



Transformation of Courtyards in Agraharam Settlements of Kerala

¹Vethika A, ²Haritha C

¹B Arch student, Department of Architecture and Planning, TKM College of Engineering, Kollam, India

²Assistant Professor, Department of Architecture and Planning, TKM College of Engineering, Kollam, India

Abstract : Agraharam settlements, once known for their close community life and climate responsive houses, have changed a lot over time. The courtyard, which used to be the heart of family, culture and climate comfort has either evolved or disappeared due to external factors. This study looks at how courtyards in Agraharam houses have changed, based on examples from Trivandrum and Palakkad. It examines how their form, use, and social meaning have shifted over the years. The findings show that even though the courtyards spatial idea still exists, its cultural and community value has faded, marking a slow loss of the Agraharam's traditional identity.

Key words - Agraharam, Courtyard, Spatial Evolution, Cultural Transformation, climatic aspects, social disconnect.

I. INTRODUCTION

An Agraharam or Agrahara is the name given to the Brahmin section of a heterogeneous village or to any village populous by Brahmins (Mary J, 2019). These traditional houses, found in the temple towns of India, have been home to generations of the Brahmin community. The layout of the houses, streets, and temples each carry distinct features that reflect the residents' religious beliefs and way of life. This settlement includes houses built either linearly or in concentric patterns around the main temple acting as the nucleus of the settlement. Their built form represents a unique blend of spatial planning, cultural practices, and community living.

The aim of the research is to study evolution of Agraharam morphology through studying one of its spatial elements, the courtyard and its transformation over tie.



Fig.1 The street view illustrating the rows of Agraharam on both sides of the streets (Singal, 2022).

II. NEED FOR THE STUDY

With rapid urbanization, many Agraharam houses are being altered or demolished, leading to the disappearance of traditional design wisdom once rooted in community life. Courtyards were highly climate-responsive and contribute to passive design strategies. The courtyard was not just a climatic device, but a ritual and social space, central to Agraharam community life. Its loss means a loss of intangible cultural heritage.

Most studies focus on temple architecture or settlement patterns, fewer explore courtyard transformation specifically in Agraharam houses. Lack of research on how socio-cultural aspects and spatial transformations have affected their form, function, and relevance today. What are the current challenges of maintaining and conserving them? Is the courtyard maintain its cultural relevance nowadays?

III. AIM

To analyse how the courtyards in Agraharam houses have evolved in response to social, cultural, and functional changes within the settlement over time.

IV. OBJECTIVES

- To document the spatial configuration and morphology of courtyards in Agraharam houses.
- To examine the factors and socio-economic changes that have influenced the continuity or transformation of Agraharam.
- To trace the changes in courtyard, use and form due to modernization

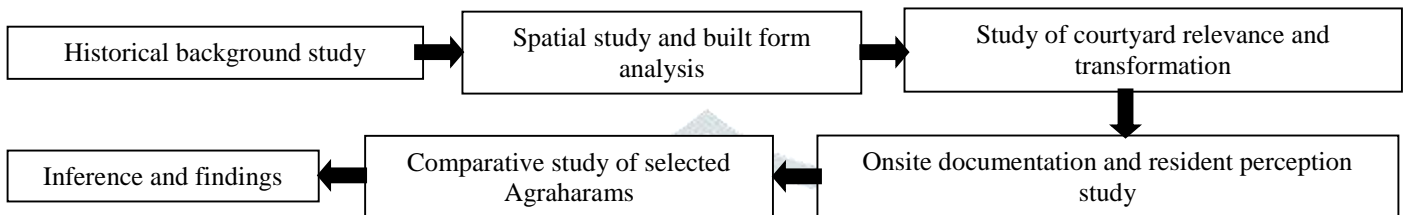
V. SCOPE

- The research involves a comparative study of traditional, modified, and modernized houses to understand the gradual evolution of courtyard form, function, and relevance.
- Both spatial and socio-cultural factors influencing courtyard evolution are considered.

VI. LIMITATION

- The study focuses on Agraharam houses in selected settlements.
- The study focuses on observational and qualitative analysis, not detailed climatic simulations or structural performance.

VII. METHODOLOGY



VIII. LITERATURE REVIEW

7.1 Historical Background

The major Brahmin migrations to Kerala began during the early Sangam period and continued until around 1600 A.D. Most of these communities settled in regions such as Palakkad, Kochi, Trivandrum, Kollam, and Thrissur. In Kerala, two broad groups of Brahmins existed the local Namboothiri brahmins and the Tamil Brahmins, also called Paradesi Brahmins, who migrated from Tamil Nadu. They brought the new style of housing called Agraharams.

Some moved due to displacement from their homeland, while others came seeking better opportunities. A big wave of migration happened after the fall of the Vijayanagar Empire, which had earlier protected South India from northern invasions.

This leads to the establishment of Agraharam housing patterns in various parts of south India. With temples at their centre, settlements like Kalpathy, Nurani, Sekharipuram, Lakshminarayanapuram and Vaddakanthara quickly expanded. These temples were not just places of worship but they became the heart of community life, spaces for festivals, rituals, and gatherings.

7.2 Spatial planning and built form

Agraharam settlements were usually planned in a grid or circular pattern, with the temple at the center of the layout. The houses, typically single or double-storied, were built with traditional sloping tiled roofs. Streets were narrow and closely integrated with their daily life, functioning almost as an extension of the household.



Fig. 2 Interacting space puramthinna (singal,2022).

The selection, orientation and location of the house influenced by the concept of Vasthupurushamandala, the cosmic diagram and related geometric ways of spatial planning in relation with time and nature based on astrology and mathematical computation, which formed the primary resource of Hindu architecture (Koduveliparambil, 1997).

The houses shared common walls and featured a long front verandah (puramthinna) supported by stone or wooden pillars, which encouraged social gathering. This raised platform ran throughout the houses, serving as both a transition space and a venue for informal activities. Inside, a passage connected the street-facing entrance to the backyard, organizing the house in a linear sequence of spaces. The narrow streets in these settlements were originally designed for pedestrians, not for vehicle movement, as many important religious and cultural function held in streets. Agraharam were often established on land donated by royal patrons, with plots distributed among migrant Brahmin families according to their social hierarchy. Families of higher regard, such as

priests and scholars, occupied prime positions close to the temple, while others were located toward the fringes.

7.3 Various components of Agraharam

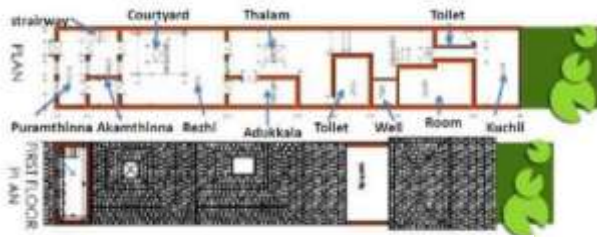


Fig. 3 Spatial Planning of Agraharam



Fig.4 Section depicting the spatial organization of Agraharam

Puramthinnai- the long verandah or corridor that runs along the front of the house, often used as a semi public community interactions.

Akamthinnai- The room located just behind the front verandah, containing the *konippadi* (staircase) that leads to the upper floor.

Rezhi- The central space within the house, functioning mainly as a living area or bedroom for the family.

Thalam- The circulation space surrounding the courtyard

Mittam- The open to sky courtyard

Adukkala- The kitchen space, usually positioned close to the courtyard

Kuchil- The small room at the rear of the house, traditionally used by women during their menstrual period rest.

Machil – The attic room accessed through the staircase from the *akamthinnai* used by newly married couples or for storage.

Kottil – A small detached structure at the far end of the backyard

7.4 Role of Courtyard

The courtyard, also called as mittam/ thalam, forms the core spatial and climatic element of Agraharam. It served both as symbolic and functional aspects of the household. In Agraharam settlement which are compact and linear, the role of courtyard adapts to limited space while maintaining its climatic and ritual value.

7.4.1 Spatial and functional aspects

The sloping roof allows only limited sunlight into the interiors, which is balanced by the ample natural light coming through the large central courtyard. The courtyards level difference helps in rainwater drainage, connected to channel leading outside the house. Similar to traditional Kerala houses, a well is usually placed near the kitchen, with an opening in the wall to draw water easily. A larger service courtyard is often located beside the kitchen and toilets, used for washing and equipped with taps for daily cleaning activities.

7.4.2 Climatic Role

In the region's hot and humid climate, the courtyard helps keep the house well-ventilated, while the roof openings allow natural light to enter the windowless rooms. It creates stack effect, drawing warm air upwards and cooler air to circulate throughout the adjacent spaces. Light modulation through these open spaces ensures varying degrees of brightness, suiting different household activities such as, service courtyards receive direct sunlight for drying clothes and grains, where as inner courtyards provide softer, diffused light for social and ritual uses.

7.4.3 Spatial experiences: light, shadow and texture

Deep shadows and soft darkness help create a sense of depth and calm within the space. Courtyards act as gentle transitions between light and shade. Even though many indoor areas remain dim, the light that filters in through courtyards, openings, or glass roofs brings a pleasant, diffused brightness. Multiple courtyards allow this natural light to spread softly throughout the house, brightening the darker interiors.

The enclosed sleeping areas have comparatively less light coming in through one or two openings, whereas the semi-open spaces get indirect light through the courtyard (Singal, 2022). The light condition throughout the house is regulated over the spaces, enhancing its function. The kitchen has a minimum required light entering through the light well and transparent roof tiles. A low roofline at the edge of semi-open spaces in living areas controls direct light, whereas a little higher roofline in the semi-open areas of the service section provides direct light appropriate to the task. The undulation on the floor of courtyards is felt on the skin, it translates the understanding of exposure to weather. The courtyard floor is comparatively rough due to its exposure to sun and rain (Singal, 2022).



Fig. 5 View of mittam, the courtyard (Singal, 2022).



Fig.6 Significance of shadows (Singal, 2022).

7.4.4 Cultural and religious significance

Unlike traditional Kerala houses, Agraaharam houses also include a courtyard in their design, though it is not positioned in the *deva-sthana*. The courtyard serves a purpose similar to that of traditional Kerala homes, but its size and proportion are adapted to the compact layout of the Agraaharam. These spaces were often used for religious rituals and daily activities, forming an essential part of Brahmin community life. A sacred *Tulsi* plant was usually placed and worshipped at the center of the courtyard.

7.4.5 Typological aspects

Unlike the Nalukettu houses of Kerala, which emphasized a central courtyard within a large compound, Agraaharam houses were compact, linear, and street-facing, reflecting a lifestyle centered around the temple. The courtyard here is small, usually located along the corridor, unlike large central courtyards in nalukettu. Multiple courtyards may exist serving distinct functions. According to typologies studies (Widiastuti,2018), the Agraaharam courtyard is classifies as type 6 courtyard house, smaller, elongated and attached in rows, differing from Kerala’s other typologies.

IX. LIVE CASE STUDY

Study Area

The study focuses on agraaharam settlements in trivandrum and palakkad, selected for their distinct climatic, cultural, and spatial contexts. Trivandrum, with its dense urbanization and humid coastal climate, and palakkad, with its semi-rural, drier climate and greater tamil brahmin influence, are two extremes of kerala's cultural spectrum. The comparison aids in understanding how the development of courtyards within these traditional linear settlements has been influenced by regional, social, and climatic factors.

- (a) Puthen Street, Attakulangara, Thiruvananthapuram, Kerala
- (b) Chandrasekhara Puram, Palakkad, Kerala



Fig.7 (a) The view of Attakulangara, showing the streets with the temple positioning (Image from Google Earth)



Fig.7 (b) The view of Chandrasekhara Puram, showing the streets (Image taken Google Earth)

9.1 House no 1
Paandigarshaala madam, Chandrasekhara Puram, Palakkad

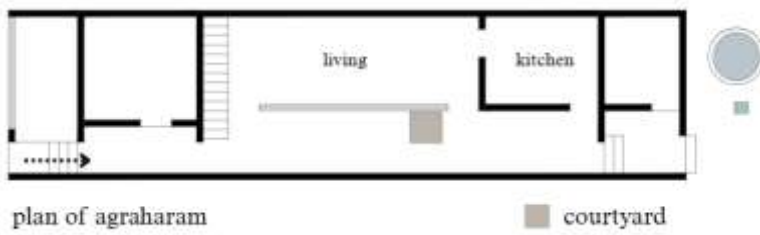


Fig.8 Plan of Agraharam 1 -House No: 1

This house has a single courtyard, with size 1m x 1.2m, positioned centrally, adjacent to the living room. the courtyard is not at all in use, not opened to sky. courtyard is closed by a grill, the rain water is collected through a piping system.



Fig. 11 The external view and internal courtyard space of house no 1 (Photograph by author)

9.2 House no 2
Rudras house, Chandrasekhara Puram, Palakkad

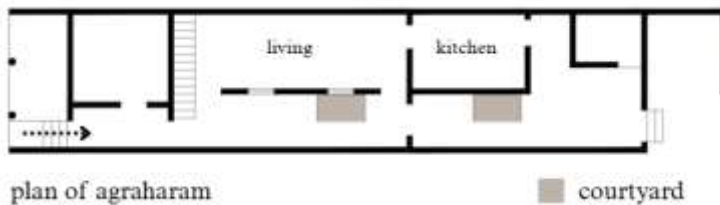


Fig.9 Plan of Agraharam - house No:2

This house has two courtyards, with size 0.6m x 1.5m, positioned centrally, adjacent to the living room and the kitchen space. The courtyard is now used as washing area and for drainage space, collecting and channelling rainwater out of the house. The courtyard located adjacent to the kitchen is open to sky.



Fig.12 The internal courtyard space of house no 2 (Photograph by author)

9.3 House no 3
Chandrasekhara Puram, Palakkad

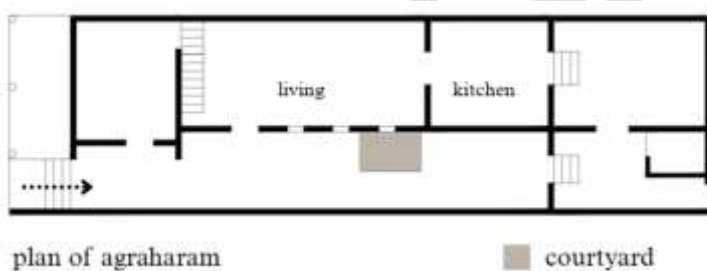


Fig.10 Plan of Agraharam - house No:3

This house had a single courtyard, with size 0.8m x 1.5m, positioned centrally, adjacent to the living room. the courtyard closed now, but there is small skylight on roof. The absence of an open courtyard is evident, but its earlier presence can be identified through the change in flooring materials. The courtyard was closed due to loss of neighbour connection and shared maintenance responsibilities.



Fig.13 The external view and internal courtyard space of house no 3 (Photograph by author)

9.4 House no 4
Puthen Street, Thiruvanan

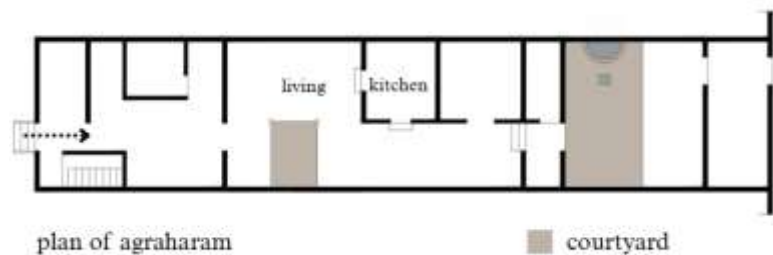


Fig. 14 Plan of Agraharam - house No:4



Fig. 15 The external and internal courtyard space of house no 4 (Photograph by author)

This house has 2 courtyards, with size 2.5m x 3m and 6mx 3m. One is positioned centrally, adjacent to the living room, which is in use, not open to sky. The size size of this courtyard is reduced. The other one is in backyard consisting of well and a tulsi madam, which is open to sky. The second courtyard is initially the backyard space.

9.5 House no 5
Chandrasekhara Puram, Palakkad

This house does not include courtyard and it is built in 2024 after demolishing the old structure. According to the residents, courtyard felt like a waste of space, in todays lifestyle, so they choose not to recreate it. However, they have retained a small backyard with tulsi madam and a well, preserving a traditional character.

9.6 House no 6
Puthen Street, Thiruvananthapuram

This house doesn't include courtyard space. The house is built in 2019 after demolishing the old structure. But the residents have incorporated a skylight on the roof in order to bring in natural light, fulfilling the same purpose

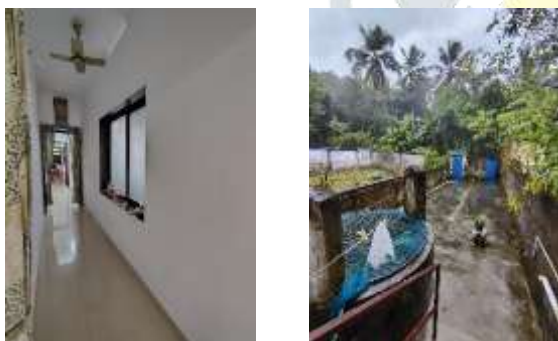


Fig. 16 The internal corridor space and backyard space of house no 5 (Photograph by author)



Fig.17 The internal skylight and external view of house no 6 (Photograph by author)

X. COMPARATIVE ANALYSIS

To understand how the courtyard spaces have changed over time, a comparative study was done on these 6 houses on different aspects, shown in table 1, which includes number and positioning of courtyards, their climatic, cultural, social roles, along with changes in materials and design adaptations.

Each house represents different stages of evolution. The study aims to understand how traditional ideas are being adapted in today's context and how the way people use courtyards has changed over time

Table 1- Comparison of spatial and courtyard characteristics in selected Agraharam houses

Comparing aspects	House no 1	House no 2	House no 3	House no 4	House no 5	House no 6
No of courtyard present	1	2	1	2	-	-
Type of courtyard	Square, partially opened to sky	Rectangular, one of them is covered	Rectangular, closed	Rectangular, one of them is covered	No courtyard present	Skylight used in place of courtyard
Positioning/ adjacent spaces	Centrally, adjacent to living room	Adjacent to living and kitchen space	Adjacent to living room	Adjacent to living space and backyard	-	Living room
Climatic role	Since partially covered, allows minimal natural lighting	Stack effect, natural ventilation	No role as it is closed, not in use	Stack effect, more thermal comfort	-	In order to bring natural lighting and ventilation
Cultural/ ritual use	No cultural relevance	No cultural relevance	No cultural relevance	Rituals and gatherings held once	-	-
Social/ functional aspects	Relaxing spot for women, during menstruation	Functional more the aesthetics, drainage use	No role	Relaxing spot for women, during menstruation	-	-
Adaptations	Closed by grill, piping system used to collect rainwater	Washing area, as the water is channelled out of the house	Closed by tile flooring	The inner courtyard had reduced in size over time	New RCC structure built after demolishing the old one	New RCC structure built after demolishing the old one
Materiality	Stone	Stone	Red oxide flooring	Tile, granite	-	-
Analysis	No cultural relevance, may differ across site context	Planning to renovate, maintenance issue, social disconnect	High maintenance cost, leakage issues faced	Valued, but the younger generation is planning to renovate	Choose not to recreate the courtyard space, changing lifestyles	Still concerned about natural lighting

XI. FINDINGS

The cultural relevance of courtyards has diminished over time. Cultural practices associated with courtyards vary between regional context. The climatic role remains the most significant aspect, supporting natural ventilation and heat control. Most houses have compact layouts, but some retain courtyard concepts through skylights for natural light. The form and spatial hierarchy around the courtyard remain consistent, even in modified houses. Social disconnection among neighbours and the loss of shared maintenance have accelerated courtyard closures.

XII. RESULT AND ANALYSIS

The survey was conducted through interviews with the residents from 20 houses within the study area, supported by direct field observations. The responses helped in understanding the social, spatial transformation of courtyard spaces occurring in Agraharam houses today.

12.1 Profession and house ownership

The shift in occupation and lifestyles has significantly altered the daily use of space. Most of the residents belong to professions not directly related to temple activities, unlike earlier generations whose lives revolved around temple routines. Several families have members who work abroad, leaving their homes vacant for long periods. In many such cases, the houses are rented out, leading to further alterations and loss of original features. The cultural identity once reflected through the courtyard has weakened.

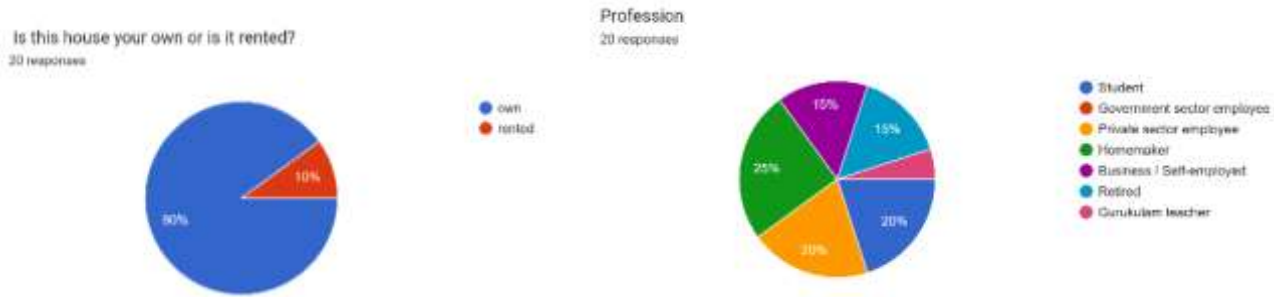
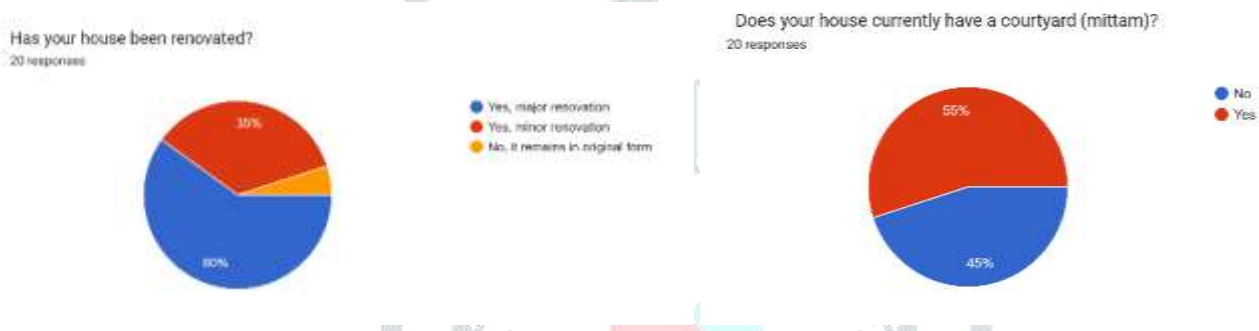


Fig 18 Survey on the profession and ownership of the Agraharams

12.2 Renovation and existence of courtyards

The majority of houses surveyed have undergone major renovations, with only few retaining their original structure. Among these only few houses now have functional courtyards. In cases where courtyard still exist, they are often not actively used, serving more as a leftover space rather than an integral part of daily life. The houses that once had courtyards no longer retain them, as most of them are altered, covered, or completely removed during renovations.



Has the courtyard been changed in recent years?

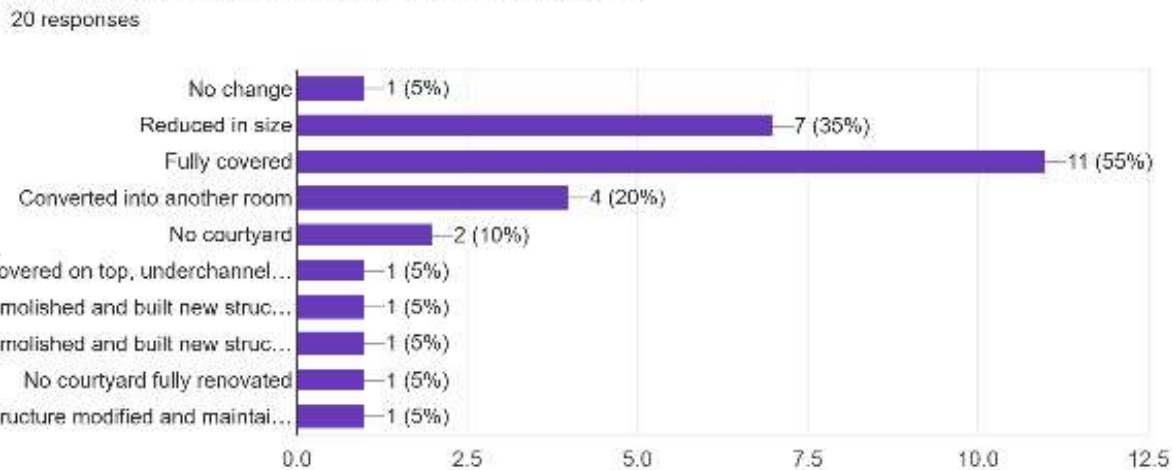


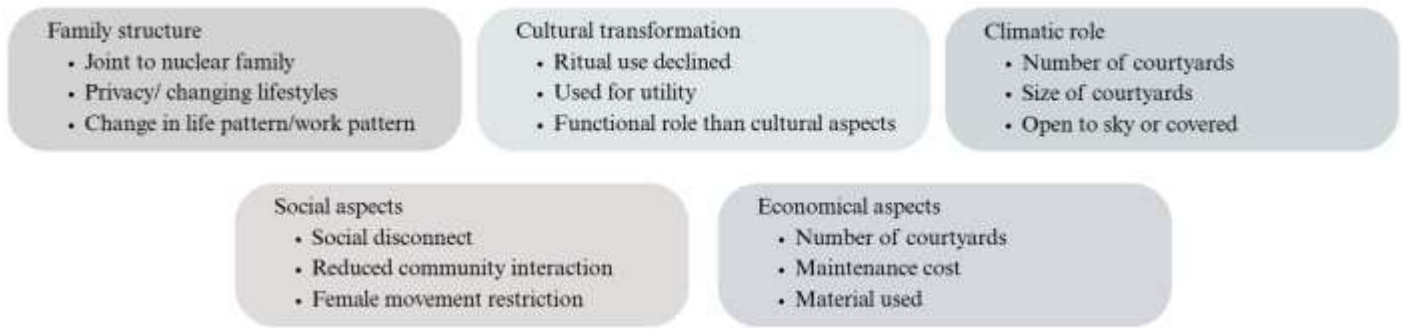
Fig 19 Survey on the renovation and repair

12.3 Changes made to courtyard spaces

The survey revealed that most courtyards have been completely covered, reduced in size, or converted into other rooms such as dining areas, bedrooms, or extension of living space. The reasons commonly mentioned includes:

- Adapting to modern lifestyles that require enclosed and air-conditioned spaces.
- Maintenance issues due to exposure external climatic conditions
- High construction and structural repair costs related to open courtyards.
- The need for more usable floor spaces, especially in smaller plots.

12.4 Factors influencing courtyard evolution



XIII. RESULT AND ANALYSIS

The study shows that Agraharam houses have changed greatly over time. Changing lifestyles, occupations, and family patterns have led to these transformations. While a few traditional elements like the tulusi madam or backyard spaces still remain. The overall change in courtyard reflects the transformation of the entire Agraharam, showing how one spatial element reveals the evolution of whole settlement.

XIV. RECOMMENDATIONS

Future interventions in Agraharam houses should focus on reviving passive design ideas like courtyards and skylights in modern ways. Awareness about the cultural and climatic value of traditional layouts can guide renovation or adaptive reuse. Designers and residents can reinterpret traditional elements to suit future needs without losing the original identity.

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