

La relazione tra salute mentale e contesto di cura: approcci, ricerche, strumenti

Prendersi cura di sé, dei luoghi e della quotidianità

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Università di Torino

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- Premessa: La relazione tra salute mentale e contesto di cura
- Approccio teorico per una comunità di pratica
- Metodi e strumenti creativi

Premessa

- Partecipazione

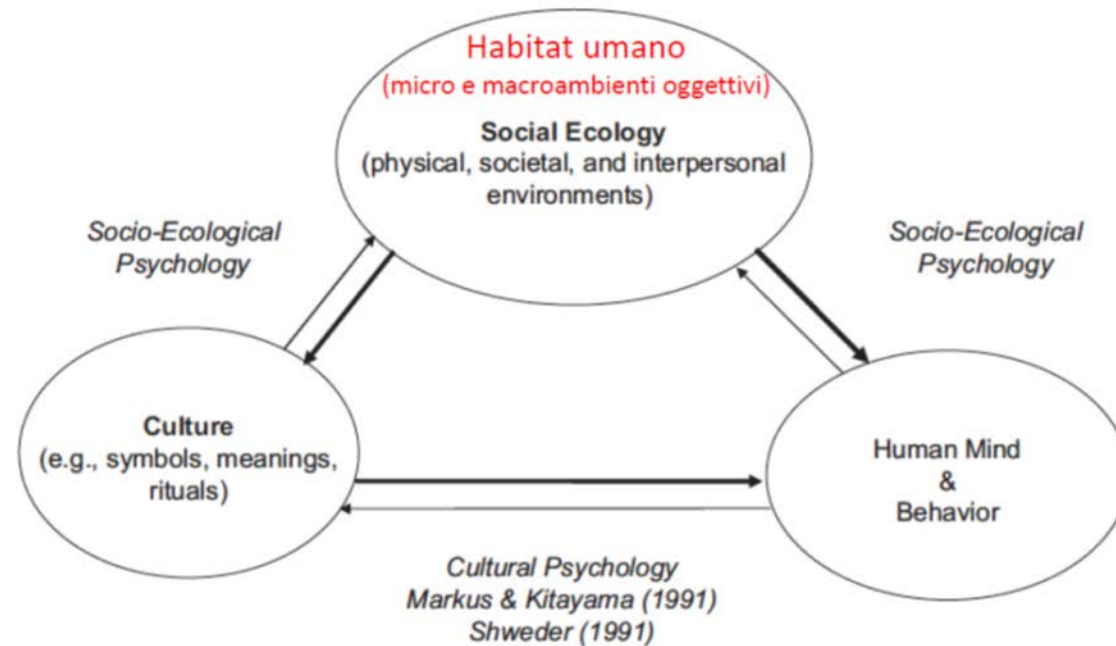


Fig. 1. Culture, social ecology, and psychology. In this figure, *culture* is defined as "explicit and implicit patterns of historically derived and selected ideas and their embodiment in institutions, practices, and artifacts" (Adams & Markus, 2004, p. 341).

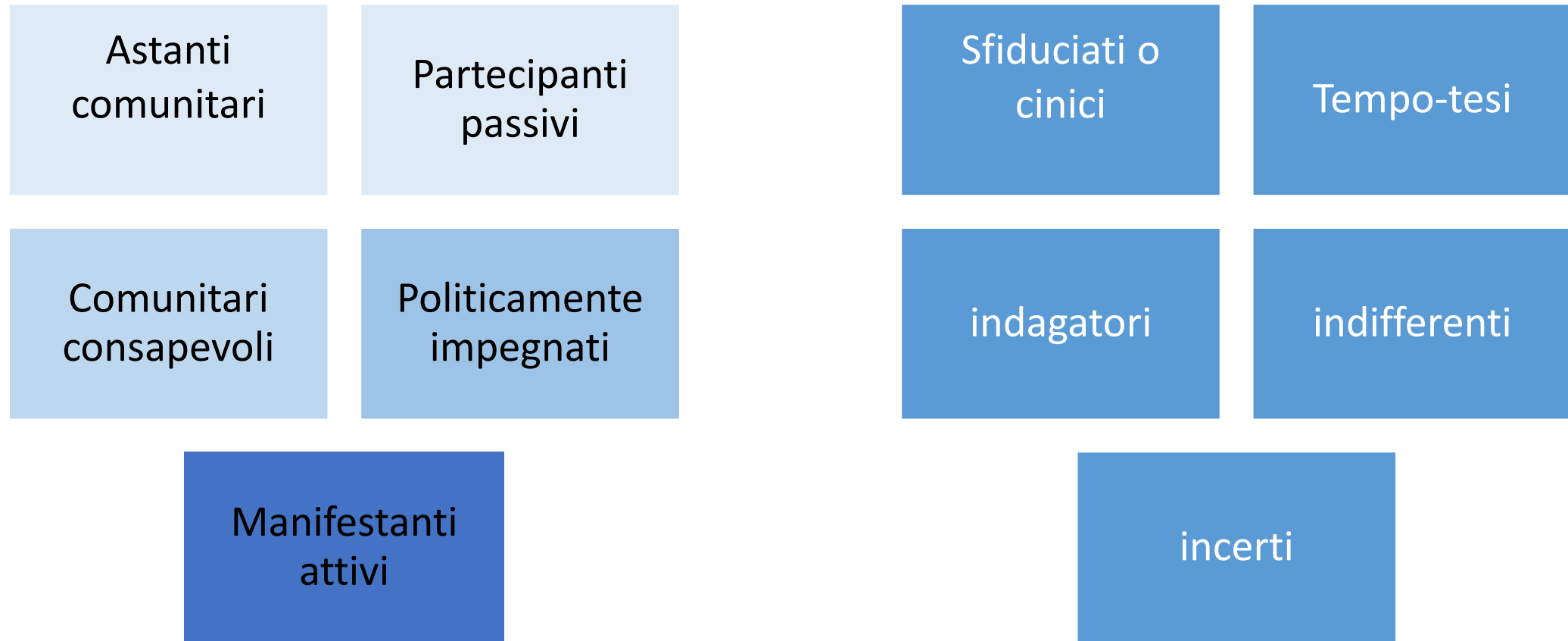
6 R per favorire l'impegno sociale

ACCESSIBILITA'

- Prossimità dei luoghi (dimensione spaziale)
- Comunicazione (dimensione sociale)
- Facilitazione relazionale (dimensione psicologica)

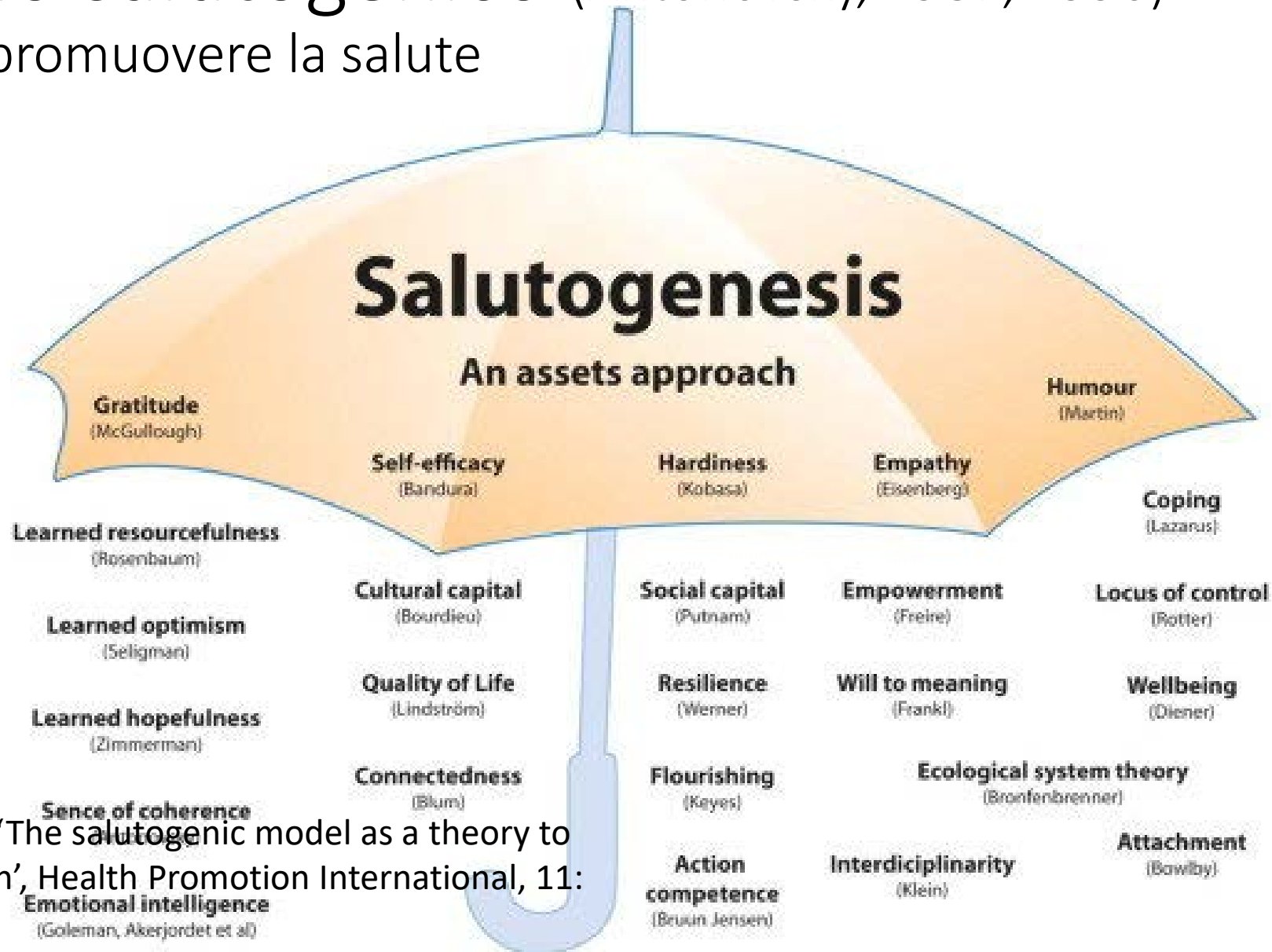


I profili della partecipazione / non partecipazione



L'approccio salutogenico (Antonovsky, 1987, 1996)

una guida per promuovere la salute

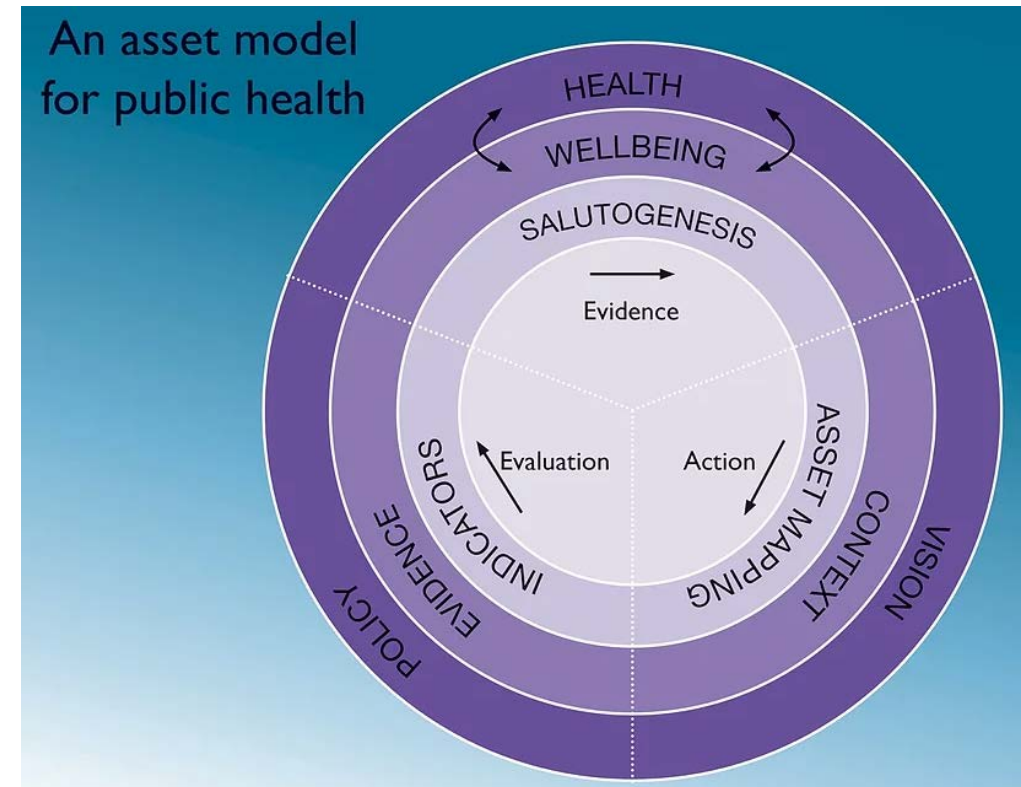


Antonovsky A. (1996), 'The salutogenic model as a theory to guide health promotion', Health Promotion International, 11: pp.11-18.

Adottare prospettiva ecologica di trasformazione sociale mediante un metodo evidence-based (Morgan et al. 2010)

Finalizzato a promuovere la salute mediante un'articolazione di processi partecipativi e collaborativi che accompagnino la costruzione di un senso di coerenza tra salute e benessere.

Dimensione	scopo	focus
Relazionale	Coessione sociale	Sostegno sociale/mutuoaiuto
Strumentale	Capacitazione	Comunità competente
Culturale	Cambiamento culturale	Cambiamento culturale
Strutturale	Empowerment sociale	Inclusione sociale /empowering



La valutazione

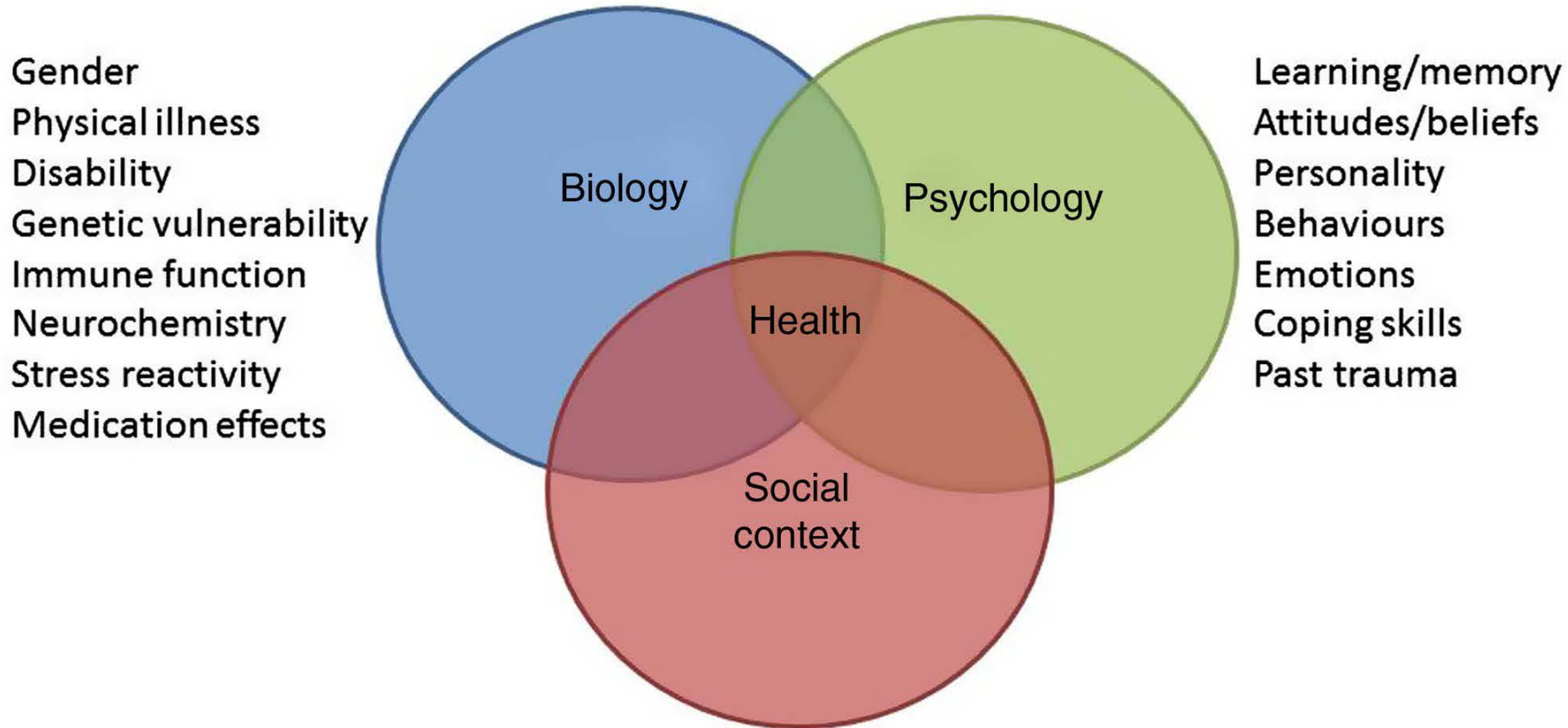
Interdisciplinarity
Action competence Hardiness Connectedness
Flow Inner strength **Empowerment** Learned optimism
Self-efficacy Will to meaning Flourishing Thriving Wellbeing
Humour Coping **Sense of Coherence** Posttraumatic Personal Growth
Reasonableness Social capital Cultural capital Empathy Attachment
Learned hopefulness Resilience Learned resourcefulness
Gratitude Social and emotional intelligence Self-transcendence
Quality of Life Locus of Control Belonging
Ecological system theory

SALUTOGENESIS

Assets for health and well-being

© Monica Eriksson

La salute e l'approccio biopsicosociale



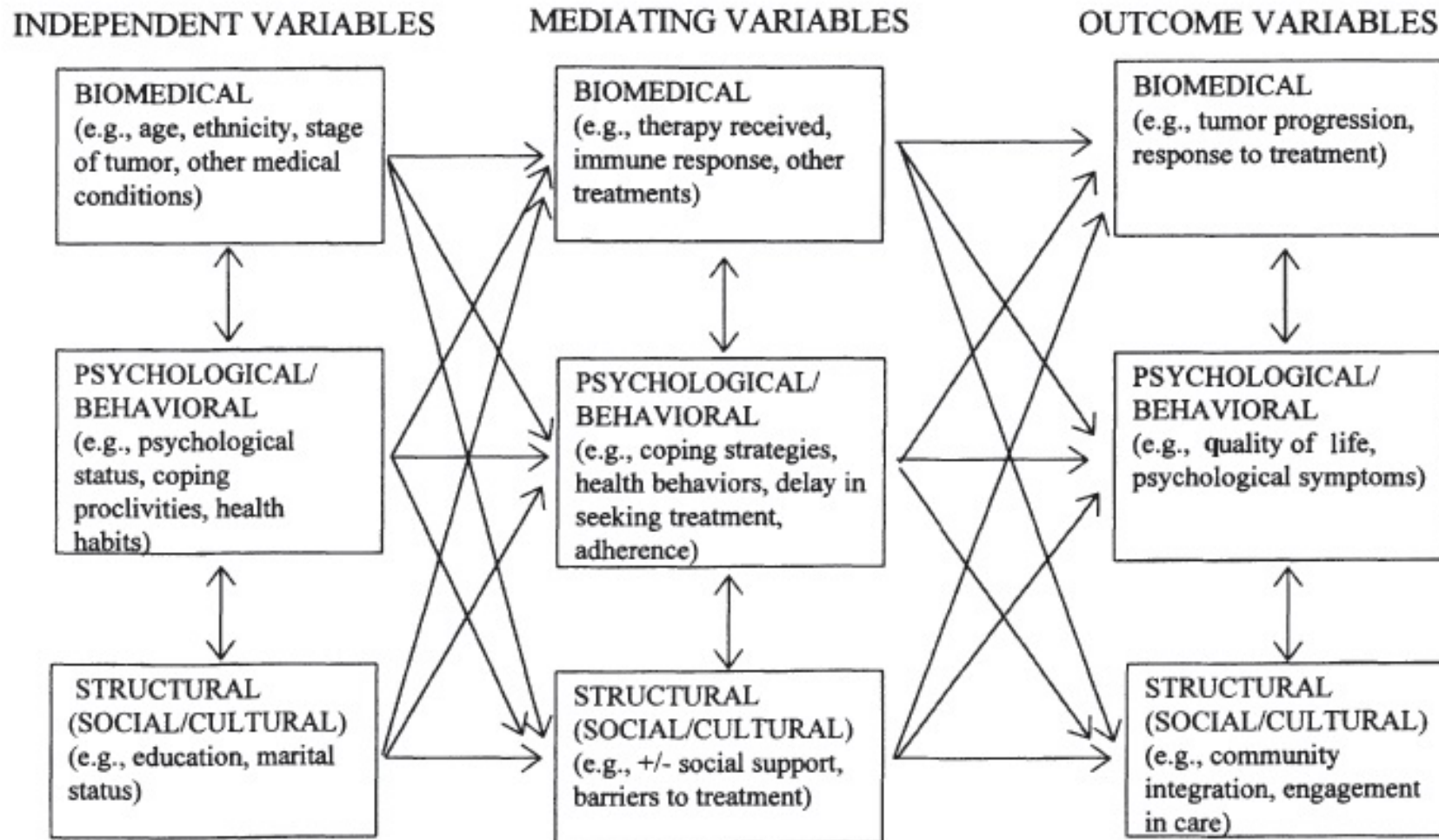
Gender
Physical illness
Disability
Genetic vulnerability
Immune function
Neurochemistry
Stress reactivity
Medication effects

Learning/memory
Attitudes/beliefs
Personality
Behaviours
Emotions
Coping skills
Past trauma

Social supports
Family background
Cultural traditions
Social/economic status
Education

Fonte:
<http://perspectivesclinic.com/health-psychology/>. JAPA Vol. 26, No. 4, 2018

Il modello biopsicosociale (fonte: Engels 1977, 1997)



Nothing will change unless or until those who control resources have the wisdom to venture off the beaten path of exclusive reliance on biomedicine as the only approach to health care' (Engels, p. 135)

Le caratteristiche ambientali: superstimoli per il sostegno e la partecipazione

- Una caratteristica dell'ambiente o uno scenario ambientale, può rappresentare un *affordance* (Gibson, 1979), uno stimolo che ci «chiama» o invita a «fare qualcosa», attrae l'attenzione sfruttando dei processi cognitivi o schemi già presenti in memoria. Talvolta corrisponde a un impellente richiamo sentimentale, una sorta di colpo di fulmine che può illuminarci sulla soluzione di un problema.
- Secondo Ulrich (1991) i superstimoli possono ridurre lo stress e accrescere il benessere dei pazienti attraverso:
 - Un aumento del controllo percepito
 - La percezione di sostegno
 - La percezione di accesso a distrattori positivi

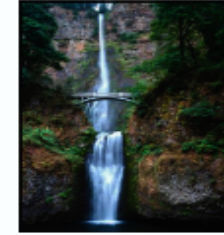
Alcune evidenze ...



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Promoting patient and family engagement through healthcare facility design: A systematic literature review



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Health facility planning

ABSTRACT

Objectives: Summarize and synthesize published literature regarding whether the physical design of healthcare facilities affect patient and family engagement in care.

Design: Systematic literature review.

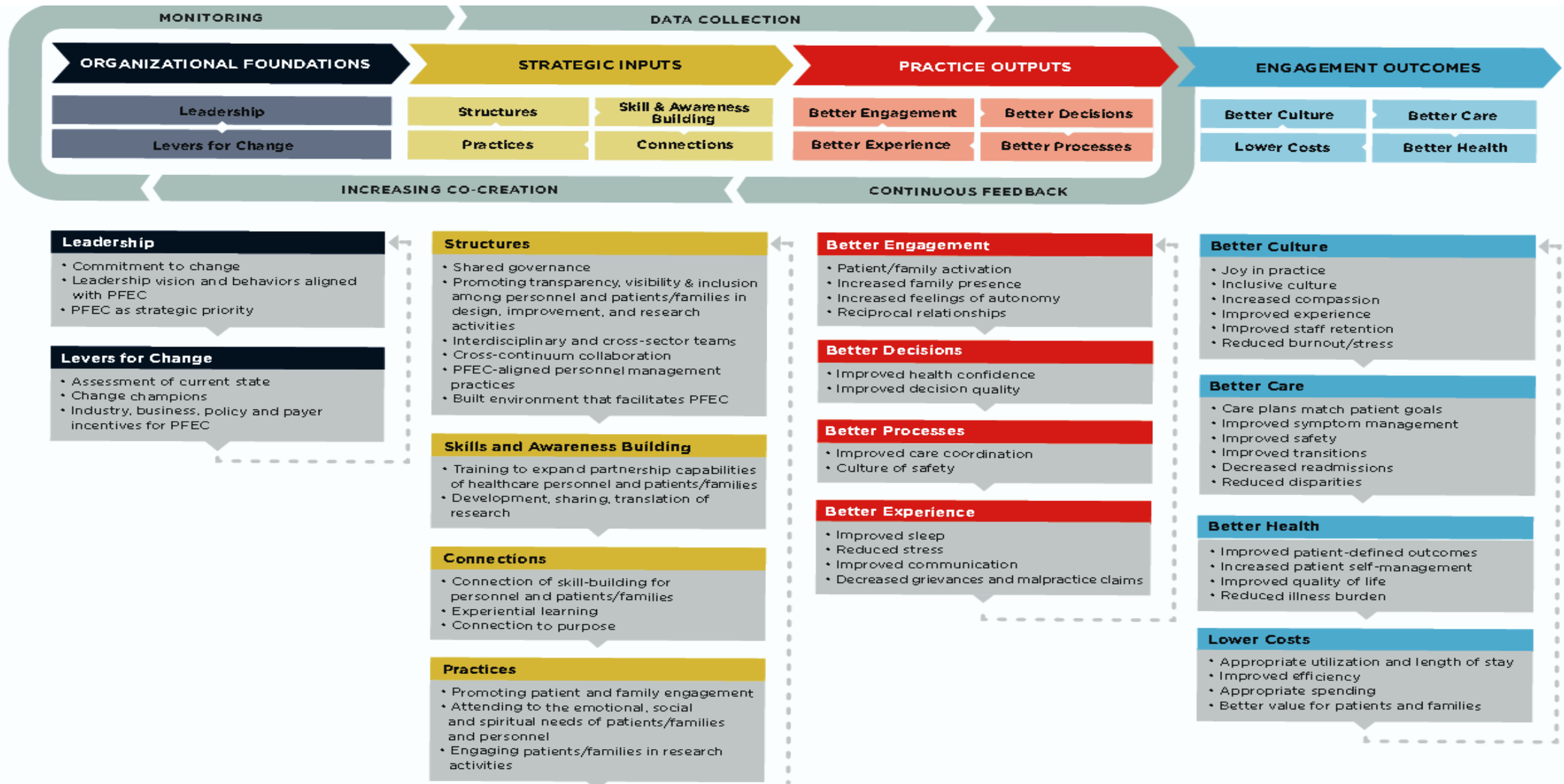
Data sources: EBSCOhost Health Business FullTEXT, Informedesign, *Journal of Interior Design*, *Journal of Health Environments Research and Design* and hand search. Thesaurus, MeSH and truncated terms were used where appropriate.

Review methods: A modified PICO framework was used to develop literature search strategies. Articles that met the inclusion criteria were reviewed.

Results: A total of 18 articles met the inclusion/exclusion criteria.

Conclusions: There is a modest amount of evidence indicating that the physical environment may affect patient and family engaged care. Designs that are comfortable and foster control of one's physical and social environment, access to social support and positive distractions may enhance the patient and family experience and promote engagement in care delivery.

Un Guida per l'engagement (fonte: National Academies of Medicine - Frampton et al., 2017)



	1st & 2nd Author (YR)	Level of Evidence	Research Approach	Participants	Study Aim(s)	Key Variables	Setting	Instruments	Key Findings
BETTER HEALTH	Hendrich et al. (2004)	2	Pre-post	Staff and patient data gathered over three years	Investigate relationships between acuity adaptable patient room design and health-related outcomes.	Medication errors, patient falls, patient demographics, admission, discharge, transfers, cost, complications, severity, nursing acuity.	Comprehensive Coronary Critical Care facility Indianapolis, IN	Baseline and monthly data before and after move. Patient Expectation Project standardized tool.	↓ medical errors by 70%. ↓ physician hand-off. ~ patient transfers to almost none, simplified work process for staff. ↓ patient falls. ↑ patient satisfaction. ↑ number of patient days per bed. Stabilized staff turnover.
	Lorenz and Dreher (2011)	2	Retro comparison design	Patients aged 65+, Length of stay between 3 and 10 days (n = 166)	Private vs semiprivate rooms	Rates of falls and hospital acquired infections	University Medical Center at Princeton (LMCP), New Jersey	Medical charts, admission assessment, staff notes, laboratory and diagnostic testing.	Risk of falling in a private room was 4x higher than in semiprivate room. No difference in hospital acquired infections.
	Maben et al. (2016)	2	Pre/post move survey comparison	Pre-interviews (n = 20), Post-interviews (n = 21)	Evaluation of the impact moving into a new space on senior managers, clinicians, ward staff, and patients.	Impact of single rooms within a healthcare setting on staff and patient experience, patient safety and costs.	4 adult inpatient wards in a single acute hospital with 100% single rooms in England; 2 control hospitals	Interviews, observations, behavior mapping including time and motion data, pedometer data of staff.	Clinical staff preferred a mix of single and shared patient occupancy rooms while most patients preferred single rooms. There were no significant fiscal or safety related reasons supporting 100% single rooms.
	Ajiboye et al. (2015)	2	RCT	Intervention group (n = 26), Control group (n = 33)	Impact of room layout on patient-physician interaction. Control room: patients without view of computer and physician with access to computer. Experimental room: Patients with equal access to computer.	Patient-physician interaction	Center for Internal Medicine, University of Kansas School of Medicine-Wichita (outpatient setting)	Space and Interaction Randomized Trial (SIT) survey, and demographic information (both self-reported)	↑ interpersonal-room interaction, ↔ satisfaction, mutual respect, trust, communication quality, people-room interaction
	Almquist et al. (2009)	2	RCT	Physicians (n = 6), Total Patients (n = 65) in 2 dyads: Standard consult room (n = 30), Experimental room (n = 35)	Impact of room layout on patient-physician interaction. Control room: patients without view of computer and physician with access to computer. Experimental room: Patients with equal access to computer.	Patient-physician interaction	Division of General Internal Medicine, Mayo Clinic, Rochester, Minnesota (outpatient setting)	Space and Interaction Randomized Trial, Survey, and demographic information, interview	↑ interpersonal interaction, better patient interaction with computer screen, records and results via screen, ↔ satisfaction between rooms, mutual respect, trust, communication quality, people-room interaction.
	Biddiss et al. (2013)	3b	Observe, Survey Focus Groups	Staff members (n = 10), Children (n = 11), Parents (n = 6)	Technology integrated, interactive play system with dynamic floor input and wall mounted visual display	Design, engagement, feasibility & acceptability of the interactive system from children, parents and staff	Urban North American Children's Rehabilitation hospital	Workshops, semi-structured focus groups, survey, Youth Evaluation of Products Scale	ScreenPlay was developed based on input. Participants of various ages and abilities reported high levels of engagement and enjoyment with the interactive system.
	Casscells et al. (2009)	5	Survey	Active Duty Military personnel (n = 382) & spouses (n = 36)	Understand perceptions of AD military and their spouses regarding evidence-based design strategies for enhancing military health facilities	Perceptions of design attributes focused on patient-centered elements in patient rooms	Service wide	Telephone survey	Important Features: Room for families, Environmental Control, Better Communication, Privacy
	Choi and Bosch (2013)	3a	Comparative Study	Patients and their families in the ICU (n = 81)	Comparison of family presence between two existing ICU with different environmental designs, traditional and family-centered, and similar acuity of patients	Family presence and interaction	Two ICUs at Tampa General Hospital, Tampa, FL	Behavior mapping & interviews with nurses.	↑ Family presence, family-patient interactions and family-staff interactions in the family-centered unit.

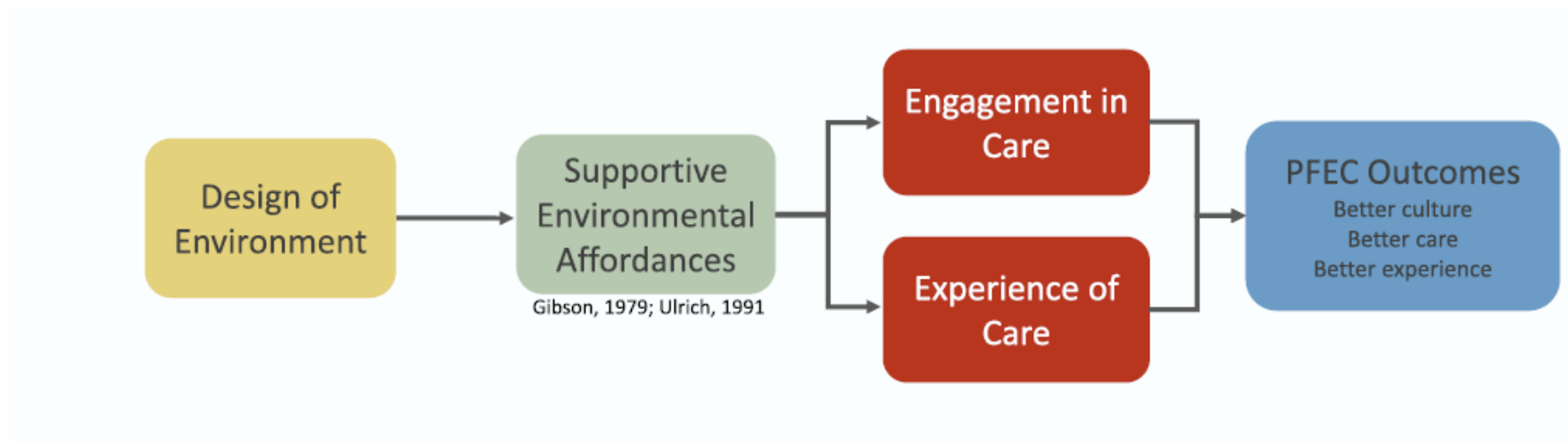
1st & 2nd Author (YR)	Level of Evidence	Research Approach	Participants	Study Aim(s)	Key Variables	Setting	Instruments	Key Findings
Devlin, Andrade, & Carvalho, 2016	5	Survey	USA (n = 78), Portugal (n = 158)	Identify what design features patients value in their hospital rooms	Features of the physical environment affecting patient satisfaction	Hospital rooms in the U.S. and Portugal	Open-ended Survey	When listing features of the hospital room affecting their satisfaction, 71% were considered positive and 29% negative; 64% of total responses categorized into (33%) positive distraction, (22%) perceived control, (6%) social support, (3%) Internet and (36%) other.
Harris (2017)	3b	Multi-method comparative study	Patients (n = 42)	Compare a variety of perceptions and outcomes, including time staff and visitors spent in patient rooms, in carpeted patient rooms versus those with vinyl flooring.	Patient and staff perceptions of indoor environmental quality and preferences	Telemetry unit for heart patients	Patient and staff surveys, medical chart review, behavioral observation	↑ amount of time visitors spent with patients in carpeted rooms. Patients rated rooms with vinyl flooring as cleaner, but preferred carpet.
Jacob et al. (2016)	5	Survey	Family members (n = 45)	Understand how well the needs of family members of ICU patients were met while their family member was in the ICU.	Needs of family members while their family member was in the ICU	Adult neuroscience ICU with continuous visitation policy and adjoining private suite for family	Survey of family needs, provided 72 h after the patient was admitted to the ICU	Most important: patient info, visitation, hope, daily communication with doctor, assured best care; Least important needs: physical comforts for family; Most reported high satisfaction of care
Pati and Nanda (2011)	2	Comparative group study	Pediatric patients age 5+ (n = 158)	Investigate effects of positive distractions on children in waiting rooms.	Activity, behavior and engagement of the children	Two patient waiting areas (dental and cardiac clinics) pediatric tertiary care center, US.	Activity, behavior and engagement observations, standardized data sheet	Positive distraction conditions provided an increase in calm behavior and a decrease in fine and gross motor movement in the children. Engagement increased with positive distraction conditions.
Schreuder et al. (2016)	5	Observation, survey	Patients (n = 379)	Impact of design-related characteristics of patient rooms (n = 48) on patient well-being.	Patient self-reported well-being	In-patient hospital rooms in the Netherlands	Survey, photo documentation of physical characteristics of patient rooms	Spatial comfort, safety & security, autonomy have the strongest influence on patient self-reported well-being in a patient room. Privacy had the smallest influence.
Bosch et al. (2012)	3b	Pre- and Post-move Survey	Pre-move survey (n = 148), Post-move survey (n = 158)	Staff perceptions before and after adding 23 single-family patient rooms in NICU with noise-reducing materials and improved digital communication system. Amenities also added to accommodate patient families.	Caregiver perceptions of open bay and hybrid (open bay and single-family rooms)	Joe DiMaggio Children's Hospital, Wasie NICU, Hollywood, FL	Survey pre-move and 9 months post-move. 30-7 pt Likert scale with three open-ended questions.	↑ perceived safety/quality of NICU for infants and families ↑ Perceived quality work environment in new combination NICU (single-family rooms and open-bay).
Karnik et al. (2014)	5	Survey	Patients (n = 826)	Assess the effects of a hospital's art collection on patient health and experience on the main campus of the medical center.	Mood, comfort/pain and stress	Tertiary care medical center, Midwestern USA	Survey with a five point Likert scale, mood/comfort/pain/stress.	The longer time on main campus, the more they noticed and were impacted by the artwork. ↑ satisfaction with their care environment and motivation to get well.
Quan et al. (2016)	3a	Observation, survey	Pediatric patients and their families (n = 182)	Evaluate impact of 3 positive distraction levels (minimum, light and animation) on patient stress, mood and parental satisfaction.	Patient behavioral stress response, mood, parent satisfaction	Pediatric radiography unit	Observational behavior rating scale, survey	Intervention group displayed fewer stress-related behavior, increased positive affect, increased parent satisfaction.

1st & 2nd Author (YR)	Level of Evidence	Research Approach	Participants	Study Aim(s)	Key Variables	Setting	Instruments	Key Findings
Trzpuć et al. (2016)	5	Survey (online and face-to-face), Interviews	Patient image surveys (n = 188), online staff surveys (n = 48), face-to-face staff interviews (n = 25)	Investigate impact of design and spatial elements on behavior and well-being for patients, staff and families.	Behavior, well-being	(n = 1) Child-adolescent mental health unit, USA.	Survey of safety, teamwork, patient interactions and family interaction.	Interior design and spatial elements were shown to positively influence patient and staff satisfaction and clinical efficacy on patient mental health outcomes as well as positive patient behavior outcomes.
Weinberger et al (2017)	5	Survey	Child life specialists (n = 90)	Identify interior design elements that support child life goals for pediatric in-patient population related to hospital play rooms	Specific interior design elements supporting child life goals	n = 5 child life play rooms	Survey using photographs, Likert ratings and open-response questions	Child life specialists helpful in detecting design distinctions between rooms. Biophilia features including windows, light and nature were important. Highest rated rooms promoted sensory-motor and play with open layout.

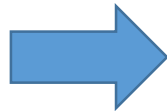
Notes: ↑ = increase, ↓ = decrease, - = no change, AD = active duty military, COI = centers of innovation, EOC = environments of care, HCAHPS = Hospital Consumer Assessment of Healthcare Providers and Systems, Hrs = hours, ICU = intensive care unit, NICU = neonatal intensive care unit; Post-hoc = analysis completed after the event has concluded, SIT = Space and Interaction Randomized Trial Survey, SPSS = Statistical Package for the Social Science (Data analysis software), UMCP = University Medical Center Princeton, VA = Veteran's Administration.

Modello teorico per il design di ambienti che facilitino l'impegno di user e carer


- PFEC (patients and family engaged care)



La descrizione dell'ambiente riflette la percezione e la rappresentazione da parte di chi li vive ed è informativa dell'influenza che il contesto può esercitare sugli attori



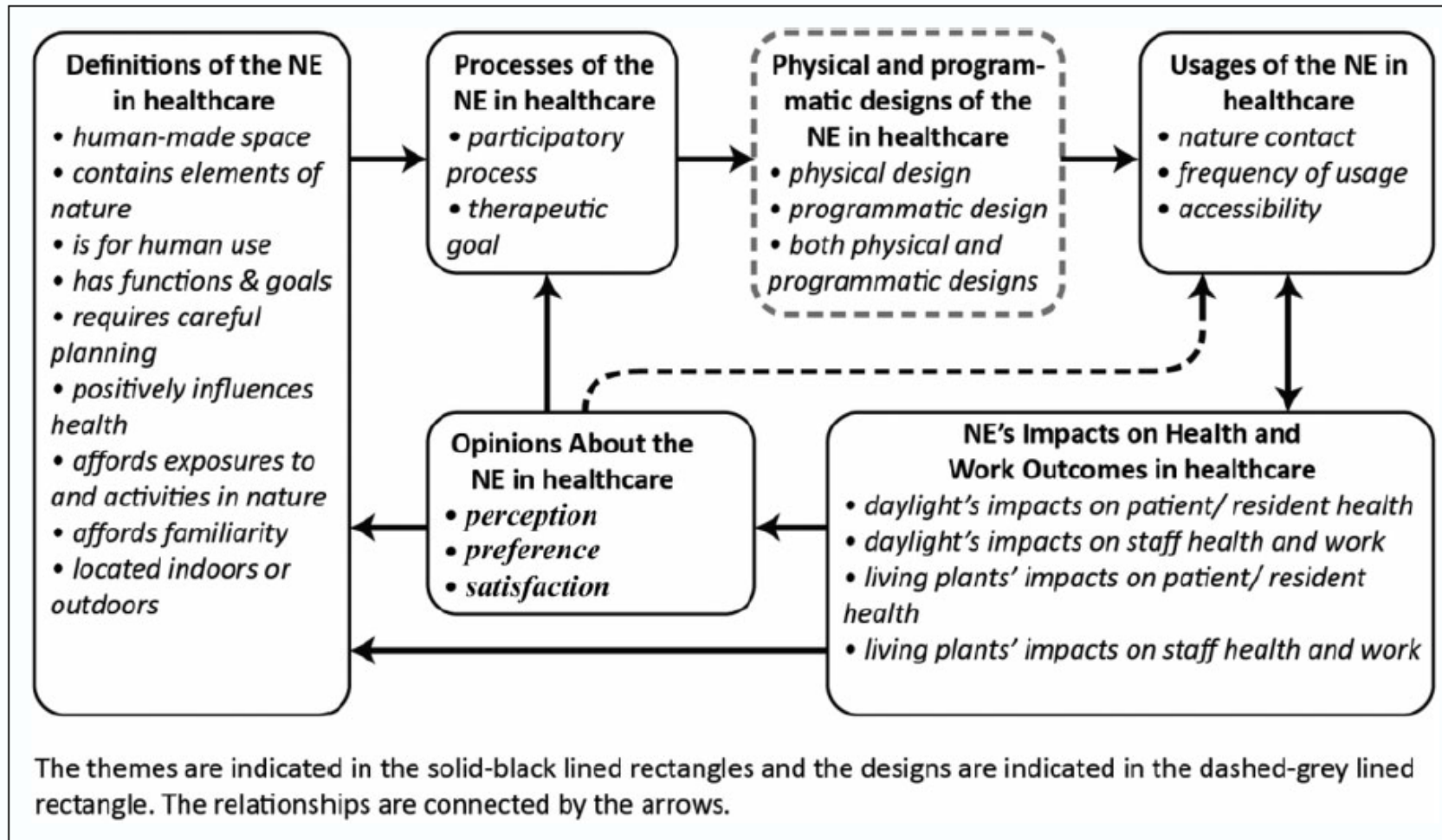
The Conceptualization of the Natural Environment in Healthcare Facilities: A Scoping Review

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Jennifer Gutberg, PhD(c), MSc¹, and Whitney Berta, PhD, MBA¹

Abstract

Objectives: To identify how the natural environment (NE) in healthcare has been conceptualized. **Background:** The NE appears to afford significant therapeutic benefits. A clear concept of the NE in healthcare affords a shared understanding from which to advance science to facilitate comparisons across contexts. In this article, the various meanings of the NE were brought together into one framework by which to map its themes and their relationships. **Method:** A scoping review was conducted using database searches in MEDLINE, EMBASE, PsycINFO, CINAHL, and Cochrane for articles published up to July 2018. The bibliography of the included articles were manually searched for published books. **Results:** This review includes 137 peer-reviewed articles and research-based books from 27 countries. A conceptual framework was developed to identify five themes that conceptualize the NE in healthcare: (1) definitions of the NE in healthcare, (2) processes of the NE in healthcare, (3) usages of the NE in healthcare, (4) opinions about the NE in healthcare, and (5) NE's impacts on health and work outcomes in healthcare. These themes are filtered by the NE's physical and programmatic designs; changes in one affect the others. Definitions of the NE are described as human-made space, located in the indoors and outdoors, containing elements of nature and designed with the purpose to positively influence humans. Processes are described as the participatory approach in NE's development and its therapeutic goals. Usages are categorized into nature contact, frequency of usage, and accessibility. Opinions are accounted for by perceptions, preference, and satisfaction. Outcomes are related to physical health, mental health and well-being and work. **Conclusions:** This framework contributes to the conceptual discussion and emphasizes NE's complementarity to the biomedical healthcare system.

Ambiente naturale e salute



L'influenza degli NE sugli esiti della cura

Nature Elements of the NE in Healthcare	Typology of Influence	Influences	Reference Examples (See complete reference details in Table S1 of Online Supplementary Materials.)
Increase daylight exposures for patients/residents	Benefits on physical health	Reduce falls and increase vitamin D levels	Bogers, Bostoën, and Broekman (2016); Sambrook et al. (2011)
		Improve sleep	Bano et al. (2014); Callins, Szmerekovsky, and Biddle (2007); Connell, Sanford, and Lewis (2007); Karami, Golmohammadi, Heidaripahlavian, Poorolajal, and Heidarimoghadam (2016); Wahnschaffe et al. (2017)
		Reduce epileptic seizures	Baxendale (2009)
		Lower analgesic intake	Ulrich et al. (2008); Walch et al. (2005); Laursen, Danielsen, and Rosenberg (2014)
Benefits on mental health and well-being health		Higher physical activity levels	Nioi, Roe, Gow, McNair, and Aspinall (2017)
		Clear actinic keratosis lesions (combined with photosensitizing agents)	Cordey et al. (2017); Nissen, Heerfordt, Wiegell, Mikkelsen, and Wulf (2017); Sotiriou et al. (2017)
		Increase emotional expressions of pleasure, alertness, and quality of life	Munch et al. (2017)
		Reduce hospitalization in psychiatric patients	Benedetti, Colombo, Barbini, Campori and Smeraldi (2001); Beauchemin and Hays (1996); Canellas et al. (2016)
Lower daylight exposures for patients/residents	Impacts on physical health	Reduce delirium in intensive care patients	Zaal and Slooter (2012)
		Reduce stress in surgical patients	Laursen et al. (2014)
		Reduce anxiety and physical/verbal agitation	Connell et al. (2007); Karami et al. (2016)
		Lower vitamin D levels and bone mineral density, higher daytime plasma melatonin levels, and earlier nocturnal rise	Baskett, Cockrem, and Todd (1991); Lamberg-Allardt (1984); Leenders, van Eijndhoven, van der Veer, and Muskiet, (2013); Mowé, Bøhmer, and Haug (1996); Sato, Asoh, and Oizumi (1998)
Increase daylight exposures for staff	Benefits on physical health	Decrease blood pressure, sleepy behaviors, and job stress, and deteriorate mood; increase temperature, communication, blood oxygen saturation, and job satisfaction; and indirectly reduce their job burnout	Alimoglu and Donmez (2005); Zadeh, Shepley, Williams, and Chung (2014)
	Benefits on work-related outcomes	Reduce hospital staff's annual absenteeism and vacancy rates (comparison between a new unit and an old unit)	Shepley et al. (2012)

Nature Elements of the NE in Healthcare	Typology of Influence	Influences	Reference Examples (See complete reference details in Table S1 of Online Supplementary Materials.)
Increase exposures to living plants on patients/residents	Benefits on physical health	Improve functional capacities	Brown, Allen, Dwozan, Mercer, and Warren (2004); Goto et al. (2013); Raske (2010) Yao and Chen (2017) De Bruin et al. (2010); de Boer et al. (2017b) Tse & Ho, 2013; Verra et al., 2012 Goto et al. (2013) Detweiler, Murphy, Kim, Myers, and Ashai (2009) Han, Park, and Ahn (2018)
		Improve activities of daily living	
		Improve physical activeness and total energy intake	
		Reduce pain	
		Reduce heart rate	
		Reduce falls	
		Reduce cortisol levels	
	Benefits on mental health and well-being	Positively stimulate and distract	Masel et al. (2018)
		Improve mood	Chen and Ji (2015); Goto et al. (2013); Tse (2010) Lai et al. (2018)
		Improve happiness	
Improve dementia-related behaviors		Detweiler et al. (2008); Mooney and Nicell (1992); Murphy, Miyazaki, Detweiler, and Kim (2010) de Boer et al. (2017a); Brown et al. (2004); Gigliotti and Jarrott (2005); Powell, Felce, Jenkins, and Lunt (1979)	
Improve social interactions and engagements			
Improve relationships	Raske (2010)		
Improve psychopathological symptoms	Colombo, Buono, Smania, Raviola, and De Leo (2006)		
Improve self-satisfaction	Bassi, Rassiga, Fumagalli, and Senes (2018)		
Improve awareness	Bryant (1991)		
Increase exposures to living plants on staff	Benefits on physical health	Reduce acute stress and improve alertness	Pati, Harvey, and Barach (2008)
		Reduce stress and facilitate breaks	Turner et al. (2009)
	Benefits on work-related outcomes	Mobilize nature-based care	Chapman, Hazen, and Noell-Waggoner (2007); Van Vracem, Spruytte, Declercq, and Van Audenhove (2016)

Il contesto di cura

Una ricerca integrata
(rassegna + survey)

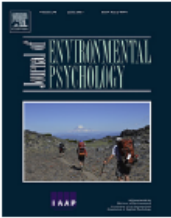


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Mental and behavioral health settings: Importance & effectiveness of environmental qualities & features as perceived by staff



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ABSTRACT

This paper describes research on the design of behavioral and mental health facilities. Using input from clinical staff, the purpose of the study was four-fold: to develop and test a tool for the evaluation of mental and behavioral health (MBH) facilities, to evaluate the importance and effectiveness of specific environmental qualities and features, to generate design guidelines for MBH facilities, and to make recommendations for future research. A draft version of a tool that was intended to measure the importance and effectiveness of environmental qualities and features in MBH facilities was developed using a multi-methods approach. This survey, the Psychiatric Staff Environmental Design (PSED) tool, was distributed to psychiatric nursing organization members (N = 134). The researchers determined that the PSED was suitable for future research with minor modifications. Other findings included staff support for private patient rooms, staff recognition of the critical role of positive distraction, and the importance of aesthetics.

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Costrutti rilevanti (fonte: Shepley et al. 2016)

Densità ridotta nelle stanze / stanze singole	Private or shared beds/reduced patient density (100%)	Bailey (2002) noted that patients need a place that is conducive to emotional attachment and expression of ownership; having a room that can be personalized offers patients therapeutic security and comfort. Multiple authors have encouraged the use of private rooms (e.g., Forster, Cavness, & Phelps, 1999; Lynch, Plant, & Ryan, 2005; Martin, 1995; Salerno, Forcella, Di Fabio, FigàTalamanca, & Boscolo, 2012). Lower density patient rooms, such as large shared, two-person bedrooms are recommended by others (e.g., Chou, Lu, & Mao, 2002; Izumi, 1968; Turlington, 2004; Ulrich et al., 2014; Wilson, Soth, & Robak, 1992; Wolfe, 1975), and some care staff believe that shared rooms enhance patient supervision.
Luce diurna	Daylighting (100%)	Adequate daylight is an important consideration in MBH facilities (Davis, Glick, & Rosow, 1979; Gutkowski & Guttman, 1992; Karlin & Zeiss, 2006; Turlington, 2004). Ulrich et al. (2014) identified well-illuminated interior space as an amenity that contributes to reduced aggression. Regarding the positive impact of daylight on staff and patients in other healthcare settings (e.g., Shepley, Gerbi, Watson, Imgrund, & Sagha-Zadeh, 2012; Welch et al., 2005). Exposure to daylight has been correlated with improved mood (Partonen & Lönnqvist, 2000) and better sleep (Boubekri et al., 2014), two issues that are critical in a psychiatric milieu.
Terapia indoor/ Outdoor	Deinstitutionalized and homelike environment (100%)	Research typically supports the incorporation of deinstitutionalized and homelike environments (Tapak, 2012; Ulrich et al., 2014; Whitehead, Polsky, Crookshank, & Fik, 1984; Wilson et al., 1992). Environments that are not residential in character are evaluated poorly by patients (e.g., Grosenick & Hatmaker, 2000). The definition of a homelike environment has been debated. Spivak (1984) hypothesizes that 13 characteristics/activities (e.g., shelter, sleep) constitute a homelike environment. Carr (2011) builds on this definition by suggesting design goals such as cheerful, non-institutional materials, privacy, noise reduction and lighting control, and TV/radio.
Osservazione/ Supervisione	Indoor/outdoor therapy (100%)	Indoor spaces are common in most facilities, typically focusing on group meetings, art or occupational therapy. Fewer facilities offer outdoor therapy, but visual or direct access to such amenities are supported. Specific features might include nature window views, accessible gardens and nature art (Cooper Marcus & Sachs, 2013; Ulrich et al., 2014). The benefits likely extend to all age groups. When Shepley (1995) asked children to draw their vision of the ideal residential behavioral unit, the majority of their sketches included nature content.
Diversi postazioni	Nurse station observation (94%)	Open stations support patient-centered care (Turlington, 2004) and contribute to improved supervision (Carr, 2011). Whitehead et al. (1984) found that openness encouraged staff to vacate their station, and supported interaction with and observation of patients. Stations with direct access to dayrooms and large windows result in more frequent interaction with patients (Gross et al., 1998). A nurse station that was relocated for increased supervision resulted in reduced absences, improved patient self-image, less violence and greater satisfaction (Christenfeld, Wagner, Pastva, & Acrish, 1989). Ulrich et al. (2014) observed reduced use of restraints when an open station was provided, but Southard et al. (2012) did not find significant differences in perceptions of an enclosed versus open station.
Setting visivo e fisico	Mix of seating (94%)	The impact of seating on behavior was among the first factors studied in mental health facilities (e.g., MacDonald, Davidowitz, Gimbel, & Foley, 1982; Peterson, Knapp, Rosen, & Pither, 1977; Sommer & Ross, 1958; Stahler, Frazer, & Rappaport, 1984). Although additional research is required, designers recommend providing a mix of seating arrangements that support social interaction between different groups of patients. In a high security UK hospital, Baldwin (1985) examined the impact of short-term interventions in furniture arrangements in the dayroom and observed reductions in use of seclusion rooms and casualties.
Autonomia/ Supporto del personale/ Spazi per fumare Arredi resistenti / Ambiente ordinato	Visual and physical impact of nature (93%)	The outdoor environment is important in the psychiatric milieu (Perkins, 2013). Bailey (2002) recommends outdoor recreation to sustain appropriate psychological, physical and cognitive development. Regarding other health settings, Diette, Lechtzin, Haponik, Devrotes, and Rubin (2003) examined the impact of nature murals/sounds on individuals undergoing bronchoscopy and found higher levels of pain control, but no differences in anxiety. Relatedly, Ulrich et al., (2003), examined the impact of video tapes showing nature settings, urban settings, television and no-television conditions and found reduced pulse rate but no impact on blood pressure or affective responses in blood donors.

Autonomy and spontaneity (88%)

Spontaneity is considered to be a behavior associated with well-being (Davis, Leach & Clegg, 2011). Autonomy and spontaneity are among the ten factors listed on the Ward Atmosphere Scale (WAS), and often interpreted as effective objectives in studies using the WAS scale (e.g., Sorlie, Parniakov, Rezvy, & Ponomarev, 2010). Lynch et al. (2005) found that competence and autonomy influenced staff attitudes and treatment of patients.

Well-maintained environment (87.5%)

More than 80% of staff in a drug rehabilitation facility felt that well-maintained, lounge furniture supported treatment goals (Grosenick & Hatmaker, 2000). Proper maintenance may decrease patient violence, improve staff mood and reduce unscheduled staff absence (Christenfeld et al., 1989). A recently remodeled facility is likely perceived as well-maintained and results in improved satisfaction and attitudes (Holahan & Saegert, 1973; Potthoff, 1995). Schizophrenic patients were found to socialize more in a newly remodeled ward with bright colors over a ward with old, worn furniture and a dark and dull color scheme (Holahan & Saegert, 1973).

Orderly and organized environment (87.5%)

Bartlett (1997) notes that the physical environment can be disorganized and chaotic, resulting in negative responses, or it can support orientation. Appropriately ordered and organized environments may contribute to satisfaction (Eklund & Hansson, 2001; Middelboe, Schjodt, Byrting & Gjerris, 2001). Although this topic has not been explored in healthcare settings, the foundation regarding its role in influencing behavior was laid by Kaplan, Kaplan, and Brown (1989) who suggested that a preferred environment is a balance between coherence and complexity. Individuals who are suffering from MBH symptoms might be seeking a higher level of order to balance their diminished sense of competence, a construct supported by Lawton's Environmental Competence/Press Theory (Lawton & Nahemow, 1973).

Damage-resistant furnishings (87.5%)

Experts recommend easily repairable and damage-resistant furnishings (e.g., Carr, 2011; Davis et al., 1979). Furniture in psychiatric settings is often subject to destruction due to the frequent occurrence of aggressive behaviors. In recognition of the role of furniture, the quality of furniture is an item on the Ward Evaluation Scale (WES) tool ("The furniture on your ward is in good condition"), a tool used in multiple studies by the creators (e.g., Klett, Berger, Sewall, & Rice, 1963; Rice et al., 1963; Rice, Berger, Klett, Sewall, & Point, 1966).

Social interaction and community (82.3%)

Designers and researchers recommend developing common areas and dayrooms that promote interaction between patients and between patients and staff, and support a sense of community (Davis et al., 1979; Devlin, 1992; Gutkowski, Ginath, & Guttmann, 1992; Sidman & Moos, 1973; Turlington, 2004). Furniture arrangements can influence the social environment of a facility (Gutkowski et al., 1992); Timko (1996) found that social-recreation aids, such as group tables, were correlated with positive outcomes regarding engagement in self-initiated activities. Some spaces are more effective at supporting community than others; according to Fairbanks et al. (1977) the dining room has the highest social function on an inpatient unit.

Staff support (76.5%)

Spaces for staff mental health consultation and therapy are important. Duties of psychiatric staff, particularly the prevention of self-destructive patient behavior or restraint procedure events, are sources of significant stress (Salerno et al., 2012). Chen, Huang, Hwang, and Chen (2010) found a relationship between staff perception of low quality of life and an increased number of violent patient events. Although not in MBH environments, Nejati and colleagues (Nejati, Rodiek, & Shepley, 2015; Nejati, Shepley & Rodiek, 2017; Nejati, Rodiek, Shepley & Varni, 2016) studied nurse preferences in general staff lounge space and concluded that appropriate lounge design enhanced higher the staff satisfaction.

Suicide resistance (76.5%)

A vast body of literature and guidelines exists regarding suicide resistant environmental features. In recent examples, [Watts et al. \(2012\)](#) assessed the impact of identifying and reducing hazards on suicide in Veteran's Administration facilities and [Carr \(2011\)](#) identified eleven safety considerations in facilities, including tamperproof electric and mechanical devices, and avoidance of traditional doorknobs and handles.

Staff safety/security (70.6%)

The physical layout can be thought of as "affording" operational objectives ([Gibson, 1977](#)) such as reducing aggressive events and staff absences ([Martin, 1995](#)) and mitigating the use of restraints and staff injuries ([Forster et al., 1999](#)). A variety of environmental factors can undermine the safety of on-site clinicians such as spaces that don't allow supervision by others when staff are interacting with patients, and inappropriate location of door swings in the path of staff rushing in response to an emergency.

Smoking rooms (64.7%)

This topic has been discussed in multiple forums. Smoking may result in pollution problems in psychiatric and other healthcare environments. However, because restricting the habit can potentially increase patient stress, some authors express support for smoking rooms (e.g., [Salerno et al., 2012](#)). In a skilled nursing setting, [Shepley, Frohman, and Wilson \(1999\)](#) found that patients and staff supported the inclusion of designated smoking areas as it provided patients a sense of choice and control.

How important are these features in a MBH facility?

How effectively are these features achieved in your facility?

All Settings Environmental Qualities

All Settings Environmental Factors

Inpatient Environmental Factors

Inpatient Environmental Qualities

ALL SETTINGS ENVIRONMENTAL QUALITIES

Well-maintained
Visual/physical access to nature
Attractive
Deinstitutional

INPATIENT ENVIRONMENTAL QUALITIES

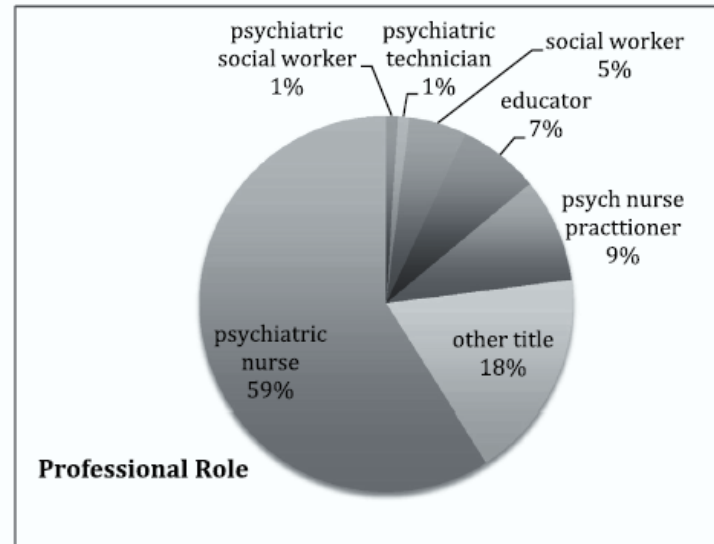
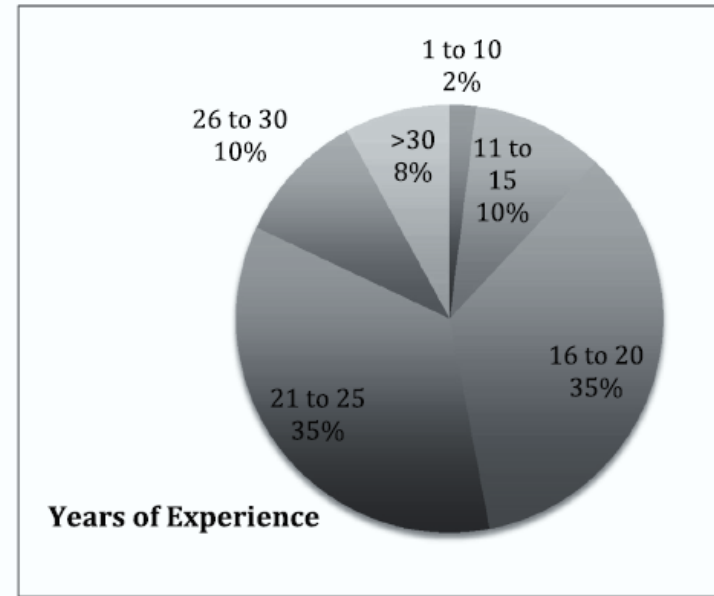
Suicide resistant
Positive distraction
Staff respite
Social interaction
Autonomy

To what degree do specific environmental characteristics contribute to these environmental goals?

Survey: campione

Demographic characteristics of patient population and associated facilities.

Facility Country		Number of Beds	
United States	64	1-10	1
Australia	31	11-50	28
Canada	7	51-100	10
United Kingdom	2	101-150	5
Facility Location		151-200	7
Urban	52	>200	8
Suburban	35		
Rural	15	Number of Beds Per Unit	
		1-14	1
		11-15	6
Patient Diagnosis (all that apply)		15-20	21
Schizophrenic/psychotic disorders	100	21-25	21
Mood disorders	97	26-30	6
Anxiety disorders	93	>30	5
Post-traumatic stress disorder	82		
Obsessive-compulsive disorder	71	Outpatient Counseling Rooms	
Impulse and addiction	70	1-5	1
Cognitively challenged	59	6-10	4
Autism spectrum disorder	42	11-15	7
Eating disorder	41	16-20	2
Other disorders	21	>20	5
Length of Stay		ER Holding Rooms	
Less than 4 days	3	1-10	3
4-7 days	26	11-15	2
8-13 days	17	16-20	1
2-4 weeks	8	>20	1
1-4 months	3		



Risultati

Evaluation of importance of environmental qualities and environmental features across all settings (with pairwise comparison p-values).

Quality:	M	SD	Orderly	Homelike	Aesthetic	Outdoors	Maintain
Maintained	6.26	0.690	0.05	ns	ns	ns	–
Outdoors	6.01	0.796	ns	ns	ns	–	
Aesthetic	5.92	0.947	ns	ns	–		
Homelike	5.88	1.025	ns	–			
Orderly	5.80	0.957	–				

Feature:	M	SD	Attr furnit	Staff resp	Resis furnit	Elec light	Conf furnit	Daylight	Noise cntrl	Staff safety
Staff safety	6.60	0.842	0.001	0.001	0.001	0.001	0.001	ns	ns	–
Noise control	6.38	0.742	0.001	0.05	0.05	ns	ns	ns	–	
Daylighting	6.33	0.746	0.001	ns	ns	ns	ns	–		
Comfort furniture	6.11	0.781	0.05	ns	ns	ns	–			
Electric light	6.09	0.740	0.05	ns	ns	–				
Resistant furniture	5.90	1.146	0.05	ns	–					
Staff respite	5.87	1.334	0.05	–						
Attract furniture	5.53	1.004	–							

Evaluation of effectiveness of environmental qualities and environmental features across all settings (with pairwise comparison p-values).

Quality:	<i>M</i>	<i>SD</i>	Outdoors	Homelike	Aesthetic	Orderly	Maintained			
Maintained	4.98	1.459	0.05	0.05	ns	ns	–			
Orderly	4.71	1.419	ns	ns	ns	–				
Aesthetic	4.43	1.644	ns	ns	–					
Homelike	4.29	1.77	ns	–						
Outdoors	4.22	1.766	–							
Feature:	<i>M</i>	<i>SD</i>	Noise cont	Staff resp	Attr furn	Comf furn	Daylight	Staff safe	Resis furn	Elec light
Electric light	5.21	1.329	0.001	0.001	ns	ns	ns	ns	ns	–
Resistant furniture	5.15	1.307	0.001	0.001	ns	ns	ns	ns	–	
Staff safety	5.12	1.497	0.001	0.001	ns	ns	ns	–		
Daylighting	4.79	1.609	0.05	ns	ns	ns	–			
Comfort furniture	4.55	1.376	ns	ns	ns	–				
Attractive furniture	4.55	1.478	ns	ns	–					
Staff respite	4.11	1.725	ns	–						
Noise control	3.81	1.831	–							

Ranking of environmental characteristics that contribute to environmental qualities for all settings (with pairwise comparisons) (lower mean indicates higher ranking).

Well Maintained:	<i>M</i>	<i>SD</i>	Other	Equipment	Furniture	Fixtures	Clean surf				
Clean surfaces	2.01	0.97	0.001	0.001	0.05	ns	–				
Fixtures & systems	2.32	1.085	0.001	ns	ns	–					
Furniture & finishes	2.76	1.173	0.001	ns	–						
Equipment	2.96	1.043	0.001	–							
Other characteristics	4.94	0.485	–								
Visual Access:	<i>M</i>	<i>SD</i>	Other	Street Life	Landscape	Gardens					
Pleasant gardens	1.65	0.688	0.001	0.001	ns	–					
Pleasant landscapes	1.67	0.718	0.001	0.001	–						
Pleasant street life	2.76	0.617	0.001	–							
Other characteristics	3.92	0.419	–								
Physical Access:	<i>M</i>	<i>SD</i>	Other	Sit alone	Landscape	Group Act	Gardens	1-on-1	Safety		
Outdoor safety	1.77	1.279	0.001	0.001	0.001	0.001	0.001	0.001	–		
1-on-1 conversation	3.44	1.45	0.001	0.05	ns	ns	ns	–			
Pleasant gardens	3.61	1.585	0.001	ns	ns	ns	–				
Group activities	3.78	1.722	0.001	ns	ns	–					
Pleasant landscapes	4.07	1.577	0.001	ns	–						
Sitting alone	4.50	1.381	0.001	–							
Other characteristics	6.83	0.900	–								
Aesthetics:	<i>M</i>	<i>SD</i>	Other	Abstract art	Colorful	Nature art	Complex	Light	Windows		
Window views	2.01	1.41	0.001	0.001	0.001	0.001	0.001	ns	–		
Good lighting	2.86	1.471	0.001	0.001	0.001	0.05	ns	–			
Natural complexity	3.60	1.505	0.001	0.001	ns	ns	–				
Art depicting nature	3.76	1.363	0.001	0.001	ns	–					
Colorful furnishings	4.17	1.449	0.001	ns	–						
Abstract art	4.95	1.608	0.001	–							
Other characteristics	6.63	1.358	–								
Deinstitutional:	<i>M</i>	<i>SD</i>	Other	Hotel-like	Artwork	Homelike	Cozy	Privacy	Welcome	Control	Respect
Sense of respect	2.85	1.633	0.001	0.001	0.001	0.001	0.001	ns	ns	ns	–
Choice/control	3.33	1.675	0.001	0.001	0.001	0.001	ns	ns	ns	–	
Welcoming entry	3.41	2.236	0.001	0.001	0.001	0.001	ns	ns	–		
Privacy	3.97	2.045	0.001	0.001	0.001	ns	ns	–			
Spaces that are cozy	4.49	1.578	0.001	0.001	0.001	ns	–				
Homelike furniture	5.00	2.374	0.001	0.001	0.05	–					
Artwork & décor	6.36	1.502	0.001	ns	–						
Hotel-like furniture	7.18	1.545	0.05	–							
Other characteristics	8.40	1.863	–								
Orderly:	<i>M</i>	<i>SD</i>	Other	Cohesive	Storage	Navigable	No clutter				
Absence of clutter	1.80	0.939	0.001	0.001	0.001	ns	–				
Navigable space	2.41	1.16	0.001	0.05	ns	–					
Equipment storage	2.81	0.962	0.001	ns	–						
Visually cohesive	3.19	1.11	0.001	–							
Other characteristics	4.80	0.758	–								

Evaluation of importance of environmental qualities and environmental features in inpatient settings (with pairwise comparisons).

Quality:	<i>M</i>	<i>SD</i>	Autonomy	Interaction	Respite	Distraction	Resistant
Suicide resistant	6.71	0.607	0.001	0.001	0.001	ns	–
Positive distraction	6.47	0.607	0.001	0.001	0.05	–	
Staff respite	6.11	0.863	ns	ns	–		
Social interaction	6.00	0.678	ns	–			
Autonomy	5.84	0.807	–				
Features:	<i>M</i>	<i>SD</i>	Smoking	Direct	Staff-patient	Indoor	
Indoor therapy	6.46	0.82	0.001	ns	ns	–	
Staff-patient consult	6.35	0.87	0.001	ns	–		
Direct observation	6.08	1.18	0.001	–			
Smoking	3.49	2.39	–				

Evaluation of effectiveness of environmental features for inpatient settings (with pairwise comparisons).

Qualities:	<i>M</i>	<i>SD</i>	Staff Resp	Autonomy	Pos Distrac	Social	Resistant
Suicide resistant	5.78	0.975	0.001	0.001	0.05	0.05	–
Social interaction	4.90	1.179	0.001	0.05	ns	–	
Positive distraction	4.85	1.249	0.001	0.05	–		
Autonomy	3.92	1.574	ns	–			
Staff respite	3.46	1.595	–				
Features:	<i>M</i>	<i>SD</i>	Smoking	Staff-patient	Direct Obsrv	Therapeutic	
Therapeutic activities	5.03	1.515	0.05	ns	ns	–	
Direct observation	4.81	1.754	0.05	ns	–		
Staff-patient interact	4.79	1.631	0.05	–			
Smoking areas	3.50	2.143	–				

Ranking of environmental characteristics that contribute to environmental qualities in inpatient settings (in pairwise comparisons) (in order of most contribution to least contribution, with lower means indicating higher level of contribution).

Suicide Resistant:	<i>M</i>	<i>SD</i>	Other	Share bed	Share bath	Resistant	Visibility	Ligature			
Anti-ligature	1.55	0.872	0.001	0.001	0.001	0.05	0.05	–			
Visibility nurse	2.67	1.398	0.001	0.001	0.001	ns	–	–			
Resistant	2.70	0.869	0.001	0.001	0.001	–	–	–			
Shared bathrooms	3.93	0.918	0.001	ns	–	–	–	–			
Shared bedrooms	4.38	0.993	0.001	–	–	–	–	–			
Other	5.77	1.031	–	–	–	–	–	–			
Positive Distraction:	<i>M</i>	<i>SD</i>	Other	Video	Exercise	Pet	Sports	TV	Books	Games	Music
Music systems	3.37	2.18	0.001	0.001	ns	ns	ns	ns	ns	ns	–
Games	3.67	1.884	0.001	0.001	ns	ns	ns	ns	ns	–	–
Books/magazines	4.44	1.865	0.001	0.001	ns	ns	ns	ns	–	–	–
Television	4.52	2.564	0.001	0.001	ns	ns	ns	–	–	–	–
Sports/recreation	4.67	2.20	0.001	0.05	ns	ns	–	–	–	–	–
Pet therapy	4.70	2.298	0.001	0.05	ns	–	–	–	–	–	–
Exercise equipment	4.76	2.291	0.001	0.05	–	–	–	–	–	–	–
Video game systems	6.44	2.022	0.001	–	–	–	–	–	–	–	–
Other	8.43	1.94	–	–	–	–	–	–	–	–	–
Staff Respite:	<i>M</i>	<i>SD</i>	Other	Nap room	Counsel	Exercise	Entrance	Outdoor			
Staff outdoor space	2.58	1.153	0.001	0.001	ns	ns	ns	–			
Staff entrance	2.89	1.58	0.001	0.05	ns	ns	–	–			
Exercise room	3.08	1.205	0.001	0.05	ns	–	–	–			
Staff counseling	3.37	1.346	0.001	ns	–	–	–	–			
Staff nap room	4.00	1.727	0.05	–	–	–	–	–			
Other	5.08	1.867	–	–	–	–	–	–			
Social Interaction:	<i>M</i>	<i>SD</i>	Other	Sports	Privacy	Outdoor	Therapy	Eating	Activity		
Shared activity	2.65	1.28	0.001	0.001	0.001	ns	ns	ns	–		
Shared eating	2.73	1.353	0.001	0.001	0.001	ns	ns	–	–		
Shared therapy	2.75	1.691	0.001	0.001	0.001	ns	–	–	–		
Shared outdoors	3.73	1.269	0.001	ns	ns	–	–	–	–		
Spaces for privacy	4.53	1.752	0.001	ns	–	–	–	–	–		
Shared recreation	4.62	1.581	0.001	–	–	–	–	–	–		
Other	7.00	0.000	–	–	–	–	–	–	–		
Autonomy:	<i>M</i>	<i>SD</i>	Other	Kitchen	Exercise	Outdoor	Entertain	Safety			
Personal safety	2.17	1.591	0.001	0.05	0.05	0.05	0.05	–			
Entertainment	3.12	1.365	0.001	ns	ns	ns	–	–			
Outdoor spaces	3.14	1.48	0.001	ns	–	–	–	–			
Exercise areas	3.28	1.105	0.001	ns	–	–	–	–			
Snack areas	3.29	1.214	0.001	–	–	–	–	–			
Other	6.00	0.000	–	–	–	–	–	–			

Inpatient observation/staff-patient interaction importance and effectiveness (pairwise comparison).

Importance	<i>M</i>	<i>SD</i>	Closed	Auditory	Camera	Open nurse	Window	1-on-1
One-on-one counsel	6.02	0.959	0.001	0.001	0.05	ns	ns	–
Window monitor	5.48	1.316	0.001	0.05	ns	ns	–	
Open nurse station	5.27	1.609	0.001	ns	ns	–		
Camera monitor	5.19	1.554	0.001	ns	–			
Auditory monitor	4.56	1.616	ns	–				
Closed nurse station	3.68	1.839	–					
Effectiveness	<i>M</i>	<i>SD</i>	Auditory	Closed	Camera	Window	Open nurs	1-on-1
One-on-one counsel	5.00	1.482	0.001	0.001	ns	ns	ns	–
Open nurse station	4.62	1.851	0.05	0.05	ns	ns	–	
Window monitor	4.48	1.686	ns	ns	ns	–		
Camera monitor	4.34	1.81	ns	ns	–			
Closed nurse station	3.57	1.943	ns	–				
Auditory monitor	3.54	1.747	–					

Architettura & variabili psicosociali come fattori di protezione dalla violenza e aggressività

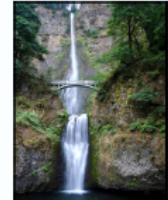
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Psychiatric ward design can reduce aggressive behavior[☆]

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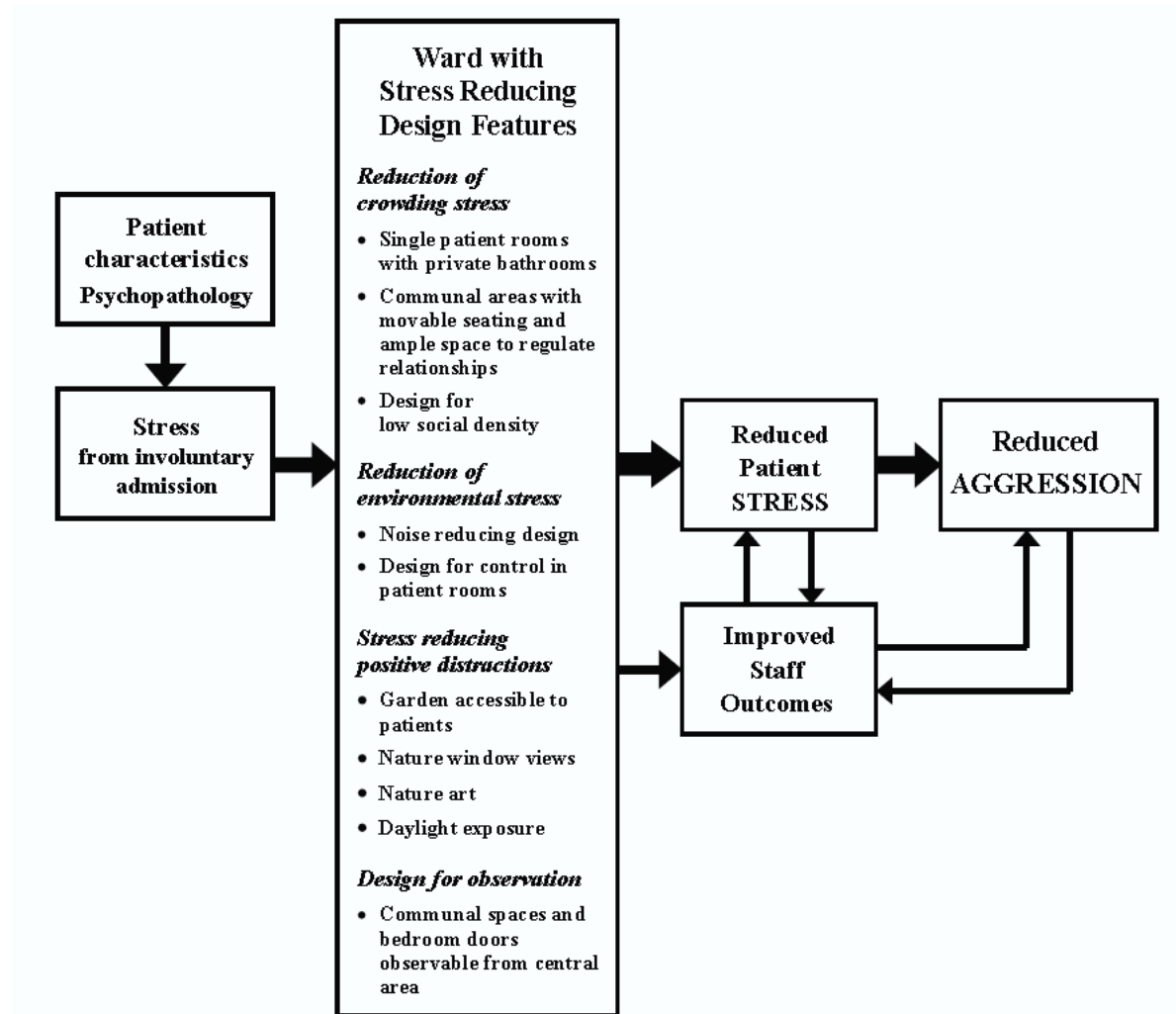
Psychiatric patients

ABSTRACT

The article describes a conceptual model proposing that aggression in psychiatric facilities may be reduced by designing the physical environment with ten evidence-grounded stress-reducing features. The model was tested in a newer hospital in Sweden having wards with nine of the ten features. Data on two clinical markers of aggressive behavior, compulsory injections and physical restraints, were compared with data from an older facility (replaced by the newer hospital) that had only one stress-reducing feature. Another hospital with one feature, which did not change during the study period, served as a control. The proportion of patients requiring injections declined ($p < 0.0027$) in the new hospital compared to the old facility but did not change in the control hospital. Among patients who received injections, the average number of injections declined marginally in the new hospital compared to the old facility, but increased in the control hospital by 19%. The average number of physical restraints (among patients who received at least one) decreased 50% in the new hospital compared to the old. These findings suggest that designing better psychiatric buildings using reasoned theory and the best available evidence can reduce the major patient and staff safety threat posed by aggressive behavior.



Un modello teorico per ridurre l'aggressività



Comparison of ward environments in Old, New, and Control hospitals with respect to stress-reducing environmental features in the conceptual model.

Stress reducing design features in model		Old hospital	New hospital	Control hospital
Reduction of crowding stress	Single bedrooms (number of 1-bed and multi-bed rooms per ward) ^a	1-bed: 8 4-bed: 2	1-bed: 10 2-bed: 2	1-bed: 2 2-bed: 1 4-bed: 2
	Private bathrooms	2	10	0
	Shared bathrooms	3	2	3
	Communal areas with movable seating and ample space to regulate relationships ^b	movable: no spacious: yes	movable: yes spacious: yes	movable: mixed spacious: no
	Number of seating/activity areas	6	11	3
	Low social density (fewer patients than rooms at 100% occupancy)	0.76 patient/room	0.40 patient/room	1.09 patient/room 1.00 (2005)
	Adjusted for average occupancy ^c	0.68 (2005)	0.36 (2007)	1.05 (2007)
Reduction of environmental stress	Noise reducing design	no	yes	no
	Design for control in patient rooms	no	yes	no
Stress reducing positive distractions	Garden accessible to patients	no	yes	no
	Nature window views	some	yes	no
	Nature art, not abstract	mixed	mixed	mixed
	Design for higher daylight exposure	no	yes	no
Design for observation	Observation from central area to bedroom doors and communal areas	bedroom drs: yes communal: no	bedroom drs: yes communal: yes	bedroom drs: yes communal: no
	Ward floor plan type	corridor-based	central area	corridor-based

^a Ward layouts and bedroom mix varied somewhat in Old and Control hospitals but not in New. Table 1 represents the environmental features of a representative or typical ward in each facility.

^b See Table 2 for space comparisons.

^c Occupancy rates: Old 2005, 89.7%; Control 2005, 91.3%; New 2007, 91.0%; Control 2007, 95.9%.

Comparison of spatial density (ward space per patient) in Old, New, and Control hospitals.

Ward space per patient	Old hospital	New hospital	Control hospital
Patient group size	16	14	12
Total ward space per patient at 100% occupancy (excluding staff work areas)	37.7 m ² (405.8 ft ²)	36.9 m ² (397.2 ft ²)	20.3 m ² (218.5 ft ²)
Space per patient in bedrooms and bathrooms	15.5 m ² (166.8 ft ²)	16.5 m ² (177.6 ft ²)	10.7 m ² (115.2 ft ²)
bedrooms only	11.4 m ² (122.7 ft ²)	13.5 m ² (145.3 ft ²)	9.2 m ² (99.0 ft ²)
bathrooms only	4.1 m ² (44.1 ft ²)	3.0 m ² (32.3 ft ²)	1.5 m ² (16.1 ft ²)
Space per patient in shared areas (excluding staff work areas)	22.2 m ² (239.0 ft ²)	20.5 m ² (220.7 ft ²)	9.6 m ² (103.3 ft ²)
corridors	10.1 m ² (108.7 ft ²)	6.9 m ² (74.3 ft ²)	4.7 m ² (50.6 ft ²)
communal seating and activity areas	12.1 m ² (130.2 ft ²)	13.6 m ² (146.4 ft ²)	4.9 m ² (52.7 ft ²)

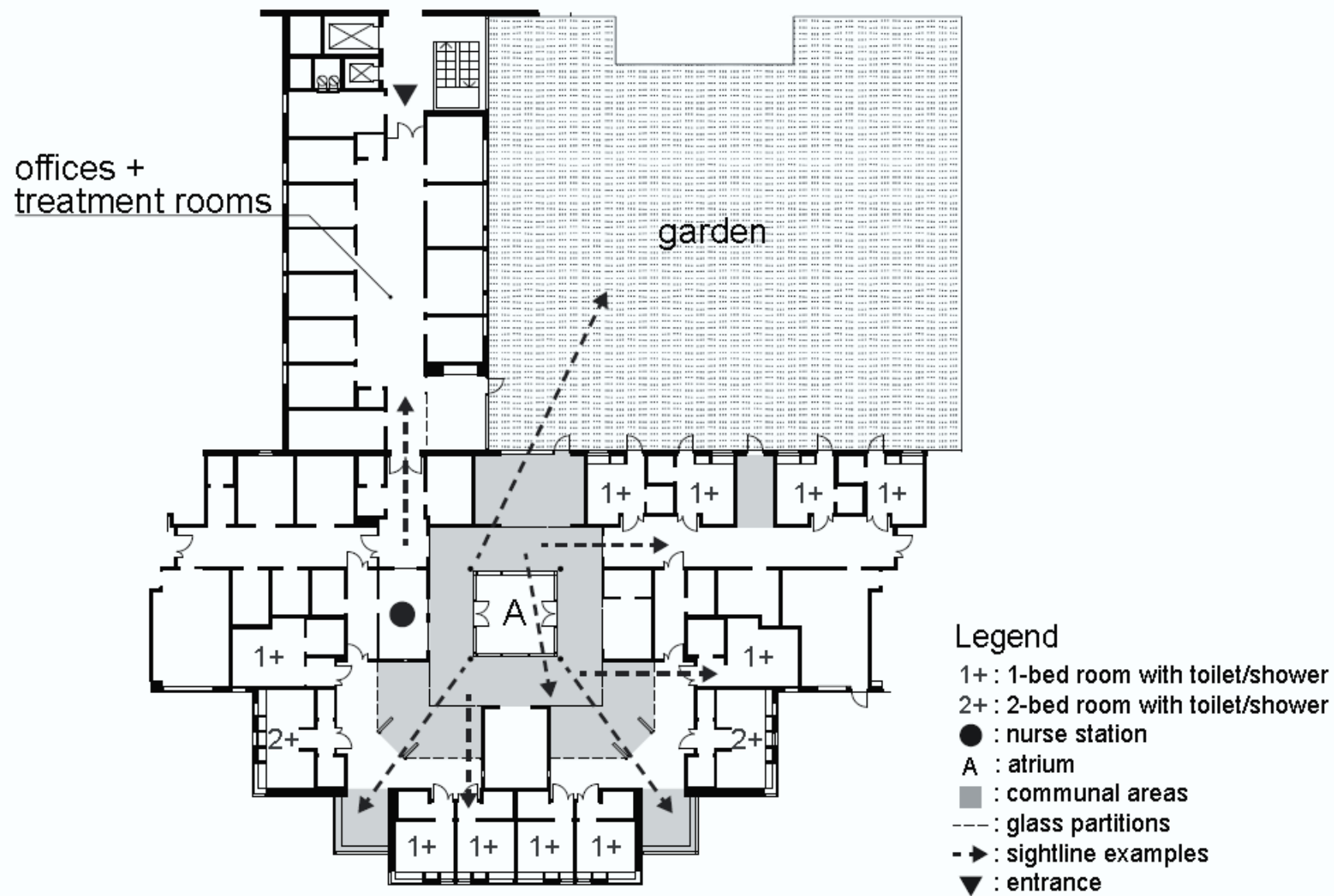


Fig. 6. One ward in New hospital. The floor layout arranges most patient rooms around a central area with an atrium. Staff moving within the central area can observe bedroom doors and communal spaces. New and Old hospitals were similar in total ward space per patient (spatial density) (Table 2) despite having very different floor layouts (central area versus corridor-dominated). Ward group size at 100% occupancy = 14 patients. Scale 1:500.

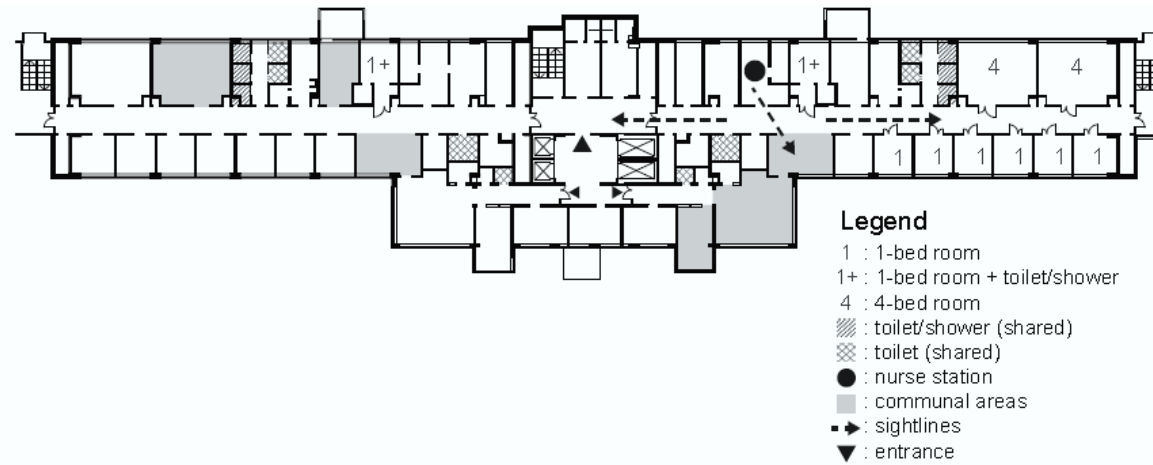


Fig. 7. One ward in Old hospital. The floor layout is corridor-based, enabling observation of bedroom doors and doors of most shared toilets and showers but not most seating areas and activity rooms. Ward group size at 100% occupancy = 16 patients. Scale 1:500.

Data for compulsory injections and physical restraints in Old, New, and Control hospitals.

Data for injections and physical restraints	Old hospital	New hospital	Control hospital	
Year	2005	2007	2005	2007
Estimated total number compulsory care patients	490 ± 15	470 ± 15	345 ± 15	300 ± 15
Number patients receiving injections	99 (20.2%)	63 (13.4%)	67 (19.4%)	73 (24.3%)
Number injections	189 (1.91/patient ^a)	115 (1.83/patient)	134 (2.00/patient)	174 (2.38/patient)
Number patients receiving physical restraints	56 (11.4%)	60 (12.7%)	70 (20.3%)	66 (22.0%)
Number physical restraints	250 (4.46/patient ^b)	135 (2.25/patient)	n/a	n/a

^a Average number of injections per patient among those who received at least one.

^b Average number of physical restraints per patient among those who received at least one.

Grazie

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