

Strategies for Managing Behavioural Symptomatology Associated with Dementia of the Alzheimer Type: A Systematic Overview

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L'objectif de ce survol systématique est de résumer les résultats de recherches sur les stratégies de prise en charge de la symptomatologie comportementale liée à la démence de type Alzheimer. Un total de 265 articles publiés et non publiés ont ainsi été recensés, parmi lesquels 45 ont été jugés adéquats. L'application de critères de validité a permis de dégager un « bon » article, six articles « moyens », 20 « très moyens » et 18 « médiocres ». Les stratégies comme les promenades à heure fixe, la zoothérapie, un programme destiné à canaliser l'attention, l'acquisition de compétences fonctionnelles, la musique et les obstacles visuels ont donné des résultats prometteurs, puisqu'ils ont permis d'améliorer : a) les comportements agressifs, agités et perturbateurs, b) les interactions sociales, c) la faculté de s'occuper de soi, d) les perturbations jour-nuit ou e) le vagabondage. Ces résultats indiquent qu'il se fait des recherches, même si celles-ci n'en sont qu'à leurs balbutiements, sur les stratégies destinées à prendre en charge la symptomatologie comportementale liée à la démence de type Alzheimer.

The purpose of this systematic overview was to summarize research findings on strategies for managing the behavioural symptomatology associated with dementia of the Alzheimer type. A search of the published and unpublished literature resulted in 265 articles, 45 of which were judged to be relevant. Using validity criteria, 1 article was judged to be strong, 6 moderate, 20 weak, and 18 poor. Strategies such as planned walking, pet therapy, an attention-focusing program, functional skills training, music, and visual barriers demonstrated promising results in improving: (a) aggressive, agitated, and disruptive behaviours, (b) social interaction, (c) self-care ability, (d) day-night disturbances, or (e) wandering. The findings indicate that there is existing research, although in its infancy, to support the use of strategies for managing the behavioural symptomatology associated with dementia of the Alzheimer type.

The Systematic Research Overview Pilot Project was initiated in early 1997 by the Alberta Heritage Foundation for Medical Research (AHFMR) Dissemination Program, Edmonton, Alberta, to synthesize

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and assess research findings that address questions important to clinical practitioners. Four research teams were established, each to address a different research question. This article describes the systematic overview conducted by the Alberta Association of Registered Nurses (AARN) research team, which was composed of an AARN representative, a university faculty advisor, and a reference librarian.

Problem Formulation

In order to generate their research question, the AARN team asked registered nurses in Alberta to submit questions of concern to them. The question considered to be of interest to most registered nurses, and most relevant to their clinical practice, was: *What strategies, within the scope of nursing, are effective in managing the behavioural symptomatology associated with dementia of the Alzheimer type in elderly individuals?* This question limited the overview to strategies within the scope of nursing practice and to studies with individuals 65 years of age and older diagnosed with Alzheimer's disease (AD) or degenerative dementia. "Within the scope of nursing practice" was included because, while professionals from other disciplines may have provided the interventions in the studies, registered nurses have the skills to either implement the strategies or train other care providers to provide the interventions.

In Canada, 8.0% of the population aged 65 and over and 34.5% aged 85 and over are diagnosed with dementia (Canadian Study of Health and Aging Working Group, 1994). AD, the most common type of dementia, affects 5.1% of persons aged 65 and over and 26% aged 85 and over (Canadian Study of Health and Aging Working Group). The estimated prevalence of AD in the world population is 8.5% of persons aged 65 and over and 28% aged 85 and over (National Advisory Council on Aging, 1996).

AD affects both cognition and behaviour. The former has received significant attention; the latter is only beginning to be addressed. Behavioural symptoms affect 70–90% of people with AD and may be manifest on a daily basis, affecting the quality of life of both the individual and the caregiver (Teri et al., 1992). The diversity of behavioural symptoms is well documented (Beck & Shue, 1994; Maas & Buckwalter, 1991; Teri et al.). The most common or most serious behaviours are wandering, agitation, physical violence, repetitive disruptive vocalizations, withdrawal, day/night disturbances, and difficulties related to

feeding and self-care (Alessi, 1991; Teri et al.). Behavioural symptoms are a primary source of stress for informal (Alessi; Stevenson, 1990) and formal caregivers (Hallberg & Norberg, 1993), as these affect persons with AD at various stages of the disease and in every care setting.

The purpose of the systematic overview was, therefore, to assess and summarize research evidence on the effectiveness of strategies in managing the behavioural symptomatology associated with dementia of the Alzheimer type. The overview was conducted from the beginning of March through June 1997.

Data Collection

Data-collection strategies included on-line computer searches, manual searches of selected journals, and searches of reference lists. An on-line search of MEDLINE, CINAHL, PsychINFO, Sociofile, Ageline, HealthSTAR, Dissertation Abstracts, Government Documents (First Search), and Can Research Index was conducted for the period January 1985 through April 1997. Selected key words were "aged 65 and over," "dementia," "Alzheimer's Disease," "long term care," "residential care," "intervention," "strategy," "manage," "behaviour therapy," "clinical trial," "random," "outcome and process assessment," and "evaluation." Key journals such as *The Gerontologist* and the *Journal of the American Geriatrics Society* were manually searched and several key informants were contacted for their published and unpublished papers. Lastly, relevant references from each article were identified, retrieved, and reviewed. The search strategies resulted in the screening of approximately 8,000 abstracts or titles. Any article whose title or abstract suggested examination of a strategy for managing the behavioural symptomatology associated with dementia of the Alzheimer type was retrieved. This process resulted in the retrieval of 265 potentially relevant articles. *ProCite*, a reference-management computer program, was used to catalogue the 8,000 citations (Rosenberg et al., 1992).

Data Evaluation

Previous systematic research overviews (Ciliska et al., 1994; Ploeg et al., 1995) and reviews of interventions to manage the symptoms of dementia (Beck & Shue, 1994; Maas & Buckwalter, 1991) guided the development of reliability and validity criteria that were used to determine whether the article would be included in the review.

Relevance Rating

A relevance tool was developed, pretested, and revised. The relevance criteria determined whether the study: (a) was published or conducted between January 1, 1985, and May 31, 1997; (b) evaluated a nonpharmacological intervention directed to an individual aged 65 or older with dementia of the Alzheimer type, or to their caregiver; (c) described an intervention within the scope of nursing practice; (d) measured one of the following care-recipient behaviours: wandering, agitation, physical violence, repetitive vocalizations, withdrawal, day/night disturbances, or difficulties with feeding or self-care; and (e) incorporated a control group or a pretest-posttest design with a sample size greater than one. To be included in the validity appraisal, an article had to meet all five relevance criteria. The first 20 articles were independently reviewed by two readers, and the level of agreement beyond chance was found to be 86% ($kappa = .857$); thus the second reader was not considered necessary for the remaining articles. Only 45 of the 265 articles retrieved met all five criteria.

External, Internal, and Statistical Conclusion Validity

The next phase involved rating the 45 relevant studies for validity. A validity tool, dictionary, and rating scale were developed, pretested, and revised. The external, internal, and statistical conclusion validity categories, the corresponding criteria, and the rating scale are shown in Table 1.

For a *strong* rating, at least four of the criteria had to "pass" and none could "fail." For a *moderate* rating, no criteria could fail and no more than four could pass. For a *weak* rating, one or two criteria had to fail. For a *poor* rating, more than two criteria had to fail. Although the level of agreement of the two raters remained high ($kappa = .762$, $n = 20$), the two raters independently completed the validity ratings for all of the relevant studies. There were 13 discrepancies related to oversight or differences in interpretation of the criteria; these differences were discussed and a consensus was reached on the ratings of all articles.

To facilitate retrieval of significant data from the studies, a data-extraction tool was developed, pretested, and revised. The following data were collected: year(s) in which study was conducted, date of publication, country, setting, research design, sample size at baseline and at completion of study, characteristics of sample (e.g., gender, age, diagnoses, medications, length of hospital stay), credentials of provider,

intervention strategy, intervention intensity, co-interventions, compliance with intervention, and statistical analyses.

Data Analysis

Descriptive analyses were conducted on methodological weaknesses according to the validity criteria, country, setting, provider, intervention, and outcome.

The vast majority of the relevant studies ($N = 45$) were conducted in the United States (82.2%); the others were conducted in Sweden and Norway (6.7%), Canada (2.2%), Australia (2.2%), Italy (2.2%), Japan (2.2%), and the United Kingdom (2.2%). The settings were primarily long-term-care facilities (LTCFs) (41.3%), followed by AD special-care units (28.3%), psychogeriatric centres (10.9%), and day-care centres (10.9%); only three studies (6.5%) were conducted in the home. The interventions were provided primarily by registered nurses, without advanced preparation (20.8%) or with advanced preparation (14.6%), followed by other professionals (22.9%), such as gerontologists, psychiatrists, psychologists, social workers, occupational therapists, recreational therapists, or music therapists. The remaining interventions were provided by paraprofessionals (8.3%), such as nursing aides, and informal caregivers (6.3%). Some articles (6.3%) did not identify the type of provider, and in other studies (20.8%) the intervention was related to an environmental change or pet therapy.

Music (27.1%) was the most frequent form of intervention, followed by skills training (18.8%) and visual barriers (10.4%). The remaining interventions were: exercise (8.3%), bright-light therapy (6.3%), pet therapy (6.3%), sensory integration (6.3%), reality orientation (4.2%), presence (4.2%), hand massage (2.1%), therapeutic touch (2.1%), life review (2.1%), and white-noise therapy (2.1%). The most commonly addressed outcomes pertaining to the purpose of this overview concerned: social interaction (29.6%), agitation (14.8%), wandering (14.8%), self-care ability (13.0%), physically violent behaviour (9.3%), vocally disruptive behaviour (7.4%), day/night disturbances (5.6%), and eating problems (5.6%).

Findings

Of the 45 articles reviewed, one was rated as strong, six moderate, 20 weak, and 18 poor. Those rated as poor were not included in the overview. Those rated as strong, moderate, and weak were described and critiqued within the following outcome categories: (a) aggressive,

Table 1 <i>Validity Rating Tool</i>		
Category	Criteria	Rating
<i>External Validity</i>		
(a) Design and allocation to intervention	(1) Random	(1) Pass
	(2) Before/after or matched cohort	(2) Moderate
	(3) No control or unknown	(3) Fail
(b) Inclusion	(a) If consent to participate had been sought from subject, next of kin, or legal guardian:	
	(1) >80% participation in both groups	(1) Pass
	(2) 60–79% participation	(2) Moderate
	(3) <60% participation or level of participation not stated	(3) Fail
	(b) If consent to participate had not been sought:	
	(1) subjects clearly described	(1) Pass
(c) Attrition	(2) some detail provided but not conclusive	(2) Moderate
	(3) not described	(3) Fail
	(1) <10%	(1) Pass
	(2) 11–20%	(2) Moderate
	(3) >20%, did not indicate level of attrition, or not applicable	(3) Fail

Table 1 (cont'd)	Criteria	Rating
Internal Validity		
(d) Confounders controlled	<p>(1) All relevant confounders controlled (e.g., age, sex, functional ability, level of cognitive impairment)</p> <p>(2) At least three confounders controlled, or subjects acted as their own control</p> <p>(3) Two or fewer confounders controlled</p>	<p>(1) Pass</p> <p>(2) Moderate</p> <p>(3) Fail</p>
Statistical Conclusion Validity		
(e) Data collection	<p>(1) At least one data-collection method (self-reported, assessment/screening, or medical records/vital statistics) had all of the following criteria rated as <i>yes</i>: well described, pretested, investigator blinded to participant's group allocation</p> <p>(2) At least one data-collection method had most criteria rated as <i>yes</i></p> <p>(3) None of the data-collection methods adequately addressed</p>	<p>(1) Pass</p> <p>(2) Moderate</p>
(f) Statistical analysis	<p>(1) Multivariate</p> <p>(2) Bivariate</p> <p>(3) Descriptive or unknown</p>	<p>(3) Fail</p> <p>(1) Pass</p> <p>(2) Moderate</p> <p>(3) Fail</p>

agitated, and disruptive behaviours; (b) social interaction; (c) self-care ability; (d) day/night disturbances; and (e) wandering. Table 2 summarizes the design, setting, subjects, intervention, provider, and outcomes of the articles rated as strong and moderate. While this area of research is still in its infancy, innovative interventions and promising results have emerged from the overview.

Aggressive, Agitated, and Disruptive Behaviours

Several strategies showed promise in managing aggressive, agitated, and disruptive behaviours. A study rated as moderate revealed that a planned walking program was effective in reducing by 30% the number of aggressive events on a dementia special-care unit (Holmberg, 1997). Though the methodologies were rated as weak, simulated presence therapy (SPT) — a personalized audiotape of a family member's telephone conversation about cherished memories — significantly improved problem behaviours among residents with AD (Woods & Ashley, 1995); bright-light therapy significantly reduced agitation on treatment days (Lovell, Ancoli-Israel, & Gevirtz, 1995); calming music significantly decreased agitated behaviour during and after the music intervention (Tabloski, McKinnon-Howe, & Remington, 1995); and classical and favourite music decreased the number of repetitive disruptive vocalizations in two of three LTCF residents with AD (Casby & Holm, 1994). Additionally, informal caregivers' use of written cues was shown to be effective in decreasing repetitive vocalizations (Bourgeois, Burgio, Schulz, Beach, & Palmer, 1997). The lack of a significant decrease in agitated behaviours with hand massage and therapeutic touch may have been a result of the short duration of the effectiveness of these interventions (Snyder, Egan, & Burns, 1995).

Social Interaction

Several interventions were shown to improve social interaction. The only study rated as strong in the overview demonstrated that a program of walking while engaged in conversation improved communicative function (Friedman & Tappen, 1991). Two studies rated as moderate found that an attention-focusing program improved participation in group activities (Rosswurm, 1991) and that the presence of a pet dog on a special-care AD unit significantly increased social behaviours (Kongable et al., 1989). Two studies, though rated as methodologically weak, found that a life-review program increased social interaction and orientation (Tabourne, 1995) and that reality-orientation therapy appeared to increase verbal ability but not functional ability in

LTCF residents with AD (Zanetti et al., 1995). Other studies rated as weak demonstrated that participatory music caused a trend towards improved sociability (Smith-Marchese, 1994) and that small-group activities resulted in increased walking with others and increased spontaneous singing (Martichuski, Bell, & Bradshaw, 1996).

Self-Care Ability

Four studies, two rated as moderate and two rated as weak, examined interventions directed at improved self-care for people with AD. Three of the studies reported significant improvements, while the fourth — one of the two weak studies — demonstrated no significant effect. A skills-training program appeared to improve self-care ability (Tappen, 1994). Soothing music had a statistically significant effect, increasing the amount of food intake and lengthening the mealtime by 22%. Additionally, soothing music resulted in the patients eating by themselves more often and being fed by others significantly more often (Ragneskog, Brane, Karlsson, & Kihlgren, 1996; Ragneskog, Kihlgren, Karlsson, & Norberg, 1996). However, a sensory-integration program demonstrated no effect on task-oriented and disruptive behaviours (Robichaud, Hébert, & Desrosiers, 1994).

Day/Night Disturbances

Although all three studies that examined the effect of bright light and music on day/night disturbances were rated as weak, the results are promising. Two of these studies reported that bright-light therapy appears to normalize disturbed sleep during the treatment period, with more severe behavioural disorders at baseline predicting greater clinical improvement (Mishima et al., 1994; Satlin, Volicer, Ross, Herz, & Campbell, 1992). The third study demonstrated that music appears to increase the number of hours of productive sleep in patients with AD (Lindenmuth, Patel, & Chang, 1992).

Wandering

Several studies rated as weak and one rated as moderate built on the work of Hussian and Brown (1987) and examined the effectiveness of using visual barriers to limit hazardous exiting from a facility. Hussian and Brown's study concluded that a floor grid pattern in front of a door is effective in limiting potentially dangerous exiting in many individuals with dementia. Hewawasam's (1996) study, rated as moderate, supported these findings for participants diagnosed with AD and with

Table 2 *Summary of Strong and Moderate Articles*

Study	Design (Weaknesses)*	Subjects	Intervention & Provider	Outcomes (Measurement Tools)
Social Interaction				
Friedman & Tappen (1991) USA LTCF	Randomized Control Trial Strong (e)	Subjects were ambulatory. AD: NINCDS-ADRDA, McKhann et al. (1984) Mini-Mental State Exam: mean 6.47 Age: mean 72.8 years (range 60–87) Males: 57% Intervention A: $n = 15$ Intervention B: $n = 15$ No significant differences between groups on Mini-Mental State Exam scores at pretest.	Group A: planned walking with conversation 30 minutes 3 times a week for 10 weeks. Group B: conversation only. Providers: Authors, RN, PhD & RN, EdD. Data were collected prior to and following the intervention.	<i>Significant:</i> Increased ability to communicate in Group A (Communication Observation Scale [Hoffman, Platt, & Barry, 1985], $p = .007$). <i>Nonsignificant:</i> Ability to communicate (Communication Assessment Scale [Tappen, 1988], $p = .057$).
Aggressive, Agitated, and Disruptive Behaviours				
Holmberg (1997) USA Special-Care Unit	Pretest/Posttest Moderate (d, e)	Physically active patients with disruptive wandering behaviour. Mini-Mental State Exam: 8 subjects scored 0–10 3 subjects scored 11–16 Age: mean 84.6 years (range 76–92) Females: 64% $N = 11$ Participation rate on average was 91%.	Walking group immediately after the evening meal for 1.5 hours, 3 times a week for a period of 1 year. Retrospective aggressive incident reports were counted for each day of the year by investigators who were blind to day of the week and dates of the walking group. Providers: 2–3 lay community volunteers specifically trained in safety and group-management procedures.	<i>Significant:</i> A 30% reduction in number of aggressive events between walking group weekdays and nongroup weekdays ($p = .03$). <i>Nonsignificant:</i> Number of aggressive incidents between (a) walking group weekdays and weekends, and (b) nongroup weekdays and weekends.

* **Key:** (a) Not random allocation. (b) If consent to participate had been sought from subject, next of kin, or legal guardian, less than 80% of eligible individuals consented to participate. If subject's consent had *not* been sought (i.e., with a retrospective chart review or an examination of the impact of an environmental change), subjects were not clearly described, allowing the study to be replicated. (c) More than 11% attrition. (d) Did not control for all potentially relevant confounders. (e) Data-collection strategies did not optimize validity.

Table 2 (cont'd)

Study	Design (Weaknesses)	Subjects	Intervention & Provider	Outcomes (Measurement Tools)
Social Interaction				
Kongable, Buckwalter, & Stolley (1989) USA Special-Care Unit	Repeated measures within-subject Moderate (a, d, e)	Diagnosed with AD, required supervision or assistance with activities of daily living. All participants but one had owned a pet in the past. Age: range 66–88 years Males: 83% N = 12	Pet therapy: weekly dog visitations followed by dog becoming a permanent resident. Observations of social behaviours were made in sets of two (individual and group) pretreatment, during weekly pet visitations, and permanent placement of pet.	<i>Significant:</i> Increased social behaviours during weekly visits and permanent placement of pet ($p < .001$) (checklist developed by first author). <i>Nonsignificant:</i> Between the weekly and permanent-placement phase and between the individual and group settings.
Rosswurm (1991) USA 3 LTCFs	Random allocation Moderate (e)	AD or multi-infarct-type dementia. Mini-Mental State Exam: mean 10.5 ($SD = 5.6$) Age: mean 84 (range 72–96) Females: 60% N = 30 Intervention: $n = 15$ Control: $n = 15$ No significant differences between the groups on demographic variables, Mini-Mental State Exam, dementia behaviour, and visual matching tasks at pretest.	The attention-focusing group (AFG) consisted of 3 activity segments: (a) welcoming and relaxation exercises; (b) perceptual-matching exercises, in which each member identified 2 matching objects from 4 objects of each category: solid colours, number clusters, lengths, and patterns; and (c) reinforcement with refreshments. The control group had refreshments and the opportunity for social interaction but no program. Each group met for 30 minutes 3 times weekly for 4 weeks. The posttests were completed 2 days and 3 weeks following the AFG. Provider: Author, RN, EdD.	<i>Significant:</i> Improvement in participation in group activities ($t = 3.81, p < .001$) and in the visual matching exercises ($t = 3.81, p < .001$) (checklists quantified participation in group activities and performance of visual matching exercises). Improvement in completion of the perceptual-matching tasks ($p < .01$) (Rosswurm, 1989); however, these gains had not persisted 3 weeks later. <i>Nonsignificant:</i> Functional ability (Dementia Behavioral Scale [Haycox, 1984]) and Mini-Mental State Exam did not improve significantly.

Table 2 (cont'd)

Study	Design (Weaknesses)	Subjects	Intervention & Provider	Outcomes (Measurement Tools)
<i>Self-Care Ability</i>				
Tappen (1994) USA LTCF	Random allocation Moderate (c, e)	Dementia: Short Portable Mental Status Questionnaire (Pfeiffer, 1975): 6 or more errors out of 10. Mini-Mental State Exam: mean 6.4 ($SD = 6.57$) Age: mean 84 years (range 59–102) Females: 75% $N = 72$ at baseline $N = 63$ at completion Intervention A: $n = 21$ Intervention B: $n = 21$ Control: $n = 21$ Subjects in 3 groups did not differ significantly on these characteristics or on functional ability at pretest.	Group A: Functional skills training focused on regaining function in the basic activities of daily living for 2.5 hours 5 times a week for 20 weeks. Group B: General stimulation incorporated traditional recreational activities such as dominoes, bowling, music, relaxation, and interest discussion groups. Provider: Clinical Nurse Specialist in Gerontology and Rehabilitation Aide. Posttest data were collected at the end of intervention by investigators who were blind to group assignment.	<i>Significant:</i> Skills-training group had improved ability to perform basic activities of daily living (Physical Self-Maintenance Scale [Kent, Kastenbaum, & Sherwood, 1972], $F = 3.17$; $df = 3,59$; $p = .04$; Goal Attainment Scaling [Brody, Kleban, Lawton, & Silverman, 1971], $p = .05$). <i>Nonsignificant:</i> Stimulation group had no significant effect on ability to perform basic activities of daily living (Physical Self-Maintenance Scale [Kent et al.]; Goal Attainment Scaling [Brody et al.]; Performance Test of Activities of Daily Living [Kuriansky & Gurland, 1976]). Similarly, the skills-training group had a nonsignificant effect when measured by the Performance Test of Activities of Daily Living (Kuriansky & Gurland), $F = 2.16$; $df = 3,59$; $p = .12$.

Table 2 (cont'd)

Study	Design (Weaknesses)	Subjects	Intervention & Provider	Outcomes (Measurement Tools)
<i>Self-Care Ability (cont'd)</i>				
Ragneskog, Brane, Karlsson, & Kihlgren (1996) Sweden Psychogeriatric ward	Pretest/Posttest Moderate (b, c, d, e)	Dementia: DSM-III-R (American Psychiatric Association, 1987); NINCDS-ADRDA (McKhann et al., 1984). Mini-Mental State Exam: 16 subjects scored 0-10 4 subjects scored 11-24 Age: mean 80 years (range 69-94) Females: 50% N = 25 at baseline N = 20 at completion	Music was played 5 minutes before dinner until the last resident had finished the meal. The following design was used: (a) no music for 5 days, (b) soothing music for 8 days, (c) no music for 7 days, (d) tunes from the 1920/30s for 10 days, (e) no music for 7 days, (f) pop music for 8 days, and (g) a control period for 9 days. Data were collected by a Registered Psychologist, who was blind to the interventions, following periods b, d, f, and g.	<i>Significant:</i> The residents ate more when music was played, and the difference was particularly significant for dessert ($p < .001$) (meals were weighed prior to and following eating). Irritability, anxiety, and depression also improved ($p < .05$) (GBS-scale [Gottfries, Brane, Gullberg, & Steen, 1982]). <i>Nonsignificant:</i> Restlessness did not improve between the music periods and the control period (GBS-scale [Gottfries et al., 1982]).
<i>Wandering</i>				
Hewawasam (1996) UK NHS trust hospital	Pretest/Posttest Moderate (d, e)	Residents who had a tendency to open the exit doors. AD: 4 subjects Parkinson's disease: 1 subject Other forms of dementia: 5 subjects Mini-Mental State Exam: mean 8 (6 subjects severe, 4 moderate) Age: mean 76 years Females: 70% N = 10	Following a 3-week period of baseline observations, eight 3.8 cm strips of black tape were applied 3.8 cm apart horizontally in front of the exit door for 1 week. Following another 1 week of baseline observations, the process was repeated with the tapes applied vertically. The two research assistants, who were blind to the subjects' diagnoses, recorded the frequency of door contacts by each subject in specified time intervals.	<i>Significant:</i> Reduction in the number of exit-door contacts by up to 97% for the subjects with AD and Parkinson's disease with the use of the grid ($p = .01$ to .003). <i>Nonsignificant:</i> Subjects with other forms of dementia.

Parkinson's disease but did not find this strategy effective for subjects diagnosed with other forms of dementia. Namazi, Rosner, and Calkins (1989) found a cloth panel concealing the doorknob to be more effective than a taped grid in decreasing exiting in AD residents with symptoms of visual agnosia. Dickinson, McLain-Kark, and Marshall-Baker (1995) supported these results by suggesting that visual barriers camouflaging the panic bar or doorknob are effective controls for reducing hazardous exiting in residents with dementia. Chafetz (1990) found the ineffectiveness of the grid to be related to the presence of glass windows in the doors. Lastly, Namazi, Rosner, and Rechlin (1991) found that significant personal memorabilia displayed outside bedrooms was helpful in assisting some residents with mild to moderate levels of dementia to find their bedrooms.

Discussion

Limitations

Common methodological weaknesses included: (a) absence of a control group (73.3%); (b) failure to obtain resident or guardian consent for participation (64.4%); (c) attrition rate greater than 11% (48.9%); (d) inadequate control for all potentially relevant confounders (86.7%); and (e) poorly described or un-pretested method of data collection, or possible investigator bias (100.0%). Many of the studies did not use a control group and therefore could not control the effect of attention; consequently, their reported positive effect could be partly the result of the attention the subjects received by engaging in the activities.

Some of these methodological weaknesses may reflect the editorial policies and guidelines of the journal, rather than the quality of the research itself. Many journals publish nursing research for a target audience of clinicians interested in the implications of findings and the recommendations, rather than in a description of the study; such journals may omit details about the research design and the methods.

Additionally, demonstration of effectiveness could have been hindered by several factors: (a) intervention of too short a duration to produce significant change; (b) sample sizes too small to produce measurable effects; or (c) instruments insensitive to small increments of change in elderly persons with dementia of the Alzheimer type. Moreover, conducting research with cognitively impaired residents is especially challenging because of the unpredictability of their behaviour; their misunderstanding of, or their inability to understand, how to participate in an intervention; and the high levels of noise and

disruptions on the units. The findings of this examination must be considered in light of the methodological limitations found in all of the studies included in the overview.

Implications for Research

The overview revealed several areas in which researchers might enhance the reliability and validity of their studies. The rigour of the research might be strengthened by the following measures: incorporating a control group or a delayed-intervention group; reporting on the level of agreement to participate and the attrition rate; collecting information on possible confounders and controlling for these; using blinded data collectors or measuring interrater reliability; describing the psychometric properties of the instruments used; and conducting analyses to determine the level of significance. The overview revealed the need for further research, to examine these and other strategies in greater depth. What is the optimal duration and intensity of interventions? What specific aspects of the interventions contribute to the outcomes? Can an organizational structure ensure that the most appropriate care provider implements the strategy? These are a few of the most pressing questions that remain to be addressed by future research in this area.

Replication of all of the studies included in the overview would promote implementation of the interventions. Specifically, replicating the studies with individuals diagnosed with a variety of dementias and with different levels of cognitive impairment would help determine which strategies are appropriate for each particular person. Conducting the studies at multiple sites would help build confidence in the generalizability of the results. Longitudinal studies would help in assessing long-term effectiveness in preventing or delaying the progression of the disease and in reducing caregiver stress. The cost-effectiveness of implementing the interventions requires further study and might be of particular interest to policy-makers and administrators.

Systematic overviews that include other research methods, such as qualitative approaches, would broaden our understanding of the meaning of the disease process and the effectiveness of the interventions from the perspective of persons with dementia and their caregivers. Quality of care and the quality of life of the recipients of care must be taken into account in designing interventions. Research funding targeting these areas will be necessary for the design and conduct of high-quality studies using samples of adequate size. Policy-makers and administrators have a role to play in supporting

additional research and in facilitating implementation of the strategies that have shown promise in managing the behavioural symptomatology associated with dementia of the Alzheimer type.

Implications for Practice

Behavioural symptoms associated with dementia of the Alzheimer type — aggressive, agitated, and disruptive behaviours; poor social interaction; decreased self-care ability; day/night disturbances; and wandering — have detrimental effects on the physical and mental status of the individuals and their caregivers. The management of many of these behaviours has traditionally included chemical and physical restraints. However, concerns have been raised that such interventions may create additional adverse physical and psychological problems (Werner, Cohen-Mansfield, Braun, & Marx, 1989). Moreover, the shortage of health-care professionals in LTCFs makes it difficult to implement the high staff:resident ratio necessary to ensure the safe management of problematic behaviours (Gerdner & Buckwalter, 1996). Alternative interventions are needed to manage the behavioural symptomatology associated with dementia of the Alzheimer type. While this area of research remains in its infancy, innovative interventions and promising results have emerged from the systematic research overview.

Conclusion

Studies rated as strong or moderate and demonstrating positive effects can be recommended with more confidence than those rated as weak. For example, Friedman and Tappen's (1991) study, the only one rated as strong in validity, demonstrated that a walking program increased participants' ability to communicate when measured using the Communication Observation Scale (Hoffman, Platt, & Barry, 1985). This strategy can be implemented with a fair degree of confidence that the desired effect will be produced. However, it should be noted that replicating this study in different settings would enhance the generalizability of the findings.

Although the results of the other studies are less conclusive, these other strategies are worth trying as well, as this overview has revealed the best available scientific evidence for managing the behavioural symptomatology of dementia of the Alzheimer type. The interventions are clinically safe and most can be easily implemented in a wide variety of settings: acute care, long-term care, adult day-care, home care. Although occasionally the interventions were implemented by the

researcher or by individuals with specialized training, most caregivers of people with dementia could use the strategies described.

The findings, considered in light of the various methodological limitations, indicate that research exists, although it is in its infancy, to support the use of strategies for managing the behavioural symptomatology associated with dementia of the Alzheimer type.

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