

Impact of non-pharmacological nursing interventions on behavioral and psychological symptoms of dementia (BPSD) in institutionalized older adults: A systematic review

Navdeep Singh^{*1}, Sanya², Vishal³, Ayush⁴, Gurvinder⁵

^{*1}*Principal, Indus College of Nursing, Khanda Kheri, Hansi, Haryana, India*

²*Clinical Instructor and Scholar, Indus College of Nursing, Khanda Kheri, Hansi, Haryana, India*

³⁻⁵*Research Scholar, Indus College of Nursing, Khanda Kheri, Hansi, Haryana, India*

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Abstract:

Behavioural and Psychological Symptoms of Dementia (BPSD), including agitation, aggression, anxiety, depression, wandering, apathy, sleep disturbances, hallucinations, and resistance to care, are common among older adults with dementia and represent a major challenge in institutional care. Pharmacological treatment may provide limited symptomatic benefit and is associated with important adverse effects in frail older adults. Consequently, non-pharmacological interventions are increasingly recommended as the first-line approach to BPSD management. To systematically evaluate the impact of non-pharmacological nursing interventions on BPSD among institutionalized older adults with dementia. The review included 26 eligible studies evaluating a range of non-pharmacological interventions in nursing homes, residential aged-care facilities, and long-term care institutions. Overall, individualized and person-centered interventions were associated with reductions in agitation, aggression, anxiety, depressive symptoms, and overall behavioral disturbance. Music therapy, reminiscence therapy, sensory stimulation, structured activities, and therapeutic communication also demonstrated beneficial effects on selected BPSD outcomes. Improvements were additionally reported in emotional well-being, communication, social engagement, sleep quality, and quality of life. Multi-component interventions appeared to provide broader benefits when tailored to residents' cognitive status, personal history, preferences, and behavioral triggers. Some studies also reported reductions in psychotropic medication use and restrictive behavioral management. However, substantial heterogeneity was observed in intervention duration, staff training, outcome measures, and institutional resources. Non-pharmacological nursing interventions represent a safe, person-centered, and clinically valuable approach to managing BPSD among institutionalized older adults. Individualized interventions integrated into routine nursing care appear particularly beneficial. Further high-quality studies are required to establish standardized protocols, long-term effectiveness, comparative effectiveness, and feasibility in low- and middle-income countries.

Keywords:

Dementia; Behavioral and Psychological Symptoms of Dementia; BPSD; Non-Pharmacological Interventions; Institutionalized Older Adults; Gerontological Nursing; Person-Centered Care; Systematic Review.

1. Introduction:

Dementia is a progressive neurocognitive syndrome characterized by deterioration in memory, executive functioning, language, attention, and other cognitive abilities severe enough to interfere with independent functioning. With rapid population ageing, dementia has emerged as a major global health and social care challenge. In addition to cognitive decline, a substantial proportion of individuals with dementia develop neuropsychiatric manifestations collectively known as **Behavioral and Psychological Symptoms of Dementia (BPSD)**. These include agitation, aggression, anxiety, depression, apathy, wandering, sleep disturbance, hallucinations, delusions, disinhibition, and resistance to care (Cerejeira et al., 2019).

BPSD affect up to 90% of individuals with dementia at some point during the disease trajectory and are particularly prevalent among residents of nursing homes and long-term care facilities. These symptoms adversely affect quality of life, increase the complexity of nursing care, contribute to functional decline, and may lead to increased use of psychotropic medications and restrictive practices (Brodaty et al., 2018). Institutionalized older adults are especially vulnerable because advanced cognitive impairment frequently coexists with multimorbidity, physical dependency, communication difficulties, sensory impairment, and environmental stress.

The development of BPSD is multifactorial. Progressive neurological changes reduce an individual's capacity to process environmental stimuli, communicate needs, and regulate emotional responses. Behavioral symptoms may therefore be triggered or intensified by pain, infection, constipation, sleep disturbance, unfamiliar caregivers, excessive noise, social isolation, rigid institutional routines, or unmet psychological needs (Scales et al., 2018). Consequently, agitation or aggression should not automatically be interpreted as deliberate non-compliance but may represent an expression of physical or emotional distress.

Historically, BPSD were frequently managed using antipsychotics, sedatives, and other psychotropic medications. Although pharmacological treatment may be required in selected cases involving severe distress or immediate risk, its routine use in frail older adults is associated with significant concerns, including sedation, falls, cerebrovascular events, worsening cognitive impairment, and increased mortality. These limitations have contributed to a major shift toward non-pharmacological approaches as the preferred first-line strategy whenever clinically appropriate (Livingston et al., 2020).

Non-pharmacological interventions encompass a broad range of person-centered, psychosocial, behavioral, sensory, activity-based, and environmental strategies. Common interventions include person-centered care, music therapy, reminiscence therapy, cognitive stimulation, validation therapy, multisensory stimulation, physical activity, environmental modification, therapeutic communication, and individualized behavioral management. Rather than simply suppressing behavior, these interventions aim to identify and address underlying triggers and unmet needs.

Nurses play a central role in implementing these approaches because of their continuous interaction with residents. They are well positioned to recognize changes in behavior, assess potential physical and environmental causes, identify individual triggers, implement appropriate interventions, and monitor outcomes. The effectiveness of non-pharmacological care therefore depends not only on the intervention itself but also on the quality of nursing assessment, individualization, staff competency, and consistency of implementation.

Person-centered care provides the conceptual foundation for many of these interventions. It recognizes that individuals with dementia retain their identity, preferences, emotional needs, personal history, and right to dignity despite progressive cognitive impairment (Kitwood, 1997). Knowledge of a resident's previous occupation, cultural background, daily routines, preferred music, interests, and sources of comfort can help nurses develop interventions that are personally meaningful.

The institutional environment also influences behavioral symptoms. Excessive noise, bright lighting, frequent staff changes, unfamiliar routines, and lack of meaningful activity may increase confusion and agitation. The **Progressively Lowered Stress Threshold model** proposes that individuals with dementia become increasingly sensitive to environmental demands as their cognitive ability to process stress declines. Reducing avoidable stressors and matching environmental demands to the resident's abilities may therefore improve behavioral stability (Scales et al., 2018).

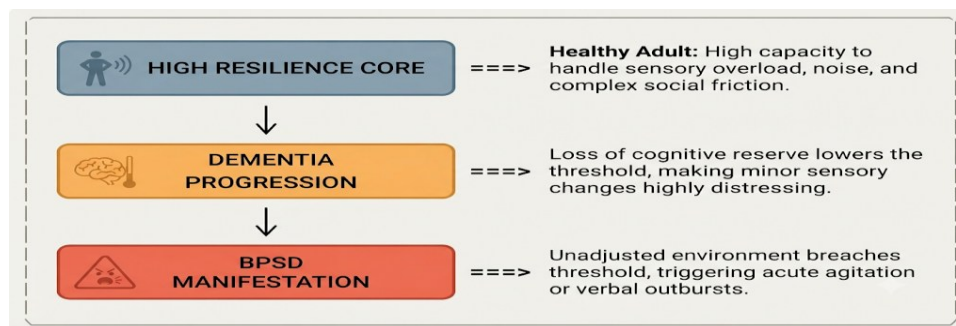


Figure. 1: The progressively lowered stress threshold model

Despite growing support for non-pharmacological care, considerable variation exists in intervention type, duration, frequency, individualization, staff training, and outcome measurement. Consequently, systematic

evaluation of the available evidence is required to identify the interventions most consistently associated with improvements in BPSD.

Therefore, this systematic review aimed to evaluate the impact of non-pharmacological nursing interventions on Behavioral and Psychological Symptoms of Dementia among institutionalized older adults and to identify implications for evidence-based nursing practice.

2. Materials and methods:

2.1. Study design:

A systematic review design was adopted to identify, evaluate, and synthesize evidence concerning non-pharmacological nursing interventions for BPSD among institutionalized older adults.

Table 1: PICO Framework of the Systematic Review

Component	Description
Population	Institutionalized older adults aged ≥ 60 years diagnosed with dementia
Intervention	Nurse-led, nurse-delivered, or nursing-supported non-pharmacological interventions
Comparison	Usual care, standard institutional care, control condition, or alternative intervention
Outcomes	Agitation, aggression, anxiety, depression, wandering, sleep disturbance, overall BPSD severity, quality of life, and psychotropic medication use

2.2. Eligibility criteria:

Eligible studies included peer-reviewed original research involving institutionalized adults aged 60 years or older with dementia. Studies were required to evaluate a non-pharmacological intervention relevant to nursing practice and report at least one behavioral, psychological, or related clinical outcome. The review considered interventions delivered in nursing homes, residential aged-care facilities, long-term care institutions, and specialized dementia care settings.

Studies focusing exclusively on pharmacological treatment, non-dementia populations, younger populations, or community settings without an institutional care component were excluded. Conference abstracts, editorials, commentaries, and studies without sufficient outcome information were also excluded.

2.3. Search strategy and study selection:

A systematic literature search was undertaken using combinations of terms related to dementia, BPSD, institutional care, nursing, and non-pharmacological interventions. Search terms included “dementia,” “BPSD,” “behavioral and psychological symptoms of dementia,” “agitation,” “institutionalized elderly,” “nursing home,” “long-term care,” “non-pharmacological intervention,” “nursing intervention,” “person-centered care,” “music therapy,” “reminiscence therapy,” “cognitive stimulation,” and “multisensory stimulation.”

Records were screened sequentially by title and abstract, followed by full-text eligibility assessment. Studies meeting the predefined inclusion criteria were included in the final synthesis.

2.4. Data extraction and outcomes:

Data were extracted regarding study characteristics, participant population, institutional setting, intervention type, duration, outcome measures, and principal findings. The primary outcomes were agitation, aggression, anxiety, depression, wandering, sleep disturbance, psychotic symptoms, and overall BPSD severity. Secondary outcomes included quality of life, emotional well-being, social engagement, communication, functional outcomes, and psychotropic medication use.

2.5. Data synthesis:

A narrative synthesis was undertaken because of substantial heterogeneity in intervention types, duration, outcome measures, and institutional settings. Findings were categorized according to intervention type and principal clinical outcomes. A formal meta-analysis was not performed.

2.6. Ethical considerations:

Ethical approval was not required because the review was based exclusively on previously published literature and involved no direct contact with human participants or access to confidential patient information.

3. Analysis:

3.1. Overview of the included evidence:

The systematic review included **26 eligible studies** evaluating non-pharmacological interventions for the management of Behavioral and Psychological Symptoms of Dementia among institutionalized older adults. The studies were conducted in nursing homes, residential aged-care facilities, long-term care institutions, and specialized dementia care settings. The reviewed interventions included person-centered care, music therapy, reminiscence therapy, cognitive stimulation, validation therapy, multisensory stimulation, structured physical activity, environmental modification, therapeutic communication, and multi-component behavioral programmes.

Considerable variation was observed across the studies in intervention duration, frequency, delivery format, participant characteristics, and outcome measures. Nevertheless, the overall evidence demonstrated a favorable effect of non-pharmacological approaches on several behavioral and psychological outcomes. The most consistent improvements were observed in agitation, aggression, anxiety, depressive symptoms, emotional well-being, social engagement, and overall behavioral disturbance.

Table. 2: Major Non-Pharmacological Nursing Interventions and Their Reported Outcomes

Intervention	Main Components	Principal Target	Reported Outcomes
Person-centered care	Individualized routines, life-history assessment, preference-based care	Agitation, aggression, resistance to care	Reduced behavioral distress and improved well-being
Music therapy	Preferred music, singing, individual or group sessions	Agitation, anxiety, depression	Reduced agitation and anxiety; improved mood
Reminiscence therapy	Life-story discussion, photographs, familiar objects, music	Depression, apathy, social withdrawal	Improved communication, mood, and social engagement
Cognitive stimulation	Structured memory, language, orientation, and group activities	Cognitive decline, reduced engagement	Improved cognitive and social participation
Validation therapy	Empathetic communication and acknowledgment of emotional experience	Anxiety, confusion, resistance to care	Reduced distress and improved interaction
Multisensory stimulation	Controlled visual, auditory, tactile, and other sensory stimuli	Agitation, anxiety, restlessness	Increased relaxation and reduced behavioral symptoms
Structured physical activity	Walking, exercise, movement, and recreational activities	Restlessness, sleep problems, functional decline	Improved mobility, sleep, and behavioral regulation
Environmental modification	Noise reduction, improved lighting, orientation cues, familiar surroundings	Confusion, wandering, agitation	Reduced environmental stress and improved behavioral stability
Multi-component interventions	Combination of person-centered, psychosocial, sensory, and environmental strategies	Multiple BPSD domains	Broader improvements in behavioral symptoms and quality of life

3.2. Effects on agitation and aggression:

Agitation was among the most frequently evaluated BPSD outcomes. It included restlessness, pacing, repetitive vocalization, resistance to care, verbal aggression, and physical aggression. Across the reviewed evidence, person-centered care and individualized psychosocial interventions were consistently associated with reductions in the frequency or severity of agitation.

Music-based interventions also demonstrated favorable effects, particularly when music was selected according to individual preferences. Familiar music appeared to promote emotional comfort, redirect attention, and reduce psychological arousal. Similarly, multisensory stimulation and environmental modification helped

reduce agitation by limiting excessive sensory demands and creating a calmer care environment.

Therapeutic communication and behavioral de-escalation were particularly relevant to aggression and resistance to care. Calm communication, short and understandable instructions, avoidance of unnecessary confrontation, and redirection toward familiar or preferred activities helped prevent escalation. Overall, the evidence indicated that agitation management was most effective when nursing personnel identified the individual triggers underlying the behavior rather than applying a standardized response to all residents.

3.3. Effects on anxiety, depression, and emotional well-being:

Several interventions demonstrated beneficial effects on anxiety, depressive symptoms, and emotional well-being. Music therapy, reminiscence therapy, validation-based communication, and meaningful activities were among the approaches most frequently associated with improvements in mood.

Reminiscence therapy promoted discussion of meaningful life experiences through photographs, music, familiar objects, and personal memories. This approach appeared to support emotional expression, reinforce personal identity, and increase social interaction. Music therapy similarly provided opportunities for emotional regulation and engagement, particularly when interventions were individualized.

Person-centered care contributed to emotional well-being by allowing greater flexibility in daily routines and recognizing individual preferences. Residents who received individualized care were less likely to experience unnecessary distress associated with rigid institutional routines or unfamiliar care practices.

3.4. Effects on communication and social engagement:

Improved communication and social interaction were reported following reminiscence therapy, cognitive stimulation, music-based activities, and structured group interventions. These approaches provided residents with opportunities for meaningful participation and interpersonal engagement.

Social engagement is particularly important in institutional dementia care because prolonged inactivity and isolation may contribute to apathy, depression, and worsening behavioral symptoms. Structured activities that matched residents' remaining abilities and personal interests were more likely to promote sustained participation than generic activities.

3.5. Effects on wandering, sleep, and quality of life:

The evidence concerning wandering and sleep disturbance was less consistent than that for agitation. Nevertheless, structured daytime activity, physical exercise, predictable routines, and environmental modification showed potential benefits. Physical activity may improve sleep by increasing daytime engagement, while environmental approaches such as reduced nighttime noise and appropriate lighting may support more stable sleep-wake patterns.

Wandering appeared to require individualized assessment because it could reflect anxiety, boredom, searching behavior, discomfort, or a previous lifelong routine. Interventions aimed at identifying the meaning and trigger of wandering were considered more appropriate than purely restrictive approaches.

Overall, improvements in quality of life were most frequently associated with comprehensive and individualized interventions. Programmes that combined meaningful activity, supportive communication, environmental adaptation, and person-centered care produced broader benefits than interventions focused solely on controlling a single symptom.

3.6. Psychotropic medication use and overall effectiveness:

Several studies indicated that structured non-pharmacological care could reduce reliance on psychotropic medications and restrictive behavioral management. When nursing teams were trained to identify triggers and use individualized alternatives, reductions in antipsychotic medication use, physical restraint, or crisis-based interventions were reported in some settings.

However, the magnitude of benefit varied across interventions and populations. The evidence did not identify one intervention as universally superior for all individuals or all BPSD manifestations. Instead, the most consistent finding was that **individualization, staff competency, and integration into routine care were central determinants of effectiveness.**

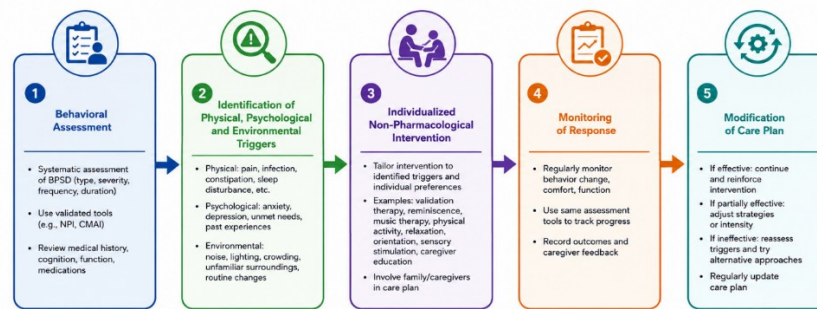


Figure. 3: Integrated Person-Centred Management Pathway for BPSD

Table. 3: Overall Effects of Non-Pharmacological Nursing Interventions on Major Outcomes

Clinical Outcome	Overall Evidence	Interventions Showing Particular Benefit
Agitation	Consistent improvement	Person-centred care, music therapy, multisensory stimulation
Aggression	Improvement reported	Person-cantered care, therapeutic communication, environmental modification
Anxiety	Generally improved	Music therapy, validation therapy, sensory interventions
Depressive symptoms	Improvement reported	Reminiscence therapy, music therapy, meaningful activities
Wandering	Variable improvement	Environmental modification and individualized activity
Sleep disturbance	Improvement in selected studies	Physical activity, structured routines, environmental management
Communication	Generally improved	Reminiscence, validation, and person-centred communication
Social engagement	Consistent positive effect	Group activities, music, reminiscence, cognitive stimulation
Quality of life	Overall improvement	Individualized and multi-component interventions
Psychotropic medication use	Reduction in some studies	Comprehensive person-cantered behavioral programmes

Overall, the results demonstrated that non-pharmacological nursing interventions were associated with favorable outcomes across multiple BPSD domains. Person-centered and multi-component approaches appeared particularly valuable because they addressed the complex interaction between cognitive impairment, physical health, psychological needs, personal history, and the institutional environment.

The limited evidence from low- and middle-income countries represents another important gap. Most existing research has been conducted in comparatively well-resourced settings. Differences in staffing, institutional infrastructure, cultural practices, family involvement, and resource availability may influence intervention feasibility. Further research is therefore required to evaluate culturally appropriate and resource-sensitive models, particularly in countries such as India.

Overall, the evidence supports a transition from reactive behavioral control toward proactive, individualized nursing care. Behavioral symptoms should be interpreted as clinically meaningful expressions requiring assessment rather than simply as problems requiring suppression. This approach can improve resident well-being while preserving dignity and potentially reducing unnecessary pharmacological and restrictive interventions.

3.7. Implications for nursing practice:

The findings have direct implications for nurses working with institutionalized older adults with dementia. Behavioral changes should prompt systematic assessment of possible physical, psychological, interpersonal, and environmental causes. Before initiating behavioral management, nurses should consider pain, infection, constipation, hunger, thirst, fatigue, sleep disturbance, medication effects, sensory impairment, environmental overstimulation, and unmet emotional needs.

Non-pharmacological interventions should be selected according to the resident's cognitive status, behavioral pattern, personal history, cultural background, preferences, and previous response to interventions. Effective

strategies should be documented clearly and communicated across shifts to ensure consistency of care. Staff education is essential for successful implementation. Training should include dementia and BPSD assessment, person-centered care, therapeutic communication, recognition of physical triggers, environmental management, and behavioral de-escalation. Institutional policies should also support individualized care and reduce unnecessary reliance on physical or chemical restraints.

Interdisciplinary collaboration among nurses, physicians, psychologists, rehabilitation professionals, activity coordinators, pharmacists, and family members can further improve care planning. Families may provide valuable information about the resident's life history, preferences, routines, and previously effective calming strategies.

3.8. Strengths and limitations:

This review provides a focused synthesis of non-pharmacological nursing interventions relevant to institutional dementia care and considers a broad range of behavioral, psychological, and quality-of-life outcomes. Its emphasis on nursing practice and individualization strengthens its clinical relevance.

However, several limitations should be considered. Restriction to English-language publications may have introduced language bias, while publication bias may have favored studies reporting positive findings. Considerable heterogeneity in intervention protocols, participant characteristics, treatment duration, and outcome measures limited direct comparison and prevented quantitative pooling. Blinding was also difficult in many non-pharmacological intervention studies, potentially increasing the risk of performance or detection bias.

The limited number of studies from low- and middle-income countries restricts the generalizability of findings to resource-constrained settings. Future studies should use standardized intervention descriptions, validated outcome measures, longer follow-up periods, and culturally adapted protocols.

4. Discussion:

This systematic review indicates that non-pharmacological nursing interventions can contribute meaningfully to the management of BPSD among institutionalized older adults with dementia. Across the reviewed evidence, beneficial effects were observed particularly for agitation, aggression, anxiety, depressive symptoms, communication, social engagement, and quality of life. These findings support the increasing emphasis on non-pharmacological strategies as an important first-line component of dementia care.

A central finding was the importance of **person-centered care**. BPSD do not arise solely from progressive neurological deterioration; they may also reflect physical discomfort, environmental stress, communication difficulties, and unmet psychological needs. Consequently, the same visible behavior may have different causes in different residents. An individualized approach is therefore essential.

Person-centered care provides a framework for understanding the individual behind the behavioral symptom. Information regarding life history, previous occupation, cultural background, daily routines, interests, and personal preferences can guide intervention selection. This may explain why individualized programmes frequently produced more favorable outcomes than standardized activities.

Music therapy demonstrated beneficial effects particularly for agitation, anxiety, and mood. Familiar music may promote emotional regulation, stimulate preserved memories, and provide a sense of familiarity within an institutional environment. However, the intervention should be individualized because inappropriate music or excessive sensory stimulation may increase distress in some residents.

Reminiscence therapy was associated with improvements in mood, communication, and social interaction. By using photographs, familiar objects, music, and discussion of meaningful experiences, reminiscence interventions may reinforce personal identity and provide opportunities for emotional expression. These benefits are particularly relevant in institutional settings, where residents may experience disruption of familiar environments and social roles.

The findings also highlight the importance of environmental modification. Individuals with dementia may have a reduced ability to process excessive or unfamiliar sensory information. Loud noise, bright lighting, overcrowding, frequent changes in caregivers, and rigid routines may therefore precipitate agitation or confusion. Relatively simple modifications to the physical and social environment may reduce avoidable stress and improve behavioral stability.

Another important finding was the central role of nursing personnel. Non-pharmacological interventions are unlikely to achieve sustained effects when delivered as isolated activities without integration into daily care. Nurses and direct-care staff continuously influence the resident's environment through communication, routines, behavioral responses, and care interactions. Staff education in person-centered care, behavioral assessment, therapeutic communication, and de-escalation is therefore essential.

The potential reduction in psychotropic medication use is also clinically important. Older adults with dementia are particularly vulnerable to medication-related adverse effects, including sedation, falls, and functional deterioration. Non-pharmacological interventions may provide safer alternatives for selected behavioral symptoms. However, sudden behavioral deterioration should always prompt assessment for potentially reversible medical causes such as pain, infection, constipation, dehydration, medication effects, or delirium. Despite the generally positive findings, considerable heterogeneity was observed across the evidence. Intervention protocols, treatment duration, frequency, staff training, participant characteristics, and outcome measures varied substantially. This variability limits direct comparison between interventions and prevents identification of a single universally superior approach.

The findings instead suggest that the effectiveness of non-pharmacological care depends on matching the intervention to the resident's individual needs and the specific behavioral trigger. Multi-component programmes may be particularly valuable because BPSD frequently arise from multiple interacting biological, psychological, and environmental factors.

5. Conclusion:

Non-pharmacological nursing interventions represent an important, person-centered approach to managing Behavioral and Psychological Symptoms of Dementia among institutionalized older adults. Person-centered care, music therapy, reminiscence therapy, cognitive stimulation, validation therapy, multisensory stimulation, physical activity, environmental modification, and therapeutic communication demonstrated beneficial effects across different behavioral and psychosocial outcomes.

The available evidence indicates that intervention effectiveness depends substantially on individualization, consistent implementation, staff competency, and integration into routine nursing care. Rather than focusing exclusively on suppressing behavioral symptoms, nurses should assess potential physical discomfort, unmet psychological needs, personal preferences, and environmental triggers.

Although further high-quality research is needed to establish standardized protocols and long-term effectiveness, the current evidence supports the integration of individualized non-pharmacological strategies into institutional dementia care. Such approaches may reduce behavioral distress, improve quality of life, preserve dignity, and reduce unnecessary reliance on psychotropic medication and restrictive practices.

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