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Housing Design for Urban Poor in Kuala Lumpur: A Literature Review

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Abstract. Adequate comfortable shelter is a significant human rights and needs. In Kuala Lumpur, high demand of affordable quality housing for urban poor has yet to be fulfilled. In order to meet demand for adequate affordable housing for low-income households, the government has introduced numerous housing programs. However, anecdotal evidences suggest that most of this typical type of affordable housing may have design deficiency that could affect occupants' housing satisfaction. This paper critically reviews on housing policy, typology and design issues for low-income housing in the context of Kuala Lumpur, Malaysia. This paper argues that there is a direct relationship between housing design and occupants' satisfaction. Based on the review, it can be recommended that housing design for low-income people should consider factors such as safety, local climate, privacy, sufficient space, layout planning, culture and social integration. Implications for the design of future housing for low income people are raised and the need for the improvement of the ongoing research is identified.

1. Introduction

House or dwelling is identified as a system of functions that comprises more than activities. Dwelling may be considered as a subsystem of the environment with specific functions such as, living area, kitchen, bathroom, bedroom and etc. While the environment consists of several subsystem that forms dwelling and may include shops, playground, community hall, school and etc. [1-2]. Whereas home refers to cultural, physical and social context [3]. Home may even be defined as a feeling or relationship that one experience with the physical structure, the house for instance, and the meaning of it [1-2]. Further understanding of the context of home may help designers in particular understand the concept of housing design.

“Good” housing design is hard to be described given its characteristic nature of interpretation [4]. Thus, in-depth studies that comprises of context that influence the nature of housing needs to be undertaken. Designing comfortable dwelling for low-income earners are a challenging task for building professionals. With limited designated space given by authorities, architects in particular have to consider space functionality in design rather than aesthetics [5]. Strategies and design adaptation in reference to issues on human comfort need to be addressed in order to achieve quality housing design. Designing low-income housing have been studied through different perspectives of understanding. The most common study on housing design for low-income earners involved residential satisfaction towards housing design and layout planning. These studies explained the relationship between housing design and satisfaction among occupants.

To produce quality design, evaluation of satisfaction among actual occupants is important [6]. From evaluation of residential satisfaction, housing needs and design issue may be identified. Residential satisfaction is a sentiment of pleasure among buyers or occupants when houses that they bought or lived



in satisfied their needs or desire [7-8]. Whereas dissatisfaction is a sentiment when the standard of performance is lower than average [7, 9].

The first study on residential satisfaction for low-income housing in Kuala Lumpur was recorded by Sulaiman and Yahaya [10] and the result showed about 41% of the respondents were dissatisfied with design and characteristics of residential units provided. This study covers the earlier layout with two bedrooms. The results show 85% of current residents wanted extra space for dining and 82% wanted detached bathroom and toilet [8, 10]. However, several changes on provisions for low-income housing in Kuala Lumpur has been made with changes in layout, design and construction method [11]. Later in 2010, Mohit, Ibrahim and Rashid [8] revealed that residential satisfaction in low-income housing were moderate with 65.4% with overall low-income housing condition.

Still, studies on residential satisfaction often dealt with personal perceptions and preferences. People with current living conditions tend to show positive remarks and high satisfaction and these interpretations may lead to subjective values. The positive interpretations often hide tolerance and adjust made towards insufficiencies [12]. Therefore, in order to identify the best solution in design housing for low-income people is through historical study and current policies. In this matter, there are two methods on how to interpret studies on background history in Art, which may also be used in Architectural study; the "intrinsic" and "extrinsic" factors. Intrinsic means to analyse the construction techniques, material used, design element and it's symbolic. This is also means to study the building without taking consideration of its surrounding. While extrinsic approach is to analyse its overall surrounding that may include social, politics and culture [13]. This study will adapt both intrinsic and extrinsic approaches.

2. Methodology

This paper aims to present reviews of literature and studies published pertaining to low-income housing design in Kuala Lumpur. Database searches from various literature sources were carried out to identify previous publication and studies in order to establish relevant data. This is to provide insights into the relationship between housing design and social conditions of living of the urban poor in Kuala Lumpur. The literature selected for this study mostly are in the perspective of Architectural, Sociology, Psychology and Economy. The purpose of the study is to justify on relevant factors such as safety, local climate, privacy, sufficient space, layout planning, culture and social integration should be taken into consideration when designing for the urban poor in Kuala Lumpur.

3. Literature Review

3.1. Identifying Urban Poor

The first definition of poverty recorded is credited to Rowntree [14]. He defined poverty as economic situation where individuals or families incapable of maintaining minimum level of living standard [14]. This definition of poverty is based on the idea of "*poverty line*" which refers to minimum needs in caloric intake in order to survive. This concept was later extended to cover other basic needs that include food, housing, clothing and transport [15].

According to World Bank there are many ways to measure urban poverty. The data taken regardless of any methods used should be ideally compared to any cities and can be separated into several factors at intra-city stage. This will show data differences of urban poverty between mega cities and small towns of any countries. This is due to the distinction of measures in economic, income, daily consumption, security and access to basic services such as electricity, water, health and education [16]. Measuring approaches are as listed in Table 1.

Table 1. Measuring approach for identifying urban poverty level [16]

No.	Measuring Component/ Aspect	Measuring Approach
1	Income or Consumption Measures	Consumption measure is consider as more reliable data compared to incomes measurement as incomes have tendency to change over time. However, income is best measure to imply on data for cost of living in urban areas. Both measure approaches can be used to measure data for daily basic needs and goods; e.g. food, housing, water, clothing, etc.
2	Unsatisfied Basic Needs Index	This approach measures the minimum dimensions of poverty that classifies an individual or households' access to basic needs. This includes education and school attendance, food consumption with caloric or protein requirement, clean water, sewage and adequate housing. If household is lacking of any classification mentioned, they are considered as having lack of basic needs.
3	Asset Indicators	This approach is used to indicate the status of the socio-economy of households. These assets may include; housing characteristics (e.g. types of roofing, wall, flooring, etc.), car, electrical appliances, and access to basic needs such as piped water and electricity.
4	Vulnerability	This approach refers to the risk exposed to households in terms of monetary and health over time or other risks such as natural disaster, violence, crime etc. This kind of approach is quite complex and needs survey to collect information.
5	Participatory methods	This method is using qualitative approaches to identify aspects of poverty that may not be measured through surveys. Poverty perceptions will be identified through focus group discussions, open-ended interviews and case studies.

In Malaysia, after independence in 1957, its economic growth has expanded and transformed from poor to middle income nation. And due to this factor, migration from rural to urban areas such as Kuala Lumpur has resulting to massive urbanisation. This is evidence by migration proportion in 1947 to 1970 which is at 12.4% to 25.9% compared to 0.2% in 1891 to 1947. The immediate effect of the large-scale migration has caused pressure in the needs for housing and land. Consequently, large numbers of slums area started to spread around Kuala Lumpur [17].

One of the earliest discussion of poverty in Malaysia which had been recorded been made by Ungku Abdul Aziz [18] in his contribution for *Kajian Ekonomi Malaysia*, stated the importance of defining and measuring poverty. He has suggested “*sarong index*” to measure the extent of poverty in rural areas of Malaysia. The “*sarong index*” which was based on traditional cloth usually worn by Malay men and women, is used to measure numbers of *sarong* in a household. This numbers will be divided by numbers of occupants with age more than one in each household in order to calculate ratio of *sarong* per capita. With below one *sarong* per capita indicated extreme poverty. Wealthy rural dwellers generally have around 7 to 15 *sarongs* per capita [18].

Economic Planning Unit (EPU) of Malaysia Government has formulated the official poverty line index (PLI) in 1977 and used to measure poverty in Malaysia prior 2005 [19]. Malaysia PLI is based on minimum needs required to maintain a household. This poverty line has three components that cover food expenditure, clothing expenditure and other non-food expenditure such as house rental, electricity, water household equipment, health expenses, transportation, education, etc. With Malaysia progressive

economic expansion, the poverty line is updated annually to suit changes in living cost and price levels [20].

PLI in Malaysia is calculated separately in accordance to current economic situations in each states. This include separate classification for urban and rural areas, taking into account of different household sizes, its locality, number of occupants in each household and demographic factor. Consumer Price index (CPI) is utilised by taking consideration of minimum expenditure in each household in order to update PLI annually [21]. As reported in Mid-term Review of 11th Malaysia Plan, PLI for Peninsular Malaysia is RM980 while Sabah is RM1,180 and Sarawak RM1,020 [22]. However, there are arguments between economists on current PLI measurement used by Malaysia as RM980 for a household in Kuala Lumpur is too low. With current price hike and Malaysia economic situation, the PLI is questionably irrelevant to be used as the official PLI in Malaysia.

3.2. Government Policies and Provisions in Malaysia

The growth of population in Malaysia has tremendously increased where in 1957, Malaysia's population was 7.3 million. This number has increased to 13.3 million in 1980 and 32.6 million in 2019 [23]. From total population of Malaysia, urban population has increased around 51% per annum in 1991 and 67% per annum in 2005 [24-25]. In 2018, the Department of Statistics Malaysia has recorded population for the city of Kuala Lumpur is 1.79 million. Thus, with economic and population growth, housing supply has to be planned in order to apt in demand mainly in urban areas.

Over the years, Malaysia has implemented housing policies in order to provide more adequate and quality housing for targeted groups which is available for sale or rent basis. In the 10th Malaysia Plan, the government has planned to build 75,000 units of affordable housing to meet demand for Low-Income earners and resettled squatters. Under the same Malaysia Plan, another RM500 million will be allotted for repairing and maintenance purpose of existing public and private low-income housings in order to raise living standards of low-income households. For that reason, for the time being, Low-Income housing development is concentrated mainly in Urban and Suburban area where selling price affects demand and supply of affordable housing [26].

Series of revision for Low-income housing has been implemented by the government to accommodate current trends and values. Initially, low-income housing priced at RM12,000 for a flat unit and this price has been revised to RM25,000 in 1982 and remained until 1998 where the pricing ranges from RM25,000 to RM42,000. The price revision was revised as to withstand participation of private developers as the sales of each housing units are according to the ceiling price without any conventional subsidy from government [25].

Malaysia's housing policy is to provide adequate, affordable and quality housing for Malaysians. Hence, Malaysia Government has introduced housing provision in low, medium and high cost housing categories under its five year National Plan. In line with Istanbul Declaration on Human Settlement and Habitat Agenda in 1996, which to accommodate shelter for all, the Malaysia Government has actively built housings for all categories through its Vision Development Plan 2001 (2001-2010) which stated that the government as main provider for low-income housing while housing under other categories were placed under commission of private developers [27].

3.3. Low-income Housing in Kuala Lumpur

In Kuala Lumpur, even though current PLI shown low percentage, adequate housing is still an issue for low-income earners. With high land price and construction cost, housing price has increase and often too high for the poorest in Kuala Lumpur [27]. Under 10th Malaysia Plan, the government has planned 78,000 new affordable housing units for families with household incomes less than RM2500 per month. In the same Malaysia Plan, the government will subsidise construction cost approximately 30% to 75% for low-income housing. According to National Housing Department, low-income housing unit of 700 square foot is sold for RM42, 000 for individuals and families.

Acknowledging the importance of providing affordable housing for urban poor of Kuala Lumpur, the City Hall of Kuala Lumpur (CHKL) has designed various range of housing programs in addressing this issue. The approach taken involving mixed strategy that rely both on public and private sectors [28]. The programs are as described in Table 2.

Table 2. Housing programs introduced by City Hall of Kuala Lumpur [28]

No	Housing Programs by CHKL	Description	Rent / Sell
1	Housing program for Urban Poor / Hardcore Poor	A below market rent scheme for hardcore poor with income less than RM500.	Rent
2	Low Medium and Low Cost Housing Quota	Quota imposed on housing developers as part of planning permission.	Sell
3	Joint Venture and Privatisation Projects	A joint venture between CHKL and private developer whereby CHKL provides site and private sector construct the housing units.	Sell
4	Joint Venture housing project with EPF	This joint venture program is between two public sectors and CHKL will coordinates and manages the housing projects while EPF provides sites and finances.	Sell
5	Housing Program under Syarikat Perumahan Negara Berhad (SPNB)	SPNB develops and constructs low-income housing and CHKL manages the completed housing units.	Sell
6	Housing Program under City Hall of Kuala Lumpur own Funding	CHKL initiate its own low cost housing program and these units are for sale with eligibility criteria for Low-Income earners.	Sell
7	Public Housing Program	The units were being rented out at subsidised rate to those with monthly income of RM1500. Renting rate imposed is below market rate.	Rent
8	Integrated Public Housing Program	The units are only for renting but the families of resettled squatters are automatically eligible to purchase under ownership schemes.	Rent

City Hall of Kuala Lumpur efforts in providing numerous housing programs for Urban Poor was found to be leading towards home ownership. Even these efforts are to be applauded, there are some flawed involving assisted home owners for not having absolute satisfactions.

3.4. Typology of Low-Income Housing in Kuala Lumpur

Low-income housing has officially been introduced in the 1st Malaysia Plan (1966-1970) in order to address housing issues for low-income earners [29]. Since 1970s, City Hall of Kuala Lumpur (CHKL) has constructed more than 65,000 low-income housing units for sale or rent. With allocation of RM215.3 million under *Perumahan Rakyat Termiskin* Fund Scheme from federal government, CHKL has constructed another 5,273 units of flats. This was in line with city free of squatters target by the year 2005.

The earliest low-income housing concept by CHKL comprised of 1 bedroom flats with floor area of 400 square feet. The unit was fitted with living area, kitchen and bathroom. This type of housing unit was situated within 4.8 km radius from city centre with rental of RM32 per month.

From 1956 to 1981, CHKL has also introduced single storey temporary longhouses with floor area of 530 square feet for transition purpose and as temporary transit housing units in order to provide adequate housing for squatters, victims of natural disaster and public [30]. There were few problems and design issues risen from these type of housing. These building have no aesthetic value with

inadequate ventilations. With high population density, the stuffy environment has ensuing living discomfort among its occupants.

In 1970s, CHKL has also introduced another type of housing, Transit Quarters. The transit quarters were for transitional purpose as to populate squatters in order to eradicate slum area the soonest possible. These type of housing is built when construction of the new housing was delayed and will only take 4-5 months to complete with simple construction. Rental was around RM15 to RM25 monthly [31].

From 1982 to 1996, the construction of low-income housings was more oriented towards building two bedroom units with floor area of 530 square feet. The housing units are fitted with living area, bedroom, kitchen and bathroom. For longhouses, double storey units with floor area of 560 square feet being built and fitted with living area, bedrooms, kitchen and bathroom (Figure 1). These types of housing have started to promote comfort living concept with consideration for safety and healthy environment. The flat housings are also facilitating with *surau* (muslim prayer hall), shops, kindergartens and libraries on ground floor of each building. As for design matter, the flat housings have good ventilation with air wells and corridor facing outwards. Every floor has only 12 units to ensure lower population density. One of the example of this type of housing is Perumahan Sri Kota, Bandar Tun Razak [31].

From 1997 to 1998, CHKL has started to introduce 2+1 bedrooms type of housings (Figure 2). These flat units were built under *Program Perumahan Rakyat* (PPR) scheme with floor area of 560 square feet. The units are fitted with living area, bedrooms, bathroom, kitchen and drying area. The PPR are also accommodate with facilities such as sundry shops, *surau*, nurseries, libraries, tuition centres, computer rooms and religious classes. These housing residences is designed with cluster concept, 4 units on every floor as to provide better ventilations and create friendly social environment among habitants. One of the example of this housing is PPR Bandar Tun Razak [31].

Starting from 1999 onwards, three bedroom flat units were built with fitted living room, bedrooms, kitchen, bathroom and drying area. This type of housing units has 650 square feet. These housings are built under integrated program, MTEN Project. One of the example of this housing is PPR Taman Wahyu I and II, Jinjang.

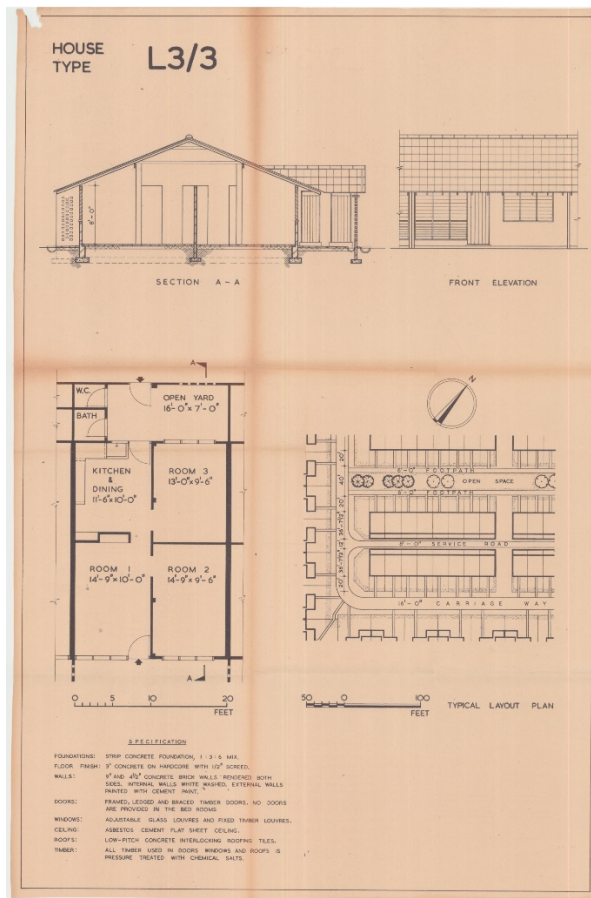


Figure 1. Typical 1-storey longhouse unit with 2 bedrooms [32]

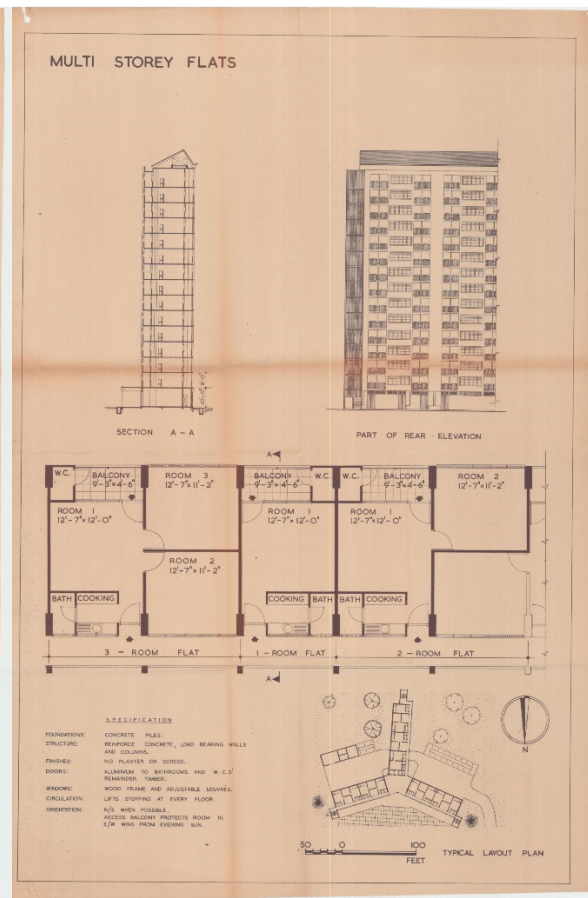


Figure 2. Typical multi-storey flat with 2 and 1 bedroom units [33]

It is evident that there are gradual changes in housing designs and planning since 1956. CHKL has developed various types of housing units to fulfil comfort and safety criteria. Aside from design factors, emphasis was also given to accommodate these housings with facilities for numerous activities in order to promote healthy and happy environment in housing areas.

3.5. Housing Needs and Design Issues of Low-Income Housing in Malaysia

The main issue for Low-income housing is to provide quality and affordable housing which supports humanistic living lifestyle and aspirations [34]. Housing is not just physical aspects but what matter the most is how the housing itself respond to its dwellers. In design it has to be safe and reliable for everyday life. While for its layout and space planning, it has to be friendly for families and surrounding communities.

To fulfil housing demand particularly in urban area, the government has been financing several housing schemes. Even though there are design revisions over the years since 1960s, the houses often fail to deliver basic levels of humanistic factors. This is probably due to cost saving aspect in constructing low-income housing. Modest improvement on infrastructural development has not always reflects on better residential living condition. There should be combination of infrastructural improvements with community living in low-income housing.

Even with the proposal of 78,000 units of affordable housing under 10th Malaysia Plan, in addition to this numbers, about 9% of the constructed houses are problematic housing projects due to settlement issues and housing quality [27]. There are two main problems in housing sectors, firstly, numbers of housing has not meet housing demand, and secondly, the types of housing offered has not meet

satisfaction to households housing needs, privacy, living comfort, social integration, cultural value and religious needs [8,35].

High rise low-income housing especially in urban areas were designed with corridors for each levels and open balconies for every unit which usually used as dry yard. Children especially, like to play in this area, and there are cases where children fell from open corridor of upper level to the ground. Tajuddin [36] also mentioned in his book, "*Housing crisis: back to a humanistic agenda*" about a case of a five year-old boy who plunged to his death from the ninth floor when looking for his mother and described the design for high rise low-income housing as "death tower". There are some other cases that proof high rise housing with open corridors is poorly designed with no consideration of its young occupants. These problem may be overcome with proper design of terrace corridor for example [36].

Adaptation towards religion and culture needs to be taken into consideration in designing low-income housing. Current design is being considered as lack of privacy due to the old concept adapted from the Industrial and Communist Revolution in late 20th century, adapted from minimalistic view leading to small house size [10]. Another design related privacy violation is linked to the modern western philosophy of design that is not suitable to eastern culture. The occupants' way of life and culture should be preserved through design.

Malaysia climate is hot and humid all year round but most of typical types of affordable housing is unsuitable for Malaysia hot and humid climate [37]. Thus, tropical design needs to be adapted in designing for low-income housing. As for thermal comfort where the housing units always overheat during the day that resulting to its occupants spending most of the time outside during most of the day [37]. With the common usage of air-conditioning in Malaysia, even in residences, developers tend to produce modern housing layout with adaptation from western culture and failed to understand the most viable factor in designing housing units in Malaysia. Tropical housing design may include wide opening, veranda and sun shading devices.

Social interaction may be looked at how overall planning is to be designed. Housing area need wide open space for public interaction and activities or to create space boundary between blocks in the same housing compound. This space may act as buffer to housing building. As for economic aspect, developer has to provide enough space for work at home mothers. In Low-income housing area especially, there are women working at home to support financial income for the family. Thus, sufficient working space for work at home mothers need to be taken into consideration in designing low-income housing.

4. Conclusion

Generalising from literature findings above, housing is not only a space for living. Designing housing for the urban poor involves a whole process of facilitating space of living with good interaction of indoor and outdoor space and activities. Whereas space personalisation and addition in home is usually created due to lack control of visual and physical access. These factors have led to creation of buffer zone and semi-private space within one's home compound. However, designers and developers should not only consider end user needs but also user satisfaction and perception as to create harmonious environment and comfort living. By identifying housing issues related to urban poor or the low-income earners, designers may gain understanding in how to design safe and comfortable home within given space. Given space has to be designated as per government policies and provisions. It is true that we seem to be modernised over the years, but our culture value and other living factors need to be taken in consideration when designing for quality habitual space for low-income earners.

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