

## CONSTRUCTION AND DIMENSION OF OLD AGE HOMES

SHEWANTI N. KASHYAP AND P. SHARMA

### ABSTRACT

A home may generally be divided into number of discrete areas that include bedroom, kitchen, living room, bathroom and others. Each area has special functioning work task, and it is thus necessary to design functional areas that do not impede the profile of an ageing user. The location of a house, construction methods, materials, finishes, appliances and maintenance all influence home safety. Incremental improvements to occupant health and safety can be achieved at every stage of the building design and construction process. Little research has been done on the role of the ergonomics and housing. The present study has conducted in two regions of Utrakhnad State *i.e.* Kumaon Haldwani block of Nainital district and Garhwal (Haridwar and Dehradun district). Fifteen elderly people from each selected old age homes Nirmala, (Haldwani block); Geeta Kutir and Virdh Sewa, (Haridwar), and Prem Dham (Dehradun) were selected randomly for the study. The old age room contain in living room (*i.e.* one habitat room used for living, sleeping, or eating purpose by single elderly people), separate bathroom and water closet, combined bath with water closet and storeroom. To test the significance difference between two means from two independent samples, two sample Fisher's test was used. The findings of Fisher's t values showed that the dimensions of habitat room were found in accordance with National Building Codes, whereas the separate water closet and store room were different from National Building Codes consequent to this especially the elderly females faced pain in their body parts due to postural stresses especially in store room. The average width of the doors of bath with water closets was 0.63 cm which was observed to be far less than the standard recommended with width of 80 cm. Hence, it caused inconvenience to the elderly people.

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A home may generally be divided into number of discrete areas that include bedroom, kitchen, living room, bathroom and others. Each area has special functioning work task, and it is thus necessary to design functional areas that do not impede the profile of an ageing user. The old age homes contain a living room (*i.e.* one habitat room used for living, sleeping, or eating purpose by single elderly people). Brink (1996) pointed out that most dwellings are not "senior-friendly" or barrier-free, and that those dwellings are designed without considering even the basic requirements of elderly residents, resulting in their exclusion from everyday life. The exchange between indoor and outdoor air profoundly affects contaminant levels in a dwelling (Esmen, 1985). The concentration of pollutants depends upon rates of production and removal, the source, and their dilution by ventilation (Lowry, 1989). Adequate ventilation is imperative to discourage humidity from reaching unacceptable levels (Collins, 1993). Healthy indoor environments with adequate fresh air ventilation were also proposed as a way to manage mite-sensitive asthma (Harving *et al.*, 1994). Scott Woodcock (2005)

pointed out that the most accidents occur in the home, but good building design can help to achieve a much safe and healthier living environment. The location of a house, construction methods, materials, finishes, appliances and maintenance all influence home safety. Incremental improvements to occupant health and safety can be achieved at every stage of the building design and construction process. Little research has been done on the role of the ergonomics and housing.

### Hypothesis :

The following null hypothesis was formulated and tested: Dimensions of old age homes have not relationship with National Building Codes.

### METHODOLOGY

The study was conducted in two regions of Uttarakhand State *i.e.* Kumaon Haldwani block of Nainital district and Garhwal (Haridwar and Dehradun district). Old age homes *i.e.* Nirmala, (Haldwani block); Geeta Kutir and Vridh Sewa (Haridwar), and Prem Dham (Dehradun) were selected randomly for the study. The dimensions of old age homes were measured with measuring tape in metres. To test the significance

difference between two means from two independent samples, two sample Fisher's t test was used (Snedecor, G. W. and Cochran, W.G. 1968).

## RESULTS AND DISCUSSION

The findings in Table 1. showed that the length, width and height of the habitat room of old age home I<sup>st</sup> were 5.1 x 3.0 x 3.9 metres, respectively. Corresponding dimensions of old age home II<sup>nd</sup>, III<sup>rd</sup> and IV<sup>th</sup> were 3.0 x 3.3 x 3.3 metres, 5.4 x 3.2 x 3.2 metres and 3.2 x 3.2 x 3.5 metres, respectively. The rooms of I<sup>st</sup> and II<sup>nd</sup> old age homes were bigger than that of II<sup>nd</sup>. In old age home IV<sup>th</sup> there was dormitory with size 6.3 x 5.3 metres also for accommodating six elderly people. The average length, width and height of habitat rooms in all the old age were 4.17 x 3.17 x 3.47 metres; with standard deviation 1.25, 0.12, and 0.30, respectively. As per recommendation given

in National Building Codes, the room size should not less than 9.5 cm<sup>2</sup> with a minimum width of 2.4 metres. The rooms of all the old age homes were within the recommended value. 71

A working toilet must be available for the exclusive use of the occupants of the unit. In old age home I<sup>st</sup>, II<sup>nd</sup>, III<sup>rd</sup> and IV<sup>th</sup> the length, width and height the bathrooms with water closets were 1.3 x 1.8 x 3.9 metres, 1.5 x 1.8 x 3.3 metres, 1.8 x 1.5 x 3.2 metres, 1.5 x 1.0 x 3.5 metres, respectively. The mean length, width and height of bath and water closet were 1.52 x 1.52 x 3.4 metres with standard deviation 0.20, 0.37, 0.30, respectively. As per the recommendation given in National Building Codes, the bath with water closet, the floor area shall not be less than 2.8 m<sup>2</sup> with a minimum width of 1.2 metres.

The baths with water closets of all the old age homes with within the recommended value. Water Closet (or

Table 1 : Dimensions of old age homes (metres)

Description	Old age home				Mean	S.D.	Fisher's t value
	I Vridh Seva	II Geeta Kutir	III Nirmala	IV Prem Dham			
Habitat room							
Length	5.1	3.0	5.4	3.2	4.17	1.25	1.2825
Width	3.0	3.3	3.2	3.2	3.17	0.12	
Height	3.9	3.3	3.2	3.5	3.47	0.30	
Bath with W.C.							
Length	1.3	1.5	1.8	1.5	1.52	0.20	1.767
Width	1.8	1.8	1.0	1.0	1.52	0.37	
Height	3.9	3.3	3.5	3.5	3.40	0.30	
Separate W.C.*							
Length				1.6	1.6		21.896*
Width	-	-	-	1.5	1.5	-	
Height				3.5	3.5		
Separate Bath							
Length				1.6	1.6		
Width	-	-	-	1.5	1.5	-	-
Height				3.5	3.5		
Kitchen							
Length	5.4	6.0	5.5	5.1	5.5	0.37	
Width	3.6	3.8	3.2	3.2	3.45	0.30	-
Height	3.9	3.3	3.2	3.5	3.47	0.30	
Dinning Spaces							
Length	7.5	3.0	5.7	6.0	5.55	1.87	
Width	7.5	2.6	3.3	2.1	3.87	2.46	-
Height	3.9	3.3	3.2	3.5	3.47	0.30	
Store room*							
Length				4.1	4.1		
Width	-	-	-	2.3	2.3	-	176.48*
Height				3.5	3.5		

\* Significant

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W.C.) is a small room or booth containing a toilet, and often a sink in the unit that provides for privacy. In old age home IV<sup>th</sup>, there was provision of separate water closet with size 1.6 x 1.5 x 3.5 metres. In old age home IV<sup>th</sup>, there was provision of separate bathrooms with size 1.6 x 1.5 x 3.5 metres. All units are required to contain a kitchen for the storage and preparation of food. Space for preparation of food (counter tops, etc.) must be free of damage, holes, and lifting surfaces that allow contamination, food build up, or insects. The size of the common kitchen in old age home I<sup>st</sup> was 5.4 x 3.6 x 3.9 metres in length, width and height, respectively. Corresponding dimensions of old age home II<sup>nd</sup>, III<sup>rd</sup> and IV<sup>th</sup> were 6.0 x 3.8 x 3.3 metres, 5.1 x 3.2 x 3.2 metres, and 5.5 x 3.2 x 3.5 metres, respectively. In old age home I<sup>st</sup> there was a well-maintained dinning space that was of 7.5 x 7.5 x 3.9 metres. There was no separate dinning space in old age home II<sup>nd</sup>, but the veranda was used as dinning purposes. The length, width, and height of this were 3.0 x 2.6 x 3.3 metres, respectively. Corresponding dimension of dinning spaces of old age home; III<sup>rd</sup> and IV<sup>th</sup> were 5.7 x 3.3 x 3.2 metres and 6.0 x 2.1 x 3.5 metres, respectively. The average length, width, and height were 5.5 x 3.87 x 3.47 metres, respectively.

There was separate storeroom of keeping personal belonging those who are living in dormitory in old age home IV<sup>th</sup>, and the size of storeroom 4.1 x 2.3 x 3.5 metres. It is evident from the t value that there was no significant relationship between dimensions of habitat rooms and dimensions given in National Building Codes. Hence, it is inferred that the dimensions of habitat rooms and bathroom with water closets showed equivalence with National Building Codes, whereas separate water closet, and store room showed significant relationship. On the strength of these findings the above null hypotheses H<sub>1</sub> 1 was partially rejected and it is inferred as the old age homes were not constructed according to National Building Codes.

The findings of the Table 2. showed that the mean length and width of door in habitat rooms was 1.64 and 0.79 metres with 0.45 and 0.19 S.D. The average width of the doors of bath with water closets was 0.63 cm which was observed to be far less than the standard recommended width of 80 cm. Hence, it may be caused inconvenience of the elderly people. The mean length, and width of window in habit rooms was 1.2 x 0.9 metres with 0.21 and 0.08 S.D. The mean length and width of ventilator was 44.75 x 0.92 metres with 3.25 and 0.22

Table 2 : Dimensions of door, windows and ventilator (metres)

Description	Old age home				Mean	S.D.
	I Vridh Seva	II Geeta Kutir	III Nirmala	IV Prem Dham		
Habitat room						
Door						
Length	1.8	1.8	2.0	0.97	1.64	0.45
Width	1.0	1.0	0.72	0.56	0.79	0.19
Material used	Wooden	Wooden	Wooden	Wooden		
Window						
Length	1.2	1.5	1.0	1.1	1.2	0.21
Width	1.2	0.9	0.8	0.9	0.9	0.08
Material used	Wooden	Wooden	Wooden	Wooden		
Ventilator						
Length	0.46	0.46	0.47	0.4	0.44	3.20
Width	1.00	0.61	1.0	1.1	0.92	0.22
Material used	Wooden	Wooden	Wooden	Wooden		
Bath with W.C.						
Door						
Length	1.8	1.8	1.95	0.97	1.63	0.38
Width	0.63	0.70	0.65	0.56	0.63	0.05
Material used	Wooden	Wooden	Wooden	Wooden		
Ventilator						
Length	0.46	0.46	0.47	0.4	0.44	3.20
Width	1.00	0.61	1.0	1.1	0.92	0.22
Material used	Wooden	Wooden	Wooden	Wooden		

S.D. It was found to be within the recommendation.

**CONCLUSION**

From the findings of the study it is concluded that the old age homes were not constructed according to the National Building Codes and require to be building ergonomically. The types of ventilation systems that are allowable are electric vent fan either wall or ceiling mounted, gravity flow vents, and shafts that allow air to escape to the outside. Specific dimensions of the physical home environment were observed that either facilitated or posed a barrier that impedes performances of basic daily living for the older persons.

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