

INVESTIGATING FACTORS RESPONSIBLE FOR DESIGN SENIOR CITIZEN HOUSING: A CASE OF PUNE

Cchinmayi Ingale, Prof. Mahesh Bangad

BNCA PUNE

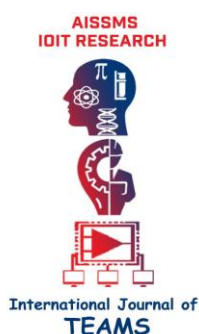
Corresponding Author: Cchinmayi Ingale, a19160.cchinmayii@bnca.ac.in

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ABSTRACT

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A Senior citizen housing is housing that has been designed to meet the physical and social needs of senior citizens. New senior housing aims to support ageing in place and independent living. Aging in place ensures that the elderly can continue living in their home and familiar neighbourhood without having to move due to health problems and care needs. An adaptive home design has been introduced, allowing the residence to meet the specific needs of the user while maintaining its appearance until more obvious accessibility features are needed. Today, "Design for All" is recognised as a tool to ensure physical accessibility for the elderly. The holistic perspective anchored in Universal Design Theory should be developed systematically and consistently throughout the design process. We have found that incorporating standardised design principles into the architectural design phase can make universally designed senior housing an efficient response to the demands of our ageing society. This research investigates the factors that are responsible for senior citizen housing, like providing an accessible and social environment, encouraging residents to be physically active, etc. This study focuses on how senior citizen housing is different from normal residential housing, how this kind of environment supports healthy aging, and how places affect the wellbeing of senior citizens. In a nutshell, this study gives us a reason to think about the needs of senior citizens and how senior citizen housing options should aim to provide accessible apartments and environments, have amenities and services, and offer social opportunities for various activities.

Keywords: senior citizen housing, universal design, comfortable environment, design considerations

1. INTRODUCTION

According to Indian tradition, families are described as social security for older family members. Nowadays, the change in family structure leads to an increase in the problems of the elderly. Due to the dominance of nuclear families, which has become apparent in recent years, the older, wealthy family members are exposed to psychological, physical, and financial insecurity. The problem of insufficient income after retirement, the loss of a spouse or enough free time, poor health, social isolation, family relationships, physical and financial dependency, etc.—all these situations are interconnected. Being able to sustain the lives of older people must be seen as a civil right, and architectural design must be seen as a tool to achieve those rights.

Because housing is linked to daily life, it must be a starting point to gain these rights. In the centre of everyday life, living spaces must meet design criteria for a useful life. The IAHS defines "aging in place" as "the ability to live in someone's home with confidence and comfort for as long as possible." But this is only possible if you have adequate and safe accommodations. Research into the lives of older people is conducted on the premise that "ageing in place" would allow them to live in a familiar environment that sustains their independent lives rather than moving to a new and unfamiliar place. Such housing means that "the housing conditions of older people are often related to their quality of life and their ability to age independently and actively in their

community. "Proximity to community and social services allows elderly residents to live comfortably safely, while affordable Housing gives them peace of mind. Buildings for the elderly are of a special type. The sustainable methods used in these buildings are special in a way. To complete the theory of sustainable design, it is necessary to assess the suitability of sustainable building concepts for older people. Sustainable designs, such as indoor climate management, can be suitable for maintaining the health of older people. Elderly people not only need a welcoming place but also a home where they can live close to children and a community that gives them love. The research aims to design a rehabilitation space that is sustainable and comfortable for the elderly. This research was formulated to find out what kind of sustainable and comfortable senior housing design is suitable for seniors. The research aims to design rehabilitation spaces that are sustainable and comfortable for the elderly. This study should show that a primary design of rooms for seniors (barrier-free housing) is socio-economically more advantageous than the renovation of existing housing. This research also focuses on how typical housing differs from senior housing based on the design and planning of buildings, facilities, and facilities, universal design, and a safe and protective environment. The main objective of this research is to analyse how this house can provide an environment that supports the health and well-being of older people and to recommend an effective design of housing for them. The basic principles underlying the design aspects, dimensions, details, colours, and symbols of support environments should not be influenced by generation difference and seniority but should rather be aimed at this user group. These principles can be briefly listed as change as little as possible, design for self-sufficiency, communication, and socialization. The research aims to design rehabilitation spaces that are both sustainable and comfortable for the elderly. This study aimed to show that a primary design of senior living spaces (barrier-free apartments) is socio-economically more advantageous compared to retrofitting existing apartments. This research also focuses on how normal residential housing is distinct from senior citizen housing based on the design and planning of the buildings, facilities, and amenities, universal design, and a protective and safe environment. The main objective of this research is to analyse how this housing can offer an environment that supports health and wellbeing of senior citizens and to recommend some effective design in senior housing

2. LITERATURE REVIEW

2.1. Housing for the aging population

(Demirkan, 2007) The findings and discussion of the paper stated that Architects and planners realised that there was a gap between the best possible solution for

an individual and the actual solution. They added that a whole range of conditions, such as social aspects such as economy, aesthetic design, sustainability, development, and cultural qualities, must be taken into account in the planning and development process. Therefore, universal design principles should be considered as a quality assurance process throughout the architectural design process. A building survey is being developed as a tool to evaluate existing buildings from a human-centric perspective. When examining design checklists or surveys, it was found that there are many universal design principles to consider, just as one principle can encompass the others. The study should guide the design process and provide criteria for new usable environments. A construction studio can promote alternative universal design solutions instead of an accessible solution. This report pointed out that a lack of awareness among designers is one of the barriers to the accessibility of the built environment. In this report, "accessibility" means the provision of buildings and places designed and managed to be "safe, healthy, comfortable, and enjoyable" for use by all members of society. This implies that buildings have to be accessible, that they have to be really usable from the ground floor to the roof, and that adequate possibilities for an autonomous exit have to be provided. Accessibility needs to be addressed from a broader spatial planning perspective. An accessible environment is safer and healthier, preventing accidents and allowing access for the elderly. An accessible environment is more comfortable because it is more liveable. It is also more adaptable, as it adapts to subsequent changes. When the built environment is designed with the physical dimensions of humans in mind, the perceptual, cognitive, motor, and cognitive abilities also support human activities. Therefore, designing for all means designing for human diversity, social inclusion, and equality.

2.2. A public health perspective to environmental barriers and accessibility problems for senior citizens living in ordinary housing

(Marianne Granbom, 2016) The author states that living environments that make it difficult to carry out everyday activities and prevent participation in social life have negative health consequences, especially for the elderly. The aim of the study was to identify environmental barriers and examine accessibility issues in ordinary housing stock in Sweden in relation to the functioning of older people. Particular attention was paid to the differences between dwelling types and construction periods and to identifying the environmental barriers that cause the most accessibility problems for older people. It is important to examine the conditions and characteristics of the built environment in the current housing stock from a public health perspective. A specific aim was to identify the environmental barriers that cause more accessibility problems for the aging population with different

combinations of functional disabilities. The methodology used was data on environmental barriers in housing from three databases on housing and health in old age, age was analysed (N = 1021). Four functional profiles, representing large groups of older people, have been used in analysis of the extent and severity of potential accessibility problems. In order to analyse accessibility problems at group level, they used functional profiles developed through simulations and statistical analysis of large data sets on functional limitations of older people from previous studies. The author notes that dwellings built before 1960 lead to more Accessibility introduced problems as newer homes. Differences in accessibility issues between housing types were small, ranging from no difference to a score of 35 accessibility issues. Several were found in kitchens in apartment buildings, among the top ten environmental barriers causing accessibility issues. For single-family homes, the barriers have been more evenly distributed in the kitchen, bathroom, and general indoor areas. Taken together, the results show a high prevalence of environmental barriers and significant accessibility issues for older people with functional limitations. Affordable housing is the basis for active and healthy aging and a necessity in countries with strong local aging policies. Making housing accessible to older people requires a large and systematic effort involving many stakeholders. The results of this study provide additional impetus to these efforts.

2.3. Design of a smart building control with view to the senior citizens' needs

(J. Vanus, 2013) The article describes approaches for the technical solution of a comfortable remote control of technical functions in an intelligent building with implemented wireless technology, taking into account the technical, sociological, and user-related needs of elderly, sick or disabled people. Health affects everyone. aspects of life in old age. For older people, the term "health" not only means the absence of illness, but also physical and social activity in addition to the self-sufficiency mentioned. In this condition, the subjective feeling of self-satisfaction is very important for older people. According to a study conducted by Demiris and his team, respondents (seniors) mentioned the following limitations affecting their self-care: vision loss, hearing problems, loss of touch, memory loss, loss of balance, difficulty reading small prints, controlling devices with small buttons, understand perceived information, including disruptive functions (e.g. watching TV news with music in the background, following the Internet with advertising), difficult operation of the PC with the mouse. The needs of older people cover three main areas with fundamental aspects: mobility, social health care, and housing. Currently, in Europe, the following care systems are used for elderly people, which improve their self-sufficiency and their potential to live in their home environment: telecare systems, home telehealth, smart

homes with care, etc. The smart home is a with Building equipped with computers and communication technology that anticipates and responds to the needs of users, increasing their comfort, reducing energy consumption, providing security and entertainment through controlled devices in the building interacting with the outside world. Research showed that these technologies are useful in situations where An elderly person needs immediate help, help with hearing or vision problems, Fall detection, indoor and outdoor temperature monitoring, automatic lighting control, monitoring of physiological data (e.g. blood pressure, glucose level), activation/deactivation control of kitchens and ovens, control of windows, doors, or refrigerators closed or open, control of water pool overflow, property protection Systems, alarm activation in case of fire or attack, a reminder of the time of a meeting or planned event, timely, and accurate information about the undesirable effects of the drug or its contraindication. The article describes the needs of older people in terms intelligent building design oriented towards the care of older people. It also describes the technical, social, and user-related requirements that are evaluated when designing a comfortable smart home remote control with wireless components. In order to effectively design a smart home to support the care of the elderly in response to their actual needs, it is necessary to integrate research in multiple disciplines such as sociology, architecture, civil engineering, mechanical and electrical disciplines (e.g. Biomedical technology, measurement and control technology)

3. METHODOLOGY

The methodology used for this research is live case study of already existing senior citizen housing in Pune known as "Athashri, Baner" and unstructured interviews of the senior citizens living both – the senior housing and normal housing. The questionnaire consisted of the questions like : no. of bedrooms you would prefer, how much access do you have in the kitchen, what design changes would they prefer? , do you feel comfortable to access the residence you are living in currently? what spaces would you prefer in the surroundings of your residence? are you satisfied with what environment you are living in? Then the case study was analysed based on planning of the dwelling units and then the site plan level and availability of the facilities

4. DATA COLLECTION AND ANALYSIS



The Athashri Senior Citizen Project is a project that is situated in Baner, which is a highly desirable area. It gives off enough solitude and is surrounded by beautiful vegetation. Since the site is formed like a linear strip, a linear layout plan is used. Total site area: 2,20,000 sq. ft Built-up area: 5.74 lakh sq. ft (448 apartments) It has good access to a major road and is close to a hospital, a mall, a bank, a hotel, a school, etc. The building orientation is straight and consists of two buildings. Building A - Club House - Building B = Building Hierarchy Pune's climate is generally hot and semi-arid, verging on tropical wet and dry, with average temperatures ranging from 19 to 33 degrees Celsius. East to West Sun Path. The wind flow is from the southwest to the northeast. The dwelling is user-specific and geared toward giving older folks a more efficient way of life. The number of family units = 514. amphitheatre in a landscaped garden. A shuttle service and an ambulance service are available. There is space for a doctor's clinic, canteen service is available, and physiotherapy equipment is available in the gym. The amenities of Athashri include: a well-stocked library; Guest rooms are furnished, The swimming pool, card room, intercom system, panic button functionality, The offices of the resident manager, temple, and badminton court are All the amenities in the neighbourhood are exclusively for elderly people. The building orientation is straight and consists of three buildings. The first structure (building a) contains 66 units for plot owners who are also older residents. Between building b, which contains 180 apartments, and building c, which has 268 units, a clubhouse with a swimming pool is planned. Building a clubhouse house building b = building hierarchy. The landscaped area is a continuous strip on the rear side that is vehicular free. All aspects of barrier free planning are taken care of. The landscaping is elaborately done with gardening lots, an open amphitheatre gathering lawn, a play court, a clubhouse with a pool, dining, recreational activities, and guest rooms . Security: modern electronic security systems and round the clock security. Services include housekeeping for common areas, doctor on call, ambulance on call, and shuttle service available on demand to different parts of the city. tie up with hospitals within the city. Tie up with grocery stores

nearby for home delivery. cultural programmes throughout the year. Courtyards : Courtyards throughout the space were thoughtfully designed with green flora and pops of colour. They were 1.5 m wide and had hand railings for older folks in consideration of their health and care facilities. On-site wheelchairs and walkers were also available. Landscape : Athashri's landscape was peaceful and serene, with an emphasis on mindfulness, It was made up of trees that had therapeutic properties as well as contributing to the aesthetic demands of the plan. , Beautifully planted shrubs and flowering plants added wonderful energy to the environment, Landscape aesthetics were excellent, including little elements such as tree form in a certain style and order, Organic gardening was done in such a way that it contributed both beauty and purpose of the space while also keeping the seniors involved in such activities. The interviews were unstructured, and the responses were noted down in a book for the references. A few of the senior citizens living in Athashri itself were more satisfied than those living in their own bungalows or normal housing. Some of the people in Athashri's B building were not very satisfied, as it didn't have courtyards or other light and ventilation wells, and the lobby areas were not lit properly, so they had some security issues. People in Athashri have canteen service provided, so they do not need much access to the kitchen in their houses. The people residing in normal housing were not satisfied because they didn't have access to all the amenities like clubhouses, card rooms, etc. They wanted more and different innovative recreational spaces where they could interact with people of the same age as theirs. They also said that they would prefer a lower kitchen top than normal housing as it can be easier to access. They somewhere had some difficulties in the bathrooms and toilets, as there was no such element that they could grab in case if they slipped. Some of them liked reading books and watching movies, but they didn't have immediate access to the library or the movie theatre. They were more interested in community gatherings and programmes that could entertain them.

5. RESULTS AND DISCUSSION

Although codes and standards for the benefit of people with disabilities specify accessible or adaptable design requirements, the universal approach to design applies to all people of all ages. Universal Design is defined in the USA as "an approach to creating environments and products that can be used by all people to the greatest possible extent" . The barriers were steps/thresholds/level differences between rooms; Too high closets and shelves in the kitchen and no handles in the shower/bath and toilet. The uneven/uneven surface in the outdoor environment; high thresholds and/or entry steps; Stairs, the only route (no elevator/ramp), and

storage areas that are only accessible via steps or other elevation changes were among the top ten barriers. There are seven principles of universal design, such as: Equal use, flexibility of use, simple and intuitive use, perceptible information, error tolerance, low physical effort, size and space of approach and use. A universal design feature is any component of a home that can be used by everyone, regardless of ability or disability. Older people suffer significantly more frequently from health problems, which often result in limited independence. Due to the fact that health status has an important impact on our housing needs, the above elements must be taken into account when designing new buildings, not only public but also residential. The residence must be adapted to people's needs, taking into account the necessary adjustments well before reaching retirement age. Buildings with accessible floors also feature an accessible environment, including access ramps, low curbs, and appropriate hallways, and elevators. The specific requirements can be summarized as follows:

Privacy: Elderly people need their own space. When designing senior housing, we must respect residents' lifestyles and preferences and privacy. Even in most types of homes, Track curtains can serve as necessary privacy dividers.

Social Interaction: A lonely life is very detrimental to the physical and mental health of older people as they themselves have a need for social interaction. Therefore, when considering residents, there must be a space for social interaction and exchange between residents.

Clear Directional and Logo System – Seniors, Due to amnesia and identification issues, demand that their environment provide clear direction and a legible signage system to guide them to venues.

Safety and Comfort - All designs for the elderly must provide a safe indoor environment that provides a sense of security and meets their needs for physical and psychological comfort.

Design for people with disabilities: indoor spaces for older people's activities require good accessibility.

Familiarity and continuity: The design of Retirement homes must incorporate a certain local tradition and provide residents with space for self-design to include familiar personal items such as photos that are reminiscent of days gone by. Communities under construction must remain accessible and provide viable walking space: sidewalks and parking lots must be designed and sloped no more than 5° to allow residents, either on foot or in a wheelchair, to explore the community alone. Outdoor environments should

create a sense of security so that the seniors can feel very comfortable. Greenery, upholstered furniture, and even the side walls of buildings can be used to create a sense of enclosure or shade. public meeting places, plants ponds, pavilions, terraces and other public spaces create opportunities for networking and meaningful activities. Blocking out the sun is one way to access nature. The use of natural features of trees, vases, green corridors can help avoid sun exposure. With the rapid development of the world economy and society, people's Energy needs have affected climate change. Sustainable designs that benefit the physical and mental health of older people suitable for older people. Older people also tend to save on their daily expenses for electricity and water. In these cases, the Existing sustainable designs are wind turbine design, high performance HVAC systems, garden atrium, green balconies, Geothermal energy, solar panels, rainwater management, landscape water conservation, renewable and low-emission materials. The economics of living in old age and the reduction of operating costs were inherent requirements of sustainable development. Quality caused high power consumption and limited energy saving. In this state, HVAC systems were required, and energy-efficient HVAC systems can save a significant amount of energy and reduce environmental impact. Beautiful green landscapes (atrium garden, green balconies, etc.) could allow older people to have more contact with the natural environment and increase the frequency of outdoor activities.

6. CONCLUSION

This study provides a basic analysis and practical research on design considerations for senior housing. The study is divided into two parts. The first part consisted of a live case study of the senior citizen housing at Pune, followed by interviews with senior citizens living in the senior citizen housing and in normal housing. The second part of this study analyses well-designed senior housing, summarises the design considerations, and suggests a few sustainable strategies that can be senior-friendly. Based on this study's research and case studies, the following principles of design should be considered: equal use, flexibility of use, simple and intuitive use, perceptible information, error tolerance, low physical effort, size and space of approach and use an accessible environment, including access ramps, low curbs, and appropriate hallways, elevators, etc. The specific requirements can be summarised as privacy, a logo system, social interaction, and the provision of a viable walking space. The focus of the study was on the basic

design principles for living spaces as well as examining the reflections of the factors influencing health, safety, and mobility, which result from reduced mobility, impaired cognition, and memory impairment as a result of aging. The current housing problems for older people in urban areas and the modernization of their existing housing stock to meet the needs of the older population are explained. Challenges and opportunities in developing housing and effective services and programs in the urban area are discussed using the literature, reviews and cases. This study shows that new buildings and developments can easily be designed according to future user needs, not necessarily with expensive and complex designs but at reasonable costs as an integral part of urban areas and daily life. This vision will reap positive results as long as current users continue to choose to stay at home as they age. Due to the limitations of this study, including the time and length of the paper, this study has only included a few recommended designs, and there remains a lack of depth and breadth regarding sustainable designs for the lifespan of the plants. Different climates and geographies should make a big difference in the design of the building.

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