# DESIGNING FOR SRI LANKAN ELDERLY A STUDY ON CONDUCIVE COLOURS FOR ELDERS HOMES

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## Abstract

*Aging of population in Sri Lanka is found to be increasing in an alarming rate. As per the estimations of the department of census and statistics, 1/5 of the total population (20%) will be above60 years by 2030. This may lead in to a definite paradigm shift in the physical and spatial attributes of future buildings and cities conducive and sensitive for psychophysiological requirements of an aging population. In comprehending the spatial needs of Sri Lankan elderly, the current investigation zooms in to colour, an imperative psychophysiological element of design which is neglected and less investigated often. A person's preference and response to colours are subjected to transformation withage. Accordingly, it was attempted to identify most appropriate colours for Sri Lankan elderly based on their preference, to be integrated into their living environments with special reference to elders' homes. An elder's socio-economic state was hypothesized as a significant parameter leading to his/ her colourpreference.*

*Three elders' homes located in Colombo and representing three most significant economic levels (low, middle and upper) of the society as a cross section were selected to be studied. The responses from 120 elders were obtained using a questionnaire survey and interviews. The research subjects were guided with anA2 size colour palette having72 colour coads as options to select the most conducive colours to be incorporated in generating the corresponding spatial attributes of selected functional spaces; living, dining, bed room, kitchen, religious space, and bathroom of their elders' homes based on preference.*

*A persons past socioeconomic level characterized by corresponding level of education, social status, political opinions, religious opinions, gender and marital status were identified by this research as significant parameters affecting colour preference of his/her elderly stage. These parameters need to be carefully considered when specifying colours in creating better, conducive environments for elders in future.*

**Keywords:** Colour preference, Aging, Socio-economic status, Elders homes

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## 1. Introduction

Sri Lanka has experienced a significant increase in the elderly population during the past four decades. As per the estimations of the department of census and statistics cited in Siddhisena (2004), in 1946, the percentage of elderly over and above 60 years was 5.4% (0.36 million) of the total population which was increased up to 10% (1.9 million)in 2001. As per the predictions of UNFPA and PASL cited in Siddhisena (2004) this value will increase in an alarming rate during the next two decades to come leading to an immense issue to be faced as a nation. It is anticipated that by 2030 the population of elderly (above 60 years) in Sri Lanka will be 22%. To be precise, 1 out of every 5 people will be an elderly person.

Sri Lankans are not alone in facing the future challenges of high rates of ageing. Aging population involves the fastest growing demographics in the developed world as well and signifies a global issue. As estimated by the State of Aging and Health in America, the growth in the number of adults over 65 will double over the next 25 years. This statistic creates a demographic that is unprecedented in the history of America. It is evident that even the developed countries are not yet prepared to face the future challenges of an aging population. The current investigation draws its attention to conducive design solutions for future cities, buildings and spaces dominated by an aged population.

Identifying the characteristics of a conducive built environment that could accommodate the requirements of the elderly requires a holistic multidisciplinary approach that involves a variety of scholars such as sociologists, psychologists, architects, interior designers, landscape architects and urban planners. Professor Matthias Hollwich of University of Pennsylvania is one of the leading scholars who has envisioned the ideal, “age-sensitive city of the future”. According to him sustainability and designing for an aging society are the two biggest topics to be tackled by the contemporary designers in their lifetime (Nuremberg, 2010).As clarified by Little (2014), architects have a whole new role to fill when it comes to designing for aging demographic. Meeting this unprecedented demand of an aging population with reference to characteristics of living arrangements and accommodations is vital in this regard. Barac (2014) suggests that, while architects and planners are involved in the transformation of public institutions and the urban terrain, the question of housing and its intersection with the related policy streams of health and social care has understandably been at the center of much discussion.

As suggested by RIBA (2014) one approach in dealing with the housing issue would be to create home environments which are better suited to the physical and social changes that ageing brings. As explicated by the panel of Innovative Housing for Ageing Population of UK, their sheltered housing is tired and tattered, the command over the dialogue (or lack of it) between relevant policy silos is limited, and the level of innovation in the planning and design of housing across the sector typology is out of step with not only their continental cousins but other countries around the world too. There is certainly more discussion, awareness, and invention going on, all geared towards being better prepared for what has been described variously as a ‘silver tsunami’, a ‘ticking time bomb’, and a ‘demographic juggernaut’ hurtling towards us (Barac,2014).

### 1.1. Definition and theories of Aging: A Review of Literature

It is a fact that the last stage of one's life starts with aging. The scientific study of the process of aging is identified as Gerontology (Hooyman and Kiyak, 2011, Amarasekara, 2016). The means of aging successfully or optimally are debatable. Understanding the psychophysiological, biological and sociological requirements of elderly is vitalin defining the conducive physical and spatial attributes of elders leading to an optimal aging experience. Theories hypothesizing the notion of aging are numerous and no one theory has been accepted. Theories on aging can be comprehended principally under four distinct categories namely chronological, biological, psychological and social (Amarasekara, 2016) as elaborated below.

#### 1.1.1 Chronological aging

Defining the notion of aging with reference to one's age is considered here. For instance people who are over and above 65 are considered as elderly, in the western countries (Myers 1985, United Nations 1998 cited in Siddhisena, 2004). However, in the Sri Lankan context aging to a greater extent is suggested by the retirement age of 55 which could be extended up to 60. However, people involved in informal public sector and agriculture continue to work even after 60 until their physical energy remain. In view of that, being elderly cannot be defined with the use of a distinct age limit (Siddhisena, 2004).

#### 1.1.2 Biological aging

Defining the process of aging as the gradual deterioration of functioning of the human organs and body systems is recognized as aging biologically which is explained with the use of numerous theories. Wear and tear theory of aging suggests that as individual ages, body parts such as cells and organs wear out from continued use. Wearing of the body can be attributable to internal or external causes that eventually lead to an accumulation of insults which surpasses the capacity for repair. Genetic theory of aging proposes that aging is programmed within each individual's genes. According to this theory, genes dictate cellular longevity. General imbalance theory proposes that body systems, such as the endocrine, nervous, and immune systems, gradually decline and ultimately fail to function. As suggested by accumulation theory, aging is bodily decline that results from an accumulation of elements. These elements can be either a natural result of cell metabolism or foreign and introduced to the body from the environment. An example of an accumulation theory is the free radical theory of aging. According to this idea, by-products of regular cell metabolism called as 'free radicals' interact with cellular components such as the cell membrane and DNA and cause irreversible damage. The idea that free radicals are toxic agents was first proposed by Gerschman and colleagues (1954). In 1956, Denham Harman proposed the free-radical theory of aging and even demonstrated that free radical reactions contribute to the degradation of biological systems. A more recent and comprehensive accumulation theory by Grey (2003) points out that aging is the consequence of the accumulation of 7 types of 'damage' at the molecular, cellular and intracellular levels. DNA damage has been one of the many causes in diseases related to aging as explained by DNA theory. The stability of the genome is defined by the cells machinery of repair, damage tolerance, and checkpoint pathways that counteracts DNA damage. One hypothesis proposed by Failla (1958) is that damage accumulation to the DNA causes aging. The hypothesis was developed soon by physicist Szilárd (1959). This theory has changed over the years as new research has discovered new types of DNA damage and mutations, and several theories of aging

argue that DNA damage with or without mutations causes aging. However, regardless of the above biological theories, a commonality is that as human's age, biological functions of the body decline.

### 1.1.3 Psychosocial Aging

Man is being born as a social animal. The social environment within which a person has been brought up and interacted has a direct influence on his/her personality development and psychological well-being determined by the associated cultural and religious acceptance, norms, customs, values, beliefs and practices specific to a society. According to Dannefer (2003), aging is an interactive process where the individual is affected by the environment while also influencing the environment in which he/she ages. Several theories of aging are developed to observe the aging process of older adults in society as well as how these processes are interpreted by men and women as they age (Amarasekara, 2016).

**Activity theory:** Activity theory developed and elaborated by the gerontologists Cavan, Havighurst (1949) and Albrecht (1951) suggests that for a successful aging one should continue and maintain the activities that he/she has been doing. Actively involving in social activities may increase their level of satisfaction. The older adults' self-concept depends on social interactions. In order for older adults to maintain morale in old age, substitutions must be made for lost roles namely retirement from a job or loss of a spouse. Activity is preferable to inactivity because it facilitates well-being on multiple levels. Because of improved general health and prosperity in the older population, remaining active is more feasible now than when this theory was first proposed by Havighurst (1949) nearly six decades ago.

**Disengagement theory:** Disengagement theory which was developed by Cumming and Henry (1961) proposes that, older adults and society engage in a mutual separation from each other preserving social equilibrium and promoting self-reflection for elders who are freed from societal roles. An example of mutual separation is retirement from the workforce; withdrawal from previous activities or roles. It furnishes an orderly means for the transfer of knowledge, capital, and power from the older generation to the young. A key assumption of this theory is that older adults lose "ego-energy" and become increasingly self-absorbed. Additionally, disengagement leads to higher morale maintenance than if older adults try to maintain social involvement. However, many older people desire to remain occupied and involved with society and an imposed withdrawal from society may be harmful to elders and the society alike. Accordingly, this theory has been largely discounted by gerontologists.

**Continuity theory:** Continuity theory on the other hand is a concept which proposes the elders to maintain the same activities, behaviours, personality traits and relationships as they did in their earlier years of life. In this theory, a dynamic concept of continuity is developed and applied to the issue of adaptation to normal aging. A central premise of continuity theory is that, in making adaptive choices, middle-aged and older adults attempt to preserve and maintain existing internal structures (relationships and social roles) and external structures (personality traits, ideas, and beliefs which remain relatively constant throughout a person's lifetime) and that they prefer to accomplish this objective by using continuity (i.e., applying familiar strategies in familiar arenas of life). In middle and later life, adults are drawn by the weight of past experience to use continuity as a primary adaptive strategy in dealing with changes associated with normal aging. To the extent that change builds upon, and has links to, the person's past, change is a part of continuity. As a result of both their own perceptions and pressures from the

social environment, individuals who are adapting to normal aging are both predisposed and motivated toward inner psychological continuity as well as outward continuity of social behaviour and circumstances. Continuity theory views both internal and external continuity as a robust adaptive strategy that is supported by both individual preference and social sanctions. Accordingly, continuity theory has enormous potential as a general theory of adaptation to individual aging.

**Cumulative advantage/disadvantage theory**: According to this theory which was developed in the early 1960s and elaborated by several researchers such as Dannefer (2003), inequalities have a tendency to become more pronounced throughout the aging process. A paradigm of this theory can be expressed in the adage "the rich get richer and the poor get poorer". Advantages and disadvantages in early life stages have a profound effect throughout the life span. However, advantages and disadvantages in middle adulthood have a direct influence on economic and health status in later life.

As elaborated above there is a wide spectrum of the types of theories explaining the notion of aging with programmed theories on one extreme and error theories on the other. It is vital to identify the means of optimally embracing the aforementioned chronological, biological and psychosocial transformation taking place in one's life when aging in architectural/spatial terms.

### 1.2 Sri Lankan Elderly: The current crisis

Elders in the Sri Lankan context prefer to live within a family setup receiving love and care from their children. In return, being the most experienced people, elders were considered the treasury of knowledge by the young ones (UNFPA, 2004). Extended family system, being the structure of the traditional notion of family in Sri Lanka provided with a sustainable remedy to care and look after the aging parents. The elders always had their pride of place in the family. While giving a helping hand to their own children by involving in the decision making process they had a special role in caring, molding, advising, guiding and laying a steady foundation for their grandchildren and great grandchildren to face the challenges of the society with confidence.

This system collapsed due to industrialization, globalization and modernization which encouraged people to move to urban areas, cities or overseas seeking employment/education opportunities eventually settling there leaving their elders alone in home towns/villages. The extended families were broken up and transformed in to nuclear families as a response to the need of the modern society (Parsons 1959, Goode 1963 and Amarasekara, 2013).The nuclear family is formed by the parents or single parent and their unmarried children living in one house. Father is the bread winner of a typical Sri Lankan family. However, women joining the workforce to cope up with ever increasing expenditure rate, leaving no one at home even if they are willing to take care of the elders are another facet of this problem (UNFPA, 2004). Not every family can afford a housemaid to dedicate this responsibility of care giving to elders at home. This is critical for people who belong to low income category in a society. These circumstances have left most of the elderly grandparents with no place in the current family system. This pathetic circumstance of old generation becoming valueless or lonely with no one to care led to the emergence of elders homes in Sri Lanka. On the other hand the 30 year's war and ethnic problems have made lots of people handicapped and orphans who may also add to the requirement of a care giving facility when they grow old. Coping up with the situation, current as well as previous governments and non-government organizations have established elder's

homes, day care centres along with health care and funding facilities for the elders. As predicted by department of census and statistics, one fifth (1/5) of the total population of Sri Lanka will be represented by elderly by 2030. This statistical projection signals the alarming requirement of well-designed cities, buildings including homes which are conducive and sensitive for an aging community as a whole in Sri Lanka.

### 1.3. Research Problem

With the process of aging, an adult will experience a distinct transition in his/her physiological, biological, behavioural, psychological, social as well as spiritual realms. Accordingly, their living environments have to be adjusted carefully according to these changing needs. It was evident that not a single elder's home has been designed considering conducive Architecture for elderly in Sri Lankan context. Most of the elder's homes are mere conversions of old buildings (bungalows or government buildings) with no involvement of architects or designers. There is a significant lack of investigations done on designing for elderly in Sri Lankan context. In view of this there is an urgent necessity for the architects, designers, urban planners and landscape architects to team up to identify the criteria for future elders homes.

Out of the diverse elements of design, the current study principally focuses on colour as a vital psychophysiological agent which can be effectively incorporated in creating spaces sensitive for elderly. Colour selection is considered as a vital decision in uplifting and maintaining elders' mental, physical and social well-being. This notion is well addressed in the international context and Sri Lanka is yet to identify and utilize the maximum potential of colours for elderly. No special criteria can be identified in specifying colours for elder's homes in Sri Lankan context and the psychophysiological impacts/benefits of colour on elderly are least considered or rather neglected. Mostly the colour decisions are made based on the preference of the head of the home or the funding authority. The current investigation significantly looks in to the psychosocial aspects of aging to be considered in designing for elderly with special reference to colour.

### 1.4 Colour for elderly

Even though a lot of research has been conducted on architecture and usability design for the elderly and documented in depth, nothing much about the usage of colour for elderly has been done. As stated by Wijk (2002), despite increased attention and concern for the elderly, the color perception, cognition and preference of seniors have not been studied enough.

Colors are found to associate with human emotions and behaviour. Warm colours (red, orange and yellow) are found to stimulate and energize humans while cool colours are said to pacify and concentrate (Mahnke, 1996).Colour associated psychological and physiological associations of humans are said to vary according one's age. Colour associated emotions are found to be influenced by age (Hupka et al., 1997; Manav, 2007; Shoyama, 2003 as cited in (Cheng et al., 2007).

Gohar (2009), identifies four different colour interventions in the literature as suitable for the environment of the elderly, visually impaired and people diagnosed with Alzheimers, namely the use of bright colours; colour coding; colour cueing (or applying effective colour contrasts); and selection of colour choices based on the individuals and cultural preferences and associations.

Out of theses interventions, mostly sited strategy of colour usage for elderly is the use of high contrasting colours to create maximum visibility and clarity of the environment (Gohar, 2009). As people age, their eyesight declines. They experience a plethora of vision problems from macular degeneration, neuro-degeneration and reduced retinal illuminance. Reduced visual ability experienced by the elderly can lead to colour confusion and difficulties in daily activities (Ishihara, 2001). Contrasting colors in an interior is found to help improve a senior's visibility (Little, 2014).Saito et al. (2006) observed that elderly are affected mostly by the contrast of colors compared to the chromaticity. As further suggested by Gohar (2009), the use of colour and colour contrasts specifically was found to be effective in promoting better orientation, memory enhancement, a sense of safety and independence in elders as well.

Elders can become lonely and depressed as they begin to feel shut-off from the outside world. Colour being a psychological agent can be integrated to generate positive moods in elderly. As explained by Little (2014) soft pinks and greens can help you feel at peace, while red and orange can improve energy levels. Colour can be used as an effective tool in their living environment to uplift their mood and energy levels to increase the joy that seniors feel within their home.

Experience of colour cannot be separated from the lighting of an elder's interior. Amount of light in the space is a vital factor for elderly (Noell-Waggoner, 2011).Poor lighting, while decreasing visual interest can lead to less visibility of surfaces causing accidents and falls. Accordingly, use of innovative lighting systems and new, larger fenestrations in order to optimize interior lighting may be considered. As clarified by Noelle-Waggoner (2011), elderly people are characterized by high percentage of sleep disorders and changing the colour of light at night is vital to induce sleep.

As suggested by Gohar (2009), people choose to stay in the spaces having their most preferred colours which are proposed to be applied to elder's homes in the current investigation. A person's preference to colour is subject to change with age. Dittmar (2001) identified age group difference as highly significant for colour preference. In a recent study, Korean elders were found to prefer light and pastel colours and disfavoured dark and strong colours(Cheng et al., 2007). Colour preference may change with one's gender, cultural and religious constructs. As per Cheng et al ( 2007) Korean women were found to prefer reddish colours while men preferred blueish colours suggesting the significance of gender for colour preference. Oberascher (2008) showed that the regionally different preferences for certain colours were influenced by cultural factors such as religion, politics, economy, technology and traditionalism vs. modernism. Adding to this, Saito (1996) identified that geographic elements can affect colour preference. Contributing to above, a study conducted by Shoyama et al. (2003) cited in Cheng et al ( 2007)reported that Japanese consumers preferred red and grayish-orange apparel whereas Korean consumers preferred cold hues and achromatic colours. It is believed that educational background has an impact on personality traits affecting individual choices including colour preferences. Hanafy and Sanad (2015) found significant relationships between educational background and colour preferences of undergraduates for living room which may be applied to adults as well.

Gohar (2009) highlights the necessity to conduct further research seeking the applicability of the identified colour interventions using qualitative research methods with reference to the cultural diversity of aging population which is the driving force of the current investigation. Colour preference of Sri Lankan elderly with reference to their living environment will be the main foci in this regard.

### 1.5 Research gap

A lot of research has been conducted in many parts of the world related to elders. Out of them the attempts made to discuss the Architecture for elderly as a response to the upcoming global issue are many. However there is a significant lack of research done on the attributes of spaces which are sensitive to the needs of an ageing population with reference to Sri Lankan context. Colour, being an effective psychophysiological agent has rarely been studied with reference to elder's needs and preferences in local as well as international context.

### 1.6 Aims and Objectives

Filling the aforementioned gap, the current study looks in to design strategies conducive for Sri Lankan elderly with special reference to colours. Taking forward the line of thinking of Gohar (2009), the current study attempts to identify specific colours to be favourably incorporated in spaces for Sri Lankan elderly, recognized by their preference.

### 1.7 Limitations

Architecture of elder's homes being a vast area of study, the current research limits only to the study of conducive interior colours for elderly selected based on their preference. Even if the theories explaining the notion of aging spans in a wide spectrum including chronological, biological, psychological, social paradigms this study limits its scope within the psychosocial aspects of aging significantly determined by the socio economic status of elderly. Out of the many elder's homes in Sri Lanka the study is limited to three homes selected representing three basic socioeconomic levels of the society determined by the level of income; Low, middle and high. These homes are based on Colombo due to availability representing a cross section of all the social levels and the convenience in accessibility. 120 elderly people with no colour blindness or other visions related problems took part in the study.

## 2 Research Method

### 2.1 Justification of Case studies

Any society comprises of several layers having inequalities termed as high class, middle and low class…etc. People tend to organize and live in separate groups based on these social classes. This social expansion which is apparent in the society is called **"social stratification**". From the past lot of philosophers have paid their attention to the parameters and consequences of social inequality. As clarified by Amarasekara (2013), the social scientists, Karl Marx (1818-1883) and Max Weber (1846-1920) have presented various theories in this regard.

As per Marx,an essential parameter of social inequality is the unequal distribution of economic resources. Accordingly economy is determined as a significant parameter of social stratification. As explained by Marx, economy is the foundation which explains the characteristics of social strata. One's ethics, arts, education, culture, law and the rest of aspects are parts of this stratification determined by economy. To understand a society in depth one should look at its internal economic structure without merely observing it's surface level features (Adams, 1987).
According to Max Weber, in describing the inequalities of a society, one should pay attention to three different dimensions, namely economy, social status and power (Devid, 1972 ,Amarasekara, 2013). In other words, people gain status through social, political and economic

orders. The social class determines a person's status, honour and reputation while the political power is decided by the way how a person is engaged in a country's decision-making process (Amarasekara, 2013).The Categorizations of social classes according to Weber as cited in Amarasekara (2013)of which the basis being the level of income is tabled below.

| *Social class* | **Description** |
|---|---|
| *Upper class* | The families which possess wealth honour and familial statutes |
| *Upper middle class* | The group of people with wealth, power, having an economic stability with a luxurious life having vehicles, lands, houses. |
| *Middle class* | This group of people gain money from government or nongovernment organizations as a monthly income |
| *Lower middle class* | Those having technical abilities and earn money from jobs abroad belong to this category. |
| *Upper lower class* | These people having practiced semi-skills and engaged in work at a stretch belong to the category. |
| *Lower class* | People having less education and engaged in different jobs with technical skills belong to this category |

Table 1: Max Weber's categorization of social classes, Source: Amarasekara (2013)

The elder's homes in Sri Lanka are distinctly categorized based on the economic level of the elders. Considering above theories, elderly people falling in to three distinct income levels were considered in the current investigation to seek their colour preferences determined by the psychosocial parameters. Three elder's homes established to accommodate elders of the three distinct economic levels were identified as case studies from the suburbs of Colombo to represent a cross-section of the social strata characterized by diverse economic status, education, gender, civil statutes…etc. Understanding the psychosocial condition experienced by different strata based on economic level is supported by the cumulative advantage/disadvantage theory of aging (Dannefer, 2003). As proposed by this theory, it was supposed that the inequalities associated with the economic level have a tendency to become more pronounced in the colour preference of aged as well.

**2.1.1 Case study one - Moratuwa social service society and Home for elders, Moratuwa (n=50, 30: males, 20: female):** This case study was conducted representing the low income category having a level of education and economy at a very low standard. Most of these elders are Buddhists (80%) while the other 20% are Catholics. A majority of males are bachelors while most of the females are married (54%: unmarried, 16%: married and 30%: widowed). Children not caring and treating them are found as the main reason for admission to this home. Most of these elders have provided education to their children to the best affordable level. Their children, once educated are feeling ashamed to reveal their actual social status and tend to move to next levels of the social hierarchy leaving the parents behind. Even though these elders are happy about the caring and facilities of the elders home in a physical level, psychologically they are unsatisfied, unhappy and live with repentance (54% = 16% :extremely unsatisfied + 38% :unsatisfied).

**2.1.2 Case study two- St. Martin's home for elders at Thibirigasyaya, Colombo 5(n=30; all female):**This elder's home represents middle income and lower middle income category. This is dominated by female elders over men by numbers and they have obtained education to an average level. Predominantly, these elder women have admitted here as they are unmarried (76.67%) and either no one is there to look after them or they cannot be a burden to their siblings. Majority of them (73.3%) are Roman Catholic and the rest are Buddhists (23.68%).The elderly women who are married (6.67%) and widowed (16.67%) have children living/working abroad.

**2.1.3. Case study three- Benedictine sisters of our lady of grace and compassion 'Melville', Moratuwella, Moratuwa. (n=40, 35: females and 5: males):** This home has been selected to study the elders representing upper income level characterized by a very high social status. Majority (82.5%) is Catholics and the rest are Buddhists (17.5%). They all have lived an extremely comfortable life and currently staying in this home because their children are either settled down or employed abroad. Even if they have a good economic level, they are alone having no one to look after and care for them. Having had a good educational background followed by a good occupation (e.g. English teachers, doctors, air-hosts) most of them are intelligent and can speak and write in English. In fact, some of them are graduates. Their children are well educated and involved in high income generating occupations namely; architects, engineers, doctors, managers etc. Some of their children have studied in foreign countries and have settled eventually in the same countries; America, Canada, Australia etc. The children who live in Sri Lanka are very few. Most of these elders also have travelled overseas having a lot of exposure and experiences**.**

## 2.2 Research Design

A sample of 120 elderly people (age above 60) living in three elder's homes were examined (35: males, 95: female). The responses were obtained via an identical questionnaire survey and structured interviews implemented in three different locations. While reporting the background information, namely personal details (educational level, economical level, colour preference, physical strength), the elders were directed to freely suggest the best fitting/conducive colours for selected functional spaces in their day to day living environment; living, kitchen, dining, bed room, shrine room and bath room based on their preference. For the convenience in choosing or deciding the best preferred colour the research subjects were guided by a coded colour palette consisting of **72** color codes (CC). The data was analyzed through excel and SPSS software.

## 3. Data analysis

The most common favourite colours of the 120 elders were identified as blue (20%) and green (20%). No matter what the socioeconomic level is, an elder's political and religious beliefs were identified to have a direct influence in choosing their favourite colour. The Catholics

**Fig 1-** Color palette consisting of 72 color codes as a guide to fill the questionnaire

preferred colour "blue" due to its association with Mother Mary and Buddhists were mostly found to prefer colour white due to the associated religious connotation. Significantly, the unmarried elderly women choose "pink" as the favourite colour and unmarried men liked "blue" colour. The influence of the established widespread socio cultural notion of "blue for boys" and "pink for girls" is evident here. Accordingly, parallel with the findings of Oberascher (2008), political, religious and traditional constructs were found as significant parameters of colour preference of elderly. The influence of the nature/environment was seen as another parameter for colour preference. It was revealed that most of the elderly preferred green and blue as the colours which can be seen everywhere in the surroundings. These colours being cool colours which are soothing and pleasing to the eyes can be another reason for this selection. As a general observation most elders were found to prefer pastel shades over bright hues similar to the preference of Korean elders revealed by Cheng et al (2007). Interestingly, least favourite colours of the elders of all the three elders' homes were much alike. Red (20.8%) and black (19.2%) were identified to be the most agreed least favourite colours, regardless of the socioeconomic strata. As per their belief these colours are dark and preferred by cold hearted people. The impact of cultural constructs on colour preference highlighted by Oberascher (2008) are evident here. 49.2% elders who had a favourite colour did not report to have a least favoured colour.

Aligned with the theory of continuity and cumulative advantage/disadvantage theory, it was identified that ideologies and notions constructed via the exposure and experiences obtained belonging to a certain socio economic state in one's past (mid ages) have a direct bearing on colour preference . The colours preferred by elders related to each functional area studied have been graphically presented below with reference to low income (case study 1), middle income(case study 2) and high income catagories (case study 3) repectively.

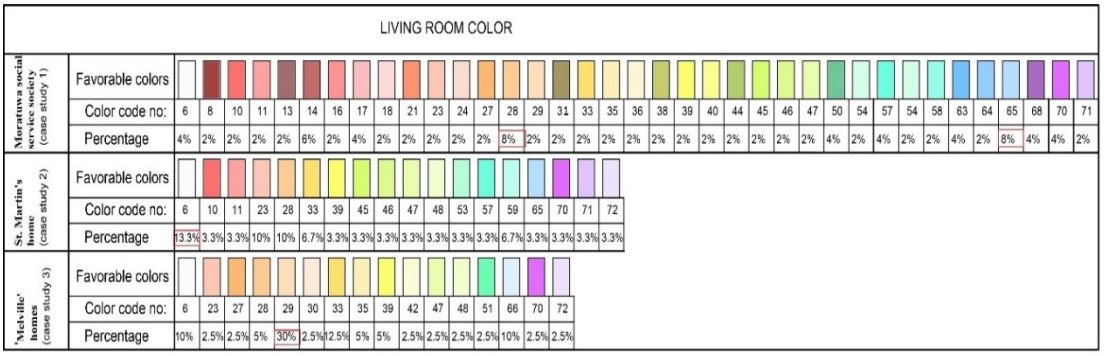


**Fig 2** - Preferred colours for Living room

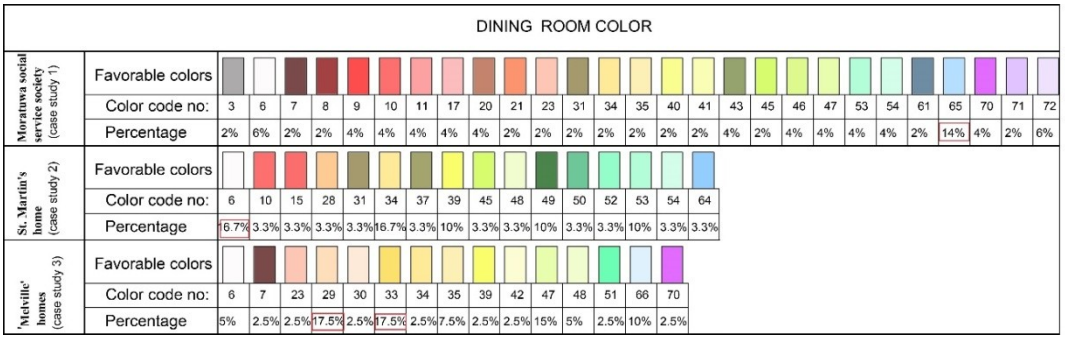


**Fig 3** - Preferred colours for Dining Room

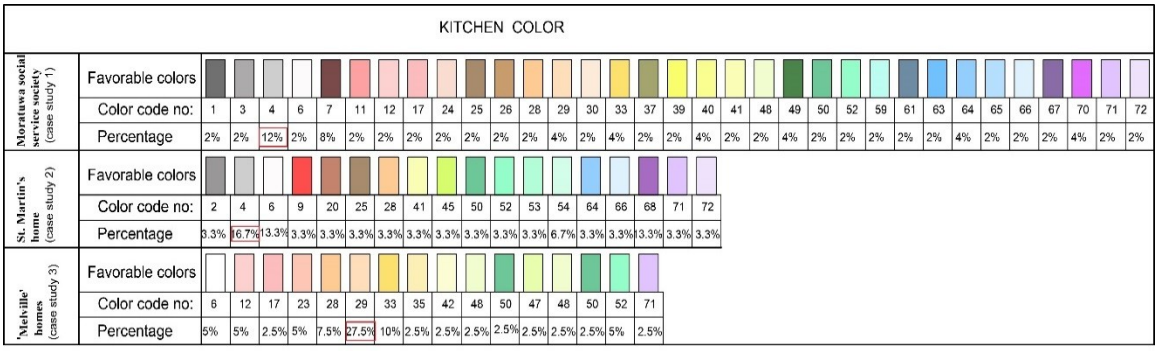


**Fig4** - Preferred colours for Kitchen

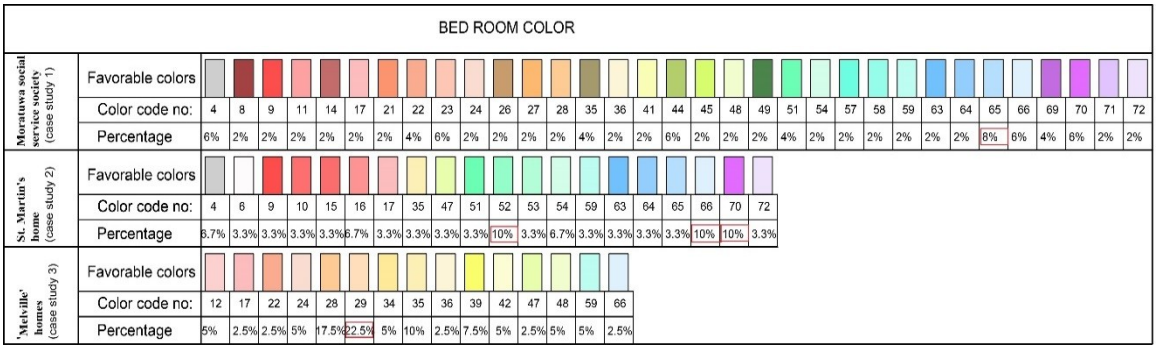


**Fig** 5 - Preferred colours for Bed Room

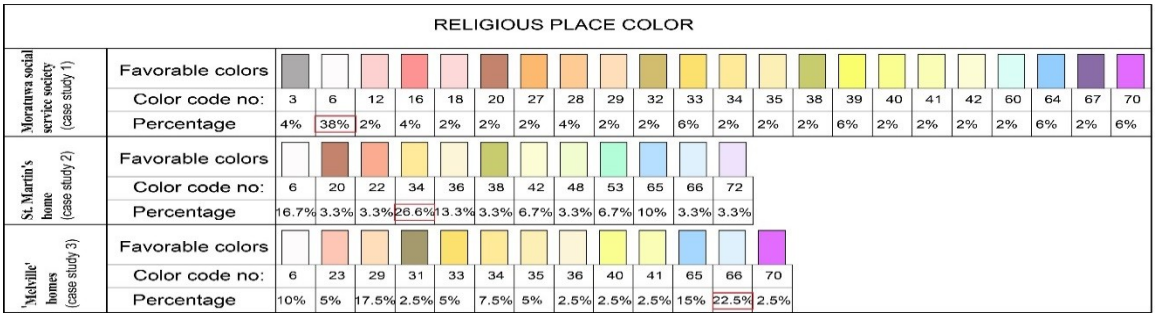


**Fig 6** - Preferred colours for Religious Space

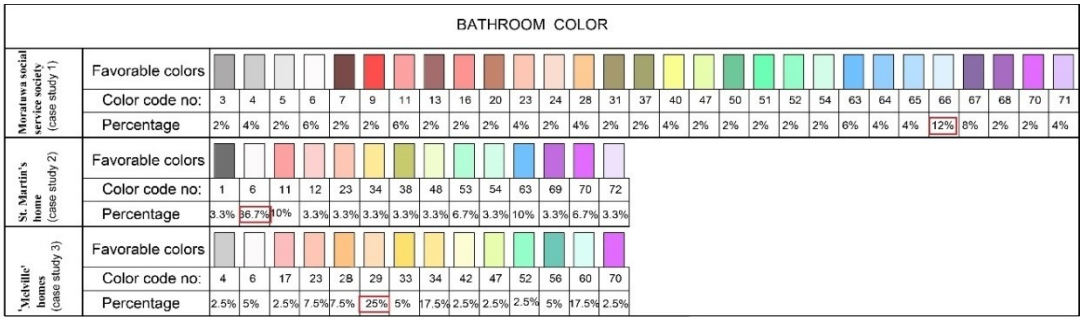


**Fig 7** - Preferred colours for Bath Room

As a significant observation, the diversity in colour preference per space was found to increase from high income adults to low income category adults. Elders of the low income category was reported to have the highest diversity in colour preference where there is a lack of common agreement in colours preferred. As shown in figure 2,3,4 and 5 they selected 37colours out of the 72 colours given in the colour palette (37/72) to apply in their living room,27/72 for dining, 33 /72 for kitchen and bed room equally representing both warm and cool colours .The lack of education, knowledge, exposure and pre conceived notions related to colour of the low income class elders were found to associate with this response. Middle class elders, having a better level of past education and colour associated pre conceived notions were found to be more selective in colour preference. For example they preferred only 18/72 colours from the given palette dominated by white (CC.6) and shades of warm colours over cool colours; pink (CC. 23), and orange (CC.28) to be applied in their living room being the most expressive space of a house. High class elders were found to have well refined, focused and clear nature in their preference supposedly due to the high level of education, preconceived ideas and vast local and foreign exposure thus selected only 16 /72 colours out of which the majority represents the warm end of the spectrum dominated by beige colour (CC. 29 - 30%).

Few of the elders who belonged to the lower income category commonly preferred various shades of blue (CC.65, 66) for the living room, dining room and bathroom. The most agreed colour of the middle class elders to be applied in spaces was white (CC.6). As a common finding, gray(CC.4) for kitchen and cool colours for bedrooms; shades of blue (CC.65, 66) purple (CC.70)and green(CC. 52) was suggested by some elders representing both low and middle income levels. Havind a completely different sociocultural exposure, the preferecne or taste of the upper income catagory elders was found to be quite different. Most of them selected shades of warm colours dominated by beige (CC.29) for living room dining room, bedroom, bathroom, and kitchen.

However, all the categories were able to agree on certain colours with reference to the religious space signifying the impact of religion on colour preference Oberascher's (2008). A majority of low income adults were able to agree with colour white (CC.6) as best suiting for their religious space. Majority being Buddhists, the impact of religion and colour associated religious concepts on the preference of this group is evident. Shades of blue colour(CC.66, 65) was selected by a majority of upper class elders as the colour of the shrine room supposedly due to the influence of their religious opinion being Catholics. However there was another dominant percentage that preferred beige colour(CC.29). Middle class elderly subjects though majority are Catholics selected shades of yellow (CC.34) and white (CC.6) and only a few people choose a shade of blue (CC.65) colour for the religious space.

Aligning with the thinking of Gohar (2008), providing insight for colour application in homes for Sri Lankan elderly, a majority of the subjects preferred cool colours having a soothing psychophysiological impact; (green:CC.52, blue:CC.65, 66), pastel/muted warm colours (beige:CC. 29 and shades of yellow:CC.33,34) and neutral colours (white: CC.6, grey: CC.4) while rejecting warm (red) and dark (black) colours to be applied in their living environment. Most distinctly preferred colours for the home interior determined by the lower, middle and upper classes are shades of blue (CC.65, 66), white (CC.6) and beige(CC. 29) respectively.

## 4 Conclusion

The group of Sri Lankan elders studied under the current investigation were found to prefer light and pastel shades over dark and strong colours to be applied in their homes. The study clearly established the impact of preconceived notions constructed based on one's past education, exposure and experience determined by the level of income and the corresponding psychosocial status on an elder's colour preference. Colour preference of elders' and diversity of preference was found to significantly differ based on their economic strata. Elders of low income category demonstrated a large diversity in colour preference including pastel shades of warm, cool and neutral colours characterized by less common agreement while the upper income elders were found to have a well-defined, consistent preference which is limited to a refined, small range of colour choices having consistency in common agreement dominated by warm colour shades. The study identified several favourable colours preferred by elders, determined by their social status, political, religious opinions and environmental parameters to be applied per each functional area of their homes. Also, the level of education, gender, marital state and psychological condition were found to affect this preference. The colours identified by the current investigation conducive for elderly as applicable to their level of income and the corresponding parameters of colour preference need to be carefully considered when specifying colours in creating desired homes for elderly in future. It is recommended to take this study forward with a large sample size representing a cross-section of the geographical, regional diversities of the country to come up with more valid data and to generalize the findings to Sri Lankan elders as a whole.

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