

## The Importance of Design and Impact of Open Spaces in Prison Architecture on Inmates' Mental Health in Different Countries

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### Abstract

Inmates in different countries around the world suffer from a range of mental health problems, due in part to the environments in which incarcerated populations are kept. This paper found that architects take into consideration the importance of design and the impact of open spaces on prisoners' mental health. However, the designs vary according to different countries. This highlights the importance of understanding the culture in the region where prisoners are housed and the significance of open spaces as well as specific designs within prison environments to boost inmates' mental health.

Prison architects recognize that the micro-environment inmates experience daily within their communal living area directly influences their individual and collective behavior as well as attitudes, their responsibilities for managing their environment, both in terms of taking care of themselves, relating to others, and being a part of the maintenance and development of the buildings. Consequently, designed environments must be humane because they are supposed to reflect the best aspects of human culture, expressed through the arts, and designed to benefit the well-being of inmates. As corrections professionals understand, there is a direct cause-and-effect relationship between the character of the physical space within a prison and the behavior and attitude of the inmates housed there. The majority of prison architectural design consensus is based on the belief that altering the prisoners' environment in a way that makes them more aware of their surroundings would affect their behavior.

**Keywords:** open spaces, prison architecture, mental health, inmates

### 1. Introduction

Prison architecture contributes to the strict control of detainees and the safety of society, but life in closed spaces for a long time can lead to a variety of health problems, such as difficult emotions and different diseases, particularly in terms of inmates' mental health. Most of the architectural studies in this field have focused on the design of the prison environment or special facilities, while there are only a few studies about open areas. However, open areas inside the prison are the only places within the prison where natural elements can be introduced, so they are extremely important. This paper describes the influence of open spaces on inmates' mental health in different countries and provides design strategies and principles for open spaces that correctional jurisdictions should observe.

Prison architecture has been considered since ancient times as a negative environment, lacking variety and full of depressive elements. It belongs to a very special group of buildings that serve correctional purposes. Because this structure is specialized, most of the contents and elements reflect or cater to this specification. However, it is different for individuals who must endure long-term stays. They may be guilty of violence, family rancor, financial failure, individual offenses, or any other reason. In short, the reasons for their detention might be different, but long-term confinement will have the same results. It will be an invisible sentence for their physical and mental health.

## **2. Research problem**

Some countries differ in the design of open spaces in prisons, each according to its culture and policies. The problem of the research lies in the neglect of some designers of prison buildings of the importance of open spaces of all kinds on the psychological health of the prisoner and their importance in influencing his behavior.

## **3. Research method**

We mainly draw on qualitative research methods to examine the relationship between prison open spaces and inmates' mental health. The focus here is qualitative research as it cultivates in-depth knowledge of the subjects of the study and their context that is directly referenced in the data itself. In this research, an array of data was collected to explore different design concepts and prisoner needs within varying architectural and social contexts. The data was collected through both qualitative discussions with participants and structured discussions through surveys of both staff and prisoners.

## **4. Research Goal**

Given the spatial and visual importance of interior open spaces in the prison, this study aims to compare in different countries penitentiary experiences, taking into account aspects related to the significance of the interior design of open spaces and the main concerns regarding the size and typologies of different prisons about the Health Quality Index and its connection to the quality of life of the inmates, particularly those directly related to inmates' mental health.

We intend to emphasize the importance of the interior design of open spaces, including furnishing, layout, noise, lighting, thermal comfort, services, and the quality and availability of space that provide stimulation and allow inmates to establish ongoing living and working relationships with others within the prison environment.

## **5. Limitations of the Study**

This study contains some limitations. The data are based on sources that may include bias and selective perception, as the archiving systems of information and communication may have certain restrictions on access. Data could be incomplete or challenging to process, as international prison authorities did not agree to participate. The absence of data on several countries due to the impossibility of accessing these correctional facilities might influence the results. It is essential to keep in mind that some prisons, particularly newly constructed facilities, were assessed at the beginning of their opening or before full occupancy, which might reflect a reduced impact of overcrowding. It is essential to be cautious in generalizing the findings. The study focuses on a systematically selected rather than a random set of countries.

## **6. Historical Evolution of Prison Architecture**

The first prison, to keep people there as punishment, not as a logistic measure, was the prison part of the Palace of King Minos at Knossos. The confinement space had a sanitary surface area, as we can see by the lechoi—clay basins filled with lime and sand, at ground floor level. However, in this trial prison, there were issues regarding dignity and personal exposure—the prisoners were confined in wooden cages, installed in sight of the corridor that circulated the prison, where any person could see the prisoners, judge, and/or throw anything at them. The mentioned aspects were solved in some way, through the passage by said corridor being interrupted due to an organizational change of the first palace of Knossos, when the circulation circle was replaced by a division using a stone wall, dividing the corridor and the prison, enhancing indelibility and preventing objects from being thrown at them. Other forms of imprisonment appeared over time in different countries from different continents, considering the different customs, judicial structures, and economic strength of each society. It was not until the third century that the first prison was built with the closest relationship between prison architecture and the degree of guarantee of prisoners' health. Built by Carcero for senators of Rome, the building included the medieval influence of a very well-structured private hotel, where prisoners stayed while waiting for their trials. Some years later, the Constantin prison, offering a more ethical type of accommodation, was built by Fordius, adopting the same philosophy [1].

### **6.1. Early Prisons**

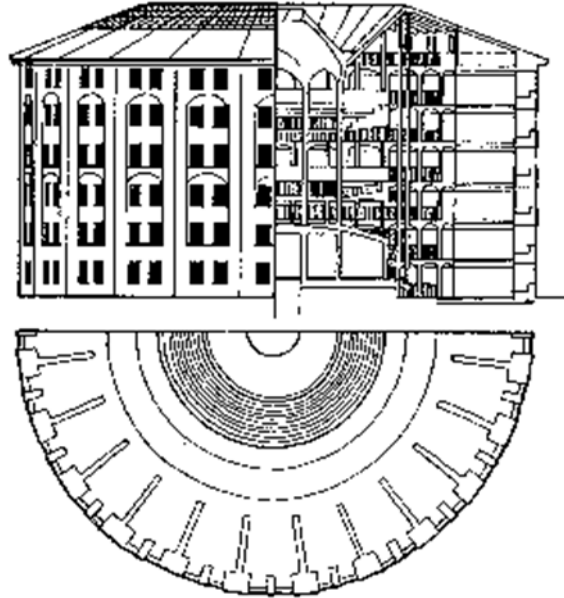
Early prison designs, dating back at least 400 years, were not meant to foster the well-being, health, or rehabilitation of inmates, but rather isolation and punishment. Several restrictions were made in the building and design of the original penitentiary regarding light, acoustics, cell size, and cell configuration that limited an inmate's participation in educational and vocational programs. The lack of safety, visitation, circulation, and mental health services intensifies the stress of incarceration. Prison architectural design and environments have direct influences on prison life and subsequently on inmates' mental health. Over the past forty years, approximately 60 new prisons have been constructed in the United States in response to pressures requiring enhanced accommodation for inmates [2].

In response, European-style inter-cell blocks have been replicated in prisons across the United States. However, many of the new units are plagued by poor design features, many of which have contributed to limited inmate participation in programming and mental health problems. These design features are reminiscent of the design problems noted over a century ago. The crowning achievement of 19th-century prison design in the United States, Eastern State Penitentiary, which opened in October 1829, exploited a convenient construction technology that ensured its long-standing visual and physical impact.

### **6.2. The Panopticon and its Influence**

The first model that tries to analyze the function of the architecture and landscape of a prison is the panopticon or circular building model. It is a model devised by the English philosopher and jurist at the end of the 18th century, but it ended up not being built according to his plans. Only its theoretical implications were presented. Essentially, this was a radial structure composed of two concentric circles: an interior one, made up of individual prison modules, and an exterior one. The center of the panopticon would be occupied by an observation tower that would allow monitoring of the prisoners without the need to be seen. The prison manager could see all the cells from a single point. This model

is not designed to reduce recidivism by treating prisoners better. Its main goal is to avoid the possibility of teaching new skills and deepening current friendships among the criminal population. It is a model for reducing the risk of evasion, violence, riot, and collective escape [3].



**Fig. 1.** Panopticon Prison

Source: <https://www.researchgate.net/figure/Michel-Foucault-Knight-J-Benthan-The-Panopticon-Section-and-Elevation>

### 6.3. 19th and 20th Century Developments

The modern period of the penitentiary system is characterized by the following trends. In the late 60s and early 70s of the 20th century, based on social justice and legislative norms, most developed countries began to implement progressive goals related to the purposes of punishment isolation. A completely new stage in the development of the penitentiary system is associated with the emergence of the doctrine of resocialization for individuals serving sentences. It is also important in the field of using alternative methods for executing punishment. Today, the strategic direction of the penitentiary system is the continuation of the constructive transformation of jail departments, the creation of a system for executing punishments, and other measures of criminal punishment through the development and introduction of innovative projects, ensuring the protection of the rights and freedoms of criminal justice offenders and the coordination of national legislation with the international obligations of Ukraine [4].

The clergy of the PPS of Ukraine has the important task of creating a good external environment and an atmosphere for rehabilitating individuals. Nowadays, the issue related to design involves providing a conducive environment aimed at creating a correct psychological climate in prisons. They noted that the design of the space for maintaining suitable conditions consumes a significant part of their budgetary funds, and informed that the size and aesthetic equipment of cells and other auxiliary premises have a positive impact on the moral state of prisoners. The key question regarding this issue should be understood as the creation of a larger and more welcoming space in the prison landscape, contributing to the mutual recognition of the personal dignity of the condemned and compliance with the requirements of a supportive environment [5].

## 7. Prison Architecture and Design

The architecture of new, modern, secure prisons and correctional facilities is designed based on the most important thing: the living conditions of the inmates. There have already been many examples when the benefits of ensuring the inmates live in a humane environment positively affected every person. For now, it is necessary for modern architecture and technology to change the environment in correctional facilities and prisons; to leave the formal restrictions of proportion and symmetry in design and return to the principles of free design, considering the psychological aspect - comfort for everyone who uses the confinement space. Considering the clinical value of the healing environment in prison, the environment in general, and the nature of the prison buildings, in connection with the specific characteristics of the confined environment architecture, psychotherapy, in which specific architectural elements play a direct role, represents appropriate methods and techniques used for other psychological methods, a number that helps to change the direction of characteristics of an individual, and it is effective assistance in treating negative behavior and avoiding the threat of experiencing a mentally ill prisoner. The research in this is conducted in the fields of psychology and architecture. Although these trends reflect a contemporary desire to integrate knowledge from two very different fields of inquiry, they are warranted, especially since psychological mechanisms often reported in discussions and debates in the field of mathematics have failed to be sufficiently identified [6].

### **Biophilic Design**

Biophilic design emphasizes the connection between humans and nature. It promotes access to vibrant colors and landscapes in daily living and working environments. This approach suggests that nature can enhance human health and well-being. By incorporating natural elements such as light, space, water, wood, and stone, architecture and interior design facilitate interaction between the natural and built environment.

Studies show that nature, especially urban green spaces, has a strong impact on mood. Ancient Greek medicine and the incorporation of natural elements into the built environment have been shown to improve mental well-being. Some scientists argue that contact with nature is essential for human survival and development. This has implications for how architects and planners design buildings and cities [7].

## **8. The Role of Open Spaces in Prison Design**

Open spaces are a critical component of any architectural environment, and prisons are no exception. An open space is a gap within a built form or structure, left open to the sky. In the case of prison architecture, it is a place to which inmates have access, where they may spend extended time. The phrase refers most commonly to outdoor areas, but it can also be applied to large working and public zones within a building. Open spaces within a correctional facility can broadly be broken into two categories – utilitarian and recreational.

Utilitarian open spaces are those that serve an instrumental requirement. Their design is usually secondary to development rather than creation. In prisons, utilitarian yards are those that give inmates access to areas such as mess halls, infirmaries, industry and work zones, and visitor centers. Their primary function is to ensure the site can function and does not shut down in times of overcrowding [8].

Conversely, recreational open spaces are purpose-built around specific program necessities such as handball courts, designated workout areas, athletic fields, soccer fields, and basketball courts. Designed to help



offenders develop improved mental, emotional, and behavioral control through movement, self-discipline, and physical achievement in a benignly competitive atmosphere while allowing outlets for physical activity from a secure environment, these courts are used as social spaces, non-institutional areas where offenders could associate as shown in fig. 2.



**Fig. 2.** Recreational open spaces

Source: <https://www.osibaltimore.org/2012/11/designer-prisons/>

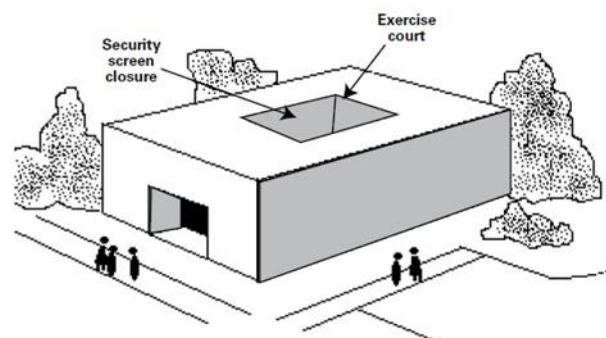
Therapeutically, such interactions were meant to encourage prosocial behavior by creating an informal network of relationships. These spark points would lead to, it was hoped, accumulated change leading to consistently positive life approaches that are grounded in pro-social conduct and cognitive global personality change. Overall, both spaces are designed for each respective group to counter the dynamic deprivations of incarceration, leading to a less negative lived experience of imprisonment [9].

### 8.1. Definition and Types of Open Spaces

Open spaces can be an expansion of our outdoor area or can come from the interposition of the built mass. In the prison system, for example, open spaces create an assembly space for greater and closer interaction, possibly fostering the growth of collective or interrelated activities as shown in Fig. 3&4. There are outdoor yards intended for physical exercise and walking. Additionally, there are different environments, specially constructed, such as internal gardens and leisure areas. They are often the core of the composition, functionally and symbolically, organizing and distributing the internal program and helping to analyze the interior and its environment as a single unit [10].



**Fig. 3.** Mesh-covered outdoor exercise area



**Fig. 4.** Outdoor Exercise Area Surrounded by Building

This paper has identified that open spaces should be configured as environments capable of receiving human activities, ensuring different aspects such as functionality, comfort, and residents' privacy. The relationships between built and open spaces may vary in quantity and quality, depending on the design

that is chosen, amid fragmented, neutral, or porous configurations as shown in fig. 8. Both these schemes may contribute to shaping interior ambiance by directly connecting enclosed environments or open spaces. The closed galleries and the central modules served as the engine for the tempo and cadence of life within the building, awaiting a pleasurable transition to the open spaces beyond.



**Fig. 5.** The relationships between built and open spaces

Source: <https://worldlandscapearchitect.com/a-prison-that-interacts-with-the-landscape>

Both these physical and psychological realms await expansion through prisoners' movement and association in society beyond. Indeed, the central circulation cores incorporating the dwellings have been positively evaluated, offering a site to pause and contemplate, looking at the views of gardens and capturing the changing lights of the day. An active and lively prison will break the monotony of time spent in prison and help alleviate feelings of isolation and suffocation. Let's rehabilitate as shown in fig. 6. [11]



**Fig. 6.** The central circulation cores in prisons

Source: <https://worldlandscapearchitect.com/a-prison-that-interacts-with-the-landscape>

## 8.2. Considerations in Designing Open Spaces for Prisons [12]

The principal outdoor areas needed for a prison include:

- **exercise area:** walled, fenced, or unenclosed, depending on the security level of inmates as shown in Fig. 7&8.
- **emergency area:** a controlled outdoor area to which inmates can be temporarily evacuated in an emergency. This may be the same as the exercise area, if part of it is far enough from the main building as shown in Fig. 9.
- **Farm or Garden area** if the facility grows some of its own food or has an inmate training program.
- **General Landscaping area:** for aesthetic purposes and the creation of buffers between the building and the public.

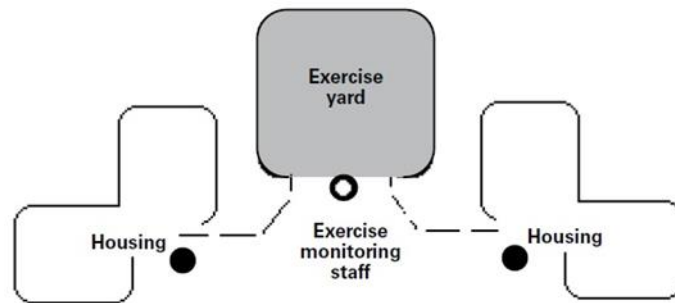


Fig. 7. Centrally Located Exercise Yard

Source: Morris L. Thigpen, Jain Design Guide, National Institute of Corrections.

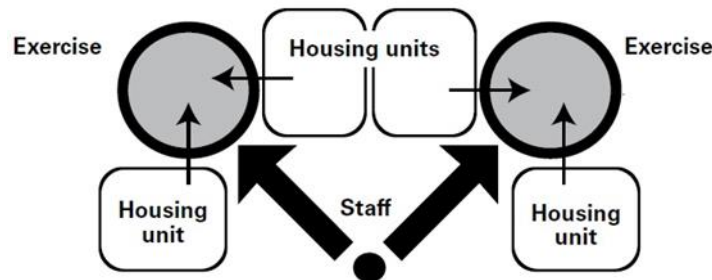


Fig. 8. Exercise Areas Immediately Adjacent to Housing Units

Source: Morris L. Thigpen, Jain Design Guide, National Institute of Corrections.

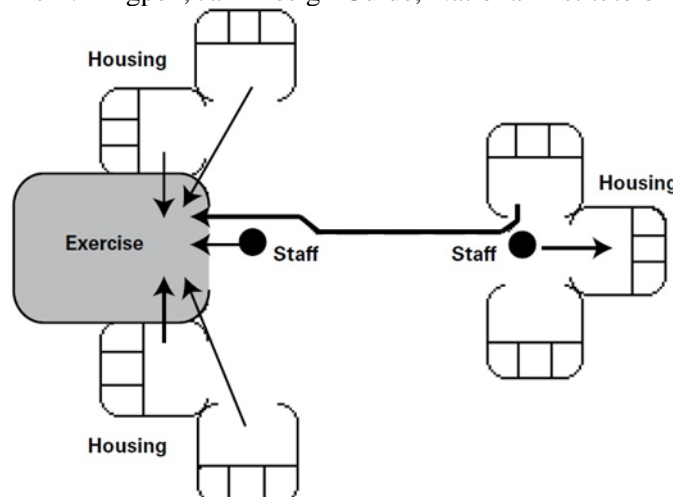


Fig. 9. Exercise Area Monitored by Staff Who Monitor Other Areas

Source: Morris L. Thigpen, Jain Design Guide, National Institute of Corrections.

**a. The numbers and types of people using exercise areas**

There are three principal types of potential users:



- inmates,
- law enforcement or prison officers as part of their fitness or community involvement programs.
- the public, with or without inmate participation.

It is important to identify the number of inmate groups that must exercise at separate times because of separation and supervision concerns. These groupings should respect the basic classification/separation requirements of the facility unless the level of staff supervision for exercise is sufficiently high to allow some merging of groups housed separately.

Once the number and types of groups are identified, the maximum group size should be determined since that size will influence space and equipment requirements as well as staffing needs.

Capacity expansion possibilities should also be identified to determine if a larger group must someday be accommodated or if additional exercise spaces should be planned.

### **b. The size of exercise areas**

Activities should be chosen based on what is most useful and productive for the inmates and the staff alike. Different activities require different amounts of space. For example, a small half-court basketball area would require 150 to 250 net square meter (regulation high school dimensions) with a ceiling height of 4.5 to 6 meter, whereas a calisthenics area might require only about 30 net square meters and a 3-meter ceiling height for the same number of users.

Additionally, each space may have secondary areas to accommodate other activities concurrently (such as weightlifting and basketball), Or they may provide seating areas for those who are resting between activities, awaiting an opportunity to participate, or, in the case of outdoor exercise, merely enjoying the fresh air.

The number of people using an exercise area at any one time affects space size. Twelve people playing two 3-on-3 games of basketball, for instance, would require two half-court areas at about 288 to 468 net square meters total. However, eight people playing one game need only about 150 to 250 net square meters not counting secondary areas for sitting or other activities.

**Table 1:** The relationship between different activities, their space and the number of users of these activities  
Source: researcher

<b>Activity</b>	<b>Minimum Dimensions(m)</b>	<b>Maximum Number of Users</b>
<b>Basketball (half-court; high school)</b>	14.5×17×4.5h	10
<b>Volleyball</b>	22×13×6h	12
<b>Weightlifting (weight machine)</b>	3.5×5×2.5h	4 - 6
<b>Sitting</b>	1.5 m <sup>2</sup> /person	

### **c. The number of separate exercise areas**

Most small and medium-sized prisons will need only one indoor and one outdoor exercise area. However, this cannot be known with certainty until a variety of factors are considered. Additionally, space-sharing options with other functions cannot be ascertained until all factors about exercise area use are considered.

Scheduling is a major determinant regarding the number of areas:

- Frequency: how often inmates will exercise outside the housing area once a week? three days a week? five days a week?
- Duration: the length of time per exercise period, including movement time between housing and exercise areas 30 minutes? one hour? two hours?
- Hours of operation: the number of hours per day the exercise area is available for use. This is frequently limited by other basic activities, such as food service and visiting, that absorb staff and inmate time during the day.
- Weather Conditions: the number of days per year that weather would typically prohibit the use of an outdoor exercise area might influence the size and type of space for the indoor area.

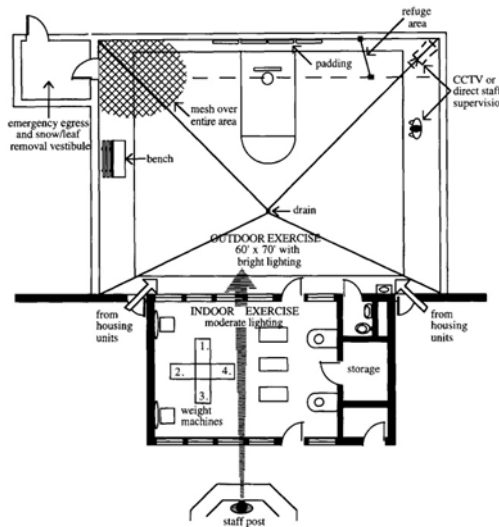
The number of different groups needing to exercise is critical since small and medium-sized prisons can easily generate 8 to 12 different groups if a strict adherence to housing unit separation is adopted.

*Sample e Calculations*

Daily Exercise:

$$\frac{2\text{-hr. duration} \times 12 \text{ groups}}{8 \text{ hrs. of operation per day}} = 3 \text{ SPACES REQUIRED}$$

$$\frac{1\text{-hr. duration} \times 8 \text{ groups}}{12 \text{ hrs. of operation per day}} = 0.67 \text{ SPACES REQUIRED}$$



**Figure 10:** Component diagram on indoor and outdoor area

**8.3. Ethical Considerations**

The impact of prison design on inmates’ mental health is undeniably an ethical issue. It is a fundamental and ethical right of every human being to live and work in a safe and positive environment. Furthermore, architects, drafters, and policymakers play a significant role in establishing the ethical framework for prison spaces. They must consider configurations of power, duties, and rights of individuals who are vulnerable in these places. For prisoners, designed spaces are key to ensuring their comfort, safety, and overall well-being. Therefore, most stakeholders argue that highly controversial public service buildings ought to be expressed within an ethical framework.

In the context of prison architecture, in which prisoners are profoundly deprived of liberty and reside in mainly publicly planned environments, unusually robust ethical requirements ought to be established. Human rights are more than providing the necessary air supply, sunlight, and the like. Complying with regulations on human rights is not enough. Both designers and administrators have to prioritize the issue of mental health in correctional spaces. There are certainly many other requirements that have to be taken into account, but they also rely on the way these issues are considered—driven by empathy or by economizing. In this context, designing a domain that disregards mental health issues is immoral in the deepest human sense. Propagating approaches that encourage the advent of mental health problems are much worse and could result in far-reaching or even everlasting affliction of a significant population. Thus, when incarcerated populations return to society, the emotional injuries they suffer could have catastrophic consequences. Legacies of harmful spaces are much more significant in the long run [13].

## **9. Mental Health in Prisons**

In addition to causing economic decline, urban form, crime, discrimination, stress, and loss of social support can also lead to chronic diseases including heart disease, high blood pressure, mental illness, and depression. Violent crime and suicide have affected the international perception of South Africa's current condition, while the high rate of recidivism reveals that time spent in prisons is not spent on rehabilitation and education, subsequently perpetuating the role prisons play in the socioeconomic condition. Not only architecture but also urban designers and architects, in general, can help to improve the socio-economic condition by reducing crime and discrimination, making prisons safer, and ensuring that reintegration into society after incarceration is a success instead of just recycling through the criminal justice system.

Exposure to prison violence leads to mental health issues for both inmates and prison guards. Trauma disrupts the mind and body's ability to cope with stress, resulting in physical exhaustion. Inmate self-harm, including suicide planning, is often linked to mental health problems. The challenging prison environment hampers healing due to harsh conditions [14].

### **9.1. Prevalence of Mental Health Issues Among Inmates**

When comparing information from empirical research on prison populations in different countries, it is often best to report findings by disorder types. There is a lot of research on the general population, but less solid knowledge on the prison population. National surveys use diagnostic instruments, have a large clinical population, and monitor trends over time [15].

At midyear 2005 more than half of all prison and jail inmates had a mental health problem, including 705,600 inmates in State prisons and 479,900 in local jails.

These estimates represented 56% of State prisoners and 64% of jail inmates. Mental health problems were defined by two measures: a recent history or symptoms of a mental health problem. They must have occurred in the 12 months before the interview. A recent history of mental health problems included a clinical diagnosis or treatment by a mental health professional. Symptoms of a mental disorder were based on criteria specified in the Diagnostic and Statistical Manual of Mental Disorders.

**Table 2:** The sample sizes of the prevalence study of the disorder being studied in state & local prisons in 2002 for local and 2004 for state

Source: Doris J. James and Lauren E. Glaze BJS Statisticians, “Mental Health Problems of Prison and Jail Inmates”, U.S. Department of Justice Office of Justice Programs, 2006.

Mental problem	Percent of inmates in		Percent of inmates in	
	State prison		Local jail	
	Male	Female	Male	Female
Recent history	22%	48%	18%	40%
Diagnosed	8	23	9	23
Overnight stay	5	9	4	9
Medication	16	39	12	39
Therapy	15	32	9	23
Symptoms	48%	62%	59%	70%

**9.2. Impact of Environment on Mental Health**

The environment in prisons affects inmates' mental health. The goal is to contribute to their rehabilitation. In addition to the staff's tasks, the physical setting can have a rehabilitative effect. This is called the normalizing function. It aims to counter the punitive effect of the prison and arrange programs that reinforce individual adaptations.

**a. Natural Light and Ventilation**

From the start, it was believed that every prison should have a court and prioritize natural light and fresh air. This approach improves well-being and helps reintegrate prisoners into society safely.

Many studies show that natural light in residential buildings improves mental and physical well-being. It strongly correlates with positive mental health and enhances comfort and mood. Exposure to daylight reduces drowsiness, improves human physiology, and enhances the function of architectural design. Daylight also enhances mental health, life quality, and cognitive skills. A view can improve attention and reduce mistakes [16].

**b. Access to Outdoor Spaces**

Design literature and UN guidelines emphasize access to open spaces, sunlight, and views in prisons. Each country decides how to meet these needs. Eastern countries favor collective prison design while Western countries prioritize both collective and separate areas. This leads to different outdoor spaces [17].

In OSP, the connection to the environment, outdoor accessibility, scale, and openness varies. Western studies recommend specific dimensions for privacy, optimal time spent outside, and size ranges for outdoor spaces in prisons. Comparing outdoor time expenditure of different regime inmates can inform architectural decisions, providing empirical data on daily outdoor time in Western countries.

**c. Color and Material Choices**

Color and material choices are important in prison architecture, as they can create spatial qualities and influence a person's sense of place. In the past, colors and materials were chosen to emphasize punishment. However, there has been a shift towards focusing on the inmate's behavioral change and creating a more human environment. Prison agencies are now seeking fresh ideas and innovative approaches from architects, designers, and artists to build prisons that reflect community values and promote healing and human dignity for prisoners [18].

**10. Case Studies**

The issue of prison architecture and its impact on inmates has been studied through an international comparative study. The study compares prison facility layouts and specifications, examining similarities and differences in open space, cost, symbolism, and terminology. The study also explores perceptions of open space and identifies design similarities and constraints. The findings have implications for inmate environments, overcrowded facilities, mental health, and international jurisdictions.

Despite debates over cultural influence on prison design, the prison seeks to differentiate itself from the outside world. Architectural elements such as climatic control, furniture, and outdoor settings are similar across international prison complexes. There is an international convergence of penal systems and their cultural aspects, as seen in new correctional facilities. Considering these cultural perspectives is crucial in managing the containment and re-education process. Large property borders should not ignore the realities of implementing detainees' rights.

### **10.1. Comparison of Design Approaches in Different Countries**

Prison design faces challenges and ethical concerns. Balancing penal policy or architecture with security and sound reduction, segregation and interaction, punishment and treatment, and mental well-being is crucial. Overcrowding affects inmate health. Arts and crafts have been replaced by sports, potentially increasing depression. New prisons adopt a softer, neoconservative approach with bright colors and friendly atmospheres.

Various countries use design techniques to provide a connection to the natural world and improve the mental well-being of the inmates. A comparison of favorable design approaches used in various countries is given below in tabular format.

### **10.2. Norwegian Correctional Facilities**

#### **Reformative and Humanitarian Approach:**






**Open spaces:** Norwegian prisons, like Halden Prison, are famous, for offering areas where inmates can freely roam around amid forests, lakes and parks.

**Impact on mental health:** Feeling of psychological well-being but it does not have large open area which exists in these costly exfoliated slopes. In Norway prisoners are often placed in more rural locations, where they can enjoy the benefits of being closer to nature as a means for reducing stress and other factors that lead on to suicides. This system rehabilitates prisoners and reintegrates them in society, also protects the humanity and dignity of a prisoner.

**Physical activity and social interaction:** Open spaces Infuse Physical Exercise/healthy social interaction on prisoners causing them to be mentally fit and communicative.



**Table 3:** A comparison of favorable design approaches used in various countries

country	Prison design & Prison building cost	
<p><b>U.S.</b> [19]</p>	<p>usually adapts a centralized design, each type of design is aimed at reducing human traffic around or inside the prison, keeping surveillance to a maximum and allowing good conditions for prisoner movement.</p> <p>The country spends the least money on the creation of prison buildings while other countries almost balance the figure spent on construction and its maintenance.</p>	 <p><i>Eastern State Penitentiary</i> Source: <a href="https://en.wikipedia.org/wiki/History_of_United_States_prison_systems">https://en.wikipedia.org/wiki/History_of_United_States_prison_systems</a></p>
<p><b>UK</b> [20]</p>	<p>Over 20 years, the authorities have moved to build some prisons in a design that tended to use better architectural principles according to the plot or site of land that was affordable.</p> <p>They now build kits of larger units that can be combined with educational blocks, healthcare centers, and gatehouses at appropriate distances to create whole prison complexes.</p>	 <p><i>Wakefield Prison in West Yorkshire</i> Source: <a href="https://www.wakefield-yorkshire-uk-june-21st-2023">wakefield-yorkshire-uk-june-21st-</a></p>
<p><b>Canada</b> [21]</p>	<p>The prison buildings are designed to have limited corridors, allowing inmates to quickly access the visitation hall, healthcare center, housing block, classroom, and other areas.</p> <p>The country's authorities believe in deterring crime and providing comforting amenities for the imprisoned.</p>	 <p><i>federal Canadian prisons</i> Source: <a href="https://www.commentary--canadian-prisons-in-the-time-of-covid-19-recommendations-for-the">commentary--canadian-prisons-in-the-time-of-covid-19-recommendations-for-the-</a></p>
<p><b>Norway</b> [22]</p>	<p>believes in deterring and changing inmates' behavior without imposing strict punishment on them.</p> <p>They do not agree with doing harm or causing suffering to people who have done wrong.</p> <p>Therefore, the authorities hold the prisoners in good buildings to give them a supportive environment, segregating the criminals from society.</p>	 <p><i>Halden Prison</i> Source: <a href="https://www.e-architect.com/norway/halden-prison#google_vignette">https://www.e-architect.com/norway/halden-prison#google_vignette</a></p>
<p><b>China</b> [23]</p>	<p>a large country and constructing an average-sized conventional or modern prison is not workable. The country thus creates two camps-like settlements within a perimeter fence.</p> <p>Each building can house some sets of deceased criminals who need lockup. Whereas the dormitory and commissary can be placed along a street and can be used by inmates in the evening.</p> <p>The many sports facilities help to relax and prepare the inmates for outside activities.</p>	 <p><i>Chishan Prison</i> Source: <a href="https://wisconsinwatch.org/2023/05/milwaukee-tool-gloves-chinese-">https://wisconsinwatch.org/2023/05/milwaukee-tool-gloves-chinese-</a></p>



**Fig. 11.** Halden Prison masterplan

Source: <https://daydaynews.cc/en/international/halden-prison-norway-is-comparable-to-a-five-star-hotel.html>

### 10.3. United States Penitentiaries

#### Traditional penal approach:

**Open spaces:** Open spaces occur in close yards with high walls In most US prisons. For example, prisons that take a more open approach within the cultural framework of embedded rehabilitation programs (see experimental prisons) are very limited because the traditional penal system operates with security and control as their primary focus.

**Impact on mental health:** The increased restrictions and the lack of open spaces creates a significant amount of stress depression inside prisoners. It isolates us to experience an environment that is closed and this isolation contributes in no way positively on our mental sanity. Although in some prisons which provide very small opening areas, and this can lead to positive psychological results but is not a complete solution against the negative consequences caused by imprisonment.

**Physical activity and social interaction:** Physical activity outlets are scarce compared to Norway, and most social contact is closely controlled II- the psychological benefit of being with others.





**Fig. 12.** The Administrative Maximum Security United States Penitentiary, ADX USP, Thomson, Illinois  
Source: <https://morrisonchamber.com/about-morrison/bop-ausp-thomson/>

#### 10.4. Japanese Penal Institutions

##### **Strict and disciplinary approach:**

**Open spaces:** There are hardly any open areas in the Japanese prisons & they are also very well guarded. Japanese prisons are known for their harsh and strictly regulated discipline, as well as the almost minimal opportunity to access open spaces. Some available spaces are small and limited at times

**Impact on mental health:** Prisons have no open spaces, just walls and more in front of them end, mental pressure on prisoners increases, these pressurised can be leading to isolation, depression and feeling anxiety. The rigid discipline suppresses the ability of prisoners to express themselves or let off steam, which in turn undermines mental health support.

**Physical activity and social interaction:** Contacts with other prisoners in Japanese penitentiary systems are few and any kind of physical exercise is visible. Such underlining of physical mating factors that there is no sufficient range of areas for motion or even-lacking stress- relaxation in the open contributes negatively to the prisoners' mental state.



**Fig. 13.** Nara Prison

Source: <https://www.spoon-tamago.com/nara-japan-prison-hotel/>

## 10.5. Comparative Analysis

**Table 4**

Source: researcher

Factor	Norway	United States	Japan
<b>Open spaces</b>	Large, natural, green	Limited, mostly enclosed	Very few, small spaces
<b>Effect on mental health</b>	Very positive, reduced stress and depression	Generally negative, high levels of stress and depression	Strongly negative, increased feelings of isolation and anxiety
<b>Physical activity</b>	Great freedom to exercise and interact with nature	Limited in enclosed spaces	Severely regulated, limited activity
<b>Social interaction</b>	Encouraged, supports positive communication	Monitored, limited	Strictly restricted, limited social interaction
<b>General Approach</b>	Correctional and humane	Traditional punitive with some attempts at reform	Strict and based on discipline and order

### Overall result:

Norway is the most progressive nation in creating open spaces for prisoners, which aids their mental health and contributes to their recovery.

The United States endorses mostly an orthodox prison paradigmas and therefore outdoor areas of a prison are virtually limited. An unhealthy and damaging environment is thus cultivated. Efforts have been made in a few of the experimental prison to try and have some outdoor rooms, but this is not the standard.

The system in Japan follows a very tight structure with no open spaces. This structure inordinate increases the psychological burden on prisoners because the situation is worse than in other countries with mental health.

## 11. Conclusion

While enduring the imprisonment and when gauging the situation to develop some new or renovating the old prison facilities, the practitioners encounter a variety of difficult tasks to work out a logical and consistent solution that safeguards the well being of the inmates as well as that of the prison workers. All architectural and spatial choices are of critical importance and cannot be divorced from health and wellbeing. There are prisons with an extra level of design focus, which encourage ones' social interaction, integration and security, as well as, lowering stress levels by constructing a favorable climatic condition, with enough clean and quiet space and various decorations and furnishing.

It is interesting to note that each and every inmate has some differences in temperament, personality, life experiences, sociability and even mental, physical states; so it is justified for the prisons to believe that some elements like poor lighting, darkness, noise and other quiet places such as dead ends are

bound to induce anxiety to some individuals. The major biophilic factors help in relieving a lot of the negative environmental pressures which people find themselves in when under stress. A poor indoor environment would affect one's mental health, increasing the tendency for aggressive behavior thus affecting the normal working of a prison. Thus, prison environments require structural control supported by an orderly management of prison activities which further does not abuse the security goal's detrimental impacts over the quality of life.

## **12. Recommendation**

- **Increase open green spaces:** Forthcoming prison architecture should have large green areas, particularly, fields and natural elements, such as trees and several water bodies – for proven purposes of soothing the nerves of prisoners. Positive effects of nature cannot be overestimated in relation to mental health.
- **Integrate physical activities into open spaces:** Physical activities should also be included in the open spaces: Such spaces could include sports fields, jogging and walking tracks which help in enhancing the mental as well as the physical health of the users.
- **Create areas for positive behavioral change:** Prisoners should have access to yards and open spaces for socialization. Possibilities for group seating and activities for members of the same group.
- **Include multiuse and/or multi-faceted design components:** Open settings should rather be designed to be used for a variety of functions or activities which could include quiet sessions, individual activities or group activities among others.
- **Limit the number of inmates per open space:** Open spaces should cater to the number of prison borders including their air spaces to the extent that overpopulation is kept at minimal levels hence cutting on the psychological trauma associated with overpopulation.
- **Integrating Therapeutic Landscapes:** 'Therapeutic landscapes that is, clinical gardens or gardening terraces, can also be introduced where the prisoners would support and help care for plants serving as a way of relieving stress.
- **Attention to natural light and ventilation:** Prisons ought to be constructed in a manner that open spaces facilitate natural light and adequate ventilation. This has a significant effect on enhancing the mood of prisoners, however, many facilities often overlook this aspect.
- **Enhancing privacy in certain open spaces is essential:** By creating secluded corners or private areas, prisoners can sit alone, free from constant oversight. This promotes opportunities for contemplation and relaxation, although it can be challenging to implement effectively.

## **13. Future studies:**

- **Analysis of the impact of the natural environment on psychological recovery:**

A long-term study on the impact of being in green natural environments on the psychological rehabilitation of prisoners, focuses on comparing prisons that provide open green spaces with traditional ones without these spaces.



- **The impact of open spaces on relapse rates:**

A study of the relationship between the quality of open spaces in prisons and relapse rates after release, to find out whether these environments contribute to enhancing the stability of prisoners after their release.

- **The impact of environmental design on relations between prisoners and staff:**

A study of how the design of open spaces affects relations between prisoners and prison staff, and whether improving the environment leads to reducing tension and conflicts between the different parties.

- **The cultural dimension of open space design:**

Exploring cultural differences in the impact of open spaces on prisoners in different countries, to find out how the cultural environment affects prisoners' response to different designs.

- **Economic analysis of open space design costs:**

An economic feasibility study of prison designs that contain open spaces and their impact on reducing costs related to mental and physical health care for prisoners, as well as reducing the need for strict punitive measures.

### **Conclusion:**

Designing open spaces in prisons is not just about providing physical space, but about having positive effects on prisoners' mental and physical health and enhancing the rehabilitation process. By adopting specific recommendations and investing more in future research, the penal justice system globally can be improved to be more effective and humane.

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