



RESEARCH ARTICLE

Analysis of Comfort Index for the Physical Environment of Mental Health Care Services: Towards Adolescent Well-Being in Peninsular Malaysia

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ABSTRACT

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One factor in the comfort and effectiveness of mental health care services for the well-being of adolescents is a physical environment that is conducive, sufficient, and suitable for them. However, this study has yet to be extensively conducted in the context of adolescents in Malaysia. Therefore, this study analyses the comfort index of the facility's physical environment and examines the relationship between the physical environment and adolescent well-being. This study's quantitative design involves four area zones in Peninsular Malaysia. The study sample involved 400 teenagers who had undergone mental rehabilitation—data collection through surveys using questionnaires. Data were analysed statistically, descriptively, and inferentially using SPSS software. Findings show that the highest comfort index analysis is comfortable room (M=4.22, SD=1.03). Correlation analysis shows that the physical environment is $r=0.25$, $p<0.01$. This indicates that physical environment and well-being have a weak relationship. These findings help social planners design mental health services that are effective therapeutic environments, ensuring health sustainability and in line with government policy requirements for the well-being of adolescents.

INTRODUCTION

Adolescents commonly experience anxiety, depression, and ADHD, which are serious mental health concerns. Early awareness and intervention are essential for tackling these problems and fostering the welfare of adolescents (Norsuhaily et al., 2020). A total of 4,24,000 Malaysian children between the ages of 5 and 15 experienced mental health issues, surpassing the prevalence reported in 2015 (Lee et al., 2023). Out of 284,516 pupils, 5104 received interventions from school counsellors for mental health difficulties (Lee et al., 2023). Furthermore, according to Lee et al. (2023), only 14 were referred to a doctor in a hospital or health centre.

The physical environment in mental healthcare services plays a crucial role in the well-being of adolescents in Malaysia. Research has shown that the physical environment can significantly impact adolescents' psychological well-being, particularly in inpatient settings. Among the designs that must be emphasised are design features, conditions, ambience, privacy and safeguarding. This is important to mental health services planners to provide an effective therapeutic physical environment. However, there are not many studies related to the comfort of the physical environment of mental health services in the context of adolescents.

The objective of this paper is (i) to analyse the comfort of the physical environment of mental health care services among teenagers in Peninsular Malaysia and (ii) to study the relationship between the comfort of the physical environment of mental health and the well-being of adolescents. The outcome of this paper will identify the level of teenagers' comfort with the physical environment of mental health services and the extent to which it affects their well-being.

LITERATURE REVIEW

Physical Environment in Mental Health Care Services

In ecological planning, three elements are emphasised: the social, natural, and built environments (Celikey, 2016). These three elements are closely related and affect each other (Figure 1). In the context of planning health care services such as mental health care, this element affects the effectiveness of the service to the client. This point is supported by the theoretical study of Marzhuki et al. (2020), which states that environmental elements affect the mental health status of humans.

Previous studies have shown that the characteristics of an effective physical environment in mental health services include design features, conditions, privacy, and safeguarding (Hezzrin et al., 2024). These elements must align with the client's needs to be comfortable receiving mental rehabilitation services, also known as the characteristics of an effective therapeutic environment

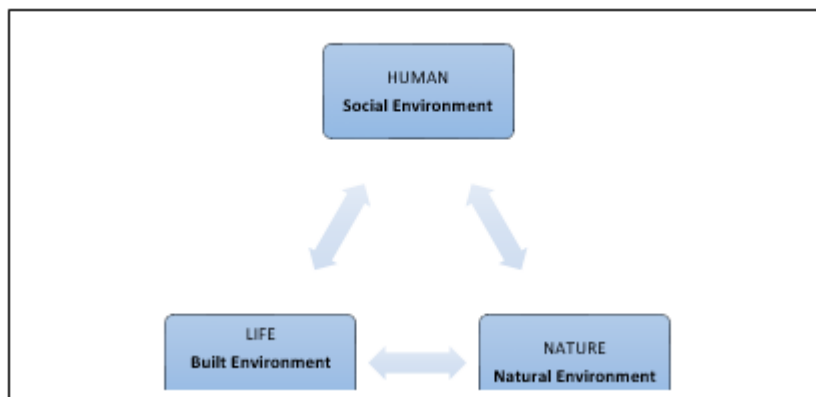


Figure 1: Ecology Planning in Environment Element

Source: Adaptation from Çelikyay (2016)

In the study by Willis (1980) in the article *Design Considerations for Mental Health Facilities*, these features are required when designing this service. Among the physical design emphasis in this service are reception area and admission areas, corridors and stairwells, therapists' offices, inpatient rooms and dayrooms. Furthermore, Willis (1980) also stated the relationship between colour, visual patterning and light and the selection of materials and finishes.

Wilson's (2023) qualitative study emphasises the importance and promotion of physical security elements in the mental health-built environment. Healthcare institutions should have architectural designs that effectively mitigate self-inflicted injuries and prioritise patient safety (Wilson et al., 2023).

The study of Jin et al. (2023) also emphasised aspects of environmental design healthcare factors, namely, specific spaces (e.g., patient area, staff workspace), and intangible elements (e.g., exterior view, light, sound). Besides, he also stressed the importance of interior space and ergonomics (e.g., material finishes and furniture) (Jin et al., 2023). However, this literature review study emphasises the impact of environmental design on healthcare professionals.

Golembiewski (2015) stated that most mental health focuses on designing mental health care services designed primarily to improve the efficiency of staff routines and patient-management protocols. So, he suggested person-centred models of care, considering the whole person and focusing on recovery on clients' terms. The current models for mental health care service design appear to reflect society's main concerns about mentally ill patients.

Chen et al., (2016) further argue that this environment research in their quantitative study shows that the built environment affects human mental health. The study also shows that urban and rural locations affect the respondents' environmental psychology. The study's analysis also emphasises the relationship between the built environment's effect on behaviour and age (Chen et al., 2016). This point is supported by the study of Marzhuki et al., (2020) that location or built environment factors affect human mental health. Urbanisation and urban planning may play a particular role in shaping the mental health of the urban population (Marzhuki et al., 2020). In conclusion, design features in healthcare facilities should prioritise comfort, safety, and recovery toward patients. This includes the intangible factors of natural light, ventilation, and noise reduction to create a calming atmosphere. All these factors of the physical environment can provide comfort to the patient.

Adolescent Well-being Impact of Healthcare Physical Environment

In the Sustainable Development Goals (SDG), good health and well-being are the 3rd SDG goals. The concept of well-being is a healthy lifestyle. Adolescents are at a challenging level of human development and constantly experience mental, physical, and psychological changes (Özdemir et al., 2016). Their emotional development is reflected in their experiences in the social and cultural contexts (Rohayah et al., 2019). Adolescents who are unable to cope with and adapt to changes in themselves and the environment are seen as susceptible to psychological disorders (Rodriguez et al., 2014). If the disturbance continues, it will cause tension and stress and affect the level of well-being of adolescents.

The components of the adolescent well-being index are emotions, social relationships, and quality of life (Anderson et al., 2022). Adolescent well-being can be influenced by what is received, seen, and learned from the social, physical, and natural environments. This matter is included in adolescents' acceptance of the physical environment of mental health care (Jamaluddin et al., 2024). The design of mental health facilities and the effects of the built environment on mental health are critical in the healing process, including for the adolescent group (Anthony & McCaffrey, 2018). Built environments such as design, crowding, services and utilities and natural environments such as noise, light, and green spaces have bidirectional associations with mental health and well-being (Marzukhi et al., 2020).

To support the study of the importance of environmental factors that affect psychological human well-being, other factors are environmental quality (air quality, thermal comfort, audio comfort, visual comfort and ease of access services)(Ahmed & Al Ali, 2023). In addition, the design features include safety stands, privacy settings (providing appropriate space to maintain their dignity and to feel secure), and physical elements (colour, size, and light) (Ahmed & Al Ali, 2023). Meanwhile, social interaction factors such as forming spaces for social interaction among the occupants and ease of access to communal spaces and environments for various activities can lead to psychological well-being (Ahmed & Al Ali, 2023). This theory can be used as a guide to physical environment planners in adolescent mental health care services.

Among the impacts of a positive physical environment and well-being in health care services are reduced depression and patient worries, improved social functioning and promoted positive behaviour and therapeutic effects (Jaafar & Othman, 2016). Therefore, there is a need for an in-depth study that focuses on the factors of the physical environment and mental health and well-being.

RESEARCH METHODOLOGY

The quantitative study applied in this research was conducted in Peninsular Malaysia's four zones: the East Zone (Terengganu), the West Zone (Selangor), the South Zone (Johor), and the North Zone (Pulau Pinang). The study samples involved 400 adolescents in four zones using multistage random sampling. Furthermore, a survey technique using a questionnaire instrument was utilised to collect information on adolescents' comfort index and well-being regarding physical environment and mental health services. A likert scale from 1 to 5 was employed to answer the survey questionnaire.



Figure 2: The study location of four zones in Peninsular Malaysia

Source: <https://3docean.net/item/malaysia-map/26684426>

This paper presents several methods for data analysis, including descriptive analysis using mean and standard deviation. This analysis also calculates the Comfort Index for the physical environment in mental health care services. Inference analysis was also used to analyse the correlation between the physical environment and well-being among the respondents.

Comfort Index Analysis of the Physical Environment of Mental Health Care Services (CIAPEMCS)

The primary data from the field survey, used to measure comfort for the physical environment of health care services in this study, were based on the Comfort Index Analysis. This CIAPEMCS was calculated based on the survey respondents’ preference scale using Statistical Package of Social Science (SPSS), which analyses the descriptive data in means and standard deviation. The formula for the calculation of CIAPEMCS was as follows:

$$CIAPEMCS = CI_{cr} + CI_{sd} + CI_{ss} + CI_{slm} + CI_{ad} + CI_{as} + CI_{alm} + CI_{al} + CI_{as}$$

CI_{cr} = Comfort Index of Comfortable Room Mean

CI_{sd} = Comfort Index of Sufficient Desks Mean

CI_{ss} = Comfort Index of Sufficient Seats Mean

CI_{slm} = Comfort Index of Sufficient Learning Materials

CI_{ad} = Comfort Index of Appropriate Desks

CI_{as} = Comfort Index of Appropriate Seats

CI_{alm} = Comfort Index of Appropriate Learning Materials

CI_{al} = Comfort Index of Accessibility of Location

CI_{as} = Comfort Index of Affordable Service

Meanwhile, Table 1 shows the interpretation of the indicator level of the comfort index scale based on the mean score. 1.00-2.33 shows a low comfort index scale. 2.34-3.66 shows a moderate scale. Meanwhile, the high comfort index scale has a mean score of 3.67-5.00.

Table 1: Mean Score and Comfort Index Scale of the Physical Environment of Health Care Services

Mean Score	Comfort Index Scale Indicator Level
1.00 – 2.33	Low
2.34 – 3.66	Moderate
3.67- 5.00	High

ANALYSIS AND DISCUSSION

A convenience sampling method, a non-probability sampling technique, was employed to select 400 respondents for the quantitative survey. The survey questionnaire was conducted at four zone-populated locations in Peninsular Malaysia: South, North, East and West. The descriptive information regarding the respondents is shown in Table 4. The majority of the respondents were 74.25% women, and the minority of them were 25.75% men. Most of the survey participants were responders aged 22 and above (54.50%), and minority participants were aged 18 -21 years old (45.50%). Furthermore, Malay (88.50%) were the majority ethnicity, followed by Chinese (5.75%), Indian (2.25%) and others (3.5%). The number of respondents for each zone is 25%.

Table 2: Socio-demographic profile.

Socio-demographic	(%)	
Gender	Man	25.75
	Woman	74.25
Age	18 – 21 years old	45.50
	22 and above	54.50
Ethnicity	Malay	88.50
	Chinese	5.75
	Indian	2.25
	Others	3.50
Zone	South	25.00
	North	25.00
	West	25.00
	East	25.00

Findings on the whole construct show that the comfort index of the physical environment of mental health care services in Peninsular Malaysia was moderate (M=3.19, SP=1.35). The physical environment of the health care centre was moderately comfortable and still met the target group's needs and the national standard. This study meets the requirements of the theoretical element of the physical environment that was debated by several researchers Hezzrin et al., (2024), Marzhuki et al., (2020) and Celikyay (2016)

Based on Table 3, the following constructs show a high comfort index which is comfortable room (M=4.22, SD=1.03), sufficient desks (M=4.14, SD=1.09), sufficient seats (M= 4.17, SD= 1.06), sufficient learning material (M= 4.03, SD= 1.14), appropriate desk (M= 4.07, SD= 1.13), appropriate seats (M= 4.12, SD=1.11), appropriate learning materials (M=4.08, SD= 1.12) and affordable service (M=3.92, SD=1.17). The location's accessibility (M=3.57, SP=1.39) is moderate.

The study primarily emphasises the respondents' comfort level with the physical environment component, specifically the availability of ergonomic mental health care services such as desks, seats, and learning materials. Research also analyses the affordable service, which was a few studies in other research. This study does not consider additional parameters, such as intangible components and ambient conditions (such as colour, visual elements, temperature, lighting, and humidity), which have been examined by Willis (1980), Wilson (2023), and Jin et al. (2023).

However, the comfort research also assessed the accessibility aspect of mental health services, revealing that respondents expressed a modest level of comfort with this feature. Physical planners of mental health care environments should prioritise emphasising this issue. According to researchers Chen et al. (2016) and Marzhuki et al. (2020), the presence of mental health facilities and the well-being of individuals are also influenced by geographical factors. Hence, these services should be offered in numerous locations, encompassing both urban and rural areas.

Table 3: Comfort index for health care services (n=400)

Construct	Mean (M)	Standard Devian (SD)	Index level
1. Comfortable Room	4.22	1.03	High
2. Sufficient Desks	4.14	1.09	High
3. Sufficient Seats	4.17	1.06	High
4. Sufficient Learning Materials	4.03	1.14	High
5. Appropriate Desks	4.07	1.13	High
6. Appropriate Seats	4.12	1.11	High
7. Appropriate Learning Materials	4.08	1.12	High
8. Accessibility of Location	3.57	1.39	Moderate
9. Affordable Service	3.92	1.17	High
Totals	3.19	1.35	Moderate

Source: Author's Calculation

In addition, the research findings found that the Pearson correlation coefficient value for the physical environment is $r= 0.25$, and the significant value is smaller than 0.01 ($r= 0.25, p<0.01$) (Table 4). This shows that physical environment and well-being have a weak relationship.

The results of this study are different from studies by Jamaluddin et al., (2024), Anthony and McCaffrey (2018), and Ahmed and Al Ali (2023). Their research states a significant relationship between the physical environment and human well-being. However, this study focuses a lot on ergonomic elements compared to other elements in the physical environment. The variable scope of this study needs to be bigger to measure the relationship between the respondents' well-being.

Table 4: Correlation between Physical Environment and Well-Being

		Well- Being
Physical Environment	Pearson Correlation	.248**
	Sig. (2-tailed)	.000
	N	400

**Correlation is significant at the 0.01 level (2-tailed)

CONCLUSION

This study focuses on analysing the comfort index for the physical environment in mental health care services and well-being among adolescents. The quantitative research data they obtained conclude that the physical environment of mental health care services in Peninsular Malaysia includes interior space, ergonomic elements, and location. The result also focuses on the correlation between the physical environment and adolescents' well-being.

The result shows that the index of comfort level for the physical environment was moderate ($M=3.19, SD=1.35$). Meanwhile, the correlation between physical environment and adolescents' well-being was weak ($r=0.25, p<0.01$). This means their level of comfort and well-being towards mental health services is not very satisfactory to them. Based on the results, there is one factor that needs to be taken into account in the preparation of an effective physical environment, which is the location of the facility (moderate in comfort index); which is seen as an accessibility factor, which is one of the elements of the built or physical environment. Social planners need to provide these facilities so that they can be easily accessible and services can be easily obtained. These facilities must be provided in the urban and rural areas.

However, this study has limitations as it relies solely on the adolescent population and involves Peninsular Malaysia only. This study also focused on ergonomics in the physical environment. The researchers suggest that future studies should use a broader group of participants and analyse other environmental elements in the physical environment (design features and other services) and natural environment (noise, water and other intangible elements) to enhance the reliability of the results. However, it offers essential information for social planners in the healthcare environment field, policymakers, government entities, and relevant non-governmental organisations (NGOs) to improve the comfort of adolescent mental health services. The results of this study also guide aligning these services with the overall objectives of enhancing well-being, as specified in the policy of Mental Health Policy of Malaysia and Sustainable Development Goals.

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