

A Comparative Study of Thermal Comfort Levels of Chouro (Traditional Hut) and Contemporary House in Mithi City Thar, Pakistan

¹Ar. Murtaza Ali Baig, ²Dr. Saima Kalwar, ³Dr. Noman Sahito, ⁴Shahnawaz Dahri

¹Post Graduate Student, Department of Architecture, MUET, Jamshoro, Sindh, Pakistan

^{2,3}Department of City and Regional Planning, MUET, Jamshoro, Sindh, Pakistan

⁴Institute of Environmental Engineering & Management, MUET, Jamshoro, Sindh, Pakistan

Abstract - In architecture, Inhabitants are one of the most important factors Thus, In order for any architectural design study to be meaningful; it has to be based on the information about its impact on the peoples peace of mind, satisfaction, and perceptions and whether they are able to meet their individual needs. This research work is comparative study between Chouro (traditional hut) and contemporary house of Mithi City Thar, Pakistan. This research paper relied upon the data collected through questioners and temperature noted in month of April 2022, based on response of 300 despondences. The results of comparison revealed that the inhabitants are emotionally, culturally attached towards Chouro (Traditional hut) and Chouro is more thermally comfort than contemporary house.

Keywords: Chouro, Contemporary House, Thermal Comfort, Satisfaction, Perception.

I. INTRODUCTION

This site is a credible and authentic representation of human history, traditions, and ways of life. It embodies the principles and beliefs of various faiths, as well as societal norms. Its exhibits showcase the rich history and culture of both the indigenous people and the town. Moreover, it serves as a reflection of the local climatic conditions, the unique characteristics of the landforms, and the distinctive architectural style and materials.

The Thar Desert was the seventh largest desert in the world and had the highest population density of any desert on the planet. The Thar Coal Mega Power Project was one of the largest coal power production projects in the world, and it was situated in this desert. It was anticipated that this project would have a considerable influence on the communities that were located there. The project had an impact on more than 250 settlements that were spread out across an area of 9,000 square kilometers, and it required a great number of people to

relocate. Migration, land speculation, and tensions among communities [1].

The Chouro dwellings, which were native to the Thar area of Sindh province and were well-known for their construction in the manner of thatched huts, served as an example of how traditional constructions could give superior protection against natural calamities and were friendlier to the environment. Chouro houses an important part of our cultural legacy, however the contemporary house that were constructed without in view of the environment degradation, surrounding, elements of sustainability and material selection and more importantly the thermal comfort is not considered.

Chouro living and contemporary house living both are offering different types of dwelling style. This different type of dwelling style creates conflict between the need, use, comfort and other factors of living. Inhabitants are the main and important part of any architectural work hence, their perceptions are important too. This thesis is focused on thermal comfort towards Chouro and Contemporary house [2].

1.1 Aim

The aim of this research study is to highlight temperature impact between Chouro and contemporary houses.

II. LITERATURE REVIEW

2.1 Thermal environmental conditions for human occupancy

It is possible to increase productivity, and morale, as well as the health and safety of residents of the building by adjusting the temperature of the interior environment. People who work in unpleasant interior environments are more likely to perform in a harmful way. This is because thermal discomfort impairs people's ability to make decisions and/or conduct physical labor, both of which are hindered when people are in uncomfortable environments [3].

2.2 Bioclimatic design approaches for sustainable building

Taking advantage of the nearby conditions of the environment, such as climatic conditions, the orientation of the building, wind direction, humidity, and groundwater, as well as making a good choice of building material taking into consideration locally (traditionally) available materials that have a high capacity to insulate temperature and are economically good, can help improve bio-climatic thermal comfort [4].

2.3 Design factors affecting the level of thermal comfort

It is preferable, during the design phase of a building, to shield it from various factors that may have a direct impact on the thermal comfort of the interior space. This will result in a higher level of indoor thermal comfort. It has been discovered that a great number of elements influence the degree of comfort experienced; the large impacts include urban planning, the architectural design of the home, and the selection of materials for the structures; the smaller effects include economy, quality, and other similar things [5].

III. RESULTS AND DISCUSSIONS

This research work has been carried in the month of April, 2022 of Mithi city, Sindh, Pakistan. As this research is comparative study, the methodology applied was more on gathering information through survey questioner, interviews and physical site visit and data were collected through device HTC2.

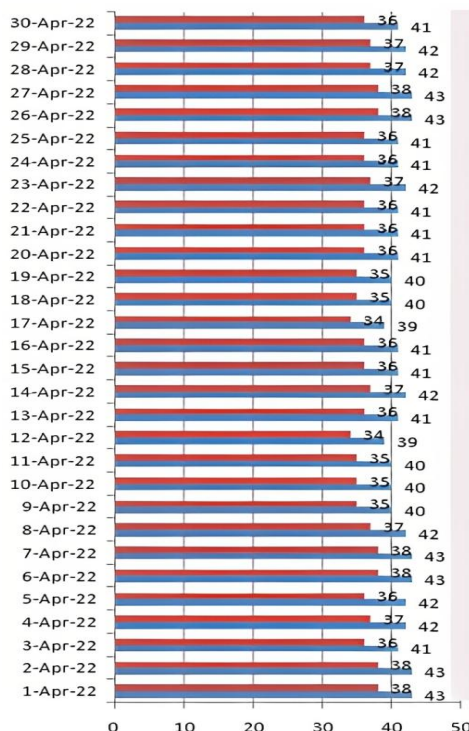


Figure 1: Temperature recorded inside and outside of Chouro

The figure no 1 shows the temperature difference between outer and inner side of Chouro (Thar traditional hut). The temperature recorded 5 centigrade lower than the outer temperature. It means that the Chouro inner temperature is 13% cooler than the Chouro outer temperature.

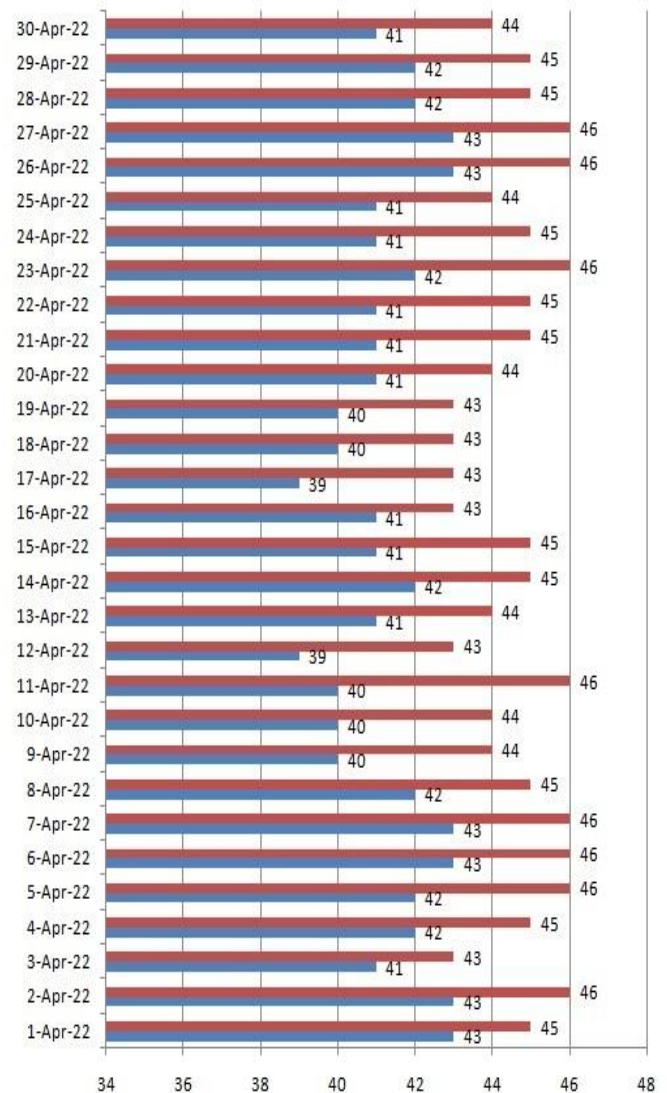


Figure 2: Temperature recorded inside and outside of concrete house

The figure no 2 shows the temperature difference between outer and inner side of contemporary house. The temperature recorded 3.3 centigrade higher than the outer temperature. It means that the contemporary house inner temperature is 7.6% hotter than the outer temperature.

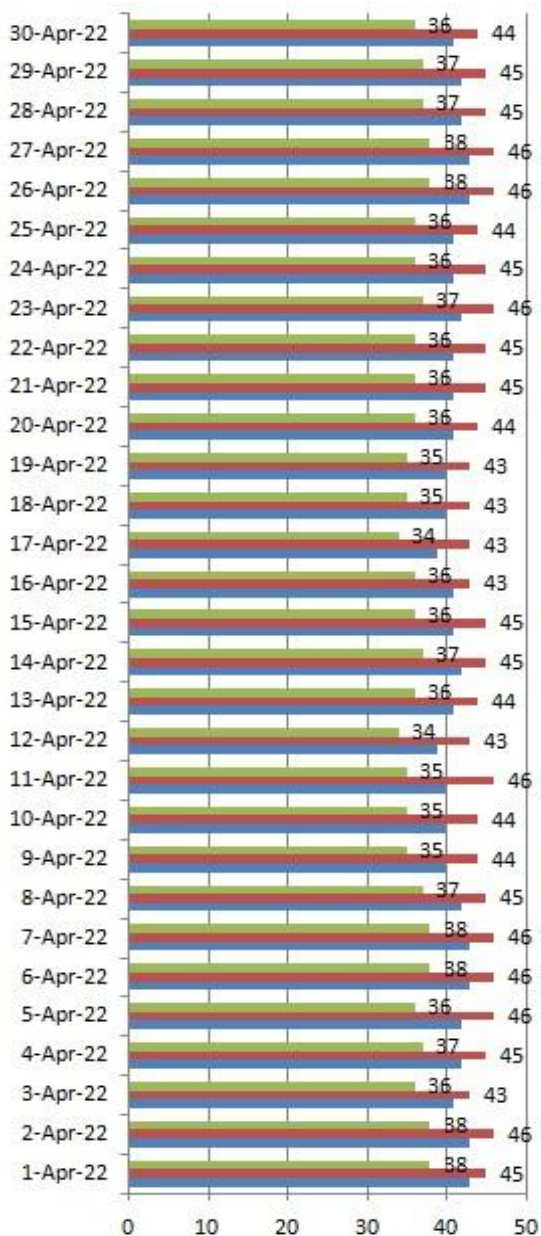


Figure 3: Temperature difference Chouro and concrete house

The figure no 3 shows that the inner temperature difference between Chouro and contemporary house is 8.3 centigrade recorded. It means that the Chouro is 20.5% cooler than the contemporary house.

IV. CONCLUSION

On the basis of recorded temperatures inside both houses, we compared the Chouro (Thar traditional hut) with the concrete house. Compared with the concrete house, the average inner temperature of the Chouro house was 36.3 degrees centigrade and the average inner temperature of the concrete house was 44.6 degrees centigrade. According to this, the Chouro was 20.5% cooler than the concrete house because its inner temperature difference was 8.3 degrees centigrade.

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AUTHORS BIOGRAPHY



AR. Murtaza Ali Baig,
Mehran University of Engineering and Technology, Jamshoro, Sindh, Pakistan.



Dr. Saima Kalwar,
Mehran University of Engineering and Technology, Jamshoro, Sindh, Pakistan.



Dr. Noman Sahito,
Mehran University of Engineering and Technology, Jamshoro, Sindh, Pakistan.



Shahnawaz Dahri,
Mehran University of Engineering and Technology, Jamshoro, Sindh, Pakistan.

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