A Comparative Study on the Factors Affecting Mental and Emotional Well-Being of Users in Independent Houses and Residential Flats: In Context with Space Design

Dr. Kajal Thakuriya

Department of Design, Vivekananda Global University, Jaipur

Abstract

The built environment significantly influences the mental and emotional well-being of its inhabitants. This study explores the factors shaping well-being in two distinct residential typologies: independent houses and residential flats, focusing on the spatial design elements that impact mental and emotional health. Key aspects examined include spatial layout, privacy, access to natural light and ventilation, and the integration of outdoor spaces. Adopting a comparative framework, the research employs a mixed-methods approach. Quantitative analysis, including spatial evaluation tools like Space Syntax, is combined with qualitative insights gathered from user surveys and interviews. Standardized well-being scales assess psychological and emotional states, while qualitative methods provide a deeper understanding of user preferences and satisfaction.

The study also considers contextual factors such as urban density, cultural values, and socio-economic conditions, which influence how users perceive and interact with their residential spaces. Preliminary findings suggest that independent houses often provide greater privacy and customization options, leading to enhanced emotional comfort. In contrast, residential flats promote community interaction but may face challenges in balancing privacy and optimizing natural light and ventilation. By identifying spatial design attributes that foster mental and emotional well-being, this research aims to provide evidence-based recommendations for architects, urban planners, and policymakers. The insights can inform the design of healthier, more inclusive residential environments that prioritize user-centric and health-promoting practices.

This study bridges gaps in the existing literature by offering a comparative analysis of independent houses and residential flats through the lens of space design. It contributes to the growing discourse on the interplay between spatial design and human well-being, with practical implications for the future of residential

architecture and urban housing development.

One of the pressing challenges modern cities face today is ensuring and enhancing the quality of life for their citizens. This challenge has driven urban planners and designers to reimagine urban spaces introducing new conceptual frameworks for city redevelopment (Kang, 2017). In this context wellbeing and happiness have emerged as critical concepts in the discourse on urban development (Barton, et al. 2015). This growing focus on well-being is increasingly evident in Latin America particularly in Chile where social movements since October 2019 has emphasised the need for equitable dignified and environmentally balanced living spaces (Herrmann, 2019). Mental well-being has been framed as a fundamental right that society's demand and is promoted globally through various political and regulatory initiatives aimed at urban development and sustainability (Inzulza, 2019). Addressing mental well-being has become particularly important in the light of challenges posed by increasing urbanisation and effects of urban regeneration on the health and well-being of the city residents. According to Organisation for Economic Corporation and Development Chile ranks 33rd out of 36 countries based on key indicators such as life satisfaction 22nd, healthcare quality 25th, and environmental quality where it ranks last 18.

Additionally, research from Italy (Pancani et al 2021), Chile (Duarte and Jiménez-Molina, 2022) and Australia (Morris et al 2020) highlights the disproportionate impact of inadequate housing on well-being compared to secure spacious homes with access to amenities.

Covid 19 lockdowns exacerbated these issues as extended periods at home underscored the inadequacies and inequities in housing affecting both physical and mental well-being. These “stay at home” orders also heightened awareness of positive and negative aspects of domestic spaces, reshaping how people perceive and interact with their homes. The concept of well-being remains broad and inconsistently defined (Dodge et al 2012). Furthermore, the interplay between housing and well-being is not universally experienced. Even residents of decent housing reported challenges to their well-being during the lockdowns highlighting the complex and subjective nature of well-being within the home. Consequently, factors such as neighbourhood characteristics and economic considerations significantly influence well-being (Young et al, Holding et al, Bower et al, 2021). To create inclusive frameworks for assessing housing needs and well-being, it is essential to consider the diverse subjective experiences and perception individuals have about their homes.

Gap of Study

While significant attention has been given to the relationship between urban

design, housing and well-being, several gaps remain in the current body of knowledge. Existing studies highlight the impact of inadequate housing and urban regeneration on physical and mental well-being particularly during events like covid 19 lockdowns. However, the concept of well-being itself remains broad and inconsistently defined making it difficult to generalise findings or create comprehensive frameworks. Furthermore, much of the research focuses on objective indicators such as housing quality and access to amenities with less emphasis on subjective experiences and perception of individuals regarding their living environments.

Additionally, while studies have explored neighbourhood characteristics and economic factors influencing well-being, there is limited exploration of how cultural, socio economic, and environmental factors interact to shape the subjective perception of well-being within diverse urban contexts. This study aims to bridge these gaps by investigating the subjective and multifaceted nature of well-being within homes incorporating cultural social and environmental dimensions to create more inclusive and context specific assessment frameworks.

Objectives

1. To examine the impact of spatial design and layout on residents' satisfaction.
2. To evaluate the emotional and psychological well-being of residents.
3. To discover the effect of cultural and socio-economic factors on preferences and satisfaction of residents.
4. To study the comparison between mental well being of the residents on the basis of type of residence.

Hypothesis

Hypothesis H01: There is no significant difference of spatial design and layout on residents' satisfaction

Hypothesis H02: There is no significant difference on residential preferences due to cultural background.

Hypothesis H03: There is no significant difference on residential satisfaction due to socio-economic factors.

Hypothesis H04: There is no significant difference between mental well-being of the residents on the basis of type of residence.

Research Design

The research design for the study is planned thoroughly to address the objectives and test the assumptions outlined. It incorporates quantitative

approaches ensuring a comprehensive understanding of the relationship between spatial design, emotional well-being and residential satisfaction. Descriptive aspects focus on understanding residents' satisfaction, well-being and preferences.

Population & Sample

Data is collected from residents who resides in urban, suburban and rural areas across varied socio-economic backgrounds. Stratified random sampling to ensure representation across age groups, gender and types of residents were taken care of.

A minimum of 76 participants to ensure the statistical reliability and generalizability is considered.

Data Collection

Primary tool of data collection is structured questionnaire. Questionnaire is structured in three sections, first section finds the demographic information of the participants, second section measures the satisfaction with spatial design factors, third section assess the emotional and psychological well-being and the last part of the questionnaire discusses the cultural and socio-economic factors affecting preferences.

Variable

Independent variables considered are spatial design factors, emotional well-being, cultural backgrounds and socioeconomical factors. The dependent variables are residential satisfaction. The controllable variables are age, gender and types of residence. Likert scale is used to measure the satisfaction and well-being measures, categorical options for demographics and contextual factors are taken.

Data Analysis

For analysis of the dataset SPSS is used. To summarize and describe the data and the satisfaction level Descriptive statistics is used.

Independent T tests are applied to compare the satisfaction levels due to spatial layout and emotional well-being. Also, to understand the effect of socio-cultural factors on the satisfaction level one sample T test is applied.

Findings:

Hypothesis H01: There is no significant difference of spatial design and layout on residents' overall well being

Two groups were analysed based on the average ratings of Spatial Design and layout (Greater Than 3 and less than 3). For residents with average design and layout

rating greater than 3 the mean overall well-being score is 2.97 with standard deviation of 0.4. For residents with an average design and layout rating of less than 3 mean overall well-being score is 2.91 with the standard deviation of 0.69. The main difference between the two groups is small. The P value 0.253 is more than the significance value 0.05, which indicates that the two groups have equal variances and we can go ahead with the T test as the equal variances are assumed. The P value .007 is less than the significance level 0.05, this suggests there is significant difference in the overall well-being scores on the basis of design and the layout. Hence The hypothesis H01 is rejected. It can be said that there is significant difference in residents' overall well-being based on the spatial design and layout of their residence. This suggests that spatial design and layout may play a role in satisfaction, they also have a measure impact on overall well-being in the data set.

Group Statistics

	Overall Mental Well being	N	Mean	Std. Deviation	Std. Error Mean
Average of Design and Layout	>= 3.0	46	2.9689	.54203	.07991
	< 3.0	30	2.9142	.69541	.1269

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Average of Design & Layout	Equal variances assumed	1.327	.253	.384	74	.007	.05465	.1423	-.2290	.33838
	Equal variances not assumed			.364	51.339	.071	.0546	.1500	-.2464	.355

Hypothesis H02: There is no significant difference on residential preferences due to cultural background.

The overall mental well-being scores are summarised for different levels of cultural backgrounds influence the main scores range from 2.692 (never) to 3.188 (sometimes). The standard deviation ranges from 1.1673 (sometimes) to 1.7974 (never) indicating varying levels of spread in the data. The total mean score across all groups is 2.921 with a standard deviation of 1.5385. Since the P value is greater than 0.05, the assumption of equal variances is not violated. This indicates less variability

Descriptives								
Overall Mental Well Being								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Always	22	2.773	1.5097	.3219	2.103	3.442	1.0	5.0
Often	8	3.125	1.6421	.5806	1.752	4.498	1.0	5.0
Sometimes	16	3.188	1.1673	.2918	2.566	3.809	1.0	5.0
Rarely	17	2.941	1.7489	.4242	2.042	3.840	1.0	5.0
Never	13	2.692	1.7974	.4985	1.606	3.778	1.0	5.0
Total	76	2.921	1.5385	.1765	2.569	3.273	1.0	5.0

Test of Homogeneity of Variances			
Overall Mental Well Being			
Levene Statistic	df1	df2	Sig.
3.359	4	71	.054

ANOVA					
Overall Mental Well Being					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.640	4	.660	.268	.898
Within Groups	174.887	71	2.463		
Total	177.526	75			

in the spread of mental well-being scores across groups which will not impact the reliability of ANOVA results. The P value is greater than 0.05, which means that there is no statistically substantial difference in mental well-being scores across the clusters defined by cultural background effect. Hence the hypothesis H02 is failed to be rejected. There is no significant difference in residential preferences based on cultural background as measured by overall mental well-being scores.

Hypothesis H03 : There is no significant difference on residential satisfaction due to socio-economic factors.

Residential satisfaction (measured as overall mental well-being) is analysed across different socio-economic group. The mean score ranges from 2.44 to 3.313 with standard deviation ranging from 1.4642 to 7.7246 indicating some variability in responses within each group. The total mean score is 2.921 with a standard deviation of 1.5385. overlapping confidence intervals for all groups suggest no clear differences in main scores. The P value .757 is greater than critical value 0.05 representing that the variances are equal. This permits us to continue with the Anova test under the hypothesis of homogeneousness of variances. The P value 0.515 is much greater than .05, this indicates no statistically significant difference in residential satisfaction scores across the socioeconomic group. Hence the hypothesis H03 is not rejected. There is no significant difference in residential

Descriptives								
Overall Mental Well Being								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Always	14	3.214	1.5777	.4216	2.303	4.125	1.0	5.0
Often	13	2.846	1.7246	.4783	1.804	3.888	1.0	5.0
Sometimes	18	2.444	1.4642	.3451	1.716	3.173	1.0	5.0
Rarely	15	2.867	1.5055	.3887	2.033	3.700	1.0	5.0
Never	16	3.313	1.4930	.3733	2.517	4.108	1.0	5.0
Total	76	2.921	1.5385	.1765	2.569	3.273	1.0	5.0

Test of Homogeneity of Variances			
Overall Mental Well Being			
Levene Statistic	df1	df2	Sig.
.471	4	71	.757

ANOVA					
Overall Mental Well Being					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.862	4	1.965	.822	.515
Within Groups	169.665	71	2.390		
Total	177.526	75			

satisfaction based on socio-economic factor. Although there are slight variations in mean satisfaction scores among the groups, these differences are not statistically significant.

H04 : There is no significant difference between mental well-being of the residents on the basis of type of residence.

For the hypothesis H04 which states there is no significant difference between the mental well-being of residents based on the type of Residence, the analysis yields the P value for Levene's test as 0.584 which is greater than the significance threshold this indicates that the assumption of equal variances is met. The significance value of t test is .015 which is less than the significance threshold. We reject the null hypothesis that there statistically significant difference in the overall mental well-being of residents based on their type of residence i.e. flat or bungalows.

Group Statistics

	Type of Residence	N	Mean	Std. Deviation	Std. Error Mean
Overall Mental Well Being	1.0	34	3.118	1.4927	.2560
	2.0	35	2.600	1.4990	.2534

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Overall Mental Well Being	Equal variances assumed	.303	.584	1.437	67	.015	.5176	.3602	.2013	1.2366
	Equal variances not assumed			1.437	66.957	.015	.5176	.3602	.2013	1.2366

The probable reasons could be the environments of different residence types is different. Even the residents may belong to different demographics, hence the different residence type may be suitable as per their demographics.

Conclusion

The study analysed four hypotheses to examine factors influencing residents' well-being and satisfaction in relation to spatial design, cultural background and socio-economic factors. The findings indicate that spatial design and layout significantly influence residents' overall well-being preferences or satisfaction, but cultural background and socioeconomic factors do not significantly influence residents' overall well-being preferences or satisfaction within the analysed data set. Lastly, type of residence influences mental well-being of the residents. People residing in flat have different mental satisfaction than people leaving in bungalows. While some minor variations were noted only spatial design and type of residence demonstrated a statistically significant relationship with the measured outcome. Hence it can be suggested that some more variables expect those studied can also play an additional critical role in determining residential well-being and satisfaction.

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