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The effects of the implementation of snoezelen on the quality of working life in psychogeriatric care

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ABSTRACT

Background: Dementia among nursing home residents is often accompanied by high care dependency and behavioral disturbances, resulting in an increased workload for the caregivers. S*noezelen*, integrated into 24-hour dementia care, is an approach that might improve the quality of working life of dementia caregivers. This study aims to investigate the effectiveness of integrated *snoezelen* on work-related outcomes (workload and psychological outcomes) of caregivers in psychogeriatric nursing homes.

Methods: A quasi-experimental pre- and post-test design was used, comparing six psychogeriatric wards that implemented *snoezelen* in 24-hour care to six control wards that continued giving usual care. One hundred and twentynine Certified Nursing Assistants (CNAs) were included in the pre-test and 127 CNAs in the post-test. The six intervention wards received a 4-day inho use training program. The intervention further consisted of implementation activities on the ward (e.g. stimulus preference screening, workgroup), three in-house follow-up meetings and two general meetings. Measurements on workload, perceived problems, stress reactions, job satisfaction and burnout were performed at baseline and after 18 months.

Results: A significant treatment effect in favor of the experimental group was found for time pressure, perceived problems, stress reactions and emotional exhaustion. CNAs of the experimental group also improved on their overall job satisfaction score. In particular, they were more satisfied with the quality of care and with their contact with residents.

Conclusion: The implementation of s*noezelen* improved the quality of the working life of dementia caregivers.

INTRODUCTION

Working in healthcare is characterized as emotionally demanding (Arts *et al*., 2001). Specific working conditions have been identified as stressful, such as shift work, shift rotations and lack of flexibility in working hours and time off (Chappell and Novak, 1992; Hare *et al*., 1988; Hoffman and Scott, 2003).

Workload is also recognized as an increasing problem among caregivers in psychogeriatric nursing homes. About 27 000 patients with dementia live in Dutch nursing homes (Hoek *et al*., 2000). The behavioral and psychological disturbances often accompanying dementia can be highly problematic to caregivers and can increase their workload. High workload may influence the level of stress reactions and job satisfaction negatively, possibly resulting in a negative psychological state commonly referred to as "burnout" (Blegen, 1993; Shelledy *et al*., 1992). Aspects such as workload, job stress, job satisfaction and burnout are associated with the concept "*quality of working life*," which has received increasing attention in health services research (Arts *et al*., 1999; 2001; Bourbonnais *et al*., 1998; Jansen *et al*., 1996).

Training and implementation of interventions for caregivers in dealing with cognitive impairment is a pro-active, inexpensive step that can be used by institutions to help alleviate the effects of stressors on caregivers (Chappell and Novak, 1992). If nurses feel that they have adequate resources to meet their patients' needs, they might be more satisfied (Shaver and Lacey, 2003).

One of the approaches that has become increasingly popular as a potential intervention on psychogeriatric wards is s*noezelen*, also referred to as multisensory stimulation (MSS). In the present study, s*noezelen* is defined as an approach, integrated into 24-hour daily care, that actively stimulates the senses of hearing, touch, vision and smell in a resident-oriented, non-threatening environment (Kok *et al*., 2000). The intent is to provide individualized, gentle sensory stimulation without the need for higher cognitive processes, such as memory or learning, in order to achieve or maintain a state of well-being.

Snoezelen might reduce maladaptive behaviors and increase positive behaviors of residents with dementia, but it is also used in dementia care to reduce caregivers' stress and hence to improve the quality of working life of caregivers (Chung *et al*., 2002; Savage, 1996). Evidence of the expected benefits of *snoezelen* for staff personnel is limited. Lancioni *et al*. (2002) recommended the determination, in future research, of the influence of multi-sensory (*snoezelen*) programs on work-related outcomes of staff personnel involved in such an approach. The purpose of the current study was to investigate the effectiveness of the implementation of *snoezelen*, delivered by Certified Nursing Assistants (CNAs) throughout the day, on their quality of working life.

Arts *et al*. (2001) integrated three existing models of "*quality of working life*" into a new model, reflecting the relationship between workload on the one hand and psychological and physical outcomes of work on the other, with a buffer in the capacity for coping. In the current study, this model is adapted to the study purposes. The hypothesized relationship between the implementation of *snoezelen*, workload (organizational characteristics, job characteristics, working conditions) and psychological outcomes of work (job satisfaction, stress reactions, burnout) is shown in Figure 1. In particular, it was hypothesized that the intervention would lead to measurable, positive changes in:

- workload: the activities that someone has to carry out in a particular environment, classified in job characteristics (skill variety, learning opportunities, autonomy, having a voice) and working conditions (time pressure, role ambiguity)
- psychological outcomes of CNAs: the subjective experience of the workload, operationalized in perceived problems, stress reactions, job satisfaction and burnout.

[FIGURE 1]

METHODS

Design

A quasi-experimental pre- and post-test design was used. The study was performed at 12 psychogeriatric wards in six Dutch nursing homes, with each nursing home designating an experimental and a control ward. The six experimental wards received training in "*snoezelen* for caregivers" and implemented *snoezelen* in 24-hour care. In the six control wards, the usual care continued. The implementation period lasted 18 months per ward in the period between January 2001 and February 2003. The effectiveness of *snoezelen* on the quality of the working life of the CNAs was studied by using a questionnaire.

Measurements were performed at baseline and after 18 months, as this time was predicted to be the minimum needed for successful implementation.

Procedures

NURSING HOMES

Six nursing homes in different parts of the Netherlands were selected for the study out of 19 potentially eligible sites. Interviews were held with staff members to obtain information and to examine whether the nursing homes met the following inclusion criteria: (1) s*noezelen* had not yet been implemented in the daily care of their residents; (2) the presence of two comparable units (i.e. population of residents, composition of nursing staff, used care model, level of attention and assistance) with at least 10 CNAs that met the inclusion criteria for CNAs; (3) willingness to create the conditions to implement *snoezelen* in the daily care of the experimental ward; (4) the presence of some basic, practical conditions (e.g. a comfortable residents' chair); and (5) no substantial organizational changes (e.g. removal, reorganization) during the study period.

The nursing homes signed an agreement that the control wards would refrain from s*noezelen* training or implementation of elements from the *snoezelen* care model on the wards during the study period. Control for contamination on the control wards was carried out by interviewing the head nurses 15 months after the start of the implementation on the experimental ward. These interviews revealed that on three control wards some CNAs started to apply parts of the *snoezelen* methodology in the daily care (e.g. music, aroma). No one integrated these parts in an individual, resident-centered approach, nor did anyone integrate these structurally. As these are considered important conditions for *snoezelen* to be effective, no serious contamination risk was assumed on the control wards.

Randomization took place at ward level. In four nursing homes, the two wards involved in each home were randomized by having lots drawn from a sealed container by an independent person. Two wards in the other two participating homes were assigned to the experimental group on the basis of practical considerations (e.g. the presence of a room that could be used as a *snoezelroom* by other disciplines such as activity therapists). This decision was taken after careful assessment of other differences between the experimental and the control ward that might prejudice treatment comparisons (e.g. population, motivation of nursing staff, working atmosphere), to rule out selection and confounding biases.

SUBJECTS

To establish the effectiveness of *snoezelen*, a sample size of 120 CNAs (60 treatments, 60 controls) was required (power=0.80, α=0.05, d=0.50). To be eligible for the trial CNAs had to meet the following criteria: (1) be employed for at least 3 months in the nursing home; (2) be employed for at least 12 hours per week; and (3) work in rotation shifts or on day-duty. CNAs who were expected to be absent during the study period for a longer period were excluded, as were CNAs who were only working at night. CNAs who dropped out

unexpectedly were replaced by new CNAs. The new CNAs received "training on the job" from the head nurse or the "coordinator of sensory stimulation" and attended the follow-up meetings on applying the *snoezelen* method. They were also coached on how to bring the care into conformity with the *snoezel* (care) plans of the residents.

Intervention

TRAINING

The CNAs were trained in *snoezelen* by a qualified and experienced professional trainer of the Bernardus Center of Expertise/Fontis. In-house training included four weekly 4-hour sessions and homework. The main objectives of training were to improve caregiver knowledge and skills with regard to *snoezelen* and to motivate all team members to implement the new care model in 24-hour care.

Attention was paid to the residents' life history, the attitude of caregivers towards residents with dementia, observation of the residents' (sensory) preferences, and understanding of the residents' needs and practical skills with regard to sensory stimulation. Trainees received a complete caregiver reader, methodology observation forms and a certificate. In total, 59 CNAs and six head nurses attended the training program, as well as 15 other caregivers who were not formally included in the study (e.g. activity therapists or nutrition assistants).

Compliance with the training sessions was 92.5%. On average, the overall assessment of the training by the caregivers on a 10-point scale was 8.4 (SD=0.75; range 7–10).

IMPLEMENTATION ON THE WARD

After the training, the caregivers started to implement *snoezelen* in the 24-hour care of the residents. The CNA took a detailed history of the matched residents' life and preferences by interviewing family members. The resident was then observed during 10 weekly 1-hour sessions using the methodology acquired in the training ("stimulus preference screening"). Next, the CNAs wrote an individual *snoezelen* care plan in order to integrate the observation findings into the 24-hour daily care (e.g. required approach, how to wake up, whether the resident is capable of choosing own clothes, whether aroma therapy, music, perfume or make-up can be used).

FOLLOW-UP AND GENERAL MEETINGS

The caregivers were offered three in-house follow-up meetings spread over a total period of 15 months under the guidance of the same professional trainer. The aim of these supervision meetings was to support the implementation of *snoezelen* in daily care (e.g. practical advice, exchanging experiences, discussing problems).

In addition, there were two general meetings attended by three representatives of each nursing home (e.g. head nurses, care managers). The aim of these meetings was to support the implementation of *snoezelen* at the organizational level.Details about the intervention have been described elsewhere (Van Weert *et al*., 2004).

Effects of the intervention on resident outcomes

In a parallel study, the effects of the above-described intervention on resident outcomes were investigated. The research population consisted of 125 nursing home residents with moderate to severe dementia at pre-test (62 in the experimental group and 63 in the control group) and 128 residents at post-test (66 in the experimental group and 62 in the control group). The effectiveness of *snoezelen* was studied by conducting ward observations and by analyzing video recordings of morning care, using observation scales on behavior and mood of elderly people with dementia.

The results of the ward observations showed a significant treatment effect in favor of the experimental group regarding apathetic behavior, loss of decorum, rebellious behavior, aggressive behavior and depressive behavior. The results of the video-analysis showed

significant pre-/post-test changes in well-being and adaptive behavior of the residents in the experimental group. A treatment effect in favor of the experimental group was found regarding mood, happiness and contentment, enjoyment, relating well to the CNA, responding to speaking and talking with normal-length sentences. Residents of the experimental group also showed a decreased level of tearfulness/sadness, bored/inactive behavior, negativism and reluctance.

In conclusion, the results of this parallel study supported the effectiveness of *snoezelen* on the behavior and mood of nursing home residents with dementia. *Snoezelen* care particularly seemed to have a positive influence on the deterioration of disturbing and withdrawn behavior and the improvement of mood and happiness. Details about the effects of *snoezelen* on resident outcomes have been described elsewhere (van Weert *et al*., 2005). The present study elaborates on the findings by investigating the effects of *snoezelen* on the quality of working life of the caregivers.

Outcome measures

The various aspects of quality of working life were measured using the most reliable, valid and sensitive scales available in Dutch. Unless otherwise stated, the internal consistency of the data was sufficient to good. Details on psychometric properties are available upon request from the first author.

WORKLOAD

The questionnaire "Experience and Assessment of Work" (VBBA) by Van Veldhoven and Meijman (1994) was used for scales on job characteristics and working conditions. Four job characteristics were measured: "skill variety," "learning opportunities," "autonomy" and "having a voice."Working conditions were operationalized in "time pressure: tempo and amount of work" and "role conflict: performing tasks that are conflicting or performing tasks one prefers not doing."

PSYCHOLOGICAL OUTCOMES

Job satisfaction: Job satisfaction of the CNAs was measured by using the Maastricht Work Satisfaction Scale for Healthcare (MAS-GZ) (Landeweerd *et al*., 1996a; 1996b). TheMAS-GZ consists of seven subscales with three items, each of which are rated on a five-point scale. In addition, an overall satisfaction score was calculated including all 21 items. Four subscales were selected for the present study: satisfaction with "quality of care," "opportunities for selfactualization/ growth," "contact with colleagues" and "contact with residents." Satisfaction with "supervisor" and "possibilities for promotion" were considered to be less relevant. Satisfaction with "clarity of tasks and rules" was excluded from subgroup analysis because of the low Cronbach's α of 0.55.

Perceived problems (general): To examine perceived problems of CNAs in the care for nursing home residents with dementia, the NIVEL Scale for Perceived Problems in Dementia Care (NSPP-DC) was used. This is a structured questionnaire specifically designed for assessing problems of caregivers in dementia care (Kerkstra *et al*., 1999). Factor analysis resulted in four subscales with an explained variance of 40.3%: "problems caused by lack of selfconfidence/ uncertainty in the care of elderly persons with dementia," "problems caused by lack of time," "negative feelings towards behaviors of elderly persons with dementia" and "problems in the balance between emotional involvement and professional distance." *Perceived problems (specific behaviors)*: The NIVEL Scale for Perceived Problems with Specific Behaviors of patients with dementia (NSPP-SB) was designed to measure CNAs' problems with specific behaviors often expressed by dementia patients (Kerkstra *et al*., 1999). The scale consists of 12 subscales: "problems with behaviors during morning care," "restless behavior," "aggression," "psychiatric symptoms," "obnoxious behavior," "behaviors during eating," "claiming behavior," "disoriented

behavior," "depressive behavior," "loss of decorum," "social isolation" and "language disorder." A total score of the scale was calculated, including all 60 items.

Stress reactions: The short version of the GeneralHealth Questionnaire (GHQ- 12) was used to measure the CNAs' perceived stress on a range from 0 to 12 (Koeter and Ormel, 1987; Ormel *et al*., 1989a; 1989b). Ratings pertained to the weeks preceding the administration of the scale. Each of the 12 items were rated on one of four answering categories: "absent" (0 points), "the same as usual" (0 points), "more than usual" (1 point) or "a lot more than usual" (1 point).

Burnout: Burnout has been described as a syndrome of emotional exhaustion, depersonalization and reduced personalized accomplishment (Maslach, 1982).

The Dutch translation of the Maslach Burnout Inventory (MBI-NL) (Schaufeli and van Dierendonck, 1994; 1995; 2000; Schaufeli *et al*., 1993), especially developed to measure burnout in the human services sector, was used for the evaluation of burnout. The MBI-NL consists of three subscales, "emotional exhaustion," "depersonalization" and "personal accomplishment," with a total of 20 items. Because of the low Cronbach's α of the depersonalization subscale (α=0.54), which is in support of earlier findings on the internal consistency of this subscale, the subscale was excluded from the analysis (Arts *et al*., 2001; Jansen *et al*., 1996; Schaufeli *et al*., 1993; 1994).

DATA MANAGEMENT AND ANALYSIS

Data management: All questionnaires were reviewed immediately after they were received. Uncompleted questionnaires were sent back to the CNA. The remaining missing values on items that were part of a (sub-)scale were substituted according to the "mean value of valid subtests principle": the missing value was replaced by the mean value calculated from the valid item scores of the (sub-) scale obtained for the same case at the same time point (Schrijnemaekers *et al*., 2003). This replacement strategy was only used if 25% or less of the items of the (sub-)scale hadmissing values. If more than 25% of the items hadmissing values, the (sub-)scale of that case was excluded from analysis (*n* in tables represent the number of questionnaires that could be analyzed).

Data analysis: Descriptive statistics were obtained on the demographic characteristics of subjects pre- and post-test and in the experimental and control groups. Differences in these variables were examined using χ^2-tests or *t*-tests. *t*-tests were also used to examine differences between completers and noncompleters (i.e. dropouts and newly included CNAs).

As dropouts were substituted by new CNAs, multilevel analysis, carried out with MLwiN-software, was used for analyzing the data (Bryk and Raudenbusch, 1992; Goldstein, 1995).Amodel ofmultilevel analysis of repeated measurements was chosen that takes into account all available data in an adequate way: the paired data of completers as well as the unpaired data of dropouts and newly included CNAs. The multilevel analysis also took account of dependencies among measurements, caused by the hierarchical structure of the data (measurement occasions nested within caregivers, who are nested within wards). We distinguished three levels of analysis: (1) measurement, (2) CNA and (3) ward. By including the ward level, the similarity within wards could be taken into account, meaning that the "CNA nested within ward" effect and its interactions are accounted for. Change scores were computed to compare the rate of change across the experimental and the control group on each measure from pre- to post-test. The mean pre-test/post-test differences in the experimental group were tested against the mean pretest/posttest differences in the control group. Additional adjusted analysis were conducted in which the following characteristics were added as covariates: age, sex, years of working experience, years of employment on the present ward, and hours of employment per week.

RESULTS

Response

Figure 2 presents the response and dropouts over time per group (experimental or control). One hundred and thirty-four CNAs were selected to participate in the pre-test, five of whom did not respond (one refused to complete the questionnaire, one changed her job, the request to participate sent to one was lost in the mail, two did not respond for unclear reasons). Thirty-seven CNAs were lost to follow-up (19 in the experimental group and 18 in the control group). They were substituted by new CNAs. At post-test, only one person did not respond (due to illness). In total, 129 questionnaires from CNAs were analyzed for the pre-test (64 in the experimental group and 65 in the control group) and 127 for the post-test (64 in the experimental group and 63 in the control group). The mean number of questionnaires analyzed per ward was 10.7 for the experimental group at pre-test (range 9–12), 10.8 for the control group at pre-test (range 7–14), 10.7 for the experimental group at post-test (range 7–14) and 10.5 for the control group at post-test (range 10–11).

[FIGURE 2]

Interviews were held with the head nurses of the experimental wards to discover the reasons why dropouts left their job and to find out whether their leave was connected with the implementation of the new caremodel. EightCNAs left their jobs to be employed in another care setting such as home care, mainly for practical reasons (e.g. no shifts, physically less demanding). Four CNAs were transferred to another ward in the same nursing home. The remainder changed for other reasons. According to the head nurses, the implementation of *snoezelen* played a role in the decision to change of five CNAs (three leaving to another ward in the same nursing home, one to another care setting, one leaving after illness).

In addition, subgroup analyses were performed to control for differences between completers and noncompleters (dropouts and newly included CNAs replacing the dropouts). In the pre-test, there were no significant differences between completers and dropouts with regard to background characteristics and outcome measures for the experimental or the control group. In the posttest, completers of both the experimental and the control groups were employed significantly longer on the ward than newly included CNAs, as was expected (experimental: 4.8 *vs*. 1.9 years, p=0.009; control: 4.9 *vs*. 1.8 years, p=0.004).

In the experimental group, completers hadmore experience than newly included CNAs (9.4 *vs*. 4.5 years, p=0.01). There were no other differences either, in background characteristics or in outcome measures, between completers and dropouts, respectively, and newly included CNAs in the experimental and the control groups.

Background characteristics

Table 1 summarizes the demographic characteristics of CNAs in the pre-test and the post-test. The table shows that the background characteristics of the experimental and control groups were to a large extent comparable. There were no significant differences between the experimental group and the control group at pre-test and at post-test, nor between measures within the experimental group or the control group.

[TABLE 1]

Outcomes

WORKLOAD

Table 2 shows the adjusted estimated means (95% confidence interval) and the change scores from the experimental group in comparison with the control group on all variables regarding workload. On all measures in this table, positive change scores indicate a change in favor of the experimental group.

A significant treatment effect was obtained for “having a voice,” “time pressure” and “role conflict.” “Time pressure” decreased significantly in the experimental group. The effects of “having a voice” and “role conflict” were obtained because, in the opinion of the control group, “having a voice” and “role conflicts” had significantly, negatively changed in comparison with the pre-test.

[TABLE 2]

PSYCHOLOGICAL OUTCOMES

The effects of *snoezelen* on perceived problems of CNAs, part of the psychological work-related outcomes, are presented in Table 3. In this table, positive change scores indicate a change in favor of the experimental group.

The scores on NSPP-DC showed a significant treatment effect in favor of the experimental group for the subscales “lack of self-confidence and uncertainty in care” and problems caused by “lack of time.” Within the experimental group there was also a significant change from pre- to post-test on these subscales, as well as on the subscale “negative feelings towards behaviors of elderly persons with dementia.” The latter, however, did not result in a significant treatment effect.

The experimental group also showed a significant, positive change in the total score of perceived problems with specific behavior of elderly persons with dementia (NSPP-SP). With regard to the 12 subscales of this scale, a significant treatment effect was found for depressive behavior (change score 2.47; $p<0.001$), loss of decorum (change score 2.08; $p<0.05$) and restless behavior (change score 1.79; $p<0.05$) (not presented in table).

Table 4 presents the adjusted estimated means and change scores of the experimental group in comparison with the control group on stress reactions, job satisfaction and burnout, all part of the psychological work-related outcomes.

On measures representing job satisfaction and the burnout subscale “personal accomplishment,” a negative change score indicates a change in favor of the experimental group. On the other measurements, a positive change score is in favor of the experimental group.

[TABLE 3]

[TABLE 4]

There was a significant effect on stress reactions and emotional exhaustion in favor of the experimental group. Significant improvements in favor of the experimental group were also found in satisfaction with the quality of care, satisfaction with contact with residents and total satisfaction. For these subscales, there was a significant, positive change from pre-test to post-test in the experimental group, as well as a significant treatment effect. Satisfaction with growth (self-actualization) showed a significant pre-test/post-test change as a result of increased satisfaction ($p<0.1$) in the experimental group and decreased satisfaction ($p<0.05$) in the control group.

DISCUSSION

The results of this study support the effectiveness of *snoezelen* in improving the quality of working life of CNAs in dementia care. With regard to workload, time pressure decreased from pre- to post-test in the experimental group, although the number of staff members had not been increased. CNAs working at wards that implemented *snoezelen* in 24-hour daily care showed fewer stress reactions and less emotional exhaustion than those applying usual care. The experimental group was more satisfied with their contact with residents and with

the quality of care than the control group. Total satisfaction and satisfaction with growth also showed a treatment effect in favor of the experimental group.

Moreover, the experimental group noted fewer problems caused by lack of time and by uncertainty. They also perceived fewer problems with specific behaviors of residents, especially with depressive behavior, loss of decorum and restless behavior. In a parallel study investigating the effects of *snoezelen*

on the behavior of nursing home residents with dementia, positive effects were found, among others, on depression, apathy and loss of decorum (van Weert *et al*., 2005). These behaviors seem to be sensitive to the *snoezelen*

approach. In the present study, CNAs also reported that they could better deal with these behaviors after the implementation of *snoezelen*. The results are in conformity with the subjective experiences of participating CNAs, evaluated during follow-up meetings and interviews with head nurses and project leaders. CNAs mentioned that, on the one hand, withdrawn residents became more responsive and, on the other hand, residents with disturbing behavior became quieter. They reported that the implementation of *snoezelen*

resulted in a more relaxed working style, but that they were still able to get the work finished, for example because they were less hindered by disturbing behavior of residents (van Weert *et al*., 2004). Factors relating to workload, residents' outcomes and psychological caregivers' outcomes seem to reinforce each other in circular processes, which indicates that the hypothesized research model should be extended with residents' outcomes. How these factors interact precisely with each other has to be determined in future research.

The results are partly supportive of recent literature. Hoffman and Scott (2003) found that nurses experienced greater professional fulfillment and career satisfaction when strategies are implemented that promote autonomous practice environments, recognize professional status and provide financial incentives.

S*noezelen* fits best in a "staff-centered work environment," meeting the needs of autonomy and professional recognition (Kitwood, 1997; van Weert *et al*., 2004), but not an increased salary. According to Shelledy *et al*. (1992), satisfaction with pay cannot only be predicted by the actual salary but also by factors such as job independence, job stress and organizational climate.

Institutions should therefore be looking for ways to lighten the demands at work and make the work more interesting (Chappell and Novak, 1992). The implementation of s*noezelen* seems to be an appropriate tool to reach these goals.

This gives rise to the question whether nursing homes have the financial means to implement an innovative care model such as *snoezelen*. In the present study, the *snoezelen* environment was broadened to a multidimensional concept, that is, a total package that has to be applied throughout the day by all caregivers involved, including a resident-oriented attitude and multisensory stimulation.

The latter does not have to be a "high-tech" package. A special *snoezelen* room can have additional value, but is not definitely required. Simple attributes in the environment of the residents, combined with some creativity of caregivers, are sufficient. This means that investments in *snoezelen* equipment might vary from around 200 € (only simple attributes) to 25 000 € (e.g. for a wellequipped *snoezelen* room) or even more (e.g. for a *snoezelen* bathroom). An investment that certainly has to be made is in training in *snoezelen*, preferably for all CNAs, but also for supervisors and other disciplines, such as activity therapists. Training will cost around 365 € per trainee or 3000 € per inhouse course for 15 trainees (excluding travel allowance). Training costs have to be estimated structurally to educate new team members. Moreover, it is recommended to rate costs for supervision meetings to support the implementation.

Limitations

A few methodological considerations require attention. First, although the multilevel model takes into account the data of completers (included in pre-test and post-test) as well as non-

completers (included in pre-test or post-test), the results might be biased. The loss to follow-up due to structural dropout was similar for the two study groups. There were not sufficient differences between completers and dropouts or between completers and newly included CNAs with regard to background characteristics and outcome measures. Furthermore, *post hoc* subgroup analyses were carried out on the variables that showed significant changes. The results showed no contradictions between the subgroup of completers and the total group. Therefore, no large bias of the results by dropouts and newly included CNAs is assumed.

Second, the implementation of *snoezelen* on the experimental wards brought new enthusiasm to staff members. This might be subsumed under the term "Hawthorne effect" because the intervention was compared to "real-life" daily dementia care given by the control group. Caregivers who have the opportunity to follow a training course may have improved job satisfaction regardless of the content of the training. However, if the Hawthorne effect were to explain all the results, this effect would have occurred in previous studies that used a "usual care" control group too (e.g. in Schrijnemaekers *et al*., 2003). Moreover, our results were not marginal but were convincing and in conformity with the findings of parallel studies. Therefore, the Hawthorne effect is not assumed to explain all the effects in the present study.

Third, the outcome measures could not be blinded, which may lead to an overestimation of effects. Therefore, complete scales were included in the questionnaire, although we did not expect effects on all subscales. The effects found were in conformity with the effects assumed.

CONCLUSION AND RECOMMENDATIONS

The results suggest that the implementation of *snoezelen* adds to the quality of working life of CNAs in psychogeriatric care. To confirm our findings, the study should be repeated, preferably by exposing a second control group to a treatment that is equivalent (e.g. education and training) to the *snoezelen* treatment. In the meantime, the implementation of this care model on psychogeriatric wards of nursing homes with patients with moderate to severe dementia seems to be promising. In future studies, research is also recommended onwhether decreased job stress, increased job satisfaction and decreased emotional exhaustion do indeed result in physical outcomes, such as decreased sick-leave.

CONFLICT OF INTEREST DECLARATION

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DESCRIPTION OF AUTHORS' ROLES

The results of this study were part of the thesis of the first author, J. van Weert, who collected the data, conducted the statistical analysis and wrote the paper. S. van Dulmen was the supervisor and copromoter of the first author. P. Spreeuwenberg was responsible for carrying out the multilevel analysis.

J. Bensing submitted the application and was the first promoter of the first author. M. Ribbe provided additional knowledge from a nursing home medical background and was the second promoter of the first author.

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FIGURES AND TABLES

Figure 1. Research model.

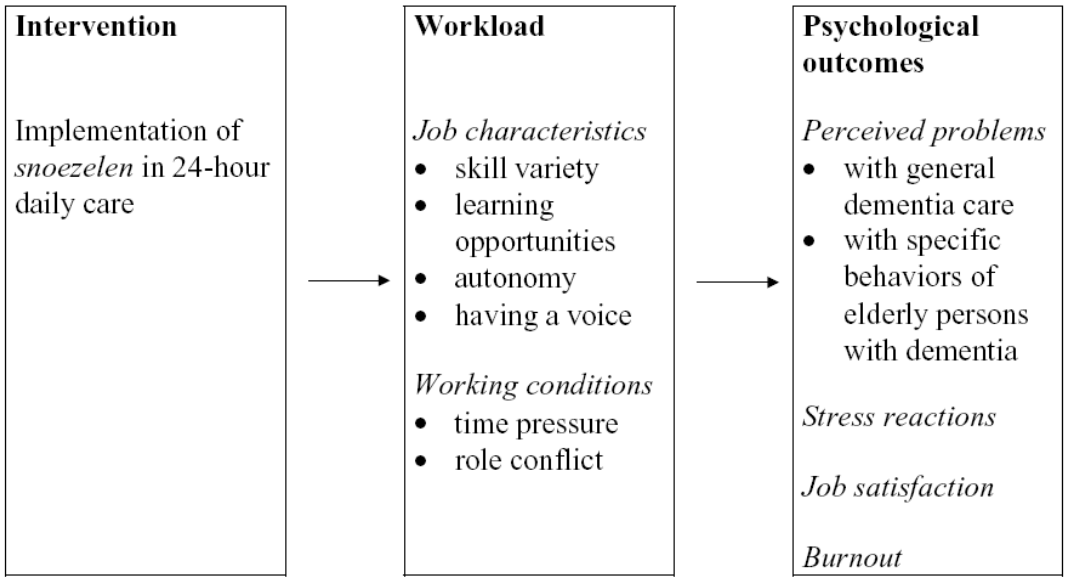

Figure 2. Flow chart of the trial.

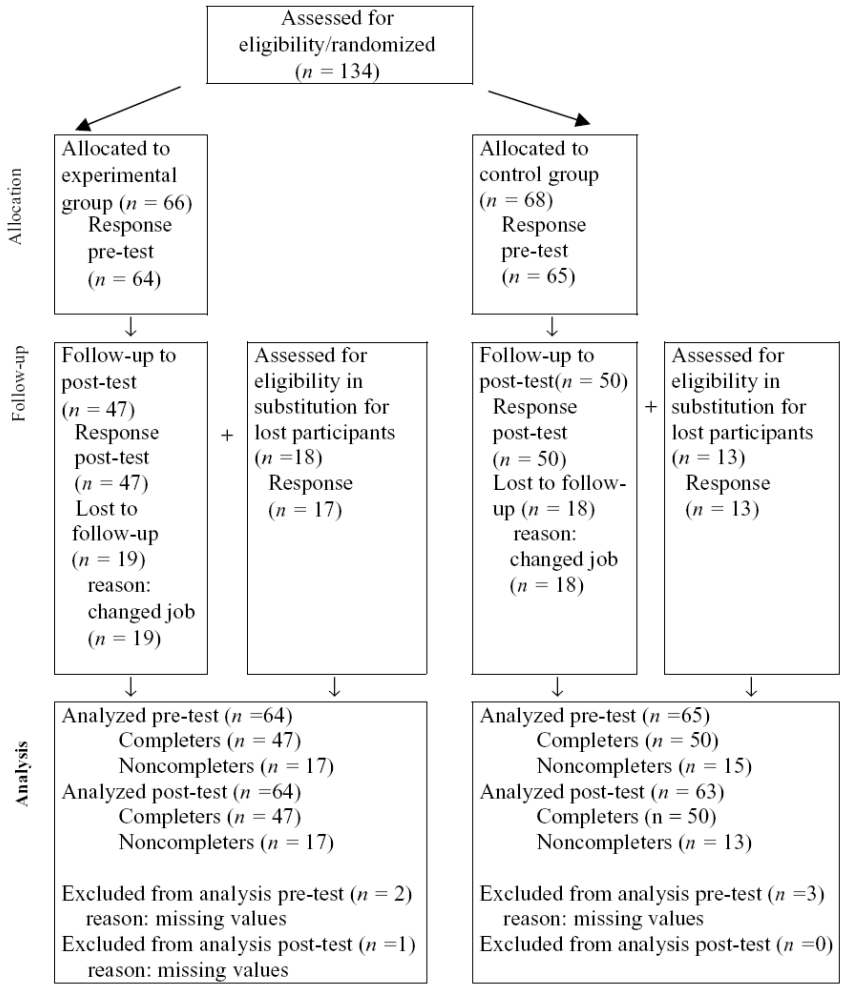

Table 1. Background characteristics of participating CNAs

	EXPERIMENTAL GROUP				CONTROL GROUP			
CHARACTERISTICS OF CNA,	PRE-TEST ($n = 64$)		POST-TEST ($n = 64$)		PRE-TEST ($n = 65$)		POST-TEST ($n = 63$)	
Gender: female (n, (%))	59	(92.2)	58	(90.6)	60	(92.3)	59	(93.7)
Age (years, (SD))	36.6	(10.9)	36.3	(10.9)	33.2	(9.5)	36.3	(10.2)
Hours of employment per week (mean hours, (SD))	29.3	(10.9)	27.9	(7.5)	29.0	(7.4)	28.7	(7.6)
Psychogeriatric experience (mean years, (SD))	7.8	(6.4)	8.1	(6.8)	7.4	(6.3)	9.0	(8.2)
Employed on this ward (mean years, (SD))	3.6	(4.0)	4.0	(3.9)	3.4	(3.7)	4.3	(3.5)
Position (n, (%))								
Team leader	5	(7.8)	4	(6.3)	7	(10.8)	5	(7.9)
Nursing assistant	52	(81.3)	53	(82.8)	48	(73.8)	50	(79.4)
Other (ward assistant, geriatric helper)	7	(10.9)	7	(10.9)	10	(15.4)	8	(12.8)

To test the differences in background characteristics, t-tests and χ^2 analysis were used. There were no significant differences in background characteristics.

Weert, J.C.M. van, Dulmen, A.M. van, Spreeuwenberg, P., Bensing, J.M., Ribbe, M.W. The effects of the implementation of snoezelen on the quality of working life in psychogeriatric care. International Psychogeriatrics: 2005, 17(3), 407-425

Table 2. Change in outcome measures regarding workload (multilevel analysis)

		EXPERIMENTAL GROUP					CONTROL GROUP						
		PRE-TEST		POST-TEST			PRE-TEST		POST-TEST				
OUTCOME MEASURES	n[c]	M	(SE)	M	(SE)	CHANGE	M	(SE)	M	(SE)	CHANGE	CHANGE SCORE[b]	$\chi^2(1)$
Job characteristics (VBBA)[a]													
Skill variety (0–18)	255	7.09	(0.5)	6.80	(0.4)	0.29	7.29	(0.5)	7.88	(0.4)	−0.59	0.89	2.24
Learning opportunities (0–12)	255	5.52	(0.3)	5.15	(0.3)	0.37	5.63	(0.3)	5.80	(0.3)	−0.17	0.54	1.45
Autonomy (0–33)	255	15.12	(0.5)	14.49	(0.6)	0.64	15.22	(0.5)	16.15	(0.6)	−0.93	1.57	3.62
Having a voice (0–24)	255	10.71	(0.8)	9.96	(0.8)	0.75	9.37	(0.8)	11.16	(0.8)	−1.79***	*2.54****	10.88
Working conditions (VBBA)[a]													
Time pressure (0–33)	255	15.67	(1.0)	13.84	(1.0)	1.84***	15.55	(1.0)	15.82	(1.0)	−0.26	*2.10***	7.52
Role conflict (0–18)	255	3.68	(0.2)	3.48	(0.3)	0.19	3.21	(0.2)	3.90	(0.3)	−0.69*	*0.89**	5.74

*$p < 005$, **$p < 001$, ***$p < 0001$.
[a]The underlined scores indicate the most favorable score for the scale.
[b]Scores in italics indicate a significant change in favor of the experimental group, meaning that the pre-/post-change in the experimental group is significantly different from the pre-/post-change in the control group.
[c]Number of questionnaires included in the analysis ($N = 256$).
VBBA = Experience and Assessment of Work Questionnaire.
$\chi^2(1)$ = chi square (1 degree of freedom).

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Table 3. Change in outcome measures regarding perceived problems of CNAs (multilevel analysis)

		EXPERIMENTAL GROUP					CONTROL GROUP						
		PRE-TEST		POST-TEST			PRE-TEST		POST-TEST				
OUTCOME MEASURES	n^c	M	(SE)	M	(SE)	CHANGE	M	(SE)	M	(SE)	CHANGE	CHANGE SCORE[b]	$\chi^2(1)$
Perceived problems (NSPP–DC)[a]													
Lack of self–confidence/ uncertainty (0–40)	254	10.61	(0.6)	8.81	(0.6)	1.80***	9.93	(0.6)	10.59	(0.6)	−0.66	*2.46****	13.47
Lack of time (0–24)	252	13.36	(0.8)	11.78	(0.8)	1.58*	11.96	(0.8)	13.21	(0.8)	−1.24	*2.82***	9.41
Negative feelings (0–32)	254	7.79	(0.6)	6.40	(0.5)	1.39*	8.74	(0.6)	8.24	(0.5)	0.49	0.89	1.38
Balance (0–24)	253	6.73	(0.7)	6.41	(0.6)	0.32	6.64	(0.7)	6.51	(0.6)	0.13	0.19	0.08
Perceived problems (NSPP-SB)[a]													
Total problems with residents' behavior (0–240)	235	94.17	(4.7)	84.84	(4.9)	9.33*	92.44	(4.6)	97.92	(4.8)	−5.49	*14.82***	7.08

*p < 005, **p < 001, ***p < 0001.
[a]The underlined scores indicate the most favorable score for the scale.
[b]Scores in italics indicate a significant change in favor of the experimental group, meaning that the pre-/post change in the experimental group is significantly different from the pre-/post change in the control group.
[c]Number of questionnaires included in the analysis ($N = 256$).
NSPP-DC = NIVEL Scale for Perceived Problems in Dementia Care.
NSPP-SB = NIVEL Scale for Perceived Problems with Specific Behaviors of patients with dementia.
$\chi^2(1)$ = chi square (1 degree of freedom).

Weert, J.C.M. van, Dulmen, A.M. van, Spreeuwenberg, P., Bensing, J.M., Ribbe, M.W. The effects of the implementation of snoezelen on the quality of working life in psychogeriatric care. International Psychogeriatrics: 2005, 17(3), 407-425

Table 4. Change in outcome measures regarding stress reactions, job satisfaction and burnout (multilevel analysis)

		EXPERIMENTAL GROUP					CONTROL GROUP						
		PRE-TEST		POST-TEST			PRE-TEST		POST-TEST				
OUTCOME MEASURES	n^c	M	(SE)	M	(SE)	CHANGE	M	(SE)	M	(SE)	CHANGE	CHANGE SCORE[b]	$\chi^2(1)$
Stress reactions (GHQ) (0–12)[a]													
GHQ-12 score	256	1.46	(0.4)	0.77	(0.4)	0.69*	1.24	(0.4)	1.93	(0.4)	−0.69*	*1.37***	8.60
Job satisfaction (MAS-GZ) (0–12)[a]													
Supervisor	253	7.08	(0.5)	7.65	(0.5)	−0.57	7.43	(0.5)	7.46	(0.5)	−0.02	−0.55	1.56
Promotion	253	6.15	(0.3)	6.16	(0.5)	−0.01	5.94	(0.3)	6.08	(0.3)	−0.14	0.13	0.10
Quality of care	254	6.43	(0.4)	7.71	(0.4)	−1.29***	6.95	(0.4)	6.61	(0.4)	0.34	*−1.62****	12.37
Growth	254	7.90	(0.2)	8.25	(0.2)	−0.34	7.90	(0.2)	7.35	(0.2)	0.55*	*−0.90***	8.44
Contact colleagues	254	8.93	(0.2)	9.11	(0.2)	−0.18	9.23	(0.2)	8.83	(0.2)	0.41	−0.58	3.39
Contact residents	254	8.98	(0.2)	9.56	(0.2)	−0.59**	8.99	(0.2)	8.79	(0.2)	0.20	*−0.79***	9.29
Total satisfaction (0–84)	251	53.36	(0.97)	56.41	(1.6)	−3.05**	54.33	(1.6)	52.87	(1.6)	1.46	*−4.50***	8.19
Burnout (MBI-NL)[a]													
Emotional exhaustion (0–48)	253	10.75	(0.8)	8.31	(0.9)	2.44**	10.35	(0.8)	10.77	(0.9)	−0.42	*2.86**	6.52
Personal accomplishment (0–42)	253	28.10	(0.8)	29.14	(0.7)	−1.05	26.38	(0.8)	25.73	(0.7)	0.65	−1.70	2.11

*$p < 005$, **$p < 001$, ***$p < 0001$.
[a]The underlined scores indicate the most favorable score for the scale.
[b]Scores in italics indicate a significant change in favor of the experimental group, meaning that the pre-/post change in the experimental group is significantly different from the pre-/post change in the control group.
[c]Number of questionnaires included in the analysis ($N = 256$).
GHQ = General Health Questionnaire (short version).
MAS-GZ = Maastricht Work Satisfaction Scale for Healthcare.
MBI-NL = Maslach Burnout Inventory (Dutch version).
$\chi^2(1)$ = chi square (1 degree of freedom).