ORIGINAL RESEARCH

A Non-Pharmacologic Approach to Manage Behaviours in Confused Medically Ill Older Adults in Acute Care

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ABSTRACT

Background

Non-pharmacological interventions are recommended to manage challenging behaviours among cognitively impaired older adults, however few studies have enrolled patients in acute care. This study aimed to determine the feasibility of implementing non-pharmacological interventions to manage behaviours in hospitalized older adults.

Method

A self-identity approach was used to identify potentially engaging activities for 13 older medically ill adults admitted to acute hospital; these activities were trialed for a two-week period. Data were collected on frequency of intervention administration and assistance required, as well as frequency of behaviours and neuroleptic use in the seven days prior to and following the trial of activities.

Results

Per participant, 5–11 interventions were prescribed. Most frequently interventions were tried two or more times (46%); 9% were not tried at all. Staff or family assistance was not required for 27% of activities. The mean number of documented behaviours across participants was 4.8 ± 2.3 in the pre-intervention period and 2.1 ± 1.9 in the post-intervention period. Overall the interventions were feasible and did not result in increasing neuroleptic use

Conclusion

Non-pharmacologic interventions may be feasible to implement in acute care. More research in this area is justified.

Key words: responsive behaviours, dementia, delirium, cognitive disorders, psychomotor agitation, aged, acute care, nonpharmacologic intervention

INTRODUCTION

Behavioural and psychological symptoms in older adults, such as agitation, delusions, verbal and physical aggression, often accompany cognitive disorders such as delirium, dementia, and traumatic brain injury.[1-5] Studies have reported that 28–56% of older adults admitted to non-psychiatric units, such as acute medical or orthopedic wards, can have such challenging (also termed responsive) behaviours.[6-11] These behaviours are also associated with increased falls, length of hospital stay, and institutionalization.[4,6,12]

Responsive behaviours are burdensome for hospital staff to manage,[13,14] often resulting in the use of physical and chemical restraints and seclusion in efforts to protect patients and staff.[15,16] Physical restraints may exacerbate existing behaviours, and are associated with adverse events such as pressure sores, falls, and death due to asphyxiation, strangulation or cardiac arrest.[17-19] Although medications, such as antipsychotics and benzodiazepines, are sometimes used to manage these behaviours, there is limited evidence to support their use and they are associated with significant side effects, including falls and death.[20-23] Hospital settings are ill-prepared to meet the needs of patients with responsive behaviours, given their focus on managing acute illness, limitations of the physical environment, differing resources, and lack of knowledge and skills related to managing behaviours.[24-26] Aggressive behaviour towards physicians and nurses is a significant issue for hospitals.[27]

Psychological and behavioural symptoms in older adults may reflect unmet psychosocial or physical needs; they may be related to over-stimulation or frightening environmental stimuli.[28,29] Patients displaying these responsive behaviours may have needs for relief of discomfort, social isolation, boredom, or desire for meaningful activity,[30] which may be difficult for patients to communicate and manage.[28,30] Amelioration of challenging behaviours is predicated on identifying and resolving potential causes for behaviours.[28,31] Understanding the person (interests, lifestyle, abilities/ disabilities, self-identity, likes/dislikes, habits) can help to understand what the individual needs and how these needs can be met.[32] Activities that simulate past roles, hobbies or leisure activities can be used to alleviate boredom or provide meaningful activity.[33]

Multiple studies conducted in community and long-term care home settings have found person-centred, non-pharmacological approaches, focusing on identifying and addressing causes of behaviours can decrease such expressions and sequelae as falls.[31,34-37] Non-pharmacological interventions may be as effective as pharmacological interventions, without the associated adverse events.[29] The Behavioural Supports Ontario program (BSO)[38] and the P.I.E.C.E.S.™ framework[39] are examples of person-centred, non-pharmacologic programs aimed at improving the management of responsive behaviours associated with cognitive impairment. In the province of Ontario, Canada, these initiatives have been instrumental to practice improvements related to challenging behaviours in the community or long-term care settings.[40-42]

However, few studies have examined the use of non-pharmacological approaches to manage behaviours in acute care.[43,44] Studies have assessed specialized units in acute care, focusing on the use of non-pharmacological approaches for persons with cognitive impairment, where staff have specialized training and wards are organized differently, and found these units were more likely to meet patient's emotional and psychological needs, and result in less agitation, aggression, fewer falls, and improved functional status.[45-47] The implementation of non-pharmacological interventions for patients experiencing behavioural symptoms, regardless of whether they are on a specialized unit, could be beneficial to both patients and staff, and would be consistent with elder-friendly hospital initiatives.[48]

In this study, a person-centred, non-pharmacological intervention was trialed to manage challenging behaviours in the general medical acute care ward. This is a proof of concept study to determine the feasibility of implementing this type of intervention in acute care. Individualized interventions were developed based on a structured interview to enhance understanding of the individual and identify activities that could potentially meet their needs.

METHODS

Design

This study employed a pre–post, case-series methodology. Interventions were trialed for a two-week time period, during which the feasibility of administering the interventions was assessed. Secondary outcome indicators were measured for seven days prior to and following the implementation of the interventions. This study was approved by the Western University Research Ethics Board.

Participants

Participants were patients referred to the geriatric consult-liaison service from various general medical (non-specialty) units within two campuses of London Health Sciences Centre, an academic hospital in London, Ontario, and their Substitute Decision-Maker (SDM) or family members. Participants were screened for eligibility and, if eligible, were invited (by MD, LB or KC) to participate in the study. To participate in this study, patients had to be medically stable, or being treated appropriately, for any active medical issues on a general medical floor (general medicine or the sub-acute medicine unit). Inclusion criteria included: age 65 or over, presence of cognitive impairment not otherwise specified (by history, or as noted in the chart or by staff), presence of challenging behaviours (as identified by staff), and availability of a SDM and/or family members. Challenging behaviours were any felt by staff to be problematic to providing care, such as resistance to care, verbal or physical agitation or aggression. Cognitive impairment could be due to dementia, delirium or other causes (e.g., sub-syndromal delirium); as there is considerable overlap between these entities and they are often not diagnosed properly, individuals with cognitive impairment due to any cause were considered eligible for inclusion. Consent was required from both the SDM or family member/friend and the patient, if capable. We excluded patients with acute traumatic brain injury admitted to specialized neurologic units, individuals with developmental disorders, those receiving palliative care, those with anticipated lengths of stay of less than one week, and those without an identified SDM.

Intervention

Management of acute medical issues possibly contributing to the responsive behaviours was done by the most responsible physician, and assessment for problems such as constipation or urinary retention was done by the geriatric consult liaison team to try and address root causes of the behaviour. In addition, a member of our research team conducted a structured interview with SDM or family members. Pages 5–18, from the "All about me" interview[49] developed by the Alzheimer Society of Canada, were used. Interview questions probed the patients' significant relationships, prior occupations and roles, major life events, self-identity, likes and dislikes, hobbies/recreational activities, and daily routines prior to hospital admission. Based on the information gathered in this interview, individualized non-pharmacologic interventions were designed incorporating: 1) current sense of identity (including some aspects of previously held identities); 2) current sensory abilities (visual, auditory, and tactile); and, 3) enhanced understanding of current needs. Selected interventions strived to be meaningful for the person

to facilitate psychological well-being, feelings of pleasure and involvement, and to promote a sense self-identity.[50-52] Interventions could include cognitive/intellectual activities (trivia, cards, puzzles, matching, organizing, and building blocks), physical activities (walking, ball toss, sweeping), social activities (discussion on topics of interest, craft or group activities), spiritual activities (church services, hymn singing, cultural activities), emotional activities (sensory stimulation, dolls/stuffed animals, reminiscence activities, music), and preserved skills/procedural memory (organizing cups, wiping dishes with a cloth, sorting cutlery, sewing, item assembly, yarn rolling/unrolling) (personal communication, L. Joworski, October 9, 2018).

Interventions were designed by members of the study team (primarily KS or LJ who work with the BSO, as well as the other co-authors, clinicians working primarily with the geriatric population). The interventions were shared with unit staff and SDM/family members, both verbally and through written methods. Staff and SDM/family members were encouraged to initiate and promote these activities; research staff also initiated and promoted these activities when able. Table 1 presents a case study illustrating the results of the structured interview and individualized interventions.

During the intervention phase, a log of suggested activities was left at the bedside (usually hanging on the wall or on an adjacent night-stand), and research staff explained to staff and family members the interventions; they were asked to trial the suggested interventions with the participant, and to document when they did the activity in the bedside log document. Intervention materials were left at the bedside. Research staff also monitored compliance by visiting participants and speaking to family members, or by calling staff assigned to the participant every two days (excluding statutory holidays).

Outcome Measures and Data Collection

Key feasibility outcome indicators for this study included the number of therapeutic activities suggested for each participant, frequency of administrating activities, assistance required, and identified barriers to administrating activities, based on the written log or conversations with staff or family. A chart audit was conducted by the research team to collect data on secondary outcomes including: specific behaviours that were documented verbatim as written in the medical chart (type of behaviour, number of times charted), number of times physical restraints were used, number of calls to security for assistance, incidence of falls, and neuroleptic and benzodiazepine use. The frequency of these were counted over the seven-day period predating the start of the intervention and compared to the seven-day period following the intervention. Given the fact that participants were in an acute care environment and could be discharged unexpectedly, a seven-day observation period was chosen. Although this is a relatively short period of observation, this would amount to a total study period of four weeks, which hopefully could occur prior to the participant being discharged. In those unforeseen instances when participants were discharged before the seven-day post-intervention period was completed, information on post-intervention outcomes was not available (although data on feasibility measures were still collected). Baseline information was also collected on participant age, sex, primary diagnosis, comorbidity (Cumulative Illness Rating Scale, CIRS) scores,[53] number of medications, living situation prior to hospitalization (community, retirement home, LTC; with others, alone), functional status as measured by Katz Index of Activities of Daily Living,[54] Lawton Instrumental Activities of Daily Living scale,[55] and mobility (Barthel Index).[56]

TABLE 1.
Case example of the development of individualized non-pharmacological interventions

Participant ID 02
• Community dwelling 91-year old male with advanced dementia; dependent in most activities of daily living, minimally verbal, and incontinent. • Admitted for worsening behavioural and psychological symptoms, particularly agitation. • In hospital: was not eating, frequently aggressive with staff during personal care (swats, hits) and was frequently in restraints • All about me interview conducted with spouse revealed: – he was previously a farmer and horse breeder; he loves dogs and horses; – he was described as a very generous person who liked to help people – for many years he sang in a choir and liked to dance – up until 6 months prior he helped his wife take care of his pet birds and helped wash dishes – he responds well to a gentle approach; lack of sleep worsens his agitation
• Individualized interventions included: – Stuffed dog – Books with farm animals – Plastic dishes and wash cloth – Music – Sensory stimulation (gel mat, twiddle muff) – Wooden building blocks – Railway tracks

Information on the SDM/family member involved in this study was also collected, including relationship to participants and how often they were present in hospital during the study period. The frequency of room changes while in the hospital was recorded.

Data Analysis

Data were entered into SPSS 25.0 for analysis (Version 25.0; IBM Corp., Armonk, NY). Descriptive statistics (mean, median, standard deviation, frequencies) were generated for all study variables, as appropriate. Given the small sample size and objectives of this feasibility study, tests to determine the significance of pre–post differences in outcomes measures were not conducted.

RESULTS

Thirteen patient-SDM/ family member dyads enrolled in this study. Two participants were discharged during the post-intervention time period. In addition, one individual was made palliative at the start of the intervention, but had the interventions administered at the request of the SDM. In the latter cases, data on feasibility outcomes (number of therapeutic activities suggested, frequency of administrating activities, assistance required and identified barriers to activities) were collected, but pre- and post-intervention secondary outcomes are not included. For the individual who changed to a palliative goal of care, data on the use of neuroleptics were excluded (as neuroleptics were prescribed for palliative symptom control).

Patient characteristics are presented in Table 2. Patients were on average 85 years of age; 85% were male (N = 11). The majority of participants (85%; N = 11) were diagnosed with dementia, and eight had a recent diagnosis of delirium (either on admission or within the month preceding admission). Generally, most participants were independent with their activities of daily living, and able to ambulate independently, though they may have used a mobility aide. Although the SDM/family members of all participants agreed to participate, three did not attend beyond the initial study interview and, of those that did visit, most (60%) visited occasionally.

TABLE 2.
Participant and substitute decision maker/ family member characteristics

Characteristics	*n(%)*[a]
Participants	
Age (N = 13)	85.2 (6.4)
Mean (SD)	71 – 94
Range	
Gender	
Male	11 (84.6%)
Female	2 (15.4%)
Documented Dementia	
Yes	11 (84.6%)
No	2 (15.4%)
Documented Delirium	
Yes	8 (61.5%)
No	5 (38.5%)
Reason for Admission	
Acute confusion	7 (53.8%)
Falls, with or without head injury	7 (53.8%)
Worsening agitation or behaviours	4 (30.8%)
Functional decline	2 (15.4%)
Pneumonia	2 (15.4%)
Congestive heart failure	2 (15.4%)
Rapid atrial fibrillation	1 (7.7%)
Acute kidney injury	1 (7.7%)
Cumulative Illness Rating Score Score (N = 13)	
Mean (SD)	9.7 (4.8)
Range	1–20
Median	9
# Routine Medications (N = 13)	
Mean (SD)	6.3 (5.2)
Range[b]	0 – 17
Median	4
Prior Living Situation (Community, LTC)	
Community – alone	1 (7.7%)
Community – with family (child, spouse, friend)	9 (69.2%)
Retirement home	2 (15.4%)
LTC	0
Room Changes While In Study	
Yes	1 (7.7%)
No	9 (69.2%)
Functional Status	
Katz Index of Independence in ADL[c] (N = 13)	
Mean (SD)	3.8 (1.8)
Range	1–6
Median	4
Lawton IADL Scale[d]	
Mean (SD)	.92 (2.1)
Range	0–7
Median	0
Mobility- Barthel Index Score	
Walks with help of one person (verbal or physical)	3 (23.1%)
Independent (but may use any aid, e.g., stick)	10 (76.9%)
Substitute Decision Maker/Family Member	
Relationship to patient	(N = 13)
Spouse	6 (46.2%)
Child/ grandchild	6 (46.2%)
Friend	1 (7.7%)
Presence during length of stay	
Yes	10 (76.9%)
No	3 (23.1%)
Frequency of presence (N = 10)	
Daily (6–7 times/week)	2 (20.0%)
Most of the time (4–5 times/week)	2 (20.0%)
Occasionally (< 3 times/week)	6 (60.0%)

[a]Percentages may not sum to 100% due to missing data.
[b]One patient had no medications.
[c]Score: Maximum = 6; 6 = High (patient independent); 0 = Low (patient very dependent).
[d]Score: Max = 8; 8 = High (patient independent); 0 = Low (patient very dependent).

Implementation of Therapeutic Activities

Type of activities suggested per participant, frequency of administration and assistance needed is presented in Table 3. As study logs were not always completed independently, the study team often interviewed staff and family members to gather the study log data. Staff were willing to provide verbal reports to the study team, even if they had not documented what interventions were attempted. Across all participants, a total of 97 interventions were suggested. Per participant, 5–11 interventions were elicited from the interview tool (mean = 7.5; SD = 2.5; median = 7). Most frequently, interventions could be classified as cognitive/intellectual (45.4%; N = 44) and emotional (29.9%; N = 29). There was variable uptake of activities over the two-week period; some were tried two or more times (46.4%, N = 45), whereas others (9.3%; N = 9) were not tried at all.

Activities engaged at least three times included playing cards, music, building blocks, and stuffed animals. Assistance was not required for 27.8% (27) activities, for which patients could engage in independently; patients were assisted by family (15.5%), staff (17.5%), and research staff (4.1%).

Identified barriers to intervention implementation were derived from conversations with staff. Perceived patient-related barriers included patient lack of interest, patient

TABLE 3.
Summary of prescribed activities, frequency of engagement, assistance with completion, and documentation of mobility interventions

Participant	*Type and Prescribed Activities*	*Participant Engagement*	*Assistance Required*	*Mobility Interventions*
01	CIA: Building blocks	≥ 3 times	Independent	Walking
	CIA: Wood puzzle	Once	Not reported	
	PA: Sand paper and block	Not reported	Not reported	
	EA: Zen music at night	≥ 3 times	Not reported	
	EA: Gel mat	At least twice	Independent	
02	CIA: Building blocks	At least twice	Family	None reported
	CIA: Animal books	≥ 3 times	Family	
	EA: Stuffed dogs	≥ 3 times	Family	
	EA: Music	Once	Family	
	EA: Twiddle muff	Not reported	Family	
	PSA: Railway tracks	≥ 3 times	Family	
	PSA: Cups/ dish cloth	At least twice	Family	
03	CIA: Listened to/ watched hockey game	Once	Staff	None reported
	CIA: Sports and music trivia questions	At least twice	Staff	
	EA: Music	≥ 3 times	Multiple people	
	EA: Stuffed caterpillar	≥ 3 times	Staff	
	PSA: Yarn rolling and unrolling	Once	Not reported	
04	CIA: Nuts and bolts	≥ 3 times	Research staff	Walking
	CIA: Playing cards	Once	Research staff	
	CIA: Videos (history)	At least twice	Research staff	
	CIA: Books	≥ 3 times	Not reported	
	PA: Ball throw	≥ 3 times	Multiple people	
	EA: Gel mat	≥ 3 times	Staff	
	EA: Music	Once	Independent	
05	CIA: Cutlery sorting	Not reported	Independent	Walking
	CIA: Board book	Once	Independent	
	CIA: TV – cooking shows	Once	Independent	
	CIA: Colouring	Once	Independent	
	CIA: Socks/ clothes sorting	Once	Independent	
	EA: Baby doll	Once	Independent	
	EA: Music	At least twice	Independent	
	EA: Stuffed animal	At least twice	Independent	
	EA: Twiddle muff	Once	Independent	
	EA: Activity apron	Once	Independent	
	PSA: Lacing	At least twice	Independent	
	PSA: Sewing	Once	Independent	
	PSA: Cups	Once	Independent	

TABLE 3. Continued

Participant	*Type and Prescribed Activities*	*Participant Engagement*	*Assistance Required*	*Mobility Interventions*
06	CIA: Listen to hockey game	≥ 3 times	Independent	None reported
	CIA: Playing cards	≥ 3 times	Staff	
	CIA: Newspaper	Not reported	Family	
	CIA: Sorting crayons/ drawing	Once	Independent	
	CIA: Sorting socks	Once	Staff	
	PA: Small sweeper, broom/ dustpan	Never tried	NA	
	EA: Music	≥ 3 times	Independent	
	EA: Picture book of memorable life events	Once	Independent	
	EA: Discussion about friends/ family	≥ 3 times	Research staff	
	PSA: Needle and thread	≥ 3 times	Staff	
07	CIA: Television	Never tried	NA	None reported
	CIA: Read	Never tried	NA	
	CIA: Puzzle	Once	Not reported	
	EA: Music	Never tried	NA	
	EA: Smoothing out sheets	Once	Not reported	
	PSA: Assemble shoe rack	Once	Not reported	
	PSA: Wood sanding	At least twice	Not reported	
08	CIA: Television	At least twice	Not reported	Walking
	CIA: Playing cards	≥ 3 times	Staff	
	CIA: Rubix cube	Not reported	Not reported	
	CIA: Map	Not reported	Not reported	
	PSA: Block tower	Not reported	Not reported	
	PSA: Train set	At least twice	Not reported	
	PSA: Folding napkins	Once	Staff	
09	CIA: Building blocks	≥ 3 times	Multiple people	None reported
	CIA: Sorting socks	≥ 3 times	Multiple people	
	CIA: Large crosswords	Once	Independent	
	EA: Golf and gardening magazines	Once	Staff	
	PSA: Self-grooming	Not reported	Staff	
10	CIA: Wooden puzzle	Never tried	NA	None reported
	PA: Ball	≥ 3 times	Not reported	
	EA: Stuffed animal	≥ 3 times	Not reported	
	EA: Gel mat	≥ 3 times	Not reported	
	EA: Music	≥ 3 times	Staff	
	EA: Doll	≥ 3 times	Independent	
	EA: Activity apron	≥ 3 times	Not reported	
	PSA: Ball of yarn	Never tried	NA	
11	CIA: Pastels	Once	Staff	None reported
	CIA: Bird book	Not reported	Staff	
	CIA: Scratch art	Never tried	Not reported	
	CIA: Gardening book	Once	Independent	
	SA: Christmas crafts and activities	≥ 3 times	Multiple people	
	PSA: Watering plants	Once	Staff	
12	CIA: Starter building set	≥ 3 times	Family	None reported
	CIA: Magazines	At least twice	Independent	
	CIA: Playing cards	≥ 3 times	Not reported	
	SA: Baking book/ conversation about baking	Once	Family	
	EA: Music	≥ 3 times	Independent	
	PSA: Grocery flyers	≥ 3 times	Family	

TABLE 3. Continued

Participant	*Type and Prescribed Activities*	*Participant Engagement*	*Assistance Required*	*Mobility Interventions*
13	CIA: Wooden screw set	Once	Family	None reported
	CIA: Building blocks	Once	Family	
	CIA: Activity sheet	Once	Independent	
	CIA: Circuit board	Never tried	NA	
	CIA: Newspapers	Once	Family	
	CIA: Magazines	Once	Family	
	PA: Sandpaper and wood	Not reported	Not reported	
	PA: Ankle weights	≥ 3 times	Staff	
	EA: Radio	≥ 3 times	Independent	
	EA: Music	≥ 3 times	Staff	
	EA: Stuffed animals	Never tried	NA	

CIA = cognitive/intellectual activities; PA = physical activities; SA = social activities; SPA = spiritual activities; EA = emotional activities; PSA = Preserved skill activity

inability to attend to an activity, difficulty engaging the patient when behaviours are already present, and requirements for one-to-one interaction to complete the activity. Staff also described barriers such as lack of time, and lack of knowledge about the on-going interventions (sometimes due to changing staff), and they expressed need for a greater variety of activities and occasional beliefs that interventions were ineffective.

Impact on Secondary Outcome Indicators

Behaviours

Table 4 presents the type and number of behaviours documented in the pre-intervention, intervention, and post-intervention study phases per participant. Verbatim charting included the following terms: "calling out", "yelling", "physical/verbal agitation", "exit seeking", "aggress/ive/ion", "removing clothes", "resistant to care", "restlessness", "pacing/wandering", "sexually inappropriate", "talking to self", "throwing objects", "trying to get out of bed", "unable to settle", and "voiding in inappropriate places". During the pre-intervention time period, physical and verbal agitation were the mostly frequently charted behaviours. The occurrence of most behaviours was lower in the post-intervention time period. In the pre-intervention time period, the mean number of unique behaviours documented per patient ranged from two to nine, with a mean of 4.8 (SD = 2.3; N = 13); in the post-intervention time period, the mean number of unique documented behaviours per patient ranged from zero to five, with a mean of 2.1 (SD = 1.9; N = 11).

Restraint Use, Calls to Security, and Falls

Restraint use in the pre-intervention period occurred eight times in 4/13 (30.8%) participants; restraint use among these participants ranged from one to three times, with a mean of 2.0 (SD = .82) per participant. In the post-intervention period, restraints were used four times in 3/11 (27.3 4%) participants; restraint use among these participants ranged from one to two times, with a mean of 1.3 (SD = .50) times per participant. Calls to security in the pre-intervention time period occurred five times in 4/13 participants (30.8%); number of calls to security among these participants ranged from one to two times, with a mean of 1.3 (SD = .50) calls per participant. Security was called once (1/11 participants; 9.1%) on one participant in the post-intervention period. During the pre-intervention time period, one patient experienced two falls. No falls were reported in the post-intervention time period.

Daily Neuroleptic Use

Neuroleptic use pre- and post-intervention for each participant is summarized in Table 5. Only one individual received a benzodiazepine during the study time period. Out of 13 participants, 10 were prescribed neuroleptics at some point in the study. One person had a change in his goals of care and his neuroleptic data are not included (as his course was made comfort care only, and neuroleptics were prescribed for symptom relief such as nausea and sedation). In the remaining nine participants, one individual was discharged during the post intervention period, three had their neuroleptic dose either decreased or discontinued, and three experienced a decrease in one neuroleptic and either an increase or the prescription of a different neuroleptic. Two of the nine participants prescribed neuroleptics experienced an increase in dosage of neuroleptics post-intervention (IDs 08, 11; increases of 201% and 20%, respectively; for one, ID 08, there was an increase in overall neuroleptic use, with the prescription of two new neuroleptics).

DISCUSSION

In this proof of concept study, management of cognitively impaired adults with challenging behaviours was addressed. The uniqueness in this intervention was to incorporate a patient-centred approach, in addition to standard medical care, to behavioural management by considering who the participant was, prior to developing cognitive impairment, and how this may be driving the observed behaviours. The acute care setting differs significantly from other settings such as long-term care or the community, in being very dynamic with different care providers interacting with the patient

TABLE 4.
Type and number of behaviours documented in the pre-intervention, intervention, and post-intervention study phases per participant.

Participant	*Behaviours*	*Pre-Intervention Phase (7 Days)*	*Intervention Phase (14 Days)*	*Post-Intervention Phase (7 Days)*
01	Agitation – Physical	3	0	0
	Agitation – Verbal	3	1	0
	Calling out/ yelling	2	0	0
	Nonsensical conversation	1	0	0
	Removing clothing	1	0	0
	Restlessness	3	3	0
	Talking to self	1	0	0
	Trying to get out of bed	2	0	0
02	Agitation – Physical	5	4	0
	Agitation – Verbal	2	0	0
	Aggression - Physical	0	4	1
	Aggression - Verbal	0	1	0
	Grabbing at others	1	0	1
	Resistance to care	0	3	1
	Restlessness	2	0	1
	Throwing objects	1	0	0
	Trying to get out of bed	2	1	1
	Unable to settle	1	0	0
03	Agitation – Physical	2	4	0
	Agitation – Verbal	3	8	1
	Aggression - Physical	4	6	0
	Aggression - Verbal	3	3	2
	Delusional thinking	1	0	0
	Exit seeking	0	3	0
	Grabbing at others	1	0	0
	Resistance to care	0	1	0
	Pacing/ wandering	1	1	1
	Sexually inappropriate	1	2	1
	Throwing objects	1	0	0
	Unable to settle	0	1	0
04	Aggression - Physical	1	1	0
	Delusional thinking	1	0	0
	Removing clothes	0	2	0
	Restlessness	0	1	0
	Pacing/ wandering	1	2	0
05	Agitation - Physical	1	2	2
	Agitation - Verbal	0	2	2
	Restlessness	2	2	0
06	Agitation - Physical	3	1	0
	Agitation - Verbal	0	4	0
	Delusional thinking	1	0	0
	Trying to get out of bed	1	0	0
07	Agitation - Physical	0	9	1
	Agitation - Verbal	0	2	0
	Aggression – Physical	1	0	1
	Exit seeking	2	7	1

TABLE 4. Continued

Participant	*Behaviours*	*Pre-Intervention Phase (7 Days)*	*Intervention Phase (14 Days)*	*Post-Intervention Phase (7 Days)*
07 continued	Resistance to care	0	4	0
	Restlessness	2	0	0
	Pacing/wandering	0	9	1
08	Agitation – Physical	1	0	0
	Exit seeking	1	3	1
	Pacing/ wandering	1	0	0
	Voiding in inappropriate places	1	0	0
09	Agitation – Physical	2	3	NA
	Aggression – Physical	1	0	NA
	Removing clothes	1	0	NA
	Resistance to care	1	0	NA
	Restlessness	2	3	NA
	Pacing/ wandering	1	0	NA
	Trying to get out of bed	3	3	NA
10	Agitation – Physical	5	7	11
	Agitation – Verbal	4	7	0
	Restlessness	4	7	1
	Trying to get out of bed	0	0	2
	Unable to settle	0	0	1
11	Agitation - Physical	1	0	0
	Agitation - Verbal	1	0	0
	Exit seeking	1	1	1
	Restlessness	1	1	1
	Pacing/ wandering	0	1	1
12	Agitation – Physical	0	1	0
	Agitation – Verbal	6	2	0
	Aggression - Verbal	0	1	0
	Delusional thinking	0	1	0
	Exit seeking	1	0	0
	Restlessness	3	0	0
	Pacing/ wandering	1	0	0
	Unable to settle	1	0	0
13	Agitation - Verbal	1	0	NA
	Restlessness	0	2	NA
	Trying to get out of bed	0	1	NA
	Unable to settle	1	0	NA

NA = not available; patient discharged in post-intervention phase.

each day, making this a challenging environment to try these approaches, and also to measure their overall feasibility.

This pilot study suggests that non-pharmacologic interventions may be feasible to implement in the acute care setting. Feasibility is a difficult metric to measure and we approximated this by surveying staff or family on how often the suggested interventions were attempted. The relatively low frequency of intervention implementation for some patients, in part, reflects the trial and error process of finding engaging activities. Activities deemed to be unengaging were not subsequently attempted. It may also reflect the low visit rates of family members or caregivers, highlighting the importance of engaging families or caregivers (either biological or chosen) that are willing to visit patients frequently and for extended periods of time. Regardless of who significant others may be, commitment to facilitating the use of non-pharmacological interventions is critical to the feasibility of this type of intervention. A review of the use of non-pharmacological interventions in long-term care settings reported that 75% of interventions required additional supports.[44] Some of these

TABLE 5.
Summary of neuroleptic use (average daily dose (calculated over a 7-day period) pre- and post-intervention for each study participant (N = 13)

Participant[a]	*Pre-intervention*	*Post-intervention*	*Change*
01	Quetiapine (62.5mg)	Quetiapine (7.14mg)	88.6% reduction
02	Quetiapine (50mg)	Quetiapine (3.57mg)	92.9% reduction
	Risperidone (0)	Risperidone (0.75mg)	New medication
03	Haldol (0.214mg)	Haldol (0.07mg)	67.3% reduction
	Risperidone (0)	Risperidone (0.036)	New medication
04	0	0	NA
05	Quetiapine (10.7mg)	Quetiapine (0)	Discontinuation
06	0	0	NA
07	Haldol (2mg)	Haldol (1mg)	50.0% reduction
	Quetiapine (44.64)	Quetiapine (53.57)	20.0% increase
08	Haldol (0.143mg)	Haldol (0.43mg)	200.7% increase
	Olanzapine (0)	Olanzapine (0.89mg)	New medication
	Risperidone (0)	Risperidone (0.64mg)	New medication
09	Risperidone (0.036mg)	Risperidone (0)	NA
	Olanzapine (2.14mg)	Olanzapine (0)	NA
	Quetiapine (0)	Quetiapine (8.9mg)	NA
10	Risperidone (0.36mg)	Risperidone (0.18mg)	50.0% reduction
11	Quetiapine (25mg)	Quetiapine (28.57mg)	14.3% increase
13	0	0	NA

[a]The data for participant #12 is not included as this person was deemed palliative at the onset of this study; medication changes reflect changes in health status.

studies used external resources (e.g., students)[57] to implement the interventions or personnel who are not available in acute care (e.g., recreation and occupational therapists).[58]

Methods to optimize implementation of non-pharmacological interventions in acute care could include the development of strategies to better engage and involve family members, increased education for staff on the use of these interventions, the use of technology to enable more independent activities (such as by using a tablet), establishing on-going working groups or champions to encourage non-pharmacologic approaches throughout the hospital, recruiting hospital volunteers to decrease burden on staff, increase varieties of activities, and recruiting recreation or occupational therapists whose training includes conducting assessments, effectively implementing person-centred, non-pharmacological interventions, and evaluating their outcome. This type of approach is consistent with objectives of elder-friendly hospital programs.[59,60]

Dedicated human resources are needed to facilitate and sustain the use of non-pharmacological interventions, fine tune activities based on feedback on efficacy, and work with staff and families to identify and overcome barriers to implementation, such as patient lack of interest and need for one-to-one interaction. Use of a self-identity approach, with a focus on identifying individuals' personal interests, is key to ensuring that prescribed activities may be of interest and sustain attention.[33,37,61] Hospital staff would require education on the health benefits of non-pharmacological interventions, as this would represent a departure from the medical model used in hospitals[48] and require a change in attitude towards these activities as being legitimate interventions that can reduce behaviours, increase quality of life, and reduce the need for more invasive interventions.

Psychotropic drugs such as neuroleptics should be avoided, if possible, to manage responsive behaviours, given their lack of proven benefit and associated side effects. Many physician and physician-independent factors (such as the perceived potential aggressiveness of the behaviour) determine whether someone will be prescribed a neuroleptic medication. It is difficult to know what the effect of a non-pharmacologic intervention is on drug prescription rates without more rigorous methodologies such as randomized controlled trials. However non-pharmacologic interventions are always recommended as first-line therapies, and their use should be encouraged. Our study did not find a dramatic increase in neuroleptic use after the intervention, which is encouraging. Changes in behaviours in this study may have been impacted by both the non-pharmacologic interventions and changes to type or dosage of neuroleptics prescribed.

There are a number of limitations to this study. The sample size was small and most participants were men. Future feasibility studies should aim for larger sample sizes

and greater sex diversity. Data collection on behaviours displayed by participants was based on what was documented, and this can be variable from provider to provider. Future studies should use routine and standardized measures for behavioural data collection, such as applying a scale such as the Neuropsychiatric Inventory[62] or other similar measures, by individuals trained in using these tools. The measure of feasibility in this study was inferred based upon interviews on how often the activities were done. Future studies should assess family and staff perceptions of the feasibility and acceptability of this intervention directly, either via survey or interview methodologies. Family members and nursing staff were asked to document the use of interventions, but this did not always happen. As a result, study staff would interview them directly to collect this data, which may have introduced a bias in reporting in the expected direction. More frequent (such as twice daily) and direct monitoring or observation of what interventions were attempted would also improve the measure of feasibility. This could be optimized with the use of dedicated personnel for implementing the interventions with the inclusion of documentation in their role. Despite these limitations, this study contributes to our understanding of the use of non-pharmacological interventions in acute care studies and can inform future feasibility studies in this area.

This study highlighted the potential feasibility of non-pharmacological interventions which may be a safer alternative to pharmacological interventions to manage responsive behaviours in hospitalized older adults. Future research in this area is justified. Use of a realist approach approach of evaluating this intervention would serve to understand anticipated outcomes based on the acute care context, and processes and structures in place to support and sustain implementation.[63,64]

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CONFLICT OF INTEREST DISCLOSURES

The authors declare that no conflicts of interest exist.

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