REVIEW ARTICLE

Effectiveness of Nonpharmacological Interventions for the Management of Neuropsychiatric Symptoms in Patients With Dementia

A Systematic Review

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Background: Recent reports documenting limited evidence supporting the use of pharmacological interventions for neuropsychiatric symptoms (NPS) and increased risk of death, the black box warnings against the use of atypical antipsychotic drugs in older adults, and Omnibus Budget Reconciliation Act regulations suggest the need to evaluate the usefulness of nonpharmacological interventions in the management of NPS of dementia.

Methods: To determine the evidence base of nonpharmacological interventions for the management of NPS in patients with dementia, we reviewed MEDLINE, PsycINFO, the Cochrane library, and relevant bibliographies published from January 1966 to December 2005, using the American Psychological Association Guidelines.

Results: Three randomized controlled trials (RCTs) and 6 single-case designs (SCDs; N of 1 trials) met inclusion criteria. Under *unmet needs interventions*, 1 SCD found a moderate reduction in problem behaviors. Under *behavioral interventions*, based on observational data, all 4 SCDs reported a relative reduction of 50% to 100% in neuropsychiatric symptoms. Under *caregiving interventions*, there were 3 RCTs. At the 6-month follow-up, 1 RCT found a reduction in 4 neuropsychiatric symptom subscales: ideation disturbance score (0.3 vs 0.5; range, 0-8; $P=.005$); irritability score (18.8 vs 23.0; range, 8-38; $P=.008$); verbal agitation, as measured by mean frequency of 20-minute outbursts (0.5 vs 0.8; $P=.005$); and physical aggression score (11.4 vs 12.9; range, 6-42; $P<.001$). Another RCT found a significant improvement in frequency (2.3 vs 3.1; range, 0-4; $P<.001$) and severity (2.2 vs 2.8; range, 0-4; $P<.001$) of target behaviors associated with the intervention arm. The third RCT found no effect. Under *bright light therapy,* 1 SCD found short-term improvements on the Agitated Behavior Rating Scale (9.7 vs 19.9; $P<.001$).

Conclusions: The cumulative research to date on the impact of nonpharmacologic interventions for NPS among patients with dementia indicates that interventions that address behavioral issues and unmet needs and that include caregivers or bright light therapy may be efficacious. More high-quality research is necessary to confirm these findings.

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In a recent systematic review, Sink and colleagues[1] concluded that pharmacological treatments for neuropsychiatric symptoms (NPS) of dementia (agitation, aggression, delusions, hallucinations, repetitive vocalizations, and wandering) lack an evidence base. Additional reviews[2,3] recently reported that the use of atypical and typical antipsychotic drugs is associated with an increased risk of death. These findings, coupled with the recent US Food and Drug Administration black box warning against the use of atypical antipsychotic drugs in older people,[4] are particularly compelling in light of a recent report[5] that extended-care settings for patients with dementia use antipsychotic drugs as the first line of management of NPS for patients with dementia,[6] despite Omnibus Budget Reconciliation Act regulations to the contrary. Because NPS are associated with staff caregivers' burnout, turnover, and morbidity; increased health care costs; and increased institutionalization of patients with dementia,[7-9] finding alternative and effective methods for managing NPS is an important public health and fiscal concern.

Nonpharmacological interventions fall into 3 broad categories, (1) *unmet needs interventions*, which conceptualize NPS as a form of communicating an underlying need, such as the need for stimulation (eg, a patient with dementia engages in repetitive vocalizations for auditory stimulation), pain reduction, and socialization; (2) *learning and behavioral interventions*, which

assume that NPS are behaviors that have been inadvertently reinforced in the face of an environmental trigger (eg, a patient with dementia learns that he or she can get attention by screaming); and (3) *environmental vulnerability and reduced stress-threshold interventions,* which assume a mismatch between the person's environment and their abilities to cope with the situation (and, thus, patients with dementia overreact to their environments; eg, they become agitated by too much noise[10,11]). Even if the source of NPS is biological, any of these nonpharmacological interventions may still be applied.

Although reviews on nonpharmacological interventions for NPS of dementia exist,[10,12] to our knowledge, no previous review has compared the research against the rigorous standards designed by researchers who are expert in the study of nonpharmacological interventions. The conclusions of previous reviews may be inaccurate because of the significant methodological differences between medication trials and nonpharmacological trials. Criteria designed for pharmacological studies may ignore the many necessary rigors needed to conduct a fair evaluation of nonpharmacological interventions (such as the use of single-case design methods). In addition, they do not account for the fact that blinded assignment is usually impossible in such interventions because interventionists and patients often are aware of the nature of the intervention (although some participants may be unaware of the intervention owing to dementia). Instead, other methods to overcome these issues, such as blind assessment and intervention manuals, are of major importance.

The American Psychological Association's Task Force created a set of guidelines to determine whether a nonpharmacological intervention has sufficient evidence.[13] The purpose of this review is to compare the existing evidence base for nonpharmacological interventions for NPS with these guidelines so that health care providers, caregivers, and extended care administrators can make informed decisions regarding nonpharmacological management of NPS in patients with dementia. This article complements the study by Sink et al[1] on pharmacological interventions for NPS.

METHODS

SEARCH PROCEDURES

Computer-based searches of MEDLINE, PsycINFO, and the Cochrane library and manual searches of bibliographies identified randomized controlled trials (RCTs) and single-case designs (SCDs; N of 1 trial) testing nonpharmacological interventions for the management of NPS in patients with dementia from January 1966 to December 2005. Key word search criteria combined condition (dementia; Alzheimer, Lewy body, and vascular diseases), nonpharmacological intervention (psychotherapy; behavioral analysis; aroma, behavioral, music, pet, nonpharmacologic, psychoeducation, psychosocial, activity, Snoezelen, dance, physical, massage, light, touch, and multisensory therapies; caregiving; contingency management; and restraint-free environment), and outcome (neuropsychiatric disease, hallucination, delusion, combativeness, agitation, aggression, wandering; and behavioral, neurobehavioral, perceptual, psychomotor, and mood disorders).

SELECTION CRITERIA FOR REVIEW

Peer-reviewed English-language studies that tested nonpharmacological interventions for patients with dementia and reported on NPS outcomes were included. We selected only those studies that had as their outcome a reduction in NPS. Similar to the study by Sink et al,[1] we did not include studies that evaluated only depression as an outcome but rather focused on disruptive behaviors, such as agitation, aggression, or wandering. (See Teri et al[14] for a recent review of psychosocial interventions for the treatment of depression in patients with dementia.)

The APA Task Force identified RCTs and SCDs as the most rigorous designs to assess the efficacy of nonpharmacological interventions. We included RCTs if they (1) randomly assigned participants; (2) compared the intervention with either no treatment or with placebo or attention control, or with some noted standard of care; and (3) used objective measures of outcomes with evidence of validity and reliability. We allowed randomization by site (a minimum of 3 sites per arm) because patient level randomization is not always possible for staff training models. In addition, we included studies that employed a randomized crossover design. This efficient design introduces 2 or more interventions to the same participant in a random order. A washout period is required to diminish potential carryover effects, and only studies with a specified washout period were included. We also included SCDs that compared treatment conditions within an individual across time so that the individual served as his or her own control.

METHODOLOGICAL QUALITY ASSESSMENT

Quality criteria identified by the APA Task Force were used to evaluate the strength of the RCTs and guided the selection of studies we ultimately reviewed. These criteria are that (1) inclusion and exclusion criteria must be clearly stated; (2) there must be a reasonable length of follow-up to determine stability of change; (3) clinical as well as statistical significance should be determined; (4) an agreed-on treatment manual or standard must be used; (5) treatment fidelity must be evaluated; (6) data must be properly analyzed (a between-group comparison and use of intent-to-treat analyses); (7) each cell must have a minimum of 25 subjects; and (8) dropout and treatment refusal information must be clearly documented.

The SCDs needed to meet the following criteria: (1) ABAB (where A denotes no intervention and B, intervention) or multiple baseline designs were allowable because they provide the most compelling evidence of causality (for more detail on these designs, see Kazdin[15] and Barlow and Hersen[16]) (other types of withdrawal designs were not included in this review because we used the strictest interpretation of APA criteria); (2) continuous assessment across phases have been conducted, with a stable baseline assessment of the behavior (at least 3 data points at minimum or predictable variability) established before the intervention was introduced; (3) assessments of NPS were standardized; (4) interobserver agreement (independent agreement between 2 raters) was routinely collected throughout the course of the study (on at least 25% of each phase with a minimum agreement rate of 80%[15]) to protect against observer drift; and (5) appropriate data analyses were conducted, or in absence of such analyses, graphical presentation of the data was provided. Adopting the strictest interpretation of APA criteria, we included in the analysis only RCTs and SCDs that met all of these criteria.

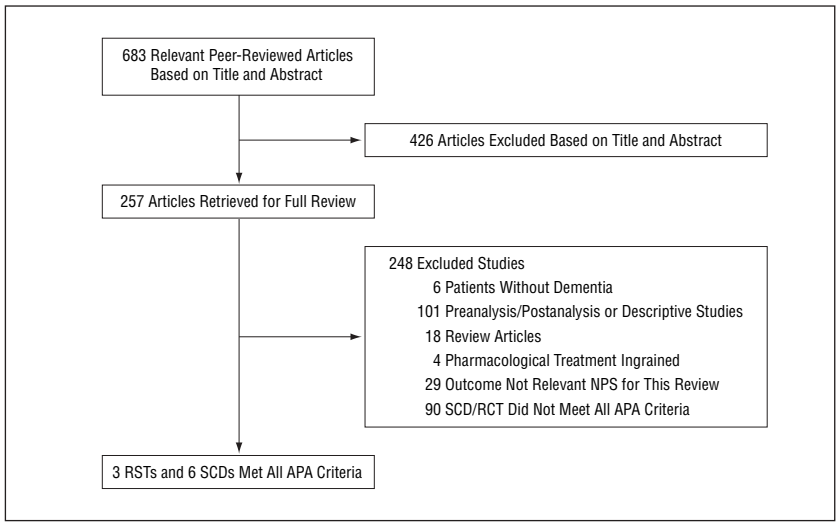

Figure. A summary of study flow. APA denotes American Psychological Association; NPS, neuropsychiatric symptoms; RCT, randomized control trial; and SCD, single-case design.

DATA ABSTRACTION

Literature searches, as well as data extraction, were conducted independently by at least 2 investigators (L.A., A.M.G., or L.F.). Disagreements between reviewers were discussed, and a consensus agreement was maintained. When necessary, the fourth investigator (P.A.A.) was consulted. To facilitate comparison with Sink et al,[1] we used similar abstraction guidelines when possible. These include type of intervention, type of study, number of participants, inclusion and exclusion criteria, dementia type and severity, setting, follow-up period, control group(s), outcome, statistical significance, and clinical significance.

DATA SYNTHESIS

Using the APA guidelines, we classified the interventions into 3 categories. An intervention is determined to be *efficacious or evidence-based* (1) if there have been 2 independent RCTs that find positive results or (2) multiple replications of SCDs (those with at least 3 subjects each) by 2 or more independent research groups. An intervention is considered *possibly efficacious, pending replication*, if (1) an SCD has found the intervention to be beneficial in at least 3 participants, (2) if all the RCTs in existence are conducted by 1 team, (3) if there is only 1 RCT in support of the intervention, or (4) if there are equal numbers of positive and negative studies that are of high quality. If none of these conditions is met, then the intervention has *no evidence base* in a specific population. A treatment is considered to be not efficacious if there have been 3 or more studies and the majority find no treatment effects.

RESULTS

EVIDENCE SYNTHESIS

For a diagram of study flow,[17] see the **Figure**. Three RCTs and 6 SCDs met all APA criteria for contributing to the evidence base and were subsequently reviewed. One SCD was an unmet-needs intervention, 4 SCDs and 3 RCTs were behavioral and learning-based interventions, and 1 SCD was an environmental vulnerability and reduced-stress intervention. See the **Table** for a summary of study characteristics and findings, organized by study type.

EVIDENCE FOR UNMET-NEEDS INTERVENTIONS

These interventions assess the motivation behind the NPS and design an intervention to either prevent the NPS from occurring or reduce their intensity. Thus, the intervention is tailored specifically to the patient.

One SCD met our quality criteria. This study found that of the 2 to 4 most frequent and upsetting behaviors identified by caregivers based on the Behavior Pathology in Alzheimer Disease Scale, there was an improvement in at least 1 problem behavior for all 8 participants and an improvement in 2 to 4 problem behaviors for 6 of the participants.[18] Because only 1 SCD was reviewed and resulted in positive outcomes, this intervention is possibly efficacious, pending replication of findings.

EVIDENCE FOR LEARNING AND BEHAVIORAL MODELS

We further divided this category into 2 subcategories based on the focus of the intervention. *Behavioral interventions* focus primarily on changing the frequency and/or duration of NPS through changes in the environment. *Caregiving interventions* focus on teaching caregivers of patients with dementia techniques for managing NPS and how to deal with the stress associated with caregiving.

BEHAVIORAL INTERVENTIONS

Four SCDs qualified for the review.[19-22] These interventions manage NPS through contingency management such as removing rewards (eg, giving attention for NPS), delivering rewards for prosocial behaviors, or behavioral redirection. Based on observational data, all SCDs found a significant reduction in disruptive behaviors following intervention (a reduction of 80% or more in out-of-seat behavior intervals [mean percentage of out-of-seat behavior intervals at baseline, 18.3%; mean percentage of intervals following intervention, 3.85%] and agitated speech [mean percentage of agitated speech intervals at baseline, 33.7%; mean percentage of intervals following intervention, 9.6%])[19]; 95% reduction in entry into a restricted area (mean entries per hour at baseline, 7.6; mean entries following intervention, 0.4)[20]; a 50% to 80% reduction in wandering frequency across participants[21]; a 100% reduction in physical and/or verbal aggression during treatment phase across participants (number of agitated assaults ranged from 1 to 3 at baseline).[22] Because of the limited scale of these SCDs and given their positive outcomes, individualized behavioral interventions are possibly efficacious, pending further research.

CAREGIVING INTERVENTIONS

Caregiving interventions provide education and support to caregivers of patients with dementia and assistance in managing NPS by using unmet needs and behavioral in-

Table. Study Characteristics and Outcomes

Study and Type of Study	Intervention	Participants, No.	Exclusion/Inclusion	Dementia Type and Severity	Setting
		Unmet Needs Intervention			
Palmer et al,[18] SCD-MBD	Hearing aids	10 CG/pt dyads (8 postintervention)	CG: MMSE ≥ 26; pt MMSE 13-23; hearing loss; live with CG, no neurological hx, speak English	AD, mild to moderate	CD
		Learning and Behavioral Interventions			
Bakke et al,[19] SCD-ABAB	Multicomponent: functional analysis, contingent reinforcement, breaks, time and task feedback; 23 sessions	1	Agitation, wandering	Moderate AD; MMSE = 9	Home
Feliciano et al,[20] SCD-ABAB, component analysis, stimulus fading	CB, redirection, minimal attention 4 mo	1	Wandering	Probable dementia, mental retardation, bipolar dx; MMSE = 0	Adult day care
Heard and Watson,[21] SCD-ABAB	DRO, individualized reinforcers	4	Dementia, referred by staff for wandering	Dementia	NH
Moniz-Cook et al,[22] SCD-ABA or ABAB	Functional analysis, removal of individual triggers; 16 d to 7 wk	5 (2 had ABAB design)	Agitation and aggression	AD; vascular; multi-infract	RH or NH
		Caregiving Interventions			
McCallion et al,[23] RCT, blind (randomized within NH)	FVEP: 4 1.5-h group sessions, 3 1-hr family conferences over 8 wk to improve family communication	66 dyads (57 postintervention)	Dementia, GDS ≥3, displayed problem behavior per staff, regular family/friend visitor (known resident ≥2 y)	MMSE mean = 5.81 (tx), 7.97 (control)	5 NHs; 120-300 beds
Teri et al,[24] RCT, blind	CG training in behavior mgmt by community consultants; 8 weekly sessions and 4 monthly telephone calls	95 dyads (83 postintervention)	CG: spouse or adult relative Pt: ADRD, ≥3 agitated and depressed behavioral problems ≥3/wk, per CG	ADRD MMSE mean = 14.7	CD
Teri et al,[25] RCT, blind	CG trained in behavior mgmt and exercise program for pt, 12 1-hr sessions in 3 mo and 3 monthly follow-ups	153 dyads (140 postintervention; 89 at 24-mo postintervention)	AD community dwelling, ambulatory, CG consent	AD MMSE mean = 16.8	In-home, recruited from university registry
		EN/RST: BLT Interventions			
Lovell et al,[26] SCD-ABABA	BLT (2500 lux, 2 h each morning) 3-d baseline, 10-d tx, 36 d total	6	Resident ≥3 mo, some agitation, judged adjusted to facility, not blind	Moderate to severe	Skilled nursing facility

(continued)

terventions. Three RCTs[23-25] met all APA quality criteria. At the 6-month follow-up, 1 RCT[23] found a significant group difference of small to medium magnitude in scores of 4 subscales: (1) the Ideation Disturbance scale of the Cornell Scale for Depression in Dementia scores (range, 0-8) (mean [SD] under intervention arm, 0.3 [0.9]; mean [SD] under control treatment arm, 0.5 [1.6]; $P=.005$); (2) the Irritability Scale of the Multidimensional Observation Scale for Elderly Subjects (range, 8-38) (mean [SD] under intervention arm, 18.8 [9.6]; mean [SD] under control treatment arm, 23.0 [17.1]; $P=.008$), (3) the Cohen Mansfield Agitation Inventory Verbally Agitated Scale (frequency of verbal agitation during a 20-minute period) (mean [SD] under intervention arm, 0.5 [1.2]; mean [SD] under control treatment arm, 0.8 [2.8]; $P=.005$), and (4) the Physically Nonaggressive Scale (range of scores, 6-42) (mean [SD] under intervention arm, 11.4 [7.4]; mean [SD] under control treatment arm, 12.9 [6.2]; $P<.001$) relative to usual care. However, the RCT conducted multiple comparisons, and the effect size was small to medium. There also was a possibility of regression to the mean because baseline values of usual care seemed to be lower than the intervention's baseline values. Another RCT found that of 3 problem behaviors identified by caregivers, there was an improvement in at least 1 for all participants in the treatment group immediately after intervention as well as a significant improvement in frequency (range, 0-4; mean [SD] frequency of problem behaviors at baseline, 3.1 [0.7]; mean [SD] postintervention, 2.3 [0.8]; $P<.001$) and severity (range, 0-4; mean [SD] severity of problem behaviors at baseline, 2.8 [0.6]; mean [SD] postintervention, 2.2 [0.8]; $P<.001$) of target behaviors but no group differences at follow-up.[24] A third RCT found no effect on NPS.[25] Given the mixed results, caregiving interventions are possibly efficacious, pending replication.

Table. Study Characteristics and Outcomes (cont)

Study and Type of Study	Assessment Periods	Control Group	Outcome	Statistical Significance	Clinically Significant
Unmet Needs Intervention					
Palmer et al,[18] SCD-MBD	6-10 wk baseline, ongoing for 5 mo	UC	Hearing aid use, Behave-AD score	≥1 Problems improved for all, 2-3 problems improved for 6 pt	Yes
Learning and Behavioral Interventions					
Bakke et al,[19] SCD-ABAB	Baseline; in-session	Baseline (UC)	Out of seat and agitated speech	No SA	Yes, reduced >80% for both behaviors
Feliciano et al,[20] SCD-ABAB, component analysis, stimulus fading	Ongoing for 4 mo	Baseline (UC)	Decrease in number of entries into office	No SA	Yes, 95% reduction for CB
Heard and Watson,[21] SCD-ABAB	6-9 Baseline sessions, each tx session	Baseline (UC)	Wandering frequency	No SA	Yes, reduced 50%-80% across participants
Moniz-Cook et al,[22] SCD-ABA or ABAB	12-24 mo	Baseline (UC)	Behavioral observation; naturalistic observation by staff; review of records; interviews	No SA	Yes, no behavior incidents during tx phases
Caregiving Interventions					
McCallion et al,[23] RCT, blind (randomized within NH)	3 mo, 6 mo	UC	MOSES (staff), CSDD (staff and resident), CMAI-O, CMAI-nurse, minutes spent managing problem behavior (staff), psychotropic drug and restraint use	At 6 mo, FVEP better for MOSES irritability; CSDD ideational disturbance; CMAI-O verbally agitated, physically nonaggressive	Possible, but small differences and multiple comparisons, possibly regression to the mean
Teri et al,[24] RCT, blind	Baseline, 2 mo (post-tx), 6-mo follow-up	UC	3 Target behaviors, NPI, RMBPC reaction	No group differences at 6-mo in problem behavior; postintervention: 100% in tx reported some improvement in ≥1 target behavior	Yes for frequency (before and after comparison; postintervention) but no group difference at 6 mo
Teri et al,[25] RCT, blind	Baseline, 3 mo (postintervention), 6 mo, 12 mo, 18 mo, 24 mo	UC	CSDD RMBPC	Tx group improved CSDD, NS for RMBPC, inst, but fewer inst for behavior in tx group (19%) vs UC (50%)	No, trend for institutionalization but not for RMBPC
EN/RST: BLT Interventions					
Lovell et al,[26] SCD-ABABA	Every 15 min, 4-8 PM	UC	ABRS	Agitation scores significantly lower during tx; $F_{1,25} = 14.40$; $P<.001$	Yes

Abbreviations: ABAB, A = no intervention, B = intervention; ABRS, Agitated Behavior Rating Scale; AD, Alzheimer disease; ADL, activities of daily living; ADRD, Alzheimer disease and related disorders; Behave-AD, Behavior in Alzheimer Disease scale; BLT, bright light therapy; CB, cloth barrier; CD, community dwelling; CG, caregiver; CMAI, Cohen-Mansfield Agitation Inventory; CMAI-O, Cohen-Mansfield Agitation Inventory Observer-derived; CSDD, Cornell Scale for Depression in Dementia; DRO, differential reinforcement of other behaviors; dx, diagnosis; EN, environmental vulnerability; FVEP, Family Visit Education Program; GDS, Global Deterioration Scale; hx, history; IADL, Instrumental Activities of Daily Living; inst, institutionalization; ITT, intention to treat; MBD, multiple baseline design; mgmt, management; MMSE, Mini Mental State Examination; MOSES, Multidimensional Observation Scale for Elderly Subjects; NHs, nursing homes; NPI, Neuropsychiatric Inventory; pt, patient; RCT, randomized controlled trial; RH, residential home; RMBPC, Revised Memory and Behavior Problem Checklist; RST, reduced threshold; SA, statistical analysis; SCD, single-case design; tx, treatment; UC, usual care.

EVIDENCE FOR ENVIRONMENTAL VULNERABILITY AND REDUCED STRESS-THRESHOLD MODELS

One type of reduced stress-threshold model met criteria for review: bright light therapy, which is based on the premise that exposure to direct bright light produces a calming effect on the agitated patient. Only 1 SCD[26] met inclusion criteria. Based on the Agitated Behavior Rating Scale (ABRS), agitation was significantly lower with the bright light condition (mean score on the ABRS under the no-intervention arm, 19.93; mean score on the ABRS under the intervention arm, 9.71; $P<.001$); however, the effects did not last beyond 1 day after intervention (mean score on the ABRS, 19.19). Thus, bright light therapy is possibly efficacious, pending replication of findings.

COMMENT

This review revealed a number of interesting findings regarding the state of research on nonpharmacological interventions for NPS. The most striking finding was an unintended one: although several hundred studies have investigated the efficacy of these interventions, only a handful met all APA criteria for quality of method, and of those, most were SCD

studies. This particular finding raises important issues about the need for more funding in this area of research and for better-quality monitoring of the research conducted. Although some interventions show promise based on the APA criteria, the designation of "possibly efficacious" is given with much caution because these interventions need to be studied rigorously with either large-scale SCD or RCT methods.

Another interesting finding is the fact that many of the interventions, which have been considered as efficacious gold standard nonpharmacological interventions, do not have enough of an evidence base in reducing NPS in patients with dementia. As in the case of pharmacological interventions,[1] there is not enough evidence to show that the actual occurrence of NPS is mitigated by behavioral interventions, caregiving interventions, multisensory interventions, or unmet needs interventions. These findings, coupled with findings regarding pharmacological management of NPS, suggest that the goal of reducing or eliminating NPS may need to be modified. As an example, a number of caregiving studies had also measured caregiver-perceived management of and burden by NPS, showing positive outcomes.[24,27-29] Although behavior itself may not change, perceived management of the behavior may change and potentially may result in reduced caregiver distress, disability, staff turnover, and overall cost of care. Future research should investigate the importance of reducing NPS frequency and increasing perceived ability to manage problem behaviors among staff and family caregivers. Furthermore, it also is important to evaluate the occurrence of positive behaviors and not only negative ones as potential outcomes of these interventions.

In addition to relying primarily on SCDs of limited size, another limitation of the current state of research is the fact that most of the studies reviewed did not evaluate adverse effects. Furthermore, although the possibility of publication bias exists in both RCTs and SCDs, it is possible that negative findings from an SCD are less likely to be published than negative findings from RCTs.

As we await more sophisticated research, clinicians are left with guidelines that clearly state that medications should be used as a last resort and that nonpharmacological approaches should be used first.[5] The best clinical research to date supports an individualized approach, in which potential causes of the symptoms are identified and addressed according to behavioral techniques. Such causes may include pain, fatigue, and other physical symptoms; understimulation or overstimulation; or environmental triggers. A careful functional analysis of the behavior and its antecedents and consequences is a crucial aspect of such behavioral interventions.[30,31] This type of individualized approach requires an interdisciplinary team approach and careful assessment and reassessment to ensure optimal outcomes. Educating caregivers about how to manage NPS as well as their own distress also is an important aspect of such multimodal care and has shown modest improvements.

To our knowledge, the present review is the only one to have used the most rigorous evaluation criteria developed specifically for behavioral interventions and as such constitutes the most in-depth analysis of the research to date on nonpharmacological management of NPS. Given the fact that other reviews that included studies of varying quality of method concluded that many of these interventions are promising,[10] future research will be extremely worthwhile to determine the efficacy of nonpharmacological methods of NPS management. In addition, more work is needed to determine the most feasible outcome for patients with dementia. Of the interventions in existence, the most promising (although still requiring further evidence) seem to be individually tailored behavioral interventions.

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