

Management of apathy in nursing homes using a teaching program for care staff: the STIM-EHPAD study

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Objective: This study aimed to evaluate the effectiveness of a nursing home (NH) staff education to manage apathy in older individuals with a diagnosis of dementia.

Methods: Sixteen NHs agreed to participate, and 230 demented apathetic residents were randomly assigned to the reference group (RG) or the intervention group (IG). IG received a month of weekly 4-h training. Qualitative evaluation was performed through interviews and questionnaires regarding work practices and knowledge about dementia. Quantitative evaluation was at baseline, at the end of the training program (week 4), and 3 months after the end of it with the use of the Neuropsychiatric Inventory (NPI), the Apathy Inventory, and two observation scales.

Results: In the qualitative evaluation, very few staff responded to the questionnaire. Concerning the difficulty that managing residents' behavioral symptoms presented, aggressiveness was ranked as the most difficult behavior to manage and apathy as the least difficult. In the quantitative evaluation, the results are as follows. NPI: the IG scores increased from baseline to week 4 more than the RG for symptoms belonging to the affective and the psychotic NPI item subgroup. Apathy Inventory: there was a significant decrease of the emotional blunting score dimension in the IG. Group Observation Scale: significant improvement was observed for the emotional blunting dimension in the IG only.

Conclusions: Apathy is rarely identified as a problem in NH. Emotional blunting was the only dimension sensitive to change. Failure to improve residents' level of interest could be explained by the difficulties encountered in accessing information regarding the subjects' personal interests. But it remains possible to modify residents' emotional reactivity and staff's perceptions of residents' behaviors and emotions. Copyright © 2012 John Wiley & Sons, Ltd.

Key words: Alzheimer's disease; apathy; training program; nursing homes

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Introduction

Behavioral and psychological symptoms of dementia (BPSD) are part of the clinical picture of Alzheimer's disease (AD) and other dementias (Finkel, 2003).

Further, regardless of the severity or stage of the disease, apathy is the most common symptom of dementia (Robert *et al.*, 2005). In the Réseau sur la maladie d'Alzheimer français, the REAL-FR cohort study, the prevalence of apathy and hyperactivity

symptoms increased significantly during a four-year follow-up period, whereas affective and psychotic symptoms were unchanged (Gonfrier *et al.*, 2012). Several studies have also indicated that apathy explains at least part of the loss of autonomy in activities of daily living (ADL) in dementia patients (Boyle and Malloy, 2004; Lechowski *et al.*, 2009). To meet diagnostic criteria for apathy (Robert *et al.*, 2009), four factors have to be present: (a) diminished motivation; (b, 1–3) behavioral, cognitive and emotional dimensions of apathy; (c) functional impairment attributable to apathy; and (d) the absence of specific characteristics listed as exclusion criteria.

There is great need for exploration of the efficacy of nonpharmacological approaches to the treatment of BPSD because psychotropic drugs have been found to have limited efficacy and negative side-effects. Actually, most professional guidelines, particularly those of the American Association for Geriatric Psychiatry, underline the fact that nonpharmacological interventions should always be the first-line treatment (Lyketsos *et al.*, 2006). To achieve this goal, the first step should be BPSD-specific, management-oriented training for all staffs (Livingston *et al.*, 2005). This is one of the primary goals of the French National Alzheimer 2008–2012 Plan. The plan has already been implemented for agitation and aggressiveness (Deudon *et al.*, 2009) but not yet for apathy in nursing homes (NH).

This study aimed to evaluate the effectiveness of staff education for the management of apathy in older individuals with a diagnosis of dementia. The training program was designed to provide advice on how to manage specific BPSD and to encourage NH staffs to use nonpharmacological solutions for their management. It was hypothesized that residents' behavior would improve in NH where staffs received a specific program of education and training when compared with the behavior of a reference group of residents.

Materials and methods

Setting and participants

Sixteen NH agreed to participate in the study among the 24 selected from a list of approximately 300 NH in the French Alpes-Maritimes region. We considered the administrative status of the NH to have an equivalent number of private, public or not for profit NH. The details are presented in Table 1. Prior to randomization of NH to study conditions, all directors were contacted and when they agreed to participate, an open-ended questionnaire was mailed to coordinator-physicians to guide them in the residents' selection. Residents' inclusion criteria were as follows: (1) a diagnosis of dementia according to medical record information; (2) a Mini mental state examination (MMSE) < 24; and (3) presence of apathy according to the proposed diagnostic criteria for apathy in AD and other neuropsychiatric disease (Robert *et al.*, 2009). The screening was performed by physicians and psychologists at the selected NH. However, inclusions were effective only after the study staff had determined that each selected resident met study criteria. Randomization by site rather than by participant was used to control for possible cross-contamination of treatment or diffusion effect. None of the participating NH shared facilities or staffs. NH assigned to the reference group (RG) were informed that the purpose of the study was to regularly assess the frequency of BPSD recorded by independent raters. They were also requested to take care of the residents as usual with their standard practices and procedures (usual care: provision of medical care, ADL assistance, nonpharmacological intervention). All study procedures received institutional approval by the Nice University Hospital ethics committee and were consistent with the principles outlined in the Declaration of Helsinki. Because the study was classified as a routine clinical procedure, signed informed consent was not required from patients or caregivers.

Table 1 Facility description, number of screened and selected residents and residents/caregivers ratio

	Total number of residents in the NH		Screened residents		Included residents		Number of caregivers in NH		Residents/caregivers ratio
	Sum	Mean (SD)	Sum	Mean (SD)	Sum	Mean (SD)	Sum	Mean (SD)	Mean (SD)
IG	769	96.12 (45.12)	135	16.88 (6.17)	119	14.88 (4.82)	284	35.5 (15.35)	0.69 (0.15)
RG	602	75.25 (14.6)	133	16.63 (3.89)	111	13.88 (5.64)	279	34.88 (13.44)	0.46 (0.13)
Total	1371	85.69 (34.14)	268	16.75 (4.99)	230	14.38 (5.1)	563	35.19 (13.94)	0.43 (0.14)

NH, nursing home; IG, intervention group; RG, reference group.

Staff training program for the intervention group

Two psychologists conducted training with staff in the intervention group (IG). The first intervention consisted of a 2-h training including a description of the study and a didactic session on AD and BPSD. The information provided was summarized on two types of index cards. Card type 1 provided general guidelines or “Do’s and Don’ts” when faced with apathy or depression. It also explained how staff could act to avoid or decrease the emergence of BPSDs especially in carrying out ADL. Card type 2 provided recommendations for nonpharmacological interventions (Figure 1). In the second stage of the intervention, NH staff received a weekly 4-h training for a month. It consisted of suggested methods and practical advice on how to deal with apathy and depression. Two hours was devoted to techniques for dealing with deficits in ADL. This training aimed at teaching NH staff how to promote patients’ autonomy and, thus, increase their sense of competence. Another 2 h was spent on teaching those staff whose work is to engage patients in various structured activities how to structure these activities and to learn techniques and exercises that could help improve the three dimensions of apathy in their patients.

Note the aim of the training program was to provide on-site, hands-on-advice to the caregivers on treating the NH residents. Psychologists attempted to integrate their teaching with the regular on-going functioning of the institutions. To insure that the psychologists were able to train and interact with the maximum number of caregivers, training sessions were offered at different times of the day and on different days (depending on the rotation of medical and paramedical staff).

Measures

Study outcome was measured using two methods: a qualitative evaluation that dealt with the care staff members’ “work” and a more quantitative one that focused more directly on changes in the residents themselves.

Qualitative evaluation. Staffs of all the NH were extensively interviewed at baseline (BL) about their work practices. They were questioned about their perceptions and knowledge of BPSDs by using a Nursing Home Behavioral Symptom Management questionnaire.

Quantitative evaluations. Conducted at BL, at the end of the training program (week 4, W4) and 3 months

later (week 17, W17), eight independently trained research psychologists blinded to the resident’s group assignment collected behavioral and functional measures at all NH (Figure 2).

Nursing home staff completed the Katz ADL Scale (Katz, 1983) to assess functional abilities and the 12 domains of the Neuropsychiatric Inventory–Nursing Home (NPI–NH) version (Sisco *et al.*, 2000) to evaluate the residents’ neuropsychiatric symptoms. NPI domains were divided into four subgroups according to the factor analysis described by Aalten *et al.* (2007): (a) psychotic = hallucinations and delusions; (b) hyperactive = agitation, euphoria, disinhibition, irritability, aberrant motor behavior; (c) apathetic = apathy, eating abnormalities; and (d) affective = depression, anxiety.

Research team psychologists completed the following: (1) The Apathy Inventory–Clinician version (AI–C) (Leone *et al.*, 2008), designed to evaluate the three dimensions of apathy. Each dimension was rated from 0 (no clinical symptom) to 4 (severe clinical symptom). (2) A Group Observation Scale (GOS) specifically developed for the study to assess behavioral disturbance through direct observation of residents of a given NH during normal mealtimes. The GOS includes items describing initiative (21 items), interest (seven items) and emotion (seven items). The higher the score, the less severe the residents’ behavioral symptoms. (3) An Individual Observation Scale (IOS) specifically developed for the study to assess behavioral disturbance in a one-on-one interview. The IOS includes items covering initiative (15 items), interest (four items) and emotion (seven items). The psychologist determined whether each of the listed behaviors, such as smiling, saying or just responding to a goodbye, appeared “a little” (one to three times), “sometimes” (four to six times) or “often” (seven times or more). The higher the score, the less severe the resident’s behavioral symptoms. The same scale was used for scoring the GOS and the IOS.

Statistical analysis

The qualitative evaluation was made by an independent economist in public health specialized in quality approach in training. He only realizes descriptive analysis.

For the quantitative evaluation, we have chosen change in AI–C scores as the primary outcome measure. The secondary outcome measures were defined by scores on the NPI–NH, on the Katz ADL Scale and on the two observation scales. Statistical

what to do and what to avoid when faced apathy and depressive moods

	Loss of emotional reactions	Loss of initiative	Loss of interest	Depressive mood
Be	Note whether the resident spontaneously expresses his/her feelings.	Notice if the resident spontaneously takes the initiative.	Check to see if the resident expresses his/her own interests spontaneously.	Accept the existence of the resident's sadness.
	Note if the resident expresses his/her own feelings after being asked about them.	Notice whether the resident answers questions.	Check to see if the resident expresses his/her own interests after being asked about them.	Consider the resident's mood in adapting your care taking.
	Be open to patient's expression of feelings.	Give positive reinforcement for participation in personal activities of daily living and workshops.	Determine residents' interests in order to adapt care so that it is most likely to be stimulating for them.	Help the resident overcome his/her morbid thoughts by giving him/her another topic to think about.
	Try to verbalize feelings patient may have experienced during daily living activities, workshops, or a visit.	Propose activities of daily living, workshops, outings.	Encourage participation in daily activities and workshops provided by the nursing home.	Point out the sunny side of things.
	Discuss feelings that the resident seems not to express.	Give	To do	To do
	Give positive reinforcement for participation in personal activities of daily living and workshops.	Solicit and encourage the resident's participation in activity of daily living, workshops, outings.	Explain the value and interest of each activity of daily living and workshop proposed by the establishment	Discuss with the resident visits received from his/her family members or friends.
Solicit and encourage the resident's participation in activities of daily living and workshops.	Start something like an activity of daily living and progressively lead the resident to continue it, and to finish it either alone or with your help.	Solicit and encourage the resident's participation in activities of daily living, workshops, and outings.	Suggest activities and workshops proposed by the nursing home taking into account the resident's mood.	
Suggest activities that would appear to fit with the resident's history and interests.	Help the resident who starts an activity to finish doing it to avoid a failure.	Promote plans, even short-term ones.	Make use of the resident's interests to increase the likelihood of his/her getting involved in self-care.	
	Suggest activities related to the resident's history and interests.	Discuss opinions about personal or general current events.		
	Provide opportunities for the resident to have social interactions.	Regularly propose new activities.		
		When possible, notify the resident that he/she will receive a visit.		
		Talk with the resident about visits he/she received from his/her family members or friends.		
Don't	Infantilize.	Do everything for the resident without giving him or her the chance to take the initiative.	Fail to discuss the resident's state of mind.	Ignore the resident's sadness.
	Dictate a code of behavior.	Fail to give him/her opportunity to express a choice	Fail to make use of the residents' past or history as subject matter for discussion.	Maintain the resident's morbid thoughts.
	Generate anxiety.	Force the resident to do anything.	Fail to discuss visits residents' received as something to talk about.	Have a discussion that could generate anxiety.
	Adopt a monotone in speaking to patient.	Incessantly ask questions.	Confine the resident in his/her room.	Minimize the resident's emotional pain.
	Use harsh or brusque gestures.	Do many things simultaneously with the resident.	Impose your own choices for activities on residents.	Adopt a monotone in speaking to patient.
	Enter the resident's room without speaking or looking at him/her.	Speak authoritatively.		Confine the resident in his/her room.
Confine the resident in his/her room.	Reprimand the resident.		Let the resident get bored.	
Force the resident to participate in activities of daily living or workshops.	Blackmail the resident.		Let the resident be alone in the dark.	

Figure 1 Description of index card type 1.

		Baseline	Week 4	Week 17
Nursing home staff	<i>Neuropsychiatric Inventory</i>	X	X	X
	<i>Nursing Home version</i>	X	X	X
	<i>Katz ADL Scale</i>	X	X	X
Psychologists from the research team	<i>Apathy Inventory</i>	X	X	X
	<i>Clinician version</i>	X	X	X
	<i>Individual Observation Scale</i>	X	X	X

Figure 2 Schedule of quantitative evaluations.

analysis was carried out with SAS 9.1 statistical software by using a level significance of less than 0.05. Descriptive statistics were used to show the distribution of variables in the total study population and experimental groups. Values were expressed as means \pm standard deviation (SD) for qualitative variables and as number and percentage for quantitative variables. Mean comparisons between the two groups were performed using the Student's *t*-test. Differences in the distribution of categorical variables were analyzed with the Chi square test. Analyses were performed as intention-to-treat and involved all patients who were randomly assigned to the IG or to the RG. Comparisons of the evolution of scores at different study times—BL and W4, and BL and W17—were performed using the Student's *t*-test (the evolution of scores was defined for each patient by these difference scores). In addition, change in the evolution of scores was analyzed using multiple linear regression analysis adjusted for potential confounding factors. Confounding factors were defined as a statistically relevant difference between two groups at baseline. The presented results are the adjusted statistical results except for the clinical characteristics of the study sample.

Results

Demographics and MMSE scores of the 230 included residents are listed by group in Table 2 as are BL scores on the AI-C and the Katz ADL. The RG had an attrition of 15 residents (13.5%); 10 were lost to follow-up because of death. The IG had an attrition of 12 residents (10.1%); 10 were lost to follow-up because of death.

Qualitative evaluation. Before training, 25% of the IG staff ($n=76$) and 22% of the RG staff ($n=65$) responded to the Nursing Home Behavioral Symptom Management questionnaire.

One possible explanation of the low response rate was the reservations expressed by some health managers regarding the real objective of the questionnaire, which included a knowledge assessment that is not

usual in the daily practice of those institutions. In terms of kinds of staff, psychologists, physicians and nurses responded more frequently to the questionnaire than practical nurse or agent of hospital service.

Considering all the professions together, results indicate a relatively low level of knowledge in the two groups with an average score of 10.32 (range: 0–15) for IG and 10.49 (range: 7–18) for RG out of 20. Levels of knowledge between RG and IG were relatively close. After training, the same questionnaire was again proposed to IG. The results improved somewhat but remain moderate: with scores of 11.7 out of 20.

Looking further at the results, responses to questions on BPSD indicated that the level of knowledge about apathy is very low in the two groups.

Staffs were also asked to rate their perceived difficulties to manage five kinds of residents' BPSD (agitation, aggressiveness, aberrant motor behavior, apathy and depression). At the "before training" assessment, agitation/aggressiveness is perceived as the most difficult BPSD to manage and apathy as the easiest/least difficult in both groups: IG score = 0.40 and 0.43 in RG for apathy, whereas scores relative to agitation/aggressiveness were about 0.88 on a 0 to 1 scale.

After the training, in the IG, there were score changes with lower scores for agitation/aggressiveness (-0.06) and aberrant motor behavior (-0.04) and higher scores for apathy ($+0.02$) and depression ($+0.08$). Thus, those results seem to reflect a change in caregivers' perceptions of BPSD, thanks to the formation.

Note that these figures represent only the perceptions of those caregivers who answer the questionnaires and not the total number of those who received the training program. Given the design of the training program, psychologists tried to interact during each training session with the maximum number of caregivers on-site. However, we have no precise figures for the real number of caregivers who benefited from the training given that such interactions are difficult to detect occurring as they did during the normal daily activities in an NH.

Table 2 Demographic and clinical characteristics of the study sample

	Study sample (n = 230)		IG (n = 119)		RG (n = 111)		p value
	n	%	n	%	n	%	
Males	47	20.5	33	27.7	14	12.6	0.004
Females	183	79.5	86	72.3	97	87.4	
Age	Mean	SD	Mean	SD	Mean	SD	p value
MMSE	88.325	6.3	87.83	6.8	88.82	5.8	0.24
NPI	12.46	6.23	11.00	6.7	13.9	5.4	0.002
Psychotic subgroup	2.1	4.7	2.1	4.4	2.1	5.00	0.98
Hyperactivity subgroup	6.05	8.3	6.3	8.2	5.8	8.4	0.73
Affective subgroup	4.2	5.65	3.6	4.9	4.8	6.4	0.12
Apathy subgroup	1.25	1.2	1.3	1.3	1.2	1.1	0.44
Apathy Inventory							
Emotional blunting	2.41	1.17	2.6	1.1	2.1	1.1	0.0007
Lack of initiative	2.79	1.06	3.00	1	2.5	1.1	0.0001
Lack of interest	2.89	0.99	3.00	0.9	2.7	1.1	0.02
Katz Scale							
Toileting	1.83	0.49	1.9	2	1.7	2.00	0.0001
Dressing	1.62	0.75	1.8	2	1.4	0.8	0.0005
Go to the toilet	1.04	0.84	1.2	0.8	0.9	0.8	0.009
Locomotion	0.66	0.53	0.8	0.5	0.5	0.5	0.0002
Continence	1.39	0.79	1.5	0.8	1.3	2.00	0.14
Feeding	0.8	0.8	0.8	0.8	0.6	0.8	0.04
GDS ^a	1.21	1.5	1.1	1.3	1.3	1.7	0.52
ADQOL ^b	30.42	6.85	30.5	6.8	30.4	6.9	0.95
	n	%	n	%	n	%	p value
Treatments ^c							
Psychotropic drugs	147	64.5	71	65.1	76	63.9	0.84
Antidepressant	100	43.6	52	46.9	48	40.3	0.32
Anxiolytic	75	32.45	32	28.8	43	36.1	0.24
Antipsychotic	49	21.35	25	22.5	24	20.2	0.66

IG, intervention group; RG, reference group.

^aGeriatric Depression Scale.

^bAlzheimer's Disease Quality of Life Scale.

^cNumber of residents with one (or more) prescription for medication.

Quantitative evaluations. Means and SDs for outcome variables completed by the NH staff for each group at each follow-up time are shown in Table 3. Comparing BL and W4 NPI–NH scores, residents from the IG had significantly higher scores for symptoms belonging to the affective subgroup ($p < 0.01$) and to the psychotic subgroup ($p < 0.01$). The differences did not remain significant when comparing BL and W17 scores. In both groups, there were no significant changes in the number of psychotropic drugs prescribed at BL.

Comparing BL and W4 Katz ADL scores, residents from the IG have significantly lower scores for “dressing” and “transferring” items ($p < 0.05$), whereas residents from RG have significantly lower scores for the “continence” item ($p < 0.01$) and “go to the toilet” item ($p < 0.05$); the lower the score, the more self-sufficient residents are. There was no significant difference between the two groups in change in the “toileting” and “feeding” item scores. Comparing BL and W17 ADL scores, residents from the IG group have lower scores

for the “toileting” and “transferring” items ($p < 0.05$), and residents from the RG group continue to have lower scores for the “continence” item ($p < 0.05$). There was no significant difference between the two groups in change in the “dressing”, “go to the toilet” and “feeding” item scores (BL–W17).

Apathy assessment (AI–C) and observational scales (GOS and IOS) are shown in Table 4. The only significant decrease was observed for the AI–C emotional blunting dimension in the IG (BL–W4, $p < 0.01$ and BL–W17, $p < 0.01$). For the GOS, the only significant change for the RG was also observed for the emotional blunting dimension (BL–W17, $p = 0.05$).

Statistical analysis of drug treatment prescriptions showed no significant difference between the two groups in terms of number of residents having a prescription (presence or absence) of psychotropic drugs (IG: 71, RG: 76), antidepressants (IG: 52; RG: 48), anxiolytics (IG: 32, RG: 43) or antipsychotics (IG: 25, RG: 24).

Table 3 Nursing home staff assessments (NPI–NH and Katz IADL scores) for the two groups of nursing homes (IG and RG)

		BL Mean (SD)	W4 Mean (SD)	W17 Mean (SD)	Difference (BL–W4)	SD	Difference (W4–W17)	SD
NPI								
Affective subgroup	IG	3.56 (4.93)	5.84 (6.32)	4.41 (6.21)	2.52	6.08**	0.83	6.13
	RG	4.76 (6.43)	4.36 (5.71)	4.70 (5.70)	–0.39	4.75	–0.07	5.95
Apathy subgroup	IG	5.91 (4.65)	6.21 (4.53)	5.94 (4.63)	0.42	5.14	–0.05	5.83
	RG	5.18 (4.64)	4.72 (4.29)	5.10 (4.65)	–0.5	4.3	0.1	4.95
Hyperactivity subgroup	IG	6.27 (8.23)	7 (9.06)	7.47 (11.82)	0.76	4.31	1.2	9.81
	RG	5.89 (8.45)	6.15 (8.12)	6.69 (8.33)	0.27	3.89	0.8	4.14
Psychotic subgroup	IG	2.15 (4.48)	3.12 (5.96)	2.77 (5.69)	0.99	5.65**	0.49	6.3
	RG	2.16 (5.02)	1.28 (2.87)	2.18 (4.30)	–0.89	4.61	0.05	5.6
Katz Scale								
Toileting	IG	1.96 (0.24)	1.85 (0.48)	1.89 (0.41)	–0.1	0.45	–0.05	0.35*
	RG	1.70 (0.63)	1.73 (0.56)	1.81 (0.46)	0.04	0.65	0.11	0.66
Dressing	IG	1.79 (0.60)	1.71 (0.66)	1.76 (0.62)	–0.07	0.57*	–0.03	0.43
	RG	1.44 (0.85)	1.53 (0.80)	1.49 (0.80)	0.1	0.69	0.04	0.86
Go to the toilet	IG	1.18 (0.85)	1.33 (0.86)	1.33 (0.83)	0.15	0.64*	0.15	0.62
	RG	0.89 (0.80)	0.85 (0.76)	0.91 (0.80)	–0.04	0.62	0.02	0.69
Transferring	IG	0.78 (0.52)	0.73 (0.55)	0.74 (0.56)	–0.06	0.49 *	–0.05	0.54*
	RG	0.52 (0.50)	0.59 (0.53)	0.60 (0.49)	0.07	0.4	0.07	0.38
Continence	IG	1.46 (0.76)	1.57 (0.72)	1.65 (0.68)	0.12	0.52**	0.19	0.47*
	RG	1.31 (0.81)	1.23 (0.80)	1.34 (0.74)	–0.09	0.62	0.03	0.69
Feeding	IG	0.80 (0.82)	0.84 (0.80)	0.86 (0.86)	0.04	0.66	0.06	0.68
	RG	0.59 (0.77)	0.62 (0.77)	0.60 (0.73)	0.04	0.62	0.02	0.69

IG, intervention group; RG, reference group; BL, baseline; W4, week 4; W17, week 17.

The presented results are those adjusted for potential confounding factors.

* $p < 0.05$,

** $p < 0.01$.

At the beginning of the study, 27% of residents of the RG and 41% of IG had a prescription of cholinesterase inhibitors, and these percentages declined in both groups to reach 22.5% and 37%, respectively, at W17.

Discussion

Questionnaire results indicated that NH staffs considered apathy as the least difficult behavioral symptom to manage. In fact, most nonpharmacological interventions and training protocols for NH staff are usually oriented toward management of the more perturbing/disruptive behavioral symptoms. This may explain why, even if apathy is the most frequently reported behavioral symptom in AD (Steinberg *et al.*, 2008; Robert *et al.*, 2010), it is rarely identified or treated in NH.

Our results indicated that, within the three dimensions of apathy, only emotional blunting responded to the training program. This finding should be used for care purposes with residents who have the most severe cognitive deficits.

This result also tends to support the diagnostic criteria for apathy (Robert *et al.*, 2009; Mulin *et al.*, 2011) where emotional blunting is indicated by two kinds of symptoms: (1) the first symptom pertains to self-initiated or “internal emotions” and (2) the second symptom pertains to the resident’s responsiveness to external stimuli. In fact, data from a validation study conducted by the European Alzheimer’s Disease Consortium group indicated that emotional responsiveness is the most preserved dimension in demented patients (Mulin *et al.*, 2011). On the other hand, we did not observe improvement in the interest and initiative dimensions of apathy. The lack of interest dimension reflects a

Table 4 Research team psychologists' assessments (AI-C and observation scales) for the two groups of nursing homes (IG and RG)

		BL mean (SD)	W4 mean (SD)	W17 mean (SD)	Difference (BL–W4)	SD	Difference (BL–W17)	SD
AI–C								
Emotional blunting	IG	2.66 (1.13)	2.36 (1.16)	2.30 (1.5)	–0.32	1.1**	–0.34	1.16**
	RG	2.13 (1.16)	2.24 (1.04)	2.27 (1.13)	0.11	1.09	0.12	1.14
Lack of initiative	IG	3.06 (1)	2.86 (0.94)	2.86 (1.04)	–0.2	0.96	–0.18	1.04
	RG	2.50 (1.05)	2.36 (1.03)	2.5 (1.04)	–0.14	0.96	–0.02	1.07
Lack of interest	IG	3.04 (0.87)	3.02 (0.92)	3.09 (0.89)	–0.03	0.93	0.08	0.85
	RG	2.73 (1.10)	2.49 (1.07)	2.72 (1.08)	–0.25	1.03	–0.02	1.1
Observation Group Scale								
Emotional blunting	IG	2.99 (3.78)	3.91 (5.01)	4.02 (5.22)	0.98	4.00	1.01	4.56*
	RG	2.60 (3.48)	3.08 (4.37)	2.55 (3.93)	0.55	4.56	–0.1	3.84
Lack of initiative	IG	12.58 (7.85)	16.78 (9.79)	15.78 (9.56)	4.55	7.17	3.42	6.85
	RG	15.72 (10.55)	18.38 (11.96)	18.25 (11.57)	2.86	8.00	2.41	8.28
Lack of interest	IG	3.05 (3.72)	3.40 (3.41)	2.96 (3.19)	0.34	3.6	–0.05	3.53
	RG	2.45 (3.44)	3.50 (3.75)	2.89 (3.24)	1.12	3.71	0.42	3.22
Individual observation								
Emotional blunting	IG	6.38 (5.39)	8.22 (5.97)	8.67 (6.89)	2.01	4.74	2.16	5.92
	RG	8.59 (6.40)	8.50 (6.40)	8.01 (6.25)	0.01	5.53	–0.44	5.74
Lack of initiative	IG	7.78 (6.37)	9.48 (7.17)	9.59 (7.48)	1.75	6.31	1.79	5.64
	RG	9.26 (7.53)	11.21 (8.14)	10.02 (7.94)	1.99	5.57	0.7	6.3
Lack of interest	IG	3.80 (4.40)	4.91 (4.77)	5.12 (5.78)	1.38	4.6	1.33	4.36
	RG	5.56 (5.80)	6.89 (5.92)	5.36 (4.69)	1.52	4.99	–0.09	4.67

IG, intervention group; RG, reference group; BL, baseline; W4, week 4; W17, week 17.

The presented results are those adjusted for potential confounding factors.

* $p < 0.05$,

** $p < 0.01$.

decline in individuals' usual level of interest in their regular activities, social relationships and leisure or professional concerns. It is a potential limitation to engagement, defined as the act of being occupied or involved with an external stimulus (Cohen-Mansfield *et al.*, 2009). There is evidence that interventions that involve objects or tasks that have personal meaning for the person with dementia will be more likely to engage that person (Cohen-Mansfield *et al.*, 2010).

Failure to improve apathetic patients' level of interest could be explained, at least partially, by the difficulties encountered in accessing information regarding the subjects' personal interests. A more personalized evaluation and intervention is probably needed and should be incorporated into staff training. Finally, lack of initiative is probably the most biologically based dimension of motivation (Berridge, 2003) and apathy (Robert *et al.*, 2005; Robert *et al.*, 2006) and the most difficult to modify using nonpharmacological approaches.

Another important aspect of this study was the use and comparison of different types of rating scales by different sets of raters. Clinical apathy assessments were conducted independently by blinded research psychologists. Parallel assessments were completed by the NH staff using the NPI–NH. Assessments indicated a worsening of residents' affective and psychotic symptoms in the IG but not in the RG. One possible explanation is that ratings by NH staff were related to the decrease of the emotional blunting observed by the research psychologists in their ratings. In other words, the increased expression of emotions by residents also leads to the expression of more negative emotions or ideas reflected in the higher NPI–NH frequency \times severity scores for anxiety and depression items, items from the affective NPI subgroup. Another possible explanation is that the IG staff became more aware of BPSD immediately after the training and consequently reported more such behaviors at W4 and then eased up at W17 and so closer to BL.

Additionally, in IG, several ADL rated by the NH staff on the Katz ADL Scale (Sisco *et al.*, 2000) were improved, suggesting that the training helped staff improve residents' autonomy. The items "go to the toilet" and "continence" worsened, but because they are also dependent on physical and biological domains, we globally consider that some ADL were improved and, consequently, the resident's lack of initiative.

Our study was designed to train NH staff uniformly so that they could, in turn, apply the techniques to the residents in the IG. In prior studies and practice of a given technique, the description of treatment programs often varies from one study to another, so we were unable to compare our results with those of others. Here, the duration of the program and the frequency of the sessions were strictly controlled to be equivalent. Furthermore, all training materials were standardized and available for reproduction.

Our study, however, has several limitations. First, we were unable to avoid all of the difficulties related to randomization. We chose to randomize NH rather than residents because it would have been impossible to randomize residents into two different groups in the same NH. A negative result of this choice is that the two groups were not equivalent at BL. In particular, apathy was statistically more severe in the IG and cognitive functioning statistically greater in the RG. This may have increased the evolution of apathy and the statistical efficacy of the training in the IG, which might have been less apparent had the initial apathy scores been less severe in the IG. Therefore, we cannot rule out the possibility that the IG apathy scores were more likely to decline and to tend to equalize with scores of the RG at the end of treatment. To limit this discrepancy, statistical analyses were adjusted for confounding factors. For secondary outcomes, multiple comparisons were performed, and results should confirm in other studies.

Another limitation of the study is the fact that not all the NH staff participated actively in the training. Freedom of choice to participate in the training sessions was one of the initial rules proposed to the directors. In fact, only 25% of the NH staff responded to the Nursing Home Behavioral Symptom Management questionnaire. Those staffs who did not wish to complete the questionnaires may not have been equally motivated in the performance of their duties as those who participated, thus questioning the level of personal motivation of the NH staff who did not respond to the questionnaires. As the training program was integrated on the regular on-going functioning, it did not ask the same motivation level and personal

implication as the questionnaire did. We can finally point that it was only descriptive analysis, and we then had no indicators of statistical significance.

Apathy is the most frequently encountered neuropsychiatric symptom in AD and related disorders. In this study, a NH staff education intervention reduced the emotional blunting dimension of apathy and, at the same time, increased the severity of residents' depressive, anxiety and psychotic symptoms. It is important to emphasize this result to show that it is possible to modify residents' emotional reactivity and staffs' perceptions of residents' behaviors and emotions.

The major challenge of studies involving programs of education in NH is whether such programs have the potential to be extended to the vast majority of NH at the national level under the auspices of the French National Plan. The first part of the AD program described earlier should be relatively easy to implement on this scale. The next stage would be to explore how the coaching part might be improved by determining the most appropriate procedures.

Conflict of interest

None of the authors have any competing interests to disclose.

Key points

- Only emotional blunting responded to the training program.
- Several activities of daily living were improved, suggesting that the training helped staff improve residents' autonomy.
- Our staff education intervention reduced the emotional blunting dimension of apathy, but the increased expression of emotions by residents also leads to the expression of more negative emotions, indicating that it is possible to modify residents' emotional reactivity and staff's perceptions of residents' behaviors and emotions.

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