0
No	382	99.0
Power backup generator installed in home		
Yes	6	1.6
No	380	98.4
Alarm system installed in home		
Yes	27	7.0
No	359	93.0

Main entrance with peephole		
Yes	41	10.6
No	345	89.4
Emergencies number display near telephone		
Yes	94	24.4
No	292	75.6
Medicines located at safety place		
Yes	335	86.8
No	51	13.2
All electrical appliances have SIRIM approval		
Yes	299	77.5
No	87	22.5
Floor at the same level/non-skid/no damage		
Yes	329	85.2
No	57	14.8
First aid box in home		
Yes	132	34.2
No	254	65.8
Fire extinguisher in home		
Yes	25	6.5
No	361	93.5
Rooms get enough lighting		
Yes	368	95.3
No	18	4.7

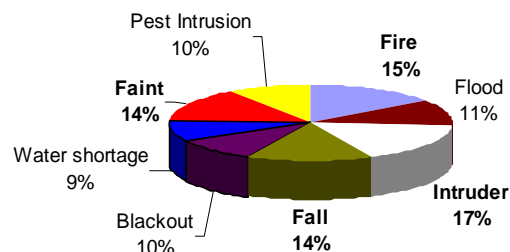


Fig. 2. Causes for Feeling of Insecurity in Home Environment (N=386)

Environmental Problems

Figure 3 shows the total number of accidents in the home with the highest occurrences in the toilets (38); bathrooms (23); kitchen (22); living room (21); stairs (7) and in the bedrooms (4). Most of the toilets and bathrooms were not installed with grab bars, the use of squat toilets and slippery floors were major problems in their home environment (Table 4). Although they faced problems in their home environment, majority of the respondents felt comfortable with their six living areas in the home (see Table 5).

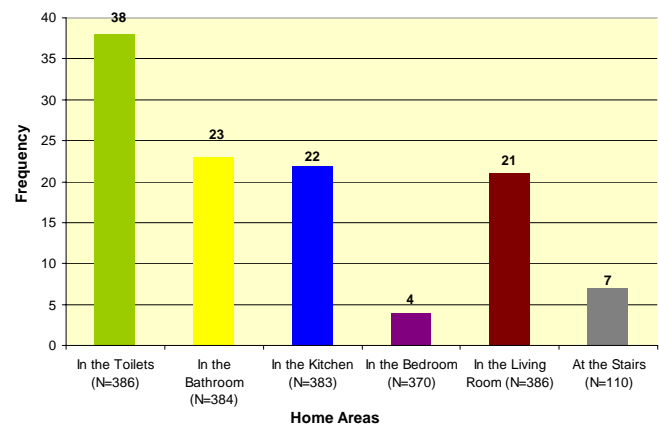


Fig. 3. Occurrences of Accidents in Six Living Areas in the Home

Table 4. Problems Faced in Home Environments

Home Areas	Type of Problems	Number (n)	Percentage (%)
Bathroom	i. No grab bars (N=386)	81	21.0
	ii. Slippery floor (N=386)	65	16.8
	iii. Temperature (N=386)	54	14.0
Toilet	i. Squat toilet (N=365)	108	29.6
	ii. No grab bars (N=384)	94	24.5
	iii. Slippery floor (N=385)	71	18.4
	iv. Temperature (N=385)	61	15.8

Table 5. Level of Satisfaction with the Six Living Areas in the Home

Home Areas	Frequency (n)	Percentage (%)
Toilet (N=383)		
Very Unsatisfied	0	0
Unsatisfied	13	3.4
Satisfied	327	85.4
Very Satisfied	43	11.2
Bathroom (N=383)		
Very Unsatisfied	0	0
Unsatisfied	10	2.6
Satisfied	331	86.4
Very Satisfied	42	11.0
Kitchen (N=383)		
Very Unsatisfied	0	0
Unsatisfied	14	3.7
Satisfied	320	83.6
Very Satisfied	49	12.8
Bedroom (N=376)		
Very Unsatisfied	0	0
Unsatisfied	10	2.7
Satisfied	321	85.4
Very Satisfied	45	12.0
Living Room (N=383)		
Very Unsatisfied	0	0
Unsatisfied	12	3.1
Satisfied	312	81.5
Very Satisfied	59	15.4
Stairs (N=110)		
Very Unsatisfied	0	0
Unsatisfied	3	2.7
Satisfied	101	91.8
Very Satisfied	6	5.5

IV. DISCUSSIONS

This paper has identified several problems faced by older Malaysians in terms of general health perceived, safety and security and home environment. The study showed that most of the respondents had sight impairment. Majority of them perceived that their home environments are safe, generally. However, fire, faint, intruder and falls were identified as causes for feeling of insecurity in their home environments. Research finding also showed that majority of respondents homes were not installed with or have safety appliances such as smoke detectors, peep-holes, alarms, emergency numbers near telephone, fire extinguishers and first aid box. The bathrooms and toilets were the most hazardous rooms identified, with multiple hazards such as no grab bars,

slippery floor and squat toilet. In previous studies the bathroom, kitchen and bedroom have been found to be the most common places where older persons falls (Day et. al., 1994; Fildes, 1994). Although they faced problems in their home environment, majority of the respondents were satisfied with their six living areas in home.

The findings of this research clearly indicated that the home living environment of the Malaysian elderly have to be improved to make it safer and more comfortable for older persons. The perceptions of safety and security of the elderly can probably be improved by installing simple and easy to use, affordable assistive technologies.

V. CONCLUSIONS AND RECOMMENDATIONS

Many older persons are living in potentially hazardous and risky environments, though they are not aware of it. The living environment should be safe and comfortable especially for older persons. Taking simple precautions and making some adjustments in the homes can help ensure a safe and accident-free home. Simple assistive technologies that are within the means of the elderly can help them feel safe and secure, physically and psychologically. With these technologies (installing grab bars in toilets, smoke detectors, burglary alarm, etc.) can probably change their perceptions of the living environment.

This study has investigated on the perceptions of safety and the level of satisfaction of the older persons on their home living environment. Further studies on the level of comfort of the older persons should be carried out, not only on perceptions but by measuring the fit between the capabilities of the elderly and the design of the home living environment. The elderly are generally thankful that they have a roof over their heads and whatever is lacking in their home environment can be compensated because of this.

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