

**Effects of a psycho-educational intervention on direct care workers’
communicative behaviours with residents with dementia**

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Abstract

This study assessed the effects of a person-centred care based psycho-educational intervention on direct care workers' communicative behaviours with people with dementia living in aged care facilities. An experimental study with a pre-posttest control group design was conducted in four aged care facilities. Two experimental facilities received an eight-weekly psycho-educational intervention aiming to develop workers' knowledge about dementia, person-centred care competences and tools for stress management; control facilities received an education-only, with no support to deal with stress. A total of 332 morning care sessions, involving fifty-six direct care workers (female, mean age 44.72 ± 9.02), were video-recorded before and two weeks after the intervention. The frequency and duration of a list of verbal and non-verbal communicative behaviours were analysed. Within the experimental group there was a positive change from pre to post-test on the frequency of all workers' communicative behaviours. Significant treatment effects in favour of the experimental group were obtained for the frequency of inform ($p < 0.01$, $\eta^2_{\text{partial}} = 0.09$) and laugh ($p < 0.01$, $\eta^2_{\text{partial}} = 0.18$). Differences between groups emerged mainly in relation to non-verbal communicative behaviours. The findings suggest that a person-centred care based psycho-educational intervention can positively affect the direct care workers' communicative behaviours with residents with dementia. Further research is required to determine the extent of the benefits of this approach.

Keywords: aged care facilities; communicative behaviour; dementia; direct care workers; person-centred care

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Dementia is the most important contributor to disability, dependence and transition of older people into aged-care facilities (Prince, Prina, & Guerchet, 2013). Currently, about one-third to one-half of people with dementia living in high income countries resides in such facilities (Prince, Prina, & Guerchet, 2013).

For decades, the care provided for people with dementia in aged-care facilities has been largely dominated by the Bio-medical model. This was based on the biological aspects of the illness, considering brain damage as the only explanation for dementia-related symptoms and behaviours (Sabat, 2008). In the 1990s, the pioneering work of Tom Kitwood called for a broader understanding of dementia and a new culture of dementia care. Kitwood had encouraged a person-centred care (PCC) approach within dementia care, advocating that dementia-related symptoms and behaviours are affected not only by neuropathology, but also by the ways in which the person is treated by others (Kitwood. 1997).

On his 'dialectical framework', Kitwood theorizes about the interpersonal processes involved in formal caregiving and the impact that workers' interactions may have on the person with dementia (Kitwood. 1997). He defines two groups of interactions that usually occur in the care of people with dementia, categorizing them into Positive Person Work (PPW) and Malignant Social Psychology (MSP) (Kitwood. 1997). The PPW consists of workers' communicative behaviours that are therapeutic and helpful in maintaining an individual's personhood, including: recognition, negotiation, collaboration, validation and stimulation (Kitwood. 1997). MSP includes communicative behaviours that damage the residents' self-esteem and personhood,

including: invalidation, infantilisation, ignoring and objectification (Kitwood, 1997).

With this framework, the author emphasises the relational nature of PCC and the need to provide workers with the skills they need to enhance the PPW and reduce the MSP.

A number of PCC-based interventions have been developed to increase the knowledge and communicative behaviours of the direct care workers (DCWs), who provide the bulk of care to people with dementia in aged-care facilities (McGilton et al., 2007; Williams, Kemper, & Hummert, 2003). These are generally education-only interventions (aiming for the systematic acquisition of the knowledge and instrumental skills necessary for effective performance in work environments (Goldstein & Ford, 2002)) and focusing on specific care tasks, particularly morning care routines (Sidani, Streiner, & Leclerc, 2012). However, findings show that even after the intervention when verbal interaction occurs it is predominantly task-focused overlooking residents' social and emotional needs (McGilton et al., 2007; Williams, Kemper, & Hummert, 2003). Also, in-depth analyses of the content of conversations confirm that DCWs' communication tends to reinforce resident's dependent behaviours rather than their empowerment (Levy-Storms, 2008; Ward, Vass, Aggarwal, Garfield, & Cybyk, 2008). This suggests that providing DCWs with information on how they should behave is not enough to lead to communicative behaviours change. While education is a necessary part of behaviour change, previous research has shown that DCWs' emotional wellbeing also affects their ability for interaction (Drebing, McCarty, & Lombardo, 2002; Edvardsson, Winblad, & Sandman, 2008; van Weert, Vandulmen, Spreeuwenberg, Ribbe, & Bensing, 2005). Though, the literature has indicated that heavy workloads, interpersonal conflicts or lack of management support threaten DCWs' emotional wellbeing, being associated with high levels of stress, burnout and

dissatisfaction (Edvardsson, Sandman, Nay, & Karlsson, 2009; Gray-Stanley & Muramatsu, 2011).

Complementing traditional education-only interventions with a supportive component aiming to develop tools for emotional management, can potentially improve person-centred interactions, yet, this has received little attention in the literature (Figueiredo, Barbosa, Cruz, Marques, & Sousa, 2013). Therefore, the current study assessed the effects of a PCC-based psycho-educational (PE) intervention on DCWs' verbal and non-verbal communicative behaviours with residents with dementia during morning care. Specifically, it was hypothesised that this intervention, compared to a PCC-based education-only intervention, would improve DCWs' positive verbal and non-verbal communicative behaviours and reduce DCWs' negative verbal and non-verbal communicative behaviours.

Method

Study design

An experimental study with a pre-posttest control group design was conducted in four aged care residential facilities. Two facilities received a PCC-based PE intervention, whereas two control facilities received an education-only intervention. The decision to establish the education-only intervention as control group was based on the fact that this has become the most widely used approach with DCWs (McFarlane & McLean, 2003). The study was conducted between November 2011 and March 2013.

Ethical approval was obtained from the Health Sciences Research Unit: Nursing (UICISA: E), hosted by the Nursing School of Coimbra, Portugal (Ref. 5-11/2010).

Settings and participants

The enrolment of the facilities in the study was conducted as follows: i) facilities were pre-stratified based on staff/resident ratio and residents with dementia/total of residents ratio; ii) two pairs of aged care facilities were approached for participation; iii) managers of each facility were informed about the study and asked to participate; no simultaneous participation in similar studies and absence of significant organisational changes during the period of implementation had to be ensured; iv) facilities within each pair were randomly assigned to the experimental or control group using a random number generator. The facility was the unit of randomization to prevent contamination between experimental and control groups. Study facilities were private, non-profit institutions of collective accommodation with more than 30 licensed beds and with a staff/resident ratio between 1:2 and 1:3.

After randomisation, the service managers of each facility were asked to identify all DCWs that: i) provided regular personal care to residents with moderate-to-severe dementia, diagnosed by a physician according to DSM-IV; and ii) worked in the facility for at least 2 months, so adjustments to the residents and facility had been achieved. Temporary workers and trainees were excluded as it was not possible to ensure their participation until the end of the intervention. Once identified, a meeting with eligible DCWs was scheduled. At this meeting, potential DCWs were provided with detailed information about the study and were invited to participate. The voluntary nature of their participation, confidentiality and anonymity were assured and written informed consent was obtained. All 58 DCWs who were eligible agreed to participate and entered the study at baseline – 27 in the experimental group and 31 in the control group. Of these, 56 completed the post-test assessment. Two dropouts occurred in the control group (DCWs were absent from work due to sick leave).

Also, the legal guardians of the identified residents were contacted, informed about the study and asked to sign a written informed consent. From 51 residents with moderate-to-severe dementia, 47 participated (one legal guardian refused participation, one resident refused permanently to be assessed by video and two residents died before collecting any data).

Intervention

Two interventions were conducted in the context of the study: (i) PCC-based PE intervention; and (ii) PCC-based education-only intervention.

PCC-based PE intervention. The experimental facilities received a PCC-based PE intervention. This comprised 8 weekly group sessions of approximately 90 minutes, coordinated by a gerontologist and a physical therapist with training and experience in PCC approaches and psycho-educational groups.

The intervention design was informed by: i) relevant literature on PE approaches, PCC and dementia; ii) findings from a previous pilot study conducted by the authors' research team (names deleted to maintain the integrity of the review process); and iii) interviews with DCWs and managers about instrumental and emotional needs (names deleted to maintain the integrity of the review process).

The intervention included two components: educative and supportive (Table 1).

The educative component aimed to provide DCWs with knowledge and skills concerning person-centred dementia care. The first session provided participants with basic information on dementia, its causes, symptoms and evolution. In sessions 2-8, participants were provided with knowledge and communicative behavioural strategies to interact with residents with dementia. Emphasis was placed on verbal and non-verbal

communicative strategies (e.g., speak clearly and slowly, with short, simple sentences; maintain eye contact or smile), motor stimulation strategies (e.g. encourage the person to perform one task or a part of it), and multisensory stimulation strategies (e.g. provide a gentle massage while washing resident's hair). In the following 3 days after each PE session, the gerontologist and the physical therapist assisted each DCW individually during morning care, clarifying doubts and making suggestions to help them implement a more PCC. Morning care (i.e. the period of time between 7:00 and 12:00 a.m. concerning activities relating to bathing, grooming, dressing and toileting) was chosen as this is considered the period of the day where more interaction between DCWs and residents occurs and challenging behaviours are more frequent (Sidani, Streiner, & Leclerc, 2012).

The supportive component aimed to provide DCWs with coping strategies to manage work-related stress and prevent burnout (e.g., time-management, problem-solving and teamwork). At the end of each supportive component, relaxation techniques (e.g., abdominal breathing and guided imagery), stretching and strengthening exercises were practiced. Several active-learning methods were used during sessions, including: group discussions, simulations, role-playings or brainstorming.

PCC-based education-only intervention. The control facilities received an education-only intervention with 8 weekly sessions. The coordination, length, order and content of the sessions were the same of the educational component of the PE intervention. It was the absence of the supportive component that distinguished both interventions. Each participant was assisted during morning care by the same professionals, who helped DCWs to deliver a more PCC and clarified doubts that emerged from sessions.

(Table 1)

Data Collection

DCWs' background data at baseline was collected through a structured questionnaire including variables such as gender, age, education, marital status and length of time working in the facility.

In order to capture both DCWs' verbal and non-verbal communicative behaviours, video-recordings of morning care routines were used. Measurements were performed at baseline and two weeks after the intervention. The use of video-recording to assess behavioural observations is becoming prevalent in research as it enables to replay and review video-recording data, the control of observer fatigue or drift, the ability to achieve deeper levels of observation and analysis that are not possible to achieve by means of real-time observations, and the relative ease of using modern sophisticated recording equipment (Haidet, Tate, Divirgilio-Thomas, Kolanowski, & Happ, 2009).

Video-recordings were performed in the resident's bedroom. The camera started at the moment the DCWs entered the room and stopped when they left. Bathing was not recorded, to assure privacy to the person with dementia. In order to minimise participant reactivity (i.e., response during data collection that affects the natural course of behaviour as a result of being observed), a few strategies were considered. First, prior to data collection, several video-recordings were performed in order to familiarise participants with the methodology and reduce reactivity bias; this also enabled researchers to rehearse the procedure, check for light and sound quality, and determine the most advantageous camera positions. Second, DCWs were instructed to stop or remove the video camera if they noticed any resident's negative reaction caused by the

device presence. Third, once the cameras were placed on a tripod and adequately positioned, the researcher left the room so that a further source of disruption could be avoided.

To ensure that DCWs' communicative behaviour was not due to chance, each DCW was video-recorded thrice in the baseline and thrice after the intervention. In total, 332 morning care sessions were video-recorded (164 at baseline and 168 at post-intervention). At baseline, 4 participants were only recorded twice as they were absent from work.

Data analysis

Socio-demographic characteristics of the groups at baseline were defined using descriptive statistics and compared with independent t-tests or χ^2 tests as appropriate.

DCWs' communicative behaviour was studied by analysing the frequency and duration of a list of mutually exclusive behaviours (ethogram). The categories described in the Kitwood's dialectical framework (Kitwood, 1997), relevant literature on staff's verbal and non-verbal communication (van Weert et al., 2005; Caris-Verhallen, Kerkstra, & Bensing, 1999; Coleman, Medvene, & Van Haitsma, 2013) and preliminary observations of the video recordings formed the basis for the ethogram. The final list comprised 18 verbal communicative behaviours (Table 2) and 8 non-verbal communicative behaviours (Table 3).

One coder (1st author) rated the DCWs' communicative behaviours according to the ethogram using specialised software, Noldus Observer XT (version 11.0) (Noldus International Technology, Wageningen, Netherlands). The coder was previously trained to use the software.

To be able to compare the variables between the different participants and across different moments (pre- and post-intervention), the video recordings were edited so that they would have the length of the average duration (510 seconds [8 minutes and 30 seconds]). For videos under the average duration (58%), proportional scores were used. Then, for each participant, the average results of the 3 videos collected at each moment were calculated and a repeated-measures ANOVA was run to assess group×time intervention effects. *Partial eta squared* (η), which corresponds to the Effect Size, was interpreted as small (≥ 0.05), medium (0.05-0.25), large (0.25-0.50) and very large (≥ 0.50) (Cohen, 1988). The established level of significance was $p < 0.05$. Statistical analyses were performed using SPSS v20.0 (IBM Corp., Armonk, NY).

Inter-observer reliability. Inter-observer reliability with two independent coders was performed for 30% of the videos. This value is similar to those of previous studies (Bourgeois, Dijkstra, Burgio, & Allen, 2004). The frequency and duration of each category in each moment were considered, using the intra-class correlation coefficient (ICC) equation (2,1) and the Bland and Altman method. The ICC(2,1) values were interpreted as follows: > 0.75 was excellent, 0.40–0.75 was moderate and < 0.40 was poor (Fleiss, 1986). The results ranged between 0.45 and 1.0, indicating a moderate to excellent reliability.

Bland and Altman 95% limits of agreement were measured and the scatter plots were analysed for all categories. A good agreement between the coders was found and no evidence of systematic bias was observed.

(Table 2)

(Table 3)

Results

Participants

Participants were all female with a mean age of 44.72 ± 9.02 years. The majority were married (67.2%), 46.4% had the primary and middle school and 41.4% the high school. The average length of service was 9.61 ± 3.72 years. No significant differences were found between the groups in terms of socio-demographic data. (Table 4).

(Table 4)

DCWs' communicative behaviour

No significant differences between groups were found at baseline for any communicative behaviour.

Within the experimental group there was a positive change from pre to post-test on the frequency of all DCWs' communicative behaviours.

Regarding participants' verbal communicative behaviours, the frequency of category "inform" increased significantly among DCWs of the experimental group and decreased among the control group ($p < 0.01$, $\eta^2_{\text{partial}} = 0.09$). Also, positive, but non-significant effects, were obtained in the experimental group for the frequency of 'consult', 'distract', 'invalidate', 'criticise', 'impose' and for the frequency and duration of 'conversation about the person'. Both groups reported significant differences from pre to post-test in the frequency of 'reward' ($p < 0.01$), duration of 'social conversation' ($p < 0.05$), frequency and duration of 'involve' ($p < 0.01$), and 'sensory stimulation' ($p < 0.05$).

In the non-verbal communicative behaviours, the frequency of 'laugh' changed significantly. The amount of laughs increased in DCWs of the experimental group and decreased in DCWs of the control group ($p < 0.01$, $\eta^2_{\text{partial}} = 0.18$).

Only the experimental group showed positive (but not significant) effects on the frequency and duration of 'smile', 'resident-direct eye gaze' and 'affective touch'. Both groups reported a significant decrease in the frequency of 'withholding' ($p < 0.01$) (Table 5).

(Table 5)

Discussion

To the best of our knowledge this is the first study designed to evaluate the effects of a PCC-based psycho-educational interventions on DCWs' communicative behaviours with residents with dementia. Overall, the results support the initial hypothesis that adding a supportive component to traditional education-only interventions lead to improvements in DCWs' communicative behaviours.

Participants from both groups showed positive significant improvements on a number of behaviours, including higher frequency and duration of involvement and sensory stimulation, more reward, longer social conversation, and a reduced duration of withholding. These findings suggest that education can provide DCWs with useful positive verbal skills relevant for the quality of dementia care. Moreover, they also offer further support for the applicability of multisensory stimulation (MSS) during residents' care provision (Figueiredo et al., 2013; Marques, Cruz, Barbosa, Figueiredo, & Sousa, 2013). This can be an undemanding PCC-based approach that may improve DCWs/resident interaction while allowing working completion (van Weert et al., 2005).

However, the findings suggest that the PE intervention had a broader impact, with the frequency of all behavioural categories being positively affected at posttest. Additionally, group differences emerged in a number of verbal communicative behaviours. DCWs from the experimental group experienced a significant improvement in inform and a trend towards improvement in the frequency of consult, distract,

conversation about the person, invalidation, criticism and imposition. Concerning non-verbal communicative behaviours, group differences were even more pronounced. The PE intervention group presented significant more laughs, and positive but no significant improvements in the frequency and duration of smile, resident-directed eye gaze and affective touch than the control group. These results are encouraging as these behaviours are considered to be central in establishing a good relationship with the resident (Brooker, 2007; Caris-Verhallen, Kerkstra, & Bensing, 1999). Indeed, it is becoming increasingly acknowledged that good dementia care is a synonymous of good interpersonal relationships between people with dementia and DCWs that rely more on emotional, sensitive, and empathetic interactions rather than on verbal expressiveness (Brooker, 2007).

The overall findings suggest that the provision of emotional support might improve respectful conversation and emotional availability to communicate and enable the expression of interest, warmth and friendliness for the resident with dementia.

One possible explanation for this association is that emotional support can facilitate DCWs' regulation and awareness of their own and residents' emotions, thus favourably affecting their ability to communicate. One can conclude that adding to an education-only intervention a supportive component that meets the workers' emotional needs can be more effective for DCWs' performance and contribute to improve Person Positive Work and reduce Malignant Social Psychology, according to Kitwood's framework.

A number of limitations need to be acknowledged. First, there were two main problems identified in the use of video recordings: mechanical limitations and the influence that videos could have had on DCWs' behaviour (Latvala, Vuokila-Oikonen, & Janhonen, 2000). Mechanical limitations include the presence of external noises that

make it difficult for the observer to correctly interpret the DCWs' verbal communication, or the position of the camera that could have occasionally hindered the observation of non-verbal communicative behaviours. Besides, DCWs' performance during observation may have been influenced by the "Hawthorne effect", which means that DCWs being aware of video-recording possibly behaved differently (Haidet et al., 2009). As participants were recorded on several occasions this effect was minimised (Haidet et al., 2009).

This is in line with the idea that exposing participants to frequent periods of observation allow them to become gradually used to the camera (Latvala, Vuokila-Oikkonen, & Janhonen, 2000). Regardless of the identified restrictions, this methodology is a viable measure to assess DCWs' behaviour. By using video recordings most of the potentially useful information can be captured, and self-report fatigue and subjectivity can be minimised (Latvala, Vuokila-Oikkonen, & Janhonen, 2000).

Second, it is likely that non-verbal communication is more complex than described, with some behaviours having different interpretations (Caris-Verhallen, Kerkstra, & Bensing, 1999). Smiling for example can convey friendless but also cynicism or arrogance (Caris-Verhallen, Kerkstra, & Bensing, 1999). Although a good inter-observer reliability had been identified for all the behavioural categories, the intricacy of non-verbal communication demands additional research.

Third, although participants were blinded to the experimental or the control group, it was not possible to blind the researchers to the intervention or assessments. Studies with a double-blinded design should be conducted to clarify findings. Furthermore, follow-up assessments to determine any changes over time and cost-effectiveness analysis to assess the feasibility of this intervention are also recommended.

Despite the identified limitations, the results are promising and highlight the need to address not only DCWs' technical expertise, but also their emotional and relational skills. This fits into the principles of the *relationship-centred care* (RCC), focused on the important dimensions of interdependent relationships necessary to create an enriched environment of care (Nolan, Davies, Brown, Keady, & Nolan, 2004). The enhanced DCWs' verbal and non-verbal communicative behaviours may ultimately be translated in residents' increased interaction. Communication is an interactional process based on a two-way flow of information, thus, further research is warranted to assess the benefits of a PCC-based PE intervention on residents.

The ethogram showed moderate to excellent observer reliability, which is suggestive of its applicability. The authors encourage other researchers to conduct future evaluations of the tool in diverse care settings in order to further develop its acceptability, utility and validity.

Conclusion

This study provides preliminary evidence of the value of a PE intervention to increase PCC communication among DCWs. The results are encouraging and support the initial hypothesis that adding to an educational intervention a supportive component, aiming to provide DCWs with tools for stress and emotional management can improve person-centred interactions. Future research is warranted in order to investigate the long-term sustainability, cost-effectiveness and extent of the benefits of this intervention on both DCWs and residents with dementia

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Table 1. Content of the interventions

Session	Component	Experimental Group	Control Group
1	Educative	<i>Information about PCC and dementia:</i> Information about the concept and principles of PCC. Basic information on dementia, its causes, symptoms and evolution.	
	Supportive	<i>Emotional impact of caregiving:</i> The positive and negative impacts of the caregiving experience on personal and professional life; Abdominal breathing.	
2	Educative	<i>Communication in dementia:</i> Communicative behavioural strategies to interact with residents with dementia. (e.g. give simple choices; use validation; allows time to respond; use individual's name and eye contact).	
	Supportive	<i>Conflict management:</i> Improving assertiveness through the DESC technique (Describe; Explain; Specify; Conclude) technique (Bower & Bower, 2004). Stretching and strengthening exercises.	
3	Educative	<i>Challenging behaviors:</i> Information about challenging behaviors and strategies to deal with them.	
	Supportive	<i>Teamwork:</i> The importance, benefits and constraints to teamwork; strategies to enhance cooperation between DCWs (e.g. active listen, positive feedback). Cognitive relaxation technique.	
4	Educative	<i>The environment and dementia:</i> Strategies to enhance the physical and social environment for the person with dementia (e.g. decrease background noise; post signs as reminders); information about the risk factors and strategies to prevent falls.	
	Supportive	<i>Deal with emotions:</i> Improving emotion-management strategies through the activity "six colors to think" (based on Bono, 1985); Stretching and strengthening exercises.	
5	Educative	<i>Motor stimulation:</i> Information about motor stimulation; strategies to enhance residents' involvement in daily care (e.g., break the small steps of an activity); and techniques for the moving and handling of residents.	
	Supportive	<i>Time management:</i> The impact of poor time management on personal and professional life and tools for better time management (e.g. set priorities; use a planning tool). Mental body-scan.	
6	Educative	<i>Multisensory stimulation - olfaction:</i> Information about multisensory stimulation; dementia-related olfactory changes and strategies to stimulate the olfaction during the daily care (e.g., use shower gel of different fragrances; place aroma diffusers in the bedroom)	
	Supportive	<i>Problem-solving:</i> Using the problem-solving technique: (a) identify the problem; (b) explain the problem; (c) create solutions; (d) choose one	

		solution; (e) plan the implementation of the solution;
		(f) evaluate the efficacy. Stretching and strengthening exercises
		<i>Multi-sensory stimulation – vision and tactile stimulation:</i> The importance of vision and touch for people with
7	Educative	dementia, dementia-related visual and tactile changes; strategies to stimulate the vision (e.g. reality orientation) and touch (e.g. hand massage during bath)
	Supportive	<i>Relaxation:</i> Yoga
		<i>Multi-sensory stimulation – audition and taste:</i> The importance of audition and taste for people with dementia;
8	Educative	dementia-related audition and taste changes; strategies to stimulate the audition (e.g., listen to residents' favourite song) and taste (e.g. brush the person's teeth with toothpastes of different flavors).
		Celebration and finalization

Table 2. Verbal communicative behaviours

Categories	Description
Consult	<p>Consulting the person with dementia about his or her preferences, desires and needs.</p> <p>Includes questions that invite resident's judgment. Examples include:</p> <ul style="list-style-type: none"> • Would you like your shoes on or off? • Do you want to wear a skirt or pants?
Inform	<p>Guiding the resident in terms of what to expect and providing information about what is going to happen during the task. Examples include:</p> <ul style="list-style-type: none"> • Now I'm going to comb your hair. • Today you will take a bath.
Involve	<p>Giving the resident the opportunity to take care for him/herself as much as possible and just 'completing' the care task when necessary. Examples include:</p> <ul style="list-style-type: none"> • Could you help me with this? • Hold the toothbrush with your hand.
Reward	<p>Rewarding the person and his/her behaviour, giving compliments and using expressions of encouragement. Examples include:</p> <ul style="list-style-type: none"> • Well done, Sr. John. • You can do it, Sr. John.
Validate	<p>Acknowledging the subjective reality of a person's emotions and feelings, and giving a response on the feeling level, without correcting the residents' reality or frame of reference, even if it is chaotic. Using statements to interpret or recognise the emotional state of the resident during the interaction. Examples include:</p> <ul style="list-style-type: none"> • This is distressing for you, I understand. • How do you feel about it?
Assess comfort	<p>Conveying interest and concern for the welfare and comfort of the person with dementia.</p> <p>Examples include:</p> <ul style="list-style-type: none"> • How are you feeling today? • Does your leg hurt?
Distract	<p>Amusing the person through humorous commentaries or distracting him/her in a positive way by guiding the conversation away from something unpleasant.</p>

Sensory stimulation	<p>Providing sensory information, without the intervention of concepts and intellectual understanding; for example through music, touch or aromas. Examples include:</p> <ul style="list-style-type: none"> • Feel how nice and soft this towel is. • This cream smells good!
Conversation about the person	<p>Showing interest in the resident's life or background. Examples include:</p> <ul style="list-style-type: none"> • You were a teacher, weren't you? • You used to like gardening, didn't you?
Social conversation	<p>Friendly conversation that conveys an interest in the resident and is not related to instrumental care. Includes statements that acknowledge that the resident said something. Examples include:</p> <ul style="list-style-type: none"> • You have a very nice dress. Where did you get it? • Thank you!
Task-oriented conversation	<p>Communication that is related to task accomplishment or focused on nursing or therapeutic topics. Examples include:</p> <ul style="list-style-type: none"> • Where are your glasses? • The doctor said not to eat bread.
Conversation with a third person	<p>Communication to a third person. Examples include:</p> <ul style="list-style-type: none"> • Can you please give me a towel? (to another DCW)
Ignore	<p>Ignoring residents' statements by responding with an unrelated statement or question, interrupting or changing the topic of conversation. Carrying on a conversation in the presence of a person as if he/she is not present. Examples include:</p> <ul style="list-style-type: none"> • Today she [<i>the resident</i>] is very friendly.
Infantilize	<p>Patronising or treating and talking to the person with dementia as if he/she was a child. Examples include:</p> <ul style="list-style-type: none"> • Good girl, you behaved so well.
Invalidate	<p>Failing to acknowledge the subjective reality of a person's experience and especially what he or she is feeling. Correcting the resident on cognitive facts. Examples include:</p> <ul style="list-style-type: none"> • Your husband is dead. • It's Wednesday today, not Monday.

Mockery	Disdain, pointing out or making fun of residents' behaviour or actions. Placing the person towards his/her difficulties. Examples include: <ul style="list-style-type: none">• What's my name? Have you forgotten?
Criticise	Showing disapproval or criticise residents' performance or behaviour. Examples include: <ul style="list-style-type: none">• That's wrong. You are hopeless.
Impose	Forcing a person to do something, overriding desire or denying the possibility of choice on his or her part. Statements can be considered dominating or controlling. Examples include: <ul style="list-style-type: none">• You will dress this sweater because it is the freshest you have.• Be quiet.

Table 3. Non-verbal communicative behaviours

Affirmative Nodding	Nodding head as a sign of approval, encouragement, or interest in the resident.
Resident-Directed	Looking at the face of the resident.
Eye Gaze	
Smile	Expression in which the corners of the mouth are directed upwards, denoting affability towards the resident.
Laugh	Opening the mouth (totally or partially), making a sound commonly associated with the act of laughing.
Withholding	Refusing a residents' request or question. Includes statements from the resident that the DCW does not acknowledge (e.g. resident asks if she can return to her room and the DCW does not respond).
Affective touch	Spontaneous and affective touch that is not necessary for the completion of a task (e.g. a pat on the back, a hug).
Guiding touch	Using touch to draw the person's attention or guide him/her for a task.
Instrumental touch	Deliberate physical contact, which is necessary for the completion of a task.

Table 4. DCWs' socio-demographic characteristics

Outcome	Total (n=58)	Experimental group (n=27)	Control Group (n=31)	p-value
	n (%)	n (%)	n (%)	
Gender				
Female	58 (100.0)	27 (100.0)	31 (100.0)	-
Age in years				
M (SD)	44.72 (9.02)	43.37 (10.00)	45.90 (8.04)	0.290 ^a
Marital Status				
Married	39 (67.2)	17 (63.0)	22 (71.0)	
Widowed	3 (5.2)	1 (3.7)	2 (6.5)	
Single	4 (6.9)	2 (7.4)	2 (6.5)	0.887 ^b
Divorced/separated	9 (15.5)	5 (15.5)	4 (12.9)	
Other	3 (5.2)	2 (7.4)	1 (3.2)	
Education				
Primary school	15 (25.9)	4 (14.8)	11 (35.5)	
Middle school	12 (20.7)	6 (22.2)	6 (19.4)	
High school	24 (41.4)	11 (40.7)	13 (41.9)	0.144 ^b
College degree	1 (1.7)	1 (3.7)	0 (0.0)	
Other	6 (10.3)	5 (18.5)	1 (3.2)	
Length of service (years)				
M (SD)	9.61 (3.72)	9.84 (4.86)	9.42 (2.51)	0.678 ^a

Abbreviations: M, mean; SD, standard deviation

^a t-test^b χ^2

Table 5. Changes in DCWs' verbal and non-verbal communicative behaviour

Categories	Type	Experimental group (n=27)		Control group (n=31)		time p-value	Partial eta squared	group× time p-value	Partial eta squared
		Pre	Pos	Pre	Pos				
		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)				
<i>Verbal communicative behaviour</i>									
Consult	Freq	1.00 (1.00)	1.04 (1.11)	1.60 (1.83)	1.24 (1.28)	0.395	0.01	0.294	0.02
Inform	Freq	7.89 (4.54)	8.95 (5.34)	8.23 (4.41)	6.99 (3.91)	0.861	0.00	0.030*	0.09
Involve	Freq	3.46 (3.15)	4.04 (3.13)	3.50 (3.28)	6.13 (2.72)	0.006**	0.17	0.073	0.06
	Dur	12.38 (14.08)	19.51 (20.02)	19.14 (21.89)	28.68 (18.94)	0.008**	0.12	0.694	0.00
Reward	Freq	1.33 (1.44)	1.90 (1.73)	0.75 (0.70)	1.34 (1.17)	0.000**	0.14	0.953	0.00
Validate	Freq	0.26 (0.64)	0.28 (0.75)	0.13 (0.34)	0.17 (0.34)	0.559	0.00	0.846	0.00
Assess comfort	Freq	0.34 (0.47)	0.35 (0.39)	0.38 (0.58)	0.43 (0.79)	0.792	0.00	0.857	0.00
Distract	Freq	0.37 (0.79)	0.64 (1.24)	0.24 (0.60)	0.15 (0.34)	0.486	0.00	0.130	0.04
Sensory stimulation	Freq	0.10 (0.21)	0.33 (0.45)	0.11 (0.33)	0.32 (0.82)	0.023*	0.09	0.904	0.00
	Dur	0.51 (1.62)	1.62 (2.64)	0.34 (0.98)	3.08 (9.59)	0.049*	0.07	0.399	0.01
Social conversation	Freq	4.56 (2.46)	5.11 (2.70)	6.44 (4.51)	6.95 (4.18)	0.306	0.02	0.993	0.00
	Dur	32.59 (28.80)	41.69 (22.63)	37.30 (25.44)	49.74 (33.38)	0.031*	0.08	0.732	0.00
Conversation about the person	Freq	0.02 (0.10)	0.04 (0.14)	0.12 (0.25)	0.06 (0.16)	0.509	0.00	0.210	0.03
	Dur	0.07 (0.32)	0.41 (1.93)	1.17 (2.76)	0.80 (2.08)	0.971	0.00	0.328	0.02
Instrumental conversation	Freq	2.55 (2.04)	2.41 (2.24)	2.10 (1.66)	1.94 (1.15)	0.608	0.00	0.972	0.00
	Dur	12.22 (10.88)	10.17 (9.26)	10.73 (9.85)	10.73 (9.96)	0.475	0.00	0.489	0.00
Conversation with others	Freq	5.18 (3.94)	5.01 (2.93)	5.55 (4.06)	4.02 (2.89)	0.103	0.05	0.191	0.03
	Dur	28.83 (29.83)	33.05 (20.59)	14.68 (17.90)	20.77 (12.02)	0.129	0.04	0.827	0.00

Ignore	Freq	1.81 (1.44)	1.78 (1.73)	2.12 (2.10)	1.63 (1.56)	0.385	0.01	0.448	0.01
Infantilize	Freq	0.02 (0.09)	0.01 (0.65)	0.28 (0.51)	0.11 (0.28)	0.101	0.05	0.128	0.04
Invalidate	Freq	0.07 (0.27)	0.00	0.13 (0.25)	0.17 (0.39)	0.730	0.00	0.242	0.03
Mockery	Freq	0.11 (0.22)	0.09 (0.22)	0.54 (0.69)	0.25 (0.44)	0.073	0.06	0.120	0.04
Criticise	Freq	0.32 (0.47)	0.06 (0.23)	0.46 (0.72)	0.57 (0.75)	0.508	0.00	0.090	0.05
Impose	Freq	0.44 (0.83)	0.21 (0.39)	0.56 (0.58)	0.83 (1.57)	0.920	0.00	0.149	0.04
<i>Non-verbal communicative behaviour</i>									
Affirmative Nodding	Freq	0.41 (0.79)	0.65 (1.09)	0.55 (0.84)	0.51 (0.99)	0.416	0.01	0.238	0.03
Resident-directed eye gaze	Freq	1.71 (1.85)	2.09 (1.94)	1.91 (2.36)	2.03 (2.26)	0.364	0.02	0.657	0.00
	Dur	16.72 (30.29)	23.48 (37.66)	25.43 (56.24)	19.68 (33.73)	0.94	0.00	0.361	0.02
Smile	Freq	0.28 (0.57)	0.37 (0.67)	0.31 (0.86)	0.23 (0.54)	0.980	0.00	0.477	0.00
	Dur	0.55 (1.17)	0.71 (1.68)	2.65 (11.90)	0.89 (2.11)	0.380	0.01	0.490	0.00
Laugh	Freq	1.04 (1.10)	1.77 (1.64)	1.01 (1.01)	0.62 (0.82)	0.304	0.02	0.001**	0.18
	Dur	11.11 (19.29)	7.04 (11.00)	10.28 (29.11)	2.10 (3.03)	0.060	0.06	0.520	0.00
Withholding	Freq	0.38 (0.72)	0.06 (0.16)	0.08 (0.23)	0.01 (0.06)	0.000**	0.13	0.070	0.06
Affective touch	Freq	0.67 (0.53)	0.9 (0.78)	1.18 (1.33)	0.75 (1.00)	0.271	0.02	0.058	0.07
	Dur	2.29 (3.11)	2.84 (5.70)	3.53 (4.42)	4.05 (9.03)	0.590	0.00	0.988	0.00
Instrumental touch	Freq	10.28 (2.92)	10.05 (2.83)	9.82 (2.79)	8.99 (2.34)	0.192	0.03	0.447	0.01
	Dur	290.49 (176.1)	307.66 (49.39)	326.37 (251.40)	268.9 (69.58)	0.530	0.00	0.242	0.03
Awareness touch	Freq	0.15 (0.45)	0.51 (1.29)	0.44 (0.71)	0.44 (0.61)	0.247	0.03	0.23	0.03

Abbreviations: Freq, frequency (i.e. number of occurrences); Dur, duration (i.e. length of the behaviour in seconds); SD, Standard deviation.

*p<0.05; **p<0.001