



POLITECNICO
MILANO 1863



HEALING GARDENS IN ITALIAN ARCHITECTURES FOR HEALTH

A quali-quantitative approach
to evaluate existing green areas in hospitals

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MAIN GOAL

Re-think the design of “Architectures for health”
according to the recent economic, social and technological changes

ACTIVITIES

- Research and development
 - *monitoring the principal national and international experiences*
- Education and training
 - *specific expertises both in the field of healthcare facilities design and urban health*
- Consulting and projects development
 - *validation of sanitary service's qualitative level*
- Drafting of feasibility studies
 - *innovation in healthcare and construction project*
- Communication
 - *cooperation between different cultural, scientific and professional skills*
 - *cultural exchange between experts*

TOPICS

Flexibility / Sustainability / Humanization / Soft qualities / **Therapeutic landscape design**



Therapeutic Landscape Desing

We're interested on the topic "*Green and Health*".
We promote annual conferences and seminars on the issue.



Each 6 months, at Politecnico di Milano, we organize a course for students and professionals on emerging topic "*Healing gardens*".

The main purpose is to create research synergies between architects, engineers, doctors, agronomists, environmental sociologists and psychologists.



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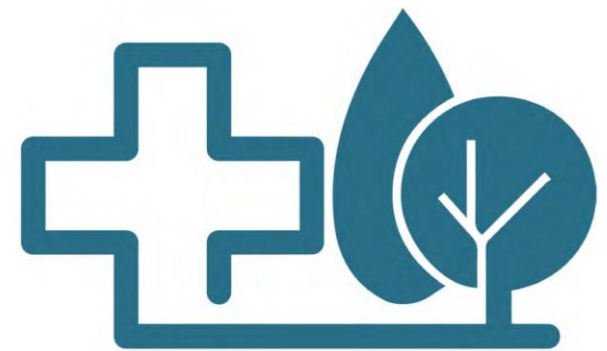
DIPARTIMENTO DI ARCHITETTURA,
INGEGNERIA DELLE COSTRUZIONI
E AMBIENTE COSTRUITO

con il patrocinio di

cneto CENTRO
NAZIONALE
EDILIZIA E
TECNICA
OSPEDALIERA

SEBIM
COGNOSCERE
CAUSAS **ItI**
SOCIETÀ ITALIANA DI IGIENE
Medicina Preventiva e Sanità Pubblica

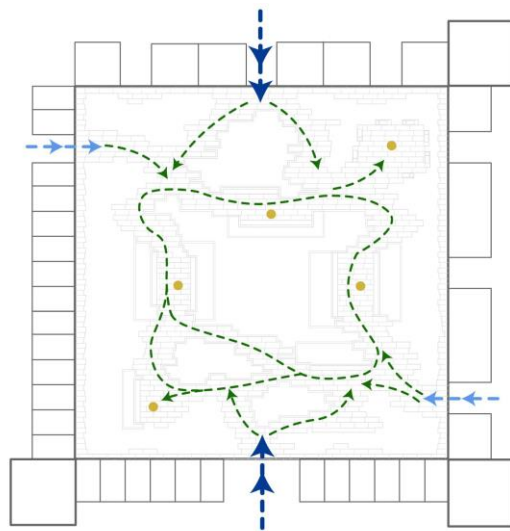
THERAPEUTIC LANDSCAPE DESIGN



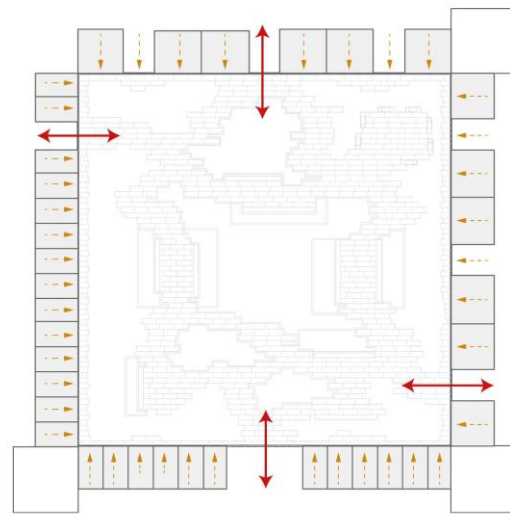
Importance of Therapeutic Green Spaces in Healthcare Facilities

The importance of therapeutic green spaces in healthcare facilities it has been scientifically demonstrated by international experiences. Nowadays, in Italy, only few examples represent the healing gardens' principles.

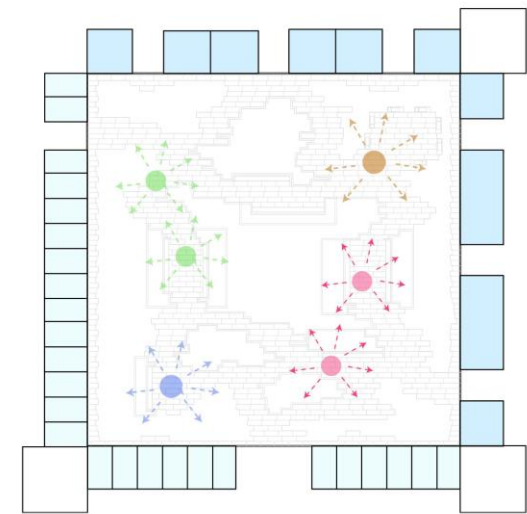
A comfortable healthcare environment, associated with a green space is beneficial for patient care, improving the management quality of healthcare facilities, reducing the time of hospitalization and saving healthcare costs.



PATHWAYS



SPATIAL RELATIONS

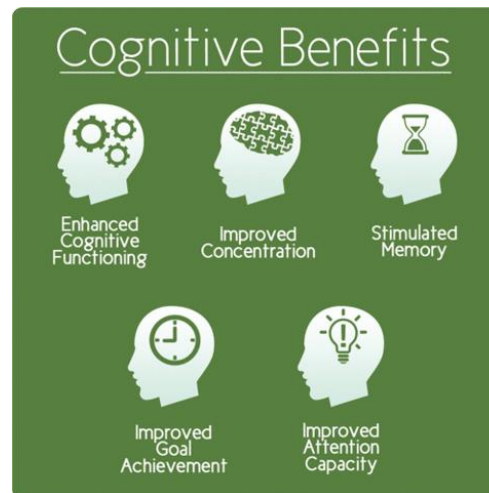


LOCALIZATION OF FUNCTIONS



Benefits of Therapeutic Gardens

There are many impact on the architectural design: in the United States, Canada and northern Europe, there are many examples of gardens realized according to the contemporary green design guidelines. Italy lacks these kind of design guidelines, regulations and assessments of processes of care's improvement.



SOURCE: www.twigterrariums.com



Which healthcare facilities for Healing Gardens ?

The healing gardens have got a key role in supporting the traditional treatments if realized within acute care facilities, such as hospitals and healthcare centers, but also in places hosting medium and long-term hospitalization or residential low-care structures such as Hospice, Alzheimer centers, day-care centers and nursing homes.



CASE STUDY: Legacy Emanuel Medical Center, Portland - Oregon



Healing Gardens in Italian Hospitals: the current condition

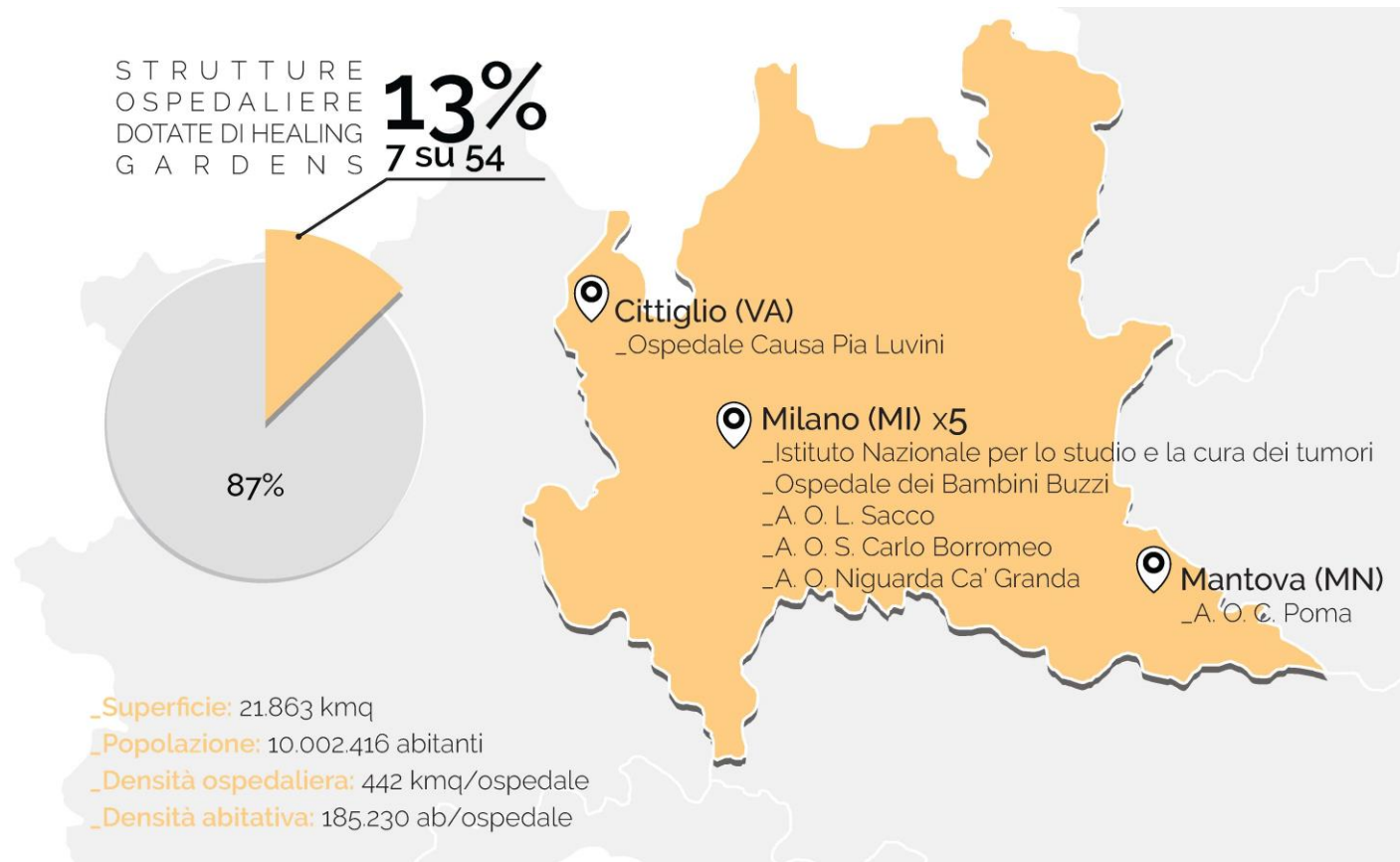
The first question of research was:
*“How many Italian hospitals have a
real therapeutic garden?”*

A previous analysis, conducted on the basis of data obtained by the Italian Institute of Statistics (ISTAT), has determined that the presence of hospitals with healing garden is not uniform in the national territory.

Of the 634 surveyed hospitals only the 4% (25 of them) has a therapeutic green space.



Healing Gardens in Lombardy Region: the current condition



Only 11 of 20 regions have at least one healthcare facility with an healing garden inside dedicated to therapy. In the Lombardy Region, of 54 hospitals found, only the 13% (7) equipped with healing garden.



Healing Gardens in Lombardy Region: 5 hospitals analyzed

Hospital Niguarda Cà Granda, Milano



- Giardini analizzati:
- 1 Terrazzo da vivere
 - 2 Orto giardino
 - 3 Percorso verde

Fondazione IRCCS, Istituto Nazionale dei Tumori, Milano



- Giardini analizzati:
- 1 Terrazza Terapeutica
 - 2 Terrazzo di Pediatria
 - 3 Orto dei Sogni
 - 4 Giardino da ammirare

Hospital San Carlo Borromeo, Milano



- Giardini analizzati:
- 1 Giardino degli abbracci
 - 2 Orto sinergico

Hospital Sant'Anna, Como



- Giardini analizzati:
- 1 Verde intorno
 - 2 la Corte
 - 3 le Corti Pensili

Azienda Ospedaliera Papa Giovanni XXIII, Bergamo



- Giardini analizzati:
- 1 Verde intorno
 - 2 le Corti
 - 3 Hospital Street



Specific Research Objective

Specific objective of the research is to build an **evaluation protocol of the current status of existing green spaces inside the Italian hospitals**, in order to understand the peculiarities and give intervention's guidelines **to improve their physical characteristics**, according to a "healing" approach.

In particular, the research was aiming at achieving a sort of **"identity card"** of the current state of the therapeutic garden, if available, or any informal space that highlights problems and potentialities of the place.

The study analyses the **relationship between indoor and outdoor spaces**, in terms of visual and spatial realization according to the healing gardens' characteristics.

By applying the Evidence Based Design' principles, **the outdoor spaces are qualitatively observed and quantitatively compared** in order to determine the effectiveness of the planning and assume any improvements for a correct and successful use of gardens.



Evidence Based Design Method

Therefore, using collected data by the Evidence Based Design method, it triggers a rigorous decision-making process divided into 8 points:

1. defining evidence-based goals and objectives;
2. finding sources of relevant evidence;
3. interpreting critically relevant outcomes;
4. creating and innovate design concepts based on EBD method;
5. developing a hypothesis;
6. collecting basic performance measurements;
7. monitoring the design and construction phases;
8. Post-Occupancy Evaluation and results' measurement.



International Scenario



In Italy, there are no hospitals accredited EDAC, nor this approach is considered for the validation of healing gardens located into healthcare facilities.



Italian usefulness & stakeholders

- Provides a **solid base of collected data**, that can be used for possible interventions, modifications and improvements from the point of architectural and landscape layout.
- It **provides a contribution to the health staff**, which could make use of this instrument to target the patients to their types of care or activities.
- It **gives patients direct knowledge of spaces and equipments available**, in addition to furniture and activities that could play within it, through the preparation of synoptic descriptive boards.
- It **provides a methodical analysis tool**, used regularly and in an extended periods of time, for an update of the state of the place.



Outdoor areas

In particular, the **outdoor areas** has been evaluated features like:

- safety
- security and privacy
- accessibility
- physical and emotional comfort
- positive distraction
- engagement with nature
- maintenance and aesthetics sustainability.

NOMENCLATURA	SPAZI ANALIZZATI
A_ EXTENSIVE LANDSCAPED GROUNDS / paesaggio attorno all'edificio	
B_ BORROWED LANDSCAPE / paesaggio preso in prestito	A.1_ GIARDINO ABBRACCI
C_ NATURE AND FITNESS TRAILS / percorsi naturalistici e fitness	
D_ LANDSCAPE SETBACK / aree d'accesso	
E_ FRONT PORCH / porticato	
F_ ENTRY GARDEN / giardino d'ingresso	
G_ BACKYARD GARDEN / giardino sul retro	
H_ A TUCKED-AWAY GARDEN / giardino nascosto	
I_ COURTYARD / cortile	
J_ THE HOLE-IN-A-DONUT GARDEN / giardino circolare con il vuoto attorno	
K_ PLAZA / piazza	
L_ ROOF GARDEN / giardino pensile	
M_ ROOF TERRACE / terrazzo pensile	
N_ A PERIPHERAL GARDEN / giardino periferico	N.1_ ORTO SINERGICO
O_ ATRIUM GARDEN / atrio verde	
P_ VIEWING GARDEN / giardino da ammirare	

Types and Locations of Therapeutic Landscapes in Healthcare

C. COOPER MARCUS, N. SACHS

Therapeutic landscapes.

An Evidence-Based approach to designing healing gardens and restorative outdoor spaces

New York, Wiley, 2014



Relationship between the (indoor) built environment and (outdoor) green areas

IN/OUDOOR CONNECTIONS

QUESITI	GIARDINO ABBRACCI A.1	ORTO SINERGICO N.1
L'ingresso all'area verde è facilmente riconoscibile dall'interno	●	●
Gli utenti riescono ad avere un'anteprima delle aree esterne	●	●
L'affaccio sul verde avviene tramite finestre	●	●
L'affaccio sul verde avviene tramite porte finestre	●	●
Presenza di una zona filtro tra interno ed esterno	●	●
Presenza di sedute nella zona filtro	●	●
Presenza di un'area appositamente attrezzata all'aperto	●	●
Gli utenti possono osservare l'area attrezzata dall'interno	●	●
L'area è sorvegliata dal personale preposto	●	●
Le porte sono facilmente apribili dagli utenti	●	●
Le porte sono facilmente apribili dagli utenti in carrozzina	●	●
Presenza di un sistema di apertura/chiusura automatico	●	●
La soglia è attraversabile da utenti in carrozzina o con deambulatori	●	●
C'è continuità di pavimentazione in entrambi i lati della soglia	●	●
Accessibilità durante il periodo invernale	●	●
Accessibilità durante le ore notturne	●	●
L'illuminazione prevista per l'area risulta idonea	●	●
La segnaletica per raggiungere l'area risulta idonea	●	●

GREEN AREA

	GIARDINO ABBRACCI A.1	ORTO SINERGICO N.1
Layout		
LAYOUT FUNZIONALE		
Aree per la sosta	●	●
Aree per le attività	●	●
Verde da ammirare	●	●
Percorsi	●	●
Accessi	●	●
Architectural elements		
ELEMENTI ARCHITETTONICI		
Elementi di arredo	●	●
Attrezzature per attività	●	●
Deposito per attrezzi	●	●
Illuminazione	●	●
Connection garden/hospital		
CONNESSIONE GIARDINO/OSPEDALE		
Aperto	●	●
Superficie opaca	●	●
Superficie trasparente	●	●
Connection garden/outdoor		
CONNESSIONE GIARDINO/ESTERNO		
Aperto	●	●
Recinzione opaca (muro)	●	●
Recinzione trasparente (cancellata)	●	●

Principle 1: Indoor-Outdoor Connections

S. RODIEK

Access to Nature Outdoor Evaluation Tool

Center for Health System & Design, Texas A&M University, College Station, 2009

● Positivo
● Negativo

● Positivo
● Negativo



Relationship between the (indoor) built environment and (outdoor) green areas

IN/OUTDOOR CONNECTIONS

percezione dall'INTERNO



5_la sala del Day Hospital psichiatrico; 6_vista dalla sala verso il giardino; 7_vista dal Reparto di Psichiatria; 8_una sala del Reparto di Psichiatria; 9_vista del Giardino degli abbracci dal sesto piano del Blocco D.

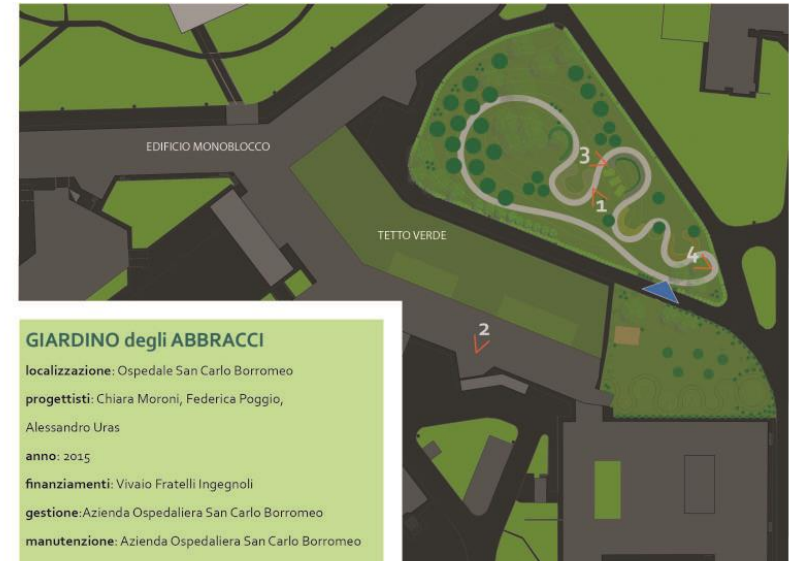
RAPPORTO costruito / area verde



10_l'accesso al Giardino degli abbracci; 11_vista dall'interno del giardino, il blocco delle degenze si affaccia sullo spazio verde.

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GREEN AREA



161



Our IDENTITY CARD compiled for each hospital garden

- registry of the hospital
- location
- type of outdoor space
- indoor / outdoor connections
- description of the individual garden
- photographic survey
- analysis of the green in terms of surfaces and greenery
- problems and potentials
- qualifying interventions



Critical Aspects and Strengths

MERITI chiave / possibili PROBLEMI del giardino

CRITERI di VALUTAZIONE

Safety / Security / privacy	General Design Guidelines for Healthcare Facilities Overarching Design Considerations	C. COOPER MARCUS, N. SACHS <i>Therapeutic landscapes. An Evidence-Based approach to designing healing gardens and restorative outdoor spaces</i> New York, Wiley, 2014.
	INCOLUMITÀ / SICUREZZA / PRIVACY	Al momento del mio sopralluogo presso la struttura (fine luglio 2015) era presente solo una segnaletica provvisoria, è in programma la collocazione di altri cartelli.
	SEGNALETICA PERCORSI SICURI PROTEZIONE	
Accessibility	ACCESSIBILITÀ	
	UTENTI IN CARROZZINA	
	ACCESSO LIBERO APERTO H24	
Physical and emotional comfort	COMFORT FISICO / EMOTIVO	
	ARREDI	
	COLORE INFORMAZIONI	
Positive distraction	DISTRAZIONE POSITIVA	
	VEGETAZIONE	
	RICHIAMI PER ANIMALI VISTA PANORAMICA	
Engagement with nature	COINVOLGIMENTO CON LA NATURA	
	FRUIZIONE ATTIVA / PASSIVA	
	MATERIALI NATURALI	
Maintenance and aesthetics	MANUTENZIONE / ESTETICA	
	MANUTENZIONE / DEPOSITO ATTREZZI	
	ILLUMINAZIONE / IRRIGAZIONE	
Sustainability	SOSTENIBILITÀ	
	TECNICHE NATURALI di COLTIVAZIONE	
	PRODUZIONE + CONSUMO DIRETTO MATERIALI RICICLATI	



Al momento del mio sopralluogo presso la struttura (fine luglio 2015) erano presenti solo dei cartelli temporanei con le indicazioni lungo il percorso



Le etichette con le indicazioni riguardanti le specie botaniche aumentano il coinvolgimento delle persone che frequentano il giardino



Le specie impiegate nel Giardino degli abbracci sono state scelte per il loro colore, per la loro forma, la loro grandezza. I progettisti sono stati attenti anche a selezionare le essenze per il loro profumo, la mutabilità e la loro trasformazione nel corso dell'anno.



In questa porzione di giardino si sente la mancanza di alcune sedute ed un paio di tavoli



Improvement Strategies and Qualifying Actions

Safety / Security / privacy

Accessibility


Physical and emotional comfort

Positive distraction

Engagement with nature

Maintenance and aesthetics

Sustainability

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PRODUZIONE + CONSUMO DIRETTO		
MATERIALI RICICLATI		

La segnaletica **provvisoria** verrà presto sostituita da una definitiva grazie all'inserimento di altri cartelli.

Sedute e tavoli potrebbero essere inseriti nel giardino, preferibilmente sotto l'ombra degli alberi.

L'unico punto in cui c'è un po' di riparo dal sole è in prossimità del "boschetto ombroso". Andrebbero pensati altri punti in cui inserire degli elementi per ombreggiare maggiormente.

Considerando che l'Orto sinergico è dedicato alla coltivazione di ortaggi e frutta, nel giardino non sono presenti alberi da frutto. Si potrebbe prevedere qualche casetta per gli uccelli.

La vista dal giardino è un fattore che non si può modificare.

Attività di orticoltura e di ortoterapia non sono state pensate per questo giardino ma solo per l'Orto sinergico.

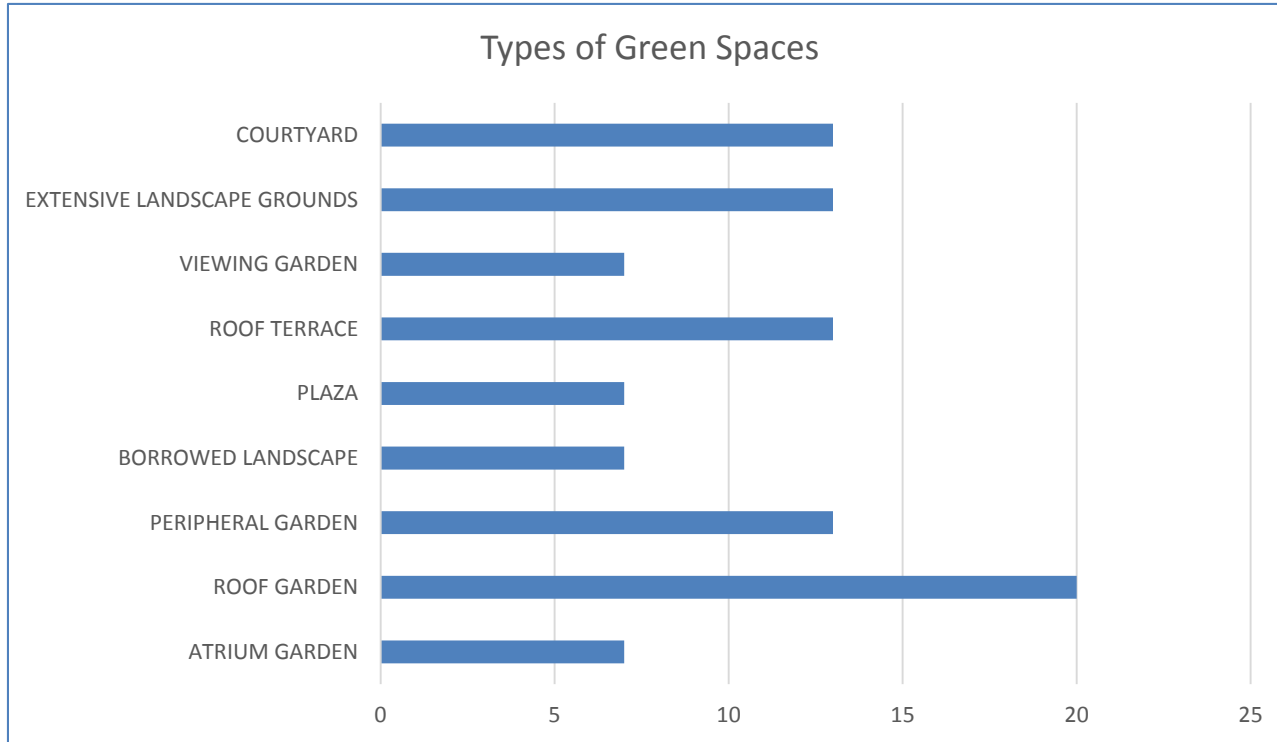
Al momento non sono presenti punti luce nel giardino.

La coltivazione di ortaggi è concentrata nell'Orto sinergico.



Comparison of result: Types of Green Spaces

The most frequent type of green space, in the analyzed Italian Hospital gardens, regarding the identified sample, is the roof garden



Result's Comparison

Among the most significant weaknesses

lack of signage was found

- the patient does not have enough ways of orient themselves in the building
- the therapeutic garden, frequently, is not properly indicated

lack of adequate furnishings

- lack of seating
- lack of shading elements (missing the effect of refreshment and physiological well-being)

The accessibility to therapeutic green spaces is often compromised, especially for users in wheelchairs or with walking difficulties:

- the paths within gardens are not diversified and structured to provide more choices to users
- the lack of an automatic opening / closing system makes difficult to reach the gardens
- the width of the paths is sometimes insufficient for the potential leeway
- the presence of differences in height, followed by the lack of ramps, constitutes a real obstacle to the use of open spaces

Strong points of interest, found in the sample, are:

- the **h24 accessibility**, for every day of the week
- a **good level of scheduled maintenance**, which in most cases includes the involvement of patients in the maintaining operations of the therapeutic gardens
- presence of numerous spaces dedicated to vegetable gardens
- **organization of collateral activities of stimulus**, involvement and treatment



Conclusions

- in the Italian architectures for health, access to nature and **outdoors spaces needs to be better understood through the definition of specific design guidelines**
- **The application of the evaluation protocol to the case studies has proven effective in determining exhaustively the qualities of the individual green spaces in all of their therapeutic values, addressing the analysis and suggesting effective solutions to emerging issues.**
- The protocol implemented is innovative for Italian context, as it provides the basis on which, simultaneously, the technical designers (architects, agronomists, engineers) and health professionals (doctors, nurses), can evaluate individual aspects which make up the therapeutic green space

A possible development of the research work, it may head towards a quantitative analysis of the readings made, in order to provide numerical data and indicative parameters necessary to make even more objective the comparison of the structures and very different study cases. The further deepening of research, might lead to the distribution of questionnaires to patients, visitors and medical staff, in order to identify a more complete picture of needs.





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