

Creating Inclusive Living Environment in Urban Residences for Indian Elderly

Sandeep Sankat and Rachna Khare

Abstract The aim of the research is to study the situations of Indian elderly and to generate a framework to create inclusive living environment for the Indian elderly. Through preliminary diagnostic surveys the need of creation of inclusive living environments has been established. An extensive literature review is done to understand ageing. Then field surveys are performed to identify the challenges that the elderly face. The survey is done for the upcoming typologies which are identified with market survey and scientific layering of the data. Then 48 elderly in the age group of 60–85 years representing independent elderly, frail elderly, and dependent elderly are studied using environment-behavior research tools. The collected data is analyzed in layers to identify 20 environmental issues. Based on these identified issues, analysis and synthesis is done to identify the possibilities of interventions at architecture design level. It has been established through testing and validation that the gap can be filled by guidelines. Thus, following a methodology, the guidelines to create “Living Environments for the Indian Elderly” are prepared.

Keywords Elderly and design · Environment behavior research tools · Research methods · Inclusive living environments

1 Introduction

In India demographic transition is contributing to ageing population. The increased birth rate, decreased mortality rate, increased life expectancy is resulting in increased elderly population. Longevity by itself is to be celebrated, but increasing vulnerabilities of the elderly arising out of poverty, rural living, income insecurity,

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illiteracy, age related morbidity, dependency and decreasing support base requires attention [1]. In most of the western countries, advanced stages of development preceded population ageing but the same is not true for many developing and middle-income countries, including India. The government of India, being a signatory to “Madrid International Plan of Action, on Ageing” (MIPAA) deserves recognition for its foresight in drafting a “National Policy on Older Persons” (NPOP) in 1999. The NPOP is coordinated by the “Ministry of Social Justice and Empowerment” (MSJE) and implemented through the respective mandates of several ministries. The revised “National Policy for Senior Citizens” (NPSC) recommends eight areas of intervention, namely income security in old age, health care, safety and security, housing, productive ageing, welfare, multigenerational bonding, and enhancing involvement and participation of media on ageing issues [1].

The physical environment, as it relates to the dependencies of older adults, remains one of the most overlooked areas in environmental design. In order to move beyond this status quo, persons responsible for planning that environment must develop a new understanding of ways in which their influence can improve the older adult’s physical and mental functioning [2].

The concept of residential design for elderly is simple: Create houses and homes that adapt to an elder population, segments of society who are or will endure the ageing process [3]. It seems pretty simple, but when we observe Indian elderly in our houses, neighborhoods, townships, markets and cities the environment created by the designers, architects and planners present numerous barriers which restrict or deter the elderly to use environment freely and with ease. These barriers restrict the elderly to adjust with the available products, restrict them to certain areas of residence, limit the use of external neighborhood environment and decrease their presence in the city areas. The lack of support in available infrastructure in the urban areas clearly indicates a need to investigate and develop an environment to enable the Indian elderly. The current research presents a sequential enquiry using evidence based research methods to develop a frame work for professionals dealing with the built environment that would help to create elderly friendly residences in India.

2 Background Context

“As people age, certain sensory changes cause them to perceive and respond to the physical environment in different ways: a person may walk more slowly, move more deliberately, hold reading material farther from the eyes, or strain to distinguish a voice in crowd. As more and more limitations in functioning are experienced, the person becomes more dependent on environment for support” [2].

As strength fails and sensory organs incur deprivation, the individual experiencing these losses reaches out to both the general social environment and physical

environment in order to continue functioning [4]. Sensory changes not only increase as people grow older but are usually compounded by the simultaneous occurrence of changes in several sensory systems. However, the age of onset and the rate of decline for these functions differ markedly among and within the various sensory systems [5].

“The Indian situations are very complex with the huge size of the country, diversity of social, cultural, economic and political background, wide variety of people with different religions, cast etc.” [6].

“With severely different demographics, characteristically interdependent social scenario, culturally different society, wide range of economic disparity, religious and traditional systems and beliefs, the Indian situations are entirely different from the western world” [7].

“Borrowing any concept without understanding the needs and aspirations of the Indian elderly and their applicability to Indian situations may result in a catastrophe” [8].

Other than the onset of physical limitations with age there are so many psychological issues which *make* their condition complex. There are social and cultural expectations too, to compound the condition.

3 Need of the Study

For all design exercises in the architecture design curriculum the data collection is done with respect to the average human dimensions neglecting the concerns and spaces with respect to the children, elderly and persons with disability. This percolates in the architecture profession as well, where all buildings are designed for average human body instead of real life users. This results in the failure of environmental designs to respond to the needs and aspirations of the vulnerable users like children, elderly, persons with disability and “All” other users. Problems faced by the children are not highlighted because they are cared by the parents but the elderly and persons with disability face serious issues when they use the environment. Thus the environmental designs fails to design for “All” and the learning of architecture design itself fails to produce solutions which cater to the issues of “All” users.

To learn about the lack of enabling environments for the Indian elderly an extensive literature survey and a few preliminary diagnostic surveys are performed. These preliminary diagnostic surveys indicated that;

1. The existing built environment lacks in inclusion of the elderly.
2. The Indian situations of the built environment and the elderly are different from the western situations.

3. There is a scope of improvement in the environment by identifying the problems, issues, barriers and challenges and removing them to make the environments inclusive and living for the elderly.
4. There is a gap in the existing body of knowledge due to which the environments for the elderly in existing Indian situations are not inclusive.

4 Aim

To develop a framework, following which inclusive living environments for the Indian elderly can be created in upcoming urban residences in India.

5 Objectives

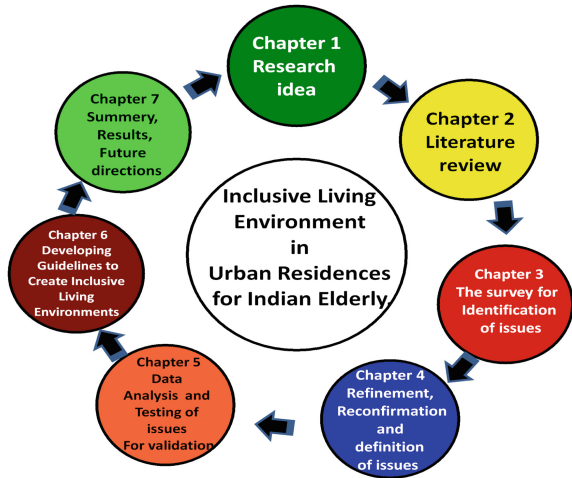
1. To study the elderly and the situations of Indian elderly in their existing living environment.
2. To develop a methodology for the identification of problems, challenges and issues related with the living environment of the Indian elderly.
3. To identify the problems, challenges and issues, the Indian elderly face related with their living environment.
4. To test the identified challenges with stakeholders associated with the living environment of the elderly, for validation.
5. To develop the guidelines to create inclusive living environment through validated environmental issues in the urban residences to create inclusive living environments for the Indian elderly.

6 Scope of Research

India is a vast country with 72.18 % of its population living in the rural areas and the 27.82 % of the population resides in the urban areas [9]. The changing situations of urbanization are resulting in a lot of changes in the urban and rural Indian society. The issues and problems in the urban and rural India, specifically, with respect to the Indian elderly are different. The present study aspires to create inclusive living environments for the Indian elderly, in the urban environment, and is focused to the environment of Indian elderly in their residences.

The study aspires to develop a framework of guidelines, following which inclusive living environments for the Indian elderly can be created. The adoption of the recommendations/guidelines in Indian situations seems more pronounced in case of a newer construction. Therefore, the scope has been limited to the upcoming urban housing typologies.

Fig. 1 The research process to create inclusive living environments for Indian elderly



7 Research Methodology

The study investigates the problems and issues which the elderly face with their environment. It aims to identify the issues to enumerate, analyse, synthesise and develop a set of guidelines to create enabling environments for the Indian elderly. It is an attempt to understand the human behaviour specific to the Indian elderly and environment. The methodology adopted is a sequential stepwise process as explained below; (Refer: Figs. 1 and 2).

8 Research Idea

The study begins with an exploratory approach with initialization of the idea and the elderly concerns in Indian situations of home, family, society, town and the city. The study then adopted user-centric evidenced-based approach with a focus on the design of residences in the upcoming housing typologies in urban India.

8.1 Literature Review

An extensive literature review is done to understand ageing, old age, elderly and the associated problems of ageing at the national and international level. The ageing issue also relates to disability thus the literature review studies included the studies of the field of disabilities at the national and international level to understand various concepts of disability.

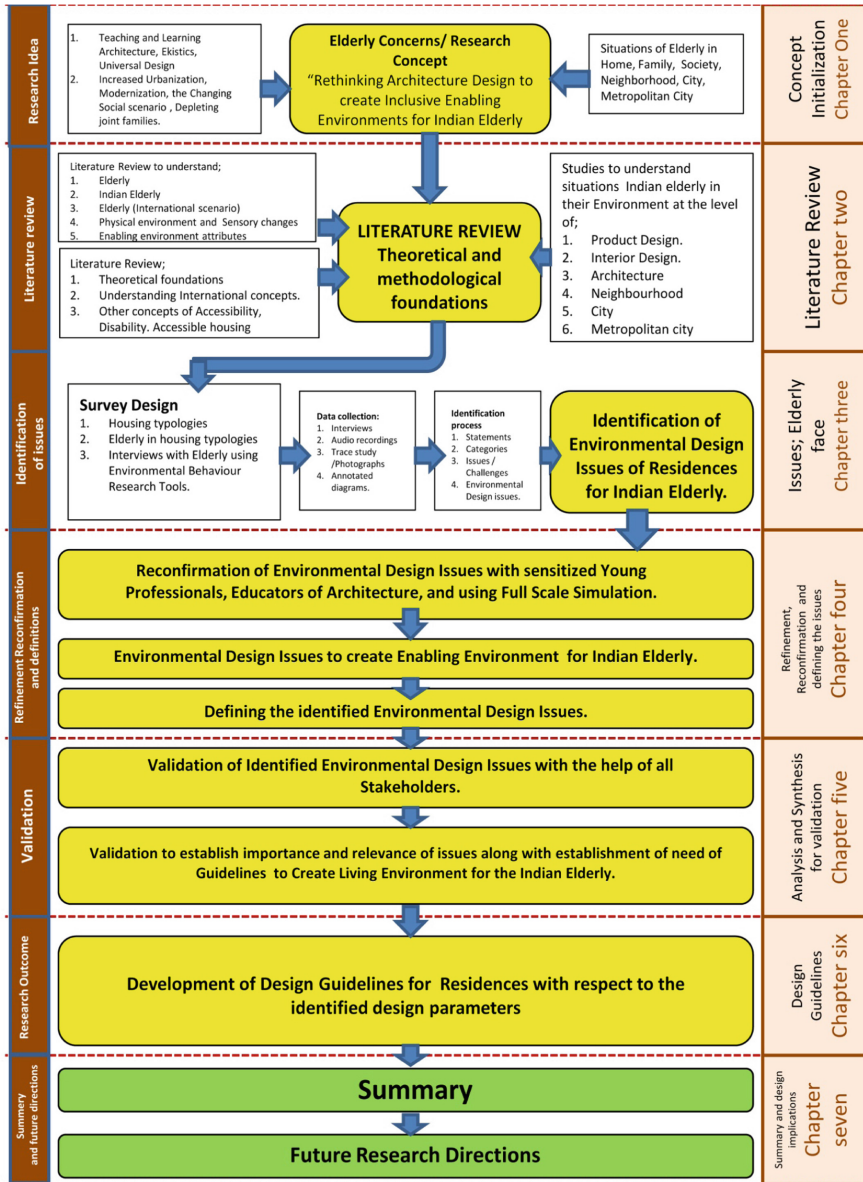


Fig. 2 Methodology of research

8.2 The Survey for Identification of the Issues

A survey to identify the issues the elderly face with their environments has been designed. Since it is an attempt to collect the qualitative data concerning the elderly and the environment, the environment behaviour research methods for survey has been adopted as mentioned below:

- Semi structured interview questionnaire [10].
- Complete audio recordings and the transcriptions of the interviews [10].
- Trace study through observations and photographs [10].
- Annotated diagrams [10].

The findings from each layer of data collection were overlapped and summarised to develop a set of identified enabling environmental issues.

8.3 Refining, Reconfirmation and Defining the Issues

The identified list of issues was refined and reconfirmed through following steps:

1. Reconfirmation and categorisation of the identified environmental issues using environmental behaviour research methods, involving young design professionals.
2. Inter-subjective transcription of semi-structured interview responses to remove bias and reconfirm the categories of environmental issues, involving sensitised architecture academicians in two layers.
3. Reconfirmation of the identified issues using full-scale simulation tool, involving young architecture professionals.

After refinement and reconfirmation, the identified enabling environmental issues were listed as final twenty identified enabling environment issues. These issues were defined and elaborated for their clarity and testability.

8.4 Analysis and Testing of Issues for Their Validation

The identified issues have been analysed, empirically tested and validated with the help of a survey conducted with stakeholders associated with the residence design, construction and use. Based on these criteria the stakeholders identified are:

- The elderly and caregivers—The users of housing.
- The practicing architects and the builders and developers—The providers of housing.

- The academicians of architecture and the young professionals of architecture—The providers (because the architectural education is resulting in professionals for the field of architecture).
- The foreign experts—International experts working for the field of architecture, interior design, disability studies, occupational therapists etc.

These stake holders have validated the identified issues for their relevance, significance and importance. The responses from the respondent groups were compared to derive the lacuna (i.e. the reason of the gap due to which the elderly residential environments in India are not inclusive). Thus the validation established the gap of context specific guidelines for the creation of living environments for the Indian elderly, suitable for Indian residences. The responses from the Indian respondents and the foreign experts were also compared to establish the difference of Indian and foreign situations. The validation also established the uniqueness of Indian situations from the foreign situations.

9 Developing Guidelines to Create Living Environments for the Elderly in Indian Residences

Through validation, the gap and the need for developing guidelines to create inclusive living environment for the elderly in Indian residences was established. Thus, the current study attempts to address this gap, through a systematic, ready reckoner in the form of guidelines to create enabling living environments for the Indian elderly. These guidelines are based on validated environmental issues and developed in terms of spatial characteristics and material characteristics for all the elements of residential design. Every element of residential design with respect to all the identified issues is analysed and synthesised in detail to develop a qualitative list of guidelines for the environmental design for the elderly in Indian urban residences. Following these guidelines, inclusive, living environment for the Indian elderly can be created.

10 Relevance of Research

A careful examination of the existing literature reveals that there is a lot of work related to socio-cultural-economic conditions of the Indian elderly has been done in geriatric and social studies. But elderly, space and environment is a domain which has not yet been explored for the Indian elderly. The only work in the field of the Indian elderly and the environment is evident through a very significant work done for the residential interior design. It is a guide book on ergonomic dimensional

references for designing home interiors by Prof. Gaur G. Ray and Lavanya Bachwal. The guide focuses on providing guidelines as standards in the form of dimensions and ergonomics along with concerns for the elderly for the residential interiors [11].

It has been established by the various researchers that the situations of the Indian elderly and the elderly in developed countries are different. Thus any concept borrowed from the developed world for direct implementation may not be successful. This emphasizes the need to study the Indian elderly and the environment for creating, context specific living environments.

This research with the development of qualitative guidelines, aspires to provide a ready reckoner in the form of guidelines which when followed for the architectural design of residential spaces, will create inclusive living environments for the Indian elderly.

11 Summarizing Results

The survey conducted with the elderly in their residential environment resulted in identification of issues. These issues are then revised and refined with a four layered refinement which resulted in 20 enabling environmental issues, as listed in Table 1.

The process of making residences involves various stakeholders, right from the conception- realization- and building of the residences. A survey conducted with

Table 1 List of identified environmental issues

Identified environmental issues			
1	Safety in environment	11	Environmental support for socio-cultural connect
2	Environmental support for mobility, balance and slow movement	12	Affordable environment
3	Environmental support for better vision	13	Environment to support leisure and recreation
4	Environmental support for better hearing	14	Environment to support security
5	Light and ventilation in the environment	15	Environment to live with nature
6	Environment to support better health	16	Environment to support spiritual connect
7	Environment to support memory loss	17	Technology connect in the environment
8	Privacy and personalization in the environment	18	Usable environment
9	Degree of independence in the environment	19	Environment to provide emotional comfort
10	Environmental support for interdependence	20	Environment to address loneliness

the stakeholder to get the opinion about the identified 20 enabling environment issues for validation. These stakeholders are:

- The Indian Elderly.
- The Caregivers.
- The Practicing Architects.
- The Builders and Developers.
- The Sensitised Academicians of Architecture Education.
- The Sensitised Young Professionals of Architecture.
- The Foreign Experts.

An analysis of data collected using a tool for rating the 20 identified enabling environmental issues has been done;

A comparative analysis amongst the responses of the stakeholders has been done to understand the difference in opinions for the 20 identified enabling environmental issues and to identify the research gap. The comparisons were done amongst; The User group (The Practicing Architects and the Caregivers) and the Provider group (The Practicing Architects and the Builders and Developers)

The comparison amongst the user group and provider group revealed that both are aware about the problems and issues whereas the providers group is more aware than the user group. But, still the elderly environment for Indian elderly, lack in real inclusion. This stated the need of translating this awareness to real designs. The present research thus developed a reckoner following which the users can demand and the providers can provide the environmental designs which will result in creation of inclusive living environments. And this ready reckoner is developed as guidelines to create “Inclusive living Environment” for the Indian elderly (Fig. 3).

The second graph (Fig. 4) shows the empirical rating of all identified issues in early stage of research. All issues are rated above 60 % and thus considered very important for the residence for the Indian elderly. These validated issues provided the foundation for the preparation of evidence based design guidelines for creation of “Inclusive Living Environment for the Indian Elderly.”.

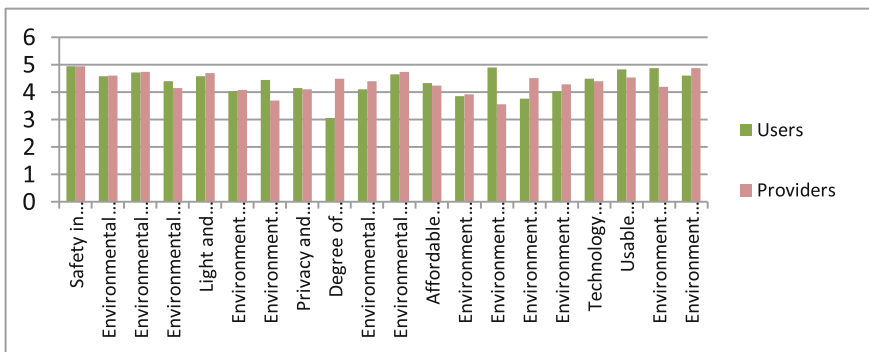


Fig. 3 Graph showing responses of Users and Providers

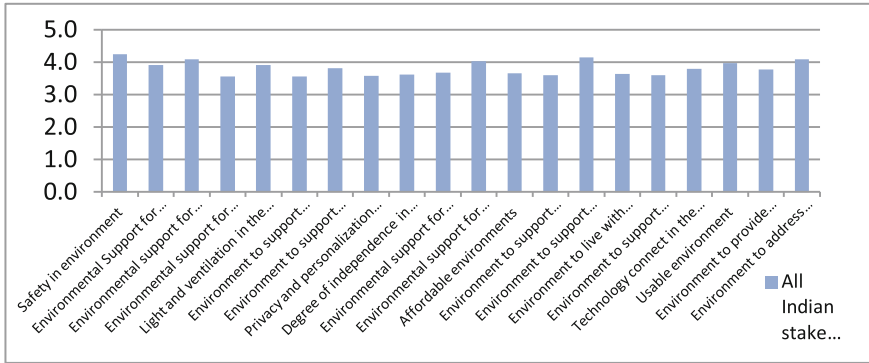


Fig. 4 Graph showing average rating of all Indian Stakeholders

With the establishment of the need to prepare guidelines for the creation of inclusive enabling environments, a set of guidelines were prepared. This research results in three major contributions;

Methodology to identify the enabling environmental design issues for the Indian elderly and environment.

Methodology of preparation of guidelines: The methodology of preparation of guidelines is a unique process which is based on the idea of identification of enabling environmental issues and then with the help of these identifications to frame the guidelines. It is a system of simultaneous considerations of the residence, the elements of residence with respect to design and its 7 subdivisions and the 20 identified enabling environmental issues (Refer detail explanation in Chap. “Bringing Universal Usability to All Users: A Case Study on Public Realm Locations of Tourist Interest in Bhopal, India” of the report).

Following the above stated methodological process of preparation of guidelines, the final guidelines for creations of inclusive, living environment are prepared (The set of guidelines is accompanied in Chap. “Bringing Universal Usability to All Users: A Case Study on Public Realm Locations of Tourist Interest in Bhopal, India ” of the report). Following these guidelines for the construction of residences in urban areas, inclusive living environments for the Indian elderly can be created.

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