Physical Examination of Residential Space and Maintenance in a Nursing Home

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Received: 22.03.2015; Accepted: 29.05.2015

Abstract. The elderly population are on the rise due to medical advances and reducing mortality and fertility statistics. Therefore, careful planning and preparation should be done to meet the increasing elderly population. Neglecting physical and psychological needs of the elderly leads to disappointment and life satisfaction in elderly and makes the weakness of old age more tangible. Nursing home is the first and simplest solution proposed to solve the problems of the elderly but due to some needs of older people like spiritual needs which are not relieved, another model named “old village” was proposed and implemented in the West. The purpose of this study is to achieve a social and functional space to meet all elderly’s needs. But, lack of attention to the needs of mental and physical condition of the elderly in designing physical space of nursing homes, increases depression and reduce the life expectancy of the population. This research aimed to study physical space of nursing homes to meet their needs. This research is a qualitative and was conducted through library research and note taking tool with a literature review. The results showed that caring the condition of nursing home leads to elderly’s physical and spiritual needs and also their character development. The findings can be used by designers and architects to create appropriate residential space to meet spiritual and physical needs of the elderly.

Keywords: Nursing home, nursing home environment, improvement of the elderly’s quality of life

INTRODUCTION

Due to medical advances and reduction of mortality and fertility in population, rising the population of elderly is an approaching fact (Hashemnejad & Asadi Boalverdi, 2009). According to the previous estimates, about 2.5 percent on average is annually added to the number of 65-year old people. Rapid increase in the number of elderly implies several consequences. Most of the elderly people from economically-productive and socially just and isolated consumers, in terms of health, the risk of chronic diseases, disabilities and disability of it. Most of the elderly people are economically productive and consumers and socially alone and isolated, and in terms of health, they are exposed to the risk of chronic diseases, disabilities and its consequences. One of the most important changes in cultural, economic and political aspects of the present century of societies, is change in family structure as the most important and most basic element of human communities. Families have changed from a wide kinship systems into nuclear families and one of the main functions of the family, taking care of elderly parents, has been changed. Families, in cases, have assigned the tasks to the specific institutions because of the increasing number of divorces and an increase in the number of women employed. Although it is ideal for elderly to live in the family warm environment, but on the other hand, studies on the causes of leaving the elderly in nursing homes in Iran indicate that factors such as level of education and divorce, virginity, family’s vulnerability to economic, social and cultural crises, lack of public housing and the need to use special equipment are impressive. However, many seniors are well able to carry out their personal affairs and can enjoy special entertainment appropriate to their ages and spirits with their friends and understand each other. Given the fact that many old people are able to do many things, the need for temporary accommodation to meet the daily needs of the elderly with recreational, recreational, athletic uses is obvious. It seems that there are a lot to do in such

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Special Issue: Technological Advances of Engineering Sciences

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important areas of research. The necessity to study the relationship between physical spaces in nursing homes to meet elderly’s physical, mental and emotional needs with the consequences and effects on each other in various groups of elderly is important (Najafzadeh, 2006).

METHODOLOGY

This research is a qualitative and was conducted through library research and note taking tool with a literature review and resources, and also selecting some concepts.

Caring environment
Caring environment is one of the major elements in nursing homes and divided into two groups: Daily care spaces used for caring partially able elderlies for up to a day and weekly spaces used for partially able and able elderlies for four weeks and at least one access per day (Sharif Amir, 2003).

Daily care spaces
Elderly’s comfort, enjoyment and their participation in social activities are the most important principles in designing daily care spaces. Daily care spaces includes spaces for seniors and spaces for staff (Sharif Amir, 2003).

Spaces for elderly
The spaces for elderly consist of their rooms and public spaces.

Elderly’s rooms
Due to the differences in physical characteristics, motion abilities, length of stay and the health of the elderly, nursing rooms in this section are considered as follows:

- 2 bedrooms room (private) with health service;
- 4 bedrooms room (suitable) with health service;
- 6 bedrooms room (cheap) with health service.

The size of nursing rooms

a. Individual rooms

Area: According to the available international standards, the room space of a permanent residence for the elderly should be 24 cubic meters. Therefore, the minimum area of the floor for a room with 2.60 m height should be 9.25 m. However, it should be noted that, the size are changeable according to the facilities intended for the room.

Length and width: The minimum size of the room, minimum length and width is 3.20 m by 3.60 m by regarding the wheelchair spinning space, it is the equivalent of 11.5 square meters and is considered for bedrooms with the area of 12 to 16 m² (Sharif Amir, 2003), picture 1.

Picture 1. Individual bedroom.
b. Group bedrooms
In group bedrooms, the minimum area for the first person is 15 m. and for added person is considered 10 m. Since most seniors are demanding independence, applying separating moveable walls which can divided the great space of the rooms into more private spaces and creates privacy is suggested or a space with 2.5 by 2.5 is proposed for each person.

Picture 2. Suitable double bedroom.

The area of rooms for the residents serviced by central kitchen and have no utensils in their rooms is considered small but it is recommended that in residential rooms facilities for making tea or coffee and washing facilities including dishwasher by safety consideration should be provided so that seniors could be somewhat independent, picture (2).

Accessibility
In terms of accessibility, the bedrooms should have direct access to the bathroom and also easy and affordable access to the living room is recommended. Loggia created to control sunlight and provide extra space for bedrooms and visual access to the open space outside the building is recommended.

Openings
The door of elderly’s room should be opened to the sleeping area without any problems. Window in the bedroom should be in such a place that provides enough as well as preventing the impudence and high bright light. The height of the windows to floor should be 30 to 60 cm so that elderly people lying on the bed could watch outdoors, picture 3 (Watts, 1995). The height of window frames should be 120 cm to reduce the size of the opening and the width of the frame and each unit of opening is better to be more at last 60 cm to be opened easily. The height of handle to the floor is recommended to be between 90 and 120 cm. Most seniors prefer to grow plants in their own rooms, therefore it is recommended not to put the radiator under the window because pots are usually kept at the windows picture 4 and 5.

Picture 3. Installing windows in proper height and easy sliding opening
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Picture 4 and 5. Suitable windows for wheelchair to see outside.

Equipment needed in the bedroom

The elderly’s room should be furnished in a way that seniors feel comfort and convenience in it. Thus providing the necessary conditions to furnish the room or private area for seniors based on their personal taste are recommended. Due to the lack of physical strength, it is recommended that elderly use lightweight furniture in order to move chairs and tables easily. Bed, nightstand, wheelchair, wardrobe, sofa or chair and side table are the primary and essential equipment that should be in the seniors’ bedroom. Considering the space required for these furniture is necessary, picture 6.

Picture 6. Seniors’ room.

Bed

The height of the bed should be in a size so that when a person sits on the edge of it could put both their feet on the ground. For elderly people with average height, the height is considered to be about 45 cm from above the bed mattress to the floor and since the thickness of the wool or cotton rugs are usually 10 cm, the height of the bed should be about 35 cm. It is important to consider some exceptions for the people who are too short or too tall. Suitable width for elderly bed is 90 cm. Rod guard rails to prevent falling down from the bed and as an anchor to get up from bed or sit on the bed is necessary. Connection of the bed with the wall and room should be large enough so that the person feels safe and the bed orientation should be toward Ghebleh in order to communicate with daylight and the bed in the room should be placed in a way to shine light sideways rather than up or down. In bedrooms with more than one bed in the room, the connection and placement of the beds are very important. In group rooms the recommended distance between beds is 90 cm (Rafizadeh, et al., 2001).

Closet

It is recommended to use the closet inside the walls in order to save the space. In terms of the size and height of the closet it is necessary to consider the following:

- The height of the highest encasement from the bottom of the floor should not be more than 160 cm;
- The height of the lowest encasement from the bottom of the floor should not be less than 25 cm;
The depth of the closet should be considered 60 cm, picture 7 (Ghavami, 1994).

Picture 7. A suitable closet.

Other facilities
- It is needed to provide a small table (nightstand) beside the bed to keep the stuff such as books, clocks, etc. that elderly needs everyday.
- Chair or sofa, small table, couch, wall clock, dresser and telephone are the other devices that can be found in the bedrooms of the elderly. The height of chairs for the elderly should not be more than 40 to 45 cm (Rafizadeh, et al., 2001).

Balcony
- If there is a balcony in the nursing room, its width to provide a space with furniture including a small table and chairs should be at least 1 to 1.5 m.
- Orientation of the balconies should be to the East, West or South. Balconies should have a shelter and be protected from the sun, wind, rain, street noise etc. so that the elderly always could use the open spaces and clean air.

Flooring
- The bedroom floor should be covered with soft materials, safe, and yet the flooring that is easily maintained and cleaned.
- It is better to avoid using very bright or dark and shiny colors due to excessive light reflection (Rafizadeh, et al., 2001).

Painting
- According to the elderly’s needs towards warmer and brighter rooms it is needed to use colors that reveal hotter room in the winter evening.
- To lighten up the room walls and ceilings should be painted with bright colors. The opaque color to paint the ceiling of the room should preferably be used which prevents light reflection (Rafizadeh, et al., 2001).

Lighting
- Indirect natural light should be used as much as possible for the Lighting in the bedroom. To provide adequate lighting during the day the windows in the room should be 1/6 to 1/8. The edge of the window should be a distance of 60 cm from the floor.
- To prevent direct light, applying vertical blinds and a few light bulbs that are scattered in different directions (instead of a lamp or chandelier) at night are recommended. Using the lights with mild red light on at night is recommended to increase visibility at night. It is also recommended to use a desk lamp near the seniors’ bed, or study table and it is better to be patched in the table (Rafizadeh, et al., 2001).
Safety and welfare conditions

- Thermal comfort in the bedroom for the elderly should be considered at 21 to 24 °C. It is also necessary to provide facilities to install emergency alarm system.

Public spaces

Entrance

To design, access, entrance position following points are recommended:

- The main entrance of the building is an important and should be considered as a single space because partly belongs to inside and partly to outside.
- The main entrance of the building depends on how the building is located in the area but it is better to be controlled and protected by the Office of Management and guard room.
- The main entrance should be clearly visible and identifiable so it is better to paint the the frame of the door with different contrasting the color of side wall color.
- It is better to cover part of or all of the door by glasses to prevent bumping into people and provide a good sight and prospect to the surrounding area.
- To facilitate the use of a wheelchair, the entrance threshold should be removed or have a maximum of 20 mm height and creates contrast color to the color of the floor (Ghavami, 1994).
- The opening of main entrance door should be at least 1 meter and door handles should be about 80 to 90 centimeters of floor in both sitting and standing position.
- Lock Mortice should be set up in order to be opened with a minimum pressure.
- To lighten the main entrance, the light exposure to the bottom should be applied so that enough light to handle, keyhole, signs, etc. to be provided (Watts, 1995).
- By creating light and transparent materials in the roof of canopy the darkness over the front entry should be avoided.

The entrance filter

One of the major physiological changes that occur with aging is extreme sensitivity to light as seniors face moving from inside to the outside. Therefore, by creating a space in the middle of the way between the interior and exterior to wait and adapt to changes in light, temperature, noise and create a sense of security and protection, elderly readiness can be prepared before leaving the building. Information panel lightened to provide the necessary information to seniors, and a clear map of the building should be installed on the entrance (Rafizadeh, et al., 2001).

Lobby

Lobby is used to give services to the elderly getting in and out. Seniors get together for group activities in lobbies. Therefore, considering a place to sit and measures to prevent noise in the hallway is necessary. If possible the lobby should be integrated with outside space through a large transparent surfaces. It should be noted that direct sunlight should not cause discomfort to elderly and not interfere in the hall ventilation. The applications such as elderly’s locker, deposit room, health services, security, and information, space to care children and first aid, etc. should be in direct contact with the floor. Public telephone is one of the required facilities for the hall and should be placed in a quiet and peaceful corner of the hall and covered or separated by cabins. The phone should be far from the main course of the elderly.

Guarding, information and counter

The main task of guarding is to protect the collection and inform the elderly. At the time of displaying films or plays it can be used as a counter for tickets. This room includes a work space for the an individual.
Public bathroom

Public bathroom are the public spaces that should be associated with lobbies and they should be located in a place easily seen and found by the seniors. Public bathrooms should be properly ventilated and placed where to prevent the annoying sound of installations. Bathrooms for the disable should be regarded as well picture 8-12. The minimum number of bthroom for the elderly is one for every 30 women and 15 men.

![Picture 8-12. Suitable bathroom.](image)

Spaces for caring children (kindergarten)

The space includes a room for children’s play, rest and bathroom. The play room includes a play space for 10 to 15 children. There should be 3 beds for children and a bthroom for children in their room for rest. This kindergarten can give services to the employees’ children in addition to the grandson of the elderly picture 13.

![Picture 13. Golhakindergarten of nursery nursing home.](image)

Medical Services

One of the important applications in daily caring is giving medical services to the elderly. These services include primary medical consultation and assistance services (EMS) to the older ones. Consulting rooms include a work space for an individual and aggregation of 2 people. First aid room includes a flat space, closet for appliances, bathroom and space for one person and 2 people waiting. This room provides necessary care for the patients before the ambulance arrives. This room is required due to the physical condition of the elderly (possible fracture, heart attack, stroke, hypertension, respiratory problems, etc.). First aid room should be accessible and be easy to take the patients to the ambulance from this room. It is recommended to provide a separate
room with two beds as C.C.U. to take care of patients with heart problems before arriving the ambulance and taking them to the hospital.

**Spaces for the staff**

**The room for the head of nurses:** this room includes places for rest and work and 2 persons waiting.

**The room for the staff:** this room is a space for work, gathering, and 4 to 6 persons waiting regarded separately for male and female staff and equipped with alarm system provided in nursing rooms. It is recommended to provide direct access to the rest and dressing room which should have enough space for 4 to 6 people and have a shower and bathroom, picture 14 (Sharif Amir, 2003).

![Picture 14. Dressing room.](image)

**Weekly caring spaces**

Weekly caring spaces give services to the elderly round the clock and the most important principles in the design of these spaces are the elderly’s comfort, personal independence, access to care and to participate in social activities. Weekly caring spaces includes: spaces for staff and elderly.

**Spaces for the elderly:** the spaces include nursing and public rooms.

**Rooms for the elderly:** due to the differences in physical characteristics, motional capabilities, the length and the amount of health in seniors, the nursing rooms are considered as follow:

- One-bedroom (with bathroom and shower);
- Three-bed room (with bathroom and shower);
- Four-bed room (with bathroom and shower).

**Public bathrooms**

Since the elderly need toilet during the night, it is needed to be regarded near their bedrooms. Using Iranian toilet for the elderly, even able to use them is not suitable. Therefore, in addition to the Iranian toilet western toilet should be necessarily used in the bathroom. The minimum space for the toilets used by the seniors using wheelchairs should be 170 cm by 170 cm. The minimum width of the bathroom door is recommended to be 80 cm. picture 15 (Ghavami, 1994).
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Bathroom (shower)

For seniors and people becoming disable gradually, the bathroom gets more important and should be designed with maximum comfort and safety. Specific bath should be considered in the nursing homes for the unaccompanied or accompanied elderly using a wheelchair. Major equipment in the bathroom should include: bath or shower, toilet, sink, mirror, dresser, and first aid kit. This equipment should be placed so that they are accessible to the people with full mobility, or unaccompanied or accompanied wheelchair users. Bathroom door should be opened with a minimum width of 80 cm to the outside. The bathroom door should have a double coating in the bottom so that it is possible to open it in two directions by hitting with feet. To avoid the elderly being seen in a bath while the door is open, its front should be covered. The dimensions of the bathroom with bathtub is recommended 2.2 x 2.2 m and a with bath tub an area of 12 square meters. In the bath specific to the disable, a space with 1.5 meters in diameter should be considered for easy wheelchair space turnover in the bathroom. Generally, it is recommended that for every 6-8 elderly, one bathroom with an area of 6.8 square meters should be considered (Rafizadeh, et al., 2001).

Public spaces

Living room

One of the most important and most used spaces in the weekly maintenance are living spaces that are considered to be the focal point for community activities. Architectural design of the space should be defined according to the elderly’s specific needs and should be complied with the elderly’s spirit. Various social activities such as watching television, talking, meeting with friends, watching the scenery outside, reading journals are required to be done in the living spaces. According to the events happen in this space, it is needed to separate different functions and create smaller and friendlier spaces used more by the seniors, picture 16 (Rafizadeh, et al., 2001).
First aid room

Due to the physical condition of the elderly (possible fracture, heart attack, stroke, hypertension, respiratory problems, etc.), first aid room is required to provide necessary care for the patients before the ambulance arrives. This room should be accessible and be easy to take the patients to the ambulance from this room picture 17.

Spaces for the staff

The room for the head of nurses: this room includes places for rest and work and 2 persons waiting.

The room for the staff: this room is a space for work, gathering, and 3 to 5 persons waiting regarded separately for male and female staff and equipped with alarm system provided in nursing rooms. It is recommended to provide direct access to the rest and dressing room which should have enough space for 3 to 5 people and have a shower and bathroom.

Spacial diagrams

Picture 16. Living room.

Picture 17. First aid room.

CONCLUSION

In this study it was attempted to recommend the residential space and keeping the nursing rooms and the relation between the spaces in a way which promotes social interactions, feeling, the sense of security, and also preventing loneliness and reducing stress specific to this periods and improving recreational and welfare conditions and providing health and elderly’s medical needs and a suitable place to do daily activities to meet their needs.

REFERENCES

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