Common Spaces in Multifamily Affordable Housing:

A Review of the Literature

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Abstract

While researchers have explored space utilization in the design of affordable housing living units, limited research has been published on the design or utilization of shared common spaces in affordable housing developments. I analyzed 15 research studies published from 2007 to 2023 on common spaces in affordable housing developments; in these studies, I uncovered seven recurring themes and organized the findings of this literature review around those themes. Researchers conducted these studies in 12 different countries, highlighting the universal desire to enhance multifamily housing across the globe to improve resident outcomes. Repeated themes across these studies include the optimization and layout of public spaces, the relationship between the design of common spaces and community building, designing for diverse resident needs, incorporating cultural considerations, employing technological and methodical approaches to analyze the utilization of and satisfaction with common spaces, challenges in designing common spaces and opportunities to improve them, and the positive impact on resident well-being. Further research is needed to quantify empirically how common spaces affect community cohesion and well-being outcomes for both residents and staff. Additionally, focused studies on a particular shared space are lacking, as are comparable studies of common spaces across different cultural, geographical, and socio-economic contexts.

Introduction

According to the US Department of Housing and Urban Development (HUD), affordable housing is commonly defined as housing for which an occupant spends up to 30% of their gross income on housing costs, including utilities (*US Department of Housing and Urban Development Archives*). While some individuals in the United States can afford to pay for their housing comfortably, other families and individuals must rely on government aid to afford housing. Most affordable housing units in the US are constructed for households below 60% of the area's median income *(California Housing Consortium)*. To make housing more affordable for Americans, federal agencies run more than 12 programs to assist people with rent payments, grants, loan guarantees, and taxes, including HUD's housing choice voucher program. The government can also help with mortgage insurance, direct loans, and grants for home repairs (*US Government Accountability Office*). To very low-income families, the elderly, and people with disabilities, HUD gives housing choice vouchers, commonly known as Section 8 vouchers, to help these parties pay for safe housing of their choice. Participants can choose their housing, including townhomes, apartments, or single-family homes. A local public housing agency pays the landlord directly for the qualified family or individual who possesses a voucher and wants to rent a unit. Often, renters must make up the difference between what the voucher covers and the monthly rent.

In 2021, there was a shortage of 7.3 million homes available to renters with extremely low incomes in the United States; this shortage increased by 500,000 from 2019 to 2021 (*Housing Matters*). Some reasons for the increased shortage of affordable homes include the COVID-19 pandemic, job losses, inflation, and rising rent prices. For extremely low-income households, they spend more than half of their income on housing. This pool disproportionately

includes more African Americans, Latinx, and indigenous households (*Housing Matters*). In the US, HUD estimates that approximately 12 million people utilize more than 50% of their income to pay for housing and therefore have an unaffordable cost of housing (*Habitat for Humanity*). In developing countries, Habitat for Humanity estimates that 40-75% of people who live in fast-growing cities live in squatter settlements without essential utilities. People are drawn to cities because cities have more jobs; however, they often live in slums with overcrowding, limited sanitation, and minimal access to clean water. 881 million people worldwide live in slums, up from 689 million in 1990. In particular, 59% of city dwellers in Sub-Saharan Africa live in slums; in Asia, that percentage decreases to 28% (*Habitat for Humanity*).

In the early 20th century, rapid urbanization caused increased demand for multi-family unit city dwellings. Early affordable housing developments were often tenement buildings characterized by inexpensive construction practices, low rents, high occupancy, poor living conditions, and cultural melting pots, given their location in ethnic centers in cities. In 1937, Congress passed the US Housing Act, hoping to make housing more accessible and affordable for low-income Americans while also attempting to address living conditions in the slums. The act aimed to provide safer and more sanitary housing for Americans. Post WWII, cities constructed suburban housing projects to house returning war veterans, and urban renewal projects, funded by the Housing Act of 1949, led to the construction of public housing high-rise buildings, as the federal government helped cities clear slums and revitalize these areas (*Planning.org*). While these high rises succeeded in housing many people, they often were not integrated with the community and lacked adequate facilities. At the end of the 20th century, given the shortcomings of prior mass developments, the design of affordable housing shifted to smaller scale developments, ofter mixed-use properties well integrated into local communities.

My area of interest lies at the intersection of architecture and affordable housing, i.e., the design of affordable housing developments. Good affordable housing design stems beyond providing basic living accommodations for individuals; good housing design must maximize connections between residents. Connected residents will have stronger ties to each other and the community. They will look after their neighbors and take better care of the building and their units, driving positive changes in their neighborhood. They may be happier with their living accommodations; there may be less turnover of tenants in the building.

Shared spaces include crossings, connection spaces, and community places (*Multi-Housing News*). Crossings allow unplanned interactions, such as when someone gets their mail, says hello to a neighbor in the hallway, or exits the building by walking through the lobby. Other crossing spaces include elevators and their waiting areas, staircases, laundry rooms, and corridors. Next, connection spaces are specifically designed for residents to gather, such as community rooms, libraries, outside courtyards and green spaces, shared kitchens, edible gardens, play areas, and basketball courts. Finally, community places are common spaces designed to connect with the surrounding community. Mixed-used developments that include retail aspects, like cafes or bakeries, accomplish this goal well. Other options that build community ties include incorporating shared rooms accessible to the public or having public plazas that incorporate bike parking, bench seating, or public play structures.

I am interested in understanding the design of common spaces in affordable housing developments, their placement in the complex, and their use by residents. Additionally, I would like to explore the impact of different architectural designs of common areas on residents' social interactions and well-being. To this end, I reviewed the existing body of literature – on Google

Scholar, EBSCO, and JSTOR – to understand the research on utilizing space in affordable housing. I uncovered and summarized 29 recent research papers. However, given space utilization was too broad of a topic, I narrowed my literature review to focus only on shared spaces in affordable housing, leaving 15 relevant research papers. These works, published from 2007 to 2023, include papers published in journals, thesis statement submissions, and one paper focused on older residents. Highlighting the universal need for affordable housing, these papers were published in countries worldwide, including the US, Canada, China, Taiwan, Korea, Indonesia, New Zealand, India, the UAE, Iran, Iraq, and the Netherlands. Below, I synthesize the research papers' findings based on the following key themes: optimization and layout of public spaces, social sustainability and community building, design and functionality for diverse needs, cultural and environmental considerations, technological and methodical approaches, challenges and opportunities for improvement, and impact on resident well-being.

Theme 1: Optimization and Layout of Public Spaces

Studies reveal the importance of optimizing public space layouts to enhance social interactions, improve community engagement, and increase residents' quality of life. Design strategies that include Social Network Analysis (SNA) and Space Syntax Analysis (SSA) and consider residents' preferences can improve public space functionality and sociability.

Optimizing the layout of public spaces in affordable housing is essential in fostering community interaction and enhancing the quality of life for residents. Architects should consider architectural principles and sociological insights when forming effective design strategies. For instance, a study in China used SNA to map social interactions, identifying key areas where residents naturally congregate, thereby suggesting improvements to communal areas' strategic

placement and design to encourage more robust social connections (Zhao, Jie et.al, “Public Space Layout”). Researchers used SNA to categorize public spaces into different types, such as central green areas, central squares, benches, and open spaces. This research highlighted the relevance of network completeness, integration, and correlation in public space layouts.

Similarly, a study in the US employed SSA to reveal insights about which spatial configurations most effectively encourage resident encounters and social activities (Bollo and Donofrio). For example, SSA uncovered the hub-like nature of specific corridor spaces. Improving these corridor spaces with features that promote social interaction, such as seating areas, can positively impact residents’ psychological and social well-being by encouraging community and social ties. Further, using SSA can reveal different depths of shared rooms. This calculation suggests that the connectivity of multipurpose rooms to other spaces, like kitchens, laundry rooms, or shared outdoor spaces, is relevant in their effectiveness as communal areas.

Employing SNA or SSA highlights the importance of design with a clear understanding of resident behaviors and preferences. When architects redesign communal areas using resident feedback, social cohesion and satisfaction can significantly improve. This finding highlights the importance of participatory design approaches, in which architects directly consider residents' insights and preferences when developing communal spaces, ensuring that these areas are functional and helpful for building community bonds. For instance, a study in India found that designing outdoor areas such as basketball courts and soccer fields close to each other promoted more resident interaction than wandering walking paths (Veluru and Karki). By optimizing the layout of the public spaces in proximity to one another, architects made a measurable difference in increasing community interaction.

Moreover, architects can enhance residents' social and physical well-being by integrating green spaces and multifunctional community centers. In a study conducted in China, residents were delighted with green spaces in front of residential buildings, neighborhood-level activity centers, and fitness facilities (Zhao, Jie et. al, “Evaluation on the Internal Public Space”). These spaces served recreational and social functions and acted as essential components for community engagement; they offered venues for events, activities, and informal gatherings, strengthening the social bonds of affordable housing communities.

In summary, architects must employ a multidisciplinary approach that balances architectural innovation with a clear understanding of social dynamics to optimize the layout of public spaces within affordable housing developments. Through strategic design and incorporating resident involvement, architects can transform shared spaces into lively social centers that address diverse needs and enhance the overall living experience within the community.

Theme 2: Design of Common Spaces and Community Building

Common spaces in affordable housing contribute to vibrant, supportive communities. Communal areas encourage social connections between residents and create a sense of belonging. Architects can allocate space to and design common areas to increase community building. For example, integrating common spaces in suburban affordable housing, guided by SNA, has helped enhance community bonds and facilitate communication. A study in China revealed that optimizing public spaces per residents’ behavioral preferences enhanced occupants’ experiences and improved their living standards (Zhao, Jie et al., ”Public Space Layout”). The study proposed ways to renovate and optimize public spaces to encourage improved resident

interaction and communication. An architect who includes these design considerations will ensure that public spaces align with residents' preferences and promote more meaningful resident interactions.

Further, a study from Los Angeles that analyzed two housing projects discovered that emphasizing informal social spaces, like meeting places and religious spaces, was vital to strengthening community ties and enhancing residents' psychological comfort (Myung et al.). By including small religious places for different religions within walkable distances of the affordable housing development, architects added to the neighborhood's convenience and inclusivity, catering to the occupants' diverse needs. When housing designs cater to the social desires of a community, they significantly contribute to the area's social structure, improving overall well-being.

Shared spaces within affordable housing also play a crucial role in promoting social activities, vital for residents' mental health and well-being. According to the findings of a UAE study, well-designed and accessible common areas significantly increased community interaction and overall occupant satisfaction (Ibrahim). This study underlines that architects need to consider residents' preferences and needs when they develop these spaces to achieve cohesive and resilient communities.

Additionally, research highlights the critical role of outdoor common spaces in enhancing the quality of life and community engagement in public housing environments. A study in Taipei concluded that common spaces in high-rise housing developments significantly influenced social interactions among residents (Li et al.). Outdoor common spaces like common seating areas and scenic spaces encouraged varying degrees of interaction. This study observed that circulation

spaces encouraged significantly more social interactions among the five space types studied, while seating areas had considerably fewer interactions. Based on the percentage of social interaction, scenic and activity spaces ranked first and second, respectively, indicating residents used them more for social purposes. Including plants, water features, and sculptures in scenic spaces added visual interest, attracted people, caused them to linger, and encouraged conversation, thereby increasing social interaction. Activity spaces ranked second in terms of the percentage of social interactions, indicating their effectiveness in facilitating engagement. Finally, this study concluded that concave seating was preferable because it allowed facial contact and encouraged interaction, making it a positive element for socializing, whereas convex seating areas discouraged socializing.

Finally, an American study concluded that design aspects of shared spaces, like the amount of hallway and stairwell usage, significantly impacted community formation within housing developments (Wood). The study found that courtyard typologies of housing developments provided the most robust sense of community. By creating a common area that all residents must use to access their apartments, courtyard projects foster frequent interactions among occupants. Courtyards are integral to community building as a space where residents are most likely to meet and engage with each other. Additionally, projects that eliminated the use of hallway spaces in the courtyard typology received the most positive reviews from residents. Researchers theorized that the courtyard acts as a social space, encouraging interaction. For instance, in the Harlem River Houses, entry to the apartments typically required occupants to pass through the central courtyard, where most community events occur. Conversely, the building typology that encouraged the least amount of community in public housing projects, according to the study, was the tower projects. Tower projects use elevators and stairs to bring

residents to their specific floors, along with differing degrees of horizontal hallway space leading to individual apartments. Although tower projects often have a common entry space, like a lobby, architects did not design these entry spaces to support large social gatherings, so they do not encourage socializing, improve community bonds, or contribute to the overall well-being of residents.

Overall, research reveals the critical role of informal public spaces in encouraging community bonds and enhancing residents' psychological health and social cohesion. By incorporating appropriate common spaces in affordable housing developments, architects can ensure that projects transcend their primary function of providing shelter to become catalysts for community building, social interaction, and enhanced quality of living.

Theme 3: Design for Diverse Resident Needs

Designing common spaces for diverse needs can foster inclusive and vibrant affordable housing communities. Shared spaces can be optimized to serve many functions, accommodating residents' various lifestyles and preferences.

A study in Makassar, Indonesia, highlighted multifunctional public spaces in low-income housing (Bunawardi et al.). The study revealed that residents in Rusunawa Mariso used common spaces for various activities. These included social interactions, private activities, commercial trading, and worship. The spaces facilitated group gatherings and individual activities, showcasing their multifunctional nature. This diversity in usage demonstrated how adaptable the public spaces were for residents, thus reinforcing the role of thoughtful design in supporting community dynamics and encouraging solid emotional bonds. Similarly, an Indian study found that designing activity spaces with flexibility and playfulness, like spacious open areas or plazas,

accommodated more users and encouraged a variety of activities, including those attractive to children, thereby promoting social interaction both among children and their parents (Veluru and Karki).

In contrast, researchers in Busan, Korea, concluded that residents used common areas less after an improvement program due to a mismatch between the design of the improved spaces and the residents' preferences (Cho and Sawaki). This discrepancy between design and preferences led to underutilizing the newly developed common spaces, as they did not adequately address community social and cultural dynamics. This study highlights how important it is for architects and urban planners to align improvement initiatives with residents' specific requirements and expectations to ensure public space effectiveness and usage. The improvement program should have focused on common spaces that align with residents' cultural preferences. Emphasizing practicality in the design of spaces such as parks and playgrounds would have likely led to greater utilization and occupant satisfaction. This research highlights the importance of engaging residents in the design process to ensure that shared spaces are aesthetically pleasing, functional, and aligned with cultural and social preferences.

Moreover, a New Zealand study on a co-housing model highlighted the balance needed between private and communal spaces, fostering community interaction while maintaining individual privacy (Coles). This balance between private and public spaces is critical to creating a humane, affordable, and socially enhancing living situation, particularly in urban settings. Researchers pointed out several well-designed common spaces contributing to a humane and usable shared living environment. For example, common kitchens should have a flexible, adaptable design for use by multiple occupants. If they include large dining areas, these can

function as workspaces, meeting rooms, or formal dining areas. Further, common balconies can act as extended living rooms, providing outdoor space for occupants in small dwellings. Offering pleasant views, these balconies can subdivide the development into smaller, more manageable common areas for different groups. Architects must ensure that they design each of these common spaces to balance private and communal needs, encouraging social interaction while maintaining individual privacy. When private spaces are adequately defined, residents are more likely to embrace common areas. This balance ensures a harmonious living environment where occupants can have privacy while enjoying public spaces. This co-housing model emphasized the potential of communal living approaches to address urban housing affordability and desirability.

These examples illustrate how design can meet the diverse needs of residents in affordable housing. By integrating flexible and accessible design elements, architects can ensure that public spaces increase social interaction, community cohesion, and resident satisfaction. Insights from studies like these support a resident-centric approach to multi-family housing, where communal spaces are inclusive and engaging while enhancing the community's well-being.

Theme 4: Cultural Considerations

Architects should consider cultural considerations when designing common spaces within affordable housing, addressing the diverse needs of communities and promoting sustainable communities. Studies offer insights into how cultural considerations can improve the social cohesion of multi-family living.

Research on Iran's Mehr Housing Projects emphasized that spaces need to be culturally sensitive and accommodate a variety of social interactions, from children's play areas to communal gatherings; they should address the residents' unique cultural and environmental contexts (Ghasemi and Ozay). The authors found that shared public spaces in these housing projects, such as parks, open spaces, and semi-open spaces, facilitated social communication. However, they noticed that projects located in suburban areas often lacked sufficient public open spaces. The study also concluded that while green spaces could improve housing quality, gathering people from different cultures in these public areas could increase crime, particularly among teenagers and children.

Similarly, research in the Kurdistan region of Iraq indicated that residents were generally particular about entrance spaces in multi-family housing (Al-Yozbakee and Sanjary). The study revealed that residents were unsatisfied if the design of these common spaces lacked consideration for local cultural norms and functional requirements. The research underscores the importance of integrating cultural, social, and functional aspects into designs to enhance shared space usability and effectiveness in meeting resident needs. Inadequately catering to local cultural and social needs leads to the underutilization of these spaces. This research from Iraq suggests that residents preferred entrance spaces that were functional, appropriately sized, and considerate of privacy needs. They valued designs that reflected local cultural and social norms and offered a welcoming and comfortable environment. Additionally, residents appreciated entrance spaces facilitating social interactions while respecting individual privacy, demonstrating the importance of balancing communal and private elements. In this study, residents preferred larger entrance spaces. Specifically, occupant satisfaction was associated with entrance spaces with an area of six to eight square meters or greater than eight square meters.

Lastly, a study conducted in Indonesia on common spaces in low-income housing emphasized the adaptability of common spaces to ensure they meet residents' cultural needs (Bunawardi et al.). For example, it highlighted how residents used common spaces in a flexible pattern. While spaces were initially designed for parking or as green spaces, residents in Indonesia used them for social gatherings, cultural celebrations, or as temporary marketplaces, highlighting these spaces' ability to accommodate a range of group activities beyond their intended use. The researchers concluded that these public spaces enriched the residents' daily lives because they could adapt to the diverse cultural needs of the community.

Taken as a group, these studies argue that architects should consider cultural sensitivities when designing common spaces in affordable housing. Spaces should be inclusive, adaptable, and reflect the community's cultural preferences, improving social cohesion and resident satisfaction.

Theme 5: Technological and Methodological Approaches

To address complex social and spatial dynamics in common spaces in affordable housing, technological and methodological approaches like Interpretative Phenomenological Analysis (IPA) and Variational Autoencoders (VAE) can be used. Researchers have applied these approaches to improve the functionality and cohesion of public spaces, providing further insight into residents' experiences and preferences.

IPA is a qualitative methodology that explores how individuals perceive and make sense of their experiences. It can be instrumental in gathering rich, detailed insights into how residents interact with and feel about shared spaces. With this approach, researchers can obtain a more nuanced understanding of occupants' subjective experiences, leading architects to design more

empathetic and user-centered spaces. For instance, researchers used IPA in a Chinese study to understand residents' feelings about shared spaces like pedestrian systems, green spaces, activity centers, fitness facilities, and medical and health facilities (Zhao, Jie et al., ”Evaluation on the Internal Public Space”). Through this methodology, researchers uncovered residents’ values, needs, and expectations about these common spaces; these fundings might not have been possible using traditional survey methods. Officials then employed a strategy of “micro-upgrading,” which involved making minor, incremental improvements to public spaces, incorporating residents’ desires from IPA.

Another technical tool, VAEs make it possible to model and visualize complex data about space utilization and interaction patterns in common areas. By processing large datasets from sensors or user feedback, VAEs generate comprehensive models that predict how different design configurations might affect usage and satisfaction. For example, a study in Los Angeles used VAEs on several affordable housing designs to conclude: (1) designing outdoor community spaces like basketball courts and soccer fields close to each other promoted more interaction between residents and (2) the gridiron pattern with buildings surrounded by roads and retail space on the ground floor reduced communal space and limited social interactions (Myung et al.). Since this tool can predict outcomes, planners and designers can experiment with virtual models of shared areas in the design process before a physical build. This tool helps ensure that final designs are innovative and aligned with residents' needs.

By employing tools like IPA and VAE, architects and planners can improve the design of common spaces in affordable housing. By combining qualitative insights into residents' experiences in shared spaces with advanced visualization techniques, these tools, in combination

or by themselves, help professionals optimize common spaces that encourage community, inclusivity, and well-being.

Theme 6: Challenges and Opportunities for Improvement

Architects face many challenges when designing common spaces that are optimally utilized and pleasing to all. Shared spaces should incorporate residents' individual needs while fostering community engagement. Residents will underutilize a common space if it is not aligned with their needs and preferences. Architects must understand the community's dynamic and incorporate flexible design elements that can adapt to various uses.

The research reveals a commonly-held truth: when architects design common spaces that do not align with resident needs, these spaces will be underutilized. For example, a Korean study looked at an urban redevelopment initiative in a high-density hillside area of Busan, Korea (Cho and Sawaki). To improve social interactions and neighborhood dynamics, architects and planners tried to enhance the housing environment and common spaces. They worked with contractors to upgrade the physical infrastructure and communal areas to create more functional, aesthetically pleasing, and socially conducive spaces for the residents. They also hoped to foster a stronger sense of community and improve overall living conditions in the area. Unfortunately, residents used the shared areas less after the improvement program due to a mismatch between the design of the improved spaces and the actual needs and preferences of the residents. To ensure the effectiveness and usage of the redesigned spaces, architects should have done a better job of incorporating the specific requirements and expectations of the residents. Emphasizing practicality in the design of these spaces would have likely led to greater utilization and satisfaction among the residents.

Next, a Dutch study highlighted challenges in designing communal spaces for older populations in affordable housing (Neykova). It also found negative consequences of poor design and management. Spaces inaccessible or uncomfortable for senior residents led to underutilization; they also failed to foster social interaction. Additionally, if buildings did not properly maintain their shared spaces or architects did not consider residents' diverse needs, common spaces ineffectively promoted social cohesion or the well-being of seniors. To enhance social interaction in a senior community, common spaces should be accessible, comfortable, and adaptable to various social activities, and they should encourage residents to gather and interact. Designing spaces that are easy to access and navigate for seniors is crucial. Comfortable seating and a welcoming atmosphere promote longer stays and interactions. Additionally, shared spaces should feel safe and conducive to social interaction while allowing for privacy and quiet reflection. This study emphasized the ability to use design to combat loneliness and social isolation among seniors; optimized common areas acted as community hubs that fostered belonging and support.

Further, research in Iraq emphasized challenges in designing entrance spaces in local affordable housing complexes (Al-Yozbakee and Sanjary). They discovered that a poorly designed entrance space failed to consider residents’ needs adequately; it might have lacked functionality, been too small or poorly laid out, provided insufficient privacy, or failed to reflect the cultural and social norms of the community. Such spaces led to dissatisfaction and underutilization among residents. This study emphasized the need for a more thoughtful approach to designing common spaces to avoid these pitfalls. Using post-occupancy evaluation methods, researchers measured resident satisfaction with their entrance spaces. They gathered feedback from residents about their experiences and satisfaction with the entrance spaces.

Surveys and questionnaires gathered residents' opinions, focusing on these spaces' design, functionality, and overall usability. Unfortunately, architects could not access resident input before designing this entrance space. This study emphasizes the importance of resident-centered design to improve utilization of and satisfaction with shared spaces.

Involving residents in the planning and development stages will ensure that common spaces reflect the community's desires and requirements. A collaborative approach enriches the design outcome and creates a sense of ownership among residents, enhancing the social cohesion of an affordable housing community.

Theme 7: Impact on Residents' Well-being

Common spaces in affordable multi-family living complexes can profoundly affect residents' well-being; they can foster community engagement, promote physical health, and improve mental well-being. Various researchers have illustrated how thoughtfully designed shared spaces can significantly improve residents' quality of life.

First, research from Vancouver emphasized the role of common spaces in enhancing social interactions and community cohesion (Kamranzadeh). In their study, researchers examined the evolution of shared space design in Vancouver over the past 70 years. They found that the design of shared spaces changed; more recent shared spaces encouraged social interaction and community building. Contemporary, aesthetically appealing, comfortable, and flexible designs reflected a deeper understanding of the social aspect of communal living. When well-designed, these shared spaces served as hubs for social engagement while enhancing residents' quality of life. They contributed to a sense of belonging and community among residents by offering spaces for relaxation and interaction outside of individual units. Shared spaces like gardens and

communal rooftops provided residents with much-needed green spaces while encouraging social gatherings. Access to nature and social venues is crucial for mental health, and shared spaces, such as the ones highlighted by this study, offer a respite from the isolation and stress that can occur in high-density urban living environments.

Moreover, other studies, such as research conducted in Taipei (Li et al.), highlighted how common spaces contribute to physical well-being. For instance, this study concluded that playgrounds, sports courts, and swimming pools within affordable housing complexes offered accessible opportunities for physical activity, crucial for maintaining physical health and combating diseases related to a sedentary lifestyle. These shared amenities ensured that residents, regardless of income level, had access to venues for exercise.

A research study from Iran pointed out both positive and negative elements of common green spaces, specifically playgrounds (Ghasemi and Ozay). The researchers found that playgrounds provided children with a safe, inclusive environment crucial to child development and familial well-being. Areas designated for play and education within housing projects significantly impacted children's social skills, physical health, and overall happiness, offering a secure space for interaction outside residents' units. On the other hand, this Iranian study also found that gathering people from different cultures in these public areas could increase crime, particularly among teenagers.

Finally, research from New Zealand discovered that communal kitchens and dining areas could facilitate social eating arrangements, improving nutritional health and reducing feelings of loneliness; residents could share meals and engage in communal cooking activities (Coles). Residents shared and cooperated in common kitchen and dining areas, improving individual

social ties to the community. Further, elderly residents and those living alone felt included, improving their emotional well-being.

Affordable housing developments' common spaces can improve residents' physical health, mental well-being, and the community's social cohesion. While common spaces are physical gathering spaces, they also enhance residents' quality of life.

Conclusion

While a larger body of research on space utilization in affordable housing exists, primarily concerning the design of individual living units, research on the design and utilization of common spaces in affordable housing is more limited. I reviewed 15 relevant research papers, most of which were published outside of the United States, and I organized my findings along seven themes: optimizing the layout of common spaces encourages social interactions; the design of common spaces can affect community building; common spaces should be flexible and designed to accommodate residents' diverse needs; common spaces should address cultural considerations; incorporating VAE and IPA into the design and analysis of communal spaces offers architects insights on space utilization and residents' priorities; architects need to be aware that residents will underutilize poorly designed common spaces, so architects should use resident input in the planning phases; and shared spaces impact residents' well-being in primarily positive ways.

A Need for Further Research

While researchers theorize that common spaces in affordable housing improve residents' quality of life, several noted the need to empirically quantify the effect of common spaces on

well-being outcomes for residents and staff. Research also needs to quantify the relationship between the functional design of public spaces and the social and psychological effects on residents. Further, a gap in the research exists concerning the long-term effects of common spaces on community cohesion and individual well-being. Much like the study from Iraq, which focused on entrance spaces (Ghasemi and Ozay), more research is required on specific common spaces to understand how they affect well-being and community building. Given the lack of affordable housing globally and the need to continually develop it, comparative studies across different cultural and geographical contexts and on various types of affordable housing designs could aid in understanding the universality of findings from an individual location. Finally, comparative studies of common spaces (e.g., entrance spaces, green spaces, courtyards, etc.) in similar housing typologies across different socio-economic contexts would be valuable to understand their broader contribution to individual well-being and community cohesion.

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