

Occupants' Perceptions in Relations to Space: The Case Study of Senior Housing Design in Jakarta

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Abstract: The development of technology, aesthetics of forms, cultural preservation have created the color and culture of the Architecture Works development throughout the world. However, it has somehow ignored the importance of human aspects. Something very fundamental that should be underlined is how Human Dimension in Architecture and People as the End Users must be taking an important role in every work of architecture and should not be left in the creation of works of architecture to avoid the Failure of Architecture. Izumi expressed understanding the meshing between the architecture of human and non-human. "The buildings containing both people and objects need to be more humanized, e.g residential buildings, hospitals and prisons" (Holahan 1978, p.3). Senior Housing is one need to be humanized. The case study taken for the research is the Senior Housing in Jakarta. This is conducted in order to assess the occupants' perceptions toward their living space as it is understood that the good perceptions of elderly will lead their positive health, peaceful feeling and happiness. The negative perceptions are also found and it is need to be solved out in order to avoid the failure of space design in the future. Comparing the International standard for housing space in the architecture references will be conducted and an attempt to provide architectural recommendation for the right people with their range of age and their own culture will be carried out. This is also to confirm the previous theory saying that one of the factors impacting perceptions and behaviour of occupants is their origins and people's age.

Keywords: Perceptions, Behavioural, Architectural Concept, Senior Housing

INTRODUCTION

World architecture has growth and developed with the times rapidly and very encouraging. However, the development of technology, aesthetics of forms, cultural preservation have created the color and culture of the Architecture Works development throughout the world. Something very fundamental that should be underlined is how Human Dimension in Architecture or People as the End Users must be taking an important role in every work of architecture and should not be left in the creation of works of architecture to avoid the Failure of Architecture.

Human Dimensions in architecture is such a crucial one. Izumi's theory has shown in the diagram explaining how Psychology in relation to the design of the building. "The buildings containing both people and objects need to be more humanized". Izumi showed that: the buildings which contain a human with a dominant type of activities that take place in it would require a greater degree of human design (Holahan, 1978, p.3), such as residential buildings, hospitals and prisons. Senior Housing in one of Residential Place where many old people stay and need to be considered to plan and designing well.

THEORIES

Human Dimensions in architecture is such an important point to be considered in Planning and Designing a project. Izumi expressed understanding the meshing between the architecture of human and non-human. "The buildings containing both people and objects need to be more humanized" (Holahan

1978, p.3). Residential like Senior Housing is one to consider the involvement of human more than other elements. This suggests that human behaviour as a factor that plays an important role and architectural features and patterns of human behaviour is a strong mutual relation to the types of the building.

In order to involve in the area of architecture, there are 3 (three) Main Architecture Knowledge, as follows: Building Architecture, Interior Architecture and Landscape Architecture. Architecture and People are interrelated. Architecture arrived when people needed a shelter to survive and safe on doing things in life. People with his/her attributes become a priority for a Design Provision. Behaviour & Space Interrelationship has no longer debatable. Several research conducted can conclude that there is a relationship between Space and Behaviour. "Human Behaviour impacts/affects the Space Design & The Space Design Impact Behaviour" (Indriyati, 2016). Therefore, Architects demanded its role in order to create space that is "good and proper". To ensure that, the Space Design provided should have a positive influence for the users of the Space or Building. Architects are also able to "steer" the user to behave better through the effective use of space with its creation and creativity.

Human Behaviour and Human Perceptions are two interrelated. Human behaviour is defined as a person's internal stimulation results followed by an attempt to meet their needs. Cultural, Social, Physical and Geographic Environment contribute to the process of formation of behaviour (molding behaviour). On the other hand, the built-environment in particular, has a strong relationship with behaviour. Open Behaviour Open so called Overt Behaviour in the form of human action is a continuation of the Closed behaviours called Covert Behaviour, including these are attitudes and perceptions. Architect needs to understand Overt Behaviour which then become a benchmark of design. However, Architects should also be sensitive to Closed Behaviour or Covert Behaviour of each individuals or groups in order to obtain Basic Behavioural Covert Data (e.g. Perception) that will be used in the design concept. As mentioned earlier, Perception - as one of the examples of the "Covert Behaviour Basic Data" (Data Base which was obtained of Conduct Closed only be assessed by an instrument (eq. Perception) - occurs when humans and the environment into contact with each other (Bell, Fisher Ross & Loomis, 1978, p.89). People look at their surroundings through the medium of the senses (the sense). Contact with the environment through our senses (the sense) followed by cognitive and then back again to the human senses which produces the perception or mental response (Purwanto 1999, p.37; Widayatun, 1998, p.111). The individual's perception is influenced by past experience, where the experience is also determined by cultural norms and values, including the daily behaviour. The human's habits are also influenced by factors Age, religion and ethnicity (Sarwono 1995, p.50).

In addition, Behavioural approach emphasizes the dialectical relationships between humans and space, particularly with those people using or occupying the space. This approach emphasizes the need to understand Human Behaviour or society those are diversified and specific in each location. In other words, the aspect of norms, culture and psychology of different people will produce the concept and form a different room (Nuraini C., 1978).

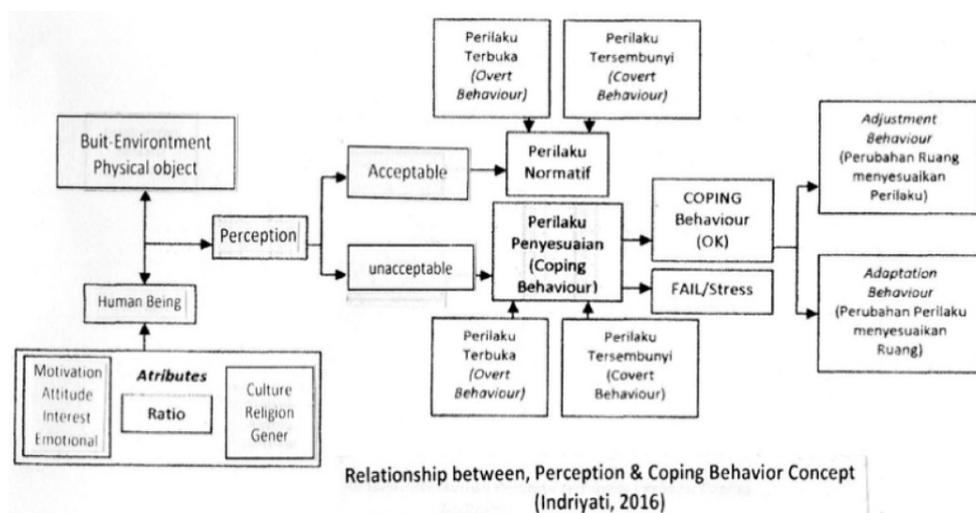


Figure 1: Relationship between Perception & Coping Behaviour Senior Housing

According to Clare Cooper Marcus and Carolyn Francis in his book *People Places: Design Guidelines for Urban Open Space*, Elderly are classified into 3 (three) categories based on age (Handayani, S. 2015), as follows:

Table 1: Senior People Age Classifications

Senior People Category	Young Old	Old	Old-Old
Age	55-70	70-80	>80
Capabilities	Active; Physical Independent	Fairly Independent; Semi Active	Less Independent (mostly dependently to others); Passive with limited movement; High-Care demanding
Activities	Personal Initiative; Socializing; Relaxing; Caring for health	Personal & Group Initiatives; Limited movement (sitting most of time); Socializing; Caring for health	Less Initiative (mostly others' initiatives); Limited movement (movement rarely or not movement at all); Socializing; Doing Therapy.

Source: e-journal.uajy.ac.id

At the age of the elderly, changes in the elderly will occur. In the context of Architecture and Space, the discussion related to the Elderly is a closer look at the theory related to changes that occur, including those are physical, social, and psychological aspects. However, the one physical aspects of the elderly is the most.

According to Hurlock (1996) in his book "Developmental Psychology: An Approach Throughout the Life Range" describes that the physical changes that occur in the elderly, including changes in appearance; Changes in the body inside; Physiological changes; changes in the five senses (vision, hearing, smelling, feeling more sensitivity to pain; Pain resistance is found decreases; as well as Sexual change. Other than that, general changes in motoric abilities are found (Maryam 2011).

Elderly is like everyone who has a life necessity. The elderly's need are certainly different from those are younger people. Some of the life needs of the elderly are found, like a routine health checks, nutritional needs, healthy housing with supporting environmental conditions which can make them feel safe and peaceful. From the psychological perspective, elderly need socialization which has proven giving a better life. According to Setiati (2000) since the early age toward old age, everyone has basic psychological needs. The elderly's need are to be safe and comfortable for themselves. The level of satisfaction toward their life depends on the elderly themselves, their families, and their environment. If it is not fulfilled, problems will arise which can make them live physical and psychological independently.¹

Elderly needs to live independently. According to Maslow in Koswara's book (1991), he explained that the needs of the elderly are as follows: (1) Physiological needs consists of physical or biological needs, such as clothing, food, shelter, sex, and others; (2) Security needs (safety needs), namely the need for security and security, both outwardly and inwardly, such as freedom and independence, etc.; (3) Social needs, namely the need to socialize through their participation in associations, arts, sports, organizations, or any other hobbies they found similar with others; (4) Self-esteem needs means their need to be recognized for its existence; (5) The need for self-actualization in which they may demonstrate abilities both physically, spiritually and the power of thought based on his experience, and eager to live.

To meet the physical needs of the elderly, a right and proper place to live is needed. The place should be able to support their needs to live healthy and happy. Types of Residence for the Elderly are different from each country. Housing for the elderly has been developed in various forms. According to Rosseta E. Parker, she explained that various forms of residence for the elderly that can be found in various countries are as follows²:

Table 2: Type of Housing for Senior People

No	Type of Housing	Description
1	Aging in Place	Senior people stay in their own house, so that they feel comfortable and not interested to adapt with new environment
2	Home Sharing	Sharing home with other senior people, so that they may share responsibility for housing maintenance
3	Extended Household/Echo Housing/Granny Flats	It is found in Australia so called Granny Flats which is the place built by the Local Government and could be built-on Housing/Granny Flats and off.
4	Modular Homes/Mobile Homes	Some Senior People sell their home and replaced by the Mobile Homes which can be used for them to live simple and less expenses incurred.
5	Retirement Residence Apartment	Apartment designed particularly for senior people (retired) and provide public facilities, like communal space.
6.	Retirement Communities	Small Village/City within Retirement housing around with convenient facilities provided.
7.	Group Homes	Grouping of Living Space within community who helps senior people with disabilities and the facilities provided considered them to use conveniently.
8.	Residential Cares	A Living Space where Senior/Retired People will gather and stay together with helper to assist them conducting all required activities and the staffs to control their liveable needs and caring.

Source: lib.ui.ac.id

Other than types of dwellings for the elderly mentioned above, there are the place where the elderly are still physically "young" and those are old and retired already yet remain active and can live independently. In contrary, the elderly who need more assistance and all supporting facilities for handling their conditions as classified as old-old ones. In Indonesia, the form of residence for the elderly is generally an aging in place, a house belonging to a child or relative (extended household) and a nursing home (residential cares).

Elderly do various types of activities. Types of good activity for the elderly who starts their age of 60 years and over. Biologically, the elderly has characteristics that can be seen clearly in their physical and psychological changes. Various activities that are appropriate and often carried out daily are very important for the elderly. Decreasing activity can lead to various functional disorders due to imbalance in lifestyle.

Activities which found beneficial for the elderly's health should meet the FITT criteria (Frequency, Intensity, Time, Type). Frequency means how often the activity is carried out. Usually classified into low, medium and high intensity. Time refers to the duration on how long the activity is carried out, and Type means kind of activities that can be carried out (Sobarna, Akhmad 2009). The active life style for elderly through physical and sport as well exercising.³

According to Kathy (2002)⁴ the types of activities for the elderly, among others are (1) Aerobic Exercise; (2) Muscle Strengthening Exercises; (3) Flexibility and Balance Exercises. In addition, the elderly also have gardening activities. This activity can be done for the elderly who likes gardening or who want to try to learn gardening. According to a Germany researcher, named Nicholas Adjei who was reported by Zeenews said that gardening activities have a healthy and natural concept that helps the elderly get physically and psychologically healthy.⁵ Another activity identified like Recreation.⁶ However, the recreational activities means certainly those do not require more energy and best possible if

recreational activities with interaction directly with the sun for the purpose of intaking more vitamin directly. According to Krippendorf (1994), recreational activities can make cheerful and happy so that feelings of depression and anxiety can be reduced and restore physical strength (TribunWisata. 2017). Cycling activities are also often carried out by the elderly. Cycling activities can increase stretch and endurance. This activity can be carried out according to ability and accompanied by aerobic exercise (Maryam, R. S., 2011).

Senior housing located abroad is the right place to change lifestyles better. It is due to that elderly live there will be equipped with various facilities that support the medical conditions. Due to each elderly has a different character, it is important to choose Senior housing which is suitable for themselves, based on their lifestyle, health, and financial level of the elderly.⁷ Before deciding to choose the right senior housing for the elderly, there are several needs to be considered for their present conditions and their future expectations, including: Physical and Medical Needs; Location and Accessibility; Home Maintenance; Social and Emotional Needs; Financial Needs; and Senior Housing Support Room. In Senior Housing, of course there are many facilities that can support various activities for the elderly and families who come to visit. These facilities must serve them to channel their hobbies and encourage them to socialize with other elderly people and families who come to visit. The spaces available can be seen like Lounge, Restaurant, Garden Venue, Farm, Meeting Room, Karaoke Room, Theatre Room, Salon & Spa, Nurse Station, Health Clinic. Fitness, Mini Market, Reflection Room, Swimming Pool, Housekeeping & Laundry Room, Activity Room, Jogging Track, Place of Worship, Library and Knitting Room.⁸

Elderly Behaviour or Behaviour in general has been defined by Notoatmodjo (2003). He said behaviour is defined as any activity or action carried out by living things which is a form of reflection from various aspects both physical and non-physical. According to Robert Y. Kwick (1972) in the American Encyclopaedia, behaviour is a form of organism's response to the surrounding environment, where it is believed that certain responses will produce certain behaviours. From the description above, it can be concluded that the Behaviour Architecture is the art and science of designing buildings that are related to all human activities as a form of reflection on the surrounding environment which results in certain behaviours.⁹

The Principles of Behaviour Architecture were formulated by Experts, ones those are Carol Simon Weisten & Thomas G David. They said in applying the theme of behavioural architecture into design, the principles of behavioural architecture should consider points of¹⁰ : (1) Communication with Humans & the Environment; (2) Facilitating the Residents' Activities Comfortably; (3) Meet the Aesthetic Values, Composition and Shape Aesthetics.

The Behaviour of Building User of Senior Housing as written by Maryam (2011) , as follows: (a) Often alone; (b) Lack of physical activity/lack of movement; (c) Angry, depressed, feeling dissatisfied, and hopeless; (d) Poor eating habits; (e) Getting closer to the Almighty God; (f) Want to accept the situation; (g) Establish good relations with the surrounding environment; (h) Easily tired because of psychological factors such as get bored; (i) Easy to fall; (j) Sleep disturbances; (k) Poor vision. Nurse/Caregiver's Behaviour and Family Member Visitors' Behaviour as quoted from reference¹¹ as follows: Nurse/Caregivers' behaviour: (a) Requires patience and training in caring for the elderly; (b) Must understand all the needs, behaviour of the elderly and understand how to handle them when they are experiencing physical or psychological health problems; and (c) Feeling tired because they have to monitor the elderly they care for within 24 hours. Whereas the Visitor's Behaviour (who mostly are Family Members), as follows: (a) Bringing goods for their parents' needs; (b) Spending time with their parents and getting along comfortably with them; (c) Ensure their parents are safe and comfortable to live in senior housing.

RESEARCH BACKGROUND & METHODS

Research initiated was considering that Senior Housing is recently becoming important for Architect to look at in terms of its design which is needed to be more humanized in response to what they really need. Senior Housing contains old people who conduct their daily activity in daily basis. Why is it significant and almost as important as pure residential cases? This is due to the fact that people reside there everyday and spend most of their time to socialize, doing various activities there. Their physical and psychological constraint are also main issues to consider, making sure they are living there peaceful and safely. One of Senior Housing in Jakarta was taken as a sample representative, as it provides medium-level and medium-density of occupation staying there.

Post Occupancy Evaluation (POE) is used and indicators used for spatial assessments as formulated by Indriyati (2013). Indicator used for the research in order to assess the Physical Space, such as: Floor

space, Room's flexibility for the functions and Room's form for functions. In addition, several indicators used to assess the Psychological Space Performance are: The Glare; Heating conditions; Freshness/Stuffiness; Air Circulation; Room's level of humidity; Rooms' Visual Privacy; Rooms' Conversational Privacy; Room's locked availability.

The data collection made from the way of distributing the questionnaire explored several aspects relating to the physical and socio-psychological conditions of living within the senior housing. Quantitative questions were deployed to collect the data for the research. Semantic differential scales were used. Semantic Scales were used in this study to elicit perceptual responses. In particular, Semantic differential scales are widely used as a technique for measuring the impression of concepts on individuals and the meaning they invoke. Concepts are measured both independently, and in comparison with other concepts, which can be related to a variety of contexts, issues or objects, thus allowing relevant conclusions about respondents to be drawn. The Semantic differential scale consists of a number of opposed concepts set on a 7 points gauge of measurement. This can also be spread across a 5 point scale (Nazir 1999, p.403). For this research, a 5 points semantic scale was employed. The respondents' assessment below the rate of 3.00 indicates negative perceptions, while 3.00 and above indicates the positive perceptions.

ANALYSIS AND RESULTS

Assessment on Occupants' Perceptions of Senior Housing is compiled as follows:

Table 3: Perceptions' Value of Senior Housing Occupants

No	Perception Criteria	Type of Rooms											
		Lou	Rest	Lib	Gard	Salon	Spa	Karao	Audi	BEx	BDel	Toi	DR
1	The Number of Rooms	3	3	3	3	3	3	2.9	3	3.75	3	3.43	3.1
2	The Availability of Floor space	3	2.4	3	2.5	3	3	2.5	2.5	4.3	3.3	3.7	3.1
3	Extension of Rooms	3	2.6	3	3	3	3	2.9	2.5	4	3	3.5	3
4	Flexibility of Room to Function	3	3.6	3	3.1	3	3	3.4	3.5	4.3	4	3.4	3.8
5	The Shape of Room for Usage	3	3.6	3	3.1	3	3	3	3.6	4.3	4	3.4	3.5
6	The Natural Lighting of Room	3.3	3.6	3.1	4.1	3	3.2	1.4	3.8	4.5	4	0	3.9
7	The Glare from Window	3.1	3.3	3	3	3	3	0	3.3	3.8	3.8	0	3.4
8	Heating	3.1	3.3	3	3	3	3	2.9	3.1	3.8	4	3	3.4

Condition of Room													
9 Stiffness of Room Air	3	3	3	3.1	3	2.8	2.9	3	3.8	3.3	3	3.3	
10 The Room's Air Circulation System	3	3.3	3.1	4.3	3	3	2.9	3.3	4	3.3	3	3.5	
11 The Room Level of Humidity	3	3	3	3.1	3	3	2.9	3	3.3	3	3	3.1	
12 Visual Privacy of Room	3	3	2.3	3	3	3.6	3.9	3	4	3.8	4.1	3.4	
13 Conversational Privacy of Room	3	3	1.9	3.1	3	3.8	3.9	3	4	3.8	4	3.4	
14 Having comfortable place to be alone	0	0	1.8	0	3	3	3.4	0	4.5	4	3.6	3.5	
15 Having place to store my own possession	0	0	0	0	2.5	2.6	0	0	4.3	4	3.8	3.1	
16 Having a Lock for Room	0	3	0	0	3	3	3	3	4	3.5	3.3	0	
17 Satisfaction	3	2.9	2.9	3	3	3	3	3	4	3.8	3.5	3.1	
Mean/Average	3.0	3.1	2.8	1.3	1.7	2.9	3.0	5.2	9.9	3.1	14.0	4.3	3.5

Notes: Lou (lounge), Rest (Restaurant), Lib (Library), Gard (Garden), Salon (Salon), Spa (Spa), Karao (Karaoke), Audi (Auditorium), BEx (Bedroom Executive), BDel (Bedroom Deluxe), Toi (Toilet, DR (Dinning Room))

CONCLUSIONS AND RECOMMENDATIONS

From the results of the Space Perception Analysis of the Senior Housing, it was concluded that:

1. Some spaces have been designed and met the general positive perceptions of users, namely Lounge, Restaurant, Garden, Spa, Hall, Bedroom Executive, Bedroom Deluxe, Toilet and Dining room.
2. Several spaces or rooms still have design issues in general, such as Library, Salon and Karaoke.
3. Other than that, among some rooms, there are rooms with identified problems related to the design, as follows:
 - a. Restaurant (The issues on the availability of floor space; extension of room; satisfaction of room)
 - b. Library (The issues on the visual privacy; having comfortable place to be alone)
 - c. Garden (The issue on the availability of floor space)
 - d. Salon (The issue on having a place to store my own possession)
 - e. Spa (The issues on the stuffiness of the room; having a place to store my own possession)

- f. Karaoke (The issues on the number of rooms; the availability of floor space; extension of room; heating condition of room; stuffiness of the room's air; the room's air circulation system)
- g. Auditorium (The issues on the availability of floor space; extension of room)

One of significant issues is the criteria of Availability of the floor space provided for them, for example particularly for Restaurant, Garden, Karaoke and Auditorium. All three rooms have a problem of floor space. Those rooms are then to be analysed regarding what the floor space they have now in relations to their perceptions as well as the International standards used for the design.

Table 4: Identified Issues of Room & Recommendations

No	Type of Room	International Standard used*/Comparative Study**	No of Pp	Total Research Floor Assessment space Occupants' Perceptions	Recommendation
1	Restaurant	2.7 sq. m/pp *	150 pp	405 sq. m Insufficient	Standards need to be improved (International Standards unable to be used for designing projects with particular users characteristics)
2	Garden	250 sq. m **-	250 sq. m	Insufficient Comparative Study done type People (Origins). with Culture different needs.	should be to a similar of Senior Culture People different has
3	Karaoke	72 sq. m ** 8 pp	72 sq. m	Insufficient Comparative Study done type People (Origins). with Culture different needs.	should be to a similar of Senior Culture People different has
4	Auditorium	2 sq. m/pp *150 pp	405 sq. m	Insufficient Standards need to be improved (International Standards to be used for designing projects with users characteristics)	

Note: *International Standard: Ernst Neufert Architects Data (www.academia.edu)

** Comparative Study Data

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