



Article

Dynamism of House Plans with Reference to Family Conditions of Lower-Middle-Class Families in Suburban Western Coast of Sri Lanka

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Abstract: This paper analyzes the dynamisms of house plans, family stages, and family backgrounds, and their interrelated dynamism, of lower-middle-class families in suburban residential areas in Sri Lanka. Through a literature review of Sri Lankan historical house plans and family units, parameters to categorize house plans, family stages, and background types were derived. Using measured drawings, interviews, and observations of the case study families, data regarding house plans, construction steps, family stages, family backgrounds, and their transition steps were collected, and a quantitative analysis was conducted. The research included identifying lower-middle-class house plan types and transition types, family stages, parents' employment types, and children's education types. The results show that the transition of family stages and family backgrounds has a relationship with the transition of house plan types, resulting in social mobility and different generations, in different social classes, living in the same house. This study proposes two new house plan types for two construction steps in two family stages, giving a mixed character of lower-middle-class and other social class house plans, providing flexibility to expand and adjustability to cater to residents in different generations and social classes.



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Keywords: house plan transition; family stages; family background; lower middle class; suburban residential areas; western coast; Sri Lanka

1. Introduction

Research on Sri Lanka has pointed out that Sri Lanka is an ethnicity-based country. But in recent research, social class has become the focal point [1]. It has been pointed out that, currently, there are five social classes, namely, upper class, upper middle class, middle middle class, lower middle class, and lower class, in Sri Lanka [2,3]. Among these classes, the lower middle class, which emerged in the late 1970s, is the most prominent class with the largest group having the highest influence on Sri Lankan society [3]. Therefore, this paper is focused on the lower middle class.

Previous research has also pointed out that each social class has its own life pattern [4]. The different life patterns actualize the social classes. These different life patterns are carried out based on the family. Therefore, this research focuses on the family lives of the lower middle class. In social science studies, family stage and family background have been identified as important aspects that influence family life [5].

In architectural studies, the house has been studied as an important object that has a close relationship with family life [6] and social class [7]. Family activities and house plans also have a strong connection. Activities occur in specific rooms, and the network of rooms in the house plan affects family activities. Hence, the house plan has a relationship with family life.

This research hypothesizes that a change in family life, indicated by family stage and background, and a change in the house plan must have interactions. From this interaction, trends of change in family life and house plans must appear. This paper tries to clarify the dynamism of the house plan, which has a certain trend of change that appears from the mechanism of the interaction.

But the family lives or house plan types of the lower middle class, which encompasses the largest group with the highest influence on Sri Lankan society, are not known. Since it is not known whether their house plans and family lives fit, the aim of this research is to examine their house plans, family lives, and their changes and interactions and to identify their needs and difficulties, which can help us give suggestions for house plans for the lower middle class.

This research analyses the dynamism of house plans and family conditions in the period from the 1990s to the present, which is the past 30 years and encompasses the largest part after the formation of the current lower middle class. Firstly, this paper analyses the house plan and its dynamism. Secondly, the dynamisms of family stage and background are analyzed, together with the dynamism of family life. Finally, the dynamism of house plans is compared with the dynamisms of the family stage, family background, and family life. With that, the interrelated dynamism of the house plan and the dynamisms of the family stage, family background, and family life are clarified.

With this clarification, the issues and needs of the lower middle class with reference to family lives and house plans are identified, and suggestions for house plans that fit the lower middle class's demands and needs are given to architects and other house designers.

2. Materials and Methods

- Methodological Framework

This paper is part of a spatial organization study, which analyses the distribution of different spaces as a result of living activities. This mere consideration of living activities is not enough, and explanations on the formation of spatial organization and its change are also needed. In this research, by obtaining support from a sociological framework, major elements that influence family life are introduced, and interactions between these elements and house plans are discussed.

Figure 1 shows the methodological framework of this research.

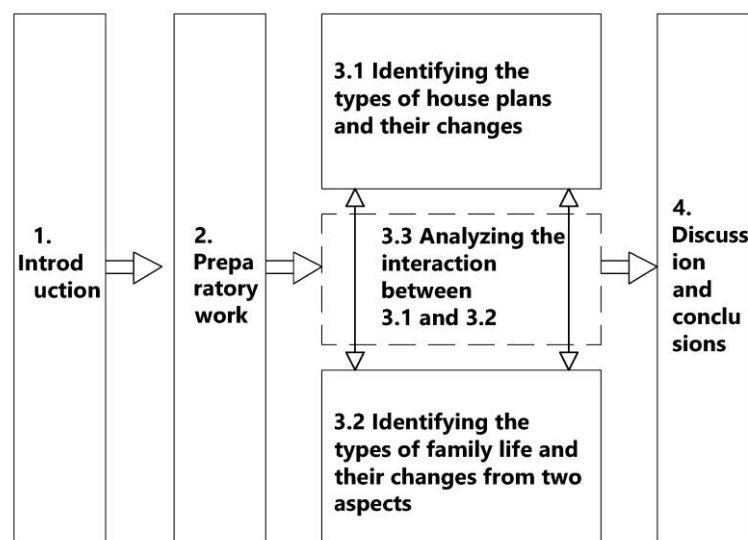


Figure 1. Methodological framework of this research.

First, an introduction is made in Section 1, in which the research background, needs, and aims are identified.

After the introduction, the case study area and the field work methodology are explained. Then, literature reviews on two topics are conducted. One literature review is on Sri Lankan historical house plan types from the medieval period to the late 1970s. Two physical parameters are extracted from this literature review, and eight house plan types are redefined from the extracted two parameters. The other literature review is on the current family lives in Sri Lanka. From this literature review, family stage and family background are extracted as two indicators to explain family life. These points are discussed in Section 2.

Thirdly, based on the physical parameters of the house plans, the indicators of family life (that are extracted in Section 2), and the data collected from the field work, three topics that relate to the selected case study residential area of the lower middle class are analyzed and clarified. One topic is the types of current house plans and their changes, which are analyzed to identify the compositions of these types. Another topic is the types of family life and their changes, which are analyzed to identify the compositions of these types. The last topic is the interactions between the former two topics. Concretely, one topic categorizes the relationship between the change in family stages (hereafter mentioned as the type of family stage change) and the change in house plans. Then, in each step, the way in which the plan changed from one type to another type (hereafter mentioned as the type of house plan change) is analyzed. Lastly, the way in which the family background changed from one type to another type (hereafter mentioned as the type of family background change) in relation to house plan changes and family stage changes is clarified. From that, the interactions between the changes in the house plan, family background, and family stage are identified. These are discussed in Section 3.

Fourthly, the problems of the lower middle class are identified through an analysis of the interaction between the changes in the family background types, house plan types, and family stage types. From these findings, two new house plans are proposed to cater to the needs of lower-middle-class families. These are discussed in Section 4.

- Methods in each section

In Section 2.1, the case study area selection is conducted by referring to urban development history.

In Section 2.2, the extraction of physical parameters and the categorization of historical house plans are conducted through an architectural literature review. The scope of the selected period is from the medieval period to the late 1970s. Through a literature review on sociology, with reference to family, the major components that affect family life and the characters of family are identified. These identified components are derived as the parameters to clarify family types in the lower middle class.

In Section 3.1, measured drawings, interviews, and observations, which are gathered through field work in the selected area, are analyzed. The case study houses and families were randomly selected, and consent was given by the participating families. Physical house plans are created through measured drawings. With the physical parameters set in Section 2.2, and the viewpoints of the spatial organization studies [8,9], the current house plan types are identified, and the house plan changes are explained with reference to the house plan types.

In Section 3.2, data on family stages and backgrounds are obtained through interviews and questionnaires. With the family stage and background parameters set in Section 2.2, the lower-middle-class family stage types, background types, and their transition types are identified.

The field studies were conducted in October 2020, April 2021, May 2022, and June 2022.

In Section 3.3, the tendencies of the house plan changes, with reference to the family stages and background changes, are identified by overlapping the house plan types and house plan changes (identified in Section 3.1) with the family stages and background changes (identified in Section 3.2).

In Section 4, the relationship between the family stages, family backgrounds, and house plan changes is discussed, and suggestions for new house plans that fit the lower middle class's demands and needs are given.

2.1. Case Study Residential Area and Fieldwork

Most lower-middle-class people are currently residing in suburban areas in the western coastal belt of Sri Lanka [10]. This area underwent the highest impact from urbanization from the 19th century onwards. With that, along the western coastal belt, a series of core towns, such as Negombo, Colombo, Moratuwa, Panadura, Kalutara, etc., have emerged. With industrialization in the 1970s, these co-towns developed and expanded, connecting as one urbanized area. Most of the suburban residential areas emerged on a small scale, in the early 1980s, around or next to these core towns. In the mid-1990s, these suburban areas were developed on a large scale by land sellers and developers.

For this research, a typical suburban residential area that is in the western coast, next to a core town, which was developed in the early 1990s by a land seller, was selected as the case study area. Hence, Galleview Watta, Korosduwa, which is a suburban area in the western coastal belt in Sri Lanka, located next to the core town Wadduwa, which was developed in 1995 by a well-known land seller, was selected as a typical suburban case study area of the lower middle class.

Figure 2 shows the selected case study area in Galleview Watta Korosduwa, Sri Lanka and the locations of the selected case study houses.

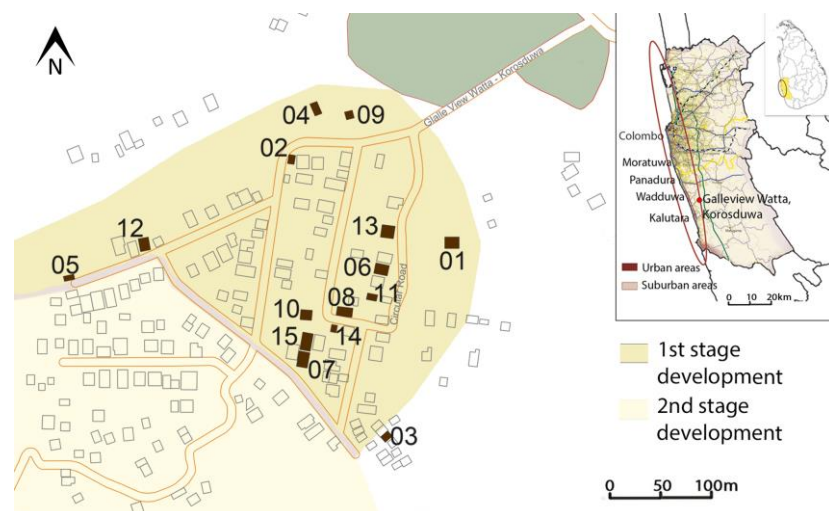


Figure 2. Selected case study area, Galleview Watta, Korosduwa, Sri Lanka and the selected case study houses (shown with reference to the case study number).

The selected case study area, Galleview Watta, had approximately 130 houses when the land seller developed the area in 1995. In the second stage, the western side of the residential area was developed. At present, Galleview Watta has 205 houses. Since lower-middle-class families construct their houses in several construction stages, and it takes several years for a house to be completed, selecting a case study area where the houses are fully developed and completed was important to study the lower-middle-class house plan transition from start to completion. Therefore, fifteen houses, which cover 12% of the houses in the area, were randomly selected from the oldest part of Galleview Watta for the case studies, as most of the houses in this area are fully developed.

2.2. Literature Review

2.2.1. Physical Parameters That Affect House Plans

In previous studies, “house” has been mentioned as a key aspect to determine social class [7,11,12]. Among these studies, some researchers [13–15] have identified that

the common places in a house, which facilitate common family activities, social gatherings, and guest entertainment, are important to consider when designing a house, as these places are the main places that a family will use for their family needs and to show their socioeconomic status, family life, and family image to their guests.

In the Sri Lankan context, the relationship between social classes and daily life has also been studied in previous studies from the perspectives of the sociological and architectural fields. There are some architectural studies which have focused on the interaction between the built environment (such as houses) and family life (behavior and its character) with reference to social classes [16–18]. These studies have pointed out the need to clarify the interaction between the built environment and family life. One study [17] discussed the impact of house plans on the family lives and behaviors of middle-class dwellers.

But in terms of the situation inside a lower-middle-class house, the way in which lower-middle-class family members use the house plan and its common places in which common family activities and guest entertainment occur, and how the family lifestyle and family image are shown to guests in these common places, have not been studied. Therefore, this paper attempts to clarify the relationship between lower-middle-class house plans and family lives.

Historical Developments of Detached House Plans and Their Relationship with Family Life

Lower-middle-class house plan characteristics and their relationship with family life have not been studied in previous research. To understand the lower-middle-class house character in relation to historical Sri Lankan house plans and their transition, a literature review on the historical house plans in Sri Lanka in different historical periods, from the medieval period to the late 1970s, was carried out. Through this literature review, the physical parameters that create the character of each house plan and its residents' family lives were identified.

In Sri Lankan history, from the medieval period to the late 1970s, there are mainly five time periods, namely, the medieval period (prior to the 16th century); the colonial period, which includes the Portuguese colonial period (1505–1658), the Dutch colonial period (1658–1796), and the British colonial period (1796–1948); and the post-colonial period after the independence movement (from 1948 to late 1970s) [19].

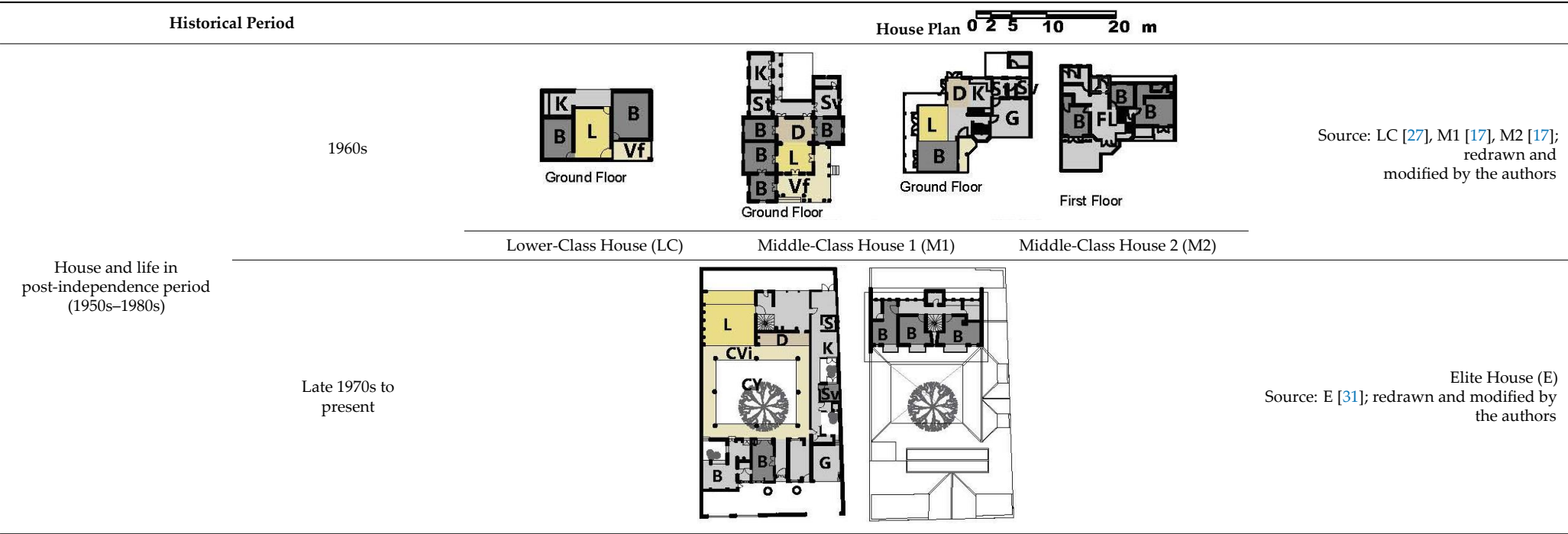
The historical house plans, their spatial usage, and the lifestyle in each historical period were taken from a literature review of historical Sri Lankan house plans and lifestyles [17,20–29].






Table 1 shows the identified historical house plans in each historical period. The influence of the Portuguese colonial period on Sri Lankan historical houses is limited, as Dutch colonial rulers who colonized Sri Lanka after Portuguese destroyed most of the Portuguese buildings [25]. Moreover, after the independence movement in the late 1940s, the locals started to reject colonial architecture. But the results of that movement were only visible in the 1960s. Therefore, in the 1950s, a new house plan type cannot be observed. Due to these reasons, Portuguese colonial period house plans and 1950s house plans were not included in this historical house plan analysis.

Table 1. Identified historical house plans in each historical period.

| Historical Period | House Plan | |
|--|---|---|
| Medieval period (prior to the 16th century) |  | Vernacular 1 (V1) Source: V1 [22]; redrawn and modified by the authors |
| |  | Vernacular 2 (V2) Source: V2 [21]; redrawn and modified by the authors |
| Dutch colonial period (17th–18th century) |  | Dutch Town House (DT) Source: DT [30]; redrawn and modified by the authors |
| House plans in colonial period (16th century to mid-20th century) |  | British Bungalow (BB) Source: BB [28]; redrawn and modified by the authors |

Table 1. Cont.



Legend: —Living Room; —Verandah (front); —Dining Room; —Bedroom; —Other Spaces; CY—Courtyard; CVi—Central Verandah; CR—Common Room; FL—Family Living Room; K—Kitchen; St—Store Room; Sv—Servant's Room; G—Garage.

Selection of Physical Parameters to Typologize House Plan Types

Through a literature review of historical plan types and observations of the historical plan types presented in previous studies, the types of rooms, their usages, and special physical characteristics that influence family life were identified. These identified physical characteristics were selected as the physical parameters to analyze and categorize lower-middle-class house plans in this research.

Having a living room and a dining room in a house plan is important because prior to Dutch and British colonial periods, in Sri Lankan house plans, there were no living rooms or dining rooms. By having a living room or a dining room, the family life is changed as indoor spaces (living room and dining room) become more important. Prior to this, the outdoors was excessively used for family activities. It is also clear that with each historical period transition, there is a trend in which the living room and the dining room are separated. Therefore, the existence of the living room and dining room (L&D) and its connections are selected as the first parameter (P1).

The literature review also revealed that in different historical periods, different sets of common places, namely, the front verandah, living room, central inner verandah, dining room, and kitchen, were used for common family activities, such as conversing, eating, resting, TV watching, guest entertainment, etc. These different sets of common places determine which types of family activities occur in each common place and how the common places are used by the family members and guests. Hence, the set of common family activity places is selected as the second parameter (P2).

Through the literature review, it was also identified that the connection between the bedrooms, which are personal usage spaces, and the common family activity rooms (front verandah, living room, central inner verandah, dining room, and kitchen), which are common spaces for both family members as well as guests, are different in each historical period. With time, the connection between the bedrooms and the common family activity rooms has become less strong or non-existent. Through the literature review, it was also identified that a network of common activities and private activities makes certain patterns and has relationships with family life. This connection between bedrooms and common rooms shows how a house plan affects family life and how it controls the personal lives and common lives of family members. Therefore, the connection between the bedrooms and the common family activity places, namely the front verandah, living room, central inner verandah, dining room, and kitchen, is selected as the third parameter (P3).

Table 2 shows each redefined historical plan type with reference to the selected physical parameters.

2.2.2. Parameters That Affect Family Stages

In the theory of family life cycle, eight family stages, which are passed down by an individual when a person grows up and develops as well as when their children grow up, are discussed [32].

The stages of the family life cycle are as follows:

- Independent;
- Coupling or marriage;
- Childbearing family—from the birth of the first child until that child is 2 years old;
- Family with preschoolers—when the oldest child is between the ages of 2 and 6 years;
- Family with school children—when the oldest child is between the ages of 6 and 13 years;
- Parenting adolescents—when the oldest child is between the ages of 14 and 20 years;
- Empty nest—launching adult children;
- Retirement or senior years [32].

Table 2. Historical house plan types with reference to the physical parameters.

| Plan Type | | Physical Parameters | | | | Resident Type |
|--------------------------|--|------------------------------------|---|------------------------------------|---|----------------------------------|
| | | Types of Rooms | Criteria for Type Identification | | | |
| | | | Existence of the Livingroom and Dining Room (L&D) and Their Connection (P1) | Common Family Activity Places (P2) | Bedrooms Open to Common Family Activity Places (P3) | |
| Medieval Period | Vernacular 1 (V1) (Prior to the 16th century) | O, Vf, CR, B, K | N/A | O, Vf, K | N/A | Ordinary people |
| | Vernacular 2 (V2) (Prior to 16th century) | O, CVi, CY, B, K, St | N/A | O, CVi, K | ⊙ | Elites |
| Colonial Period | Dutch Town House (DT) (16th century) | Vf, L, CVi-D, CY, B, K, St, Sv | L-D | Vf, L, CVi-D, K | ⊙ | Dutch colonial rulers/elites |
| | British Bungalow (BB) (17th century) | Vf, L, D, B, K, Dr, St, Sv, G | L-D | Vf, L, D, Dr, K | o | British colonial rulers/elites |
| Post-Independence Period | Lower-Class House (LC) (1960s) | O, Vf, L, B, K | N/A | O, Vf, L, K | ⊙ | Lower-class people |
| | Middle-Class House 1 (M1) (1960s) | Vf, L, D, B, K, St, Sv, G | LD | Vf, L, D, K | ⊙ | Middle-middle-class people |
| | Middle-Class House 2 (M2) (1970s) | Vf, L, D, B, FL, K, St, Sv, G | L/D | Vf, L, D, K | o | Middle-middle-class people |
| | Elite House (E) (1970s) | L, D, CVi, CY, FL, B, K, St, Sv, G | L/D | L, CVi, D, K | X | Elites/upper-middle-class people |

Vf—Verandah (front); CY—Courtyard; CVi—Central Verandah; CR—Common Room; L—Living Room; FL—Family Living Room; Dr—Drawing Room; D—Dining Room; Cvi-D—Combined Central Verandah and Dining Room; B—Bedroom; K—Kitchen; St—Store Room; Sv—Servant’s Room; G—Garage; O—Outdoors; LD—Connected L and D; L-D—Semi-Connected L and D; L/D—Separated L and D; ⊙—Yes, majority; o—Yes, not majority; X—Not; N/A—Not applicable.

These stages show that special recognition is given to the ages of the children in a family. The importance of the children's ages in the family stages has been discussed by other researchers as well. According to a study on individual adaptations in family development stages, families move through the stages in a particular order across time, and these stages are defined according to the children's ages and how the family moves along with the children's development [33]. The family development theory also discusses the importance of children's ages, the achievement of tasks, how children's development relates to other social systems such as formal education, and how those affect the dynamics inside of the family [34]. These theories emphasize that family life changes with time when the family moves into different family stages and achieves different goals.

With this understanding, in this research, Sri Lankan children and their age groups, with reference to the Sri Lankan education system, were considered when defining the family stages. Figure 3 shows the major exam grades in the Sri Lankan school education system with reference to the students' ages. In this research, the children's age groups were categorized with reference to these education levels.

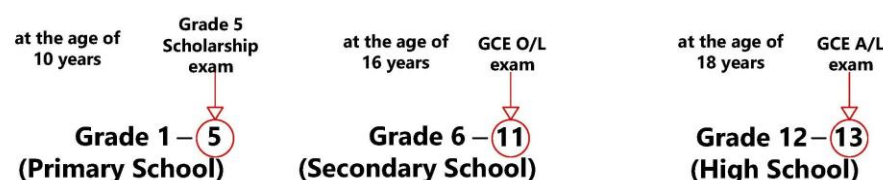


Figure 3. Major exam grades in the Sri Lankan school education system with reference to students' ages.

Table 3 shows the children's age groups considered in this research with reference to their education levels.

Table 3. Children's age groups considered in this research with reference to their education levels.

| Age Group (Years) | Education/Work Stage | Life Stage |
|-------------------|----------------------|---|
| 0–9 | Prior to grade 4 | Childhood prior to any major national exams |
| 9–18 | Grade 4–13 | School age with major exams |
| Above 18 | University/training | Tertiary education |
| | Working (training) | Initial working stage/training period |

The following seven most common family stages were selected for this research:

- A—Married couple;
- B—Only small children (0–9 years);
- C—Small children (0–9 years) and school-age (with major exams) children (9–18 years);
- D—Only school-age children or school-age children (9–18 years) and university-age children (above 18 years);
- E—Only university/working-age children (above 18 years);
- F—Only married children or school/university/working-age children and married children living at home (above 18 years);
- G—All children have moved out.

2.2.3. Parameters That Affect Family Background

Previous studies have considered many aspects that affect the family background. Among them, some studies have emphasized the importance of three main aspects, namely, family economy, parents' employment type, and parents' education level [35–40]. These studies have argued that social capital and family life are inevitably increased when the above-mentioned three main aspects are stable. This improves social networks, which gives the opportunity for social mobility, enhancing the family lifestyle.

In this research, by taking the Sri Lankan family structure into consideration, it was understood that the parents' employment type is a key aspect that determines both the economic situation of the family as well connections with other social groups. Furthermore, the education levels of both the parents and children were taken into consideration, as in Sri Lankan culture, adult unmarried children living with their parents is a common occurrence, and married children living with their parents is also common. Hence, it was clear that the children's education levels also impact the family. Therefore, parents' employment types (P1) and children's education levels (P2) were selected as the parameters to determine the family background in this research.

3. Results

3.1. Types of Lower-Middle-Class House Plans with Reference to Physical Parameters

3.1.1. Current House Plan Analysis

With the aim of identifying the current house plan types and their transition types (with reference to the construction steps) in lower-middle-class families, the current house plans of the case study families were analyzed according to the three selected physical parameters (P1—the existence of a living room and dining room (L&D) and their connection; P2—common family activity places; and P3—bedrooms open to common family activity places) identified in Section 2.2.1.

Table 4 shows the identified nine current house plan types, how they were categorized according to the identified physical parameters, and how they were rearranged in relation to the historical plan types (The current house plan of each house is shown in "Table 5. Transition of house plans—steps of construction," as the last construction step).

An analysis of the current house plan types shows that all nine current house plan types have been developed from historical plan types. One plan type (V1-1*) and one case from V1; three plan types (cLC-1, sLC-1*, and sM1d-LC*) and five cases from LC; five plan types (sM1d-LC*, sM1d-1, sM1*-E, sM1d-M2, and sM1d-E) and ten cases from M1; two plan types (sM2-1 and sM1d-M2) and five cases from M2; and two plan types (sM1*-E and sM1d-E) and two cases from E have been developed. From the V2, DT, and BB historical plan types, no plan type or case has been developed.

Figure 4a shows that most of the current house plans are M1-based house plans (ten cases). The second largest group is LC- and M2-based house plans (five cases). The third largest group is E-based house plans (two cases), and the last is V1-based house plans (one case). From the ratios, it can be said that most of the current plan types and cases have been influenced by the historical plan type M1, and a noticeable number of plan types and cases have been developed from LC and M2 as well. Though the influence of V1 is limited in the current house plans, V1 has influenced the first construction steps of the house plans in most of the cases. This point will be further discussed in the house plan type transition analysis.

Table 4. Current house plan types of the lower middle class and their physical characteristics.

| Case Study No. | Physical Characteristics of the Current House Plan | | | | Plan Types with Physical Similarities to Historical Plan Types |
|----------------|--|--|------------------------------------|--|--|
| | Types of Rooms | Criteria for Type Identification | | | |
| | | Existence of L&D and Their Connection (P1) | Common Family Activity Places (P2) | B Open to Common Family Activity Places (P3) | |
| 1 | SL, CR-B, K, G | N/A | O, K | N/A | V1-1 * |
| 9 | L, Vf, B, K, St | N/A | O, Vf, L, K | ⊙ | cLC-1 |
| 3, 4 | L, B, K | N/A | O, L, K | ⊙ | sLC-1 * |
| 2, 5 | L, D, B, K | L-D | O, L, D, K | ⊙ | sM1d-LC * |
| 8, 13 | L, D, Vf, B, K, (G) | L-D | Vf, L, D, K | ⊙ | sM1d-1 |
| 11 | L, D, B, K, G | L/D | L, D, K | ⊙ | sM1d *-E |
| 6, 7, 10, 14 | L, D, Vf, B, K, (FL), (G) | L-D | Vf, L, D, K | O | sM1d-M2 |
| 12 | L, D, Vf, B, K | L-D | Vf, L, D, K | X | sM1d-E |
| 15 | L, D, Vf, B, K, G | L/D | Vf, L, D, K | O | sM2-1 |

L—living room; SL—small Living room (>10m²/); Vf—verandah (front); FL—family living room; D—dining room; B—bedroom; CR-B—common room and bedroom; K—kitchen; O—outdoors; St—storeroom; G—garage; LD—connected L and D; L-D—semi-connected L and D; L/D—separated L and D; V1-1—Vernacular 1 house (V1)-based house plan type 1; LC-1—Lower-Class House (LC)-based house plan type 1; M1d-1—Middle-Class House 1 (M1)-based house plan type 1; M2-1—Middle-Class House 2 (M2)-based house plan type 1; M1d-LC—Middle-Class House 1 (M1) and Lower-Class House (LC) mixed house plan type; M1d-M2—Middle-Class House 1 (M1) and Middle-Class House 2 (M2) mixed house plan type; M1d-E—Middle-Class House 1 (M1) and Elite House (E) mixed house plan type; c—complexed/bigger than the based historical house plan; s—simpler/smaller than the based historical house plan; *—variation in the historical house plan without a front verandah; ⊙—yes, majority; O—yes, not majority; X—no; N/A—Not applicable.

Table 5. Transition of house plans—steps of construction.

| Case Study No. | House Construction Steps | | | | |
|----------------|---|---|---|--------|--------|
| | Step 1 | Step 2 | Step 3 | Step 4 | Step 5 |
| 01 |  2005 | | | | |
| 02 |  2003 | | | | |
| 03 |  2006 |  2006 | | | |
| 04 |  2003 |  2005 | | | |
| 05 |  1998 |  1999 | | | |
| 06 |  2004 |  2015 | | | |
| 07 |  2011 |  2015 | | | |
| 08 |  2000 |  2008 |  2009 | | |
| 09 |  1998 |  2005 |  2010 | | |

Table 5. Cont.

| Case Study No. | House Construction Steps | | | | |
|----------------|---|---|---|--|---|
| | Step 1 | Step 2 | Step 3 | Step 4 | Step 5 |
| 10 |  |  |  | | |
| 11 |  |  |  |  | |
| 12 |  |  |  |  | |
| 13 |  |  |  |  |  |
| 14 |  |  |  |  |  |
| 15 |  |  |  |  |  |



L

—Living room

B

—Bedroom

cLC-1

—cLC-1

sM1d-M2

—sM1d-M2

SL

—Living room

K

—Kitchen

sLC-1

—sLC-1

sM1d*-E

—sM1d*-E

Vf

—Verandah (front)

Other spaces

—Other spaces

sM1d-LC*

—sM1d-LC*

sM1d-E

—sM1d-E

D

—Dining room

V1-1

—V1-1

sM1d-1

—sM1d-1

sM2-1

—sM2-1

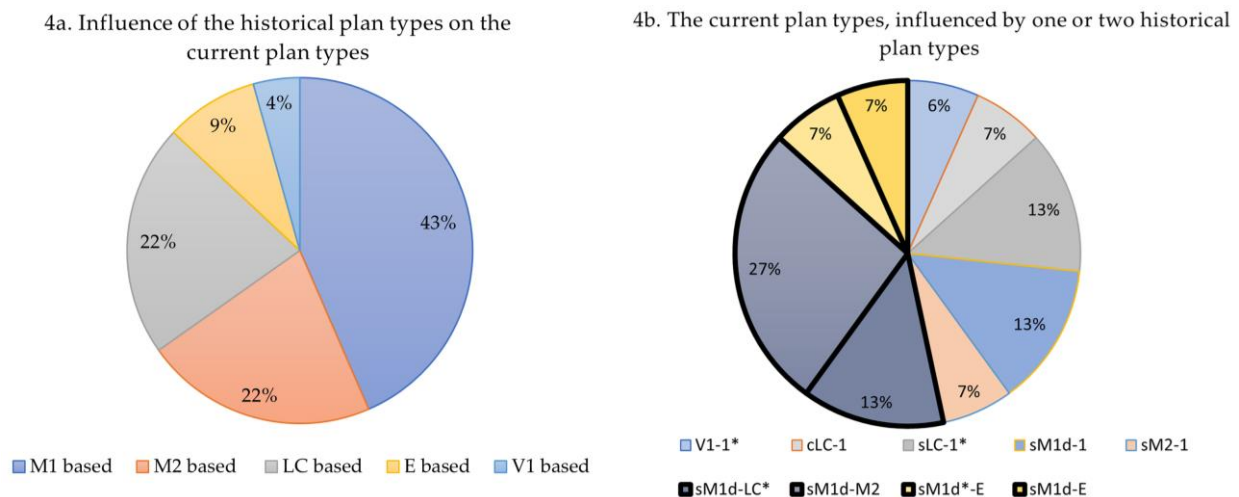


Figure 4. The current plan types with reference to the historical plan types on which they are based.

Figure 4b shows that there are seven cases (46.66%) that have been influenced by only one historical plan type, and there are eight cases (53.33%) that have been influenced by two historical plan types (shown in the thick outlines). This has resulted in more mixed current house plan types. All of the mixed plan types and the cases are influenced by the M1 plan type, and the other plan types include LC (one plan type and two cases), M2 (one plan type and four cases), and E (two plan types and two cases).

This shows that, currently, the lower middle class has a tendency to have mixed house plan types.

3.1.2. House Plan Transition Analysis (with Reference to the Construction Steps)

The interviews with the case study families revealed that out of the fifteen case study families, except for two cases (case nos. 1 and 2) (13.33%), most of the cases (case nos. 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15) (86.66%) have had two or more construction steps in the building processes of their current houses. This has resulted in two or more house plan transitions.

Therefore, to understand the transition of the house plan types in lower-middle-class families, an analysis on the house plan transitions of each family was conducted. The house plans of all case study families, from the first construction step to the last construction step (current house plan), were redrawn through the interviews and observations of the old photographs provided by the family members. To categorize these house plan types, the same physical parameters selected in Section 2.2.1 and the same method adopted to categorize the current plans in Section 3.1.2 were adopted.

Tables 5 and 6 show the house plan construction steps and the house plan type transition from the first construction step to the current house plan type.

Table 6. House plan transition types.

| Case Study No. | Plan Type Transition | | | | | | Plan Transition Type | |
|----------------|----------------------|------------------------|------------|------------|------------|------------|---------------------------|---------------|
| | Temporary Plan | Start of a Stable Plan | 1st Change | 2nd Change | 3rd Change | 4th Change | | |
| 01 | V1-1 | | | | | | V1 | V1 |
| 04 | V1-1 | sLC-1 * | | | | | V1 + LC | V1-LC |
| 05 | V1-1 * | sM1d-LC * | | | | | V1 + M1/LC | V1-M/LC |
| 13 | V1-1 * | sLC-1 * | sM1d-1 | sM1d-M2 | sM1d-1 | | V1 + LC + M1 + M1/M2 + M1 | |
| 08 | V1-1 * | sM1d-1 | | | | | V1 + M1 | V1-M |
| 14 | V1-1 * | sM1d-1 | sM1d-M2 | | | | V1 + M1 + M1/M2 | |
| 15 | V1-1 | sM2-1 | | | | | V1 + M2 | |
| 10 | V1-1 | sM1d-E | sM1d-M2 | | | | V1 + M1/E + M1/M2 | V1-M/E-M |
| 11 | V1-1 * | sM1d-LC * | sM1d *-E | | | | V1 + M1/LC + M1/E | V1-M/LC-M/E |
| 03 | | sLC-1 * | | | | | LC | LC |
| 09 | | sLC-1 * | cLC-1 | | | | LC | |
| 12 | | sLC-1 * | sM1d-LC * | sM1d-1 | sM1d-E | | LC + M1/LC + M + M1/E | LC-M/LC-M-M/E |
| 02 | | sM1d-LC * | | | | | M1/LC | M/LC |
| 06 | | sM1d-M2 | | | | | M1/M2 | M |
| 07 | | sM1d-M2 | | | | | M1/M2 | M |

V1—Vernacular 1; LC—Lower-Class House; M—Middle-Class House; M1—Middle-Class House 1; M2—Middle-Class House 2; E—Elite House; V1-1—Vernacular 1 house (V1)-based house plan type 1; LC-1—Lower-Class House (LC)-based house plan type 1; M1d-1—Middle-Class House 1 (M1)-based house plan type 1; M2-1—Middle-Class House 2 (M2)-based house plan type 1; M1d-LC—Middle-Class House 1 (M1) and Lower-Class House (LC) mixed house plan type; M1d-M2—Middle-Class House 1 (M1) and Middle-Class House 2 (M2) mixed house plan type; M1d-E—Middle-Class House 1 (M1) and Elite House (E) mixed house plan type; c—complexed/bigger than the based historical house plan; s—simpler/smaller than the based historical house plan; *—variation in the historical house plan without a front verandah.

The Changes from the Starting Plan

- The changes from the V1-based or mixed starting plan types

Most of the families (9/15) (60%) have started with a V1-1-based plan type. Except in one case (1/9) (11.11%), the majority of the V1-1-based plan type cases (8/9) (88.88%) have changed into another plan type. V1-based plans have changed to LC-based (4/15) (26.66%), M1-based (5/15) (33.33%), M2-based (1/15) (6.66%), and E-based (1/15) (6.66%) plan types. This shows that, at present, the V1-based plan type is working, but only as a temporary plan type.

When the V1-based plan type is excluded, there are fourteen cases with other plan types. Out of these fourteen cases, the following plan type changes were observed.

The data show that most of the cases (8/14) (40%) have started with LC- or M1-based or mixed plan types. The second largest group of cases (3/14) (21.42%) have started with M2-based or mixed plans. The lowest number of cases (1/14) (7.14%) have started with E-based or mixed plan types.

Figure 5 shows the changes from the starting plan types of the LC-, M1-, and E-based plan types.

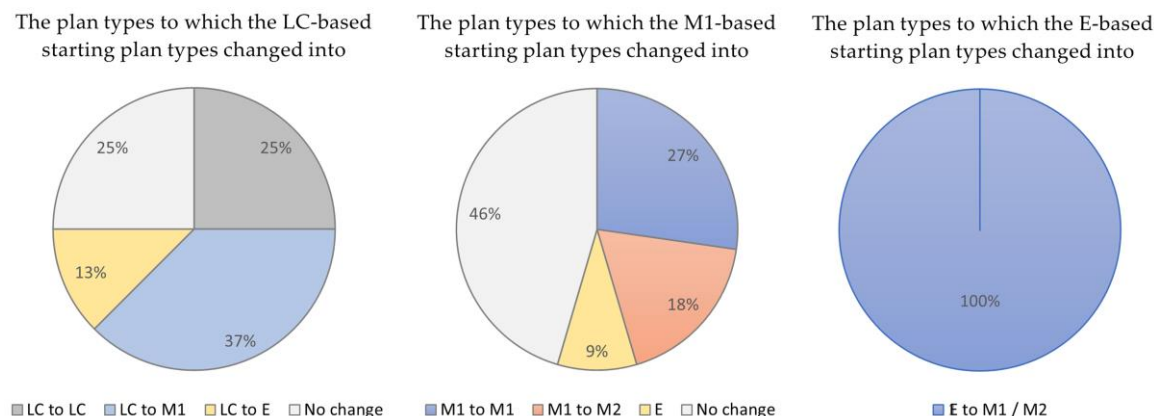


Figure 5. Plan type changes from the starting LC-, M1-, and E-based plan types.

- The changes from the LC-based or mixed starting plan types

A quarter of the cases (2/8) have not changed into another plan type. A quarter of the cases (2/8) have changed into another LC-based or LC mixed plan type, showing some tendency for minor changes. More than one third of cases (3/8) have changed into an M1-based or M1 mixed plan type. This shows a high tendency for middle-level, upward changes. Very few cases (1/8) have changed into an E-based or E mixed plan type. This shows a low tendency for major upward changes.

- The changes from the M1-based or mixed starting plan types

Most of the cases that started with an M1-based or M1 mixed plan type have not changed into another plan type. Almost one third of cases have changed into another M1-based or M1 mixed plan type. This shows a high tendency for minor changes. Around one fifth of cases have changed into an M2-based or M2 mixed plan type. This shows a tendency for middle-level, upward changes. Very few cases have changed into an E-based or E mixed plan type, showing a low tendency for major upward changes.

- The changes from the E-based or mixed starting plan types

The only case (1/1) (100%) that started with a mixed E plan type has changed into an M1-based or M1 mixed plan type and M2-based or M2 mixed plan type. This shows a high tendency for minor or middle-level downward changes.

- The changes from the M2-based or mixed starting plan types

None of the cases (0/3) (0%) that started with an M2-based or M2 mixed plan type changed into another plan type. This shows a high tendency to have a continuation with no changes.

The data analysis shows that, when the V1-based plan type is excluded, more than half of the cases (8/14) (57.14%) have not changed into another plan type from the starting plan type (LC, M1, M2, and E). But almost half of the cases (6/14) (42.85%) have changed into another plan type from these starting stable plan types. Two thirds of the cases (4/6) (66.66%) that changed from these plan types have changed only one time, while one third of the cases (2/6) (33.33%) that changed from a stable plan type have changed three times. There are no cases that changed from these plan types that have changed two times.

Since most of these plan types (LC, M1, M2, and E) have not changed into another plan type, these plan types were identified as stable plan types. Since most of the cases (8/9) (88.88%) with the V1-based starting plan type have changed into another plan type, the V1-based plan type was identified as a temporary plan type. Except for the case (case no. 1) that stayed in the V1-1 plan type, most of the cases (14/15) (93.33%) have stable plan types.

The Changes from the Second Stable Plan Onwards

After changing from the starting stable plan, the LC-based plan types have not changed into another plan type (0/15) (0%), the M1-based plan types have changed two times (2/15) (13.33%), and the M2- and E-based plan types have changed only one time (1/15) (6.66%).

- The changes from the M1-based or mixed plan types after the starting stable plan change

After changing from the starting stable plan, one third of the cases (5/15) (33.33%) have the M1-based or M1 mixed plan type as the second plan type. Out of these, more than half of the cases (3/5) (60%) have not changed into another plan type. More than one third of cases (2/5) (40%) have changed into another plan type. Regarding the cases that have changed from the M1-based plan types, all cases (2/2) (100%) have changed into another M1-based or M1 mixed plan type. This shows a high tendency for minor changes in the second plan transition. Half of these cases (1/2) (50%) have changed into an M2-based or M2 mixed plan type or an E-based or E mixed plan type. This also shows a tendency for middle-level or major upward changes in the second plan transition.

- The changes from the M2-based or mixed plan types after the starting stable plan change

After changing from the starting stable plan type, less than one third of the cases (3/15) (20%) have the M2-based or M2 mixed plan type as the second or third plan type. Out of these, most of the cases (2/3) (66.66%) have not changed into another plan type. Only one third of cases (1/3) (33.33%) have changed into an M2 plan type. The only case (1/1) (100%) that has changed from an M2-based plan type has changed into an M1-based plan type. This shows that still there is some tendency among lower-middle-class families to have middle-level downward changes in house plan transitions.

Overall, the analysis of the starting stable plan transitions and the analysis of the second and third stable plan transitions show that the stable plans have changed less. The LC-based and M1-based plan types have changed more than the M2-based plan types. Once an M2-based or E-based plan type or a mixed type of plan is achieved, the tendency to change from that plan type is low.

3.2. Lower-Middle-Class Family Life Transitions

3.2.1. Lower-Middle-Class Family Stage Transitions

With the aim of identifying the family stage transition types of the lower middle class, the family stages of the case study families were analyzed according to the ages of the children with reference to the Sri Lankan education system, as identified in Section 2.2.2.

The data show that most of the current families are in family stage D (6/15) (40%). The second largest group is in family stage E (4/15) (27%). The third largest group is in family stage G (3/15) (20%), and the fourth is in family stage C (2/15) (13%). Currently, there are no families who are in family stage F.

Table 7 shows the identified family stage transition types of the selected case study families.

Table 7. Family stage transition types.

| Case Study No. | Family Stage Transition | | | | | | | Family Stage Transition Type | |
|----------------|-------------------------|---|---|---|---|---|---|------------------------------|--------------------------|
| | A | B | C | D | E | F | G | | |
| 02 | O | O | O | | | | | A-B-C | Increasing family |
| 11 | O | O | O | | | | | | |
| 10 | O | O | O | O | | | | | |
| 12 | O | O | O | O | | | | A-B-C-D | Static family type |
| 08 | O | O | O | O | | | | | |
| 09 | O | O | O | O | | | | | |
| 06 | O | O | O | O | | | | | |
| 15 | O | O | O | O | | | | | |
| 03 | O | O | O | O | O | | | A-B-C-D-E | Decreasing family type |
| 13 | O | O | O | O | O | | | | |
| 14 | O | O | O | O | O | | | | |
| 01 | O | O | O | O | O | | | | |
| 04 | O | O | O | O | O | | O | A-B-C-D-E-G | |
| 07 | O | O | O | O | O | | O | | |
| 05 | O | O | O | O | O | O | O | A-B-C-D-E-F-G | Second-cycle family type |
| | A | B | C | D | E | F | G | | |
| | | | | | | | | | First generation |
| | | | | | | | | | Second generation |
| | | | | | | | | | Third generation |

A—married couple period; B—only small children (0–9) period; C—small children (0–9) and school-age children (9–18) period; D—only school-age children or school-age children (9–18) and university/working-age children (above 18) period; E—only university/working-age children (above 18) period; F—school/university/working-age children and married children living at home or only married children living at home (above 18) period; G—all children have moved out period; O—yes; dark grey—parents’ imagination; grey—children’s influence; light grey—no change.

The data show that all families (3/3) (100%) (case study no. 4,5,7) that have reached the family stage G have gone through the following family stages: family stage A—married couple period; B—only small children (0–9) period; C—small children (0–9) and school-age (with major exams) children (9–18) period; D—only school-age children or school-age children (9–18) and university-age children (above 18) period; E—only university/working-age children (above 18) period; and G—all children have moved out period. Family stage F—only married children or school/university/working-age children and married children living at home period (above 18)—is the only family stage that is skipped by most of these families (2/3) (66.66%). This shows the current tendency of lower-middle-class families’ married children to not live with their parents and to have nuclear families.

The interview data analysis showed that the families who are in the A, B, and C family stages are classified as the “increasing family type,” as they have small children below nine years old and still have the possibility of having more children. The families who are in the D family stage are classified as the “static family type,” as these families have only school-age children or school-age children (9–18) and university/working-age children (above 18). In these families, the possibility of having more children is smaller, and the possibility of the older children leaving the family soon is also smaller. The families who are in family stages E and G are classified as being in the “decreasing family stage.” As family stage E only has university/working-age children (above 18), there is a high tendency for the older children to leave the family and for the family to shrink. In family stage G, all of the children have left the parental house, and only the old parents are remaining in the house. This results in maximum shrinking within the family. The families who are in the F family stage are classified as the “second cycle family type,” as these families have school/university/working-age children and married children living at home or only mar-

ried children living in at home with newly added family members, such as their spouses and grandchildren. This starts a second developmental cycle in the family.

The interview data also revealed that, when compared with the Sri Lankan education system and the families' expectations of the children's future/life courses, the parents' expectations of the family image and the children's life courses change and become limited when the children grow up and pass the family stages. In each family stage, the following characteristics were observed and identified:

- Family stages A, B, and C—these are the stages of imagination in the family life course in which there are still hopes for the life courses of the children/family to be free and changing.
- Family stage D—this is the stage of mixed imaginations and limitations in the family life course in which some children's life courses are fixed and some children's life courses are still free. Hence, still there are some hopes and imaginations for the life course of the family.
- Family stages E and G—these are the stages of a fixed life course in which all of the children's life courses are fixed. The children going to university or directly starting work is a crucial point of shift in the family life course, as this determines the life courses of the children and the family.
- Family stage F—this is the stage of mixed and fixed life courses and free imagination in which all of the children's life courses are fixed but there are still hopes and imagination for the life courses of the grandchildren to be free and still changing as the family is having a second developmental cycle.

This analysis shows that the parents' expectations of their children's life courses and the changes in the children's life courses in the family stages have impacts on the family. Hence, they must have impacts on the family background and, ultimately, on the house plan type transitions.

Furthermore, the analysis shows that in family stages A, B, and C, the effect of the children's life course is smaller, as the children's life courses are still not fixed in these family stages. During the A, B, and C family stages, the parents' current life courses/lifestyles have the main influence on the family. From family stage D onwards, the effect of the children's life courses is greater, as some children's life courses are fixed in family stage D, and all of the children's life courses are fixed in family stages E, F, and G. Hence, during family stages D, E, F, and G, the children's life courses/lifestyles have the main influence on the family. This emphasizes the fact that family stage D is a crucial point in the family stage transition and the family life course transition.

3.2.2. Lower-Middle-Class Family Background Transitions

With the aim of identifying the lower-middle-class family background types and their transitions, the family backgrounds of the case study families were analyzed according to the selected parameters in Section 2.2.3, namely, the parents' employment types (P1) and the children's education levels (P2).

Family Background with Reference to the Parent's Employment Type

Prior to analyzing the parents' employment types, the parents' education level data were analyzed. This analysis showed that the parents of all fifteen case study families have only had education up to the Ordinary Level (O/L). This revealed that most current lower-middle-class families have parents with middle-level (up to O/L) education. Since all families' parents' education levels are the same, the main difference in the family backgrounds of these families was initially created by the parents' employment types.

Table 8 shows the parents' employment types within the case study families. According to the analyzed data, three parents' employment types can be identified. They are the "employment type with limited permanent contacts with only one social class" (E1), the "employment type with limited permanent contacts with other social classes" (E2), and the "employment type with many permanent contacts with other social classes" (E3).

Table 8. Family background with reference to the parents' employment types and the children's education levels.

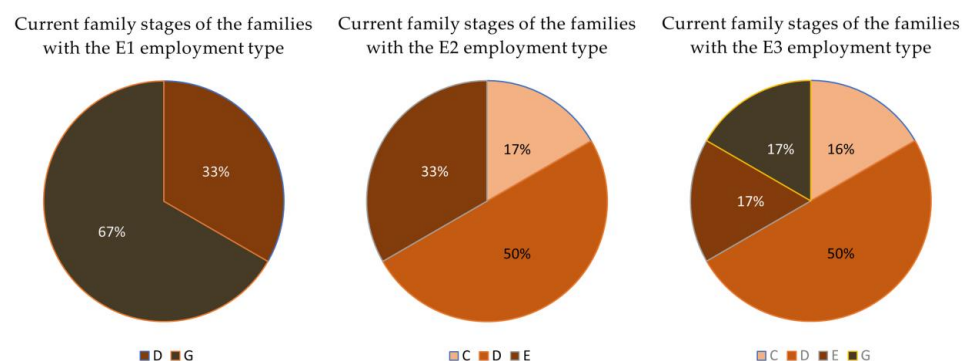
| Parents' Employment Type | Case Study No. | Family Stage | Children's Education Level | | |
|---|----------------|--------------|----------------------------|-----|------------------|
| | | | Below A/L | A/L | Higher Education |
| Employment type with limited permanent contacts with only one social class (E1) | 01 | D | | O | |
| | 05 | G | | O | |
| | 04 | G | O | | |
| | 02 | C | ● | | |
| Employment type with limited permanent contacts with other social classes (E2) | 08 | D | | ● | |
| | 09 | D | | ● | |
| | 10 | D | | ● | |
| | 03 | E | | O | |
| | 13 | E | | O | |
| | 11 | C | | ● | |
| Employment type with many permanent contacts with other social classes (E3) | 06 | D | | ● | |
| | 12 | D | | | O |
| | 15 | D | | | O |
| | 14 | E | | O | |
| | 07 | G | | | O |

A—married couple period; B—only small children (0–9) period; C—small children (0–9) and school-age children (9–18) period; D—only school-age children or school-age children (9–18) and university/working-age children (above 18) period; E—only university/working-age children (above 18) period; G—all children have moved out period; O—yes; ●—change in children's education levels is still possible.

The data show that almost half of the families (6/15) (40%) have the E2 and E3 employment types. The smallest group (3/15) (20%) is the families who have the E1 employment type. This shows that most of the families (12/15) (80%) have an employment type that provides the opportunity to interact with other social classes and that can facilitate upward social mobility.

Current family stages of the families with different employment types

Figure 6 shows the current family stages of the families with different employment types.

**Figure 6.** Current family stages of families with the E1, E2, and E3 employment types.

- Families with the E1 employment type

Most of the families (2/3) with the E1 employment type are in family stage G. The smallest group (1/3) is in family stage D. Overall, all of the families (3/3) (100%) are in a family stage later than C.

- Families with the E2 employment type

In the families who have the E2 employment type, half of the families are in family stage D (3/6). The second largest group of families is in family stage E (2/6), and the smallest group is in family stage C (1/6). Overall, most of the families (5/6) (83.33%) in which the parents' have the E2 employment type are in a family stage later than C.

- Families with the E3 employment type

In the families who have the E3 employment type, half of the families (3/6) are in family stage D. The second largest group of the families (1/6) are in family stages C, E, and G. Overall, the majority (5/6) (83.33%) are in a family stage later than C.

In all three employment type family groups, namely, E1, E2, and E3, most of the families are in a family stage later than C. Therefore, in these cases, some or all children have either started directly working or have started higher education. Therefore, currently, most of these families are also influenced by the children's education levels, which determine the children's employment types, social connections, and social mobility.

Family Background with Reference to the Children's Education Levels

Table 8 shows the children's education levels within the case study families. According to the analyzed data, three main types of children's education levels can be identified. They are children with "below advanced level (A/L)," "advanced level (A/L)," and "higher education" levels (university level).

The data show that most of the families (10/15) (66.66%) have children with middle-level education (up to A/L), which provides limited contact with the other social groups and limited opportunities for social mobility to upper social classes. This also indicates that most lower-middle-class families have a tendency to remain in the same social class. One fifth of the families (3/15) (20%) have children with higher education (university level education), which provides many contact opportunities with the other social groups and more opportunities for social mobility to upper social classes. This indicates that some lower-middle-class families have a tendency to move into higher social classes. Very few families (2/15) (13.33%) have children with lower levels of education (below A/L) that provide limited or no contact with the other social groups and limited opportunities for social mobility to upper social classes. These families have a high tendency to remain in the same social class or to have social mobility to lower social classes. This indicates that a few lower-middle-class families have a tendency to remain in the same social class or to move into lower social classes.

Current Family Stages of the Families with Different Levels of Children's Education

Figure 7 shows the ratios of the current family stages of the families with different levels of children's education.

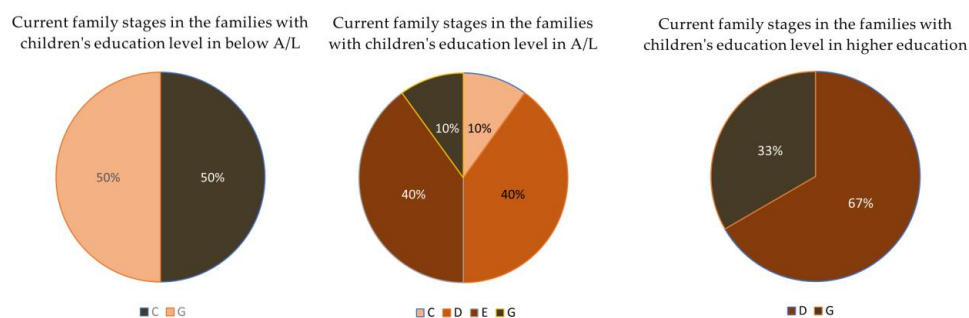


Figure 7. Current family stages of the families with different levels of children's education.

- The families with children whose education levels are "below A/L."

Half of the families (1/2) in this group are in family stage C, and the other half (1/2) are in family stage "G". The families that are in family stage "C" still have the possibility to

have some or all children with higher education, and to have much contacts with the other social groups and upward social mobility to the other upper social classes. In the families that are in family stage “G”, all children have completed their education, and therefore, these families have no or limited possibility to have children with higher education, to increase contact with the other social groups, and to have upward social mobility to the other upper social classes.

- The families with children whose education levels are “A/L.”

Most of the families (4/10) are in family stages D and E. The smallest groups (1/10) are in family stages C and G. The family (1/10) that is in family stage “C” still has the possibility to have children with higher education, as the children are still school-age. Also, the families (4/10) that are in family stage D still have the possibility to have some children with higher education, as some of the children are still school-age. Therefore, half of the families (5/10) still have the possibility to have children with higher education and to have a lot of contact with the other social groups and upward social mobility to the other upper social classes. In the families (4/10) that are in family stage “E” and in the families (1/10) that are in family stage “G”, all of the children have completed their education. Therefore, half of the families (5/10) have no or extremely limited possibility to have children with higher education and to have much contact with the other social groups and upward social mobility to the other upper social classes.

- The families with children who have “higher education.”

Most of the families (2/3) are in family stage D. The smallest group is in family stage G (1/3). The families (2/3) that are in family stage “D” still have the possibility to have some more children with higher education, and to have much contact with the other social groups and upward social mobility to the other upper social classes. In the families (1/3) that are in family stage “G”, all of the children have completed their education, and the family has no or limited possibility to have more children with higher education, to increase contact with the other social groups, and to have upward social mobility to the other upper social classes. But it should also be noted that, in the Sri Lankan context, when at least one child has higher education, the family’s connections with the other social classes increase, irrespective of the younger children’s educational attainments.

3.2.3. Family Background with Reference to the Parents’ Employment types and the Children’s Education Levels

Table 8 shows the data regarding the parents’ employment types and the children’s education levels.

Figure 8 shows the difference of the children’s education levels in the families with different parent employment types.

- The families with the E1 employment type (parents’ employment with limited permanent contacts with only one social class)

Most of the families (2/3) have children with the education level of “A/L”. Only one family (1/3) has children with the education level of “below A/L”. All of these families (3/3) (100%) are in a family stage above D, in which all of the children are above the school age. Hence, there is no or little possibility of improving the children’s education levels.

- The families with the E2 employment type (parents’ employment with limited permanent contacts with the other social classes)

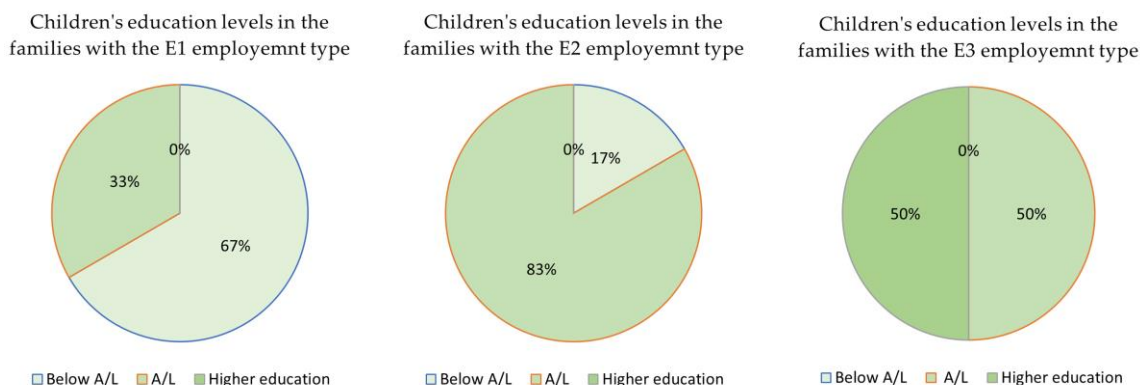


Figure 8. Children’s education levels in the E1, E2, and E3 employment type families.

Most of the families (5/6) have children with the education level of “A/L”. Only one family has children with the education level of “below A/L” (1/6). Among these families, two thirds of the families (4/6) are still in or below family stage D, in which some or all of the children are still of the school age. Hence, there is still a possibility of the younger children to obtain higher education. Only one third of the families (2/6) are in a family stage above D, in which the children’s education levels are fixed.

- The families with the E3 employment type (parents’ employment with many permanent contacts with the other social classes)

Half of the families (3/6) have children with the education level of “A/L”, and the other half (3/6) have children with the education level of “higher education” (3/6). Among these families, two thirds of the families (4/6) are still in or below family stage D, in which some or all of the children are still of the school age. Hence, there is still a possibility for the younger children to obtain higher education. Only one third of the families (2/6) are in a family stage above D, in which the children’s education levels are fixed.

This analysis shows that lower-middle-class families that have parents with the E1 or E2 employment type have a high tendency to have children with middle-level education. The families that have parents with the E1 employment type also have a higher tendency to have children with lower-level education than the families with the E2 or E3 employment types. The families with the E3 employment type have a higher tendency to have children with higher levels of education than the families with the E1 or E2 employment types. Hence, this analysis shows that, in the lower middle class, the parents’ employment types and the children’s education levels have a direct relationship.

It is also clear that, prior to family stage D (in family stages A, B, and C), the parents’ employment types have an impact on the family background. After family stage C (in family stages D, E, F, and G), the children’s education levels also have an impact on the family stage, as through their educational attainments, their future life courses and the financial/social support they can give to the family are determined. This shows that the parents’ employment types have an effect on the house plan type transition until the children come to the age of employment/higher education (until family stage D), and from family stage D onwards, the children’s education levels also have an impact on the house plan.

3.3. House Plan Transition with Reference to the Parents’ Employment Types and the Children’s Education Levels

This section discusses the relationship between the house plan types (with reference to construction steps) and their transition, with reference to the family stage types, family background types, and their transition, and how it has an effect on social class and social mobility.

In or prior to family stage C (when the parents’ employment types had the biggest influence, and prior to the influence of the children’s education levels on the family)

- The house plan changes in the families with the E1 employment type

Most of the families (2/3) (66.66%) in which the parents have the E1 employment type have started constructing their own houses in family stage B (only small children (0–9) period). One third of the families (1/3) (33.33%) have started constructing their own houses in family stage C (small children (0–9) and school-age children (9–18) period). All (3/3) (100%) of these families have had only the V1-based house plan types, without any transition, prior to starting family stage D. This shows that in the E1 employment group, there is a tendency to have a V1-based house plan type prior to family stage D.

- The house plan changes in the families with the E2 employment type

Half of the families (3/6) (66.66%) in which the parents have the E2 employment type have started constructing their own houses in family stage B. The lowest number of families (1/6) (16.66%) have started constructing their houses prior to or in family stage A, and one family has not started constructing a house prior to family stage D. Out of the families who constructed houses prior to family stage D, the majority (3/5) (60%) started with a V1-based house plan type, and the second largest group (2/5) (40%) started with an LC-based house plan type. The smallest number of families (1/5) (20%) started with an M1-based house plan type. Prior to starting family stage D, most of the families (4/5) (80%) achieved an M1-based house plan type, while very few families (1/5) (20%) achieved an LC-based or E-based house plan type. This shows that in the E2 employment group, there is a tendency to have an M1-based house plan type prior to family stage D.

- The house plan changes in the families with the E3 employment type

Most of the families (5/6) (83.33%) in which the parents have the E3 employment type have started constructing their own houses in family stage B. Few families (1/6) (16.66%) have not started constructing their houses prior to family stage D. Out of the families who have started constructing a house prior to family stage D, the majority (3/5) (60%) have started with a V1-based house plan type, and the smallest number of families (1/5) (20%) have started with an M1-based or LC-based house plan type. Prior to starting family stage D, most of the families (4/5) (80%) have achieved an M1-based house plan type, and the second largest group of families (3/5) (60%) have achieved an M2-based house plan type. Very few families (1/5) (20%) have achieved an E-based house plan type. This shows that in the E3 employment group, there is a tendency to have an M1-based or higher than M1-based house plan type prior to family stage D.

This analysis shows that, according to the parents' employment types, different plan types can be observed. Hence, it is clear that parents' employment types and the house plan have a relationship.

After family stage C (from family stage D onwards) (when the children's education levels have the biggest influence on the family)

Currently, most of the cases (13/15) (86.66%) are in family stage D or a later stage. But it should also be noted that almost half of the cases (6/13) (46.15%) are still in family stage D or in a prior stage with some school-age children. These cases still have the possibility to experience family background changes, with the remaining school-age children having different education levels than the current education levels of their elder siblings. Two cases are still in family stage D with children with higher education levels. Since the family background level changes, when at least one child achieves a higher education level, these two cases are also taken as fixed cases. Hence, most of the cases (9/15) (60%) currently have fixed families.

Most of these fixed families (7/9) (77.77%) have a tendency to change the house plan when the family becomes fixed (in a family stage later than D).

- The house plan changes in the families with children whose education levels are "below A/L"

All families (1/1) 100%) with children whose education levels are "below A/L" have a tendency to change into an LC-based house plan type.

- The house plan changes in the families with children whose education levels are “A/L”
Most of the families (3/5) (60%) with children whose education levels are “A/L” have a tendency to change into an M1-based plan type. This is followed (2/5) (40%) by the LC- and M2-based plan types.

- The house plan changes in the families with children who have “higher education”
All of the families (3/3) (100%) with children who have “higher education” have a tendency to change into an M1-based or mixed house plan type. This is followed (2/3) (66.66%) by the M2-based house plan type, and the least (1/3) (33.33%) is the E-based house plan type. The data also revealed that all of the families whose children achieved higher education tend to make better house plans than the M1-based house plan types.

Table 9 shows the house plan type transition prior to and after family stage C, with reference to the parents’ employment types and the children’s education levels.

Table 9. Relationship of family background (parents’ employment types and children’s education levels) with house plan type.

| Parents’ Employment Type | Case Study No. | Family Stage | Children’s Education Level | | | Types of House Plans in or Prior to Family Stage C | Types of House Plans after Family Stage C (From D Onwards) |
|---|----------------|--------------|----------------------------|-----|------------------|--|--|
| | | | Below A/L | A/L | Higher Education | | |
| Employment type with limited permanent contacts with only one social class (E1) | 01 | E | | O | | V1 | |
| | 05 | G | | O | | V1 | M1/LC |
| | 04 | G | O | | | V1 | LC |
| | 02 | C | ● | | | M1/LC | --- |
| Employment type with limited permanent contacts with other social classes (E2) | 08 | D | | ● | | V1-M1 | --- |
| | 09 | D | | ● | | LC | --- |
| | 10 | D | | ● | | V1-M1/E | M1/M2 |
| | 03 | E | | O | | | LC |
| | 13 | E | | O | | V1-LC-M1 | M1/M2-M1 |
| Employment type with many permanent contacts with other social classes (E3) | 11 | C | | ● | | V1-M1/LC-M1/E | --- |
| | 06 | D | | ● | | M1/M2 | --- |
| | 12 | D | | | O | LC-M1/LC-M1 | M1/E |
| | 15 | D | | | O | V1-M2 | |
| | 14 | E | | O | | V1-M1 | M1-M2 |
| | 07 | G | | | O | | M1/M2 |

A—married couple period; B—only small children (0–9) period; C—small children (0–9) and school-age children (9–18) period; D—only school-age children or school-age children (9–18) and university/working-age children (above 18) period; E—only university/working-age children (above 18) period; G—all children have moved out period; O—yes; ●—change in children’s education levels is still possible; --- —change in house plan is still possible; V1—Vernacular 1; V2—Vernacular 2; LC—Lower-Class House; M1—Middle-Class House 1; M2—Middle-Class House 2; E—Elite House.

Only a few families (2/7) (28.57%) have not changed their house plans after passing family stage D. One case is exceptional because that case does not own the land where their house is built. The other case has not changed because, prior to family stage D, they have already achieved an M2-based house plan type.

This analysis shows that, according to the children’s education levels, different house plan types can be observed after family stage D. Hence, it is clear that the children’s education levels and the house plan have a relationship.

4. Discussion

The overall analysis shows that, along with time, the house plans of lower-middle-class families change with the family life changes, which include the family stage and family background changes.

In the analysis in Section 3.1, it was identified that lower-middle-class families tend to construct their houses in several construction steps. That has resulted in plan type tran-

sitions. This analysis also revealed that most lower-middle-class families start with a V1-based house plan type. But almost all of these cases change from the V1-based plan type, making it a temporary plan type. In contrast to the V1-based temporary plan types, the number of plan transitions from the LC-, M1-, M2-, and E-based plan types is low, making them stable plan types. The plan transition type analysis also showed that the lower middle class has a high tendency to have the LC-based plan type as the first stable plan, and then transfer from the LC-based plan type to the M1- or M2-based plan type. Furthermore, it was also evident that the lower middle class has a tendency to have mixed house plan types with dual characters. Therefore, when designing a house plan for the lower middle class, it is important to consider starting from an LC-based plan type, which has the adjustability to transfer into an M1- or M2-based house plan type at a later stage.

In Section 3.2, it was identified that in family stages A, B, and C, families' imaginations and expectations for the children's life courses are free, as all of the children are still of the school age. From family stage D onwards, the families start to limit their imaginations and expectations for their children's life courses, as some children's life courses are already fixed in family stage D. Hence, family stage D is a critical moment in the family stages, as well as in the family background. The family background analysis and the interviews also revealed that, until family stage D, the parents' employment types have the highest impact on the family, and after family stage D, the children's education levels have an impact on the family.

The analysis in Section 3.3 also showed that, along with these family stages and the family background transitions, house plan transitions also happen, as lower-middle-class families have several construction steps when building their houses throughout the years. The house plan transition analysis shows that most of these families have changed their house plans when the family starts to become stable in or after family stage D.

The house plan transition analysis with reference to the parent's employment types showed that, prior to family stage D, the families with parents who have the E1 employment type have a tendency to achieve only a V1-based house plan type. The families with parents who have the E2 employment type have a tendency to achieve an M1-based house plan type, and the families with the parents who have the E3 employment type have a tendency to achieve an M1- or M2-based house plan type or one that is higher than the M1-based house plan type. This confirms that, prior to family stage D, the parents' employment types have an effect on the house plan type and its transition.

The house plan transition analysis with reference to the children's education levels showed that, in or after family stage D, most of the families change their house plans when the children complete their education or when the children's life courses become fixed. The families with children who have education levels "below A/L" have a tendency to change into an LC-based house plan type. The families with children who have an "A/L" education level have a tendency to change into an M1-based plan type. The families with children who have "higher education" have a tendency to change into an M1- or M2-based house plan type or one that is higher than M1. This analysis confirmed that, in or after family stage D, children's education levels have an effect on the house plan and its transition. The overall analysis showed that, based on the parent's employment types and the children's education levels, house plans change.

The children's education analysis also showed that children with different education levels have different levels of possibilities to have social mobility. This shows that there are three directions of social mobility, and the house plan transitions are related to the children's education in lower-middle-class families. The three directions of social mobility include the following: i. few families remaining in the lower middle class or moving to the lower class have the LC-based plan type, ii. most of the families remaining in the lower middle class have the M1-based plan type, and iii. some families moving to the middle middle class or the upper middle class have the M1-based house plan type or above. The analysis also showed that up to family stage D, in all of the families, all of the social mobility directions are possible, and after family stage D, a family has to settle in one direction.

Therefore, family stage D is a critical moment in social mobility as well as in the house plan type transition of a family.

With this social mobility within the family, different generations in different social classes exist and continue to have relationships with two or more social classes. The parents of these families, most of the time, continue to have the character of the lower middle class, and the children of these families have the character of a different social class according to the social mobility gained by them based on their own efforts. Therefore, the house plan should cater to these residents of different social classes as well as their visitors from different social classes.

Moreover, the house plan type analysis showed that lower-middle-class families have mixed house plan types that are based on different social classes' house plan types. This also shows that when families have residents from two or more social classes, the house plan also has mixed characters.

Therefore, when proposing a house plan type that caters to lower-middle-class families, the following points must be taken into consideration by planners and designers:

- i. Lower-middle-class families have the tendency to have several construction steps when building a house. Hence, a lower-middle-class house plan needs flexibility to expand into several construction steps.
- ii. In the first stable plan type stage, most families have the LC-based house plan type, and later, the majority have the M1-based house plan type. Therefore, providing an LC-based house plan type for the first construction step that can be later expanded into an M1-based house plan type is important.
- iii. After family stage D, with the children's education levels and the direction of social mobility, the residents of two or more social classes co-live in the house. To cater to both the residents and the visitors from different social classes, a house plan with the flexibility to cater to both or all social classes is needed.
- iv. Most lower-middle-class house plans have mixed characters, in which lower-class, lower-middle-class, middle-middle-class, and upper-middle-class house plan characters co-exist. Therefore, providing a mixed plan type that caters to the residents of the mixed social classes is important.

With this understanding, this research proposes a house plan as follows (shown in Figure 9):

- i. For the first step of construction, prior to family stage D, an LC-based house plan type with a living room, two or more bedrooms opening to the living room, and a kitchen is proposed.
- ii. For the second step of construction, in or after family stage D, a house plan type with a linked living room and a dining room and newly added two or more bedrooms, with an equal number of bedrooms opening to the living room as the number of bedrooms that do not open to the living room nor the dining room (the common family activity places), is proposed.

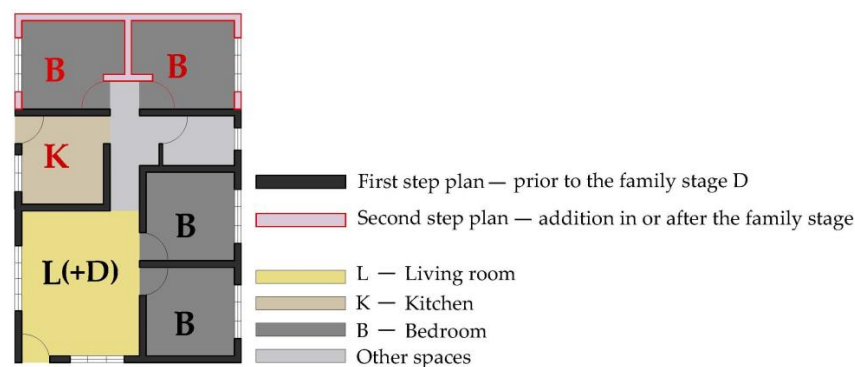


Figure 9. Proposed house plan for lower-middle-class families.

Through this plan, the family members (usually the old parents) who are in the bedrooms opening to the living room will have a lower-middle-class lifestyle that facilitates participating in all of the common family activities and mingling with all of the guests. The family members (usually the children who have had different social mobility directions) who are in the bedrooms that do not open to the living room nor the dining room will have middle-middle-class or upper-middle-class lifestyle that facilitates interactions with only selected common family activities and guests on selected occasions. Hence, this proposed house plan type gives the possibility of adjusting the lifestyle of the family members who move into the other social classes while retaining the lifestyle of those who will remain in the lower middle class while facilitating their interactions.

Future Research

Since this research was conducted with only fifteen case study families and houses in a typical lower-middle-class residential area, conducting extended future research with a larger number of case studies can further support the research findings.

Moreover, since this research is based on lower-middle-class families, their house plans, and their transitions and interactions, future research on the other social classes' families and their house plan transitions can facilitate a broader understanding of the overall family lives, house plans, and their transitions in Sri Lanka. Through this, the way in which the lower-middle-class family lives, house plans, and their transitions are similar or different to the other social classes' family lives, house plans, and their transitions can be identified.

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