

Public Housing Environment and Depression: Case Study Bandar Baru Sentul

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ABSTRACT

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Depression is one of the common mental health problems worldwide, and in Malaysia, it is mostly from low-income groups. Due to this factor, most low-income groups in urban areas will reside in public housing due to high living costs. This study aims to understand the public housing environment's effect on mental health. The objectives are to study and analyses states of depression in public housing and its relationship with the surrounding built environment. This study was conducted at the Federal Territory of Kuala Lumpur, Malaysia. The questionnaire is an adaptation of Depression, Anxiety and Stress Scales (DASS-21). The sampling technique using homogenous sampling in the selected case study area. The selected area is based on several characteristics, which are housing typologies, green areas, and density. The collected data were analysed using correlation analysis and compared with the theoretical framework to study the relationship between the surrounding environment and depression. The results have shown that public housing's surrounding built environment is associated with depressive symptoms and mental health wellbeing. The findings also show that the surrounding built environment may contribute to mental health wellbeing and worsen existing sufferers' condition.

Keywords: built environment; urban; depression; mental health

INTRODUCTION

Depression is a common mental health problem worldwide, affecting more than 300 million people, equivalent to 4.4 per cent of the world's population (WHO, 2017). Depression can affect the person feeling, thinking, and handling daily activities such as sleeping, eating, or working (Mental Health Handbook,2019). According to World Health Organization (WHO) (2010), by the year 2030, depression will be the second-highest cause of disease burden in low- and middle-income countries and the third highest in the low-income countries. According to the National Institute of Health Malaysia (2019), the Below 40% (B40) group has the highest prevalence compared to the Medium 40% (M40) and Top 20%(T20) income group with 2.7 per cent. The public housing is normally dwelled by the B40 group. Public housing, especially in the Federal Territory of Kuala Lumpur, typically uses the concept of renting at an affordable price. Public housing also usually comes with a minimum size of housing and limited provision of facilities. By the year 2030, UN-Habitat (2015) expecting six out of ten people will be living in the urban areas and 1.6 billion people living in inadequate conditions in the urban area, especially in the developing country.

As rapid urbanisation is exerting pressure on the urban environment, the number of urban populations increases along with the prevalence of depression in the urban area. Most of the urban population in the low-income group live in public housing. Thus, this study aims to understand and study the public housing environment's effect on mental health conditions, especially depression. The objectives are to study and analyse states of depression of the residents of public housing in the selected sites and their relationship with the housing environment.

LITERATURE REVIEW

In recent years, the built environment and mental health have been a topic of interest. Since the number of mental health problems has increased by year, more researchers started to developed interest in these problems. However, more research is needed to understand the relationship between of built environment and mental health in various ways. In order to have a better understanding, a theoretical framework of the urban environment and mental health is developed (see figure 1).

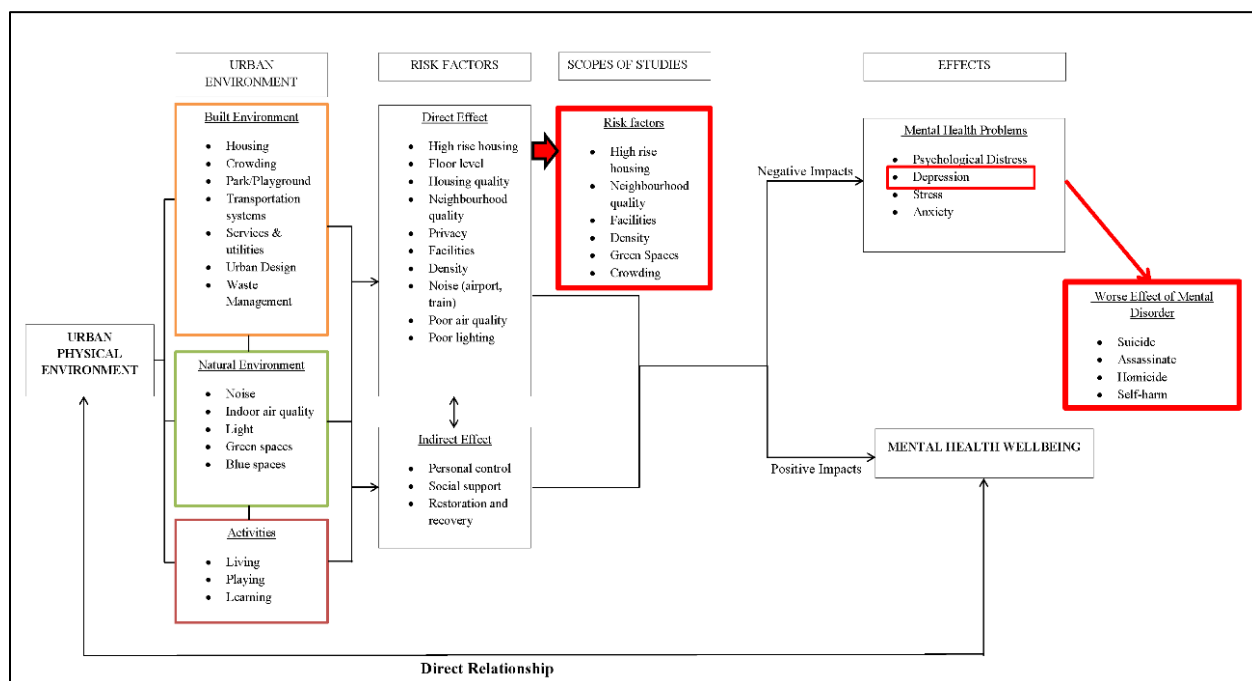


Figure 1: Theoretical Framework of Urban Physical Environment and Mental Health

Based on the theoretical framework, the environment consists of the built environment, natural environments, and activities. Built environment and mental health can affect depression, and improve some of the built environment features can decrease the symptoms (Ceñido et al., 2019; Melis et al., 2015). The natural environment can also increase the positive effects and lower the risk of poor mental health (Mitchell, 2013; Thompson et al., 2019; Wendelboe-Nelson et al., 2019). Activities are the supporting elements to the built and natural environment. The activities conducted by a person, such as walking, physical activities, interact with nature mitigate the risk and improve mental health problems (Guo et al., 2019; Zhang & Li, 2017). This study considers these three environmental elements to study the risk from these environments to mental health.

The theoretical framework (see Figure 1) is shown the risk factors derived from these environments. Every element of the environment can have direct and indirect effects. For this study, the relationship study on the direct effect of the environment on mental health. The characteristics of environments such as high-

rise residential, floor levels, privacy, facilities, density, and poor lighting can directly affect mental health (Evans, 2003). These effects are measure based on the health and wellbeing of the residents. The environments and the environment's characteristics that have risk factors towards mental health will be measured to find the relationship between environment and mental health.

Public Housing and Depression

Housing as a built environment itself has several research pieces of evidence that relate to mental health. The feeling of overcrowding, structural problems, poor housing conditions, and lacking spaces are significantly associated with high levels of depression (Firdaus & Ahmad, 2014; Singh et al., 2019). Hoisington et al. (2019) stated that the person with lower socioeconomic status has a limited ability for housing selection resulting in a decline in access to green spaces and built environment feature that decrease the mental health wellbeing. Rautio et al. (2018) and Suglia et al. (2011) also found that poor housing quality, lack of green spaces, noise annoyance, and air pollution are related to depression symptoms. In addition, research conducted by Wang et al. (2018) in Mainland China shows that residents with better housing quality, adequate spaces, and good housing conditions have better mental health than those who live in poor housing conditions and inadequate quality spaces. Barros et al. (2019) stated that high-rise residential buildings have worse mental health outcomes than other residential buildings. Multiple studies have confirmed that housing or built environment is associated with mental health in various ways.

METHODOLOGY

This study aims to study the relationship between public housing environments and depression and the factors contributing to mental health problems. An area in the Federal Territory of Kuala Lumpur was selected based on several characteristics, which are housing typologies, green areas, and density. The selected areas were two public housing residential areas known as Sri Perak Public Housing and Sri Negeri Sembilan Public Housing. Each area has different types of housing typologies, green areas, and density. A set of questionnaires adapted from Depression, Anxiety and Stress Scales (DASS-21) escalates to the residents for both areas. The sample size (N=102) was selected using the homogenous sampling method. The respondent's selection is randomly based on their availability and willingness to participate in the survey. The respondents selected may or may not experience any mental health problems.

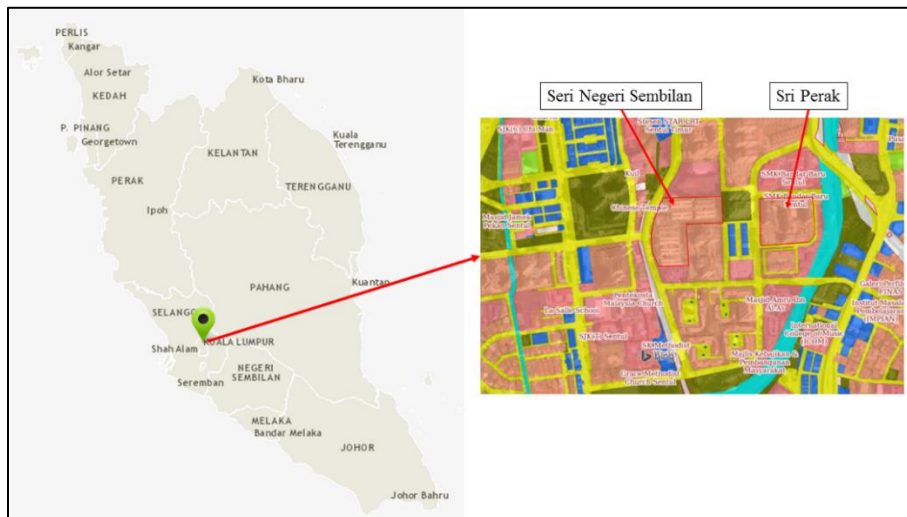


Figure 2: Location of Site Selection (Source: PlanMalaysia, 2019)

The questionnaire is divided into two sections. The first section is the demographic background and the second section is the DASS-21 questions. The second section consists of seven questions on depression, eight questions on anxiety, and eight questions on stress in evaluation scales format. The results from the DASS-21 questionnaire showed the states of mental health of the respondents. The statistical analysis was performed using the Statistical Package for Social Sciences Version 26.0 (SPSS) for the descriptive and correlation analysis. The correlation analysis uses Spearman analysis with a significance value set at $p < 0.05$ to explore the relationships. The dependant variables are states of mental health for depression which assess using the DASS-21 questionnaire. The independent variables are the respondents feeling when they are living in their home in public housing. The Spearman correlation analysis showed the relationship between public housing environment conditions and respondents' mental health states focusing on depression.

RESULTS

The participants for the conducted surveys answered all the questions accordingly. The total number of male respondents is 42 (41.2 per cent), and female respondents are 60 (58.8 per cent). Most of the respondents are 25 years old to 54 years old (66.6 per cent). There are 25.5 per cent of respondents from above 55 years old and 7.8 per cent from below 24 years old. The highest academic qualification of the respondents is a mostly secondary school (52 per cent). There are 21.6 per cent graduating from college or university, and 20.6 per cent finished primary school. Only 5.9 per cent does not have any academic qualification.

The employment status of the total respondents is 48.0 per cent employed. About 33.3 per cent of the respondents are housewives, and 3.9 per cent are students. However, 14.7 per cent of the respondents are unemployed. The unemployment is due to old age and in the mid of job seeking. The household income of the respondents is ranging from below RM 1,000 to RM 6,000. For household income below RM 1,000, there is 49.0 per cent of the respondents. While for household income RM 1,001 to RM 3,000 is 46.1 per cent of the respondents. There is only 4.9 per cent of the respondents have a household income of more than RM 3,000. The number of households for the surveys ranges from 1 person to 9 persons in one housing unit. Most of the respondents live five persons in one unit of the house, 20.6 per cent. There is 58.6 per cent of respondents living together with more than six persons in one housing unit. Meanwhile, 55.9 per cent of respondents are living with below four persons in one unit of housing.

Depression States of Study Area

The states of depression are divided into two selected housing areas to compare the severity of the depression. The depression results are calculated using the DASS-21 template, and these results are a self-reporting scale. The result for each area is shown in Table 2 below.

Table 1: Respondent's Background Profile

Variables	Nos	Percentage (%)	
Gender	Male	42	41.2
	Female	60	58.8
Age	15 – 24 years old	8	7.8
	25 – 34 years old	24	23.5
	35 – 44 years old	24	23.5
	45 – 54 years old	20	19.6
	55 – 64 years old	14	13.7
	Above 65 years old	12	11.8
Academic Qualification	Primary School	21	20.6
	Secondary School	53	52.0
	University / College	22	21.6
	None	6	5.9
Employment Status	Employed	49	48.0
	Student	4	3.9
	Housewife	34	33.3
	Unemployed	15	14.7
Household Income	Below RM1,000	50	49.0
	RM1,001 – RM3,000	47	46.1
	RM3,000 – RM 6,000	5	4.9
Number of Households	1 Person	9	8.8
	2 Persons	16	15.7
	3 Persons	15	14.7
	4 Persons	17	16.7
	5 Persons	21	20.6
	6 Persons	9	8.8
	7 Persons	10	9.8
	8 Persons	4	3.9
	9 Persons	1	1.0

Table 2: The States of Depression in Study Area

Depression Severity	Sri Perak		Sri Negeri Sembilan	
	Nos	%	Nos	%
Normal	34	66.7	28	54.9
Mild	7	13.7	9	17.6
Moderate	7	13.7	7	13.7
Severe	2	3.9	4	7.8
Extremely Severe	1	2.0	3	5.9
Total	51	100.0	51	100

From the result of the DASS-21 survey in both selected area (see Table 2), it is shown that Sri Negeri Sembilan Public Housing has a higher percentage of respondents having depression, which is 45.1 per cent (23 respondents) compared to Sri Perak Public Housing 33.3 per cent (17 respondents). However, each area

has a worrying number of persons having depression. Sri Negeri Sembilan has a higher number of respondents with extremely severe states of depression (5.9 per cent) compared to Sri Perak (2.0 per cent). There are many causes for depression, and the surrounding built environment also could contribute to these statistics.

Theoretical Framework and Study Area

Based on the theoretical frameworks, several items or components related to the built environments can affect mental health. Table 3 shows the built environment components for each study area.

Table 3: Components of Built Environment Comparison in Study area

Built Environment Components	Sri Perak	Sri Negeri Sembilan
Number of floors	18 floors	Five floors
Density	494 person per acre	304 person per acre
Total acreage	7.23 acre	9.20 acre
Housing Typologies	Linear Block	Linear Blocks with Courtyards
Area of Green Spaces	2.12 acres (29.3 per cent)	0.59 acres (6.4 per cent)
Distance to nearest Public Transport	750 meters (9 minutes of walking distance)	450 meters (5 minutes of walking distance)
Distance to Public Facilities	240 meters (3 minutes of walking distance)	400 meters (5 minutes of walking distance)

Table 3 shows the related components of built environments derived from the theoretical frameworks. Based on the table, it is shown that Sri Perak has a higher density compared to Sri Negeri Sembilan. The number of floors also differs where Sri Perak has 18 floors with an elevator; meanwhile, Sri Negeri Sembilan is five floors, a walk-up flats design. Comparing the housing typologies, Sri Negeri Sembilan has poor lighting due to the design of linear blocks with courtyard compared to Sri Perak, which more open because of linear block design and only one row of housing units for each block. Sri Negeri Sembilan is also located nearest to the Light Rail Transit station, which can cause noise to the residents compared to Sri Perak. Other than that, Sri Perak also has more centralised green spaces or recreation areas (29.3 per cent) than Sri Negeri Sembilan (6.4 per cent). Sri Perak is located near the centralised public facilities called Urban Transformation Centre (UTC) compared to Sri Negeri Sembilan. In order to analyse these relationships, a correlation analysis is conducted.

Correlation Analysis of Public Housing and Study Area

To understand the relationship between public housing and depression, a correlation analysis between depression and the respondent's feeling towards their home or living spaces is conducted using the Spearman correlation. The result of the analysis is as shown in Table 4.

Table 4: Correlation of Depression and Public Housing

Study Area		Negative feeling towards the neighbourhood	Could not do things at home	Feeling downhearted and blue when at home	Unable to become enthusiastic about anything when at home
Sri Perak	Depression Coefficient (r)	0.348*	0.476**	0.790**	0.601**
	Significance p Value	0.012	0.000	0.000	0.000
Sri Negeri Sembilan	Coefficient (r)	0.430**	0.713**	0.794**	0.750**
	Significance p Value	0.002	0.000	0.000	0.000

Notes:

* correlation is significant at the 0.05 level

** correlation is significant at the 0.01 level

Based on the correlation analysis, both areas have a high correlation of depression towards respondents feeling of their home and neighbourhood area. However, Sri Negeri Sembilan shows a higher correlation compared to Sri Perak. The feeling of negativity towards the neighbourhood indicates that Sri Perak has significance at the 0.05 level; meanwhile, it shows at Sri Negeri Sembilan at 0.01 level of significance. The negative feeling toward the neighbourhood is due to feelings of insecurity, dark and gloomy surroundings, and lack of privacy. The respondents' feeling could work up the initiatives to do things at home shows a high correlation in Sri Negeri Sembilan with significance at a 0.01 level compared to Sri Perak with a medium correlation at 0.01 significance level. The respondents could not initiate doing things at home because they may be uncomfortable staying at their own house.

For both respondents feeling downhearted and unable to become enthusiastic when staying at their own house shows a significance at 0.01 level for both areas. The respondent's lack of privacy may cause this feeling, lack of communication due to in-house crowding, gloomy surroundings, lack of space for physical activities, and sleep disturbance.

The correlation analysis shows that the respondent's feeling towards their living spaces has relationships with depression. This relationship is in two ways where their living spaces could give them depression, and due to depression, the feeling of uneasiness and uncomfortable in their living spaces is created.

DISCUSSION

From the results, it is clearly shown the relationship between built environment and depression. The correlation results align with the built environment factors that can contribute to depression or other mental health problems. Based on the theoretical frameworks, high-rise residential, floor level, poor lighting, and density can contribute to mental health problems. Sri Perak has a higher level than Sri Negeri Sembilan; however, Sri Perak's design is more conducive and has greater green spaces or recreational areas. It has lower depression rates than Sri Negeri Sembilan. Most public housing in the Federal Territory of Kuala Lumpur uses a linear block with a courtyard design. However, this design gives less lighting, and the corridor becomes dark and gloomy.

Green spaces or recreational areas are important for each housing scheme, whereas the place is the focal point of community gathering, physical activities, and meeting area. Green spaces or recreational areas have the evidence to reduce the risks of depressive symptoms (Nadha Hassen, 2015; Song et al., 2019; Wang et

al., 2019). Noise from train and transport is also associated with depression (Beemer et al., 2019; Beutel et al., 2016; Hoare et al., 2019; Hoisington et al., 2019).

Based on previous studies and this study, it is found that the built environment, especially housing, has a relationship with depression directly. However, this study has its limitation, especially regarding the self-reporting scales questionnaire, which can create potential bias answers by the respondents.

CONCLUSIONS

The results from this study and published data support this conclusion. Overall, the correlation analysis supports the theoretical frameworks where a built environment can contribute to mental health wellbeing. From this study, it is also concluded that public housing with insufficient spaces, green spaces, low quality of neighbourhood and design can contribute to depression. The effect from the surrounding environment of public housing can affect directly or indirectly. Most of the public housing residents are in a low-income group, which could not afford to choose a better and comfortable housing scheme. Most respondents prefer to live in public housing, especially in urban areas, because of the high cost of living and smaller household income. The design or the housing typologies also play an important role as it will affect the surrounding environment even though the number of levels and density is lower than the high-rise buildings.

Public housing in urban areas usually builds in low quality, and most of the building deteriorates due to the building age. Other than that, the provision of greenspaces or recreational areas is also important as people with in-house crowding will tend to find a place for relaxation and stress release other than physical activities beneficial for both mental and physical health. Living in an overcrowded, deteriorated building, poor lighting, high density, and insufficient green spaces can contribute to depression and worsen existing patients with depression. Thus, public housing planning should consider the typologies, the size of housing units, and provision of adequate public spaces to give the residents a sense of belonging, security, and quality to promote good mental health.

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