Arkitektur og Lindring: Forsknings viden om rumlige og fysiske sanseparvirkninger

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Hospices can be designed to minimize the negative effects of stress-inducing environments, based on documented research.
Well-designed hospices should include architectural consideration of the documented effects of design factors on the human body.
Light:
Design Factors

Daylight, sunlight and windows

Artificial light – colour, temperature

Level of lighting – day and night

Quality of light

Sollys i foyeren ved hovedindgangen, Sygehus Vendsyssel, Hjørring
## Light Effects

<table>
<thead>
<tr>
<th>User Satisfaction, patients and staff</th>
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<td>Orientation</td>
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<td>24hr rhythm and sleep</td>
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<td>Stress</td>
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Design lighting to foster sense of control

- People have need for sense of control with respect to their surroundings
  - Uncontrollable conditions are **stressful**
  - In health facilities, **loss of control** is major problem that produces much stress in patients, worsens outcomes
- But stress can be reduced by design that **enhances control**
Loss of Control
A meta-analysis of randomized controlled studies published in *American Journal of Psychiatry* concluded that light treatment for depression is “efficacious, with effect sizes equivalent to those in most antidepressant pharmacotherapy trials” (Golden et al. 2005)
STUDY: Natural light and depression by Benedetti et al., 2001

Patients:
602 diagnosed with severe depression

Findings:
Those with high levels of morning sunlight (east facing rooms) had shorter stays by 3.7 days

Morning: 1400 lux
Afternoon: 3000 lux

Morning: 15500 lux
Afternoon: 2700 lux
Östra Psychiatric Hospital, Gothenburg
Architecture: White
Newhaven Downs House
United Kingdom
Design: Penoyre & Prasad
Patients:
89 adults undergoing elective cervical and lumbar spinal surgery

Findings:
Patients with higher levels of sunlight were less stressed, reported less pain, took 22% less pain medication, and had 21% less pain medication costs.
Natural Light Improves Staff Outcomes

- Nurses with higher access to daylight report less work stress, higher satisfaction, and better health status

(Mrockzek et al., 2005; Alimoglu & Donmez, 2005)

Emergency department nurse station
St. Mary's Hospital, Walla Walla

Staff work area
Doernbecher Hospital, Oregon
Design for daylight in staff spaces
Infectious Disease Clinic
Malmo University Hospital
Light references


Sound Design Factors

- Decibel Levels
- Reverberation time
- Type and quantity of equipment
- Acoustic screening
- Single wards
Sound: Effects

- General patient and staff wellbeing
- Sleep
- Pain distracter
- Stress and physiological affects
- Confidentiality and privacy
- Workplace satisfaction
- Communication
- Level of Error


Artwork
Design Factors

- Colour
- Visual and Audio Distracters
- Context related
- Orientation
Artwork Effects

- Pain
- Orientation
- Distracter
- Tranquillity
- Admission length and mortality
- Pain and Stress
- Level of Error in Medication


• Heslet, L., & Dirckinck-Holmfeld, K. Sansernes hospital


Air and Smell
Design Factors

- Natural ventilation
- Mechanical ventilation filtering systems
- Materials and surfaces
Air and Smell Effects

- General patient and staff wellbeing
- Pain distracter
- Stress and physiological affects
- Anxiety

Movement and Navigation
Design Factors

Clarity of plan

Clearly understood entrance

Information and signage design

Spatial reference frames
‘Internal’ landmarks
Movement and Navigation Effects

- Orientation and stress
- Distribution of service areas
- Walking distances for patients and staff
Movement and Navigation references

Personal Space
Design Factors

- Single rooms
- Storage space
- Bathrooms
- Unassisted ablutions
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<td>Social interaction</td>
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<td>User Satisfaction</td>
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Social Space
Design factors

- Plan layout
- Direct contact
- Waiting areas
- Treatment rooms
- Kitchenettes
- Activity rooms
- Semi-private common rooms
- Room design and interior design

Rum for social interaktion, Rikshospitalet Oslo
### Social Space Effects

- Healing
- Appetite
- Admission length
- Comfort
- Stress
- Anxiety
- Safety
- Privacy
- Communication
- Mood
Social Space references


Outdoor Space Design factors

- Views
- Visual stimulation
- Visibility, centrally placed
- Accessibility
- Vegetation
- Sound, smell, sight, touch,
Outdoor Space Effects

- Pain Distracter
- Stress
- Physical Exercise
- Admission length
- Mortality
- Anxiety
- Privacy
- Social interaction
- Mood
- Orientation
- User satisfaction
Outdoor Space references


Hygiene Design Factors

- Handwash facilities
- Water supply
- Ventilation system and filters
- Materials and finishes

Flersegsstue med dør til altan, Darmstädter Kinderkliniken Prinzessin Margaret, Darmstadt
Infection
Ventilation
Admission length
Economy
Hygiene references


Injuries and Errors
Design Factors

- Acoustics, Lighting
- Control stations
- Manouvring areas and volume
- Furnishes and fittings
- Materials
- Equipment
Injuries and Errors
Effects

- Admission length
- Medication errors
- Communication
- Concentration
- Staff sick leave
- Economics
- Work related injuries
Injuries and Errors references

Central Literature

Sansernes hospital (red.: L. Heslet og K. Dirchinck-Holmfeldt)

The Role of the Physical Environment in the Hospital of the 21st Century: a Once-in-a-lifetime Opportunity (R. Ulrich et al)

Arkitektur og design for livskvalitet og helse. En kartlegging af foreliggende forskning. (K. Hammerstrøm og A. Bjørndal, Kunnskapscenteret)

A Review of the Research Literature on Evidence-Based Healthcare Design (R. Ulrich et al)