Could towel bath reduce aggressiveness in patient with dementia? Results from a crossover trial

Giada Cocciolo¹, Lara Carelli², Laura Di Prisco², Paolo Ferrara², Mauro Parozzi², Giancarlo Celeri Bellotti², Elena Sala², Agostino D’Antuono², Stefano Terzoni², Roberta Lodini²

¹ Lmu Klinikum Grosshadern, Munich, Germany
² ASST Santi Paolo e Carlo, Milano, Italy

Findings:
This paper provides evidences concerning the use of the towel bath technique instead of traditional bathing to reduce aggression in patients with dementia.

ABSTRACT

BACKGROUND: Bathing is one of the most intimate activities during which persons with dementia are cared for. The literature suggests that 20-40% of patients with cognitive impairment, hospitalized in long-term facilities, may react with aggressive behaviours.

AIM: To evaluate the efficacy of the towel bath technique in reducing agitation, aggression, and discomfort in nursing home residents with dementia.

MATERIALS AND METHODS: An Interventional crossover study was conducted; a convenience sample of patients with dementia was enrolled. Aggressive behaviors were evaluated using the Italian version of the Care Recipient Behavior Assessment (CAREBA-ita).

RESULTS: 71 resident were enrolled. Towel Bath technique showed a reduction in episodes of aggression and in the execution time of the procedure with a statistically significant difference (p < 0.05).

CONCLUSIONS: The technique Towel bath provides a viable alternative to traditional bath to reduce aggression in patients with dementia.

KEYWORDS: dementia, towel bath, aggression, nursing
La "towel bath" può ridurre l'aggressività in pazienti affetti da demenza? Risultati di un trial crossover

Giada Cocciolo¹, Lara Carelli², Laura Di Prisco², Paolo Ferrara², Mauro Parozzi², Giancarlo Celeri Bellotti², Elena Sala², Agostino D’Antuono², Stefano Terzoni², Roberta Lodini²

¹ LMU KLINKUM, Munich, Germany
² ASST Santi Paolo e Carlo, Milano, Italy

ABSTRACT

INTRODUZIONE: Il bagno rappresenta una delle più delicate attività assistenziali durante le quali ci si prende cura delle persone con demenza. La letteratura suggerisce che il 20-40% dei pazienti con compromissione cognitiva, ricoverati in strutture a lungo termine, possono reagire con comportamenti aggressivi.

OBIETTIVO: Valutare l'efficacia della tecnica di Towel Bath nella riduzione dell'agitazione, dell'aggressività e del disagio nelle persone affette da demenza ricoverate in residenze assistenziali.

MATERIALI E METODI: È stato condotto uno studio crossover interventistico; è stato arruolato un campione di convenienza rappresentato da pazienti affetti da demenza. I comportamenti aggressivi sono stati valutati utilizzando la versione italiana della Care Recipient Behavior Assessment (CAREBA-ita).

RISULTATI: Sono stati arruolati 71 pazienti. La tecnica della Towel Bath ha mostrato una riduzione degli episodi di aggressività e del tempo di esecuzione della procedura con una differenza statisticamente significativa (p<0.05).

CONCLUSIONI: La tecnica della Towel Bath rappresenta una valida alternativa al bagno tradizionale per ridurre l'aggressività nei pazienti affetti da demenza.

KEYWORDS: demenza, towel bath, aggressione, assistenza infermieristica
BACKGROUND

The presence of aggressive behaviors in person with dementia is a reality that needs to be addressed and prevented. It is known in literature that 20% of patients with dementia develop psycho-behavioral symptoms within two years from being diagnosed. This percentage raises to 80% during the course of the disease (1–3). In patients with dementia, agitation and aggression represent a challenge for both caregivers and healthcare personnel, with direct consequences such as (4) poor job satisfaction, distress and high staff turnover (5,6). In the absence of disease, hygienic care including bath or shower, are self care activities important for most people, not only because they allow adequate prevention against infection but also because they provide comfort (7–9). Despite bath being considered by most people a pleasant and relaxing experience, for patients with dementia and their caregivers it can turn into a stressful and traumatic moment, triggering aggression (10,11).

Bath time can become a real struggle between caregivers and patients (10): the literature indicates that 20-40% of patients with cognitive impairment, hospitalized in long-term facilities, can react with aggressive manifestations such as screaming, threats, kicks, punches, and scratches, as well as to remain agitated for many hours after the bath (12–14).

Currently, the treatment options for psycho-behavioral symptoms include pharmacological and non-pharmacological therapies (15–17). Some studies show that antipsychotics are used between 21% and 46% of cases to manage agitation and aggression (18–20). Atypical antipsychotics are the most commonly used to reduce the frequency and severity of episodes of agitation and aggression (21,22) which, however, in most patients, are poorly controlled by the drug (23), thus leading to consequences (24,25) increased risk of falls and fractures (26), development of cerebrovascular accidents, reduced quality of life and increased mortality (27–30).

For these reasons, the guidelines of the American Psychiatric Association from 2007 onwards have been recommending (31) non-pharmacological interventions as the first choice (32–34). However studies on this subject are few and sometimes discordant, and produce scant evidence (35,36).

Specifically, interventions such as touch therapy (37), aromatherapy (38,39), music therapy (40,41) and sensory stimulation (15,42) have shown promising results in reducing agitation and deterioration in elderly patients with dementia (15,43,44). The Towel bath (45,46) is a technique that starts in the early 1990’s, when two research groups, of North Carolina, were funded by the National Institutes of Health to develop interventions to improve the techniques used during bathing. This technique is a variant of the bed bath, it can be a good choice for people who are frail, non-ambulatory, severely overweight or fearful of lifts, also representing an useful and viable alternative to the complete bath in bedridden patients. In 2004, within a broader educational program, this technique was used on a group of persons with dementia, achieving good results in terms of reduction in aggressive behaviors against caregivers, reduction in care recipient agitation, reduction in care recipient distress and decrease in the time used for the execution of the bath (10). The technique of Towel bath in fact as well as reducing patient discomfort and aggressive behavior helps to promote a therapeutic relationship between patient and caregiver (10,11,47).

It is possible to wash these persons adequately in the bed, which is often less stressful. The technique consists in gently covering the body of the person with a large warm towel containing a no-rinse soap solution, and washing and massaging through the towel (47). The technique was performed in all cases by two operators.

Aggression in people with dementia is a complex phenomenon, with several possible causative factors
that requires a multidimensional and multidisciplinary response; nursing assessment in this field is aimed at researching specific risk factors. The use of valid screening tools assessment helps nurses to identify those at high risk, and to implement interventions aimed at reducing the risk of aggressive behaviour.

The level of aggressiveness of the person with dementia can be assessed through the Care Recipient Behavior Assessment Scale (CAREBA), created in 2004 and used to evaluate signs of behavioral distress in the person receiving Person-centered showering and the towel bath in different nursing homes. In Italy, to date towel bath is not commonly used, and no Italian versions of the CAREBA scale currently exist.

AIM
The aim of the study was to evaluate the effectiveness of the Towel bath technique in reducing aggressiveness when nursing care for residents with bathing.

MATERIALS AND METHODS
A monocentric, non-randomized, two-arms crossover trial, aimed at comparing the method of Towel bath (intervention group) with complete bath (control group) was conducted in a long-term care facility dedicated to patients with dementia; aggressiveness shown by patients and time required to complete the procedure were evaluated.

Setting, sample size and sample characteristics
The study was conducted in two units of the “Istituti Milanesi Martinitt e Stelline e Pio Albergo Trivulzio” in Milan, Northern Italy, both dedicated to patients suffering from dementia, from June to October 2018.

We enrolled persons with diagnosis of dementia (Alzheimer’s and non-Alzheimer’s) with "moderate" or "severe" cognitive impairment, with a Mini Mental State Examination scores (MMSE) ≤ 19, Pain Assessment in Advanced Dementia scores (PAINAD) <4 (that is, absence of pain before the procedure) and history of physically or verbally aggressive behaviours. Patients with a primary diagnosis of delirium, unconscious or comatose patients, patients with a alcohol-related dementia or with psychotic disorders as their primary diagnosis, patients with a MMSE > 19 with a cognitive "mild" impairment and PAINAD patients ≥ 4 were excluded.

Sample size was calculated considering a probability of type I error of 5%, and a probability of type II error of 20% (power=80%). Considering an expected effect size between 30% and 40% a sample size of 71 patients was needed to compare the two groups.

Crossover trial
The study design is outlined in Fig 1. The 71 persons were invited to receive the usual-care - traditional bathing, with water, soap, and full-body cleansing with sponges - with prior permission of the patient’s guardians or next of kin.

The following bath, after an average of 4 days, was given to the same persons with the towel bath technique, described in the Background section. During the remaining days of the week, all patients received daily hygiene but not a full bath. This schedule was compliant with the usual care provided in the hospital, in which full bath was only given every four days even before the beginning of this study.
In order to avoid a bias represented by the possible presence of pain, which could influence aggressive behaviours, the PAINAD scale was administered prior to all baths. Patients with positive PAINAD scores were treated for pain according to the physician's prescriptions, and not enrolled for the study until pain came under control again.

Assessment of aggressiveness was performed through repeated administration of the Italian version of the CAREBA scale to all patients, 15 minutes before the bath, during the bath and 15 minutes after the end of the procedure.

Data collection was performed by one nurse only; assessment and baths were always performed during the morning shift by two experienced nurses with advanced education and training about towel bath technique.

Validation Of The Careba Scale

The scale, reported in table 1 (appendices section), has 9 items, each corresponding to a patient's behaviour, which can be present or not. According to the original author patients are considered at risk of violence even with a single "attempt" of aggressive behaviour against the caregiver. The scale was backtranslated from English into Italian by two nurses independently and then back to English (by an English teacher). The final version was approved by the original author. Face and content validity of the Italian version of the CAREBA scale were investigated by calculating the content validity index, with the help of six nurses with experience of 5 or more years in this area. Cronbach's alpha was used to assess internal consistency.

Statistical analysis

Continuous variables have been described with mean and standard deviation if normally distributed, with median and interquartile range otherwise. Wilcoxon matched-pair test was used to compare the CAREBA-ita scores in the two groups (traditional and towel bath) after failure of data normalization, attempted with Blom's transformation and checked with Shapiro-Wilk normality test (p<0.05). The threshold of significance of the tests was set at 5%. All calculations were checked by a statistician and performed using SAS® 9 (SAS Inc., Cary NY). Post-hoc power analysis on our sample revealed an actual power of all statistical tests between 80% and 82%, which can be considered satisfactory.

Ethical issues

The hospital does not have an ethical committee, and is not affiliated with any external committee. Ethical issues are discussed by representatives of the hospital management, including nurses, doctors, and managers, according to the ethical principles of the Declaration of Helsinki. We complied with the ethical rules of the hospital, and obtained all required authorizations to conduct the study.

RESULTS

Validation of the Italian version of CAREBA scale (CAREBA-ita)

Face validity was satisfactory: the scale had a content validity index (S-CVI) of .94. Internal consistency was good (Cronbach’s alpha = .79). Average time for

Figure 1: Flow chart outlining study design

![Flow chart outlining study design](image-url)
Sample characteristics
71 eligible patients were enrolled, median age 86 years, IQR [83-89] (skewed distribution, Kolmogorov-Smirnov test p < 0.05), 61 were women, 10 men, among them 56 patients (79.0%) taking antipsychotics, 22 patients (31.0%) had Alzheimer’s disease, 27 (38.0%) mixed dementia, 22 (31.0%) vascular dementia. The Mini Mental State Examination had a median value $\text{Me} = 5$ [2-8] with a range between 1 and 19, thus largely compatible with the diagnosis of dementia. Before bathing, no patients needed pharmacological treatment for pain, according to the PAINAD score (always <4).

Traditional bath vs Towel bath
The CAREBA scores were calculated in both groups before (15 minutes), during and after (15 minutes) bathing with the traditional technique and Towel bath, as shown in Table 2. All patients received 6 evaluation, 3 in the control group and 3 in the intervention group. Before and after bathing, no patient were at risk (CAREBA score=0); one patient was evaluated at risk of aggressive behaviours during bathing with traditional technique.

Towel bath led to statistically significant reduction in the number of patients that showed aggressive behaviours ($p=0.037$) during the bath. The CAREBA scores ranged between [0-3] in the control group and [0-1] in the Towel bath.

Table 3 shows the comparison of every single item in the two groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>Before(n, Me[IQR])</th>
<th>During (n, Me[IQR])</th>
<th>After (n, Me[IQR])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional bath</td>
<td>0,0[0-0]</td>
<td>43, 1[0-3]</td>
<td>1,0[0-0]</td>
</tr>
<tr>
<td>Towel bath</td>
<td>0, 0[0-0]</td>
<td>22, 0[0-1]</td>
<td>0, 0[0-0]</td>
</tr>
</tbody>
</table>

$n = \text{patients with CAREBA >0}; \text{Me} = \text{median score CAREBA}; \text{IQR} = \text{InterQuartile Range}$

Table 2: Comparison CAREBA-ita scores in the two arms
38 patients (54.0%) had a Mini Mental State Examination below 5 points. Having a MMSE above or below MMSE=5 was not related to any significant differences in the scores CAREBA during bathing (always p > 0.05). As regarding the variables “Diagnosis”, “Gender” and “Age” the scores during the procedure showed no significant differences in the different domains of the CAREBA (always p > 0.05).

As regards the time required to complete the procedure there was a statistically significant difference in favour of Towel bath, requiring a median of 7 minutes IQR [6; 8] against 9 minutes IQR [8; 10] traditional bath (p=0.01).

CONCLUSIONS
The perception of a safe environment is a fundamental characteristic of individual and social well-being (48). It is an important component of job satisfaction and job performance. An aggressive event can adversely affect the healthcare worker’s problem-solving skills and expose them to the risk of experiencing other issues as moral distress (49).

Bathing persons with Alzheimer’s disease is physically and emotionally demanding for the healthcare workers. Hitting, kicking, biting, swearing, and shouting at staff by dementia patients while bathing is an everyday occurrence in long-term care facilities. This study shows that changing the nursing approach can significantly reduce aggression and agitation without having a negative effect on bathing completeness or hygiene outcomes. The reduction in behavioral symptoms produced by the technique Towel bath was large except for spitting, but the lack

<table>
<thead>
<tr>
<th>Item</th>
<th>Traditional bath (n, Me[IQR])</th>
<th>Towel bath (n, Me[IQR])</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitting, pushing, scratching</td>
<td>24,0[0-2]</td>
<td>11,0[0-0]</td>
<td>0.02</td>
</tr>
<tr>
<td>Kicking</td>
<td>10,0[0-0]</td>
<td>3,0[0-0]</td>
<td>0.001</td>
</tr>
<tr>
<td>Biting</td>
<td>2,0[0-0]</td>
<td>0,0[0-0]</td>
<td>0.01</td>
</tr>
<tr>
<td>Grabbing caregiver</td>
<td>11,0[0-1]</td>
<td>3,0[0-0]</td>
<td>0.001</td>
</tr>
<tr>
<td>Throwing things</td>
<td>6,0[0-0]</td>
<td>0,0[0-0]</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Spitting</td>
<td>1,0[0-0]</td>
<td>0,0[0-0]</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Calling for Help /Protesting/Objecting</td>
<td>9,0[0-1]</td>
<td>2,0[0-0]</td>
<td>0.03</td>
</tr>
<tr>
<td>Hostile/Aggressive language</td>
<td>3,0[0-0]</td>
<td>1,0[0-0]</td>
<td>0.03</td>
</tr>
<tr>
<td>Screaming/yelling</td>
<td>9,0[0-1]</td>
<td>2,0[0-0]</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Table 3: comparison of different Item both physical and verbal aggression while bathing in the two groups
of this occurrence suggests the need for further investigation. It also seems interesting to investigate the perceived any caregiver regards the effectiveness of this technique.

About the execution time of the procedure, there was a statistically significant difference in favour of Towel bath technique against traditional bath. These results are in line with what it was declared in international studies that have implemented Towel bath (10,11). The CAREBA scale (10) was translated into Italian by the method of back translation. We proceeded to the internal consistency evaluation by calculating Cronbach Alpha which turned out to be 0.79: this value is satisfactory, indicating that among the items of the scale there is a good correlation and therefore, a strong logical connection. The scale is easy to use, requires less than a minute to be completed and thus represents a valid and reliable instrument in assessing the aggressiveness even in persons with dementia in long term facilities.

This study supports the growing belief that a change in attitudes and practice can and should take place with regard to bathing and other personal care activities. Improving personal care experiences would have a significant positive effect on both patients and healthcare professionals.

In conclusion our results support the idea that the technique Towel bath can be a valid alternative at traditional bathroom types, for use in patients with dementia to reduce aggressive manifestations and the execution time of the procedure.

The towel bath technique can be incorporated into educational training programs for any healthcare professional or caregiver who will be working with persons with dementia. It is a procedure that can be adapted to the care of the most challenging resident and will help staff begin to display person-centred care for the resident who is afraid of care procedures or is not compliant as a result.

These results require replication in further settings and on a wider sample; continued enhancement of health professionals through education, supportive administrative practices and regulation is recommended to maintain the level of improvement achieved in this study. Efforts in this direction are currently ongoing.

Declarations of interest: The study was performed by part of the editorial board of Dissertation Nursing: the appropriate editorial conflict of interest policies (Publication Ethics - Art. 7.2) and the conflict of interest procedure described in the Author Guidelines were adopted.

REFERENCES


Dissertation Nursing


20. Richter T, Mann E, Meyer G, Haastert B, Köpke S. Prevalence of psychotropic medication use among German and Austrian nursing home residents:


34. Brasure M, Jutkowitz E, Fuchs E, Nelson VA, Kane RA, Shippee T, et al. Nonpharmacologic Interventions for Agitation and Aggression in Dementia [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2016 [cited 2017 Mar 6]. (AHRQ Comparative Effectiveness...


45. The University of North Carolina at Chapel Hill, Cecil G. Sheps Center for Health Services Research. Bathing Without a Battle Creating a Better Bathing Experience for Persons with Alzheimer’s Disease and Related Dementias [Internet]. Available from: http://bathingwithoutabattle.unc.edu/bathing-techniques


APPENDICES:

Table 1 - CARErecipient Behavior Assessment (CAREBA) – first part

<table>
<thead>
<tr>
<th>BEHAVIOR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitting, pushing, scratching, etc</td>
<td>- physically abuses caregiver with hand or handheld object or with other body parts (head, whole body), includes pushing, shoving, scratching, pinching (contact must occur)</td>
</tr>
<tr>
<td>Kicking</td>
<td>- strikes forcefully with foot or leg (contact occurs)</td>
</tr>
<tr>
<td>Kick attempt</td>
<td>- swings out leg and foot with force towards caregiver</td>
</tr>
<tr>
<td>Biting</td>
<td>- bites, chomps, gnaws (on caregiver only)</td>
</tr>
<tr>
<td>Biting attempt</td>
<td>- moves face and open mouth towards caregiver to bite</td>
</tr>
<tr>
<td>Grabbing caregiver</td>
<td>- grabs onto a caregiver. Do not rate if resident is holding on to the caregiver for safety reasons. If it is unclear, do not rate.</td>
</tr>
<tr>
<td>Throwing things</td>
<td>- forcefully throws object, knocks object off surface</td>
</tr>
<tr>
<td>Spitting</td>
<td>- spits other than for dental hygiene purposes.</td>
</tr>
</tbody>
</table>

This coding system is used to rate clear signs of behavioral distress. If two behaviors occur simultaneously, rate BOTH. Attempts do not make contact with the caregiver. If a behavior cannot be clearly seen, do NOT rate it.
### Table 1 - CARErecipient Behavior Assessment (CAREBA) – Second part

#### 2. VERBAL SYMPTOMS

<table>
<thead>
<tr>
<th>BEHAVIOR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calling for Help/Protesting/Objecting</td>
<td>- says “You are hurting me”, “Ouch”, “Help”, etc.; these may include expressions of pain, discomfort or dissatisfaction or calls for help</td>
</tr>
<tr>
<td>Hostile/Aggressive language</td>
<td>- verbally threatens to physically harm the caregiver, eg, &quot;I'm going to kill you.&quot; or threatens the caregiver in a nonphysical way, eg., “I'm going to tell my son about you.” Must be words. - uses curse words (profane or obscene language)</td>
</tr>
<tr>
<td>Screaming/yelling</td>
<td>- <strong>Clearly above conversational level:</strong> howls, shouts out, includes LOUD verbal outbursts, e.g., - loud exclamations such as &quot;Oh!&quot; or &quot;Help!&quot; would be rated as Screaming/yelling and Protest/Objecting. Rate &quot;help&quot; said in a pleading manner as Protest/Objecting.</td>
</tr>
</tbody>
</table>