FROM SENSORY STIMULATION TO MEANINGFUL ENGAGEMENT

A SYSTEMATIC REVIEW AND BIBLIOMETRIC MAPPING OF TOUCH, MULTISENSORY EXPERIENCE, AND DESIGN IN DEMENTIA CARE

Kahfiati Kahdar[1] · Deny Willy Junaidy[2] · Gregorius Prasetyo Adhitama[2] · Qoriah[3] · Indra Wibowo[4] · Debri Haryndia Putri[5]

[1]Craft and Tradition Research Group, ITB, [2]Human and Interior Research Group, ITB, [3]Humanities Research Group, ITB,
[4] School of Life Sciences and Technology, ITB · [5] Department of Architecture, Universitas Brawijaya

Abstract

This systematic review and bibliometric study examines how tactile-sensory engagement is conceptualized and translated into dementia-care design. A Scopus search in May 2026 yielded 108 English-language publications after screening. Studies were coded for intervention type, tactile component, engagement mode, outcomes and design implications. Sensory assessment (48%), passive sensory exposure (52%) and unspecified tactile components (37%) dominated. The proposed Tactile-Sensory Care Ecology Model reframes touch as embodied, relational engagement supported by calibration, affordance and mediation.

KEYWORDS dementia · touch · multisensory care · engagement · design ecology

Introduction

Touch is often treated as one element of general sensory stimulation. Yet receiving contact differs from actively exploring an object, interacting with caregivers, or recalling meaning through familiar materials. Existing studies rarely specify exactly what is touched, who initiates contact, or how context shapes the encounter. This review therefore shifts attention from the stimulus itself to the person's mode of engagement.

RESEARCH QUESTIONS

- How is tactile-sensory engagement represented in dementia-care research?
- How do engagement modes link interventions, outcomes and design?
- What principles support meaningful, person-centred sensory design?

SEARCH AND SELECTION (PRISMA)

4,205 records
Scopus: "sensory" AND "dementia"

↓

150 records
Refined: tactile OR haptic OR touch

↓

121 publications
Articles (91) and reviews (30)

↓

108 INCLUDED
English-language final corpus

Figure 1. PRISMA-guided selection, reconstructed from the source manuscript.

Research Method

PRISMA-guided systematic review, bibliometric mapping (VOSviewer) and thematic synthesis. Studies were coded for tactile modality, intervention, engagement, outcome and design translation. Descriptive cross-tabulations identify recurrent Engagement–Intervention–Outcome–Design (E–I–O–D) pathways; no pooled clinical effect was estimated.

EVIDENCE PROFILE · n = 108

Sensory assessment	52 (48%)
Multisensory care	31 (29%)
Passive exposure	56 (52%)
Touch not specified	40 (37%)

Categories are from different coding dimensions; percentages are not additive.

KEYWORD CO-OCCURRENCE

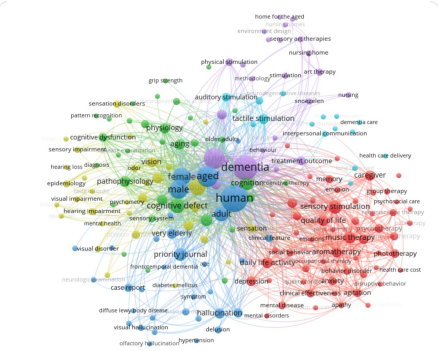


Figure 2. Six interconnected clusters span sensory assessment, cognitive mechanisms, care practices and design.

ENGAGEMENT MODES

Passive sensory exposure	52%
Non-engagement evidence	13%
Active tactile exploration	12%
Facilitated engagement	11%
Technology-mediated	9%
Meaningful engagement	3%

RESULT DIRECTION Mixed 36% | Supportive 35%

Results & Discussion

52	30	15%
E–I–O–D pathways	singletons	intervention papers

The literature remains fragmented: sensory assessment and passive exposure dominate, while active and meaning-oriented forms of engagement receive limited attention.

TACTILE-SENSORY CARE ECOLOGY MODEL

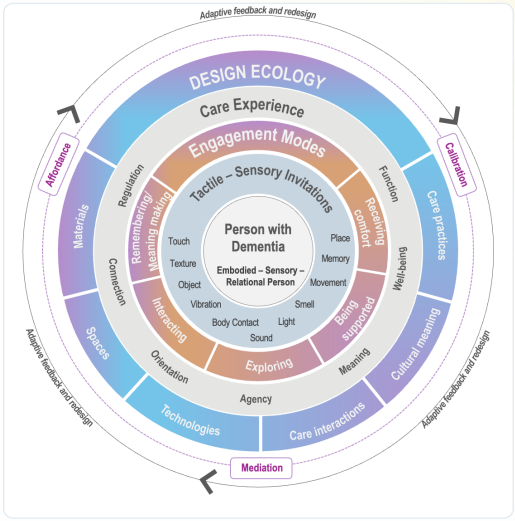


Figure 3. A proposed conceptual model, not an empirically validated causal pathway.

THREE DESIGN ROLES

CALIBRATION
Match sensory intensity, timing and complexity to individual thresholds.

AFFORDANCE
Make sensory invitations legible, safe and actionable for each person.

MEDIATION
Support consent, familiarity, caregivers and cultural meaning.

CONCLUSION

The central contribution is a shift from stimulus delivery to embodied, relational engagement. Touch gains significance when people can receive, explore, interact, remember and make meaning through sensory invitations. Materials, spaces, technologies, care practices and culture shape these encounters. The ecology model offers a framework for person-centred design and future evaluation.

LIMITATIONS Scopus and English only; mixed evidence roles; dominant-category coding.