abstract

Strategies such as simulated presence therapy, pet therapy, light therapy, validation therapy, music, massage, therapeutic touch, aromatherapy, and multisensory stimulation have shown promising results in decreasing physical aggression, physical nonaggression, verbal aggression, and verbal nonaggression in older adults with dementia. Further research is needed to identify which strategies are most effective in managing symptoms of agitation associated with the different types of dementia and at different levels of cognitive impairment.

Key words: *Alzheimer's disease, dementia, nonpharmacological strategies, agitation, aggression, behaviour*

Nonpharmacological Management of Agitated Behaviours Associated with Dementia

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Introduction

Eight percent of Canadians 65 years of age and older and 35% of those over the age of 85 have Alzheimer's disease and related dementias (ADRD). The average duration of dementia is 6.7 years for women and 4.6 years for men. Half of those with ADRD live in the community with a spouse, other family members, or friends, while the other half are cared for in institutions.[1] Behavioural disturbances are very common and increase distress for those with ADRD, increase the strain for informal caregivers (often resulting in the need for institutional care), and are potentially dangerous for other residents and staff. The most challenging of the behavioural disturbances is agitation, which encompasses four domains (Table 1).[2]

Nonpharmacological approaches have several advantages. They address the psychosocial and/or environmental reason(s) for the agitation, and compared to pharmaceutical interventions they avoid potential side effects, drug-drug interactions, and masking of behaviour that may serve as a signal for a need.[2] The purpose of this review is, therefore, to assess and summarize research evidence on the efficacy of nonpharmacological strategies in managing agitated behaviour associated with ADRD.

Theoretical Models

Relevant to this review are two theoretical models that conceptualize behavioural disturbances associated with dementia: the unmet psychosocial needs model and the reduced stress–threshold model.[3] Interventions aimed at addressing psychosocial unmet needs of those with dementia (e.g., sensory deprivation, boredom, and loneliness) provide sensory stimulation, activities, and social contacts. According to the reduced stress–threshold model, persons

Table 1: Four Domains of Agitation

Domain	Examples
Physical aggression	Hitting, kicking, biting
Physical nonaggression	Motor restlessness
Verbal aggression	Screaming, cursing
Verbal nonaggression	Constant repetition of sentences or requests

with dementia progressively lose their coping abilities and perceive their environment as more and more stressful. At the same time their stress threshold decreases, resulting in anxiety and behavioural disturbances. Interventions based on this model aim to reduce stimulation and promote relaxation.[2] The interventions included in this review are categorized according to these two models (Table 2).

Music, simulated presence, bright light, and aromatherapy are commonly used interventions, as are skill training, pet therapy, validation therapy, hand massage, therapeutic touch, and multisensory stimulation.

Interventions Based on the Unmet Psychosocial Needs Model

Simulated Presence Therapy

Two studies reported conflicting results regarding the efficacy of simulated presence therapy during episodes of agitation.[6,7] This nonpharmacological intervention was presented to residents in long-term care settings as an audiotape of a relative's portion of a telephone conversation about cherished memories, with pauses that allowed the resident to respond. In a study of 49 patients with ADRD, Camberg *et al.*[6] found that agitation decreased by 67% during the audio-taped simulated presence compared to usual care (59%) and placebo (46%).

In another study, Miller *et al.*[7] found no significant improvement in language-communication scores among seven study subjects while the social interaction and attention-awareness scores showed improvement. However, caution must be used in interpreting these results as the study's sample size was too small to be able to draw any conclusions.

A third study (n=32) presented a videotape of a family member talking to the older person during episodes of verbally disruptive behaviour.[8] This behaviour decreased by 46% compared to music (31%) and no treatment (16%), but was not as effective as *in vivo* social interaction (56%).

It is important to note that five participants refused the audiotape simulated presence therapy more than 50% of the time,[6] which underscores the importance of tailoring the intervention to specific individuals. Simulated presence via audiotapes should not be offered to older adults who may be too agitated to attend to the tape or patients who do not have a strong bond with the family member who appears on the tape. The videotapes appeared to be most effective for older adults manifesting hallucinations; the video may have oriented them back to reality.

Pet Therapy

Though there is anecdotal evidence that supports pet therapy intervention in long-term care settings for reducing loneliness, lowering blood pressure, and alleviating depression, the use of pet therapy for treating behavioural disturbances is an uncharted area (Figure 1). One study observed that the presence of a therapy dog for 30 minutes on two occasions during sundown hours reduced the number of agitated behaviours in 28 older adults with ADRD.[9] Socialization also improved in this group of patients. These changes were found to be unrelated to the severity of dementia, indicating that the presence of a therapy dog may be a beneficial intervention for all stages of dementia.

Light Therapy

Agitated behaviours may, in part, be due to circadian dysrhythmias[10] or limited sunlight exposure.[11] Three studies examined the efficacy of bright light in decreasing agitated behaviours among older adults with severe ADRD. Two studies

There is some evidence that exposure to a therapy dog can reduce agitated behaviour and enhance socialization in ADRD patients in a long-term care setting. Pet therapy is also suggested to reduce loneliness, lower blood pressure, and alleviate depression in older adults.

Figure 1: **Pet Therapy for Behavioural Disturbances in Dementia Patients**

(n=31, n=15) reported no significant effect of morning or evening bright light, administered by a Brite Lite box placed one metre from the person, with an exposure of 2,500–10,000 lux for two hours per day over 10 days to four weeks.[12,13] The third study (n=16) found that bright light (10,000 lux) administered during breakfast significantly decreased agitated behaviour compared to the post-treatment phase.[14] An interesting finding from this study was that agitation decreased significantly more during the summer than during fall to spring.

Validation Group Therapy

One study compared the effectiveness of validation group therapy (n=31), offered for 30 minutes four times a week over a year, to a social contact group (n=29) and usual care group (n=28). Validation therapy was found to be more effective than the other two intervention strategies in reducing agitated behaviours.[15] There is, however, insufficient evidence available to draw any conclusion about the efficacy of this form of therapy.

Skills Training

A randomized trial investigated the efficacy of two interventions (an activities of daily living [ADL, n=29] and a psychosocial activity [n=30]) and a combination of the two (n=30) in reducing agitated behaviours.[16] The ADL intervention consisted of the implementation of successful protocols that improve functional status during bathing, grooming, dressing, and noon meal. The psychosocial activity intervention involved 25 standardized modules designed to meet the psychosocial needs for communication, self-esteem, safety and security, personal injury, and cognitive understanding. The interventions were provided five days a week for 12 weeks. The results revealed no significant differences between the groups.

The authors concluded that although the interventions were designed to globally address triggers of agitation and meet psychosocial needs, the treatments did not specifically address factors that may have triggered agitation. Individually designed interventions need to be developed that consider the attributes of the older adult with dementia and the triggers of the agitated behaviour. Caregivers could then draw upon a range of strategies and target interventions to the precipitating factors rather than to the behaviour itself.

Multisensory Stimulation

Multisensory stimulation (MSS), previously known as Snoezelen therapy, aims to stimulate the senses through the provision of unpatterned visual, auditory, olfactory, and tactile stimuli (Figure 2). The assumption is that persons in the final stages of dementia may receive too little stimulation or inappropriate stimulation.[17] Stimuli offered may include moving shapes beamed around the room, bubble tubes, fibre-optic sprays, music, and aromatherapy oil diffusers. The person is encouraged to explore the room at his or her own pace. The effect of MSS (n=5) on agitated behaviour was compared with reminiscence therapy (n=5).[18] Agitation decreased after four weeks of MSS but was not sustained 15 and 30 minutes after the sessions. There was a tendency for agitation to increase during and after the reminiscence therapy. It is imperative that these interventions are appropriate to the person's cognitive ability.

Interventions Based on the Reduced Stress–Threshold Model

Music

Four studies have examined the efficacy of music on agitated behaviours. The first study (n=39) compared the effects of preferred versus low-tempo classical music[19] while the second study (n=32) compared preferred music with simulated presence therapy during episodes of verbally dis-

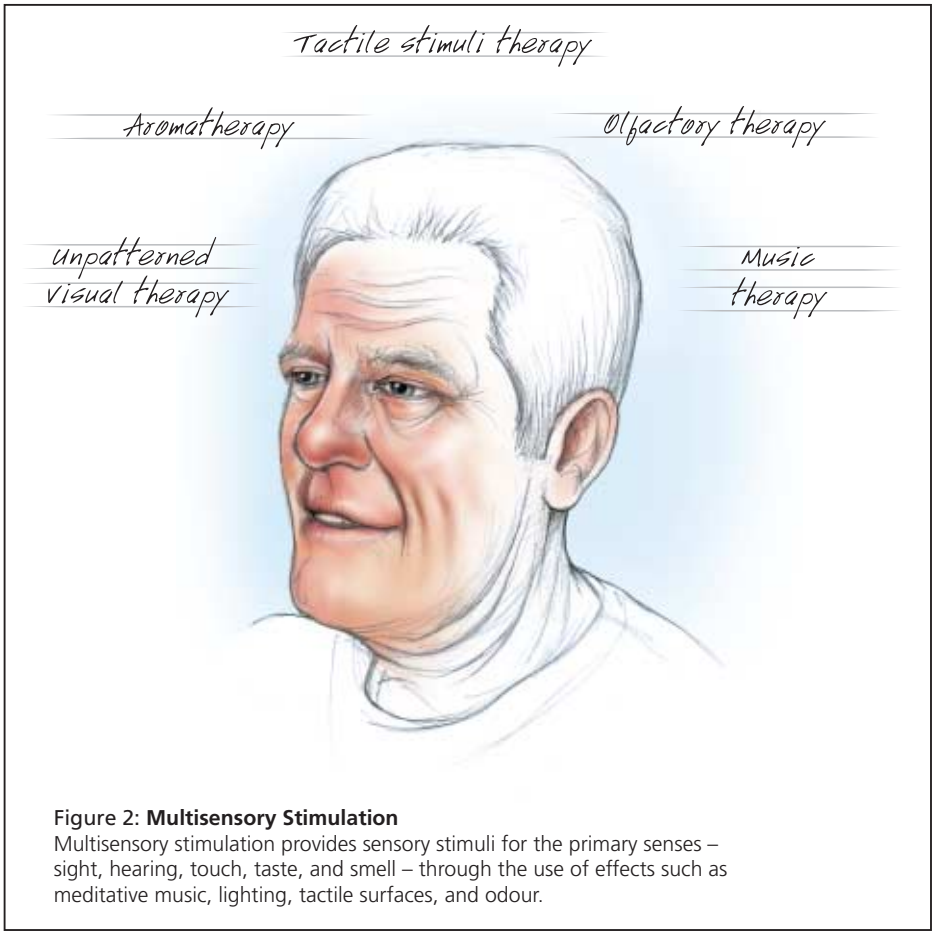

Figure 2: **Multisensory Stimulation**
Multisensory stimulation provides sensory stimuli for the primary senses – sight, hearing, touch, taste, and smell – through the use of effects such as meditative music, lighting, tactile surfaces, and odour.

Table 2: Nonpharmacological Interventions

Unmet Psychosocial Needs Model	Reduced Stress–Threshold Model
Simulated presence therapy	Music
Pet therapy	Massage
Light therapy	Therapeutic touch
Validation group therapy	Aromatherapy
Skills training	
Multisensory stimulation	

ruptive behaviours.[8] A significant reduction in agitation during and following preferred music compared to classical was observed in the first study,[19] and verbal aggression was found to decrease by 31% with preferred music compared to simulated presence therapy (46%) and no treatment (16%) in the second.[8]

A third study (n=15) examined the effect of preferred music on decreasing agitated behaviours during 10 bathing sessions (bathing often precipitates agitated behaviours).[20] Music significantly decreased the total number of observed agitated behaviours, particularly hitting behaviour.

A fourth study (n=68) tested the effect of a 10-minute exposure to calming music (Pachelbel's Canon in D), hand massage, or the combination of the two on agitated behaviours.[21] None of the interventions significantly reduced physically aggressive behaviours. However, physically nonaggressive behaviours decreased during each of the interventions compared to no treatment. There was no added benefit from simultaneous exposure to calming music and hand massage.

In summary, preferred music was found to be more effective than classical music and to be beneficial during bathing, but less effective than simulated presence therapy in decreasing agitated behaviours. In addition, calming music was found to be as effective as massage in decreasing physically nonaggressive behaviours.

Massage

In addition to the above study that examined the efficacy of hand massage,[21] a community-based study (n=9 caregiver-patient duos) examined the efficacy of slow-stroke massage provided by an informal caregiver on agitated behaviours of older adults with ADRD.[22] Verbal displays of agitation did not decrease, whereas, physical expressions of agitation did. This is the only study included in the review that was conducted in the home. With the increasing numbers of those with dementia remaining in their communities, further research is needed to develop strategies that can assist informal caregivers in supporting their family members who remain at home.

Therapeutic Touch

Therapeutic touch is founded on the premise that the human body, mind, emotions, and intuition form a complex, dynamic field. In health, this field is balanced; in illness, the field becomes imbalanced and disordered. Therapeutic touch appears to elicit a relaxation response that decreases the physiological response to stress by activating the parasympathetic nervous system.[23] The effect of therapeutic touch, administered for five to seven minutes twice a day for three days, on agitated behaviour in 10 older persons with ADRD was examined.[23] Although the hypothesis was not unequivocally supported (searching, manual manipulation, tapping, and escaping restraint showed no or small increases), a significant decrease in both vocalizations and pacing occurred during treatment and for up to one and a half days following treatment.

Aromatherapy

Two studies examined the efficacy of aromatherapy in decreasing agitated behaviour in older adults with severe ADRD. In the first study (n=15), the effect of a two percent lavender oil aroma stream administered on the ward for a two-hour period, alternated with placebo (water) every other day for a total of ten treatments, was examined.[24] The majority of residents (60%) showed a modest improvement in agitated behaviour while 33% showed no change in behaviour.

These results may be related to the anosmia experienced by many with dementia, particularly those with dementia with Lewy Bodies.[25] Indeed, in Holmes' study,[24] of the three participants with dementia with Lewy Bodies, two showed no evidence of improvement and one appeared worse. The widespread use of lavender oil in the treatment of agitation in those with ADRD cannot be advocated. Rather, the use of individual approaches, such as topical administration, may be an alternative approach.

The second study explored the effect of direct application of Melissa essential oil (lemon balm) (n=35) compared with sunflower oil (n=36) on the agitated behaviour of those with severe dementia.[26] The oils were combined with a base lotion and applied to the participants' faces and arms twice a day over a four-week period. The results revealed a 30% reduction in agitation in 60% of the Melissa essential oil group compared with 14% of the placebo group. Significant improvements were seen in the domains of physical nonaggressive agitation, verbal nonaggressive agitation, and physical aggression. As most people with severe dementia have lost their sense of smell, the reason(s) for the positive effect of Melissa oil in decreasing agitation requires further research.

Conclusion

Several strategies (e.g., simulated presence, pet therapy, bright light, validation therapy, music, massage, therapeutic touch, aromatherapy, and multisensory stimulation) have demonstrated promising results in decreasing physical aggression, physical nonaggression, verbal aggression, and verbal nonaggression. The lack of strong evidence for these interventions may be more a reflection of the lack of rigour in the design of the studies than the effectiveness of the interventions. Additional rigorous studies need to be conducted using truly randomized controlled trials with larger sample sizes.

Several of the studies in this review revealed the importance of individualizing interventions (e.g., music, simulated presence, and multisensory stimulation) to reflect older adults' tastes, cultural and personal backgrounds, and level of cognition. However, we do not know which interventions (and at what intensity, timing, frequency, and duration) should be targeted to which type and level of dementia. Is the goal of the intervention to provide stimulation, activities, and social contact (unmet psychosocial needs model) or to provide relaxation (the reduced stress–threshold model)?

All of the studies examined the frequency and/or severity of agitated behaviours. Future studies should also examine the efficacy of the interventions from the perspectives of persons with dementia and their informal and formal caregivers.[27] Improved matching of the interventions with older adults' needs, capabilities, and preferences may result in greater benefits to those with ADRD and their caregivers. ◆

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