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OCCUPANTS' PERCEPTION OF 'HEALTHY HOUSING' IN HIGH-DENSITY URBAN HOUSING

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Abstract

The quality of housing constitutes the physical condition of housing as well as the perception and actions of the occupants. Assessment of housing quality tends to be based on the physical indicators of the housing environment with less attention to the occupants' understanding of housing quality. This study explores the housing quality from the point of view of the occupants especially in relation to the concept of 'healthy housing'. A structured interview was conducted with a number of occupants living in high-density urban housing in order to reveal their understanding of the 'healthy housing' concept. The study found the existence of a gap between the occupant's perception of the healthy housing quality and the factual physical condition of their housing. The occupants tend to evaluate their housing as having good quality, despite the facts found from the observation that some physical requirements of 'healthy housing' have not been satisfied yet in most houses. This understanding of 'healthy housing' is primarily related to the aspect of cleanliness, while other aspects of healthiness do not seem to get enough attention. These findings become the basis of the discussion on the extent to which the perspective of the occupants should be incorporated in developing programmes for urban housing quality improvement.

Keywords: health, housing, occupants, perception, quality

1. Introduction

Quality of space for living has become an important issue in the development of urban housing especially in high density urban housing which is continually emerging in third world countries. One of the objectives in United Nations Agenda 21 especially Chapter 7 on promoting sustainable human settlement development is "Providing adequate shelter for all" (United Nations, 1992). This implies the right for everybody to live in good quality housing that ensures health, safety and happiness in their everyday life.

An important issue in the provision of healthy housing is to achieve the overall well-being of the occupants. Health issues in housing are not merely related to the avoidance of diseases, but they also encompass the needs to provide adequate spaces for the occupants to conduct their everyday activities in a comfortable and pleasant setting (Ranson, 1991). Nevertheless, the physical quality of housing has been found to significantly correlate with the occupants' health as well as with their satisfaction and happiness (Cattaneo *et al.*, 2009). It becomes important to pay attention to the physical quality of housing that may create a healthy environment for the occupants.

The majority of research concerning the quality of housing generally refers to physical aspects as the indicators of housing quality. These physical aspects include dwelling space area (United Nations, 2007; Cacnio, 2001; World Health Organization, 1988), access to basic facilities, such as water and sanitation (United Nations, 2007; Olotuah, 2006), electricity (Arias & De Vos, 1996) and public amenities (Fiadzo, 2003), as well as the quality and durability of building materials (United Nations, 2007; Arias & De Vos, 1996; Fiadzo, 2003). Studies have confirmed the importance of those physical aspects of dwelling environment to the health and well-being of the occupants. For example, a study found that crowding in a household may increase the risk of acute lower respiratory infection in young children (Cardoso *et al.*, 2004), while another study found that the materials used in the buildings may affect the health condition of the occupants (Cattaneo *et al.*, 2009). The physical indicators above have been included in various manuals and guidelines that are available as guidance for the development of healthy housing (for example, World Health Organization, 1988; Department of Communities and Local Government, 2006).

The development of housing in Indonesia, especially in urban areas, has become a challenge for the Indonesian government in responding to the fast growth of population. Just like what happened in many third world countries, cities in Indonesia face the problems of high density urban housing with limited spaces available for the occupants. According to the population census in 2000, in average, the number of households in Indonesia increase by around 1.2 million per year or 3.15% (Kuswanto, 2005). This growth rate implies the needs to provide more housing to cater for the needs of the increasing number of households from time to time.

The challenge in providing adequate housing for everyone does not only necessarily mean the adequacy in quantity, but also in quality. To support the development of quality housing, the government has published technical guidelines for Low-Income Healthy Housing or *Rumah Sederhana Sehat* (Keputusan Menteri Permukiman dan Prasarana Wilayah, 2002). The guidelines explain several aspects of healthy housing, which include the minimum requirements of: a) space area, b) health and comfort that includes the requirements of lighting, air conditioning, temperature and humidity, c) safety and security in building structure. The minimum requirements have also been set for the facilities to be provided in the neighbourhood of low-income housing (Keputusan Menteri Pekerjaan Umum, 1991).

Nevertheless, the factual data suggest that more attention should be given to the provision of quality housing for the various segments of society, especially those living in high density urban neighbourhood. According to the data survey on social welfare statistics in 2006, there are around 44.1% of households in Indonesia living in the dwelling with floor areas less than 50 m² (Biro Pusat Statistik, 2006). In particular, around 22.8% of the houses provide dwelling space of less than 10 m² per occupant (Kuswanto, 2005).

There is also a lack of quality of living space in terms of physical materials and facilities provided in each house. The data indicate that there are still a number of houses with inadequate quality of materials, as indicated by the percentage of households living in non-permanent dwellings with non-brick walls (37.78%), with roof made of leaf or natural fiber (4.65%), and with earth floor (16.35%) (Biro Pusat Statistik, 2006). Access to basic sanitary facilities is not yet experienced by all households. For example, there are only 56.56% of households equipped with private drinking facility, 60.38% with private toilet facility and only 46.07% with septic tanks (Biro Pusat Statistik, 2006). Overall, there are around 60.23% of dwellings in urban areas and 20.16% of dwellings in rural areas that may be categorized as adequate for living, based on the

permanent materials of the house building and the availability of facilities.

Although the data only illustrates a few among many aspects of healthy housing, it suggests the need for physical improvement of housing quality in order to fulfil the basic needs of the occupants. However, the physical condition of housings should not become the only consideration for determining the quality of housing. In fact, "the housing process cannot be associated exclusively with the physical unit alone, as it requires an integral analysis of the relation between the inhabitant and their habitat" (Jiron & Fadda, 2003: 7). Therefore, it becomes necessary to consider the quality of housing from the perspective of the occupants, their perception and their possible actions towards their housing.

A house is ideally designed in such a way that it could promote the satisfaction of various needs of its occupants. A house may play a role as a setting for fulfilling various needs of each individual living in it, from the basic physiological needs to the higher level needs of self-actualization (Maslow, 1943). The needs of a house as a shelter comprise the needs for a structure that meets our basic physical needs: sleep, rest, food, drink, hygiene, sex, light, air and sun (Israel, 2005; Mikellides, 1980). Such basic needs must be fulfilled before the house can cater for other social needs, aesthetic needs and needs for self-actualization. In turn, the physical quality of living environment, become one of the factors that predict occupants' satisfaction towards their housing (Bell, Greene, Fisher & Baum, 2001).

Within the context of healthy housing, the occupants should be considered as active agents that possess capabilities to make a change and create a better living environment. To promote positive environmental behaviour, however, there is a need to identify the human nature and the situation that could foster motivation (Kaplan & Kaplan, 2008). Environmental action is influenced by environmental values, situational characteristics and psychological variables (Barr, 2003).

This study explores the understanding of 'healthy housing' quality as perceived by the occupants. It attempts to reveal what the occupants think about the quality of their housing, especially in terms of the level of healthiness, and what aspects that they consider as constituting healthy living environment. Understanding the occupants' perception is important since it would be a basis to enable them to conduct the act of creating and maintaining the healthy housing quality in their own dwellings. The study contributes to the development of programmes for urban housing quality improvement which consider the occupant's perception towards their living environment.

2. Methods

2.1 Research Setting and Samples

The study was conducted in two high density urban neighbourhoods located in East Jakarta, Indonesia (Figure 1). The first neighbourhood is located in Kramat Jati district, near the Kramat Jati public market that serves the community in the surrounding areas. Many of the occupants living in this neighbourhood work in the market as sellers of various goods. The second neighbourhood is located in Cawang district. The neighbourhood is a housing area surrounded by a variety of urban commercial uses. A total of 50 households were taken as the samples of the study, consisting of 29 households in Kramat Jati and 21 households in Cawang. One representative of each household – either the husband or wife – becomes the respondent interviewed in this study.

In general, both neighbourhoods are similar in their urban form (Figure 2, 3). They consist of rows of houses with narrow aisles of around 0.9-1.5 meter wide which can only be accessed by pedestrians or motorbike and not accessible by four-wheel vehicles. The houses are located next to one another without any spacing in between. The majority of the houses are built in very limited land parcel, and therefore do not have any garden or yard in front or at the back. Based on the occupancy, there are generally two types of houses in the two neighbourhoods; the houses occupied by a household, and the houses consisting of several units that are either occupied by the extended families of the owner or rented by the owner to different households. The latter is usually called *rumah petak* or *kontrakan* (house for lease).

Both neighbourhoods are not equipped with public social facilities such as parks or sport fields, since there is no land available for such facilities. There is also an issue of cleanliness and drainage found in both locations. Kramat Jati neighbourhood is located next to a small river, however, the river tends to become the waste dumping site by the residents, creating dirty river environment. Similarly, the drainage condition in Cawang also indicates the residents' inability to maintain the drainage well, leaving it dirty and blocked with waste.

In particular, the neighbourhood in Kramat Jati also has the problem of cleanliness due to the fact that many of the occupants of the houses are traders working in the nearby market and some of them often bring their goods home. A variety of trading goods kept by the occupants fill the alleys and other left spaces in the neighbourhood, making the environment more crowded and disordered. There are even chicken slaughter houses and cow stalls, which generally produce dirt and smells that affect the surrounding houses. Such situations do not exist in Cawang, which is a common housing area.

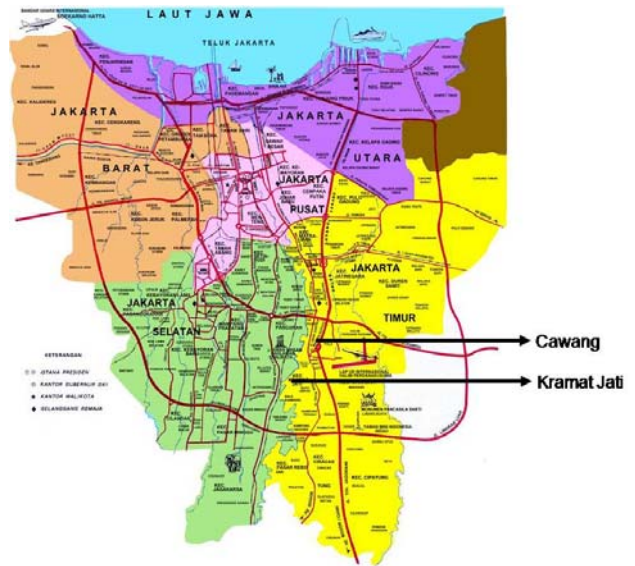


Figure 1. Location of Research in Jakarta, Indonesia



Figure 2. The Neighbourhood in Kramat Jati

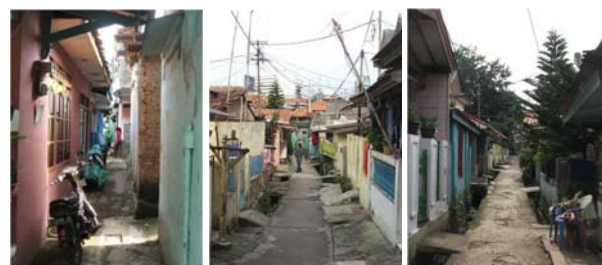


Figure 3. The Neighbourhood in Cawang

2.2. Methods of Data Collection

The primary objective of this study is to understand the occupant's perception towards their dwelling environment and their understanding of 'healthy housing' concept. The data was collected through structured interviews with the occupants. To determine the 'perceived quality' from the occupants' point of view, during the interviews the samples were asked to rate their house in the scale of 1 to 10; 1 indicates the judgment of the house as 'not healthy at all' and 10 indicates the judgment of the house as 'very healthy'. The occupants gave a rating for the healthiness quality

of their own house as well as the neighbourhood environment. During the interview, they were also asked to mention the reasons for their rating, as well as to describe their habits to maintain the healthiness quality in their housing.

In addition, the observation was also conducted in each dwelling in order to obtain a general description on the quality of housing. There were five major aspects of housing quality observed in each house: 1) floor area per person; 2) access to natural ventilation, 3) access to natural lighting; 4) availability of green open space, and 5) availability of sanitary system. The findings of the observation represent the factual physical condition of housing in which the respondents live, which would then be used as the basis of further interpretation and discussion.

3. Results and Discussion

3.1 Occupants' Perception of Housing Quality

The results of the rating made by the respondents are presented in Table 1. Figure 4 illustrates the distribution of scores representing the occupants' perception on the extent to which their houses may be considered as 'healthy'. The average score given by the occupants is 6.92 for the quality of the house. This data suggests that the occupants tend to evaluate their houses as quite healthy to healthy. Figure 5 shows the distribution of score representing the occupants' perception on the extent to which their neighbourhood environment may be considered as 'healthy'. The average score given by the occupants is 6.76, indicating the perception of quite healthy neighbourhood environment.

Table 1. Average 'Perceived Quality' Scores based on Respondents' Rating

Variable	Average score
Perceived quality of house	6.92
Perceived quality of neighbourhood	6.76

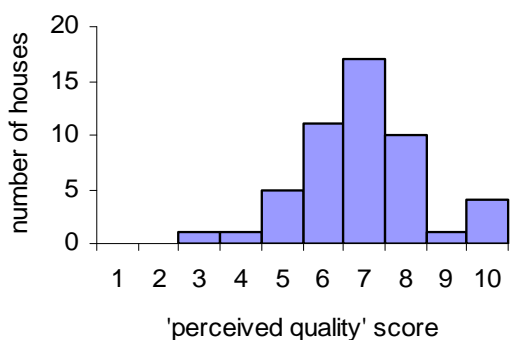


Figure 4. Distribution of 'Perceived Quality' Score based on the Occupants' Rating on the Quality of Their House

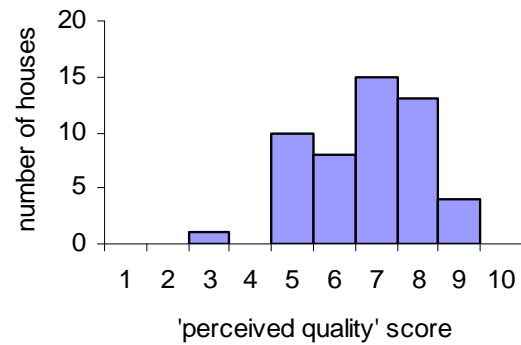


Figure 5. Distribution of 'Perceived Quality' Score Based on the Occupants' Rating on the Quality of Their Neighbourhood Environment

Based on the data above, we can conclude that the majority of the occupants perceive their housing and their neighbourhood as quite healthy. We will now turn to the results of the observation of the physical condition housing to reveal the factual condition of their housing environment in terms of healthiness.

3.2 Factual Physical Condition of Housing

The study found that that the majority of the houses observed in this study fail to provide adequate living space for the occupants. In average, the houses observed in this study have an average of 8.49 m² floor area per person with an average of 4.88 occupants per dwelling. Around 64% of the houses only provide less than 7.2 m² floor area per person, which is the minimum standard according to the regulation of healthy housing (Keputusan Menteri Perumahan dan Prasarana Wilayah, 2002).

The observation also found that some rooms within the dwellings do not receive enough natural ventilation and natural lighting, as illustrated in Figure 6. Only 18% of the houses have access to natural ventilation for all the spaces, while only 28% of the houses have access to natural lighting for all the spaces. The other houses only have some rooms that are naturally ventilated or lit, either directly or indirectly.

Further analysis indicates that the majority of the rooms inside the houses without any accesses to natural ventilation and natural lighting are kitchens, bedrooms and bathrooms. This fact requires consideration since the bedrooms are the spaces used for resting activities of the families. Therefore a lack of natural ventilation and lighting in these rooms may affect the occupants' comfort and health condition. Besides, kitchens and bathrooms are service spaces which involve smells and smokes. Thus, inadequate ventilation and lighting conditions may reduce the occupants' comfort within the dwelling as a whole.



Figure 6. Condition of Spaces Inside the Houses



Figure 7. Houses with Very Limited or No Green Spaces

Another aspect observed is the availability of private green space in the forms of front yards or backyards. The provision of open green space is quite a challenge in high density urban housing with the limited available space. In the context of housing in this study, the majority of the houses do not have any space left for green space, as illustrated in Figure 7.

There are only 14% of the houses which have some spaces for plants with the ground made of water absorbent surface. The majority of the houses do not have any green space (46%), and even if there are some spaces left in front of their house, the space is either made of ground surface with no ability to absorb water, or only planted with few plants or even nothing at all (40%).

Another physical aspect is the provision of sanitary facilities, consisting of private toilets and septic tanks for the sewerage system. The study found that only 40% of the houses can be considered satisfying the requirement of sanitary facilities. There are 20% of the houses that do not have private toilets and therefore the occupants need to share the public toilets with other



Figure 8. Sanitary Facilities in Some Houses

occupants. Another 40% of the houses have toilets but without adequate disposal system of septic tanks. In such cases, the waste is disposed straight into the river or other open drainage. The conditions of sanitary facilities in some houses are illustrated in Figure 8.

Based on the results of observation above, it can be concluded that a number of houses have failed to fulfil the requirements of healthy housing in one or more aspects observed in this study. In general, the requirements for healthy living space have not been achieved by many houses in this study.

3.3 Discrepancies between Occupants' Perception and Observed Physical Conditions of Housing

The findings above show that the occupants tend to evaluate their houses as quite healthy to healthy as indicated by the average score of 6.92. On the other hand, the observation of physical indicators suggests that some requirements of healthy housing have not been satisfied yet in most houses. This indicates that even though factual condition suggests that the houses cannot be categorized into healthy houses, the occupants still consider them as healthy. Such discrepancy may indicate that the occupants do not realise that there are still a lot of improvements needed in their houses to become healthy living environment.

The findings suggest that the occupants of the housing in this study consider that their current condition of housing has satisfactorily fulfilled the requirement of healthy housing according to their own standard. This fact may reflect varying needs regarding housing among society with different social and economic background. The population taken as samples in this study represents the community from relatively poor economic background, and it seems that this segment of community does not expect higher quality of housing than the ones that they occupy now.

This might be explained by understanding that their level of needs is still on the bottom part in Maslow's hierarchy of needs. Since "the appearance of one need usually rests on the prior satisfaction of another" (Maslow, 1943: 370), it seems that the society is still

concerned on the fulfilment of basic living needs. Hence, the existence of house as physical shelter, although not fulfilling the criteria of healthy housing, is considered enough by the occupants. Furthermore, even for the fulfilment of basic physiological needs, there are still lots of improvements needed to achieve sufficient quality of space. However, not all the occupants might be aware of the needs for improvement. Research has suggested that the environmental awareness of society is related to educational level as well as occupation and income (Bodur & Sarigollu, 2005, Zhang *et al.*, 2007). This in turns might be related to the awareness of the quality of living environment and the needs to improve the condition.

The discrepancy found between the perceived quality and the factual physical conditions might be explained by exploring the occupants' understanding of healthy housing. Table 2 shows that from the 50 respondents interviewed, 90% mentioned 'cleanliness' and another 38% mentioned 'tidiness' in their understanding of what makes a house healthy.

Other aspects that were also mentioned were the presence of windows or ventilation that allow fresh air to come in, clean toilet, trees and lighting. However, these aspects were only mentioned by few respondents, suggesting that their general understanding of healthy housing is much related to cleanliness as a major aspect.

Such understanding was also revealed in the actions that they have done to create and maintain their house as healthy houses. The responses from the respondents in Table 3 indicate that 94% of them mentioned cleaning as their main action to maintain the healthiness level of their houses. This includes regular cleaning, sweeping, mopping, emptying the water tub and dusting. Arranging household stuffs in order to tidy up the house was also mentioned by 16% of the respondents. Only

Table 2. Occupants' Description of what Makes a House Healthy (N=50)

Healthy Housing Aspect	n	% of Respondents
Clean	45	90
Nice/tidy	19	38
Ventilation	11	22
Sanitation	4	8
Trees	3	6
Lighting	2	4

Table 3. Occupants' Actions to Make Their House Healthy (N=50)

Occupants' Actions	n	% of Respondents
Clean the house	47	94
Tidy the house	8	16
Open windows	2	2

one respondent mentioned the importance of opening windows, and none of the other aspects were mentioned. Those responses indicated that the issue of hygiene and cleanliness seems to become the major aspect of healthy housing, and while other aspects such as the needs of ventilation, lighting and green spaces were hardly mentioned.

The findings above illustrate that in general the occupants' understanding of healthy housing quality tends to focus on sanitary and hygienic issues. The way individuals perceive health issues is often associated with the efforts to create hygienic condition of our environment. Hygiene and cleanliness is related to removing the dirt which has the possibilities of carrying germs and transmitting diseases (Forty, 1986). Hence, the act of cleaning has become the most common way of maintenance found in many settings of human activities, and have become a norm in everyday life especially in domestic environments with the housework devoted to maintaining cleanliness (Walter, 1985). This tendency was also found in this study.

Nevertheless, the issue of healthy housing is not limited to the technical aspects of sanitation and hygiene, but more related to "the whole health spectrum of physical health, mental health and social well-being both within the dwelling and in the residential environment" (Ranson, 1991: 2). Various factors may affect the health condition of the occupants, and cleanliness might be only one among many other factors. The majority of guidelines on healthy housing (such as Keputusan Menteri Permukiman dan Prasarana Wilayah, 2002; World Health Organization, 1988; Department of Communities and Local Government, 2006) have highlighted various factors that need to be considered in the development of housing quality. The discrepancies between occupants' perception and factual conditions as found in this study may reflect the needs to pay more attention on how the various standards of housing quality could be understood by the society.

3.4 The Relationship between Individual Dwelling and Neighbourhood Environment

Another important finding is related to the occupants' perception towards their neighbourhood environment. The study found that the occupants tend to perceive their neighbourhood environment as healthy, as indicated by average score of 6.76. Such findings pose further question on the relationship between the quality of individual houses and the quality of the whole neighbourhood. In fact, as shown above, the observed quality of the houses still requires a lot of improvement. This needs further attention, since it is not possible to create healthy neighbourhood environment when there are individual houses with poor healthy quality. On the other hand, an individual house with healthy quality does not necessarily guarantee the healthy living of the

occupants, if the surrounding environment still poses health problems.

The findings suggest that it becomes necessary to consider housing quality in a comprehensive way. The issues of quality in housing cannot be dealt with by considering individual housing units as separated entities. In fact, housing issues should be considered by understanding housing as “a locus of interaction between the building, the individual and society” (Serageldin, 1990: 23). Healthy housing implies the understanding of housing units as an entity that should be designed in such a way to ensure the proper layout arrangement (World Health Organization, 1988) as well as provision of various necessary public facilities (Fiadzo, 2003).

It is important to consider how people perceive their environment at different scales (Eyles et al., 2009). The physical condition of a single entity of the environment may influence the overall perception of the rest of the neighbourhood; as believed by “fixing broken windows” theory (Kelling & Coles, 1996). It becomes necessary to ensure that no single unit of the environment is neglected or abandoned since this may further destruct the overall image of the whole environment.

However, this idea also implies that in order to create healthy neighbourhood, each individual needs to show empathy on the wider environment outside their own. It is also important to realize the role of the quality in each single dwelling unit in contributing to the quality of the whole neighbourhood. Nevertheless this may not be easy in practice, since the individual’s awareness of environmental issue at wider level varies and may depend on their education level (Syme, Nancarrow & Jorgensen, 2002). Occupants’ attention to their dwelling environment is related to their ability to control and to take action to create healthier environment (Eyles et al., 2009). There is a need for the awareness of everyone in the neighbourhood to pay attention to the physical condition of the neighbourhood beyond their own dwelling. The findings of this study suggest that this would be a challenge towards healthy living environment.

3.5 The Importance of Occupants’ Perception of Healthy Housing

Some implications for practice might be derived based on the findings. First, there is a need to promote awareness and understanding of ‘healthy housing’ concept through educational programme for occupants. This could be achieved through educating the occupants on the needs to improve and maintain their houses. This programme may become a way to promote the capacity of occupants as the agent of change in their own environment.

In this way, educational programme for the occupants especially in high density urban housing becomes necessary elements in promoting healthy housing quality, as a complementary to the physical development of the housing environment. The messages delivered in educational programmes needs to be comprehensive in order to promote the occupants’ needs of healthy housing quality as a whole and not merely as a physical shelter. All aspects of healthy housing, not just cleanliness, should be promoted. Furthermore, education should be targeted to all members of housing communities to ensure the complete understanding. Children become necessary target, since some actions in improving housing condition are unlikely to be accomplished at the moment and therefore become the future task of the next generation.

Secondly, there is a need to develop a practice design that incorporates the comprehensive aspects of healthy housing. The findings of this study suggest the needs to create housing environments that allow the occupants to be involved in the improvement and maintenance of healthy housing quality. It is crucial that dwelling is not seen as a single entity but as an integral part of neighbourhood. Good quality houses do not automatically create good neighbourhood, especially if there are some houses with poor quality. Therefore, an integrated approach in neighbourhood design practice is required. However, again, this should be accompanied with sufficient information for the occupants in the action, so that they could improve and maintain their living environment.

The third implication is related to the need to incorporate the aspects related to occupants to complement physical indicators of housing quality that already exist. Physical indicators that have been primary consideration in judgment and evaluation of housing quality should be complemented with more occupant-related aspects. It becomes necessary to include these aspects of occupancy in various forms, especially in the regulation and guidelines that incorporate the development of quality housing. For example, regulations that control the quality of housing should incorporate the needs to educate the occupants on the understanding of housing quality and actions that they may contribute to improve their housing condition. The inclusion of occupants-related aspects would promote knowledge and actions of occupants in urban high density housing to be more active in improving the quality of their living environment.

4. Conclusion

The findings of this study indicate that there is a gap between the occupant’s perception of the healthy housing quality and the factual physical condition of their housing. It suggests a lack of understanding of the

comprehensive concept of healthy housing, which should integrate the quality of physical health, mental health and social well-being, not only within the individual dwelling but comprising the whole neighbourhood. In fact, there is a tendency of the occupants to emphasise on certain aspects of healthy housing related to cleanliness, thus the awareness of other more integrated aspects still need to be promoted.

The findings contribute to the development of a framework in thinking housing quality as a comprehensive concept involving both physical entities and human being as the occupants of space. Within this framework, the knowledge, understanding and actions of occupants are considered as an integrated part in achieving healthy housing quality, and as an important support of physical housing quality.

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