
REVIEW ARTICLE

The effects of psychosocial methods on depressed, aggressive and apathetic behaviors of people with dementia: a systematic review

Renate Verkaik*, Julia C. M. van Weert and Anneke L. Francke

NIVEL (Netherlands Institute for Health Services Research), Utrecht, The Netherlands

SUMMARY

Objectives This systematic review seeks to establish the extent of scientific evidence for the effectiveness of 13 psychosocial methods for reducing depressed, aggressive or apathetic behaviors in people with dementia.

Methods The guidelines of the Cochrane Collaboration were followed. Using a predefined protocol, ten electronic databases were searched, studies selected, relevant data extracted and the methodological quality of the studies assessed. With a Best Evidence Synthesis the results of the included studies were synthesized and conclusions about the level of evidence for the effectiveness of each psychosocial method were drawn.

Results There is some evidence that Multi Sensory Stimulation/Snoezelen in a Multi Sensory Room reduces apathy in people in the latter phases of dementia. Furthermore, there is scientific evidence, although limited, that Behavior Therapy-Pleasant Events and Behavior Therapy-Problem Solving reduce depression in people with probable Alzheimer's disease who are living at home with their primary caregiver. There is also limited evidence that Psychomotor Therapy Groups reduce aggression in a specific group of nursing home residents diagnosed with probable Alzheimer's disease. For the other ten psychosocial methods there are no or insufficient indications that they reduce depressive, aggressive or apathetic behaviors in people with dementia.

Conclusions Although the evidence for the effectiveness of some psychosocial methods is stronger than for others, overall the evidence remains quite modest and further research needs to be carried out. Copyright © 2005 John Wiley & Sons, Ltd.

KEY WORDS — dementia; depression; aggression; apathy; BPSD; psychosocial methods

INTRODUCTION

Dementia is often accompanied by behavioral and psychological disturbances that can be highly problematic to patients, their informal and formal caregivers. The International Psychogeriatric Association has assigned the term Behavioral and Psychological Symptoms of Dementia (BPSD) to these disturbances. They define BPSD as 'signs and symp-

toms of disturbed perception, thought content, mood or behavior that frequently occur in patients with dementia'. BPSD can be clustered into one of five syndromes: psychosis, aggression, psychomotor agitation, depression and apathy (Finkel and Costa e Silva, 1996). Various studies have been conducted into the prevalence of BPSD and describe figures between 58% and 100% of patients with at least one of the five syndromes (Zuidema and Koopmans, 2002).

Earlier research shows that most serious problems experienced by nurses caring for patients with dementia concern depression, aggression and apathy (Ekman *et al.*, 1991; Halberg and Norberg, 1993; Kerkstra *et al.*, 1999). One way to support nurses who are often confronted with these problems is through the development of guidelines. The guidelines should be

*Correspondence to: R. Verkaik Msc, NIVEL, P.O. Box 1568, 3500 BN Utrecht, The Netherlands. Tel: +31-30-2729824. Fax: +31-30-2729729. E-mail: r.verkaik@nivel.nl

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based on psychosocial methods that are scientifically proven to reduce the BPSD. A systematic review of the existing research literature can help to determine the effectiveness of psychosocial methods in reducing BPSD. In recent years some systematic literature reviews have already been conducted. Following the review method of the Cochrane Collaboration these literature reviews explored the effects of Multi Sensory Stimulation/Snoezelen, Validation, Reality Orientation, Reminiscence (Chung *et al.*, 2002; Neal and Briggs, 2002; Spector *et al.*, 2002a; Spector *et al.*, 2002b). These reviews did not result in solid conclusions, because of, among others, the limited number of studies that could be included.

For this reason and because of the lack of systematic reviews of some other psychosocial methods (e.g. Psychomotor Therapy, Behavior Therapy, Gentle care) a new, large-scale systematic review has been conducted as a first phase in a research project aimed at the development of evidence based guidelines for nurses (including nursing assistants) working with clients suffering from dementia. In this review the amount of evidence for the effectiveness of 13 psychosocial methods to reduce depression, aggression and apathy in people with dementia is established. Not only methods employed by nurses were studied but also methods utilized by other disciplines, such as by activity therapists, psychologists and psychotherapists. If these methods should prove to be effective they could be adapted to nursing practice. Previous reviews included only Randomized Controlled Trials (RCTs). In order to increase the chances that more solid conclusions could be drawn, non-randomized controlled trials (CCTs) were also included in the review. The possible selection biases produced by the inclusion of CCTs are controlled for in the data synthesis of the review. In this article the methods, results and conclusions of the review are presented and discussed.

METHODS

The review has been conducted following the guidelines of the Cochrane Collaboration. This entails that (1) most steps in the review are performed by two researchers independently; (2) the researchers work in accordance with a predefined protocol and (3) the methodological quality of the studies is taken into account during the data synthesis. The method is described in detail in the Cochrane Reviewers' Handbook (Clarke and Oxman, 2002).

Inclusion criteria

Types of studies. Randomized controlled trials (RCTs) and controlled clinical trials (CCTs), also including cross-over trials with a sufficient wash-out period (depending on the specific psychosocial method), were included in the review when there was a full article or description of the study obtainable.

Types of participants. People were included who have been diagnosed as having a type of dementia according to DSM-III-R, DSM-IV, ICD-10 or other comparable instruments. Both inpatients and outpatients and all severities of dementia were included.

Types of psychosocial methods. The ten psychosocial methods distinguished by the American Psychiatric Association were included, their names sometimes adjusted to current practice (APA, 1997), supplemented with three methods (in Table 1 with an asterisk) that are well known to be used in the Netherlands.

Types of outcome measures. Only studies using depression, aggression or apathy as an outcome measure were included.

Table 1. Included methods

Behavior oriented	Emotion oriented	Cognition oriented	Stimulation oriented
—Behavior Therapy	—Supportive Psychotherapy	—Reality Orientation	—Activity/Recreational Therapy
	—Validation/Integrated Emotion-Oriented Care	—Skills Training	—Art Therapy
	—Multi Sensory Stimulation/Snoezelen		—Psychomotor Therapy*
	—Simulated Presence Therapy		
	—Reminiscence		
	—Gentle Care*		
	—Passivities of Daily Living (PDL)*		

Search method

From September 2002 to February 2003 we searched in various international and national bibliographical databases for intervention studies that fulfilled all four inclusion criteria. Ten databases were searched: PubMed, Cochrane CENTRAL/CCTR, Cochrane Database of Systematic Reviews, Psych-Info, EMBASE, CINAHL, INVERT, NIVEL, Cochrane Specialized Register CDCIG, SIGLE, Cochrane Database of Abstracts of Reviews of Effectiveness.

The databases were searched using the following strategy that was formulated in PubMed and adapted to the other databases:

dementia [MESH] AND (psychotherapy OR complementary therapies OR psychosocial treatments OR psychosocial* OR emotion-oriented care OR emotion-oriented* OR validation therapy OR validation-therapy OR multi-sensory stimulation OR sensory stimulation OR sensory integration OR snoezelen OR simulated presence therapy OR simulated presence* OR reminiscence therapy OR reminiscence* OR warm care OR gentle care OR passivities of daily living OR PDL OR behavioral therapy OR behavior* therapy OR cognitive therapy OR reality orientation OR ROT OR skills training OR recreational therapy OR psychomotor therapy OR psychomotor* OR psychomotor-therapy)

Limits: Clinical Trial

All identified systematic reviews were screened for additional references.

Selection method

A first selection for inclusion was performed by the first author (RV). On the basis of titles and abstracts all studies that clearly did not meet one of the four inclusion criteria were excluded from the review. If the studies seemed to meet the inclusion criteria or if there was any doubt, the full article was ordered by library services, obtained by contacting authors or by contacting the Cochrane Dementia and Cognitive Improvement Group. A second selection was made by two reviewers independently (RV, JvW). On the basis of the full articles the two reviewers checked if the studies satisfied all four criteria. Disagreements regarding inclusion status were resolved by discussion. If no consensus could be met, a third reviewer (AF) was consulted.

Assessment of methodological quality

The methodological quality of the selected RCTs and CCTs was rated by a list developed by Van Tulder *et al.* (1997). This list, containing specified criteria proposed by Jadad *et al.* (1996) and Verhagen *et al.* (1998) consists of 11 criteria for internal validity, six descriptive criteria and two statistical criteria. The list was developed in close contact with the Dutch Cochrane Center. All criteria were scored as yes, no, or unclear. Equal weight was applied to all items. Studies were considered to be of 'high quality' if at least six criteria for internal validity, three descriptive criteria and two statistical criteria were scored positively. Otherwise, studies were considered of 'low quality'. The methodological quality of the included trials was independently assessed by two reviewers (RV, JvW). The assessments were compared and disagreements were resolved by discussion.

Data extraction

Two reviewers (RV, JvW) independently documented the following characteristics of each included study:

1. Study design.
2. Participants: inclusion and exclusion criteria; number of patients; sex; age; type of dementia and diagnostic instruments used; severity of the dementia and diagnostic instruments used; duration of the dementia; inpatients/outpatients; duration of institutionalization.
3. Psychosocial method: type of psychosocial support method in the experimental condition(s); type of psychosocial support in the control condition(s), features of methods (duration, frequency, setting).
4. Outcome measures/instruments (aggression, depression or apathy): instrument(s) used; timing of measurements; number of participants who completed the study in the experimental and control conditions; mean scores for experimental and control conditions; standard deviations in experimental and control conditions.
5. A short description of the results

The documentations of the two researchers were compared and disagreements were resolved by discussion.

Data synthesis

Owing to diversity in the features of the psychosocial methods and in outcome measures, it was not possible to pool the data for each type of method. Therefore a

Table 2. Principles of Best Evidence Synthesis

Evidence:

Provided by consistent, statistically significant findings in outcome measures in at least two high quality RCTs.

Moderate evidence:

Provided by consistent, statistically significant findings in outcome measures in at least one high quality RCT and at least one low quality RCT or high quality CCT.

Limited evidence:

Provided by statistically significant findings in outcome measures in at least one high quality RCT

Or

Provided by consistent, statistically significant findings in outcome measures in at least two high quality CCTs (in the absence of high quality RCTs).

Indicative findings:

Provided by statistically significant findings in outcome measures in at least one high quality CCT or low quality RCT (in the absence of high quality RCTs)

No/Insufficient evidence:

If the number of studies that have significant findings is less than 50% of the total number of studies found within the same category of methodological quality and study design

Or

In case the results of eligible studies do not meet the criteria for one of the above stated levels of evidence

Or

In case of conflicting (statistically significantly positive and statistically significantly negative) results among RCTs and CCTs

Or

In case of no eligible studies

'Best Evidence Synthesis' was conducted (see Table 2) based upon criteria developed by Van Tulder *et al.* (2002) and adapted by Steultjens *et al.* (2002). The Best Evidence Synthesis is conducted by attributing various levels of evidence to the effectiveness of the psychosocial methods. The synthesis takes into account the design, the methodological quality and the outcomes of the studies. Table 2 shows that at least one high quality RCT or two high quality CCTs were necessary to establish some evidence for an intervention.

Sensitivity analysis

A sensitivity analysis was performed in order to identify how sensitive the results of the Best Evidence Synthesis are to changes in the way it was conducted. The Best Evidence Synthesis was repeated in two different ways, using the following principles:

1. Low quality studies were excluded.
2. Studies were rated 'high-quality' if they at least met four criteria of internal validity (instead of

six). The results of the altered syntheses were then compared with those of the Best Evidence Synthesis and the sensitivity of the method was described.

RESULTS*Selection of studies*

Application of the search strategy to the specified databases resulted in 3,977 hits. Based on titles and abstracts, the first author selected 189 studies which possibly met the four inclusion criteria.

A total of 177 studies were tracked down, 12 studies could not be retrieved. Four of these studies investigated the effects of Validation (Esperanza, 1987; Snow, 1990; Buxton, 1996; Pretczynski *et al.*, 2002), two studied the effects of Psychotherapy (Burns, 2000; Marino-Francis, 2001), two the effects of Multi Sensory Stimulation (Creaney, 2000; Sansom, 2002), one the effects of Reminiscence (McKiernan *et al.*, 1990) and one the effects of Behavior Therapy (Howard, 1999). Of the interventions in the other two studies (North of England Evidence Based Guideline Development Project, 1998; Sharp, 1993) it was not clear which psychosocial method they concerned.

The 177 studies were independently assessed on the four inclusion criteria by the first two authors. The evaluations of the two authors were compared for all four inclusion criteria which showed a consensus on 79% of the evaluations. After discussion all disagreements were resolved. Twenty-three of the 177 articles fulfilled all four inclusion criteria. Of these articles eight described the same four studies; these were combined. This left us with a total of 19 studies to be included in the review. Of the 154 excluded studies, 89 were excluded because they did not meet one of the four selection criteria: 33 did not use a control group or a cross-over design, 21 studies did not use the formulated outcome measures, 17 did also include subjects that were not demented and 18 studies evaluated other methods than the 13 that were selected. Of the other 65 excluded studies, two were excluded because the articles did not contain a complete description (Brack, 1997; Ermini-Fünfschilling *et al.*, 1995). Sixty-three studies did not meet more than two of the selection criteria.

Data-extraction and quality assessment

This section describes the features of each study and the rating of their methodological quality. The description includes the items mentioned in the Methods

section about data-extraction as far as they were described in the articles. Table 3 contains an overview of the main methodological characteristics and results of the included studies. The following text describes the more precise content of the psychosocial methods and the control groups(s) that were used in each study.

Validation I Integrated Emotion-Oriented Care. Four studies into the effects of Validation/Integrated Emotion-Oriented Care were included in the review. Validation aims to restore self-worth and reduce stress by validating emotional ties to the past (APA, 1997). Integrated Emotion-Oriented Care is a combination of methods and techniques from emotion-oriented approaches, based on the needs of the resident in question. The method mainly consists of Validation, supplemented by other emotion-oriented methods (see Table 1) and is integrated into the 24-hour care given by nurses.

The first included study, reported by Finnema *et al.* (1998) and Finnema (2000) and Dröes *et al.* (1999), investigated the effects of 24-h Integrated Emotion-Oriented Care on depression, aggression and apathy on nursing home residents in the Netherlands. Participants in the experimental group received 24-h Integrated Emotion-Oriented Care. Participants in the control group received usual nursing home care.

The second study measured the effects of Validation and was conducted by Toseland *et al.* (1997). It investigated the effects of structured Validation Therapy group sessions on depression, aggression and apathy of nursing home residents in the United States. Participants in the experimental group received structured Validation Therapy group sessions. The first control group received Social Contact group sessions. The second control group continued to participate in regular social and recreational programs.

The third included study, reported by Schrijnemaekers (2002), investigated the effects of Integrated Emotion-Oriented Care on aggression and apathy of residents in homes for the aged in the Netherlands. The experimental group received 24-hour Integrated Emotion-Oriented Care, while the control group received regular nursing care.

Validation/Reality orientation. The fourth study on Validation/Integrated Emotion-Oriented Care is also the first included study on the effects of Reality Orientation, and was performed by Scanland and Emershaw (1993) among nursing home residents in the United States. The aim of Reality Orientation is to redress cognitive deficits (APA, 1997). In classroom Reality

Orientation, a prepared instructor reviews facets of reality with a small group of confused people.

The first experimental group received Validation Therapy group sessions. The second experimental group received Reality Orientation group sessions. A third group formed the control group and received no formal therapy. Scanland and Emershaw measured the effects on depression.

The second included Reality Orientation study, reported by Spector *et al.* (2001), investigated the effects of Reality Orientation on depression among nursing home residents in the United Kingdom. The experimental group received Structured Reality Orientation Group Therapy. The control group received usual care.

The third study on the effects of Reality Orientation was performed by Hanley *et al.* (1981) to establish the effects on apathy among residents of a long-stay psychogeriatric unit of a hospital, and residents of an old peoples home in the United Kingdom. The experimental groups received Classroom Reality Orientation. The control groups received usual care.

The fourth study on the effects of Reality Orientation was conducted by Baldelli *et al.* (1993) among institutionalized people with Alzheimer's Disease in Italy. The experimental group received formal Classroom Reality Orientation Therapy. The control group received usual care. Baldelli *et al.* measured the effects on depression.

The fifth included study on the effects of Reality Orientation, reported by Ferrario *et al.* (1991) investigated the effects on depression and apathy among institutionalized psychogeriatric patients in Italy. The experimental group received formal Classroom Reality Orientation Therapy. The control group received usual care.

Multi Sensory Stimulation/Snoezelen. The aim of Multi Sensory Stimulation/Snoezelen is to maintain or improve contact with demented people and to improve their well-being by positive stimulation of their senses (visual, auditory, tactile, olfactory and gustatory stimulation).

The first included study on the effects of Multi Sensory Stimulation/Snoezelen was conducted by Baker *et al.* (2001) among people living at home with their primary caregiver and attending a hospital day centre in the United Kingdom. People in the experimental group received 1:1 Multi Sensory Stimulation sessions in a Multi Sensory Stimulation room. The control group attended 1:1 Activity Therapy sessions.

The second study into Multi Sensory Stimulation/Snoezelen is a cross-over study, reported by Kragt

Table 3. Characteristics of included studies (E = Experimental group, C = Control group)

Treatment type and first author	Quality	Design	Treatment intensity (E&C/careprovider)	Participants (N, sex; age)	Participants (Type and severity dementia)	Outcome measures	Results ¹
Validation, Finneia <i>et al.</i> , 1998; 2000, Dröes <i>et al.</i> , 1999	High	RCT	24-h care during 7 months/nursing assistants	N completers = 146 (67 exp; 79 contr.) Female $n = 118$ Male $n = 28$ Age exp $M = 83.8$ SD 5.3 Age contr. $M = 83.6$ SD 5.8	107 Alzheimer's Disease 29 Dementia Syndrome 8 Alzheimer's and Vascular 2 Amnesic Syndrome Severity dementia (GDS-score) Mild $n = 7$ Moderate-Severe $n = 69$ Severe-Very severe $n = 70$	<i>Apathy</i> : — Behavioral Assessment Scale for Intramural Psychogeriatrics (BIP)_Subscale apathy — Dutch Assessment Scale for Elderly Patients (ASEP)_Subscale inactivity <i>Depression</i> : — Cornell Scale for Depression in dementia <i>Aggression</i> : — Cohen-Mansfield Agitation Inventory (CMAI)_Subscales verbally and physically aggressive behaviors — Dutch Assessment Scale for Elderly Patients (ASEP)_Subscale aggression <i>Apathy</i> : — Multidimensional Observation Scale for Elderly Subjects (MOSES)_Subscale withdrawn behavior <i>Depression</i> : — Multidimensional Observation Scale for Elderly Subjects (MOSES)_Subscale depression <i>Aggression</i> : — Cohen-Mansfield Agitation Inventory (CMAI)_Subscales verbally aggressive behavior (VAB) and physically aggressive behavior (PAB)	<i>Apathy</i> : No significant changes. <i>Depression</i> : No significant changes. <i>Aggression</i> : No significant changes.
Validation, Toseland <i>et al.</i> , 1997	High	RCT	Group sessions, 30 minutes, 4 times a week, during 1 year/trainers with bachelor's degrees and experience with nursing home residents	N (baseline) = 88 Female $n = 66$ Male $n = 22$ Age exp $M = 87.8$ SD 6.0 Age contr.1 $M = 87.3$ SD 6.12 Age contr.2 $M = 87.8$ SD 7.6	At least moderate level of dementia (MDS) Cognitive functioning (errors SPMQ): Errors exp. $M = 7.4$ SD 2.1 Errors contr.1 $M = 7.5$ SD 2.8 Errors contr.2 $M = 7.2$ SD 3.0	<i>Apathy</i> : — Multidimensional Observation Scale for Elderly Subjects (MOSES)_Subscale withdrawn behavior <i>Depression</i> : — Multidimensional Observation Scale for Elderly Subjects (MOSES)_Subscale depression <i>Aggression</i> : — Cohen-Mansfield Agitation Inventory (CMAI)_Subscales verbally aggressive behavior (VAB) and physically aggressive behavior (PAB)	<i>Depression</i> : Sign. difference after 1-year between validation therapy group (VT) and social contact group (SC), caused by increased depression scores of SC. No sign. differences between VT and usual care group (UC). <i>Aggression</i> : According to nursing staff assessment: Sign. changes in PAB after 3 months and 1 year. Sign. lower VAB-scores after 1 year for both VT and SC. According to nonparticipant observers: No sign. changes in PAB. Sign. lower VAB scores for SC.
Validation, Schrijnemaekers, 2002	Low	CCT	24-h care during 8 months/professional caregivers	N (baseline) = 151 Female = 136 Male = 15 Age exp. $M = 84.3$ SD 5.5 Age contr. $M = 85.9$ SD 5.6	Moderate to severe cognitive impairment (MMSE score) score exp. $M = 10.8$ SD 5.1 score contr. $M = 11.3$ SD 5.1	<i>Apathy</i> : — Dutch Behavior Observation Scale for Psychogeriatric Inpatients (GIP)_Subscale apathetic behavior <i>Aggression</i> : — Cohen-Mansfield Agitation Inventory (CMAI)_Subscales verbally and physically aggressive behaviors	<i>Apathy</i> : No significant changes. <i>Aggression</i> : No significant changes.

Validation/ Reality Orientation, Scanland <i>et al.</i> , 1993	Low	CCT	Group sessions, 30 minutes, 5 times a week, during 4 months/ registered nurse with a background in psychotherapy	N (completers) = 34 Age $M = 76.8$ (≥ 60)	Presence of confusion (MMSE ≤ 24)	Depression: Modified Beck Depression Inventory	Depression: No significant changes.
Reality Orientation, Spector <i>et al.</i> , 2001	Low	RCT	Groups sessions, 45 minutes, 15 times/ member of the research team and staff member from the nursing home	N (baseline) = 35 Age $M = 85.7$ SD 6.7	Dementia according to DSM-IV criteria Ability to communicate and understand communication (CAPE score 1 or 0 on questions 12 and 13) Senile dementia $n = 39$ Arteriosclerotic dementia or Cerebral arteriosclerosis $n = 9$ Alcohol related dementia $n = 2$ Korsakoff $n = 1$ No diagnosis $n = 6$ Severity of dementia (Koskela test) Hospital residents psychogeriatric unit Mild = 7% Moderate = 27% Grave = 25% Nursing home residents Mild = 20% Moderate = 55% Grave = 25%	Depression: Cornell Scale for Depression in Dementia (CSDD)	Depression: Significant differences in pre-/post change scores.
Reality Orientation, Hanley <i>et al.</i> , 1981	Low	RCT	Groups sessions, 30 minutes, 4 times a week, during 12 weeks/therapist	N (completers) = 57 Hospital residents of long-stay psychogeriatric unit ($n = 41$) Residents old peoples home ($n = 16$) Female $n = 53$ Male $n = 4$		Apathy: Geriatric Rating Scale (GRS)_Subscale withdrawn/apathy	Apathy: No significant changes.
Reality Orientation, Baldelli <i>et al.</i> , 1993	Low	CCT	Group sessions, 60 minutes, 3 times a week, during 3 months/-	N (baseline) = 23 Female $n = 23$ Male $n = 0$ Age $M = 84.5$ SD 6.4	Senile Alzheimer's Disease $n = 23$ MMSE ≥ 10 and ≤ 24	Depression: Geriatric Depression Scale (GDS)	Depression: No significant changes.
Reality Orientation, Ferrario <i>et al.</i> , 1991	Low	CCT	Group sessions, 60 minutes, 5 times a week, during 24 weeks/therapist	N (completers) = 19 Female $n = 11$ Male $n = 8$	MMSE > 18 and < 24	Apathy: —Multidimensional Observation Scale for Elderly Subjects (MOSES)_Subscale withdrawn behavior Depression: —Multidimensional Observation Scale for Elderly Subjects (MOSES)_Subscale depression	Apathy: Significant lower apathy scores than at pretest. Depression: No significant changes in depression scores.
Multi Sensory Stimulation/ Snoezelen Baker <i>et al.</i> , 2001	High	RCT	1:1 sessions, 30 minutes, 2 times a week, during 4 weeks/staff member day hospital & occupational therapist or psychology assistant	N (baseline) = 50 Female $n = 25$ Male $n = 25$ Age $M = 78$ (≥ 60)	Alzheimer's Disease $n = 33$ Vascular Dementia $n = 7$ Mixed $n = 10$ (psychiatrist & CAMDEX) MMSE Score exp. $M = 11.0$ SD 6.5 Score contr. $M = 6.1$ SD 5.1	Apathy: INTERACT_Short (differences in the amount of interaction at 10 min before each session and at 10 min after each session).	Apathy: Significant interaction effect on 'attentiveness to the environment'.

Continues

Table 3. Continued

Treatment type and first author	Quality	Design	Treatment intensity (E&C)/careprovider	Participants (N; sex; age)	Participants (Type and severity dementia)	Outcome measures	Results ¹
Multi Sensory Stimulation/ <i>Stoerzelen, Kragt et al., 1997, Holtkamp et al., 1997</i>	High	Rct-Over	1:1 sessions, 30–60 min, 3 successive days/activity therapist	N (baseline) = 16 Female <i>n</i> = 15 Male <i>n</i> = 1 Age <i>M</i> = 86 < 78.97 >	Diagnosis dementia (MMSE)	<i>Apathy</i> : —Dutch Behavior Observation Scale for Psychogeriatric Inpatients (GIP)_Subscale apathetic behavior	<i>Apathy</i> : Significant effect on apathy.
Multi Sensory Stimulation/ <i>Stoerzelen, Robichaud et al., 1993</i>	High	RCT	Group sessions, 30–45 minutes, 3 times a week, during 10 weeks/doctoral student gerontology and geriatrics	N (completers) = 40 Age <i>M</i> = 78.4 < 66.88 >	Dementia according to DSM-III-R Modified MMSE score ≤ 75 Physically able to attend the sessions	<i>Depression</i> : —Revised Memory and Behavior Problems Checklist (RMBPC)_Subscale depression	<i>Depression</i> : No significant effect.
Reminiscence, Goldwasser et al., 1987	Low	RCT	Group sessions, 30 minutes, 2 times a week, during 5 weeks/graduate student clinical psychology & a social worker	N (completers) = 27 Female <i>n</i> = 20 Male <i>n</i> = 7 Age <i>M</i> = 82.3 < 70.97 >	Clinical diagnosis of dementia: <i>Depression</i> : Alzheimer's Disease <i>n</i> = 6 Multi-infarct <i>n</i> = 11 Dementia secondary to a medical disorder <i>n</i> = 10 MMSE score <i>M</i> = 10.4 < 1.22 >	Beck depression Inventory	<i>Depression</i> : Significant lower self-reported depression score at posttest. Note: Reminiscence group participants had higher depression scores at baseline than the 2 control groups.
Reminiscence, Namazi and Haynes, 1994	Low	CCT	Group sessions, 30 minutes, 3 times a week, during 4 weeks/trained instructor	N (completers) = 15 Female <i>n</i> = 15 Male <i>n</i> = 0 Age <i>M</i> = 81.5 SD 3.6	Alzheimer's disease <i>n</i> = 15 MMSE Score exp. <i>M</i> = 13.4 SD 4.9 Score contr.1 <i>M</i> = 12.6 SD 3.9	<i>Apathy</i> : Verbal responses during session 'Related responses < 5 or > 5 words' and 'Unrelated responses < 5 or > 5 words'	<i>Apathy</i> : No significant changes.
Psychomotor Therapy, Hopman-Rock et al., 1999	High	RCT	Group sessions, 2 times a week, during 6 months/ activity therapist	N (baseline) = 92 Female <i>n</i> = 87 Male <i>n</i> = 5 Age exp. <i>M</i> = 83.8 SD 5.8 Age contr. <i>M</i> = 84.2 SD 5.6	Cognitive impairment (CST-14 maximum score = 14) Score exp. <i>M</i> = 11.5 SD 3.3 Score contr. <i>M</i> = 11.5 SD 5.7	<i>Apathy</i> : —Dutch Behavioral Observation Scale for Intramural Psychogeriatry (BIP)_Subscale apathetic behavior <i>Depression</i> : —Dutch Behavioral Observation Scale for Intramural Psychogeriatry (BIP)_Subscale depression	<i>Apathy</i> : No significant changes. <i>Depression</i> : No significant changes.
Psychomotor Therapy, Dröes, 1991	High	RCT	Groups sessions, 45 minutes, 3 times a week, during 11 months/a graduate and a doctoral student Human Movement Sciences	N (baseline) = 43 Female <i>n</i> = 36 Male <i>n</i> = 7 Age <i>M</i> = 84.2 SD 5.39	Diagnosis probable dementia of Alzheimer type (DSM-III-R) MMSE score <i>M</i> = 12.7 SD 4.16	<i>Apathy</i> : —Dutch Behavior Observation Scale for psychogeriatric Inpatients GIP_Subscale apathetic behavior <i>Depression</i> : —Dutch Depression list	<i>Apathy</i> : No significant changes. <i>Depression</i> : No significant changes.

Skills Training, Meier <i>et al.</i> , 1996	Low	CCT	Group sessions, 60 minutes, 1 time a week, 4 quarters/-	N (completers) = 53 Female $n = 34$ Male $n = 19$ Age exp. $M = 74.7$ SD 8.7 Age contr. $M = 75.6$ SD 7.2	Alzheimer's Disease (NINCDS-ADRDA) $n = 28$ Vascular Dementia (NINDS-AIREN) $n = 25$ MMSE score Score exp. $M = 24.7$ SD 2.9 Score contr. $M = 24.6$ SD 3.2	Aggression: —Dutch Beoordelingschaal voor Oudere Patiënten [Assessment Scale for Elderly Patients] (BOP)_Subscale aggression	Aggression: Significantly lower aggression scores in subgroup of patients with more functional disorders than in this type of patients in the control group. Depression: No significant changes.
Behavior Therapy, Teri <i>et al.</i> , 1997	High	RCT	1:1 sessions, 60 minutes, 1 time a week, during 9 weeks/ geriatrician	N (completers) = 72 Female $n = 34$ Male $n = 38$ Age $M = 76.4$ SD 8.2	Probable Alzheimer's Disease (NINCDS-ADRDA criteria) MMSE score $M = 16.5$ SD 7.4	Depression: —Hamilton depression Scale —Cornell Scale for Depression in Dementia —Beck Depression Inventory	Depression: Significantly lower depression scores in both experimental groups after 9 weeks intervention period and after 6 months follow-up. Depression: No significant changes.
Art Therapy, Wilkinson <i>et al.</i> , 1998	Low	CCT	Group sessions, 45 minutes, 1 time a week, during 12 weeks/-	N (completers) = 15 Female $n = 10$ Male $n = 5$ Age exp. $M = 79.6$ Age contr. $M = 80$ N (baseline) = 26 Age exp. $M = 83.5$ SD 5.3 Age contr. $M = 81.5$ SD 5.3	Consultant diagnosis of dementia (DSM-IV)	Depression: —Cornell Scale for Depression in Dementia	Depression: No significant changes.
Gentle Care, Bråne <i>et al.</i> , 1989	Low	CCT	24-hour, during 3 months/nursing staff		Patients in the experimental group were demented according to their MMSE-score (Folstein <i>et al.</i> , 1975).	Apathy: Depression in Dementia Scale, Subscale withdrawal Depression: Depression in Dementia Scale, Subscale depressed mood	Apathy: Significant changes in withdrawal change scores. Depression: No significant changes.

¹Significant results are in favor of the experimental group, unless otherwise stated. Only results concerning apathetic, depressive or aggressive behavior are mentioned.

et al. (1997) and Holtkamp *et al.* (1997), into the effects on apathy among nursing home residents in the Netherlands. The experimental method consisted of 1:1 Snoezel sessions in a Snoezel room. The control method consisted of staying in the living room and receiving usual care.

The third included study on the effects of Multi Sensory Stimulation/Snoezelen was conducted by Robichaud *et al.* (1994) and measured the effects on depression of nursing home residents and residents of a hospital for long-term care in Canada. The experimental group followed a so called Sensory Integration Group program. The Sensory Integration sessions also contained Reality Orientation and cognitive stimulation. The control group took part in the usual leisure activities of their institution.

Reminiscence. Two studies that were included in the review investigated the effects of Reminiscence. The aim of Reminiscence is to stimulate memory and mood in the context of the patient's life history (APA, 1997).

The first study, reported by Goldwasser *et al.* (1987), measured the effects of Reminiscence Therapy Group sessions on depression among nursing home residents in the United States. The experimental group received Reminiscence Group Therapy sessions. There were two control groups. The first control group attended Support Group sessions that focused on present and future events and problems. The second control group received usual care.

The second study on Reminiscence was conducted by Namazi and Haynes (1994) and investigated the effects of so called Sensory Reminiscence on apathy among nursing home residents in the United States. The experimental group attended Sensory Reminiscence Group sessions. The Sensory Stimulation part consisted of colored photographs of objects and sounds related to the objects. Participants in the control group attended discussion sessions in which the events of the day and future times were discussed, without the aid of sensory stimuli.

Psychomotor Therapy. Two studies into the effects of Psychomotor Therapy were included. The aim of Psychomotor Therapy is to help people with dementia to cope with the changes they encounter as a consequence of their disease. Sporting activities and games are used to stimulate cognitive and psychosocial functions (Dröes, 1991).

The first study was performed by Hopman-Rock *et al.* (1999) and measured the effects of Psychomotor Therapy on apathy and depression among cognitive

impaired residents of homes for the elderly in the Netherlands. The experimental group attended Psychomotor Activation Program Group sessions. The control group participated in usual activities.

The second study on the effects of Psychomotor Therapy, reported by Dröes (1991), investigated the effects of Psychomotor Therapy on depression, aggression and apathy among nursing home residents in the Netherlands. The experimental group attended Psychomotor Therapy group sessions. The participants in the control group attended Activity Group sessions with the same intensity.

Skills Training. One included study researched the effects of Skills Training on people with dementia. The aim of (Cognitive) Skills Training is to redress cognitive deficits (APA, 1997), by activating remaining cognitive functions. It is often conducted in a classroom setting.

This Swiss study performed by Meier *et al.* (1996) measured the effect of Cognitive Skills Training on depression. The participants were living at home with their primary caregiver and were attending a memory clinic. The experimental group received Cognitive Skills Training in groups of eight to nine persons. The people in the control group received no treatment and were on a waiting list for receiving Cognitive Skills Training or lived too faraway to attend the sessions.

Behavior Therapy. One study on the effects of Behavior Therapy was included. The aim of Behavior Therapy is to reduce or improve behavior by analyzing the situations in which the behavior occurs and anticipate these situations.

This study was conducted by Teri *et al.* (1997) and investigated the effects of Behavior Therapy–Pleasant Events and Behavior Therapy–Problem Solving on depressed Alzheimer's disease patients, living at home with their primary caregivers in the United States. Two experimental groups and two control groups participated in the study. In the first part of Behavior Therapy–Pleasant Events patients and their primary caregivers learned how to reduce depression by increasing pleasant events. In the second part they learned how to identify and confront behavioral disturbances that interfered with pleasant events. In Behavior Therapy–Problem Solving the focus was on problem-solving patient depression behaviors that were of specific concern to the caregiver. The control groups received either Typical Care Control (patients and caregivers received advice without specific problem solving or behavioral strategies) or were on a Waiting List.

Art Therapy. One study on the effects of Art Therapy was included in the review. Art Therapy (e.g. music, dance, drama) provides stimulation and enrichment, and in this way can mobilize the patient's available cognitive resources (APA, 1997).

The study, reported by Wilkinson *et al.* (1998), investigated the effects of Drama and Movement Therapy on depression in the United Kingdom. Participants were living at home and attending a psychiatric day hospital for the elderly. The experimental group attended Drama and Movement Therapy group sessions. The control group received the usual care of the day hospital.

Gentle Care. One included study measured the effects of Gentle Care, sometimes called Integrity Promoting Care, on people with dementia. The aim of Gentle Care is to create an atmosphere in which people with dementia feel safe, and in this way reduce feelings of fear and insecurity. Closeness, recognition and liberty are central concepts of gentle care (Buijssen, 1991).

Bråne *et al.* (1989) measured the effects of Integrity Promoting Care on apathy and depression of nursing home residents in Sweden. Residents in the experimental group received 24-h Integrity Promoting Care from trained nursing staff. The control group received usual 24-h care.

Data synthesis

Using the principles of the Best Evidence Synthesis (see Table 2), taking into account the design, methodological quality and outcomes of the studies, the following conclusions can be drawn.

Apathy. There is some scientific evidence that people with moderate to severe dementia (MMSE 0–17) and high care dependency, are less apathetic when remaining in a Multi Sensory Stimulation/Snoezelen room than when receiving Activity Therapy or staying in the living room. The evidence comes from two studies with apathy as outcome measure, both with the same significant positive findings. The studies were two high quality RCTs conducted by Kragt *et al.* (1997)/Holtkamp *et al.* (1997) and Baker *et al.* (2001).

Depression. There is limited scientific evidence that people with probable Alzheimer's Disease (NINCDS-ADRDA), meeting DSM-III-R criteria for major or minor depressive disorder, and living with their caregivers at home, are less depressed when their informal caregivers are trained in using Behavior Therapy–Pleasant Events or Behavior Therapy–Pro-

blem Solving than when: (a) their informal caregiver receives standard information from a therapist or when (b) the informal caregiver does not receive any special training or information. The evidence comes from one study, conducted by Teri *et al.* (1997), with depression as outcome measure. This study was an RCT that was rated as being of high methodological quality.

Aggression. There is limited scientific evidence that people living in nursing homes who meet DSM-III-R criteria for probable Alzheimer's disease, who are mobile (including wheelchair), who are support-dependent or slightly care dependent (BOP 0–6) but are relatively highly functionally disordered (PADL < 44) are less aggressive when following Psychomotor Therapy groups than when following Activity Groups. The evidence comes from one study with aggression as an outcome measure that shows significantly positive results. This study, conducted by Dröes (1991), was an RCT that was rated as being of high methodological quality.

There is no evidence that Multi Sensory Stimulation/Snoezelen, Behavior Therapy–Pleasant Events, Behavior Therapy–Problem Solving or Psychomotor Therapy also have positive effects on the other outcome measures that were subject of this review. For Validation/Integrated Emotion-Oriented Care, Reality Orientation, Activity/Recreational Therapy, Reminiscence, Skills Training, Art Therapy, Gentle Care, Passivities of Daily Living, Supportive Psychotherapy and Simulated Presence Therapy, there is no or too limited evidence that they have positive effects on either apathetic, depressed or aggressive behaviors of people with dementia.

Sensitivity analysis

The results of the data synthesis appeared not to be sensitive to the principles used in the Best Evidence Synthesis. The results remained the same when the analysis was repeated with low quality studies excluded and when studies were rated to be of 'high-quality' if four or more criteria of internal validity were met.

CONCLUSION AND DISCUSSION

The main results of this review are that:

- (1) there is some evidence that Multi Sensory Stimulation/Snoezelen in a Multi Sensory Room reduces apathy in people in the latter phases of dementia;

- (2) there is scientific evidence, although limited, that Behavior Therapy–Pleasant Events and Behavior Therapy–Problem Solving reduce depression in people with probable Alzheimer’s disease who are living at home with their primary caregiver;
- (3) there is also limited evidence that Psychomotor Therapy Groups reduce aggression in a specific group of nursing home residents diagnosed with probable Alzheimer’s disease.

The evidence comes from a maximum of two high quality RCTs that arrive at the same positive results.

The systematic review as described has some limitations. In the first place it was not possible to track down complete descriptions of 12 studies (see section ‘Selection of studies’). If some of these studies should meet all four inclusion criteria the results of the review could be different. If, for example, the omitted studies on Multi Sensory Stimulation/Snoezelen were also to measure the effects on apathy, and these studies were not to find the same positive results as the included studies, there would be no scientific evidence left for Multi Sensory Stimulation/Snoezelen. Also, if one of the excluded studies were a randomized controlled trial of high methodological quality on a psychosocial method for which no studies were yet included, and with positive effects, there would also be limited scientific evidence for the effectiveness of this method. However, the odds that the results of the review would be different if the 12 studies had been included are small. Of the 12 not-included studies four measured the effects of Validation/Integrated Emotion-Oriented Care. Looking at the method of Best Evidence Synthesis, these studies can no longer influence the results of the review, because of the lack of significant findings in the studies already included. The other eight studies were on: Supportive Psychotherapy, Multi Sensory Stimulation/Snoezelen, Reminiscence, Behavior Therapy and two as yet unclear psychosocial methods. If the percentage of the studies that meet all four inclusion criteria is comparable with that of the studies already included (14%), only one of these eight studies would be included.

Another limitation of the review is that the included studies were classified into one of 13 psychosocial approaches according to their main principles. While the main principles of the methods are similar, the specific content and intensity of the methods classified into one approach could sometimes be quite different. In the Validation/Integrated Emotion-Oriented Care group, for example, studies were included that measured the effects of 24-h Integrated Emotion-

Oriented Care and studies that measured the effects of Validation Therapy Group sessions. The more specific content and intensity of the methods in some cases might play a larger role than the main principles. Moreover, the measurement instruments used to measure the effects of a psychosocial approach on, for example, apathy could differ between specific methods. If the Best Evidence Synthesis is repeated with some subdivisions of methods that belong to an approach, this does not however, change the results. And when looking more closely at the measurement instruments used for apathy in the Multi Sensory Stimulation/Snoezelen studies, these are comparable.

Another point related to the focus on 13 types of psychosocial interventions, is that studies into other (possibly effective) interventions are not being described. However, the reason the study was limited to these interventions was so that the results could be combined. Inclusion of all psychosocial methods would have made this impossible.

A substantial limitation of the review would be if not all existing studies into the effectiveness of the 13 psychosocial methods on reducing depressive, aggressive and apathetic behaviors of people with dementia had been considered for inclusion. The search in ten different databases in combination with screening relevant other reviews ($n = 22$) gives us confidence that the search strategy has been robust.

In conclusion, it seems noteworthy that until now:

- (1) the number of studies of sufficient scientific quality on the effectiveness of psychosocial methods in dementia care is rather limited, though there are some convincing examples of high quality research and
- (2) treatments based on a non-cognition oriented theory seem to produce the most promising results. Multi Sensory Stimulation/Snoezelen, Behavior Therapy–Pleasant Events and Behavior Therapy–Problems Solving are all methods that aim to improve the patients’ well-being and to fit the individual needs of demented patients. However, other psychosocial methods, such as Validation/Integrated Emotion-Oriented Care or Gentle Care, do have comparable goals. There may be several reasons why there is no or insufficient evidence (Toseland *et al.*, 1997; Bråne *et al.*, 1989) for the effectiveness of these methods for as far as reduction of depression, apathy and aggression are concerned: lack of sufficient high quality scientific research (e.g. in the case of Gentle Care), the heterogeneity of the study population,

the measurements used and the specific content of the method or the duration of the implementation period (Finnema, 2000). New scientific research is needed to gain more insight into the effectiveness of psychosocial methods used in the care for demented elderly with BPSD.

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