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# Furniture and accessories design process in Melania nursing home in Jakarta

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**Abstract.** This research aimed to show the design needed for an elderly resident or nursing home, Melania nursing home in Jakarta, to stay comfortable. Melania nursing home was one of the elderly residents in Jakarta that should be a place that satisfied the needs of elderly residents. This research employed both direct and indirect research methods, which consisted of the field survey to several nursing homes in the Jakarta area, interviews, as well as consulting relevant literature to gain insight into the existing body of knowledge. It is found that nursing home needs special concern to satisfy the physical and psychological of the elderly, which will have an affect the perspective and prosperity of their lives. One of the try to meet their needs in Melania nursing home is by adding entertainment space with good ergonomic and aesthetic design. Color applied to this room also follows the basic psychology of color believed in making the elderly calmer and more comfortable. The form of dynamic furniture used is also satisfied to help the elderly more eager in their activities.

**Keywords:** furniture design, accessories design, nursing home

## 1. Introduction

At this time, society has entered the era of modernization, so that changes in the community's mindset and attitude arise. One of the negative effects of modernization is the growth of individualistic attitudes. This attitude causes people to feel they do not need other people in their activities, even though humans are created as social creatures. So that people tend to compete to pursue personal goals.

This results in time and thought being taken up. When this attitude is brought home, each individual will focus more on the nuclear family. So the part of the family that has started to get old does not get the attention and care of their children and grandchildren. Families who are unable to care eventually put their seniors in nursing homes.

Melania Nursing Home in Jakarta still has not paid attention to details in the field of interior and furniture that are actually considered important in the survival of the elderly in the nursing home. Even though these things require quite an attention considering the residents of the nursing home are the elderly, who need special facilities and furniture to meet their daily needs. Sometimes the facilities are inadequate such as the use of chairs that do not meet ergonomic standards, the shape of the chair that is sometimes dangerous, less attention to materials, and colors that can affect the mood of the elderly



and can cause them to feel less comfortable in carrying out activities. All of these can affect the psychology of the elderly in carrying out their daily activities.

The elderly do more activities that tend not to be tiring and in dire need of supporting facilities such as furniture itself. Therefore, if supporting facilities such as furniture do not support their activities, it can hinder and complicate them, which can cause them to be less eager to undergo the activity because it has many obstacles and no motivation.

Therefore, addressing these problems in interior design, it is expected to be an effort to improve and enhance existing facilities at the Melania Nursing Home for the welfare of the elderly's lives. A special activity room exists as an area where the elderly can interact socially and undergo activities or therapies that make people personally happy. The design of furniture and interior accessories in the Activity Room is felt to be important in supporting the creation of a conducive atmosphere for the residents in carrying out their activities and making the residents of Melania Nursing Home more enthusiastic about going through the old days.

## **2. Literature review**

### *2.1. Definition of elderly*

The Elderly is a condition marked by a person's failure to maintain balance against physiological stress conditions. This failure is related to a decrease in the ability to live and increase individual sensitivity [1].

### *2.2. Definition of gerontology*

Concerning old age, gerontology emerged. Gerontology comes from Latin, which is *Geros*, which means advanced age, and *logos*, which means the branch that studies the aging process and problems in the elderly. Gerontology is a branch of science that studies the aging process and problems in the elderly [2].

#### *2.2.1. Theory of the aging process*

Aging is a process of the gradual disappearance of the network's ability to repair itself or replace and maintain its normal function not to survive the infection and repair the damage suffered [3]. Individual stages of the aging process occur in people of different ages [3]. Each older person has different habits so that no one factor is found to prevent the aging process. These theories can be classified into two groups, namely biological theory, and social psychology theory.

The biological theory is the science that studies the life of living organisms, including its structure, growth function, evolution, distribution, and taxonomy. Branches in biological theory study are Genetic and Mutation Theory (Somatic Mutatie Theory), Cellular Interaction Theory, DNA Replication Theory, Crosslinking Theory, Free Radical Theory, and reaction from own immunity.

The social psychology theory examines the impact or social influence on human behavior. This theory looks at the attitudes, beliefs, and behavior of the elderly. Several types of social psychology theories are Activities Theory, Continuing Personality Theory, Liberation Theory, Subculture Theory, Subculture Theory, Age Stratification Theory, and Theories of Adjusting Individuals to the Environment.

#### *2.2.2. Psychological stressor*

Stress can be interpreted as a stimulus that causes an imbalance in physiological and psychological functions. Stress is a reaction pattern facing stressors originating from within the individual and from his environment [1]. It is common for the elderly to experience stress due to three factors, which are modernization, loneliness, and occupation. The existence of a large family pattern to a small family consisting of a father, mother, and child can place the elderly outside the small family system so that the elderly feel neglected. The burden of doing house chores in the working family is sometimes left to the elderly, who spent most of the time staying home. Lastly, retirement is often equated with loss of activity, income, position, reduced self-esteem, and absence of professional role.

### 2.3. Definition of a nursing home

According to the Indonesian dictionary, the understanding of nursing home is a place to care for and accommodate the very older people and physically weak. According to regional regulation No. 15 of 2002 concerning amendments to regional regulation No.15 of 2000 regarding regional services, the nursing home is the TresnaWerdha social institution that changed its name to the TresnaWerdha Social Protection Center.

### 2.4. Definition of entertainment room

The space between the two (rows) of poles or between the four poles (under the house) [4]. The room is a closed place with a ceiling in the house or other building forms. The room usually has a door and several windows that serve as a place for the entry of light, airflow, and access to the room. Large rooms are often referred to as hall. Some rooms have a specific name in accordance with the purpose of manufacture and use. For example, a room for cooking is called a kitchen. Structural design, use, and interior decoration are part of the architectural discipline.

Entertainment is anything - whether in the form of words, places, things, behaviors - that can be a comforter or a sad or solace of the heart. In general, entertainment can be in the form of music, film, opera, drama, or even in the form of games and sports. Traveling can also be said as an entertainment effort by exploring nature or learning culture. Filling activities in leisure time, such as making crafts, skills, reading can also be categorized as entertainment. The entertainment room is a closed place with a ceiling in the house or other forms of a building that serves to facilitate the user to enjoy certain entertainment.

### 2.5. Definition of furniture

Furniture is home equipment that includes all items such as chairs, tables, and cabinets. *Mebel* comes from the word movable, which means to move. In ancient times table chairs and cabinets are relatively easy to move from large stones, walls, and roofs. Furniture comes from French, *fourniture*, which means household furniture. *Fourniture* has the origin of the word *fournir*, which means furnishings or home or room furniture. Although mebel and furniture have different meanings, those designated are tables, chairs, cabinets, etc. In other words, mebel or furniture are all objects in the house and used for residents to sit, lie down, or store small objects [5].

## 3. Methodology

The study employed both direct and indirect research methods, which consist of the field survey to several nursing homes in the Jakarta area, interviews, as well as consulting relevant literature to gain insight into the existing body of knowledge.

### 3.1. Direct research methods

#### 1. Field survey

The method of observation/survey is carried out by collecting data directly through direct observations in the field regarding the state of the building that will be used in this final project and observing the design of furniture and accessories that already exist. The field survey was conducted at several private nursing homes in Jakarta, namely Senior Living D'Khayagan, Melania Nursing Home, and Rukun Senior Living.

#### 2. Interview

The interview method was conducted informally to several people from several private nursing homes in Jakarta. This method was carried out so that researchers knew what needed to be developed in the design of furniture and accessories at the Nursing Home in Jakarta.

### 3.2. Indirect research methods

The literature study method is carried out by gathering existing information from various sources such as books and internet media about nursing homes that already exist in Jakarta. Information includes

the state of several nursing homes in Jakarta now, the condition of the elderly in several nursing homes in Jakarta today, the needs and standardization of furniture and accessories making to be more comfortable and efficient.

### 3.3. *Stages of design*

After conducting the data collection process, the next step is to analyze the problems during data collection. The analysis of the problems obtained during the data collection process regarding the nursing home can help the interior design of this nursing home later.

The next stage, after analyzing the problem, is the planning stage. It includes making a space program consisting of activity-facility programs, calculating total space requirements, relationships between spaces, matrices, the closeness between spaces, and then proceed with conceptualization.

After the concept is found, the next step is planning the layout and working drawings for the special space that will be designed through important considerations and critical thinking in accordance with the needs of the activities and facilities of the relevant parties and existing concepts.

After that, the sketch stages of special room furniture according to the concepts and needs of residents according to the data that has been processed. Then obtained a fixed design for the furniture to be produced.

After completing the stages of layout and furniture planning, proceed with the completion of the work drawings then to provide an overview in accordance with the results of interior planning that has been done then, the process continues with the making of presentation drawings that include 3D visual space contained in the design of a predetermined design.

#### 3.3.1. *Wood*

The wood materials consist of several types [7], detailed as follows:

a. Teak wood

Teak wood is often referred to as wood that has the most beautiful fibers. The advantages of using this are that it is classified as durable wood class I, strong class I, II, strong resistance to mold, and rot due to moist air or insect attack.

b. Merbau wood

Merbau wood is one type of wood that is quite hard and stable as an alternative to teak wood. Including wood with Durable Class I, II, and Strong Class I, II. Merbau has also been proven to be resistant to insects. The color of reddish-brown Merbau wood and sometimes accompanied by yellow highlights. Merbau wood is usually finished with dark / dark color melamine. Merbau has a discontinuous line fiber texture. Merbau trees include tropical rain forest trees. Merbau trees flourish in Indonesia, especially on the island of Irian / Papua. Our Merbau wood comes from Irian / Papua.

c. Mahogany wood

Mahogany wood texture is quite smooth, beautiful fibers and colored pink to dark red and widely used as an element of room decoration, including wood with Durable Class III and Strong Class II, III. Mahogany trees are mostly found in teak forests in Java or planted on the roadside as a protective plant.

d. Bangkirai wood

Bangkirai wood is a type of wood that is quite durable and strong. Including wood with Durable Class I, II, III, and Strong Class I, II. The hardness is also accompanied by a high agility degree so that hair cracks easily appear on the surface. In addition, in bangkirai wood, pinholes are often found. Generally, these hair cracks and pinholes can be covered with wood fillers.

e. Camphor wood

In Indonesia, camphor wood has long been an alternative building material that is more affordable. Although not as long-lasting as teak wood and as strong as bangkirai, camphor has a smooth and beautiful wood fiber, so it is often the choice of material to make panel doors and windows. Because there is not as much as bangkirai, cracked hair is rarely encountered. Because it is not as hard as bangkirai, the tendency to change shape is also large, so it is not recommended for doors and windows with a design that is too wide and high. Including wood with Durable Class II, III, and Class Strong II, I. Camphor trees are mostly found in Kalimantan's tropical rain forests.

f. Sungkai wood

Sungkai wood has a quite smooth texture, beautiful fibers, and pale yellow. Sungkai wood is often used as a decorative element material. Including wood with Durable Class III and Strong Class II, III. Sungkai trees are not too large in diameter.

g. Ironwood

Ironwood is one of the strongest and hardest types of wood in Indonesia. The best quality of ironwood comes from Kalimantan. This wood is weighty, hard, and weather-resistant, so it is good for use on processed wood products exterior / outdoor such as outdoor decking wood and fences.

### 3.3.2. *Wood-Based on Processed Types*

1. Plywood

Plywood is a type of wood with strong enough resistance so that when used for basic materials, it can take a long time. Plywood is also the most processed wood with the best quality.

2. MDF (Medium Density Fiberboard)

Medium Density Fiberboard or better known as MDF is wood powder whose manufacturing process is mixed with chemical resins after it is compacted. This MDF has advantages, namely making furniture or other, this type of wood tends to be easier to form, its strength is stable, MDF can also be applied finishing systems such as HPL, melamic, PVC, and other finishing systems.

3. Particle Board

Particleboards are made from woodwork residue particles such as sawdust, small pieces of wood, wood chips, and resin chemicals glued with high pressure and then dried. The process is more or less the same as MDF; only MDF materials are finer and more uniform while the particle board is coarser and irregular.

4. Block Board

Blockboard is processed wood made from small pieces of wooden boxes (about 2.5 - 5 cm) compacted by machine and given venner coating on both sides so that it becomes a sheet resembling a board. Its thickness varies among others 12 mm, 15 mm, and 18 mm with a standard size of 122 x 244 cm equal to a multiplex.

### 3.3.3. *Rattan*

Rattan is a type of palm that propagates. The shape is long like a water pipe, with a variety of diameters ranging from the largest, which is more than 8cm to less than 0.2 cm.





**Figure 1.** Rattan

#### 3.3.4. *Bamboo*

Bamboo is a segmented plant with a cavity in it. Bamboo is shaped straight with a diameter between 2 to 20cm. What needs to be considered in processing bamboo into furniture is that bamboo skin is tough and slippery, so it needs the right material to paint or member coating on bamboo.



**Figure 2.** Bamboo

#### 3.3.5. *Metal*

Many types of metals can be used for furniture. However, the characteristics must be studied first. The iron has characteristics that can rust. To anticipate, before coating must undergo treatment first. The coating material must contain pigment or anti-rust. Aluminum and copper do not rust but have a higher density. So we need to paint with better adhesion. Metal does not need anti-rust because anti-rust itself can increase prices.



**Figure 3.** Iron

#### 3.3.6. *Plastic*









Plastic is widely used for furniture. This material does not require painting because it has the desired color. Nevertheless, sometimes certain parts require painting to match the color.

Paints for plastics require special formulations such as helmets, TV casings, tape recorders, and powder places. Slippery plastic surfaces need to be slightly damaged for the foundation of paint adhesion, using a more aggressive solvent. Some types of plastic include PE (Poly Ethylene), PP (Poly Propylene), PVC (Poly Vinyl Chloride), PVAC (Poly Vinyl Acrylic), and many more.

#### 3.3.7. *Color Study*

There are eleven colors that have a universal psychological effect for everyone [6]. These colors can be related to the physical body, mind, feelings, and can balance the three if appropriately used. The following are the elaboration of the eleventh effects of this color.

**Table 1.** Color Psychology





Color	Positive Effect	Negative Effect
 Red (physical)	Strength, warmth, energy, stimulation, masculinity, excitement	Aggression, strain, stimulate pulse rate, demanding
 Blue (intellectual)	Intelligence, communication, trust, efficiency, serenity, calm, logic	Coldness, aloof, lack of emotion, unfriendly
 Yellow (emotional)	Optimism, confidence, friendliness, creativity	Irrationality, fear, depression, anxiety
 Green (balance)	Harmony, refreshment, universal love, rest, peace, reassurance	Boredom, stagnation, blandness
 Purple	Spiritual awareness, containment, luxury, quality	Introversion, suppression, inferiority
 Orange	Physical comfort, warmth, security, fun, passion	Frustration, immaturity
 Pink	Nurture, femininity, love, sexuality	Emotional claustrophobia, physical weakness
 Grey	Psychological neutrality	Lack of confidence, depression, lack of energy, hibernation

### 3.3.8. Form Study

Here are the effects and lines that can be produced in detail.



**Table 2.** Form Study

Aspect	Variations	Appearance	Physical effect	Psychological effect
<b>Path</b>	Straight		emphasizes angularity, rarely found in nature	Stiff, direct, rigid, precise, masculine
	Restrained curve		Slightly emphasizes curves	Soft, gentle, flexible but controlled, graceful, feminine, subtle, loose
	Full curve		Emphasizes curves	Dynamic, feminine, youthful, exuberant, forceful, unstable
	Bent		Combines straight and curved effects	Forceful and gentle

### 3.4. Definition of ergonomics

The term ergonomics comes from Latin, namely *ergon* (work) and *nomos* (natural law). It can be defined as a study of human aspects in the work environment that are reviewed anatomically, physiology, psychology, engineering, management, and design. Ergonomics is also concerned with optimization, efficiency, health, safety, and human comfort at work, at home, and in recreational areas. Ergonomics requires the study of systems where humans, work facilities, and the environment interact with the main goal of adjusting the work atmosphere to humans. To improve humans' ability to perform tasks, several things around the natural human environment, such as equipment, physical environment, the position of motion (work) need to be revised, modified, redesigned, or designed according to human capabilities and limitations. With the body's ability to increase optimally, work tasks that can be completed will also increase. Conversely, if the natural environment includes equipment that is not in accordance with the natural capabilities of the human body, it will be a wasteful use of energy in the body, get tired quickly, results are not optimal even harmful.

#### 3.4.1. Changes in the elderly according to ergonomic application

- Anthropometry (size and range of motion).
- Physiological (physical work capacity).
- Physical (muscle strength and biomechanical integrity).
- Perception (visual and auditory senses).
- Cognitive (information processing).

#### 3.4.2. Understanding of tropical climate homes

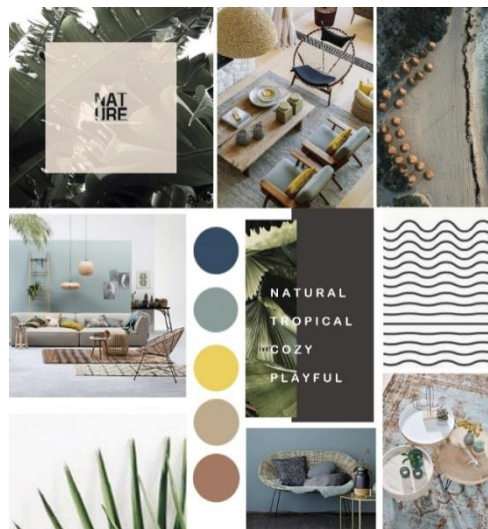
Tropical house is a house in which the shape and its constituent elements are designed to be suitable and comfortable for tropical climates. The Tropical House Design Concept will optimize the potential of tropical climate and reduce the impact/adverse effects of the tropical climate. In other words, the concept of tropical home design is a design concept that is able to adapt to the tropical climate.

### 3.4.3. Characteristic of tropical architecture design

Tropical designs use bright colors with natural elements as the main source of inspiration, such as green, blue, brown, or orange. The natural touch can actually be applied to parks and lights. Wood elements can be used, like in a lantern made of bamboo or wood. Around the park can also be arranged stones from the river.

This will create a harmonious blend of tradition and modern patterns. This combination can be by choosing furniture that is modern and natural in style. For example, someone uses a sofa and table made of wood with engraving around the edges and legs of the table. The division of space inside does not always have to be closed. Some rooms can be left without insulation. This can make the home feel more spacious and healthier air circulation.

### 3.5. Design concepts and its application



**Figure 4.** Mood Board

#### 1. Image Concept

Space image is very important to support the creation of the desired atmosphere of space and in accordance with the concept of the interior. Because the appropriate image of the room will help change one's mood or mood when in the room. The desired image of space in the interior planning this time is to create a room with a comfortable, playful atmosphere combined with calm color.

The use of thematic "Tropical" in the room is expected to provide tranquility. Visual relaxation for the elderly, furniture, and accessories is expected to build the elderly's mood and arouse the enthusiasm and motivation of the elderly to move.

#### 2. Form Concept

The concept of shape that will be applied to furniture and accessories at the Melania Nursing Home is formed that consists of curved lines that minimize the formation of sharp angles. The curved lines themselves represent softness, elegance, flexible but controlled, and dynamic. The use of these lines, which will be developed into furniture, will give the impression of being shaped. These lines will become a design reference for obtaining the final shape of furniture and accessories.

#### 3. Color Concept

The color concept used in the design of furniture and accessories for the Melania Nursing Home uses the basic theory of color psychology. The appropriate color is blue, orange, green, and yellow, with tone colors that are made softer (calm color). The blue color itself describes communication and calmness, orange comfort, passion, pleasure, and warmth: green peace and yellow creativity.

#### 4. Material Concept

To design furniture and accessories for Melania Nursing Home, an appropriate material selection is needed. Rattan material will be used as the main material; the material is also used as additional material. Rattan material is used to select this furniture design because the characteristics of rattan material are flexible following a curved shape; besides that, rattan material is easy to reach and lightweight. While the material used for sweetening and upholstery coating.

#### 5. Lighting Concept

In designing Melania Nursing Home, good lighting is needed for the comfort and safety of the elderly. The lighting used is natural lighting from sunlight and artificial lighting from lamps.

### 4. Conclusions

Based on the study results, it can be concluded that the designs of furniture and accessories in nursing homes could be improved by taking into account the needs of its residents, the elderly. To gain insight into their needs, incorporating knowledge from the psychological aspect and gerontology theory is essential. On top of that, creating designs that cater to the elderly's activities could also be instrumental.

After these aspects are being considered, following a good design process such as selecting the material, colors, as well as calculating the ergonomics and aesthetics of the end products, should be implemented. Hence, the designs would be not only useful, but also provide maximum physical and psychological support for the nursing home residents.

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