ANALYSIS OF THE EXISTING HEALTHCARE SIGNAGES FOR THE ELDERLY IN KOTA KINABALU: FOR EFFECTIVE HEALTHCARE SIGNAGES

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ABSTRACT

Signage is a kind of graphic design, which can be in the form of symbols and words, especially for conveying directions or warning information. Malaysia will become an ageing country by year 2030. The difference between ageing and diseases lies in its ubiquity. Diseases may be deterred, cured and removed but ageing is a natural process that everyone goes through. It can not be avoided by anyone. As people age, they succumb more easily to illness and diseases. Therefore, the elderly tend to go to hospitals more often than other age groups. Hospitals have a complex setting and environment which may cause confusion for visitors with a 30 to 40 per cent rate of visitors getting lost. At present, Malaysia has carried out a large number of research related to the elderly but the information related to the use of healthcare signage in Kota Kinabalu and the perception of the elderly is limited, so it will be very important to study ways to improve the level of healthcare signage. This paper discusses the physiological characteristics of the elderly by consulting existing literatures, provides suggestions to improve the designs causing an effective display of healthcare signage and also analyses the existing healthcare signage in Kota Kinabalu. The data collection qualitative research method used in this study is walk-through observation and semi-structured interviews from the main, public and private, hospitals in Kota Kinabalu, Malaysia. Making it helpful to upgrade the existing construction of healthcare way-finding signage for the elderly and help the elderly to obtain safe, smooth and independent medical services.

Keywords: Healthcare environment, hospital, wayfinding signage, elderly, Kota Kinabalu.

INTRODUCTION

According to the World Health Organization (WHO), a country is said to be ageing when at least 7 per cent rate of the population is composed of the elderly, defined as people aged 60 and above. With the estimation that 10.7 per cent rate of the population Malaysia will be 60 years old and above, and those aged 65 years and above stood at 7.0 per cent rate in 2020 (Department of Statistics Malaysia Official Portal). Malaysia will become an ageing country by 2030 when it is projected that 15 per cent rate of the total population will be 65 years old and above, according to a statement by Malaysia's Chief Statistician on July 2019. The population aged 60 and above in a distribution by state indicated that Selangor is the state with the largest population (1.13 million), followed by Johor (0.71 million) and Sabah (0.54 million). The Malaysian population indicate that the elderly are now the most frequent users of hospital services. The difference between ageing and diseases lies in its ubiquity. Diseases may be deterred, cured, and removed with good care and attention. However, ageing is a natural process that everyone goes through. It can not be avoided by anyone despite all the efforts put into slowing the cosmetic signs of age. Every human body slowly disintegrates naturally and unconsciously until things start aching. As people age, they succumb more easily to illness and diseases. Therefore, the elderly tend to go to hospitals far more often than any other age groups. Hospital environment is a healthcare institution, providing professional medical and nursing staff as well as medical equipment for patients. The Minister of Health, Dr Dzulkefly Ahmad, said that Sabah lags behind some states in the field of health. As far as medical facilities are concerned, the existing clinics and hospitals in Sabah need to be upgraded (*New Straits Times*, 17 September 2018).

Wayfinding system is a useful tools for visitors to find the information they need in a hostile environment to help them reach their intended destination. People's autonomy and quality of life are closely related to their ability to reach their destination in the environment as independently as possible (Marquardt & Schmieg, 2009). Signage is an important part of wayfinding system. It is a type of graphic design, which can be in the form of symbols and words, especially for conveying directions or warnings. According to Mark Green, hospitals have a complex setting and environment which may cause confusion for visitors with a 30 to 40 per cent rate of visitors getting lost (*The Week Publications*, 2018). Carpman and Grant (2002) found that, it is important to consider that wayfinding problems have their own particular cost in the healthcare environment, stress caused by disorientation may lead to helplessness, increased blood pressure, headaches, increased physical exertion and fatigue. In hospitals nurses, physicians, and

other healthcare employees work under extremely stressful physical conditions (Ulrich et al., 2004).

Wayfinding has been widely used by visitors and staffs to ease finding their way around under stressful conditions (Sansom & Brooks, 2012). In order to create a high-quality healthcare signage, it will be beneficial to guide visitors, and ultimately promote rehabilitation, improve visitors' experience, reduce stress, anxiety and fear of hospitals, which will then benefit hospital staff, because it enables staff to finish their work effectively instead of guiding visitors around the hospital. Therefore, a more reasonable and effective wayfinding system becomes especially important. Although a well-informed staff could be more helpful than a static signage people, however, still prefer having the tools to help themselves rather than rely on someone else to help them find their way (Mollerup, 2005).

At present, Malaysia has carried out a large number of researches related to the elderly, but the information related to the use of healthcare signage in Kota Kinabalu and the perception of the elderly is limited. So, it will be very important to study ways to improve the level of healthcare signage in Kota Kinabalu.

OBJECTIVES

The purpose of this study is to understand the requirements and challenges faced by the elderly in the existing healthcare signages in Kota Kinabalu.
The focus of the study is on three objectives:
- To summarizes the physiological characteristics of the elderly by consulting existing literatures.
- To analyses the existing healthcare signage in Kota Kinabalu.
- To provide suggestions to improve the designs resulting in the production of effective display of healthcare signage.

LITERATURE REVIEW

This section reviews the literature involved in the designing of wayfinding signage. It also reviews the physiological characteristics of the elderly to tackle some of the challenges associated with healthcare wayfinding signage in Kota Kinabalu.

Wayfinding and Signage

Wayfinding was originally aimed at being used in outdoor environments. According to Kevin Lynch, the term wayfinding was penned as he was writing

in his widely popular book called "The Image of the City". The writer made claims that a psychological imaging of what is around us is created using memory and feelings as a method of getting to places we need to find (Lynch, 1960). Knowing that humans have the ability to conceptualize images naturally to recommend and evaluate the setting the design of cities. Romedi Passini who studies the theory of signage, spaces for architecture and also other types of graphical communications proposed by Lynch managed to extend that same study (Arthur & Passini, 1992). Coming up with a special signage for a particular area is critical to provide navigation as well as locational information that can is adapted to the surrounding. There are four particular types of signs that are important to have; namely information, identification, direction, and warning signs. The main strategy for wayfinding is to be able to include people with linguistic, extensive sensory, intellect, social, cultural and age range and let as wide a range of people as effectively possible all the information necessary (Arthur & Passini, 1992). Wayfinding enables users to organize and perceive their surrounding which is a intuitive and necessary part of human abilities. According to Dejonge (1963), signages evokes mental images for each area or region if they are displayed well with clearly distinctive signage that gives good information. Passini (1984) signs need to be accurate and easily understood making it a positive wayfinding experience. Muhlhausen (2006), establishing consistency in the positioning, realizing effective graphic communication, layouts of signs, code areas by colour and memorable signs, easy-to-understand simple language, and common pictographs using colours as well as characters to encourage understanding in all the information written information on signs. To better make new visitors comfortable and welcome to a new building, signages are crucial for the navigating experience.

Colour, typographs and symbols used on signage

According to Sherlock (2005), colour coding is commonly seen as a way to wayfinding. Wayfinding should be prominent and consistent as well as conspicuously laid out and effective as its laid out all over the locale and provides information. Colour combinations are a factor that needs to be taken into consideration when choosing the designs for signage and wayfinding and also the environment it will be set in. A distinguishing factor for signs are how colours can offer a idea of what the message is going to be without being able to understand the language the sign is written in. To create harmony of sign and surrounding, colour selection is crucial. When used improperly, it could cause confusion and negative impacts. Irrespective of the language it is written in, a great choice of colour will contribute to understanding. The choices of colours could

highlight specific and traditional places. Harmonious, readable and comfortable from different distances and angles are the aim when using colours in signage designs. According to Calori (2007), light reflections and angles should be taken into account when selecting colour for signs.

Most people recognise shape over reading word for word when reading signs so that is why designers should make sure to use normal sentence case (Tinker MA, 1963). The choice of font styles generally prefered are easy to understand from the point of view of the design. The more common the style the quicker the understanding and reading transfer becomes. Thus, making font choice crucial and necessary. Good height, spacing and clear letters are the key factors when choosing. These are the most important for legibility (Calori, 2007).

According to Berger and Juntos (2005), symbols can often be recognised and understood more quickly than words. When symbols are connected to the concept of a viewer in its meaning and interpretation, it can be deciphered using the background and culture of the viewer (Cowgill & Bolek, 2003). Universal symbols do not attempt to replace text but seeks to be integrated with text to promote success on signs.

Changes Associated with Aging

Eyesight, mobility, hearing, cognition, perception, general physical ability and endurance generally decline with the increase in age. Various acute and chronic diseases and symptoms appear with the increasing age and reduces the normal functions and elderly. Key features of the elderly physiological characteristics in terms of vision are reduced visual acuity and field of vision, macular degeneration and cataracts and glaucoma incidence, sensitivity to glare and decreased vision in low light situations, taking longer to adjust to light levels with greater difficulty, yellowing of lenses with age, poorer colour vision for example decreased ability to distinguish blue-green colours as well as reduced contrasting surfaces. The reduced hearing ability and greater sensitivity to high frequency noise as well as increased reaction to environmental vibration is increase in the elderly. The elderly also suffer from lower ability to differentiate pitch levels, direction or source of sound as well as filtering out background noise. Cognitive function varies in stages of dementia and cognitive affects. The ability to reason, think, focus on details, form new association is reduced. The decrease in memory and information retrieval affects learning and information processing time. It also alters the abilities of the elderly to communicate. The physical changes of the elderly includes 40 - 60 per cent muscle strength reduction, decreased flexibility,

coordination with drastic reduction in fine motor coordination, balance with loss of equilibrium, reaction and reflex time, dexterity, joint stiffness and neck movement, poorer grip, reaching range, increased fatigue and slower reaction time is common and expected. Medical problems that could surface for the elderly are the combined effects of medication, cardiovascular and neurological problems. These combined could contribute to falls, poor mobility and weakness, susceptibility to delirium and incontinence, reduced thermal response with sensitivity to abrupt changes in temperature ranges in the lower end as well as being more susceptible to dehydration, hypo-tension as well as change in skin integrity. These are the main physiological characteristics of the elderly according to Belinda and Kathleen (2007). The impact of the elderly in the hospital setting could be a synergistic impact especially because of such expected conditions. With the number of chronic diseases increasing significantly with the growth of age, psychological problems become more profound. It also derails emotional stability as the elderly deteriorate. Contact and opinions of others as well as lifestyle could combine to affect the mobility and independence of a person (Stephen, J. & Mark, L., 2007). Such functions of the social and psychological frequently change dramatically. Feeling sad can be normal. However, depression, sleep disorders, anger, substance abuse and anxiety could fluctuate with chronic disease. Psychological and physical damage is suffered by elderly patients. Hence, well catered and thought out wayfinding signages in hospitals are crucial in its care for the emotions of the elderly while still functioning in transmitting accurate and effective designs that can be used cheerfully and easily.

METHODOLOGY AND FINDINGS

Qualitative research examines and reflects attitudes, values and opinions (Neville, 2007). In a hospital environment, in order to provide the best service for visitors, it is very important to improve wayfinding and convey essential information to hospital users by reviewing the current situation and developing signages, so as to create a friendly environment (Leonard et al., 2014). This paper employed qualitative research as a manner of gathering information concerning healthcare signages as well as feedback from users. Taking an indicative approach to analyse the existing healthcare signages in Kota Kinabalu so as to prepare for better healthcare signages for the elderly. This paper presents the initial results. Data was collected in three stages:

Stage 1. Literature review: Reviewing healthcare design and facility guidelines, wayfinding theories and the elderly physiological characteristics by consulting literatures to support this study.

Stage 2. Semi-structured interview: In order to understand the personal experience of users on the wayfinding system of Kota Kinabalu hospitals, the researcher conducted semi-structured interviews. Feedback from patients and visitors was gathered. This qualitative study was conducted using in-depth interviews involving elderly respondents. The 45 elderly respondents were over 60 years of age and the races included Malay, Chinese, Indian and others. In the interview, they described their own healthcare wayfinding signages experiences. All interviews were recorded to make verification possible and transcription were produced for subsequent analysis. All interviews were conducted face to face on the interviewee's own premises.

Stage 3. Observation Method: Walkthrough observations were conducted recorded using note pad and taking photograph from the main, public and private, hospitals in Kota Kinabalu, Malaysia. Focusing on healthcare signage aspects clustered as colour, typograph and symbols.

Hospitals Background

The case study analysis consists of existing healthcare signages in Kota Kinabalu samples which includes two government hospitals, namely, Queen Elizabeth Hospital I and II, and two private hospitals, namely, KPJ Sabah Specialty Hospital and Gleneagles Kota Kinabalu Hospital. Queen Elizabeth Hospital I was built in 1957, Sabah. It is the main hospital for the city and Sabah. It is named after Queen Elizabeth II of the United Kingdom. In 2009, the federal government purchased the former building of Sabah Medical Centre (SMC) and renovated it as the Queen Elizabeth Hospital II. It is mainly used now as a heart centre for cardiothoracic surgery and other surgeries. KPJ Sabah Specialist Hospital is the largest private healthcare provider in Sabah. The hospital was built in 2012, and started operating in 2014. It is part of KPJ Healthcare Berhad, a local and large health system with extensive spread of hospitals nationwide. Gleneagles Kota Kinabalu Hospital is a private hospital in the city of Kota Kinabalu, Sabah, Malaysia. The hospital started operating in 2015 and is the first international tertiary hospital in the city. The reason for choosing these public and private hospitals in Kota Kinabalu is that each of the four hospitals has 200 beds and has inpatient and outpatient departments, so the flow of patients is sufficient.

Results and Discussion

Wayfinding can be defined as spatial problem solving (Arthur & Passini, 1992). It needs intelligence, including decision-making, decision-making execution, and information processing. In many wayfinding aids, signages are considered to be a key part of helping wayfinding. Signages help users form a mental map of a facility. In order to convey information effectively, signages must be fast, clear and unforgettable. Signages can directly and indirectly communicate information using colour, typograph and symbols (Burton, 2002). In an attempt to improve the elderlies abilities to reach their destinations, this paper analyses the existing healthcare signage colour, typograph and symbols used in Kota Kinabalu hospitals. To explore existing signage in healthcare might reveal the cause of confusing information so as to see what factors could improve the healthcare signage effectiveness.

Typographs and Symbols used on Signage

There are many forms of signage that is utilized within a healthcare facility. In all wayfinding systems, three types of coded information has been identified by Arthur and Passini (1992) which could be seen in: orientation signage about the setting, directional signage to destinations and identification signage of destinations (Figure 1). Orientation signage is a sign that allows users to know the shape, location and destination of building. This information is used in the decision-making phase. They can be represented by building directory, floor plan and map. Directional signage is used in decision-making execution. It leads a person to a destination, and is considered to have directional information. For the sake of clear direction, they can be represented by arrows. The direction in which a person needs to move to find their desired position reduces the unknown pressure of getting lost or going the long way round. Identification signage is a sign of the position, which determines whether the person is in the correct position. It is also a sign to announce to someone that they have arrived at their destination.
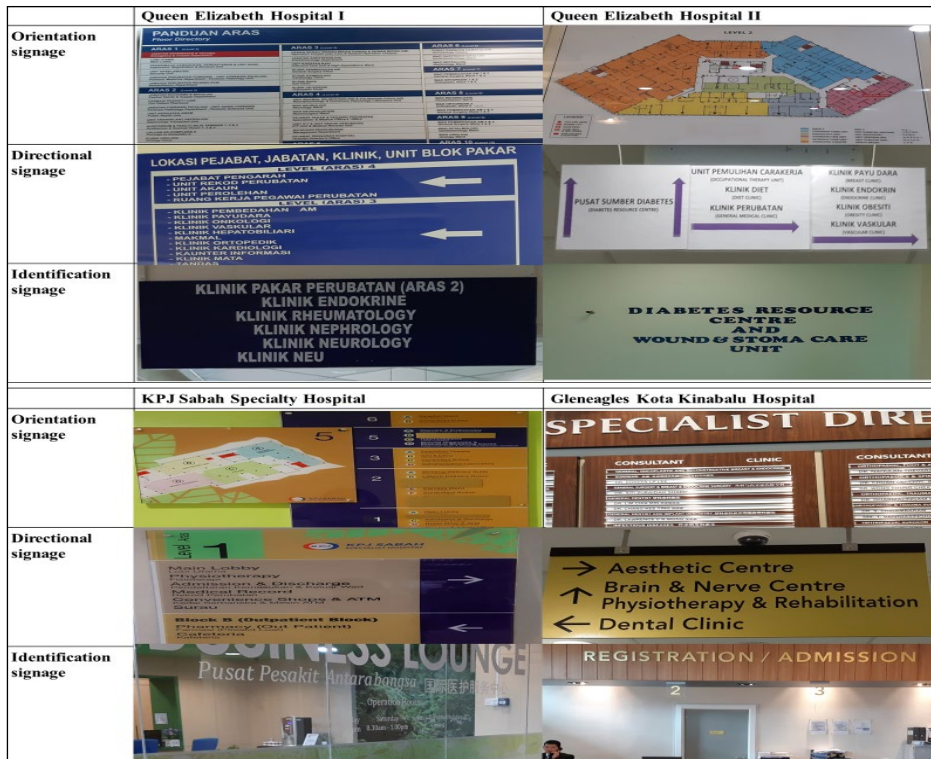
Figure 1 Three types of coded information signages identified - Queen Elizabeth Hospital I and II, KPJ Sabah Specialty Hospital and Gleneagles Kota Kinabalu Hospital

Source: Research Fieldwork conducted on September 2019

According to Chee Heng and Barraclough (2007), more of the elderly relied on governmental hospitals rather private hospitals. Based on the interview respondents, it was found that most of the government hospital patrons are from the middle income groups. They prefer government hospitals because they cost much less than private hospitals. Government healthcare remain an important service provider for the elderly. However, the existing government hospitals signages in Kota Kinabalu are severely problematic such as Queen Elizabeth Hospital II had a lack of functional colour and uniformity of a theme in terms signage (Figure 6). Most healthcare wayfinding signages in the Queen Elizabeth Hospital I are not suitable for the elderly. The most direct manifestation is that the elderly cannot see the higher signage information due to vision problems. The small font signage higher than the line of sight is not visible to them (Figure 2 and 3). For elderly with vision deficiencies the font size should be at least 16 mm high on small signs and at least 40 mm high on larger signs. The use of very large signs visible to people with visual deficiencies and hang signs between

wheelchair and standing heights – 910 mm to 1320 mm high or as low as 50 mm above handrails, were essential (Belinda & Kathleen, 2007). The healthcare signage is not in place, which leads to the interference of the acquisition, understanding and memory of information by the elderly. The signage designer should stand on the side of the user, consider the healthcare wayfinding signage suited for everyone, and solve the confusing problem of signage information. This will make the healthcare signage more accessible for everyone who needs it. According to the literature, we knew that uppercase and lower case letters with Sans Serif, Helvetica and Frutiger Bold fonts are easier for the elderly to read. (Morrell, 2001; Hartley, 1994). In addition, the use of upper and lower letters improves reading speed (Conover, 1990). Queen Elizabeth Hospital I and II, KPJ Sabah Specialist Hospital and Gleneagles Kota Kinabalu Hospital's signages used normal font style, but Queen Elizabeth Hospital I and II had not made use of upper and lower case letters on most of it's signages. While text can improve the comprehension of signage, text is also language-specific and thus limiting (Scialfa, 2008). Malaysians comprise of a multilingual and multicultural society. According to the Department of Statistics in 2020, out of the 29.7 million citizens, Malaysian citizens consist of the ethnic groups Bumiputera 69.6 per cent, Chinese 22.6 per cent and Indians 6.9 per cent while others remained at 1.0 per cent. In terms of language, the Malaysian language is the official language of Malaysia, and English is the second most spoken language. Queen Elizabeth Hospital I signages are shown in Malay and English. Some signages showed Malay only; Queen Elizabeth Hospital II, KPJ Sabah Specialist Hospital and Gleneagles Kota Kinabalu Hospital's signages showed Malay, English and Chinese, but only a few signages showed a range of three languages. Most signages were shown in Malay and English only. With the saddest range of some signages only displayed in Malay or English. These lack of languages causes confusion amongst users who cannot speak or understand them. According to Chee Heng and Barraclough (2007), health care and long-term care issues for the elderly reports, a 56 per cent of the elderly in Malaysia had no formal education. The existing sign in hospitals of Kota Kinabalu were "text only". They caused hospital patients to be confused during their diagnostic process. In particular, the elderly having vision problems and low literacy could not read the signs to determine the exact direction or accurate diagnostic procedure. It was observed that users do not make use of current signs, but would rather ask staff for directions.

Figure 2 Queen Elizabeth Hospital I signages are higher than the line of sight

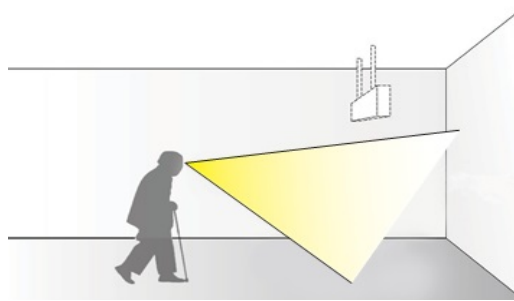Source: Research fieldwork conducted on September 2019

Figure 3 Viewing angle of an elderly

Source: Research fieldwork conducted on September 2019

Symbol is usually easier to understand than words. It is helpful for people with limited literacy. Symbols has become a universal language, but culture can influence meaning (Berger & Juntos, 2005). Compared to text signages, the use of symbols should be increased in the setting of healthcare signages to help users find their way (Rousek & Hallbeck, 2011). Inferred from the four major government and private hospitals in Kota Kinabalu selected, most hospitals' signages in Kota Kinabalu do not use universal healthcare symbols. Malaysia has not yet developed its own universal healthcare symbol. A set of universal healthcare symbols by Berger and Juntos (Figure 4) has been developed after testing in the US and several hospitals in the US have incorporated them in wayfinding signage with positive results (Cooper, 2010). Unfortunately, these 'universal healthcare symbols' have not been extensively tested in an international multicultural context to assess their application for global use. According to Lee et al. (2014) and Hashim et al. (2014), the study tested universal healthcare symbols by Hablamos Juntos in the United States, South Korea, Turkey and United Arab Emirates to compare the comprehension of symbols cross-country. The results of the study demonstrate that symbol comprehension can be varied significantly

in different countries. The search for universal healthcare symbols needs further study, as current research shows considerable misunderstanding of the symbols developed from the Hablamos Juntos series. The universal healthcare symbols developed by Hablamos Juntos has not been tested in the Malaysian environment yet. This prompted the author to carry out a questionnaire survey to collect the understanding of Hablamos Juntos universal healthcare symbols by the people in Kota Kinabalu.

Figure 4 The universal healthcare symbols (Berger & Juntos, 2005)

Colour Used on Signage

Colour, as a kind of information, is accepted by the brain faster than text. This colour strategy also reduces the need for multilingual signs. High contrast colours are also helpful for people with vision loss. According to Bronson (2020), due to the physical aspects of aging, the colour selection of health care environment should also be based on colour perception by Jennifer Paist said, an interior designer at Horty Elving in Minneapolis. Paist also said, as we get older, the lens of our eyes will become hard, thicker and more yellow. Colours look more grey, and it is difficult to see subtle tonal changes, so soft colours are not as good as bright ones. It is as if you are looking at everything through amber-coloured sunglasses. In addition, the sensitivity of the cells responsible for normal colour vision in retina decreases, resulting in less obvious contrast between different colours. This change affects depth perception and makes judging distances more

difficult. That is where high contrast can play a role to help delineate objects and levels. However, it needs to be used carefully to provide cues, and not to cause more confusion. A common clue that is helpful for understanding and wayfinding methods is colour.

The literature suggests that colour should be combined with other environmental clues, and the information conveyed by colour should be consistent throughout the whole hospital. Predictability can be achieved by reliably repeating key colours in the environment (Cohen & Weisman, 1991). Use of distinguishing colours is related to the increasing direction (Lawton et al., 1984). Among the four selected hospitals, only KPJ Sabah Specialty Hospital, employs coloured arrows integrating wayfinding signages into wall design were implemented to be followed easily in order to find the destinations (Figure 5).

Figure 5 KPJ Sabah Specialist Hospital coloured arrows integrating wayfinding signages into wall design

Source: Research fieldwork conducted on September 2019

Red is usually used as a warning signs, and it conveys warning and danger signals. Many of the warning signs consist of a red background with yellow or white lettering, by using symbols as warning signs are multi-language and does not need explanation, even if you can not read the text. Red is a very powerful colour, especially in crowded visual environment. Red is a kind of glaring signal. Black, white and yellow fonts work well too. Warning information is always displayed in red and white, yellow and black colours. Among the four selected hospitals, the warning signage of Gleneagles Kota Kinabalu Hospital is the best. Almost all warning signages in Gleneagles Kota Kinabalu Hospital contain warning colours, text and symbols (Figure 6), while Queen Elizabeth Hospital I and KPJ Sabah Specialty Hospital mostly contain warning colours and text. It

was observed that Queen Elizabeth Hospital II signages had no colour coding for navigation, no consistent theme regarding signage, no consistent colour usage causing confusion – e.g red colour toilet/seminar room/ pediatric cardiology signage (Figure 7).

Figure 6 Gleneagles Kota Kinabalu Hospital warning signages

Source: Research Fieldwork conducted on September, 2019

Figure 7 Queen Elizabeth Hospital II signages

Source: Research Fieldwork conducted on September, 2019

Contrast between the signage foreground and background is one of the most important factors for the ease of reading. According to Arthur and Passini (1992) by substracting the darker colour from the lighter colour, divided by the difference by the lighter, and multiplying by 100, we get brightness differential. When the brightness differential is 70 per cent or higher the legibility is assured. Calkins (2002) suggests signage by using hue, value and chroma or colour intensity, and higher contrast with the background. Queen Elizabeth Hospital I had yellow registration signage against an orange wall, the contrast ratio for displaying text on a coloured background for signage is 52 per cent (Figure 8), and some white

map signages against beige walls, causing the contrast ratio for display to be 28 per cent (Figure 9). When it is less than 70 per cent, the legibility cannot be assured and it is not recommended that those colours be used in that combination.

Figure 8 Queen Elizabeth Hospital I registration/admission signage and colour contrast by science

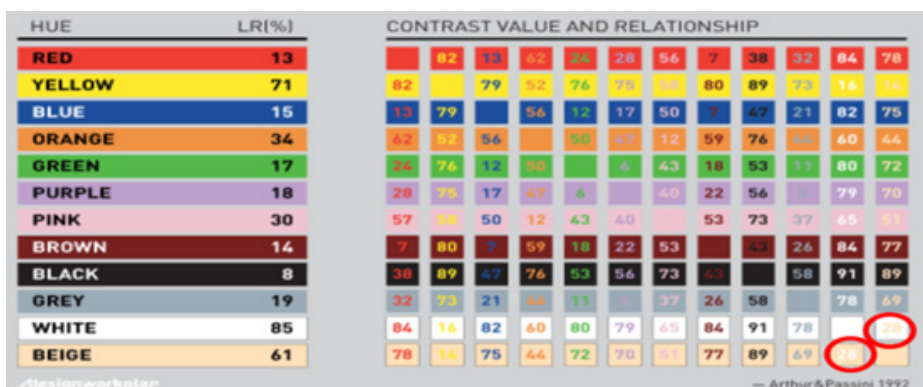Source: Arthur & Passini, 1992

Figure 9 Queen Elizabeth Hospital I map signages and colour contrast by science

Source: Arthur & Passini, 1992

This study conducted on four hospitals in Kota Kinabalu, Malaysia, focuses particularly on the signage design characteristics. The study findings indicate that the case study, which are the two private hospitals - KPJ Sabah Specialty Hospital and Gleneagles Kota Kinabalu, are performing moderately well on healthcare signage design aspects. And the two government hospitals - Queen Elizabeth Hospital I and II are not performing moderately in terms of their healthcare signage. The researcher reviewed key healthcare signage design aspects and suggested key potential points for healthcare signages improvement for the elderly based on the data findings. The in depth interviews were conducted with the 45 chosen elderly patients that frequent the hospitals. The information received, based on the feedback, were a range of responses regarding the clarity of Kota Kinabalu healthcare signages among the elderly. Some thought the signage was adequate while some thought it was confusing and people were not helpful when asked for directions. All respondents were of the opinion that once a person is familiar with a hospital, there were no problems at all, but when moving to a new facility they encountered difficulties finding their way. There were also comments such as, signage may be inadequate for the visually impaired or illiterate, and that additional use of picture symbols may be wise consider, and more people such as staffs could be needed to help with directions.

CONCLUSION

The aging population has become an issue to Malaysia. Demographic trends regarding the issue of elder highlights the fact that both current situations and future trends directly concern all of us. For some elders it is their present reality, for others is their future. We should take care of the needs of the elderly from all aspects. As they age, it takes the elderly a longer time to process information

and to retrieve memories. Most elderly with a decline in cognitive ability often have great difficulties with orientation and wayfinding in a building, especially in a large hospital building with complex layouts. According to the quantitative research conducted in phase I, the research findings reveals that there are some problems in the existing healthcare signages in Kota Kinabalu. There are no healthcare symbols that have been tested exclusively for the public in Malaysia, insufficient attention was paid to signs, the use of healthcare signages were not standardized, and the signages for hospital environment that can meet the needs of the elderly has not fully matured. These problems show that the Kota Kinabalu healthcare signages are still at a low level maturity. It is necessary to intensify research on hospital wayfinding signages and healthcare symbol, and formulate standard signages that the needs of the public as soon as possible, and improve the healthcare environment.

To minimize confusion and anxiety in the elderly, this study findings suggest some significant implications which are helpful to upgrade the construction of existing healthcare wayfinding signage for elderly to help the elderly receive safe, smooth and independent medical treatments. Signage should focus on simplicity, clarity and legibility which could reduce anxiety caused by disorientation. Too many signage may cause information overload in an environment to be too confusing for the elderly. Another approach to assist the elderly with wayfinding is to integrate wayfinding into interior design that guides the elderly to their destinations intuitively. It has been widely used in healthcare facilities to integrate wayfinding into floor or wall design and guide users to enter various functional areas. This kind of design concept can be further developed and applied to a wider range of building types. For English or Malay text, a combination of capital and lower case lettering would be easier to read than all uppercase letters. It is difficult for most elderly to see the signages hinger than the top of their heads when watching at close range, so the position of signs and the size of the characters should be determined according to the expected visual angle and distance. High visual contrasts should be provided between the content and its background. The thickening and yellowing of the lens in mature eyes will change the way colour is perceived and needs to be taken into consideration. Some elderly people might have difficulty in distinguishing colours with slight differences. Using colour contrast can help people with poor colour vision to attract attention. The universal healthcare symbols should be included in the wayfinding signage system, because most elderly with cognitive impairment often respond better to symbols than text or colour content.

Therefore, the author has completed the phase I using walk-through observation and semi-structured interviews from the existing public and private hospitals in Kota Kinabalu, Malaysia as means of quantitative research field with analytical and critical literature review and is now conducting phase II qualitative research primary data through survey and questionnaire. The phase II qualitative research will be conducted via a survey of the study testing the understanding of Hablamos Juntos universal healthcare symbols by the people from Kota Kinabalu that are designed to meet the approval of the public. Symbol is easy to understand with textual description, a further improvement in terms of design could take place to cause the improvement in terms of the effectiveness, helpfulness, ease of use and suitability of the healthcare signage. This study not only pays attention to the needs of the elderly, but also provides designers with design methods and ideas to improve the design quality of healthcare signage, which makes the communication of design information more scientific and providing users with a more humanized healthcare environment.

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