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INTERACTIVE SPATIAL EVALUATION FOR ENVIRONMENTAL ENHANCEMENT: CROSS COMPARISON OF SELECTED OLD AGE HOMES FOR SUSTAINABLE USAGE.

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ABSTRACT

With rise in population of the urban centers through urbanization across Pakistan and negative impacts of socio-economic decline & financial crisis across the nation, there has been a rise in the need and availability of old age homes in the major cities of Pakistan. This trend has jolted the existing family based cultural system previously followed and has laid the foundation to a new challenge where de-nuclear family setup raises challenges for keeping the old people at home. Hence old age homes to facilitate this rising population has emerged. Yet to manage their mental, physical, social, psychological and to some extent medical needs, these facilities needs to be evaluated. Interactivity provision in such spaces makes these more functional, livable and viable for old age people. Hence a cross comparison of two selected old age homes was done in Karachi with focus on social, environmental and physical parameters related to interactivity. Hybrid research mode was used. Based on the comparison, it was concluded that these facilities were not mainly designed for the stated functional purposes and they require a complete remodel approach for future and existing facilities through design interventions.

KEYWORDS

Old age homes, Interactive spaces, Safety & security, cultural cohesion.

INTRODUCTION

With all of the positive consequences of modern advances and developments, old values and morality are more likely to disappear from cultures in the coming generation. The centuries-old distinction between eastern and western civilizations regarding the care of elderly family members is being lessened as a result of this divide, which is contributing to the dissolution of traditional values. In many contemporary Asian cities, multigenerational families—a characteristic uniquely Eastern—are dwindling as younger generations want to preserve their privacy and reject the notion of a conventional undivided family. The last century has observed a speedy increase in need of old age homes, this phenomenon is not restricted to the western world, but many countries such as Pakistan are in present world feeling the influence of this operation. The norms of society are also shaped by cultures and traditions. For example, in Saudi Arabia, the notion of an old age home does not exist since elderly people prefer to live with their family rather than in institutions. Like many other Asian cultures, Indian culture places a strong emphasis on filial piety and the idea that parents should be revered as gods. Leaving parents in old age homes also raises cultural issues, particularly in developing nations like Pakistan where the joint family system predominated and the head of the family was the only source of income. In the past, there was no such thing as "Old Age Homes" in Pakistani society. But as time s have changed and the life have become fast and stressful, people do not have time for their family especially to take care of their elderly.

This is also evident by the fact that in 2016, there were only 3 Old Age Homes in Karachi. But now the official number have gone up to 15 till 2021. While people may hold firm believe that ‘abandoning’ a parent is against a social and religious norms in Pakistan, there is no denying that such places for elderly to live offer advantage in rapidly changing society and its priorities. The elderly can get a chance to socialize with the people of same age and it can have positive impact of their overall health bit particularly on mental health. Every person-man, woman and child deserves to be treated with respect and care no matter how old or young they are. Older people today are more visible as the number of old homes is increasing. The family member’s attitude changes as the responsibility comes to them. They start misbehaving with them, neglect them in many things and the same thing their children do with their grandparents. They think that parents are burden on them. Our religious and ethical belief doesn’t allow us to have this kind of behavior towards our parents.(Qadwai, 2018).

Hence this recent phenomena lead to raise the question towards not only having these facilities as part of the western world idea but also to ensure that these facilities are as per the need of the older fragile people who will be occupying these spaces and will be the long live tenants for the rest of their lives. A strong need to creating a supportive, elder friendly physical environment in old age homes can promote functional ability to reduce stress, encourage healing and recovery, and enhance safety in older adults. Most of the old age homes are providing basic facilities and also basic health facilities, but the problem seen in them is that the residents are not willing to interact with each other, so they are not able to come out of their loneliness. Which leads to depression and other mental health issues, and due to poor mental health their physical health start degrading even more. So there is strong need to create such Interactive Space in these homes which help the residents to come out of their bubble of their painful thoughts, by keeping them busy and they start interacting with each other. Once they start some activities and start interacting with each other they will be able to come out of their depressions and other mental health issue. Hence in order to move forward, following major research objectives were set forth:

1. To evaluate the physical conditions of the selected two old age home buildings.
2. To evaluate that what type of spaces can encourage the resident to interact with each other for better health and mental wellness.

Research exploration aims to address a recent social challenge through exploration of the physical settings which are mainly explored previously in the existing body of knowledge and which may contribute to better design interventions in future towards developing strategies to manage these projects better through operational optimization and design enhancements.

REVIEW OF LITERATURE

While ageing is occurring in all countries around the world, it is taking place the fastest in developing countries, including those which have a large proportion of young people. The world's older population continues to grow at an unprecedented rate. Today, 8.5 percent of people worldwide (617 million) are aged 65 and over (NIH, 2016). This percentage is projected to jump to nearly 17 percent of the world's population by 2050 (1.6 billion). (NIA, 2015). Amongst 15 countries with more than 10 million older persons, seven are developing countries, including Pakistan. It is further estimated that there will be over 43 million people (15.8 per cent of the total population) over 60 in Pakistan by 2050, compared with 11.6 million (6.5 per cent of the total population) at present (Memon, 2018).

Elderly people (aged 60 & above years) comprise a significant number in our population and they should be treated with respect, care and love along with basic health and survival facilities by the government. On the contrary apart from people who could afford to look after their parents, the story of poor elderly people reflects misery, sorry and dejection in most of the cases. Some of the help if reaches the right people is being provided by Pakistan Bait-ul-Maal and few NGO's are also working for the betterment of old people who are fighting the after effects of age, lack of financial stability and love. Our Religion stresses a lot on the rights of elderly people and we are asked to serve elderly relatives of our parents if parents are not alive. We make fun of the West that they send their parents to "Old Houses" and do not bother to inquire about them. With raising inflation and changing life styles, the concept of Old Homes in Pakistan is getting popular. Pakistan was ranked as the third worst country, for a person to grow old by the UN-banked.(Global Age Watch, 2013). Now if we analyze that what is happening to elderly people especially in the poverty struck rural areas it gives us following haunting facts:

1. Elderly people die miserably due to lack of food and medical attention.
2. They develop psychotic disorders due to depression and dejection.
3. They develop certain diseases by not eating healthy food which is not providing the necessary multi-vitamins needed to survive in the old age.
4. Employees' Old age benefits pension money is used by their family members.
5. They have very limited social life.
6. Lack of religious and basic education deprived them from doing anything useful to pass the time.
7. Children of even well settled families tend to ignore grandparents who just need to share love with them and focus.

A residence where old people live and are cared for when old age prevents them from looking after themselves in their own homes.(Collins English Dictionary, 2016). Basic rights of the old age people included right of security, right to have nice standard of living, right to work, right to basic health & human needs and the right participate. There are around 35 Old Age Homes all around the country with almost half in Karachi city.

One of the main challenges in providing care for the elderly is improper communication. It may cause the elderly person and their caregiver to get frustrated. Elderly persons can be difficult to

communicate with for a variety of reasons, the most of which are related to their diminished hearing or difficulty articulating their ideas. Since communication requires two people to convey clear information, when one of them is unable to do so, a gap occurs. Aging is a natural process that comes with reduced communication abilities, which is something you cannot control. Nevertheless, the actions you must take to address the issue will depend on your capacity to pinpoint its origin. Finding nonverbal techniques to communicate can be as easy as that, or it can get more complicated and involve medical intervention. Other significant problems that come with becoming older include problems with eyesight and sight, the need for medicine and medical care, neurological impairment, etc. These complicate the process of providing care.

Spaces in such homes can be divided as active and passive spaces. The active spaces include Gym (space for physical exercise), common room, lounge and open spaces. Whereas the parking lot, washrooms, stores and dining halls etc. Comprise the passive space zones. A properly design house for elderly shell ensure to accommodate all activities viz. extracurricular and interactive spaces as well as space for personal needs. Adequate size and number of rooms along with extra spaces such as corridors and verandahs the basic unit. The other areas accommodating other facilities such as small library and art rooms, audio visual learning air room, computer room and multipurpose hall contribute in enhancing their interaction with each other. At the same time properly designed open space for elderly are indispensable for improving the physical health conditions. The passive areas which mainly fulfill the personal needs of the residents and staff are provided by washrooms, water drinking unit dispensary etc. The number or residents that a building serves to is a critical element in allocating the above mentioned spaces. Some of the most critical spaces and their aspects include Personal space, Ancillary space, Outdoor spaces, etc. With respect to disabilities associated with people kept in old age homes, following are the major ones:

- **Non-ambulatory Disabilities.** Impairments that, regardless of cause or manifestation, for all particular purpose, confine individuals to wheelchair.
- **Semi-ambulatory Disabilities.** Impairment that cause individuals to walk with difficulty or insecurity, braces or crutches, amputees, arthritics, and those with pulmonary and cardiac ill may be semi-ambulatory.
- **Sight Disabilities.** Total blindness or impairments affecting sight to be extent that the individual is unable to focus and see the things clearly.

- **Deafness or hearing handicaps.** The partial or total inability to hear. A deaf person has little to no hearing. Such people avoid to interact and most of the time do not initiate the conversation (VR Viral Records, 2016).

Some of the major critical spaces required include but are not limited to A multipurpose hall, Reading spaces, Lobby space, Gymnasium, Lounge, Craft room, Open area sitting space, Gardening space and Play area (open ground). Common design elements with corresponding recommendations for elder friendliness include Lighting, Color, Flooring & Walls, Hallways, Doors & Windows, Handrails, Walkways, Ramps & Stairways, Acoustic Considerations and Special Considerations would focus on Parking, Equipment, Furniture, Elevator and Washrooms. Critical environmental factors include lighting, noise and fresh air movement.

RESEARCH METHODOLOGY

Most urban areas appear to have a growing incidence of cases of abandoned elderly. Thus, the Old Age Homes of various types are rapidly becoming a choice for many “abandoned”, “left out” or “neglected” old person with or without survival resources. So, the old people when reaches Old Age Homes are with high depressions and the sense of loneliness badly affect their mental health. In such condition most of them ended up in isolating themselves from other members in the Old Age Home and slowly and gradually their physical health also starts getting worst. There is need to create such spaces in the Old Age Homes which encourages the residents of move out of their rooms and interact with each other. As this is the only way they can come over with the sense of loneliness and depressions.

Hence to carry out forward the research endeavor, following research framework was established as shown below in figure 01.

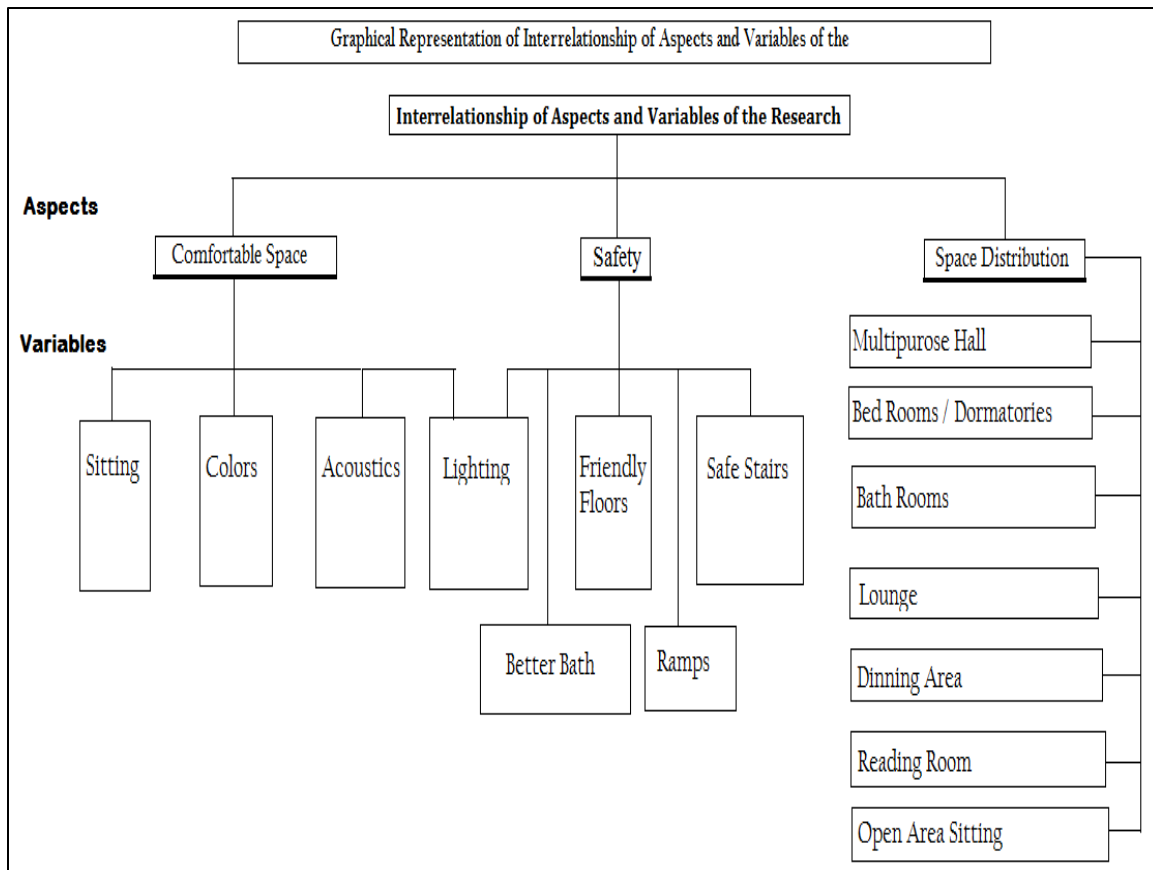


Figure 01 Research Framework

As shown above, the research followed the shared framework above in figure 01. The study undertakes the estimation of these aspects through checking the provision of different variables. Population of the study was all the Old Age Homes of Karachi. In order to get the true representation through constraints of time and resources, sampling was done and using random sampling method two old age homes out of 15 were selected. However they have been selected because of difference in the conditions, so the comparative study can also be done. Because of difficulty in obtaining data the study could not be confined to single tool i. e. the questionnaire only. These difficulties were anticipated on account of poor level of comprehension by the subject as well as a verity of information required. Thus three type of research tools were put on.

Simplified form of questionnaires from both the residents of the house and for the staff helping them, were framed to find out the opinion of the students and the teaching staff with respect to all the environmental aspects. However the supporting staff and the residents were directly interviewed and recorded in the questionnaire. An observational sheet was used to record information of various

aspects of environmental considerations through direct measurements. The values of the light and sound levels measured by Lux meter and Sound Meter were recorded in the observational sheets. Photographs of the particular conditions were taken. Plans were drawn after taking measurements of the buildings, and were examined to identify the situations favorable for the further design interventions.

DATA COLLECTION & ANALYSIS

Karachi being the largest city of Pakistan has huge number of Old Age homes with respect to the rest of the country. At the time of research, it was 15. Most of them are run by different NGOs and are free. Many of them are not even registered. During the preliminary assessment many of them are found with very bad condition and found lacking in providing basic needs and rights to the old age residents. The mandatory research has been undertaken to conduct a detailed assessment of the Physical and environmental conditions of Old Age Houses. There is strong need to assess the general situation prevailing in these homes. On account of time and resource limitation a simple study has been taken up comprising of two old age homes. Details of these are shared below:

Table 01 Comparative analysis of Two selected old age homes

S.No	Aspect	Sahara Village	Dar-ul-Sakoon
1	Introduction	As a non-Government, non-political and a non-profitable organization Sahara Public Rights Welfare with the “MISSION TO SERVE THE HUMANITY” is being run with the help of some kind-hearted philanthropists. Mr. Akber Ali Rana had started his work from scratch, using his own income and monetary source. He helped those who were sick and needy. The aim of the organization is to provide comfort to those who were penniless and were suffering from mental agony and pain.	Dar ulSukun initiated as a care home for children with disabilities only, who were abandoned by their families. A Dutch nun, Sr. Gertrude Lemmens, laid the foundations of Dar ulSukun on February 17, 1969. Visiting Pakistan in her young days, she was deeply moved by the plight of children with disabilities who were found deserted on street corners or in/around garbage pits in the city. She chose to devote her life for the care of such children in Pakistan. Slowly and gradually this grew into a bigger organization and was funded my Catholic community of Karachi. Slowly and gradually a network of homes developed in Karachi and then expanded to other cities as well. In Karachi, a home for socially displaced girls and women as well as a home for senior citizens was established.

2	Location	D-59, Sahara Village, Block-9 ,PunjabChowrangi ,Clifton, Karachi, Pakistan.	House # JM-2/243, Catholic Colony # 1, M.A Jinnah Road, Opp Quaid-E-AzamMazzar, Catholic Colony, Karachi, Karachi City, Sindh.
3	Area	At present, built area is 3,212 sqft, total area available will be 10,172 sqft.	-
4	Orientation	If we look at the wider scale, the posh areas like DHA is at South-East and Clifton is at South-West of the building. Whereas we find lower to middle class societies on the other sides of the buildings. Whereas looking at the micro level, we have residential building on the North, South and East of the building and a mosque on the West.	-
5	Neighbourhood	The building is in a residential area, having residential houses on two sides. Having a school and a mosque in same street.	The building is surrounded by only Residential buildings. Across the main road (M.A Jinnah Road) there is Quaid-E-Azam Tomb.

As shared above in table 01, the selected buildings of Old Age Homes comprise of good blend with respect to their age, type and sizes. One of the building is double storied with other is triple storied building. The selected buildings are in total different type or areas according to the neighborhood. Also the selected buildings shows wide difference between the conditions and areas provided for the residents. Both the building are situated in residential hub but still have garbage thrown on roads all around and in front of the buildings. The overall built form comparison is shared below in table 02:

Table 02 Built form and usage details

No.	Basic Information	Sahara Village	Dar-ul-Sakoon
1.	Year of Construction	2002	2008
2.	Type of Building	Triple Storied	Triple Storied
3.	Site Area	3070 sqft	18,420sqft
4.	Covered Area	1789 sqft	14,210 sqft

5.	No of male Residents	15	31
6.	No of Female Residents	12	45
7.	No of Helping Staff	8	15
8.	No or Nursing Staff	None	2
9.	No of Doctors, Psychotherapist, Psychologist	None	4
10.	Average Area of Rooms (dormitories)	104 sqft	450 sqft
11.	Average No of Person /Room	3	8
12.	Dining Area	132 sqft	800 sqft
13.	Lobby Area	239 sqft	300 sqft
14.	Open Sitting Area	287 sqft	2800 sqft
15.	Area of Multipurpose Hall	–	550 sqft
16.	Area of Gymnasium	–	450 sqft

As shown above in the table 02, both old age houses have the potential to be transformed into better places and spaces through detailed analysis as both have ample space for improvement and the old age people as well. Detailed analysis for both old age homes is done ahead based on three critical aspects i.e. Open space distribution, Private space distribution and Ancillary space

distribution. These three are discussed and shared below:

Table 03 Open space distribution comparison

No.	Space Distribution	Sahara Village	Dar-ul-Sakoon
1.	Sitting space- no of seats	12	25
2.	Ramps	not available	2
3.	Space for Gardening	Not available	180 sqft separate area

Table 04 Private space distribution comparison

No.	Private Space	Sahara Village	Dar-ul-Sakoon
1.	No of Rooms/ Dormitory	9	13
2.	Average no of Beds per Room	3	8
3.	No of Washrooms	8	16
4.	Counseling room	Not available	1
5.	Rooms for Staff	1	2

Table 05 Ancillary space distribution comparison

No.	Ancillary Spaces	Sahara Village	Dar-ul-Sakoon
1.	Multipurpose Hall	Not available	550 sqft
2.	Reading Area	Not available	Not available
3.	Store Room	48 sqft	96 sqft
4.	Entrance Lobby	239 sqft	300 sqft
5.	Dispensary	Not available	42 sqft
6.	Parking	Outside	Outside
7.	Guard Cabin	30 sqft	35 sqft
8.	Corridors	153 sqft	612 sqft
9.	Elevator	Not available	1

As shown above in the table 03-05, multiple aspects have ate short to be called in for the old age houses to be beneficial as well as operationally optimized for the old age people. In both the buildings whole open space is paved and no space is left for the lawn. Plants are grown in pots. While designing the open spaces are not given any importance which can be seen. Though the people in this age love to sit outside and it's also advisable for the healthy lifestyle. Most of the people showed willingness to sit in the open spaces during interview. Open space offers physical as well as psychological benefits to an old age person. But unfortunately both the building studies have very limited out door space. Such buildings must have enough open area for the different

activities and enough sittings.

Single private rooms are not available in these houses, and the residents live collectively in a big room, we can call it a dormitory. These are rooms where number of people live, having a bed with side table. The buildings under study have different type and sizes of such rooms. Some rooms are so small that hardly three beds can be accommodated. Whereas few rooms are so big those are catering 16 beds. In an old age it is never advisable that more than four people stay in a room. As in this age most of the people are having some kids of either physical or psychological issues. So it is disturbing for each other when so many people with different problems get together. Most of the rooms have attached bathrooms but do not have personal storage space. There must be a reasonable storage space where individuals can keep their belongings. In Sahara Village such storage spaces are present but were in very bad condition, without any proper cupboards. Few rooms are dark and do not have good ventilation, with keep the room environment more depressing. In most of the rooms bed spacing are not designed according to the movement of wheel chair. The ancillary spaces were of the same standards and lacked basic needs with respect to the old age people residing in these old age houses.

Environmental aspects & Variables Explored: Multiple environmental variables as per shared in the review of literature were explored using multiple environmental gadgets and data collection tools. The details are discussed below:

Light: The level of light noted down with the lux meter shows that in both the buildings light conditions are different from each other. As according to the standard bed rooms must have 100-200 lux. In Sahara village the average light in bed rooms is 110 Lux. Which is at the lower level and makes the rooms much gloomy and depressing. Whereas the conditions in Dar-ul-Shiffa is totally different. The bed rooms there have at an average of 180 Lux. The rooms give a very open feelings and the people living there are also noticed much happier and in better moods.

Acoustics: The noise level measured in both the buildings are almost same. The noise in the rooms depends upon the number of people in the room, size of the room and sometime also on the mental conditions of the residents. On the other hand it is also recommended that few rooms like, gymnasium, activity rooms must also not be so quiet and is recommended to have some music so that it keeps the space alive. On the other hand personal space like bed room must have 30 – 35 dB.

So that it makes a space relaxing and one can have better sleep and take good rest, which is very important for every individual.

Ventilation and Air Movement: The facilities of air movement in the buildings varies from space to space. It is observed that the bed rooms of the both buildings have better ventilation and fresh air. While when we compare the corridors and dining halls the situation is different. In corridors of the Sahara Old Age House are not ventilated and gives a suffocated feelings whereas the corridors in the Dar-ul-Sakoon are well ventilated because every end of the corridor is provided with a big opening.

Safety & Convenience: The Conditions of safety and convenience of such building are of great concern. We probably don't think much about turning a doorknob, but it can actually be quite a chore, even painful, for someone with arthritis or other conditions. In Sahara Village, the doorknob of some of the rooms are find hard, not easy to turn and open. Even some doorknobs of the wash rooms are found either hard and some are found broken. Slippery surfaces are not the only danger underfoot, although they're the most obvious. The bathrooms of the buildings under study have glazed tile flooring.

For older people living on more than one level, stairs can be especially dangerous. As both the building under study are multiple storied. The width of the stairs are 3 feet in both the building, which is considered less as the people using it, climb the stairs very slowly, so there must be enough space that if two person are closing, they can cross easily. Risers of the staircase are found normal. Hand railing was provided only on one side of the stairs. Artificial lighting provided in this area is very low, as the stair case must be well lighted. The staircase isn't the only part of a home that needs good lighting. A dark room is an invitation to a bump or a fall, rooms of Sahara village are not will lighted, specially number of lights provided in rooms are very less, which makes the rooms dark after sun set. Most people think of shower grab bars as the way to make bathing safer. In both the buildings under study are not provided with the grab bars/ handles in the shower. None of the bath place is provided with hand shower or a sitting place.

DISCUSSION & ANALYSIS

The detailed comparative study of the two old age homes made it possible to perceive the eminent shortfalls in building and securing the suitable environmental conditions for the aged people. The

present built up area is located along the secondary Road at the side of Gazri Bridge, Clifton, DHA Karachi. Present building was built as a residential house, later it was given in charity to Sahara Village. With the little changes in the interior the authorities decided to transform into old age home. The present building is insufficient with respect to the usable space per resident, interactive space as well as open space. Different NGOs helped the center to acquire the neighbor buildings so that building can be redesigned and extended. The environmental conditions i-e the natural light, cross ventilation, thermal comfort and acoustics are highly in conductive. As the building was not designed according to the needs of old aged people and they did segregation by dividing the male and female members on first floor and ground floor. Because of which the female members are restricted on first floor only, which effect their physical as well as their mental health. The existing condition of the facilities i-e conditions of the rooms, washrooms, dining area and lobby are below standards. There is strong need for the availability of multipurpose hall, gym and open sitting areas for the betterment of mental and physical health of the residents. The existing building on the whole is not properly designed and unable to play any role for the improvement of the mental and physical health of the old people living there.

RESEARCH FINDINGS

Based on the research exploration, it was evident that these buildings needs remodeling and revamping to ensure they are suitable for use by old age people. The scope of remodeling envisages making alterations in existing building as well as conducting new blocks to improve suitable environment for the activities, which can indirectly improve the environment of the building. These two things collectively is effecting the health of the old age people living there. It may also involve development of the open areas. It may also involve development of the new areas (open/enclosed), which encourage the residents to have physical movement and also encourage residents to interact with each other as well as with the visitors. Indeed such assignment is very challenging because of the sensitivity of the physical and psychological challenges of the users. A dive necessity has been assessed with respect to the provision of more personal space in their bedrooms to combat the need for the existing numbers of residents.

CONCLUSIONS & RECOMMENDATIONS

The extensive review of relevant literature as well as analysis of the survey data assembled in the case studies of two Old Age Homes have facilitated to set out the following guide lines for remodeling the existent one creating a better place for the users. Planning of such buildings must be divided in different zones e.g.

1. Zoning according to sun orientation
2. Zoning according to the function and activities in space
3. Zoning for private, semi-private and public space
4. It is recommended that each bed room must not have more than three residents.
5. It is concluded that the building for old people must be designed with such areas which can bring the residents together and they interact with each other and also with the visitors. Such areas can be
 - A multipurpose hall
 - A reading area
 - Craft room
 - Art room
 - TV Lounge etc.
 - Gardening/ kitchen garden
 - Sitting Spaces in different corners
6. Ramps must be provided wherever there is level difference.
7. At entrances, maintain a gradual change in lighting as older adults enter the building. Some ways to reduce abrupt changes in lighting are:
8. Install a skylight just inside each entrance;
9. Place awnings and other covers over each entrance;
10. Place a brighter light inside each entrance.(minimum 100-LUX)
11. Decorate with warm colors which are easier for older adults to see than cooler tones. Avoid bold patterns, especially on floors and walls, as the visual over-stimulation can exacerbate confusion in older adults.

12. Ensure flooring and walls are in a solid color; avoid bold patterns, flecking, or glossy finishes which present visual perception challenges for older adults.
13. Ensure walls and floors are in a matte (non-shiny) finish which reduces glare
14. Simply replacing doorknobs with lever-style hardware can make life easier for residents. Levers are also best on faucets, and illuminated rocker switches are better than the standard toggle light switches.
15. All floors must to be made non-slip by removing area rugs entirely or placing nonskid mats below them. Because trips may be just as deadly as slides, try to minimize or remove trip sites such as thresholds. Low-pile carpeting is the safest option for those who use walkers because it prevents the walker from catching on deep pile and falling.
16. If at all feasible, handrails should be installed on both sides of the stairs. Make sure the entire stairwell is well-lit from top to bottom since lighting is also very important. Fall prevention can be aided by clearly marked stairs that indicate the location of the tread's edge.
17. Thus, ensure that each room, corridor, and entryway has enough lighting—at least 100-LUX. Entryways that are poorly illuminated are particularly risky.
18. There exist alternative methods to guarantee bath safety. Grab bars near the restroom and other areas of the space where someone might want assistance can be added. Although a step-in shower is safer than a bathtub, install grab bars to make getting in and out easier if that isn't an option. Scalding is less likely when using a single-handled faucet control at the sink and a pressure-balanced control in the shower. For those with restricted mobility, a hand-held showerhead is frequently more user-friendly than a fixed showerhead.
19. The emergency staircase must be provided for exit incase of fire hazards.
20. The lift/elevator must be provided in such buildings.
21. Re-arrange furniture to promote barrier free access and try to avoid furniture with jutting or recessed bases.
22. Provide stable tables with rounded corners that are accessible from a wheelchair.

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