

Social Considerations of the Elderly for Home Environment Design Based on COVID-19 Pandemic Situation

Yunita Setyoningrum, Shirly Nathania Suhanjoyo, and Amanda Muliati

Abstract

The elderly often experience degenerative process that affect their activities and how they interact socially in their environment. Based on these conditions, this article explored the elderly feelings of anxiety related to their decreased physical mobility condition, and how they cope with social disconnectedness and health protocols in pandemic situation. This research is quantitative descriptive. Data collection was carried out through interviews and surveys, to gather the elderly condition and opinion about physical health and mobility, their feeling of anxiety facing COVID-19 pandemic and toward social disconnectedness when they perform COVID-19 health protocols. This research aimed to find social features for home environment which able to accommodate elderly people needs of social connectedness, independence, and self-esteem. The research showed that the elderly felt confident on their health and physical mobility, even though they felt anxiety toward COVID-19. Physical mobility, COVID-19 prevention, and social connectedness have no significant effect on the anxiety variable in the elderly. Based on the gathered data, this research proposed that creative industries involve with home environments' designs should consider to develop designs that are enable the elderly to move around safely and therefore maintain their self-esteem, meet with others on-site safely, and to meet others and connect with outside world virtually.

Keywords

COVID-19 pandemic • Elderly • Home environment • Anxiety • Physical mobility • Social disconnectedness

1 Introduction

Design for sustainability is a design approach that aims to reduce the negative impact of design on the environment. Design for sustainable aging implies creating a physical and service environment that is resilient and adaptable to the needs associated with the aging process (Wu & Kaushik, 2015). Design for sustainable aging becomes more important since people nowadays have longer life expectancy due to better quality of health care and a decrease in mortality rate. WHO stated that life expectancy globally has increased from 66.8 years old to 73.4 years old in the recent ten years (Cau et al., 2020). It is predicted that between 2015 and 2030 people aged 60 years or over will grow by 56% and reach 1.4 billion in 2030. The number is around 16.5% of the global population and will continue to grow by 2050 to 22%. Therefore, it is urgent to construct global programs for the well-being of the aging population (Dugarova, n.d.).

The aging population is often neglected in any economic and social development agendas around the world, their voices are unheard, and their needs are overlooked because this population is considered as inactively contributing to the community. The 2030 United Nation's Sustainable Development Goals has a transformational vision to 'leave no one behind, which means that all sustainable development agendas should include all persons of all ages. This means older persons have equal rights to be included in all the development agendas. In particular, development agenda that mentioned the inclusion of older person is on the Goal no.3, which is to ensure healthy lives and promotes well-being for all at all ages (*Transforming Our World: The 2030 Agenda for Sustainable Development*, 2015). The UN

Y. Setyoningrum (✉) · S. N. Suhanjoyo · A. Muliati
Department of Interior Design, Faculty of Arts and Design,
Maranatha Christian University, Bandung, Indonesia
e-mail: yunita.setyoningrum@art.maranatha.edu

S. N. Suhanjoyo
e-mail: shirly.ns@art.maranatha.edu

A. Muliati
e-mail: amanda.muliati@art.maranatha.edu

created a plan for Decade of Healthy Ageing (2021–2030), which brings together governments, civil society, professionals, academicians, media, and private sectors to improve the lives of the elderly, their families, and the community in which they live. The plan was developed following the UN resolution on global health and foreign policy in 2020. The collaboration plan shall focus on four areas: (a) age-friendly environment, (b) combatting ageism, (c) integrated care, and (d) long-term care (*United Nations Decade of Healthy Ageing (2021–2030)*, 2020). Aligned with the UN's SDG and plan for healthy aging, studies on a home environment that will enhance the lives of older people should become one of the strategies of house design planning. Compared to public facility environments' design, home environments' designs are less thought because the designs are personalized to the homeowners.

Older people needs are often been stereotyped, and in creative industries, they are considered as grey market (Mortimer, 2017). Comfort and a sense of belonging at home are very necessary for the elderly because this can affect the condition and quality of life of the elderly, including good mental and physical health. Hence, the home environment for the elderly should be properly designed to accommodate their daily life in various activities, and this includes the need for privacy, creating various choices, and independence for the elderly. The meaning of 'home' does not only indicate an area of ownership or a place to live but also has cultural, sociological, political, and economic meanings.

In this research, we explored elderly situation during COVID-19 pandemic, especially because the elderly physical condition (such as decreased mobility and body balance) demands special assistance while running their daily activities in their homes. During the COVID-19 pandemic, many elderly lives were affected because of the health protocols such as stay at home, social distancing, and limited access to public buildings. Many of them hardly accustomed to technology use, so they had difficulties switching their activities to digital/online format without assistance from younger peers. Therefore, the elderly are at risk of feeling excluded from the digital world (Seifert, 2020). Elderly physical condition might have decreased, such as their visual and hearing performance, which give them difficulties to operate machines and other high technology gadgets. Moreover, some of them might had decreasing cognitive ability, such as memory loss, confusion, disorientation to time, space, and location, and have disorganized thinking (Iancu & Iancu, 2017).

The degenerative process of the elderly occurs at different times in each individual, and thus, it cannot be avoided. The degenerative process will occur in the physical and mental aspects. Physical degeneration includes conditions that decrease motor, sensory or sensory functions, and sensory functions. Meanwhile, mental degeneration includes

cognitive functions and interpersonal functions. The condition of this decline should not make the elderly dependent on others. Elderly independence means they can perform all their daily activities by themselves without being assisted by others. When the elderly inadvertently reduce their activities due to a lack of confidence or other problems, their biological age will gradually be accelerated. It is because their physical or mental functions become less active or even inactive. The elderly might experience a decline in cognitive function and interpersonal skills which often causes stress and worries about being excluded and underappreciated. The condition would affects their activities and how they interact socially in their environment. It can even results in mental disorders and emotional problems, such as depression, anxiety, and distracted self-concept (Hurlock 1980, as cited in Ulfiana et al., 2017).

Former researches such as mentioned above had been concerned that during COVID-19 social distancing and stay-at-home situation, the elderly might experienced greater adverse effect due to their decreased physical condition. However, early period of COVID-19 pandemic research findings evidently showed that the elderly were more resilient in facing the pandemic rather than the younger peers. The resilience was proven from low reported data of elderly anxiety disorders and depressive disorders. Thus, these research findings contrast the numerous personal stories about elderly difficulties during pandemic (Vahia et al., 2020).

Research by Karma, Ada-Katrin, and Handler-Schuster in Switzerland (2021) identified four needs that are related and should be highlighted as important when facilitating a home environment for them, which are: (a) independence and autonomy, (b) social security, (c) structure in daily life, and (d) community and belonging. The elderly has their own experience, thus shaping their perspective. Along with the decreased performance of their physical and mobility, the elderly sometimes find it hard to accept help from other people because of the fear of losing autonomy. On the other side, they need social security which means having someone to trust. The structure in their daily life means a package of tasks that has to be done each day. When the elderly have completed all tasks, they will feel successful and therefore keep their self-esteem and motivation to live. The elderly with decreased mobility might be constrained in their social life. Thus, it is important to promote a sense of belonging to a community, such as the neighborhood as the closest (Karma et al., 2021).

Departed from the confusement about whether the elderly experienced greater adverse effect during COVID-19 isolation and their needs of home environment, this research explored situation and opinion of the Indonesian elderly on COVID-19 effect to their daily life at home. The research questions are: (1) How do the elderly react to COVID-19

pandemic and the demand to follow health protocols such as social distancing, staying at home, considering their specific needs of health care because of decreased mobility and body balance that might need assistance from others? Do they really feel social disconnectedness or anxiety during period of pandemic staying at home? (2) How do the elderly assess their home environment related to their need for independence versus the decreasing physical mobility and body balance while doing their daily activities? Do their home environment comfortable enough to live in isolation during pandemic? Based on those main questions, this research aimed to find out how the elderly feel about their home environment during COVID-19 which affect their independence and autonomy, social security, social connectedness to the community, and their daily life structure.

2 Methods

This research will examine several concepts which are related to decreased physical mobility condition, and how they cope with social disconnectedness and health protocols in pandemic situation. The research is quantitative descriptive using multiple linear regression analysis. The first step of data collecting is through literature review. From the literature review, we established main variables to be further examined: (a) physical health, mobility, and body balance, (b) personal performance of COVID-19 health protocols, (c) feelings toward social disconnectedness, and (d) anxiety when facing COVID-19 pandemic. We derived these variables from Karma's four needs of elderly home environment to meet elderly life quality (Karma et al., 2021) which can be seen in Table 1. We focused on the situational background of elderly decreased physical mobility and COVID-19 pandemic health protocol practices. We assumed that decreased physical mobility of the elderly impacted their independence and autonomy. Hence, the elderly physical mobility should be assessed. The COVID-19 pandemic unstable environment was assumed to relate with the elderly social security which

caused fear of self-health, death, and uncertainty in all aspects of social life. Hence, we explored how the elderly perform their daily COVID-19 prevention health protocols. The COVID-19 health protocols such as social distancing, stay-at-home, and limited access to public places were assumed to relate with elderly sense of belonging to their former community (family, circles of friends, religious community, workplace, etc.) and impacted their structure of daily life. Hence, we explored the elderly feeling toward social connectedness and anxiety.

The research data was collected through online questionnaire (Google Forms) during the lock-down period in the COVID-19 pandemic situation (2020). The participants are elderly aged 55 to 89, which were living in private houses in Indonesian urban cities such as Jakarta, Tangerang, Bandung, and Surabaya. Participants answered a 15-min survey which questioned their physical and mobility overall condition, daily preventive action to avoid getting infected of COVID-19 virus, social connectedness situation during COVID-19, and level of anxiety during pandemic situation. We also collected data on the type of houses they were living at, numbers of people living together in their houses and their ages as can be seen in Table 2. The quantitative study used multicollinear regression analysis. Before conducting analysis, this research had been through prerequisite tests, which are validity test, reliability, normality, linearity, heteroscedasticity, multicollinearity, and autocorrelation. 3.2. We used *f*-test and *t*-test to examine regression analysis. All the tests were done using IBM SPSS 24.

3 Results and Discussion

3.1 Test Result (Validity Test, Reliability, Normality, Linearity, Heteroscedasticity, Multicollinearity, and Autocorrelation)

The validity test was conducted both manually and using SPSS by correlating each question with the total score with

Table 1 Hypotheses to variables

Background/Situation	Needs (Karma et al., 2021)	Variable to assess
Decreased physical mobility	Independence, autonomy	Physical mobility
COVID-19 pandemic situation (fear of self-health and death, unstable environment)	Social security	COVID-19 prevention (performing health protocols)
COVID-19 pandemic situation (social distancing, stay-at-home, and limited access to public places)	Sense of belonging, community	Social connectedness
COVID-19 pandemic situation (social distancing, stay-at-home, and limited access to public places)	Structure of daily life (habit)	Anxiety

Source research report

Table 2 Distribution of respondents

Characteristics	<i>N</i>	%
Gender	40	
1. Male	13	32.5
2. Female	27	67.5
Age	40	
1. 55–64	10	25
2. 65–74	24	60
3. 75-up	6	15
Level of education	40	
1. Elementary school	1	2.5
2. High school	8	20
3. University (diploma/bachelor degree)	20	50
4. University (master degree)	6	15
5. University (doctoral degree)	6	15
Job status	40	
1. Employed	8	20
2. Entrepreneur or self-employed	8	20
3. Retiree	16	40
4. Unemployed	8	20
Physical health	40	
1. Healthy	30	75
2. Has chronic illnesses (diabetic, cancer, asthma, heart condition, and hypertension)	10	25
Number of people living together	40	
1. 2 or less	11	27.5
2. 3–5	20	50
3. 6 and more	9	22.5

Source manual data analysis

Pearson correlation (comparing *r*-table and *r* value from correlation test). The validity was tested from the answer score of 41 questionnaire questions gathered from 40 respondents. From the result of correlation test, we found that 9 of 41 questions are not valid because the value of *r* was less than the *r*-table. These 9 invalid questions were excluded from the next test. In the reliability test, both the total questionnaire and each question have Cronbach's alpha value > *r*-table 0.3044, which means that both each question and total questionnaire were reliable. Normality test from test 1 sample Kolmogorov–Smirnov showed that Asymp. Sig. (2-tailed) is = 0.082 > 0.05, which means that the data were distributed normally. Linearity test resulted in deviation value from linearity sig. 0.537; 0.506 and 0.347, all of them > 0.05. Therefore, it can be concluded that there is a significant linear relationship between dependent and independent variables. Based on heteroscedasticity test, the sig. value of all independent variable are > 0.05 which

means there are no heteroscedasticity problem. From the multicollinearity test, the data is considered to have no multicollinearity if the VIF value is less than 10.00. It is known that the VIF values of all independent variables are all below 10.00, so it can be concluded that the data is free from multicollinearity problems. Autocorrelation test uses Durbin Watson value, and the Durbin Watson table value is collected for the number of samples $n = 40$ and $k = 3$, namely $dL = 1.3884$; and $dU = 1.6589$. It is known that Durbin Watson's value from test using SPSS is $1.834 > 1.6589$, which means that there are no positive autocorrelation; while $(4-dw)$ is $2.1663 > 1.6589$, which means that there are no negative autocorrelation.

3.2 Regression Analysis to Examine the Effect of Independent Variables to Dependent Variable

Table 3 shows descriptive measurement from 40 respondents. The table shows the minimum, maximum, mean, and deviation standards of all the variables. Respondents' physical and mobility condition scores are excellent. Most of the respondents claimed that they did not have difficulties related to their physical and mobility conditions (mean value was nearly maximum). But according to the minimum value, some respondents have poor physical and mobility conditions. Some of them claimed to have difficulties in home cleaning, cooking and preparing food, and shopping for groceries and personal medicines. They also have difficulties to do squat to stand up position and bend their back (bow position).

COVID-19 preventive action variable analysis showed that respondents obtained excellent results. This means that most of the elderly take preventive measures very well. However, there are still elderly people who tend not to follow proper health protocols (e.g., not keeping their distance from other people, not cleaning themselves after traveling, not basking in the morning sun, and other things that should be done).

Social connectedness variable analysis showed that respondents also obtained excellent results, which means most of them had already practiced COVID-19 health protocols such as staying at home and social distancing. They also limit physical interaction with others and prefer to do online interaction. But few respondents have low value, which can be assumed that these respondents have difficulties using digital technology such as online shopping, conducting virtual meetings, and doing religious worship online.

COVID-19 anxiety variable analysis showed that most respondents did not feel anxiety. We assume that they did not have (or have less) anxiety because they were still living together with someone else (spouses/children/maids) and evaluated themselves as healthy elderly. Indeed, few of the

Table 3 Descriptive measurement result

Descriptive statistics					
	<i>N</i>	Minimum	Maximum	Mean	Std. deviation
Physical mobility	40	39.00	75.00	65.8000	8.78285
COVID-19 preventive action	40	18.00	40.00	34.5500	4.84080
Social connectedness	40	6.00	20.00	15.8000	4.17072
Anxiety	40	15.00	25.00	21.8750	2.84819
Valid <i>N</i> (list wise)	40				

Source Data analysis with IBM SPSS statistics

Table 4 *f*-test result

ANOVA ^a						
Model		Sum of squares	df	Mean square	<i>f</i>	Sig.
1	Regression	12.996	3	4.332	0.514	0.675 ^b
	Residual	303.379	36	8.427		
	Total	316.375	39			

^aDependent variable: Anxiety

^bPredictors: (Constant), social connectedness, COVID-19 preventive action, physical mobility

Source Data analysis with IBM SPSS statistics

respondents felt discomfort after reading/hearing the news about the pandemic or because of loneliness due to having to stay at home.

Table 4 shows that Sig. value = 0.675, which means that simultaneously all the independent variables were not significantly correlated to the dependent variables.

From Table 5, it can be seen that the Sig. value of all variables > 0.05. It means that partially all/each independent variable has no significant effect on the dependent variable anxiety. Positive values on physical and mobility variables indicate that the better the physical and mobility variables, the higher the anxiety variable value (although the effect is small/not significant). This means that the health of the elderly in terms of independence can increase self-confidence, so that the elderly are not easily anxious.

The effect of the COVID-19 preventive variable is negative and very small (not significant, namely -0.029), meaning that

the better the COVID-19 preventive variable, the lower the anxiety variable (although the relationship is very small). The more rules there are, the more anxiety they feel in the elderly. In the current condition, it is possible that the existing regulations can still be accepted by the elderly or because of the condition of the elderly who are obedient, and understand the conditions; which is evident from the COVID-19 preventive variable which is on average very good.

From the social connectedness variable, it can be seen that the higher the value of the variable, the higher the value of the anxiety variable. This means that if the communication is more secure, the elderly will feel safe and not anxious. The small/insignificant effect on the independent variables in this study indicates that there are other variables outside the research model that affect the anxiety of the elderly who are respondents.

Table 5 *t*-Test result

Coefficients						
Model		Unstandardized coefficients		Standardized coefficients	<i>T</i>	Sig.
		<i>B</i>	Std. error	Beta		
1	(Constant)	17.563	4.575		3.839	0.000
	Physical mobility	0.030	0.059	0.093	0.510	0.613
	COVID-19 preventive action	-0.029	0.107	-0.050	-0.275	0.785
	Social connectedness	0.110	0.107	0.174	1.025	0.312

^aDependent variable: Anxiety

Source Data analysis with IBM SPSS statistics

4 Conclusion

The results of this study indicated that the variables of physical mobility, COVID-19 prevention, and social connectedness have no significant effect on the anxiety variable in the elderly. This research is limited by the variables of anxiety, physical and mobility, COVID-19 prevention, and social connectedness, with the limitation of the object of research is the elderly. We suggest further researches to use other variables that may affect anxiety caused by pandemic, such as issues related to spirituality, living conditions, news in the media, and others.

Overall, there is anxiousness as the result of elderly reaction to COVID-19 pandemic, but it is not significantly correlated with their decreased physical mobility and the demand to follow health protocols such as social distancing, staying at home. It seems that all respondents did not feel social disconnected during stay-at-home period or social distancing, as long they have companies at home (spouses/children/maids) and have access to outside world virtually. The elderly assess their home environment comfortable enough to cover their need for independence and the decreasing physical mobility.

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