

## Environmental Design As A Non-Pharmacological Intervention

Patricia Buchain, PhD<sup>1</sup>; Debora Pastore Bassitt, MD, PHD<sup>1</sup>; Flavia Ranieri da Silveira<sup>2</sup>; Bruna Corrêa Scheidegger<sup>2</sup>; Tania Correa Toledo Ferraz Alves, MD, PhD<sup>1</sup>.

<sup>1</sup> Old Age Research Group (PROTER) Department and Institute of Psychiatry, Faculty of Medicine, University of São Paulo, São Paulo, Brazil; <sup>2</sup> Architecture, Flavia Ranieri, Belo Horizonte, Brazil.

Environmental redesign as a **non-pharmacological intervention /strategy** that transforms psychogeriatric spaces into active therapeutic components and functional learning laboratories for continuity of care at home.

### Background

The built environment functions as either a facilitator or a barrier to Activities of Daily Living (ADLs) and occupational engagement in older adults with cognitive impairment [1]. Poorly designed healthcare settings exacerbate disorientation and increase staff and caregiver burden [1,2]. Therefore, purposeful environmental design in psychogeriatric care serves as a valuable non-pharmacological strategy to enhance cognitive accessibility, functional engagement, and sensory regulation, mitigating behavioral symptoms physical and cognitive deficits [1,3].

### Objective

To describe an environmental redesign project as a non-pharmacological intervention in an integrated psychogeriatric care setting (inpatient unit and geriatric day hospital) at the Institute of Psychiatry, University of São Paulo Medical School, Brazil, based on dementia-friendly design principles.

### Method

This practice-based environmental redesign ,as a non-pharmacological intervention, was developed within routine clinical practice, informed by systematic observation, care protocols, and a narrative literature review. An interdisciplinary committee of 13 professionals (nurses, occupational therapists, architects, *psychiatrists* , a physiotherapist, a psychologist, a social worker, hospital engineers, and a project manager) analysed patient profiles, care routines, and staff workflows.To establish the patients profile, clinical tracking from January to September 2025 was analyzed. This included 80 patients from the Inpatient Unit and 35 from the Geriatric Day Hospital (GDH), mapping demographics, length of stay, and diagnostic distribution, using descriptive statistics (Table 1).The institutional area expanded from 419.74 m<sup>2</sup> to 522.31 m<sup>2</sup> through an iterative process guided by the 6 Fleming-Bennett dementia-friendly design principles: cognitive accessibility, orientation, sensory modulation, familiarity, autonomy, and dignity [3,4].

### Results

The redesign reconfigures the environment into an active component of care and an educational setting, transitioning to a specialized dual-structure layout (fig01). The primary modification physically separated inpatient beds from living and therapeutic areas, establishing a dedicated entrance for the Geriatric Day Hospital (GDH). This infrastructure dynamically accommodates 12 inpatients and 7 daily day-hospital slots, while offering a dedicated environment for caregiver support, education, and well-being. Key architectural features include discreet 360-degree nursing observation zones, an individualized dining area for behavioral management, and sensory regulation spaces with specialized armchairs. Central to this flexible layout are multipurpose spaces designed to expand or contract through adjustable configurations, minimizing stimuli when needed. These areas dynamically adapt based on clinical demands and social interaction needs. Every space incorporates a homelike design, transforming the facility into a functional laboratory for non-pharmacological care.

| Unit                   | Patients (N) & Caregivers                   | Demographics and Length of stay                                                           | Diagnostic Distribution                                                              |
|------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Inpatient Unit         | • 80 Patients<br>• 80 Registered Caregivers | • 75.0% Females<br>• Mean Age: 71 years<br>• Mean Length of Stay: 30.6 days               | • Mood Disorders: 60.0%<br>• Dementia: 25.0%<br>• Psychosis: 11.7%<br>• Others: 3.3% |
| Geriatric Day Hospital | • 35 Patients<br>• 35 Registered Caregivers | • 55.9% Females<br>• Mean Age: 71.82 years<br>• Mean Attendance: 14.5 daily slots (2x/wk) | • Mood Disorders: 55.9%<br>• Dementia: 29.4%<br>• Psychosis: 2.9%<br>• Others: 11.8% |

Table1. PROFILE FOR ARCHITECTURAL PROJECT (JAN-SEP 2025)

### Discussion

This project demonstrates a theory-informed, evidence-based approach to environmental design as a non-pharmacological intervention in integrated psychogeriatric care, aligning with contemporary recommendations [1]. To optimize these spaces, an interdisciplinary partnership between healthcare professionals and architects is fundamental [3]. This strategic design ensures that collective spaces possess the layout flexibility to accommodate individual adjustments, acknowledging diverse levels of functional and cognitive impairments and physical needs to enable truly person-centered interventions [4]. When assessing environmental demands, evaluations must span both individual and community levels to account for specific cognitive-functional declines alongside age-related changes [1,2]. This dual-structure layout establishes a practice-based model for specialized care [5]. Future phases will evaluate post-implementation outcomes related to patient functionality, engagement , behavioral symptoms, and caregiver burden.

**References:**  
1-Alzheimer's Disease International, Clare, L., & Jeon, Y. H. (2025). *World Alzheimer Report 2025: Reimagining life with dementia – the power of rehabilitation*. London, England: Alzheimer's Disease International.  
2-Fleming, R., & Bennett, K. (2020). *Dementia-Friendly Design: Principles and Evidence-Based Practice for Healthcare Environments*. London: Routledge.  
3-Grey, T., Xidous, D., & Kennelly, S. (2024). *Designing the Geriatric Day Hospital: Therapeutic Landscapes and Spatial Autonomy for Frail Older Adults*. *Health Environments Research & Design Journal (HERD)*, 17(2),145-1.  
4-Marquardt, G., Johnston, D., Schmiege, P., & Kuliga, S. (2022). Architectural Design of Inpatient Psychiatric Units for Older Adults: A Systematic Review of Environmental Interventions. *Journal of Environmental Psychology*, 81, 101812.  
5-Quirke, M., Bennett, K., Chau, H.-W., Preece, T., & Jamei, E. (2023). Environmental Design for People Living with Dementia. *Encyclopedia*, 3, 1038-1057.

AI Disclosure: The authors utilized Gemini (Google AI) for grammatical editing, translation assistance, and text formatting. The final scientific interpretation and drafting were critically reviewed and approved by the human authors.

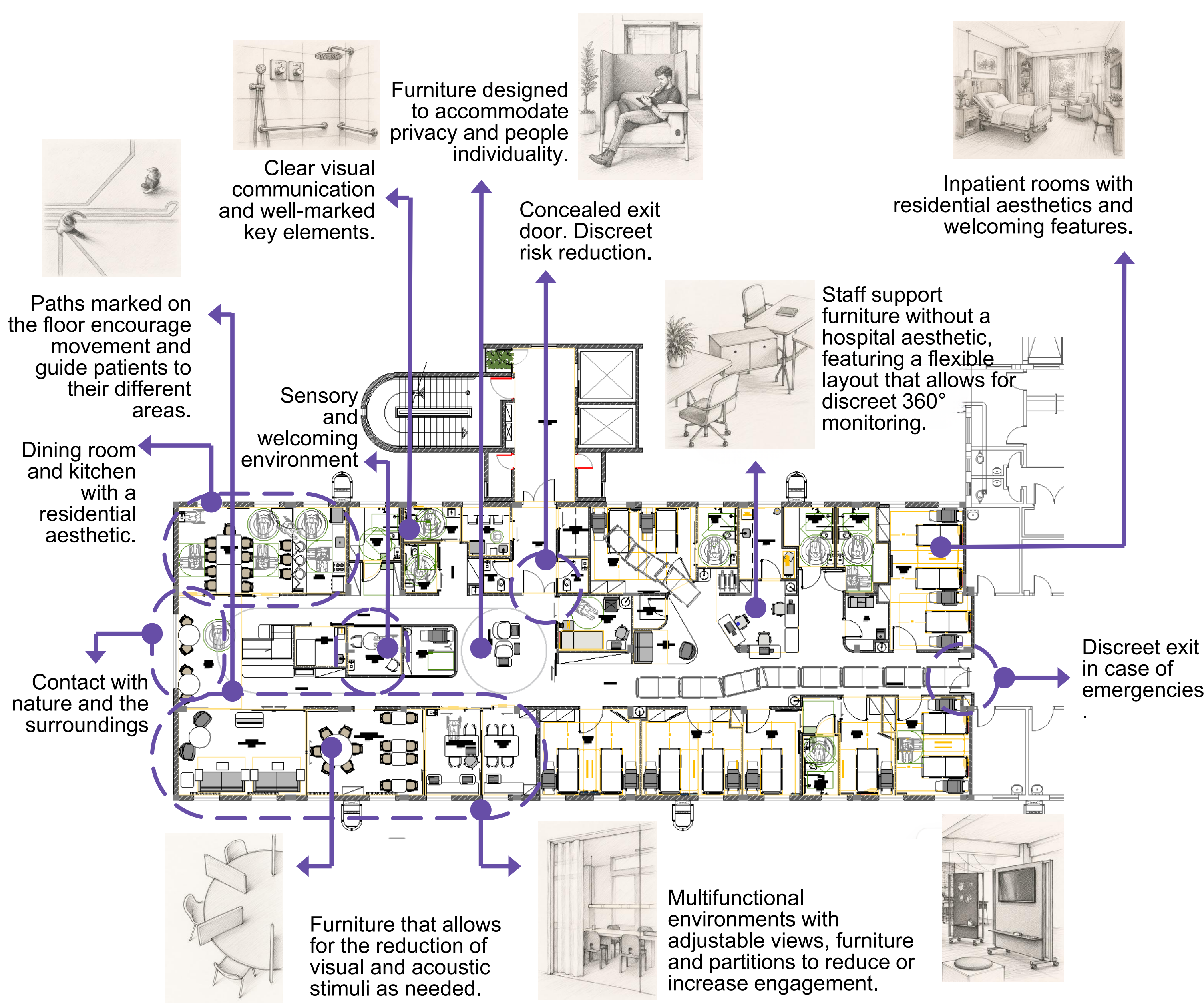


Fig.1 Final Architectural Floor Plan

### CONTACT



patricia.buchain@hc.fm.usp.br

ALZHEIMER'S ASSOCIATION | AAIC >26