

# An exploration of the experience of using the TENA Pants product compared to usual continence products as perceived by carers of people with dementia in care homes.

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## Declaration of Interest

This study was funded by Essity, manufacturers of the TENA Pants product.

**Abstract:** Incontinence is a common symptom experienced by many older people with dementia, with an increased prevalence noted in care home settings when compared to community dwellings. Incontinence may often be a reason for care home admission. Absorbent continence pads are a common form of intervention with this client group. However, disposable continence pants are becoming more common and TENA Pants are one such example.

**Research Aim:** To understand what are the key product satisfaction indicators for absorbent continence pads; and in light of this review the experience of using the TENA Pants product compared to currently used continence products with people with dementia in care homes.

**Methods:** A review of the literature was undertaken to identify factors reported to affect user experience of absorbent continence pads. These results led to the development of a pre and post carer intervention questionnaire that focused on user satisfaction, which together with a semi-structured interview, reviewed a 4 week user trial of the TENA pull-up pants.

**Findings:** Overall, high satisfaction levels with the product were recorded suggesting this to be a suitable continence product for people with dementia residing in care homes. However, the qualitative data showed that satisfaction with the pads was greatest when used with people in the early and mid-stages of disease progression. Three key factors were found to account for the highest percentage of satisfaction and as such are likely to become key predictor variables for good quality and satisfaction when developing absorbent continence pads for this client group, as well as key points for product development and marketing. These were:

- Absorbent pads are comfortable to wear when they are dry
- Absorbent pads need to be designed so they can be easily fitted and removed
- Absorbent pads need to control odour well
- Considerations for further research in this area are also discussed.

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# 1.0 Background and Context

There are currently over 850,000 people living with a diagnosis of dementia in the United Kingdom (UK), with an additional prevalence of approximately 7.1% of people aged over 65 years (Alzheimer's Society, 2014). This number is forecast to rise to 1,142,677 by 2025 and to 2,092,945 by the year 2051 (Alzheimer's Society, 2014). Dementia however is also an international concern with a worldwide estimation of 44 million (Alzheimer's disease International, 2014). These figures have supported increasing attention to understanding the experience of dementia, the care of people with dementia and satisfaction of service provision.

People with dementia experience a range of associated distressing symptoms and the majority will experience incontinence at some point during the course of their disease. As such continence management is an area of care provision that requires consideration by carers and is a key area of focus for companies providing continence products both now and in the future. Following a careful and robust continence assessment, the choice of a suitable continence product is important due to its potential physical and a psychosocial impact. The two most common continence products used with this client group are disposable continence pads and pull up pants. The pads are inserted into specially designed underwear. Many pads will feature wetness indicators making it easier for individuals to know when to change and pull-up pants. Pull up pants are breathable and encourage the flow of air, maximising skin integrity. They also all feature a super absorbent polymer, which makes them highly absorbent and neutralises odours. Various levels of absorbency are available in both pads and pants.

Although a number of studies have looked at the use of these products with older people, there are far fewer studies that specifically focus on the needs of people with dementia. In 2013, the BBC, quoting from the Alzheimer's Society, reported that approximately 80% of care home residents in England, Wales and Northern Ireland, approximately 320,000 people had dementia, and so it is clear that continence management in people living with dementia in care homes is a real and growing issue. With this in mind the aim of this small study was to understand what are the key product satisfaction indicators for absorbent continence pads; and in light of this review the experience of using the TENA Pants product compared to currently used incontinence products with people with dementia in care homes.

Dementia takes many forms and to understand how this affects people's experience of continence it is important to have an appreciation of this diversity. The following section gives an overview of the main types of dementias and the disease progression.

## 2.0 Dementia – an introduction

Dementia is an umbrella term used to describe a range of chronic neurological conditions that are both progressive and debilitating. Importantly it is not a natural consequence of ageing, although the risk of dementia does increase with age. It is for this reason that most people with dementia are over the age of 65 years, although it may develop earlier with current estimates suggesting that there are as many as 40,000 people under the age of 65 in the UK with dementia. Many of the more common symptoms of dementia arise from a gradual global impairment of the brain's higher functioning and include cognitive problems often associated with memory, orientation, understanding information, and communication. In some instances additional 'non-cognitive' symptoms may also develop and include personality changes, behavioural problems, hallucinations and delusions. As dementia progresses, more areas of the brain become affected and so the experience of dementia becomes more debilitating and may also include co-morbid emotional disorders such as depression and anxiety, as well as functional loss such as the potential for incontinence. This leads to increasing difficulties in carrying out basic tasks or activities associated with everyday living such as washing, dressing, or going to the toilet.

### 2.1 Common types of dementia

There are over 200 different forms or types of dementia (Brooker, 2016) although the most common in the UK are:

- Alzheimer's Disease
- Vascular Dementias
- Dementia with Lewy Bodies
- Fronto-temporal lobe degeneration dementias

Not every person with dementia however has a clear diagnosis of the form or type. There are many reasons why this may be the case but it is recognised that where possible this should be identified– particularly in the early stages where knowing the type of dementia could support better assessment and care management.

#### 2.1.1 Alzheimer's Disease

In Alzheimer's disease, the most common type of dementia, accounting for up to 75% of cases (Qiu et al., 2009) there is often a slow and gradual progression. Memory problems, particularly with short term memory and word finding difficulties occur in the early stages (Taylor and Thomas, 2013) as well as orientation difficulties. As the condition progresses difficulties with remembering names and carrying out basic activities of daily living become apparent. Communication difficulties begin to surface and functional difficulties may lead to the need for ever increasing levels of support from others, whether formal or informal carers, friends or relatives. Difficulty in recognising familiar people, including family and close friends, may also develop as well as problems with mobility, toileting, eating, drinking and other such everyday activities. In the later stages of the disease, the person may eventually become fully dependent on carers to carry out

most aspects of care such as washing, dressing, managing incontinence, feeding, and to anticipate and respond compassionately to their physical and emotional needs.

### **2.1.2 Vascular Dementia**

The second most common form of dementia are the Vascular dementias. These usually occur following a stroke or other ischaemic or small blood vessel disease in the brain which leads to problems with neuronal function and eventually brain cell death. The symptoms experienced depend largely on where the damage has occurred in the brain. Progression in this form of dementia often takes a 'step-wise' pattern as further ischaemic or blood vessel damage occurs. Symptoms of depression, anxiety and apathy are often seen in this form of dementia (O'Brien et al., 2003). As the disease progresses the level of assistance required to undertake activities of daily living also increases.

### **2.1.3 Dementia with Lewy Bodies**

Dementia with Lewy Bodies is thought to account for approximately 10% of all cases (Matsui et al., 2009). Although attempts have been made to consider three distinct and progressive stages of this form of dementia (McKeith et al., 1992) progression, particularly in the third or final stage is often variable and much less predictable than with Alzheimer's disease. It includes symptoms that are also commonly associated with Parkinson's disease, such as shuffling gait, muscle stiffness, tremor, slow movements, as well as cognitive symptoms, and vivid visual hallucinations. Importantly in this form of dementia, the person's level of cognition may fluctuate during the day or even during the week. Sleep is also often disrupted, and the person may experience falls or feel faint during the day. In the final stages, behavioural difficulties become a significant feature often in response to their hallucinatory experiences, and severe gait impairment including fixed flexion of the neck and trunk/torso lead also to ever increasing problems with mobilising.

### **2.1.4 Fronto-temporal dementias**

Fronto-temporal dementias are forms of focal dementia that affect the frontal and temporal lobes of the brain. Understanding how the frontal lobe of the brain functions is important for understanding the particular symptoms of this type of dementia which may include personality changes, altered emotional responses, problems with communication, reduced insight into risk and sometimes sexual disinhibition. Mild, moderate and severe stages of progression exist where initial symptoms become increasingly more pronounced and disabling.

### **2.1.5 Dementia summary**

It is important to note that when we speak of or use the term 'dementia', we are actually using an umbrella term that reflects a range of different conditions and also a continued range of different symptoms that reflect each type of dementias progression. However, it also need to be recognised that each type of dementia will ultimately affect people differently and symptoms are often quite unique to the individual. A person's background, personality, health, and social psychology, as well as the neurological

impairment itself (Kitwood, 1993; 1997) would also affect the dementia experience and thus also the way in which care and support is responded to.

### 3.0 Dementia and Incontinence

As noted above, although dementia can occur at any age, it is more common in the older population. Older people are subject to age-related physiological changes in bladder and bowel function, (Wilson, 2003; Pringle-Specht, 2005) which may include (but are not limited to) bladder capacity and contractility as well as issues relating to the nervous system; with some changes that are more gender specific such as the prostate in men and pelvic floor muscles in women. Other factors may also increase the risk of incontinence such as some medications, mobility problems, co-ordination, fine/gross motor skills and/or sensory impairments. The added difficulties experienced by older people with dementia makes continence in dementia an important area of concern (Bravo, 2004). In this sense, explanations for incontinence in people with dementia may be understood as both functional (Knight, 2000; Upton and Reed, 2005; Yap and Tan, 2006) and/or organic in nature (Diehl-Schmid et al., 2007).

However, as may be expected, incontinence in older people with dementia is much more common than in older people without dementia. A study for example comparing these two groups found a prevalence rate of urinary incontinence of 53% for people with dementia, compared to only 13% in people without dementia (Yap and Tan, 2006). In addition, people with dementia who lived in care homes (nursing and/or residential) were found to be more likely to have continence issues; this may be because people with more advanced disease are more likely to live in care homes. Bravo (2004) for example noted that 84% of people with dementia in a nursing home had urinary incontinence compared to only 22% of people with dementia living in the community. In another study looking at residential care homes, Pringle-Specht et al. (2002) noted that of 145 residents with a primary diagnosis of dementia 81% were incontinent. Incontinence may start at differing times during the disease progression depending on the type of dementia and characteristics of the individual, but the majority of people with dementia are likely to experience some degree of incontinence.

However, different types of dementia may also show differences in the characteristics of incontinence. In Alzheimer's disease for example, there is a higher prevalence of urinary incontinence when compared with people with vascular dementia (Davidson et al., 1991; Diehl-Schmid et al., 2007), although interestingly incontinence may also be seen as an early indicator of vascular dementia (Del-Ser et al., 1996). However, of all the common dementia types incontinence is most likely to occur earlier in dementia with Lewy bodies (Ransmyr et al., 2008) and frontotemporal dementia (Diehl-Schmid et al., 2007).

### **3.1 Dementia and continence management**

Appropriate continence management is dependent on the identification of the continence problem followed then by a thorough assessment. Incontinence, like dementia, is used as an umbrella term for a range of conditions. Examples of types of incontinence that may need to be considered for any person include stress incontinence (related to weak pelvic floor muscles), urge incontinence (also sometimes called 'unstable bladder' caused by detrusor hyperactivity), obstructive incontinence (related to enlarged prostate in men or constipation in both sexes), functional incontinence (based on cognitive or environmental factors rather than physical problems), overflow incontinence (caused by obstruction of the urethra or hypotonic detrusor activity), reflex incontinence (bladder emptying during stimulation of the stretch reflex) and faecal incontinence (which could include diarrhoea, overflow, or impaction) and finally infection of any type or lack of mobility can lead to incontinence. Therefore, it is clear that only after an incontinence problem has been correctly identified and assessed should any long term intervention strategy be adopted.

Following assessment, carers have a range of interventions from which to choose, some of which are used to treat the cause of the incontinence whilst others exist solely to manage the incontinence. Latterly, the management of incontinence in older people with or without dementia is frequently achieved through the use of 'absorbent continence products'.

Absorbent pads are a commonly used continence aid in care homes. A number of absorbent continence pads are available on the market. They are used not only manage incontinence, but to also provide their wearer with dignity and a sense of physical and psycho-social security. The expanding product assortment for this however may leave patients, carers and professionals somewhat confused about what may be the most appropriate product to select (Simpson, 2000). Cost is often considered as a major variable with some care homes adopting a single product type to be used for all residents requiring absorbent continence products in order to take advantage of economies of scale rather than taking a more individualised approach. Moreover, what constitutes a good absorbent continence aid for people with dementia is actually still little understood.

### **3.2 The key features of a good absorbent continence pad - the literature**

A number of key features of 'good' absorbent continence pads have been identified in the literature. These included comfort (Trowbridge et al., 2016), both when the pad was wet or dry; the fit of the product and thus the use of manufacturer information compared to carer judgement when assessing size, absorbency and comfort (Simpson, 2000); pad discreetness when worn, including bulkiness and the general wear-ability (Chartier-Kastler et al., 2011; Tarbox et al., 2004); the control of malodour (Chartier-Kastler et al., 2011); the capacity of the pad to hold fluid and its associated absorbency quality (Gibb and Wong, 1994; Clarke-O'Neil et al., 2004; Doherty 2003); its ability to support skin integrity (Trowbridge et al., 2016; Chartier-Kastler et al., 2011; Benbow, 2012); product

storage; the ease of application and removal of the pad (Fader et al., 2008); its use with other products (such as medicinal/barrier creams) (Vinson and Pooch, 1998); and, disposal of pads (Simpson, 2000).

## 4.0 Study Design

### 4.1 Aims and objectives of the study

Research Aim: To understand what are the key product satisfaction indicators for absorbent continence pads; and in light of this review the experience of using the TENA Pants product compared to currently used continence products with people with dementia in care homes.

With this in mind the study objectives were:

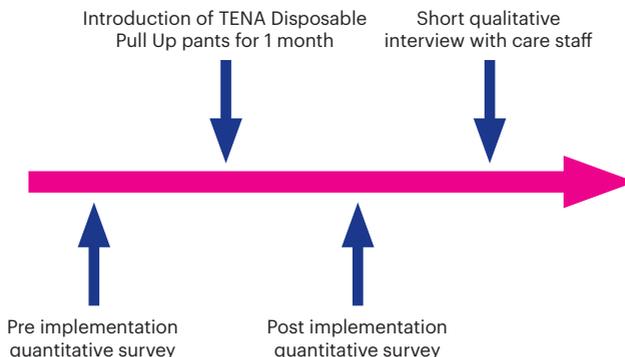
- To undertake a literature review to identify the factors reported to affect user experience of absorbent continence pads and to use this to develop a questionnaire for carers of people with dementia who used these products;
- using the questionnaire developed, explore the experiences of care givers in care home setting of their current incontinence product and the newly introduced TENA Pants product in pre/post introduction questionnaires;
- to explore the perceptions of care givers in care home setting of the experience of continence products for residents with dementia in brief interviews post intervention

In order to meet these aims, a small mixed methods evaluative study of TENA Pants was undertaken in seven care homes.

### 4.2 Study design overview

The study was designed around 4 stages as depicted below in figure 1.

**Figure 1. Summary of research design**



Stage 1 began with the administration of a questionnaire to care staff in care homes to assess their views of the current incontinence products being used in the home. Importantly, factors identified in the literature (see section 3.2) as key features of incontinence products (comfort, fit, discreetness, odour control, absorbency, skin integrity, storage, and ease of application and removal, use with creams and disposal) were developed as the questionnaire items.

In stage 2, the TENA Pants products were introduced to care staff via a training/guidance session with the product manufacturer's continence advisors, who advised on the correct use and fitting of these products. Supplies of the product were then left with the care home for use with specific residents with a diagnosis of dementia and with symptoms of incontinence. The care homes trialled the TENA Pants with these residents for one month.

Stage 3 began at the end of this trial month where care staff were asked to complete the questionnaire once again, but this time giving their views of the trial product TENA Pants with their residents. The administration of the questionnaire at two points in time, pre- and post- intervention, allowed a statistical comparison of care staffs' views of the disposable pull up incontinence pant when compared with their regular products. In the final stage, brief voluntary interviews were undertaken with care staff. This gave a more in-depth and qualitative understanding of the responses given in the questionnaire as well as providing opportunity for new insights to emerge above and beyond that noted in previously published literature in relation to continence products and people with dementia.

### **4.3 Development of the questionnaire and interview Schedule**

The questionnaire was developed by a member of the research team who was a dementia nurse specialist and who also had extensive practice experience working in care homes not included in the study (CK). The questionnaire began with demographic data including gender, ethnicity and age. Data on the type of care home service (residential or nursing) was collected. This was followed by the two main components of the questionnaire. First, to qualify the overall satisfaction of the product used (initially with any current products in use and then again following a month trial of TENA Pants), care staff were asked to grade their level of satisfaction with the continence product on a scale of 1-10, where 10 indicated the highest possible level of satisfaction. Identification of the overall level of satisfaction with the continence product became the main outcome, known as the main outcome variable.

The second component explored the factors that might affect this overall satisfaction score. The published literature concerning the use of absorbent continence pads used with adults was carefully examined for individual factors that would affect user experience. These factors were then discussed with a nurse with expertise of dementia nursing in a range of settings, including care homes, to ensure fit with the common types/forms of dementia and the dementia care experience. These factors were then

turned into statements where respondents could indicate the extent to which they agreed with the statement. This resulted in 12 statements which required a response using a scale, again with 10 the highest level of satisfaction 0 indicating the strongest level of dis-satisfaction (see table 1). These statements were statistically correlated with the overall satisfaction score (main outcome variable) to identify which were the key variables effecting overall satisfaction with the product and in so doing become, where statistically significant, predictors of what makes a good continence product for use with this client group.

**Table 1. Predictor variables based on literature review and expert opinion**

My residents seem to find the pad **comfortable** to wear when it is **dry**.

My residents seem to find the pad **comfortable** to wear when it is **wet**.

Getting the pads to **fit** is easy.

The pads are usually not easy to see and are **discreet**.

The pads control **odour** well.

I can usually **leave** the pad in place for an eight hour shift.

The pads seem to seldom cause skin **irritation**.

The pads are easy to **store** and are not too bulky.

The pads are quick and easy to **apply**.

The pads are quick and easy to **remove**.

The pads are easy to use with barrier **creams**, when necessary.

It is easy to **dispose** of the pads once removed.

Participants were also able to provide more detailed comments through two further open ended questions provided at the end of the questionnaire:

- Are there any other comments that you would like to make about the pads you use with dementia residents who have incontinence?
- As someone who cares for dementia patients with incontinence, what are the most important qualities you would look for in a pad?

Post-intervention, three additional questions were also asked more specifically about the TENA Pants:

- Are there any other comments that you would like to make about the TENA Pants you have used with dementia residents who have incontinence?
- Did you find it more or less easy to use the TENA Pants than your usual product with residents who had more severe dementia?
- Did you feel that the type of dementia which the residents had affected the way you used the TENA Pants?

In addition, to ensure the themes noted from the literature review remained relevant to this user group, a series of short interviews (appendix 2) were also carried out using semi-structured and open questions about carer experience of using the TENA Pants and the perceived impact this had on the residents they were caring for.

#### **4.4 Data analysis**

Quantitative data was subject to descriptive and statistical analysis using IBM SPSS 22 and is more fully explained in section 5.0. The qualitative element was analysed using content analysis (Graneheim and Lundman, 2004) which has previously been used in health and care research environments.

Interviews were transcribed and analysed as described. Generated themes were compared against the themes sourced from the more general literature review. This was to either corroborate these themes or to consider re-adaption/ subtle changes that could be reflected upon; this was to ensure greater levels of reliability when discussing the data. Differences between variables/ satisfaction indicators adopted by the general older population (as found in the published literature) when compared to people more specifically with a diagnosis of dementia (based on the findings of this research) needed to be openly reflected on and considered in the writing of this report. It was felt that this combined data might then be used as a potential recommendation for the future development of a tool to measure quality of product in people specifically with dementia using absorbent pad products.

#### **4.5 Sampling**

The original recruitment target was for 10 care homes to take part in the study. Lists of care homes were gathered in a range of geographical locations across the East Midlands locality in the UK. Care home managers were then invited to take part in the study by telephone or email by two research assistants. Recruitment to this study however was very slow and proved difficult. Sometimes change of staff or managers meant that care homes which had originally agreed subsequently declined to take part in the study. Sometimes, recruited homes experienced a delay in beginning the trial which meant they withdrew from the study. Some care home managers just failed to respond to emails or phone calls. However, a total of 7 care homes were eventually recruited and successfully completed all stages of the study.

#### **4.6 Ethical considerations**

Ethical approval for the study was obtained from De Montfort University Faculty of Health and Life Sciences. Permission was also sought from each care home provider which was kindly granted. It is important to note that this research was about people with dementia and their experience of a product used to manage their incontinence symptoms. With this in mind it is noteworthy that due to the level of cognitive impairment and communication issues, only care staff were offered the opportunity to complete the questionnaires. However to secure any potential routes for involvement and the perspective of people with dementia, staff were also asked to consider their answers and discuss questions where felt appropriate, with residents.

## 5.0 Results

Data was entered into SPSS 22.0 for analysis. A total of 7 care homes completed all phases of this study. We received completed questionnaires from 61 care home staff pre-intervention and 72 post-intervention. So we can say that 61 people gave us information on their perceptions of the existing continence products used in the care homes for people with dementia but that 72 carers reported their perceptions of the TENA Pants following the trial period.

### 5.1 Descriptive data of care homes involved in the trial.

Residential care homes are now generally referred to simply as care homes. And what used to be called nursing homes are now called care homes with nursing. Table 2 shows the type of care home the participant care staff worked in. Most of the care homes were run by private companies, and a minority were classified as care homes with nursing. Virtually all the staff participants were women (n= 60 98%); 85% identified their ethnicity as being White British, 7 (11%) as White European, and 2 (4%) as other. The average age of participants was 38 years. Only 2 participants were registered nurses, the remaining 96% were care/senior care assistants. This is highly appropriate as care assistants are the staff most likely to be regularly using incontinence pads and pants.

**Table 2. Care Home information provided by staff**

	Number and Percentage of respondents who identified the Care Home as:	
<b>Is the home privately run or run by another agency?</b>	Private	54 (88%)
	Other	6 (9.8%)
	Not sure	1 (1.6%)
<b>Care home category (Where DE = Dementia (over 65); D = Dementia under 65; OP = Older person)</b>	Not sure	25 (40.9%)
	DE	15 (24.5%)
	D	2 (3.2%)
	DE/OP/Other	9 (14.7%)
	D/DE/OP/Other	8 (13.1%)
	D/DE	2 (3.2%)
<b>Type of care home</b>	Care home	52 (85.2%)
	Care home with nursing	9 (14.8%)

## 5.2 Descriptive data of main outcome variable: overall satisfaction with the TENA Pants

Figure 2 shows the overall satisfaction with the TENA Pants product by the end of the 4 week trial. Carers were asked to rate the product from a scale of 1 to 10, with 1 indicating least level of satisfaction, and 10 the highest. Almost 54% of staff rated the overall satisfaction with the product as 7 out of 10 or higher and 28% rated the product 10 out of 10.

**Figure 2 Overall satisfaction score of TENA Pants product**

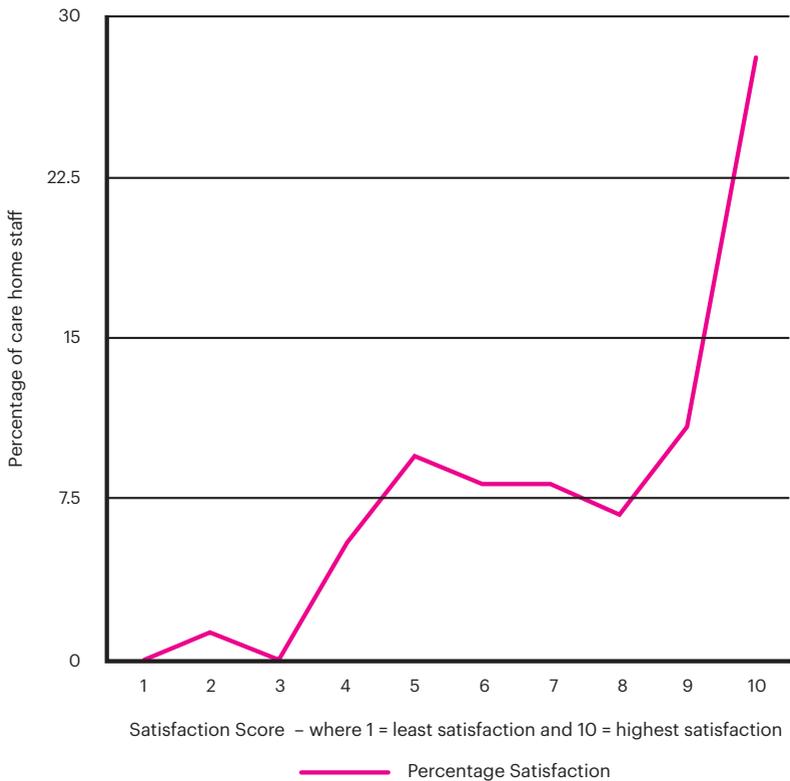
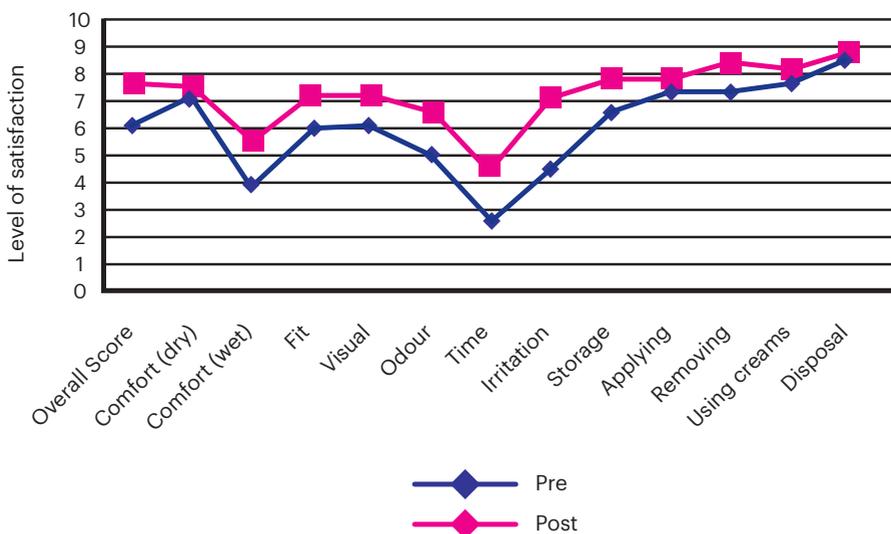


Table 3 shows this overall satisfaction over a range of factors with TENA Pants product compared with the pre-trial product used in participating care homes. Figure 3 shows a scatter chart of these same results.

**Table 3. Comparison table of conventional product v TENA Pants product satisfaction scores**

<b>Outcome Measure</b>	<b>Original pre- trial product</b>	<b>Using TENA pull-up pants</b>	<b>Difference in product satisfaction scores</b>
<b>Overall Score out of 10 (where 1 = least satisfaction and 10 = highest satisfaction)</b>	6.12	7.71	1.59
<b>My residents seem to find the pad comfortable to wear when it is dry</b>	7.19	7.60	0.41
<b>My residents seem to find the pad comfortable to wear when it is wet</b>	3.80	5.56	1.76
<b>Getting the pad/ pant to fit is easy</b>	5.98	7.26	1.28
<b>The pad / pant are usually not easy to see and are discreet</b>	6.11	7.28	1.17
<b>The pads control odour well</b>	5.04	6.64	1.6
<b>I can leave the pad in place for up to eight hours if needed</b>	2.55	4.39	1.84
<b>The pads seem to seldom cause skin irritation</b>	4.50	7.15	2.65
<b>The pads are easy to store and are not too bulky</b>	6.72	7.84	1.67
<b>The pads are quick and easy to apply</b>	7.39	7.92	0.53
<b>The pads are quick and easy to remove</b>	7.36	8.50	1.14
<b>The pads are easy to use with barrier creams when necessary</b>	7.66	8.26	0.6
<b>It is easy to dispose of the pads when removed</b>	8.68	8.84	0.16

**Figure 3 Comparison chart of conventional product v TENA Pants product satisfaction scores**



It can be seen clearly from the graph above that the TENA Pants product has scored more highly with care staff on every factor than when compared to the original products used by the care homes. The TENA product scored most highly with regard to comfort and fit of the product and the level of skin irritation. Although there was a notable increase in satisfaction with the TENA Pants product throughout, the lowest scores were received for the statement;

**‘I can leave the pad in place for up to eight hours if needed’.**

However, if you look at the gap in satisfaction scores between the original product and the TENA Pants product (table 3) this indicates where participants perceived the greatest level of difference between the original products being used in the care home and the TENA products. Interestingly the low level of skin irritation had the largest gap (2.65) between the old product and the TENA Pants, indicating that as the biggest difference between the old and the new products as well as scoring the highest level of satisfaction. But second to that was the item which scored lowest score for satisfaction, length of time that the product was able to be left in place (1.84). So although the ability to leave the product in place for eight hours scored the lowest satisfaction rating for the original and the TENA product the TENA product was perceived to offer much more satisfaction if this was to happen. The third largest difference in satisfaction was the comfort of the TENA product when it had been used (was ‘wet’, 1.76), followed by the reduced bulk of the product (1.67), the lack of odour (1.6) and the fit (1.28).

### **5.3 Inferential statistics**

Shapiro-Wilk tests revealed that data was not normally distributed. From this, tests were conducted to assess whether the data met the assumptions for multiple regression. Multiple regressions, as a method for statistical analysis, was used as a model to test which predictor variables (qualities of a good continence pad) could best explain the main outcome variable of overall product satisfaction. An analysis of standard residuals was carried out, which showed that the data contained no outliers. The data also met the assumption of independent errors. A histogram of standardised residuals indicated that the data contained approximately normally distributed errors, as did the normal P-P plot of standardised residuals. Finally, the scatterplot of standardised, predicted values showed that the data met the assumptions of homogeneity of variance and linearity. In addition, as both sets of data were ordinal, all assumptions were considered met for non-parametric data and multiple regression analysis.

### **5.4 The predictor variables**

Although as stated above TENA Pants product scored higher satisfaction rates in all 12 factors (or predictor variables) that people look for in good continence pads when measured against the usual/pre-trial products used. It was also important to consider which of these 12 factors potentially had the greatest impact on overall satisfaction. Of the 12 statements from the questionnaire, all were positively correlated with the satisfaction (outcome) variable ( $p < 0.05$ ). These are presented in Table 4 below. This analysis was bootstrapped to account for any variation within the data. Next, to adequately explore the relationship between overall satisfaction levels and these factors (outcome, satisfaction and predictor variables), multiple regression analysis as a statistical technique was also applied.

### **5.5 Regression analysis**

Data was analysed using a Forward Stepwise technique. This type of analysis was chosen as it allowed us to identify which predictor variables accounted for the largest amount of variance within the outcome variable (Overall Satisfaction of TENA Pants Product). A four step model summarised the results. The  $R^2$  value was 0.792, accounting for 79.2% of the variance. The adjusted  $R^2$  value was 0.780. This value is approximately 5% less than the  $R$ , confirming that the results are stable and likely to be applicable to a large population.

Four items from the original 12 were identified by the model as being statistically significant (Table 5). The beta values show the change in outcome per unit of predictor. All beta values fell within their 95% confidence limits.

Here, results showed that 'fit', 'odour', 'comfort' (specifically dry) and 'time' were the strongest predictors of overall carer's satisfaction with the product suggesting that these variables are most important to carers when considering the overall usability of an incontinence product for people with a diagnosis of dementia.

**Table 4 Correlation analysis between overall satisfaction of TENA Pants product scores and predictor variables**

	Comfort Dry	Comfort Wet	Fit	Visual	Odour	Time	Irritation	Storage	Applying	Removing	Using Creams	Disposal
<b>Overall Score</b>	.796**	.734**	.813**	.611**	.693**	.482**	.408**	.330**	.637**	.428**	.557**	.397**
<b>Comfort Dry</b>		.709**	.846**	.582**	.590**	.432**	.411**	.513**	.751**	.534**	.723**	.596**
<b>Comfort Wet</b>			.707**	.670**	.721**	.576**	.510**	.351**	.642**	.419**	.518**	.283**
<b>Fit</b>				.690**	.649**	.381**	.366**	.383**	.649**	.493**	.690**	.542**
<b>Visual</b>					.625**	.341**	.464**	.295**	.557**	.490**	.396**	.448**
<b>Odour</b>						.600**	.515**	.323**	.578**	.395**	.427**	.285**
<b>Time</b>							.485**	.159	.416**	.137	.230	.067
<b>Irritation</b>								.437**	.487**	.491**	.486**	.300**
<b>Storage</b>									.549**	.502**	.523**	.519**
<b>Applying</b>										.707**	.623**	.625**
<b>Removing</b>											.513**	.821**
<b>Using Creams</b>												.628**

\*\*p<0.01, \*p<0.05

**Table 5. Stepwise multiple regression analysis of predictor variables of overall satisfaction of TENA Pants product.**

	<b>B value</b>	<b>Standard Coefficients</b>	<b>Significance</b>
<b>Fit</b>	.446	.405	>0.001
<b>Odour</b>	.357	.303	>0.001
<b>Comfort (dry)</b>	.283	.207	>0.001
<b>Time</b>	.140	.140	>0.001

## **5.6 Qualitative findings**

Drawing on the semi-structured interviews and the free text from some of the open-ended questions, additional qualitative findings were found to help support this data, both in terms of two of the main predictor variables but also in terms of the length of time products could be left in situ, supporting the points raised in our quantitative analysis. These findings are quoted below.

### **5.6.1 The fit of the product**

Fit of the TENA Pants was one of the main variables explaining the overall satisfaction score. Qualitatively, this was also described by some carers:

**“They are not so bulky – they fit better because they are pull ups – other products (that aren’t pull ups) don’t fit as well.”**

### **5.6.2 Comfort level provided by the product**

Perceived comfort of the product was one of the main variables explaining the overall satisfaction with the TENA Pants product, particularly when dry. Qualitatively this was also described by some carers:

**“For residents that would wear an incontinence pad inside their underwear we sometimes found they would remove them due to being uncomfortable, however TENA pads seem to replace them well”.**

**“They were able to toilet themselves without getting confused. We found they kept them on rather than putting or taking them off which in turn reduced stress caused by incontinence.”**

One carer placed a particular emphasis on the ability the product gave to ensure the correct size:

**“Size is very important to make sure that they are the correct size, because obviously we don’t want them to be too small, and cause friction, or skin irritation.”**

### **5.6.3 Length of time the product can be left in place**

A significant positive relationship was found between overall satisfaction and length of time the product can be left in place. Qualitatively reasons for this were described by some carers:

**“Overall, there was less incontinence (when using pull-ups), so from a financial point of view, the home would have to purchase them less. Incontinence was reduced because they were going (to the toilet) themselves, or they were promoted to go, they would go to the toilet, pull the pad up, if they did have the incontinence, it was absorbed; you weren’t having to change clothing or wash the chairs. Overall it does make your working life as a support worker a lot better.”**

### **5.6.4 The visual appearance of the product**

A correlational analysis was conducted to assess the relationship between overall satisfaction of the TENA Pants and visual satisfaction from the carer’s perspective. This was found to be significant as overall satisfaction was positively correlated with visual satisfaction.

Qualitatively this was also described by some carers:

**“They are not so bulky – they fit better because they are pull ups – other products (that aren’t pull ups) don’t fit as well.”**

**“Quite good, quicker to use than a pad and pants and better received as a resident can identify them as knickers”**

### **5.6.5 Applying and removing the product**

The ease of applying and removing the product was found to be a significant factor in the overall satisfaction with the product.

Qualitatively this was also described in more detail by some carers:

**“Pull ups are easy to use; seems like pulling up underwear taking away the embarrassment of using them for residents”.**

**“Easier to use pull ups than slip on pads as they are able to use the toilet as and when. Being able to pull up the pants giving them a bit of independence.”**

Findings also demonstrated the importance of considering each resident on an individual basis as gender, mobility and stage of dementia appeared to impact on the usability of the TENA product.

**“Easier for residents with skirts but harder for residents wearing trousers”.**

**“Yeah, when they are wet, you have to literally take all their clothes off to change them, which was the only thing, because some of the residents who had them don’t like being changed too often. Some of them understand, but some of the others don’t understand why they’re getting changed in the middle of the day, they don’t want to take their clothes off.”**

**“Ideally TENA pull ups would be a better alternative for people who are still mobile and are aware of when they need to go to the toilet.”**

Although very positive response was received for the new product, all studies have limitations, and these are discussed in the next section

## **6.0 Limitations of the Study**

This study based in 7 care homes, focused on the views of care staff caring for people with incontinence that had dementia. It looked to compare overall satisfaction with the TENA Pants product versus the regular (non TENA) product used by the care home and to explore the factors that may affect this rating. Our inability to include the voice people with dementia in our study is seen as a real, but not unusual limitation. This is particularly so in care home settings where people are likely to have more severe dementia and be less able to contribute. However, staff were actively encouraged to work in partnership with the people in their care who were trialling the products to seek their views and opinions too. This was actively encouraged, particularly during the semi-structured interviews, by the researchers. The research team did note, positively, that care home staff discussed the products, where practically reasonable to do so, with their clients. However, care staff are the group most likely to use and influence purchasing decisions relating to continence products and so it is highly appropriate to seek their views.

There were also a number of methodological limitations. Care homes are not static and change, both in terms of staffing, managers, type and number of residents as well as sometimes providers, all of which can affect recruitment and/or continuation with research. In addition, individual care home priorities at the time of any proposed intervention may mean the difference in continuing with the research or withdrawing – such concerns can include staffing problems, infection outbreaks (such as scabies, norovirus, etc.), or CQC / regulated activities.

Additional data, such as the type and range of continence products used pre-trial would have been useful. However, we can only say that the participating homes were not using

the TENA Pants product. Further demographic details of the people with dementia involved in the TENA Pants trial may would have added to our understanding but we did not have ethical approval to gather this data.

## 7.0 Discussion

The aim of this small study was to understand the key product satisfaction indicators for absorbent continence pads; and in light of this review the experience of using the TENA Pants product compared to currently used incontinence products with people with dementia in care homes.

### **The study objectives were:**

- To undertake a literature review to identify the factors reported to affect user experience of absorbent continence pads and to use this to develop a questionnaire for carers of people with dementia who used these products;
- using the questionnaire developed, explore the experiences of care givers in care home setting of their current incontinence product and the newly introduced TENA Pants product in pre/post introduction questionnaires;
- to explore the perceptions of care givers in care home setting of the experience of incontinence products for residents with dementia in brief interviews post intervention

Using the literature and expert opinion we identified 12 factors commensurate with good quality continence products: comfortable to wear when dry or wet, fit, discreet, good odour control, little or no skin irritation, absorbency, quick and easy to remove, easy storage (not bulky), suitable for use with creams, easy disposal. These factors were transposed into questionnaire items. The questionnaire was completed by care staff before and after the introduction of the TENA Pants product allowed comparison between that and the original continence product used in participating homes.

### **7.1 Satisfaction Indicators**

The main outcome variable, the focus of the study, was to review the overall satisfaction of carers with the TENA Pants product, when used with people with a diagnosis of dementia residing in care homes. Descriptive analysis of this main outcome variable for overall satisfaction produces data that show 54% of carers rated the quality of the product as 7 or higher out of 10, with 28% of carers awarding it 10 out of 10. What is striking however is that even in the few cases where participants were less enthusiastic about the product and gave a lower rating (here defined as a rating of 4 or less found in just under 7% of cases) this score was still higher than that given to the original product used before the TENA Pants product trial. This suggests that although there may be room for further product development and market testing the TENA Pants product is a better offer for use with this client group than the products the care homes were originally using. Indeed, this was strongly indicated in the findings of this study where the TENA

Pants scored more highly on satisfaction on each of the individual factors demonstrating the quality of the product and its ability to meet the needs of residents with dementia. When looking more closely at the rating of individual satisfaction factors for the TENA Pants product, it can be seen that ease of disposal scored most highly, followed by the ease of removal, ability to use the TENA Pants product with creams if needed, and a range of factors associated with fit and comfort then followed. The lowest scoring factor related to the ability to leave the TENA Pants product in place for a number of hours. However, if you look at the gap in satisfaction scores between the original products being used in the home and the TENA Pants product low level of skin irritation had the largest gap between the old product and the TENA Pants, indicating that as the biggest difference between the old and the new products as well as scoring the highest level of satisfaction. But second to that was the item which scored lowest score for satisfaction, length of time that the product was able to be left in place. So although the ability to leave the product in place for eight hours scored the lowest satisfaction rating for the original, the TENA product was perceived to offer much more satisfaction if this was to happen.

Our step-wise model and multiple regression analyses showed that 3 factors which together accounted for the largest percentage of the overall satisfaction and are therefore the strongest predictors of overall carer's satisfaction with a continence product with people with dementia. These factors are:

- comfort (specifically when dry), fitting of the product, and odour control. This suggests that marketing and product development should initially focus on these areas and that absorbent pads should be designed in a way that they are comfortable to wear, particularly when they are dry,
- need to be designed so they can be easily fitted by carers or people with dementia, and
- need to control odour well.

These qualities were clearly present in the TENA Pad product used in this study.

## **7.2 Importance of social value of the user in product buying decisions**

This study highlights the impact of incontinence on the daily lives of the product users. Part of the success of the key features (see above, 7.1) of the TENA Pants product have centred around the ability of the product to 'normalise' daily life and related activities (Bank-Mikkelsen and Nirje, 1969) and reduce the signs of 'differentness' and negative societal perceptions. This concept is now known as Social Role Valorisation (SRV), the guiding principle being "the establishment, enhancement, or defence of the social role(s) of a person or group, via the enhancement of people's social images and personal competencies (Wolfensberger 2011[1883]: 435). In the context of this study, this means that the factors highlighted by carers as accounting for highest levels of satisfaction (good fit, odour control and comfort when dry) suggest that carers are actively supporting conditions to overcome incontinence symptoms for residents with dementia and help the person attain the goals and life conditions that enhance their clients' social

image / perceived value for others. Our qualitative data supports the connection that the carers make between the TENA Pants product and the views of people with dementia and the impact of continence products on their social image.

### **7.3 Psychosocial benefits of appropriate products**

The TENA Pants product, while being an effective continence aid, also has the look and feel of ordinary underwear with which residents will be familiar. Finding a product that can help reduce not only the impact of incontinence physiologically, but help disguise the fact they are wearing a pad can have significant social-psychological benefit. In this sense, finding a product that is easy to put on, fits well without looking bulky and will give added reassurance over odour control becomes a key aspect of product choice.

This places emphasis on manufacturers to develop products that not only feel normal for the user, but remain discreet to the attention of others and hide signs that may betray the user has problems with continence. An additional feature of the pull-up pants noted from the qualitative interviews with the carers was the potential empowerment it gave to clients, helping to provide and support greater levels of independence in using the toilet for a longer period of time. Empowerment, independence and enablement thus become additional variables that add to satisfaction levels. It is through these modalities that we see carers actively advocating for their residents to have products made available to them that prevent or reduce ideas of differences to others and that support, for as long as possible, the maximisation of skills and capabilities that enable and importantly defend the social role(s) of people with dementia.

### **7.4 Stages of dementia and suitability of pull-up pant products**

It was evident from the qualitative interviews that the advantages of social role valorisation that this product offers were particularly useful for people in the early and moderate stages of dementia where people are able to stand and are mobile. Findings demonstrated that for those people with more advanced disease, less mobility, and less awareness, pull on pants were actually seen as a disadvantage. This is because these products largely require the removal of shoes, trousers etc. for them to be changed. Not only is this less convenient for care staff it is more disruptive, and more of a challenge to the dignity of the person with dementia. Moreover, as the dementia progresses, there is an increasing need to change continence products at more frequent intervals, and thus the praxis of pull-up pad changing becomes increasingly labour intensive to care staff and potentially physically and psychologically awkward for the resident.

Therefore, where the person has advanced dementia and is fully dependent on carers for washing, dressing, feeding, hoisting in and out of chairs and onto the toilet, and regular position changing in bed to minimise risk of pressure sores, then an all-in-one wrap-around style continence product was believed a better option. These are interesting findings and provide important information to both product manufacturers and product marketing on what potential purchasers may be looking for when selecting a product. Offering a range of products that clearly address the needs of people with dementia at

different stages of the disease may help to develop product loyalty but at the very least offer the chance to prevent consumer dissatisfaction caused by inappropriate product choice.

## **7.5 Summary and key points**

This research has shown that satisfaction levels reported by carers are higher with TENA Pants than with the other pad products on the market used in a range of care homes supporting people with dementia. This is indicative of the quality, the design and the manufacture of the product. The study has highlighted the qualities and appropriate market of people with mild to moderate dementia for the product, with a wrap round product (that reflected the 12 satisfaction indicting factors) being more appropriate in the later stages of the disease. Finally, this study is perhaps one of the first to show evidence of the principle of social role valorisation for people with dementia (the term is rather largely used in learning disability settings) and how this is now in keeping with current socio-political practices of care with dignity and compassion and dementia friendly settings. Furthermore, manufacturers may want to consider this growing concept within their product design and marketing.

### **7.5.1 Further research**

As indicated earlier indicators suggest that the TENA Pants product may be particularly suitable for the client group in this study. However, clear accuracy would require a systematic list of all continence products in the form of absorbent pads available for use in care homes followed then by a randomised control trial (RCT) these products, including the TENA Pants product.

This study has highlighted both gap and need in research for and with people with dementia using continence products. Here we have focused on the views of the paid carer as one of the key stakeholders of this process. Other stakeholders however also are also apparent, including importantly the person with dementia themselves, family members (particularly when being cared for at home), district nurses in the community and hospitals where appropriate. It would be interesting to discover whether the key factors highlighted in this research are shared across the spectrum of stakeholders or instead confined just to the views of care home staff. It is recommended that further research, starting with a study designed to understand the experience of the person with dementia and their use of the product ought to be considered and compared with the findings of care home staff as there is the potential that satisfaction indicators may or may not be shared across these two groups.

### **7.5.2 Key points**

- Satisfaction levels overall were higher with TENA Pants product than with currently used products.
- TENA Pants product scored more highly than any other products being used in the participating care homes in all the individual satisfaction indicators

- Highest satisfaction indicators, and greatest predictors of satisfaction were comfort for wearer, easily fitted by carer, and odour control.
- The TENA Pants product was seen as contributing to the empowerment and promotion of dignity in people in earlier stages of dementia
- People with advanced dementia may be more suited to a wrap-around product

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