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The Impact of Physical Design on Social Health: A Mixed-Methods Case Study of the Hamedan Rehabilitation and Correctional Center

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Abstract

The physical design of rehabilitation and correctional environments can influence social interaction, perceived safety, and psychological well-being. However, empirical evidence on how specific architectural features affect social health in such settings, particularly in the Iranian context, remains limited. This study examined the relationship between spatial design and social health in the Hamedan Rehabilitation and Correctional Center using a mixed-methods case study approach. Data were collected through questionnaires and semi-structured interviews and analyzed using SPSS alongside qualitative thematic analysis. The findings indicate that several design features, including spatial organization, functional efficiency, access to natural elements, and opportunities for social interaction, were positively associated with improved psychological and social conditions among users. Participants identified poor spatial quality and limited environmental responsiveness as factors contributing to stress and reduced social engagement, whereas well-designed spaces were linked to greater calmness, interaction, and perceived support. These results suggest that architectural design is not merely a physical framework but an active factor in promoting healthier social environments in rehabilitation settings. The study highlights the need for closer collaboration between architects, environmental psychologists, and policymakers in the design of correctional and rehabilitation centers. Incorporating socially responsive and culturally appropriate design principles may improve user well-being and support more effective rehabilitation outcomes.

Keywords

Architectural Design, Mental Health, Architectural Spaces, Society, Space Quality.

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Introduction

Architecture, as a discipline that addresses the biological and social needs of individuals, plays a crucial role in promoting social health and reducing behavioral crises. Given the increasing prevalence of social issues such as delinquency and various social problems, examining the relationship between architectural design and social health has become particularly significant. The primary aim of this research is to analyze the role of spatial design in improving social health in rehabilitation centers, particularly in the city of Hamadan.

This study employs both qualitative and quantitative methods for data collection and analysis, with the credibility of the data assessed through interviews, questionnaires, and field observations. The findings indicate a positive relationship between spatial design and the mental-social well-being of individuals within educational environments. Appropriate space design can significantly impact psychological and social factors, enhancing the quality of life for individuals by creating healthy and desirable environments.

Attention to the elements of spatial design is essential for improving the mental and physical health of society. Architects and designers must consider the psychological and social needs of individuals in their designs. Enhancing the design of spaces in rehabilitation centers is vital for supporting social health and environmental well-being, and architecture should be recognized as an effective factor in improving social health and reducing social anomalies. Given the social and economic challenges in contemporary societies, interdisciplinary collaboration between architecture and the humanities can contribute to the establishment of environments that foster positive social interactions.

Research background and Theoretical foundations

This research examines the intricate relationship between architectural design and social health outcomes in correctional settings, with a specific focus on the Rehabilitation and Correctional Center in Hamedan. The study explores how thoughtful architectural interventions can promote rehabilitation, improve well-being, and support positive social dynamics among incarcerated individuals. The relationship between physical design and social health has increasingly garnered attention in interdisciplinary research, emphasizing how built environments influence human well-being. High-quality physical environments are recognized not only as essential for individual health outcomes but as critical factors in fostering social interactions and community integration. The role of environmental design in healthcare and urban settings underscores the potential for physical surroundings to promote mental and physical health by supporting social connectivity, reducing stress, and encouraging active lifestyles (Anåker et al., 2017; Yang et al., 2023). Research also highlights that design quality encompasses sustainability, accessibility, and user experience, which together contribute to improved social health outcomes (Anåker et al., 2017).

Recent studies demonstrate that environments fostering social connectedness, through thoughtful spatial arrangements, accessibility to green spaces, and communal areas, can significantly reduce feelings of loneliness, anxiety, and depression (Holt-Lunstad, 2024; Prior et al., 2019). Moreover, urban design impacts physical activity, which is strongly tied to social health, thus bridging the gap between physical infrastructure and psychosocial well-being (San-Juan-Escudero et al., 2025). The emergence of novel concepts such as healthy cities and resilience planning further illustrates the integration of physical design with broader public health goals, aiming at equitable health benefits across communities, especially marginalized groups (Yang et al., 2023).

1. *Understanding the Architecture-Health Nexus in Correctional Environments*

Architecture plays a pivotal role in shaping human well-being across various contexts. The World Health Organization defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (Rice& Drane, 2020; World Health Organization, n.d.).

This holistic definition underscores the importance of creating spaces that support all aspects of human health, extending beyond mere physical considerations to encompass mental and social dimensions. According to Biofilico Founder Matt Aspiotis Morley, built environments significantly impact well-being by creating conditions that either support or hinder social connections, physical activity, mindfulness, and prosocial behaviors (Morley, n.d.). This perspective is particularly relevant in correctional facilities, where the design of physical spaces can profoundly influence rehabilitation outcomes.

Contemporary research increasingly recognizes that correctional facility design must evolve beyond traditional punitive models to embrace approaches that actively promote healing and social reintegration. López i Ferrer (2019) notes that while it remains questionable whether the world needs more prisons, it is undeniable that better designed facilities are essential to keep pace with progressive correctional philosophies and practices. This shift represents a fundamental reconceptualization of correctional spaces as potential tools for rehabilitation rather than merely mechanisms of punishment and containment.

2. *The Evolution of Correctional Architecture*

Historically, correctional facilities have been architectural manifestations of prevailing punishment philosophies. In the 18th century, early purpose-built correctional designs reflected punitive ideals of enforced solitude and intimidation, with the physical structure itself serving as an instrument of punishment. However, contemporary approaches to correctional design are increasingly moving away from these classical models, characterized by high perimeter razor-wire topped fences and gloomy, undersized concrete cells along narrow corridors, toward innovative spatial concepts that better align with humane treatment principles and rehabilitation priorities.

This evolution reflects growing recognition among scholars, correctional staff, and policymakers that correctional environments should be designed with consideration for their impact on mental health, social functioning, and rehabilitation potential. Research on the Dutch prison system demonstrates how thoughtful architectural design can contribute significantly to criminal justice reform by promoting human dignity, rehabilitation, and community integration (Jewkes & Moran, 2015). The study analyzes how environmental factors such as spatial layout, natural light, privacy, and access to rehabilitative resources influence inmates' health, behavior, and recidivism rates (Groen, 2024).

3. *Social Health in Correctional Settings*

Social health, the ability to form satisfying interpersonal relationships and adapt to different social situations, is particularly vulnerable in correctional environments, where individuals are separated from their social networks and must navigate complex institutional hierarchies. Research indicates that numerous architectural features influence social health outcomes in these settings, including building age, architecture, location, interior design, exterior landscaping, exercise and recreation facilities, housing arrangements, and occupancy levels (Jewkes et al., 2019).

The quality of physical environments can be "health giving or health destroying," with spatial design directly shaping opportunities for positive social interaction and community formation. Factors such as the provision of communal spaces, the flexibility of gathering areas, visibility lines, acoustic properties, and territorial demarcations all influence how incarcerated individuals interact with one another and with staff, ultimately affecting their social health trajectories.

4. *Trauma-Informed Design Approaches*

A particularly promising development in correctional architecture is the integration of trauma-informed design principles. Many incarcerated individuals have histories of trauma, and conventional correctional environments can inadvertently trigger trauma responses, impeding rehabilitation efforts. Research across multiple jurisdictions emphasizes that "a women-centered, trauma-informed approach to health and emotional wellbeing in prisons must start with the processes of prison commissioning, planning and design" (Plugge et al., 2016). This approach acknowledges the relationship between built environments and trauma

alleviation, suggesting that architectural interventions can support psychological healing when thoughtfully implemented.

The 'Engager' programmer, who developed a complex collaborative care intervention for prisoners with common mental health problems, further illustrates the importance of considering psychological well-being in correctional settings (Lennox et al., 2021). The programmer highlights the value of through-the-gate services, integrated care pathways linking agencies both within and outside prisons, joint planning between health and criminal justice agencies, peer involvement in support, and thoughtful preparations for ending support, all elements that can be reinforced through appropriate architectural design (Senior et al., 2013).

5. *Architectural Health Indicators and Assessment Methods*

To evaluate the impact of architectural design on health outcomes, researchers have developed various assessment frameworks. Architecture health indices (AHIs) provide evidence of the effects on human health associated with building design. However, systematic review reveals limitations in existing indicators, which predominantly focus on communicable diseases directly affecting physical health through factors like air quality or water quality. There are relatively few indicators addressing factors influencing mental and social health, despite the increasing prevalence of these health challenges globally (Rice& Drane, 2020).

Moreover, there is a notable absence of AHIs addressing non-communicable diseases (NCDs), which constitute the majority of poor health outcomes worldwide and are frequently associated with built environment design. This gap highlights the need for comprehensive assessment frameworks that capture the full spectrum of health impacts, including social health dimensions, particularly in specialized environments like correctional facilities.

6. *Design for Rehabilitation: Beyond Physical Parameters*

To truly enhance human well-being in correctional settings, architectural design must move beyond optimizing single parameters such as temperature and humidity toward holistic approaches that support health-promoting behaviors. The Design for Health journal, which covers "all aspects of design in the context of health and wellbeing," emphasizes the importance of design interventions that promote dignity and enhance quality of life.

This perspective aligns with emerging trends in correctional design that prioritize normalization, creating environments that more closely resemble non-institutional settings, and emphasize human dignity and agency. By incorporating elements such as natural light, views of nature, appropriate acoustic treatment, personalization opportunities, and spaces for meaningful social interaction, correctional facilities can better support rehabilitation objectives and promote positive social health outcomes. Crimes do not necessarily occur outside urban areas; instead, many crimes take place in locations that are out of sight from law enforcement and within high-crime sections of cities. Offenders often assess their environment and categorize it based on the perceived risk of detection and arrest, thereby selecting lower-risk areas to carry out their activities. As a result, crimes and social deviance occur in specific places, often premeditated. Crime prevention through environmental design emphasizes the connection between practical objectives, spatial utilization, and behavioral management (Moradi, 2022).

Social health encompasses an individual's evaluation of their performance within society and the quality of their relationships with others, including family and social groups to which they belong. The scale of social health measures a portion of an individual's overall well-being, reflecting their satisfaction or dissatisfaction with life and their social environment, which ultimately involves their internal responses. Various concepts present in people's daily lives can be conveyed through architectural elements, highlighting social and cultural relationships that are significant determinants. Considering the specialized foundations of environmental and social psychology within the field of architecture, the concepts present in people's daily lives can be conveyed to others through spatial elements (Bierhoff, 2013). In the specialized field of psychology concerning social and human aspects, it should be noted that society requires a high level of social capital when addressing the issue of social health. The enhancement of social vitality is not a single-

factor phenomenon; rather, it involves a combination of factors that influence the strengthening or diminishing of vitality among individuals in society. As human beings are goal-oriented and seek vitality, happiness, and well-being, they do not experience joy, happiness, and contentment until they achieve what they desire. Each individual's effort is directed toward finding joy and vitality in the future, and a sense of social vigor is one of the most significant supports for confronting social problems. Real vitality depends on fulfilling one's inner needs through means accepted by society and its established norms. It is essential to recognize that the feeling of happiness relates to various social and individual variables, and social vitality is a combination of individual and societal conditions that encompass and influence a person's life. Social vitality is an enduring and resilient feeling of inner expansion and joy (Mohseni, 2015).

Architecture addresses all social issues through targeted systems. The matter of rehabilitation requires a designed space that supports the return to society under the umbrella of social health. Rehabilitation centers serve as places for the detention, reformation, and training of children and adolescents who have committed delinquent acts. Upon arrival, delinquent minors are quarantined and assessed for health issues (Mir-Kamali, 2015). The architectural design of rehabilitation centers is aligned with the country's legal framework. Legal experts have concluded through their analysis of the impact of harsh punishments on children that such methods are ineffective, and that higher rehabilitative approaches are necessary, enabling individuals to reintegrate into society as productive citizens after serving their sentences (Mehdinejad, 2018).

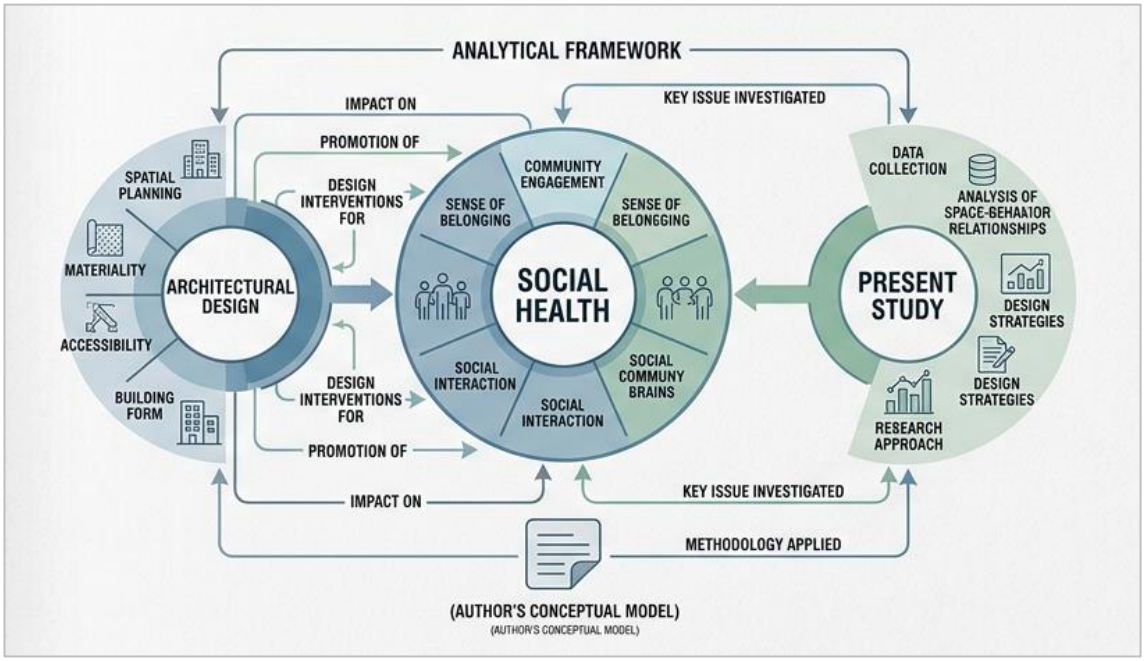

Figure 1: *Key issue in the present study that places social health as a goal in architectural design* (AI).

7. *Rehabilitation Center*

The rehabilitation center primarily falls under the umbrella of organizations such as Welfare in Iran. In this context, this architectural space can be considered a facility where adolescents are detained for committing crimes. The rehabilitation center serves as a place for the custody, reform, and education of minors who are under eighteen years of age and have engaged in delinquent behavior. The purpose of the legislator in distinguishing and separating such offenders is to address the tangible realities in urban societies and the constraints faced by individuals, particularly children and adolescents, who are often affected by exploitation stemming from their ignorance of current laws and regulations, as well as their cognitive and psychological development (Seddigh Sarvestani,2018). Most of the adolescents who arrive at this facility have committed a crime and are under the age of eighteen. Considering the aforementioned points, the rehabilitation center serves as a refuge for individuals facing severe social issues. Accordingly, when

addressing the topics related to the design of such a structure, it is essential to recognize that aspects of social health and social vitality must be integrated and considered holistically within the architecture. This building, functioning as a multifunctional facility, should embody characteristics that are both care-oriented and educational. Therefore, in the discussion of architectural elements, attention must be paid to an eclectic approach in the architectural design process (Falahatpisheh et al., 2011).

Sociological theories that deal with artificial spaces focus on how buildings and artificial environments are meaningfully connected to social actions and society. Sociological approaches to architecture can be categorized into three groups: buildings as social realities, buildings as significant social entities, and buildings as social influencing factors. The architecture of public spaces has leaned towards individualism and has distanced itself from encouraging collectivism. Therefore, the inefficacy of public spaces in forming social interactions can be reduced by increasing citizen participation in the development and design of these spaces (Motamid & Matin, 2020).

Research Gap and Study Relevance

Although the relationship between architectural design and well-being has been widely discussed in environmental psychology and correctional design literature, three gaps remain insufficiently addressed. Firstly, most existing studies have been conducted in Western contexts, and fewer studies have examined how these relationships operate in culturally specific non-Western correctional environments. Secondly, the concept of social health is often treated in a broad and descriptive manner rather than being translated into measurable spatial and behavioral indicators. Thirdly, while previous research has identified the importance of factors such as light, privacy, greenery, and spatial organization, fewer studies have attempted to examine these factors simultaneously within a mixed-methods framework in a real correctional case study.

Accordingly, the novelty of the present study lies in three areas. First, it develops a context-sensitive analysis of the Rehabilitation and Correctional Center in Hamedan, contributing evidence from an Iranian setting to the broader international discussion on rehabilitative correctional architecture. Second, it operationalizes social health through a set of assessable dimensions related to social interaction, perceived privacy, psychological comfort, sense of safety, and access to supportive environmental qualities. Third, by combining qualitative insights with quantitative assessment, the study proposes an interpretive framework for understanding how spatial design characteristics are associated with social health outcomes in correctional environments.

Therefore, the main contribution of this study is not to claim a wholly new relationship between architecture and well-being, but to provide a more contextually grounded and methodologically structured account of how specific architectural attributes may be associated with social health in a rehabilitation-centered correctional facility.

Methodology

This study adopts a convergent mixed-methods design in which qualitative and quantitative data were collected in parallel and integrated at the interpretation stage. This design was selected because the research problem involves spatial, perceptual, and social dimensions that cannot be adequately understood through a single method.

In the qualitative phase, data were obtained through document analysis, theoretical review, field observation of the Hamedan Rehabilitation and Correctional Center, and semi-structured interviews with specialists in architecture, environmental design, and, where accessible, professionals familiar with correctional environments. The purpose of this phase was to identify the key spatial factors associated with social health and to generate the dimensions used in the quantitative instrument.

In the quantitative phase, a researcher-developed questionnaire was designed based on the literature review and the qualitative findings. The questionnaire consisted of two sections: demographic/background information and a set of Likert-scale items evaluating the relationship between spatial characteristics and dimensions of social health. The main constructs included natural lighting, privacy, quality of communal spaces, access to greenery, material quality, spatial legibility, perceived safety, and their associations with social interaction and psychological comfort.

Content validity was examined through expert review, and the wording and relevance of items were revised accordingly. Construct alignment was strengthened by directly linking questionnaire items to the conceptual dimensions identified in the theoretical and qualitative phases. Internal consistency was assessed using Cronbach's alpha, which indicated acceptable reliability.

Because of access restrictions and ethical limitations in correctional settings, the study relied primarily on expert assessment and environmental evidence rather than extensive direct data from incarcerated users. Therefore, the findings should be interpreted as analytically grounded associations between spatial design and social health-related conditions, rather than as a complete representation of users lived experiences. This limitation is acknowledged and identified as an important direction for future research.

Operational Definition of Social Health

In the present study, social health is not treated merely as a general state of well-being, but as a multidimensional construct referring to an individual's capacity to maintain constructive interpersonal relations, adapt to institutional social conditions, experience a sense of belonging, and engage in socially regulated behavior within the correctional environment. Based on the literature and the aims of this research, social health was operationalized through five interrelated dimensions:

1. Quality of social interaction
2. Perceived privacy and personal dignity
3. Psychological comfort in shared spaces
4. Sense of safety and reduced environmental stress
5. Perceived support for participation in educational and rehabilitative activities

These dimensions were examined in relation to spatial variables such as natural lighting, access to green areas, spatial organization, material quality, environmental legibility, and the design of communal and semi-private areas. Therefore, in this study, social health is measured indirectly through users' and experts' evaluations of environmental conditions associated with these dimensions, rather than as a purely clinical or medical indicator

Findings

Based on the qualitative analysis of the findings, addressing the topic of architectural spatial design with the aim of fostering health and social vitality requires a focus on elements such as volume and spatial surfaces, decorations, materials, methods of entrance and openings, social interaction properties and proximities, visual diversity, distances, dimensions and heights, visibility and surveillance, spatial organization, environmental principles, green architecture, services provided to users, privacy and confidentiality, oversight and monitoring, color and lighting, geometry, and other related subjects. These factors facilitate human comprehension of architectural space and create social environments conducive to vitality. The research findings indicate that effective architectural design can significantly enhance social health.

The results reveal that in interaction with architectural space, qualitative elements such as psychological perception and aesthetics are far more critical than physical factors in fostering health and social vitality. Therefore, it is essential for architectural spatial design to pay greater attention to perceptual and psychological aspects. Consequently, four main areas have been introduced as qualitative components related to architectural space and social health and vitality: design foundations aimed at enhancing safety,

security, and vitality; functional principles related to user activities; environmental principles that provide comfort and tranquility for users; and social communication principles influencing relationships among users. These findings clearly indicate that architecture should align with disciplines such as psychology and sociology in order to maximize its potential impact on social health and vitality.
In light of these considerations, Table 1 is presented as a summary of the qualitative findings regarding the design foundations of architectural space aimed at fostering social health and vitality in architectural designs, such as those for rehabilitation centers.

Table 1: *Operational Dimensions of Social Health in the Study*

Related Spatial Variables	Description	Dimension
Meeting rooms, communal areas, counseling spaces	Opportunities for constructive interpersonal engagement	Quality of social interaction
Dormitory layout, semi-private zones, room organization	Sense of personal respect and spatial protection	Perceived privacy and dignity
Soft colors, lighting, reduced noise, interior quality	Sense of calmness and environmental ease	Psychological comfort
Security arrangement, visibility, controlled circulation	Reduced tension and environmental stress	Sense of safety
Workshops, library, classroom, sports space	Perceived encouragement for education and activity	Support for rehabilitative participation

The data presented in Table 1 represent the final extracted components of this research concerning architectural design and the promotion and enhancement of community health and well-being. This information has been specialized and derived from qualitative considerations using the research methodology applied for conducting interviews and administering questionnaires. Accordingly, the type, value, and credibility of this data are outlined in the analysis section of quantitative findings.

The analysis of the quantitative findings of the research is based on the final qualitative data presented in Table 1, employed for assessing validity and reliability. These data were obtained through interviews and questionnaires in the field and quantitative research processes. Following the collection, extraction, and classification of the data, the researcher prepared frequency distribution tables and distribution ratios, after which the data analysis process, considered a crucial phase of the research commenced.

This section consists of two main parts: descriptive statistics and inferential statistics. In the first part, demographic characteristics and variables related to the research hypotheses are presented in the form of descriptive statistical tables and charts. In the inferential statistics section, the Kolmogorov-Smirnov tests were employed to examine the normality of the variables. Additionally, for non-normal variables, the Spearman correlation test was utilized. To predict the components of community health based on the components of architectural design, linear regression analysis was conducted using SPSS statistical software, version 20. These methods comprehensively ensure the reliability and validity of the data, facilitating a more precise analysis of the relationships between architectural components and community health. Consequently, the results obtained can significantly contribute to elucidating the connection between architectural design and social health criteria.

The statistical population of this research consists of 100 individuals, among whom 54 individuals, or 54%, are women, while 46 individuals, or 46%, are men. Regarding education, 60% of the respondents hold a Master's degree, while 40% possess a Doctorate. In terms of age distribution, 25% of the respondents fall within the age range of 30 to 40 years, 60% are in the age range of 40 to 50 years, and 15% are in the age range of 50 to 60 years.
The work experience of the respondents includes 11% with up to 5 years of experience, 32% with 5 to 10 years, 28% with 10 to 15 years, 24% with 15 to 20 years, and 5% with over 20 years of experience. Regarding employment status, 60% of the respondents are psychologists, 10% are consultants, and 30% are doctoral students.

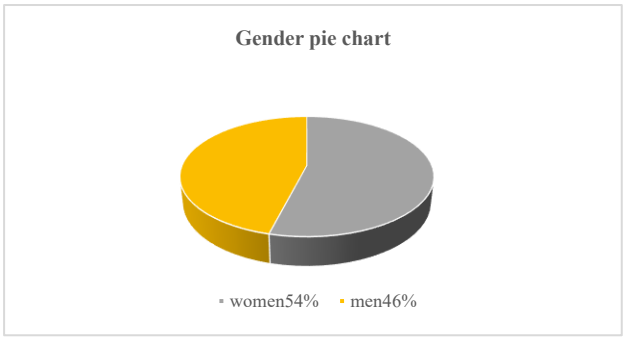

Figure 2: *Gender pie chart*

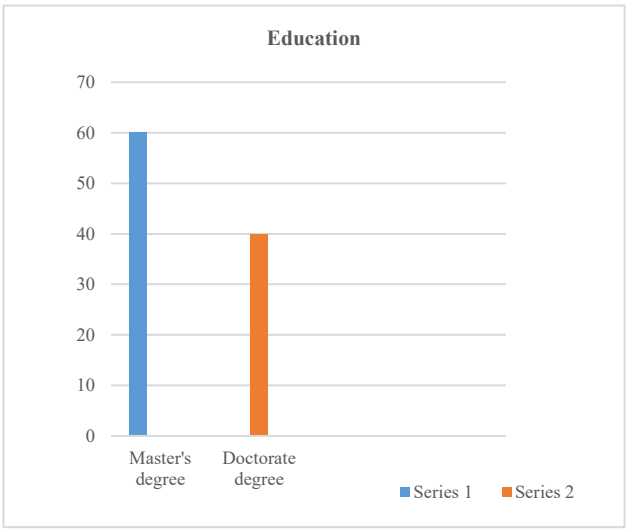

Figure 3: *Education*

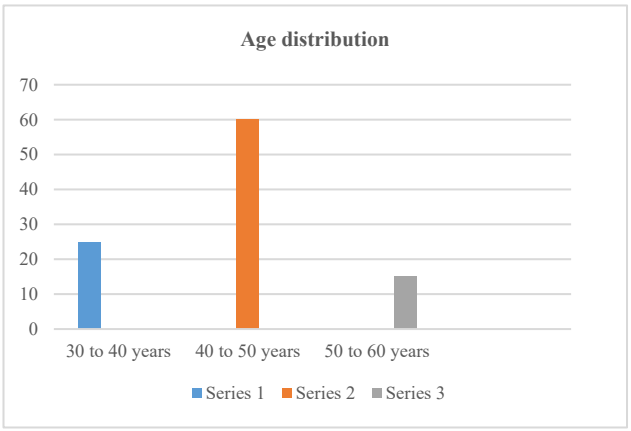

Figure 4: *Age distribution*

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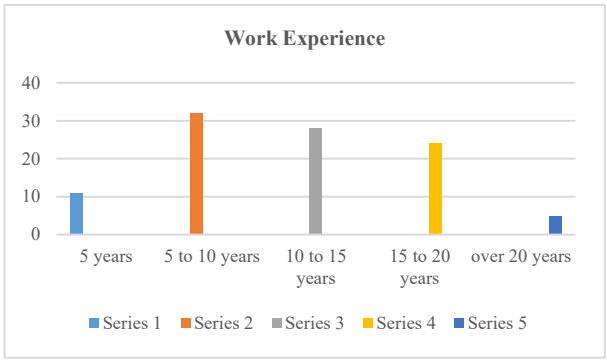

Figure 5: *Age distribution*

Table 2: *Mean and Standard Deviation of the Variables* (Author).

Standard deviation	Average	Standard
0.4	3.48	*Physical space component*
0.31	3.86	*Functional component in the body*
0.24	4.29	*Environmental component on the body*
0.23	4.13	*The social connection component of the body*
0.20	4.03	*community health*

One of the methods that aids in assessing the reliability of questionnaires is Cronbach's alpha coefficient. In this study, the value of Cronbach's alpha for the questionnaire has been calculated to be 0.73. Since this value exceeds 0.7, it can be concluded that the questionnaire possesses adequate reliability.

Before examining the hypotheses of the research, it is essential to verify the normality of the research variables; thus, the Kolmogorov-Smirnov test has been utilized for this purpose. The results of the analyses indicate that the significance levels of all research variables are less than 0.05; this allows us to confidently assert, at a 95 percent confidence level, that the examined variables deviate from normality and are suitable for the application of non-parametric tests.

Hypothesis testing reveals significant relationships between several components. A notable relationship exists between the spatial component and community health. Additionally, a significant correlation is found between the environmental component and community health. Furthermore, a significant association can also be observed between the performance component and community health, as well as between the social interactions within the spatial context and community health. To confirm these hypotheses, Spearman's correlation test has been employed, which is appropriate given the non-normality of the examined variables.

Table 3: *The Relationship Between the Components of Space, Environment, Performance, and Social Interaction on the Spatial Context and Community Health* (Author).

Level of significance	Number	Correlation coefficient	Communication
0.00	100	0.718	*Physical space and community health*
0.00	100	0.353	*Physical environment and community health*
0.00	100	0.783	*Physical performance and community health*
0.00	100	0.616	*Social connection to the body and health of society*

The results indicate that the obtained significance level is less than 0.05, which suggests a significant relationship between the spatial components and community health at a 95 percent confidence level. The positive correlation coefficient obtained clearly demonstrates a direct relationship between the spatial components and community health. Therefore, the research hypotheses are confirmed, indicating a significant and direct relationship between the spatial components and community health.

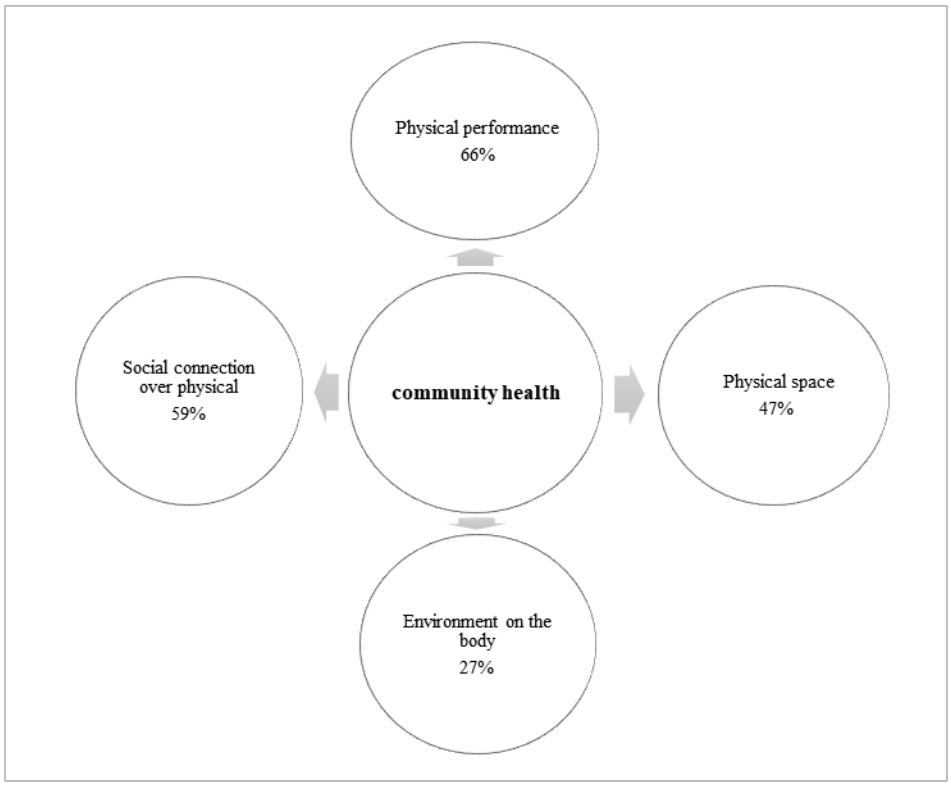

Figure 6: *Representation of the Impact of Spatial Components on Community Health* (Author).

Based on the obtained results, it can be concluded that, in order of significance, spatial performance, social interactions within the spatial context, spatial environments, and environmental aspects have the most substantial impact on community health. According to Table 3, it is evident that in spatial design, aspects such as security, activity, tranquility, and interactions are highlighted as valuable indicators with significant relevance.

The quantitative analysis primarily identifies patterns of association between spatial variables and dimensions of social health. Therefore, the results should not be interpreted as demonstrating direct causal effects. Rather, they indicate that environmental qualities such as natural light, privacy, greenery, and spatial organization are meaningfully related to perceived conditions of social interaction, comfort, and safety within the studied setting.

The qualitative findings identified the conceptual and experiential importance of design elements such as natural light, environmental comfort, activity-supportive settings, communal and semi-private spaces, and communication-oriented environments. These findings helped explain why specific spatial features matter in a correctional context.

Table 4: *Main Qualitative Findings*

Design Elements Identified	Component	Variable
CCTV, quarantine room, landscaping, accused room location, dormitory isolation, safe room	Physical space, security	Architectural physical design
Open-air dining room, meeting room, sports area, workshop, classroom, library	Activity	Function in the body
Soft colors, interior decoration, low noise, lighting, green plants, landscape, sunlight, ventilation	Relaxation	Environment on the body
Meeting room, group counseling, worker and doctor access, sense of belonging	Communication	Social connection on the body

The quantitative findings complemented this by showing which dimensions were perceived as most strongly associated with social health. In particular, the high importance of spatial performance and social connection supports the qualitative observation that spaces are most effective when they facilitate activity,

communication, and institutional functionality rather than merely satisfying minimal physical requirements.

Table 5: *Relative Association of Spatial Components with Community Health.*

Percentage	Spatial Component
66%	Spatial performance
59%	Social connection over physical space
47%	Physical space
27%	Environment on the body

Discussion

The findings of this study support the view that architectural design in correctional and rehabilitation settings should not be reduced to issues of enclosure, security, and technical efficiency alone. Rather, the built environment should be understood as a social and behavioral context that may shape how individuals experience dignity, stress, interaction, routine, and belonging.

From a theoretical perspective, the results are consistent with environmental psychology approaches that regard space as an active mediator of behavior and well-being. The findings also align with sociological understandings of architecture as a framework through which institutional power, social order, and human relations are organized. In a correctional environment, where individuals are exposed to restricted autonomy and elevated psychological pressure, the quality of space becomes particularly significant.

The study suggests that design elements such as natural light, access to green features, clear spatial organization, activity-supportive settings, and communication-oriented spaces are not merely aesthetic enhancements. They may be associated with greater psychological comfort, improved environmental legibility, and more constructive forms of social interaction. In this sense, design quality acquires ethical and social importance. At the same time, the findings indicate that ***functional spatial performance*** is especially important. This suggests that spaces contribute to social health not only through visual or sensory qualities, but also through their ability to support meaningful daily routines, educational and rehabilitative participation, and social regulation. A well-designed space is therefore one that accommodates activity, reduces confusion, enables supervision without excessive oppression, and permits a degree of social connection compatible with institutional goals.

The importance of communication-related spaces further suggests that correctional design should incorporate settings that support human contact, counseling, supervised gathering, and access to support services. Such spaces may contribute to a more socially responsive environment by reducing isolation and fostering a sense of institutional care and belonging. However, it is essential to interpret these findings with analytical caution. The quantitative analysis identifies associations, not direct causes. The study does not demonstrate that design alone produces social health outcomes, nor does it claim that architectural intervention can independently resolve the complex social and institutional challenges of correctional settings. Social health is shaped by multiple factors, including management, policy, program quality, staffing, social relations, and broader socio-economic conditions. Architecture should therefore be seen as one important contextual factor among others.

The theoretical significance of the study lies in advancing a more nuanced understanding of how social health can be interpreted within architectural research. By operationalizing social health through measurable spatially relevant dimensions, the study contributes to bridging abstract social theory and environmental design analysis. Its practical significance lies in informing future planning and policy for rehabilitation-oriented correctional facilities in Iran and similar contexts. All principles and topics in design must be accompanied by the creation of a calm and comfortable environment for individuals. When the architectural environment exudes tranquility, it can result in effective social functionality. Conversely, in

the design of spaces and architectural planning, it is essential to ensure that opportunities for face-to-face interactions and social events, as indicated in Table 4, are taken into account.

Table 6: *Results Obtained from Field Operations, Observations, and Interviews* (Author).

Design results from observations and interviews		
Offer	**Component**	**Variable**
CCTV cameras + room quarantine + landscaping + suitable location of the accused room + security + dormitory isolation + safe room	Physical space (security)	**Architectural physical design**
Open-air dining room - meeting room, sports area - workshop - classroom - library	Function in the body (activity)	
Soft colors - Interior decoration - No noise pollution Lighting + Green plants + Suitable landscape + Suitable dormitories + Suitable view + Sunlight + Ventilation	Environment on the body (relaxation)	
Meeting room + counseling group + worker + doctor + creating a sense of belonging	Social connection in the body (communication)	

Discussion

This study examined the relationship between physical design and social health in the Rehabilitation and Correctional Center in Hamedan through a convergent mixed-methods approach. The findings indicate that spatial design is meaningfully associated with dimensions of social health, particularly through spatial performance, communication-supportive environments, environmental comfort, and activity-related settings.

The study contributes to the literature in three ways. First, it provides context-specific evidence from an Iranian correctional environment, addressing a gap in the predominantly Western-oriented literature. Second, it offers an operational definition of social health suitable for architectural analysis. Third, it demonstrates the value of integrating qualitative and quantitative evidence in understanding the role of design within correctional settings.

The results suggest that correctional architecture should move beyond a narrow security-based model toward a more balanced framework that also values dignity, environmental comfort, meaningful activity, and social support. Features such as natural light, ventilation, greenery, suitable dormitory design, educational and recreational areas, counseling spaces, and legible spatial organization appear to be important environmental conditions associated with healthier social functioning.

These findings do not establish direct causality, but they do indicate that architectural design is an important contextual factor in shaping conditions related to social health and rehabilitation. For this reason, architecture should be considered an integral part of interdisciplinary efforts to improve correctional environments and support more humane and socially responsive institutional models.

This study has several limitations. First, due to institutional and ethical constraints, the research relied primarily on expert assessment, field observation, and environmental analysis rather than extensive direct participation by incarcerated users. This may limit the ecological validity of the findings. Second, the quantitative analysis was correlational and therefore does not allow causal inference. Third, as a case study focused on a single correctional center, the findings should not be generalized without caution.

Future research may build on this study in several ways. Comparative studies across multiple correctional facilities could help identify recurring and context-specific design patterns. Research including direct user perspectives, where ethically feasible, would strengthen understanding of lived experience. Further studies may also employ more advanced analytical models to examine the relationships among environmental variables, institutional conditions, and psychosocial outcomes.

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