



# Improving Continence Management Outcomes and Staff Skills with the Use of New Sensor Wear Technology

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# Acknowledgements

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## Disclaimer

The technology tested in the project was a commercial product designed and owned by Essity Australasia. Essity Australasia's involvement in the research was limited to providing education about the technology. The company had no input to the drafting of the manuscript.

## Acknowledgement of Country

NARI acknowledges the Wurundjeri Woi-Wurrung people as the Traditional Owners of the land on which our office in Naarm (Melbourne) is situated, and the Ngunnawal people as the Traditional Owners of the land on which our office in Canberra stands. As a national organisation, we recognise the enduring connection that Aboriginal and Torres Strait Islander peoples maintain with lands, skies, water, and communities throughout Australia.

We extend our deepest respect to all Aboriginal and Torres Strait Islander cultures, and we honour the wisdom and contributions of Elders, both past and present.

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# Executive summary

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## Background:

Current approaches used to identify the continence care needs of care-dependent people with incontinence are inaccurate. This can result in management approaches that are ineffective and the use of incontinence products that do not match the person's needs, which in turn, impacts on their quality of life and ability to socialise. Poorly managed incontinence also has important negative effects on family carers' quality of life and has cost implications.

This project which represented a partnership between the aged care sector and industry to implement innovation and adopt technology was the first of its type in Australia. It was designed as a feasibility trial to evaluate the use of sensor wear technology to improve the current practices for the assessment of urinary incontinence experienced by community-dwelling care-dependent older people. It was led by Community Vision in partnership with Essity Australasia and the National Ageing Research Institute (NARI).

## Aim:

To establish the feasibility and acceptability of using new sensor wear technology titled '**TENA SmartCare™ technology**' to improve the capacity of providers of community-based aged care to: (i) identify the continence care needs of care dependent community dwelling older people with urinary incontinence, and (ii) implement targeted individualised continence care.

## Methods

A mixed methods repeated measures feasibility trial involving: (i) 14 older people with urinary incontinence once a day or more, regularly using continence products and accessing services and supports from an aged care community provider; (ii) 7 carers of older people; and (iii) 17 nurses and support workers employed by the provider. The intervention consisted of training for nurses and support workers on **TENA SmartCare™ technology**. The primary outcome of interest was the impact of urinary incontinence on older peoples' perceived social support, which was a proxy for social isolation. The secondary outcomes were their quality of life, carer burden and health related quality of life, nurses' and support workers' confidence to manage incontinence, and the individual costs associated with the use of continence products.

## Findings

The project demonstrated improvements in staff confidence to manage incontinence in community-dwelling older people from baseline to post intervention. This is an important finding and aligns with a key goal of the ARIIA mission which is to equip the aged care sector with evidence-based knowledge and improve capability.

Findings from the surveys of older people suggest they identify as having a low health-related quality of life and low levels of social support, indicating they were at risk of being social isolated. Levels of incontinence varied in severity. Baseline data from surveys of informal carers also suggest a low health-related quality of life and a high burden associated with caring. The vulnerability of this cohort was confirmed through interviews with staff who had trialled the technology. They described a sample who required high levels of support to engage with the research and to trial the technology.

Data were insufficient to draw conclusions about the impact of the technology on the primary or secondary outcomes. Although the project did not result in comparable data, it nevertheless yielded data to answer

the question of the feasibility and acceptability of the technology to augment current approaches to identify and manage the continence care needs of care dependent community-dwelling older people with UI.

Our experience of conducting the trial in the community with older people and informal carers, and nurses and support workers suggests the technology and its use in this cohort warrants further consideration in terms of (i) its reliability, (ii) the levels of support some individuals may require engaging with it, and (iii) the most appropriate way to introduce it to this cohort. Indeed, several people suggested it would have greater uptake and benefit in residential aged care homes where professional carers are available on a 24-hour basis and could monitor its use, or by continence nurse advisors working in the community.

# Introduction

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Urinary incontinence (UI) disproportionately affects care-dependent older people (Wagg., 2023) and has significant negative personal, social and financial impacts. As Australia's population ages, the number of care-dependent and older people with UI in the community will increase.

Urinary incontinence increases a person's risk of depression and anxiety (Cheng, 2020), falls (Moon, 2021), incontinence-associated dermatitis (Bliss, 2015) and is associated with a reduced quality of life (Pizzol, 2015). Skin health deteriorates and IAD dermatitis begins rapidly after an incontinence event, even with the use of a premium pad with wicking technology (Phipps 2019). Therefore, prompt attention to incontinence events is needed to prevent moisture-associated skin damage (incontinence-associated dermatitis) even when absorbent pads are used.

Urinary incontinence also has implications for providers of community aged care services. Currently, 816,793 Australians access home care and home support through the Community Home Support Program (CHSP) and 210,309 access a Home Care Package (HCP). Up to 36% may have UI according to an analysis of risk factors for admission to aged residential care for older people in New Zealand, (Schluter, 2017).

Providers of community aged care services in Australia have specific responsibilities under the Aged Care Act 2014 (the Act) to assess for, and if required, provide continence products and assistance in using them to clients who use their services and supports. Specifically, [Schedule 3, Part 1 of the Act](#) specifies the care services that an approved provider of a home care service may provide. In relation to the management of UI, this includes: (a) assessment for and, if required, providing disposable pads and absorbent aids, commode chairs, bedpans and urinals, catheter and urinary drainage appliances and enemas; and (b) assistance in using continence aids and appliances and managing continence. Little is known about the methods aged care providers use to assess and address the continence care needs of this population.

Current guidelines for the management of UI promote investigation to identify the underlying causes and to actively treat with either surgery, medication, or conservative interventions. In order to diagnose the underlying causes, the International Consultation on Incontinence (ICI) promotes a two-tiered assessment process: (i) a basic assessment (characterised by a general assessment, symptom assessment, assessment of impact on quality of life, assessment of the desire for treatment, physical examination and urinalysis and initial investigations where relevant) and (ii) a specialised assessment – intended to be done by specialists) (Cardoza, 2023). As part of a basic assessment, a continence assessment should quantify the frequency and severity of UI (Cardoza, 2023).

In ideal circumstances, the information can be obtained from a bladder diary that patients complete over a 24–72-hour period (Cardoza, 2023). However, the ICI notes 'there are some limitations to the use of a bladder diary. There is no evidence that the results of these charts provide a valid prediction of the type of UI experienced by each patient' (Cardoza, 2023. p. 404). Not all individuals have the capacity to complete a bladder diary and may rely on a carer to check their continence status regularly. These 'wet checks' are highly unreliable as the accuracy of the information is tied to the frequency of checks. They are also potentially intrusive to the person, who may or may not have the cognitive capacity to understand the need for the checks. The lack of objective information about the frequency and severity of a person's UI means that decisions about management, particularly about toileting assistance and the use of pads, are largely based on trial and error.

To overcome current barriers to identifying the frequency and severity of a person's UI, several companies have designed, and market tested sensor wear technology. The technology termed **TENA SmartCare™** is a

commercially available integrated electronic sensor technology system consisting of **TENA Identifi™** and **TENA Change Indicator™** (TENA Identifi™, Essity Hygiene and Health AB, Gothenburg, Sweden). They consist of sensors that are woven into body-worn absorbent disposable continence pads that when combined with a reusable transmitter (logger), send data to a remote secure server to generate a voiding pattern report onto a local computer for analysis

Evidence on the accuracy and acceptability of sensor wear technology is inconsistent and variable and is largely limited to research conducted in residential aged care homes, rather than in the community (see Table 1). Whilst the technology has been trialled in Australia in a hospital setting (Nikoletti 2004) and in a residential aged care home (Yu, 2014) and in other countries, this was the first trial of this technology in a community-dwelling setting in Australia.

## Aim

To establish the feasibility and acceptability of using sensor wear technology to augment current approaches for identifying and managing the continence care needs of care-dependent community-dwelling older people with UI.

## Objectives

- Establish the feasibility and acceptability of using sensor wear technology to improve the capacity of the community aged care workforce to identify the continence care needs of community dwelling older people with UI.
- Establish the feasibility and acceptability of using sensor wear technology to improve the capacity of community aged care workforce to implement targeted individualised continence care.

## Hypotheses

We anticipated the technology could:

- Improve the older person's ability to socialise which could positively impact on their quality of life, often reducing other care requirements that may arise due to social isolation related to UI.
- Reduce the number and/or absorbency of pads required by an older person with UI and the number of times they need help to change their pad which would translate into a reduction in the amount of time that support workers spend managing UI.

The trial was designed as a mixed methods study to establish the feasibility of introducing the technology, by evaluating the uptake and completion of the intervention components, acceptability of the intervention and staff perceptions of the barriers and enablers to implementation, as well as any reduction in pad use and change time spent by the community aged care workforce.

**Table 1. Evidence on the use of sensor wear technology to augment urinary continence assessment systems**

| Reference       | Design                                                                        | Sample/setting                                                                                                                             | Intervention                                                                                                                                                                    | Findings                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lamparski, 2022 | A clinical trial                                                              | 35 community dwelling older people (28 females and 7 males), mean age 74 y (Poland)                                                        | 1 week use of an electronic sensor and a smartphone app                                                                                                                         | 16% reduction in the number of manual daily checks, 40% reduction in pad leakages when the participants had the device attached. No device related adverse events, > 80% caregivers rated the device very easy to use.                                                                                                                                                                              |
| Lancioni, 2002  | A single case study                                                           | A student with multiple disabilities (The Netherlands)                                                                                     | Urine-alarm signals and staff prompts with reinforcement for urination in the toilet. The study alternated two baseline phases with two treatment phases and 3 months follow up | The student became almost totally free from large urinary accidents, replacing them with self-initiated toileting and small accidents (wetting only a disposable tissue), and retained his improvement over time,                                                                                                                                                                                   |
| Long, 2015      | Prototype product evaluation trial                                            | 81 adult women from outpatient clinics, general practice surgeries, community continence services, and through charities and networks (UK) | 2 weeks use of Smart underwear                                                                                                                                                  | 86% correct alerts. Mean of 1.73 false alarms per day No change in quality of life. Positive impact in several domains of the Psychosocial Impact of Assistive Devices Scale                                                                                                                                                                                                                        |
| Mayer, 2019     | Abstract                                                                      | A 26-bed acuity adjustable unit at an academic medical center (USA)                                                                        | Disposable incontinence pad with a built-in sensor                                                                                                                              | Average UI exposure time was 22 min. 95% nursing staff reported that the incontinence management system pad was the same or better compared to other pads in terms of moisture wicking and urine absorbency; and 90% in liquid fecal absorbency. 84% reported the system's pad strength was the same or better than other pads. 76% of staff recommended use of the incontinence management system. |
| Nikoletti, 2004 | A randomised controlled repeated measures design with a qualitative component | 41 elderly patients with UI in acute care rehabilitation wards in 2 hospitals (Australia)                                                  | Staff training plus use of an electronic monitoring device for 72 hrs compared to regular wet checks                                                                            | Insufficient quantitative data to analyse differences (n=6 complete datasets)<br><br>Nurses (n=9) reported problems with device malfunction, perceptions of lack of time, lack of support from other staff, and lack of knowledge                                                                                                                                                                   |

|                |                                                                                                                                        |                                                                                                                   |                                                                                                                         |                                                                                                                                                                                                                                                                  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                                                                                        |                                                                                                                   |                                                                                                                         | about to meet resident's continence care needs.                                                                                                                                                                                                                  |
| Rajabali, 2023 | A convergent mixed-methods study with a prospective, parallel arm-controlled trial with a concurrent qualitative-descriptive component | 101 residents from 1 nursing home with 4 units<br><br>14 nursing home staff<br><br>(Canada)                       | Use of Tena Identify for 72 hrs consecutive<br><br>1 hr of staff training on technology<br><br>Compared with usual care | A significant change in the proportion of residents with a reduction in 24-hour pad absorbency (50.6% vs 39.1%, $P = .034$ ) at week 8. Significant differences in between-group changes (total absorbency of pads)                                              |
| Raepsaet, 2021 | A qualitative study with framework analysis method                                                                                     | Nursing home residents with UI, and nurses, and decision-makers in a selection of Flemish nursing homes (Belgium) | No intervention                                                                                                         | Respondents reported problems with changing routines and scepticism about the sensor's accuracy.                                                                                                                                                                 |
| Yu, 2014       | Quasi-experimental field design with pre- and postintervention repeated measures design.                                               | 120 bed nursing home (Australia)                                                                                  | 12-week trial of a 72-hour telemonitoring system for continence assessment                                              | Reduced volume of urine voided into continence aids, reduced number of prescribed toileting visits, increased number of actual toilet visits, increased number of successful toileting events and increased adherence to urinary continence care plans by staff. |

# Methods

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## Research design

The research was conducted as a mixed methods feasibility **trial** with a pre/post evaluation of a technology-based intervention. Quantitative and qualitative data were collected. To achieve a power of 80% and a level of significance of 5% (two sided), for detecting an effect size of 0.5 between pre and post responses on the primary outcome measure (i.e. the Lubben Social Network Scale), we aimed to recruit 134 older people. We also aimed to recruit 34 informal carers and 15 nurses and support workers.

## Setting and participants

The research was conducted in a single community aged care service setting in Perth, Western Australia. It is a not-for-profit company Limited by Guarantee under the Corporations Act 2001 and is governed by the Board of Governance who oversees the organisation. At the time of the project, the service employed 104 support workers, 4 RNs and 1 EN and provided services to 629 people on Commonwealth Home Support Programs, 232 Veterans Home care customers, 102 people on Home Care Packages, 13 people receiving DVA Community Nursing customers, and 74 Fee for service customers.

The project involved three groups:

- (i) Older people (aged 65 and >) with UI once a day or more who regularly used continence products and accessed services and supports from the aged care provider
- (ii) Informal carers of older people who participate
- (iii) Nurses and support workers employed by the provider

All participants provided written informed consent to participate. Proxy consent was sought from older people who did not have the capacity to provide consent. Ethics approval was obtained from the Austin Health Office for Research (HREC/101020/Austin-2023).

## Intervention

The intervention was a training program for nurses and support workers working for a community aged care provider about using **TENA SmartCare™**. Employees of Essity Australasia trained nurses and support workers in how and when to use the technology, how to choose the most appropriate continence product, how to apply and remove the product, manage episodes of incontinence, prevent and manage incontinence-associated dermatitis, support participants to use the technology, monitor their acceptance of the use of the technology, and who to contact for further enquiries and support. The training program was reviewed by NARI prior to being delivered to ensure it was free from commercial influence. Nurses additionally received information about how to conduct case conferences with older people and informal carers, how to supervise and support them in the use of the technology, and how to interpret reports using TENA Identifi™.

When confident, nurses and support workers were asked to support older people and informal carers to use **TENA Identifi™** and **TENA Change Indicator™** in the older person's home environment. It was anticipated that each staff member would be involved in the project for up to ten months – supporting an average of nine older people / informal carers each over this period of time.

Older people were asked to use **TENA Identifi™** for 72 consecutive hours one occasion at baseline and to thereafter attend a case conference with a nurse who interpreted the information from **TENA Identifi™**

and provided individualised recommendations to the person about the most appropriate forms of management. Specifically, this included recommendations for:

- No change in approach the managing UI
  - An individualised toileting program (with or without prompting and assistance)
  - A pad check and change program combined with a toileting program
1. A pad check and change program with or without the use of **TENA Change Indicator™**

## Quantitative outcome measures and data collection

### Older people

A bespoke survey was administered to elicit information about the person's experience of UI and their management strategies (see [Appendix A](#)).

The primary outcome for the quantitative phase was the pre-post difference (baseline to four weeks post intervention) in the impact of UI on older peoples' perceived social support, which we viewed as a proxy for social isolation. We chose the Lubben Social Network – (LSNS-6) (Lubben et al., 2006) to evaluate this outcome (see [Appendix B](#)). The LSNS-6 is a reliable and valid self-report measure of social support in older adults (aged 65 years old and above). It takes about 5–10 minutes to complete and assesses the size, closeness, and frequency of contacts of a respondent's social network (including both kin/family and nonrelated individuals). LSNS-6 should have a cutoff of 12 as "at risk for social isolation" as determined in previous studies (Rubinstein et al., 1994; Lubben et al., 2006): Individuals with a score of less than 12 [are identified] as socially isolated.

The EQ-5D-3L (Rabin & de Charro, 2001) was chosen to measure the older person's health-related quality of life: a secondary outcome of interest (see [Appendix C](#)). The tool contains 16-items and has two components: a five-dimension descriptive system that measures impairments in aspects of health and the EQ-VAS-Total Health Today [THT] a visual analogue scale. The five dimensions in the descriptive system are mobility, self-care, usual activities, pain/discomfort, and anxiety/depression (Teni et al. 2023). Each of the five dimension of health includes a three-answer options (levels) to measure whether respondents are experiencing 1 ('no problems'), 2 ('some or moderate problems'), or 3 ('severe / extreme problems') (Teni et al., 2023). Total scores range from five to a maximum score of 15. Higher scores indicate an increased level of health impairment. The EQ-VAS-THT component contains a scaled vertical line ranging from zero (0) ('the worst health you can imagine') to 100 ('the best health you can imagine') where respondents rate their overall reliable and valid tool to measure health-related quality of life. The EQ-5D-3L demonstrates validity and responsiveness (Bhaduri et al., 2020), It is brief survey that take approximately five minutes to complete.

The International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form (ICIQ-UI SF) was used to assess the frequency, severity and impact of 'urine leakage' on older peoples' quality of life (see [Appendix D](#)). The ICIQ-UI SF is a 6-item valid and reliable tool that takes a less than five minutes to complete (Avery et al., 2004).

These data collection instruments were administered at baseline and four weeks post intervention.

### Informal carers

Informal carers were asked to complete a bespoke survey about how they managed the continence care needs of the older person (see [Appendix E](#)) and two complete surveys to self-rated their burden of care (The Zarit Burden Interview -12) (ZBI-12) (Hébert et al., 2000) (see [Appendix F](#)) and to score their health-

related quality of life (The EQ-5D-3L)(Rabin & de Charro, 2001) (see [Appendix C](#)) – described previously. These data collection instruments were administered at baseline and four weeks post intervention.

### Nurses and support workers

Nurses and support workers were asked to complete a bespoke survey about their confidence to manage UI prior to training, immediately after, and four weeks later (see [Appendix G](#)). To estimate the organisational data on costs associated with the use of pads and changes in pad type, they were also asked to maintain a daily log of the time they spent managing UI for each participating older person for one day pre and post intervention.

### Qualitative outcome measure and data collection

The outcome of interest for the qualitative phase was the feasibility and acceptability of using **TENA SmartCare™ technology** to augment current approaches for identifying and managing the continence care needs for care dependent community-dwelling older people with UI. This was evaluated through individual interviews with participating nurses and support workers. Interviews were audio-recorded and transcribed verbatim. The interviewer nurses' and support workers' opinions about the impact of the technology on their workload, and on older peoples' and carers' acceptance of the technology and impact on their quality of life. Specifically, to extent to which it helped or hindered their ability to identify the frequency and severity of the older person's UI and identify the most appropriate form of management. They were also asked to indicate whether or not they would recommend the use of the technology in other community based aged care organisations (See [Appendix H](#) for the interview prompts used in the interviews).

### Analysis methods

All quantitative data was fully described using means and standard deviations for normally distributed, continuous data, medians and interquartile ranges for non-normally distributed data, and numbers of percentages for categorical data. Qualitative data obtained from interviews was transcribed and analysed thematically by two researchers who each independently reviewed the data and draw out the major themes. The themes were then compared for any differences and an agreement was reached.

# Findings

The final sample comprised 14 older people at baseline and 4 at the post intervention stage. Of the 14, older people, 3 withdrew. The reasons were: Change of mind and medical reasons (e.g. terminal illness, surgery). Seven informal carers consented to participate. Three withdrew. The reasons were: change of mind and medical reasons from the older person (e.g. terminal illness, surgery). Data were available from 17 staff prior to training, 10 immediately following training and 4, 4 weeks post intervention. Three nurses and support workers withdrew.

## 1. Quantitative data

### Findings from older person surveys

The following section presents findings from surveys completed by 14 older adults at baseline and 4 at the post-intervention stage.

#### Demographics

Eleven (78.6%) of the 14 older people at baseline were female, 2 were male, and 1 did not specify their gender. Their ages were 65-74 (n=2, 15.4%); 75-84 (n=8, 61.5%); over 85 (n=3, 23.1% (see Table 2).

**Table 2. Older person's age and gender**

| Survey Responses – Older Persons |                           |                       |                |
|----------------------------------|---------------------------|-----------------------|----------------|
|                                  |                           | <i>n</i> of responses | % of responses |
| Age                              | 65-74 years               | 2                     | 15.4%          |
|                                  | 75-84 years               | 8                     | 61.5%          |
|                                  | 85+ years                 | 3                     | 23.1%          |
|                                  | <b>Total for ages 65+</b> | <b>13</b>             | <b>100%</b>    |
| Gender                           | Female                    | 11                    | 78.6%          |
|                                  | Male                      | 2                     | 14.3%          |
|                                  | Not specified             | 1                     | 7.1%           |
|                                  | <b>Total responses</b>    | <b>14</b>             | <b>100%</b>    |

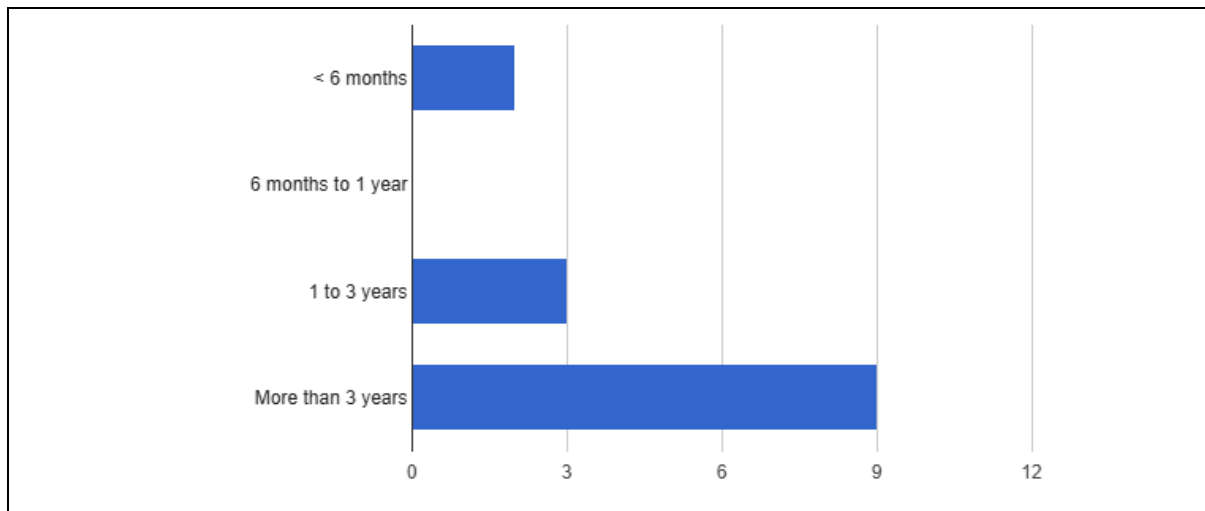
Six (42.9%) older people reported having a carer to assist them to manage incontinence (see Table 3).

**Table 3. Number of older people with a carer to assist manage incontinence**

| Do you have a carer to assist you to manage incontinence? |                        | <i>n</i> of responses | % of responses |
|-----------------------------------------------------------|------------------------|-----------------------|----------------|
| 1                                                         | Yes                    | 6                     | 42.9%          |
| 2                                                         | No                     | 8                     | 57.1%          |
|                                                           | <b>Total responses</b> | <b>14</b>             | <b>100%</b>    |

Nine older people (64%) reported having experienced incontinence for more than 3 years (see Figure 1).

**Figure 1. Duration of older persons' incontinence**



Six older people (42.9%) indicated they were concerned about going out because of their incontinence (see Figure 2). Of these, three indicated they worried about it 'a lot'.

**Figure 2. Concern about going out because of incontinence**

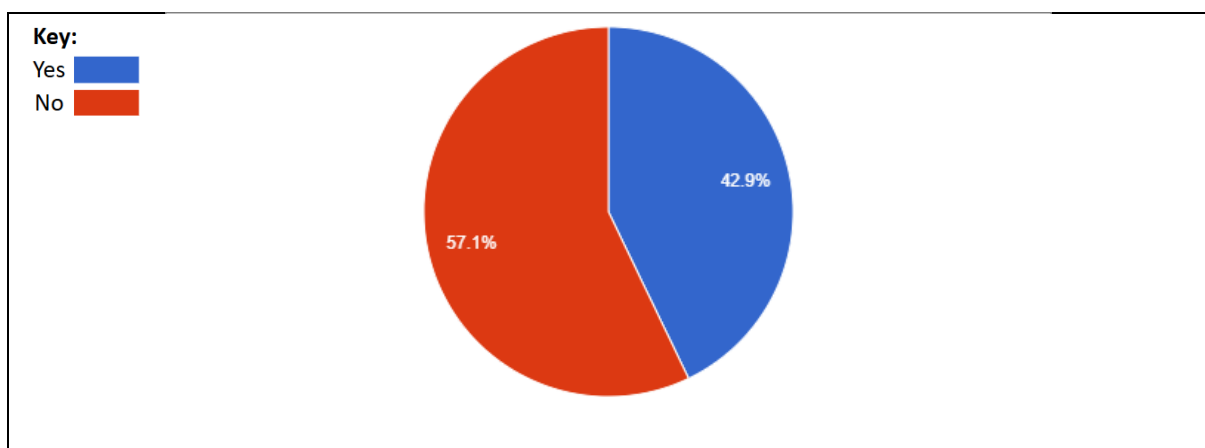
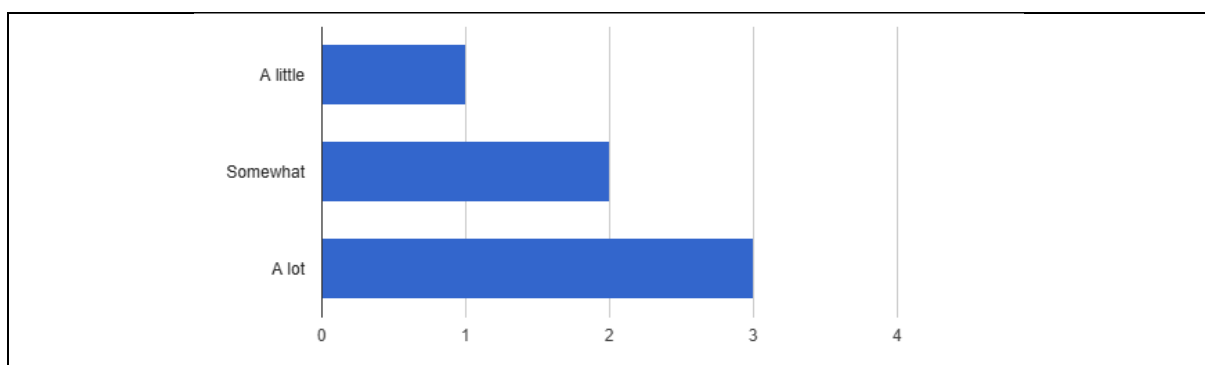
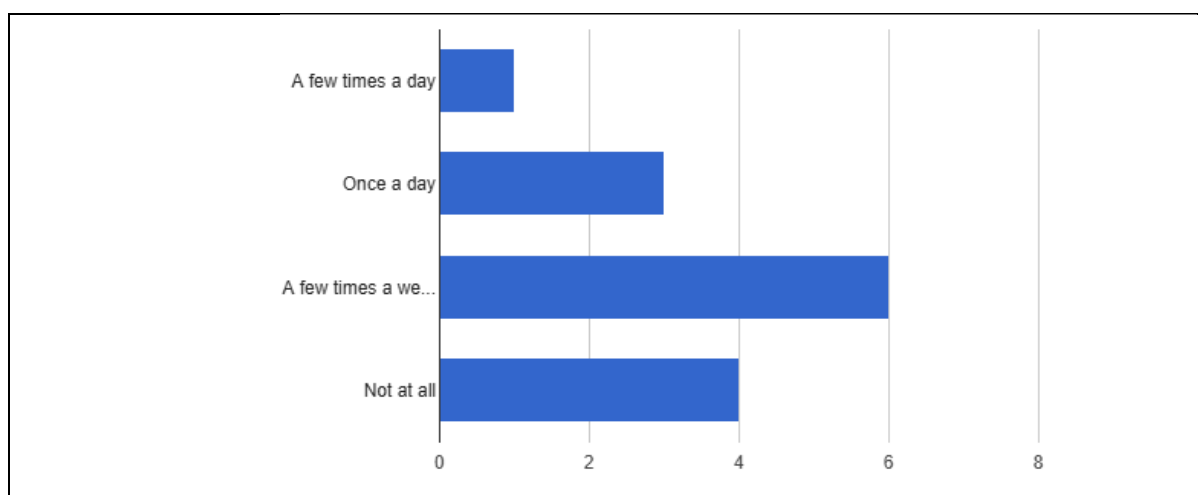


**Figure 3. Degree of worry about going out because of incontinence (n=6)**



Six older people reported experiencing leakage from their current pad/product 'a few times a week', 3 reported this occurred 'once a day', 1 indicated 'a few times a day'. Four stated 'not at all' (see Figure 4).

**Figure 4. Frequency of leakage from current pad/product (n=14)**



### Continence management

Older peoples' responses to how much time they spend each day managing incontinence ranged from <30 minutes to 3-4 hours (see Table 4)

**Table 4. Time older people spend managing incontinence each day**

| How much time do you spend each day managing incontinence (including changing clothes, pads and washing)? |                   | n of responses | % of responses |
|-----------------------------------------------------------------------------------------------------------|-------------------|----------------|----------------|
| 1                                                                                                         | < 30 minutes      | 4              | 28.6%          |
| 2                                                                                                         | 30 mins to 1 hour | 2              | 14.3%          |
| 3                                                                                                         | 1-2 hours         | 4              | 28.6%          |
| 4                                                                                                         | 2-3 hours         | 3              | 21.4%          |
| 5                                                                                                         | 3-4 hours         | 0              | 0.0%           |
| 6                                                                                                         | More than 4 hours | 1              | 7.1%           |
| Total responses                                                                                           |                   | 14             | 100%           |

Older people were equally divided on how easy or difficult it was for them to manage their incontinence (see Table 5).

**Table 5. Ease or difficulty managing incontinence**

| How easy or difficult do you find managing your bladder leakage? |                            | n of responses | % of responses |
|------------------------------------------------------------------|----------------------------|----------------|----------------|
| 1                                                                | Very easy                  | 0              | 0.0%           |
| 2                                                                | Easy                       | 3              | 21.4%          |
| 3                                                                | Neither easy nor difficult | 7              | 50.0%          |
| 4                                                                | Difficult                  | 4              | 28.6%          |
| 5                                                                | Very difficult             | 0              | 0.0%           |
| Total responses                                                  |                            | 14             | 100%           |

Most older people felt they had sufficient information to manage their 'bladder leakage', with only 1 reporting 'not at all' (see Table 6).

**Table 6. Information needed to manage bladder leakage**

| Do you feel you have the information you need to manage your bladder leakage? |            | <i>n</i> of responses | % of responses |
|-------------------------------------------------------------------------------|------------|-----------------------|----------------|
| 1                                                                             | Not at all | 1                     | 7.1%           |
| 2                                                                             | A little   | 2                     | 14.3%          |
| 3                                                                             | Somewhat   | 8                     | 57.1%          |
| 4                                                                             | Very much  | 3                     | 21.4%          |
| <b>Total responses</b>                                                        |            | <b>14</b>             | <b>100%</b>    |

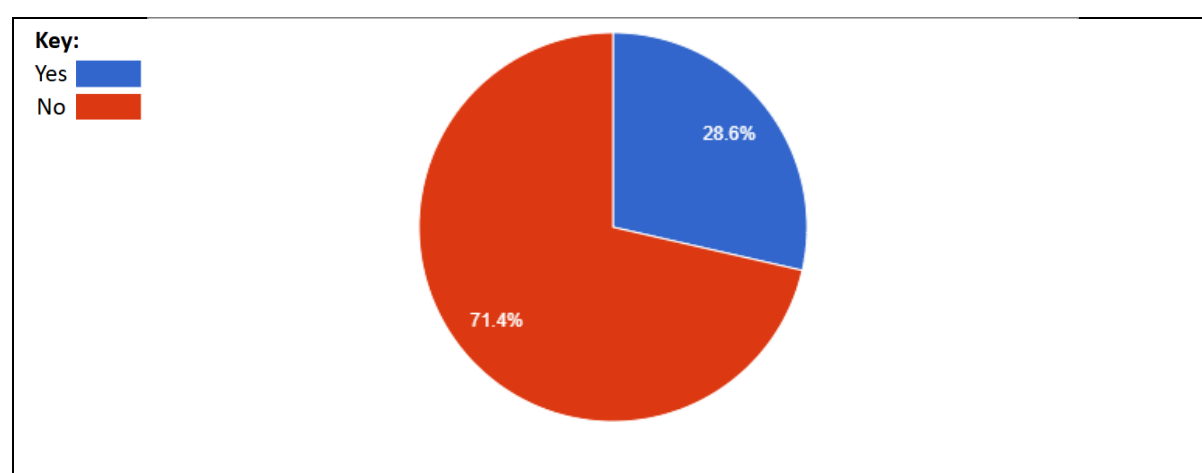
Most older person reporting being 'somewhat confident in the continence pad/product they were currently using (see Table 7).

**Table 7. Confidence in current continence pad/product**

| How confident are you about the effectiveness of the continence pad/product you are using? |                    | <i>n</i> of responses | % of responses |
|--------------------------------------------------------------------------------------------|--------------------|-----------------------|----------------|
| 1                                                                                          | Not confident      | 3                     | 21.4%          |
| 2                                                                                          | Somewhat confident | 7                     | 50.0%          |
| 3                                                                                          | Confident          | 2                     | 14.3%          |
| 4                                                                                          | Very confident     | 2                     | 14.3%          |
| <b>Total responses</b>                                                                     |                    | <b>14</b>             | <b>100%</b>    |

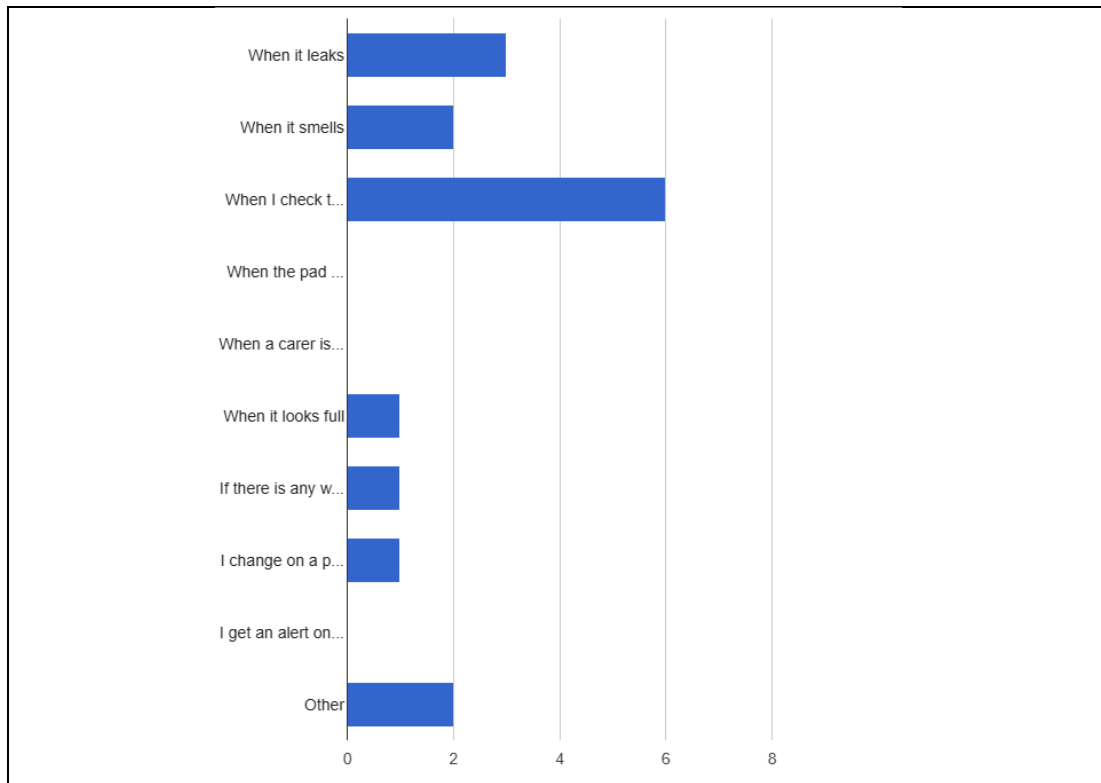
Of the 14 respondents, 4 (28.6%) reported experiencing 'skin rashes around where the pad sat' (see Figure 5).

**Figure 5. Skin rash around pad**



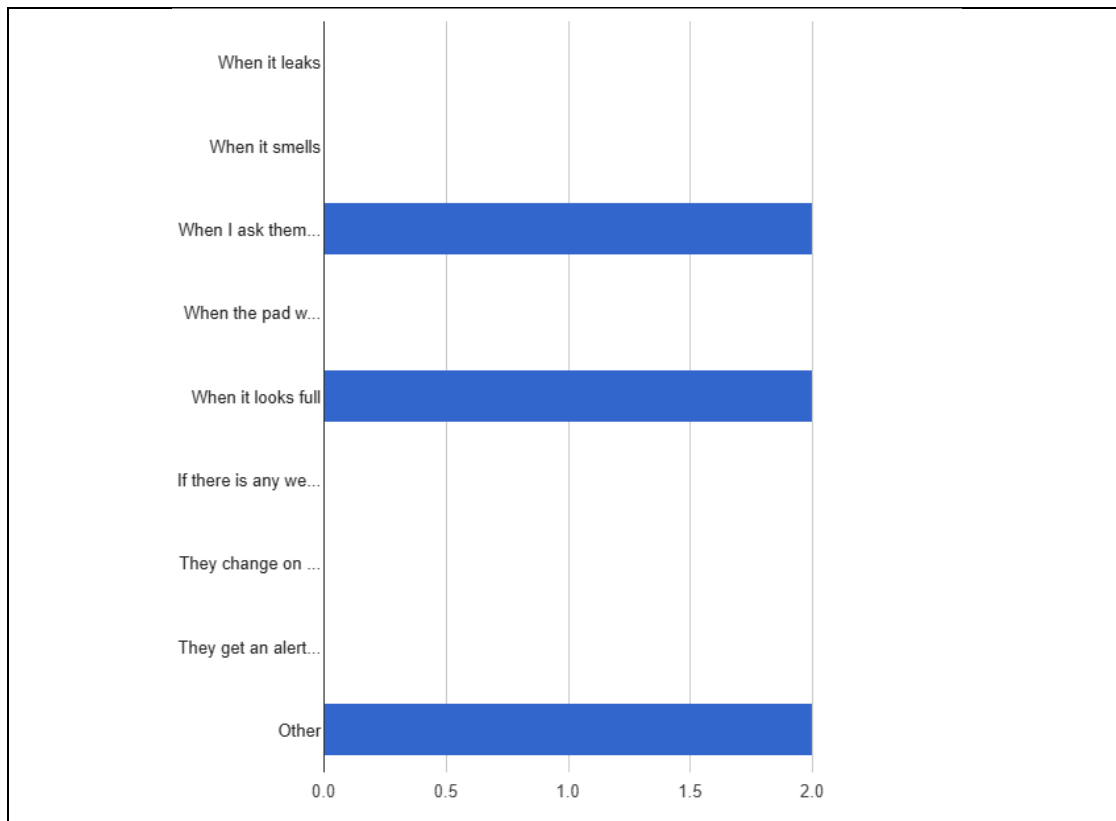
There were a range of responses to the question of how older people who self-managed knew when to change their pad/product (see Figure 6).

**Figure 6. Factors that alerted the older person to the need to change their pad/product (more than one response options)**



Older people (n=6) identified three factors that they felt alerted carers to the need to change their pad/product, including (i) when the older person asked them, (ii) when the pad/product looked full, and (iii) 'other' (see Figure 7).

**Figure 7. Factors that older people reported alerted the carer to change the older person's pad/product (more than one response options)**



Older persons were equally divided in their responses to the degree of agreement between them and their carer about when their pad/product needed to be changed (see Table 8).

**Table 8. Older person report on agreement between them and carer about when pad/product needed changing**

| To what extent do you and the person that cares for you agree on when your pad/product needs to be changed? |            | <i>n</i> of responses | % of responses |
|-------------------------------------------------------------------------------------------------------------|------------|-----------------------|----------------|
| 1                                                                                                           | Not at all | 3                     | 27.3%          |
| 2                                                                                                           | A little   | 4                     | 36.4%          |
| 3                                                                                                           | Somewhat   | 1                     | 9.1%           |
| 4                                                                                                           | Very much  | 3                     | 27.3%          |
| Total responses                                                                                             |            | 14                    | 100%           |

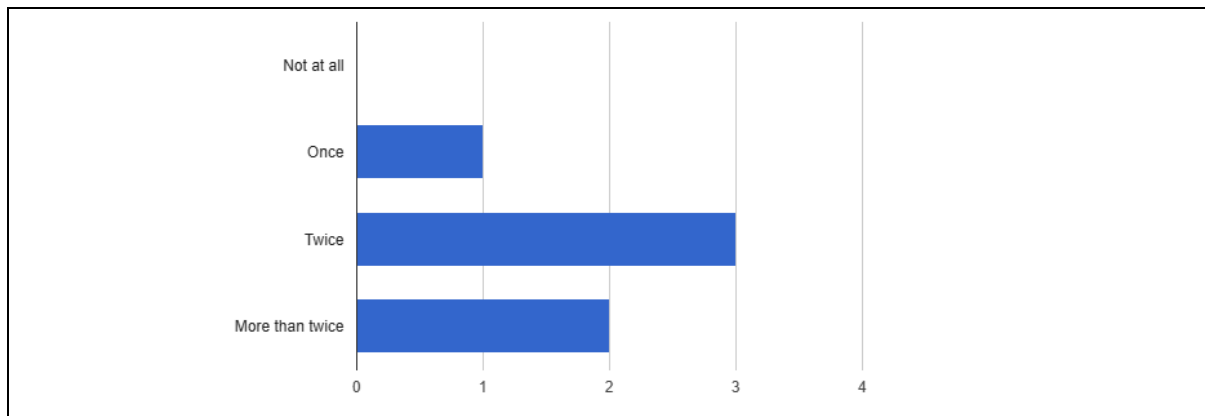
Of the 14 older people, six (42.9) indicated they had to change their pad/product overnight (see Table 9).

**Table 9. Number of older persons having to change their pad/product overnight**

| Does the pad/product you use need to be changed overnight? |     | <i>n</i> of responses | % of responses |
|------------------------------------------------------------|-----|-----------------------|----------------|
| 1                                                          | Yes | 6                     | 42.9%          |
| 2                                                          | No  | 8                     | 57.1%          |
| Total responses                                            |     | 14                    | 100%           |

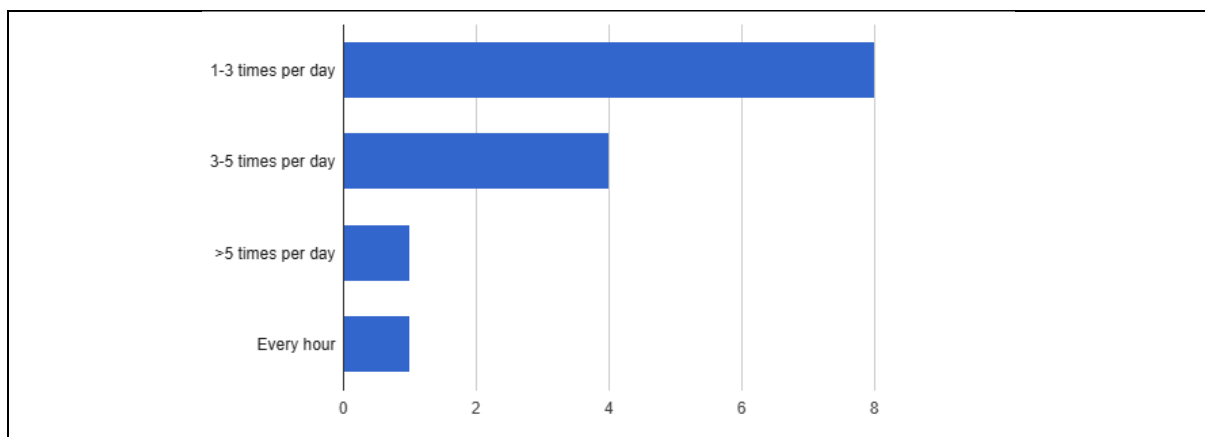
Of these, 2 indicated the pad/product needed to be change more than twice (see Figure 8).

**Figure 8. Frequency of pad/product changes at night**



Most older people (n=8) (57.1%) indicated they changed their pad/product between 1-3 times a day (see Figure 9).

**Figure 9. Number of times older person changes their pad/product during the day**



### Older persons' social support

The following section details the pre and post intervention scores from the Lubben Social Network Scale - 6 (LSNS-6). The LSNS assesses the size, closeness and frequency of contacts of a respondent's social network; lower scores indicating less closeness/contact. LSNS scores <12 indicate risk for social isolation. Complete data were available from 14 older people at baseline and 3 post intervention. Of the 14 older people who provided complete data at baseline, the average LSNS-6 score was 10.3. The lowest score was 1 and the highest was 21. Importantly, 10 of these 14 respondents had a total score below 12. ***This indicates levels of social support at baseline and risk for social isolation.*** At follow-up, the average LSNS-6 score for the three older people with complete data was 14.3 (Lowest: 6; highest: 19).

### Older persons' health-related quality of life

The following section details the pre and post intervention scores from the EQ-5D-3L. Developed by the Euro Quality of Life Group, the EQ-5D-3L is a non-disease-specific measure of health status. It consists of two components:

- A descriptive system measuring five dimensions (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression); total scores range from 5 to 15, with higher scores indicating greater levels of health impairment.
- The EQ Total Health Today (THT) visual analog scale (VAS) which is scored between 0 ("worst health") and 100 ("best health").

Complete data were available from 14 older people at baseline and 3 post intervention. The average EQ-5D-3L score at baseline was 8.3 (n=14) with the lowest score being '5' and the highest being '14'. At follow up, the average EQ-5D-3L score was 9.0 (n=3) (Lowest: 5; highest: 13).

The average score on the EQ THT VAS at baseline was  $58.3 \pm 22.6$  (n=14) with the lowest score being 20 and the highest being 95. At follow up, the average EQ THT VAS score for the three older people with complete data was  $75.7 \pm 23.8$  (n=3). The lowest score was 50 and the highest was 97. ***The baseline scores on the EQ-5D-3L and the EQ THT VAS point to a cohort with low levels of health-related quality of life.***

### The frequency, severity and impact of 'urine leakage' on older peoples' quality of life

The following section details the pre and post intervention scores from the Incontinence Short Form (ICIQ-UI SF). The ICIQ-UI SF evaluates the frequency, severity and impact on quality of life (QoL) of urinary incontinence. Scores range from 0 to 21, with higher scores indicating increased severity and impact on QoL. Complete data were available from 14 older people at baseline and 3 post intervention. At baseline, older persons' average ICIQ-UI-SF score was 13.0 (n=14) (Lowest: 6; highest: 19). At follow up, the average ICIQ-UI-SF score was 9.3 (n=3) (Lowest: 7; highest: 12). ***These scores suggest a moderately severe impact of urine leakage on older peoples' quality of life.***

## Findings from informal carer surveys

Seven informal carers participated in the study. Complete data was available from 5 at baseline.

### Demographics

Three of the informal carers were male (42.9%), 3 Females (42.9%) and one did not specify their gender. Ages 18-39 (n=2, 28.6%); 40-64 (n=1, 14.3%); 65-79 (n=3, 42.9%); over 80 (n=1, 14.3%) (see Table 10). Six identified as a family carer and 1 as 'other'. Three family carers identified as a partner of the older person, 2 as daughters and 1 as a son. All indicated they lived in the same residence as the person they cared for/were responsible for.

**Table 10. Family carer's age and gender**

| Survey Responses – Informal carer |                           |                       |                |
|-----------------------------------|---------------------------|-----------------------|----------------|
|                                   |                           | <i>n</i> of responses | % of responses |
| <b>Age</b>                        | 0-17 years                | 0                     | 0.0%           |
|                                   | 18-39 years               | 2                     | 28.6%          |
|                                   | 40-64 years               | 1                     | 14.3%          |
|                                   | 65-79 years               | 3                     | 42.9%          |
|                                   | 80+ years                 | 1                     | 14.3%          |
|                                   | <b>Total for all ages</b> | <b>7</b>              | <b>100%</b>    |
| <b>Gender</b>                     | Female                    | 3                     | 42.9%          |
|                                   | Male                      | 3                     | 42.9%          |
|                                   | Not specified             | 1                     | 14.3%          |
|                                   | <b>Total responses</b>    | <b>7</b>              | <b>100%</b>    |

Carers indicated the duration of incontinence experienced by the older person ranged from one to four years, with the frequency of leakage from their pad ranging from 'a few times a day' to 'a few times a week' (See Tables 11 and 12).

**Table 11. Carer's report of the duration of incontinence experienced by the older person**

| How long has the person experienced incontinence? |                        |          |             |
|---------------------------------------------------|------------------------|----------|-------------|
| 1                                                 | <6 months              | 1        | 14.3%       |
| 2                                                 | 6 months to 1 year     | 1        | 14.3%       |
| 3                                                 | 1 to 3 years           | 1        | 14.3%       |
| 4                                                 | More than 3 years      | 4        | 57.1%       |
|                                                   | <b>Total responses</b> | <b>7</b> | <b>100%</b> |

**Table 12. Carer's reports of the frequency of leakage from the older person's pad**

| How often does the person experience leakage from their pad? |                        |          |             |
|--------------------------------------------------------------|------------------------|----------|-------------|
| 1                                                            | A few times a day      | 2        | 28.6%       |
| 2                                                            | Once a day             | 2        | 28.6%       |
| 3                                                            | A few times a week     | 3        | 42.9%       |
| 4                                                            | Not at all             | 0        | 0.0%        |
|                                                              | <b>Total responses</b> | <b>7</b> | <b>100%</b> |

### Continence management

Five of the carers indicated they had been providing care for the older person for more than three years and over 12 hours of care per week. Two carers indicated they had been providing care for the person for < 6 months with 1-2 hours of care provision per week. In terms of providing continence care, responses varied with 2 indicating they provided between 30 minutes to one hour per day, and 1 providing more than four hours of continence care (see Table 13).

**Table 13. Hours of providing continence care per day**

| How much time do you spend each day supporting the person you care for/are responsible for with their continence care needs? |                        |          |             |
|------------------------------------------------------------------------------------------------------------------------------|------------------------|----------|-------------|
| 1                                                                                                                            | <30 minutes            | 0        | 0.0%        |
| 2                                                                                                                            | 30 mins to 1 hour      | 2        | 28.6%       |
| 3                                                                                                                            | 1-2 hours              | 3        | 42.9%       |
| 4                                                                                                                            | 2-3 hours              | 0        | 0.0%        |
| 5                                                                                                                            | 3-4 hours              | 1        | 14.3%       |
| 6                                                                                                                            | More than 4 hours      | 1        | 14.3%       |
|                                                                                                                              | <b>Total responses</b> | <b>7</b> | <b>100%</b> |

Responses to the question about how easy or difficult it was to manage the person's incontinence varied (see Table 14).

**Table 14. Ease or difficulty managing the person's UI**

| How easy or difficult do you find managing the person's incontinence? |                            | <i>n</i> of responses | % of responses |
|-----------------------------------------------------------------------|----------------------------|-----------------------|----------------|
| 1                                                                     | Very easy                  | 0                     | 0.0%           |
| 2                                                                     | Easy                       | 1                     | 14.3%          |
| 3                                                                     | Neither easy nor difficult | 4                     | 57.1%          |
| 4                                                                     | Difficult                  | 2                     | 28.6%          |
| 5                                                                     | Very difficult             | 0                     | 0.0%           |
|                                                                       | <b>Total responses</b>     | <b>7</b>              | <b>100%</b>    |

Three carers indicated they worried about going out with the older person because they don't know when to change their pad and four stated they were not worried. Of those who were worried about this, the level of concern was 'somewhat' (see Table 15).

**Table 15. Worry about going out with the person**

| Are you worried about going out with the person because you don't know when to change their pad? |                        |          |             |
|--------------------------------------------------------------------------------------------------|------------------------|----------|-------------|
| 1                                                                                                | Yes                    | 3        | 42.9%       |
| 2                                                                                                | No                     | 4        | 57.1%       |
|                                                                                                  | <b>Total responses</b> | <b>7</b> | <b>100%</b> |
| If yes, how worried are you?                                                                     |                        |          |             |

|   |                        |          |             |
|---|------------------------|----------|-------------|
| 1 | A little               | 0        | 0.0%        |
| 2 | Somewhat               | 3        | 100.0%      |
| 3 | A lot                  | 0        | 0.0%        |
|   | <b>Total responses</b> | <b>7</b> | <b>100%</b> |

Most felt they had sufficient information to manage the person's incontinence, with only 1 reporting 'not at all' (see Table 16).

**Table 16. Information needed to manage incontinence**

| Do you feel you have the information you need to manage incontinence? |                        | <i>n</i> of responses | % of responses |
|-----------------------------------------------------------------------|------------------------|-----------------------|----------------|
| 1                                                                     | Not at all             | 1                     | 14.3%          |
| 2                                                                     | A little               | 1                     | 14.3%          |
| 3                                                                     | Somewhat               | 5                     | 71.4%          |
| 4                                                                     | Very much              | 0                     | 0.0%           |
|                                                                       | <b>Total responses</b> | <b>7</b>              | <b>100%</b>    |

Four of the seven carers indicated they were 'somewhat confident' of the effectiveness of the pad/product the person was using, and 2 were 'very confident'. Only one was 'not confident' (see Table 17).

**Table 17. Confidence on the effectiveness of the pad/product**

| How confident are you about the effectiveness of the pad/product the person is using? |                        | <i>n</i> of responses | % of responses |
|---------------------------------------------------------------------------------------|------------------------|-----------------------|----------------|
| 1                                                                                     | Not confident          | 1                     | 14.3%          |
| 2                                                                                     | Somewhat confident     | 4                     | 57.1%          |
| 3                                                                                     | Confident              | 0                     | 0.0%           |
| 4                                                                                     | Very confident         | 2                     | 28.6%          |
|                                                                                       | <b>Total responses</b> | <b>7</b>              | <b>100%</b>    |

Five of the seven carers indicated the person experienced skin rashes around the pad (see Table 18)

**Table 18. Skin rashes around the pad**

| Does the person experience skin rashes around where the pad sits? |                        | <i>n</i> of responses | % of responses |
|-------------------------------------------------------------------|------------------------|-----------------------|----------------|
| 1                                                                 | Yes                    | 5                     | 71.4%          |
| 2                                                                 | No                     | 2                     | 28.6%          |
|                                                                   | <b>Total responses</b> | <b>7</b>              | <b>100%</b>    |

Carers identified several triggers to indicate to them when they needed to change the older person's pad/product (see Table 19).

**Table 19. Factors that alerted the older person to the need to change their pad/product (more than one response options)**

| How do you know when the person's pad/product needs to be changed (you can tick more than one response)? |                                                                  | <i>n</i> of responses | % of responses |
|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|-----------------------|----------------|
| 1                                                                                                        | When it leaks                                                    | 2                     | 28.6%          |
| 2                                                                                                        | When it smells                                                   | 2                     | 28.6%          |
| 3                                                                                                        | When the person asks                                             | 3                     | 42.9%          |
| 4                                                                                                        | When I check the pad                                             | 4                     | 57.1%          |
| 5                                                                                                        | When the pad wetness indicator is full                           | 2                     | 28.6%          |
| 6                                                                                                        | When it looks full                                               | 4                     | 57.1%          |
| 7                                                                                                        | If there is any wetness in it at all                             | 2                     | 28.6%          |
| 8                                                                                                        | When I am there to visit                                         | 1                     | 14.3%          |
| 9                                                                                                        | I change on a pre-determined schedule                            | 1                     | 14.3%          |
| 10                                                                                                       | I get an alert on my phone or from a nursing assistant to change | 1                     | 14.3%          |
| 11                                                                                                       | They change their own pad                                        | 1                     | 14.3%          |
| <b>Total responses</b>                                                                                   |                                                                  | <b>7</b>              | <b>100%</b>    |

Carers were equally divided in their responses to the degree of agreement between them and the older person in relation to when the person's pad/product needed to be changed (see Table 20).

**Table 20. Carer report on agreement between them and older person about when pad/product needed changing**

| To what extent do you and the person agree on when their pad/product needs to be changed? |            | <i>n</i> of responses | % of responses |
|-------------------------------------------------------------------------------------------|------------|-----------------------|----------------|
| 1                                                                                         | Not at all | 2                     | 33.3%          |
| 2                                                                                         | A little   | 1                     | 16.7%          |
| 3                                                                                         | Somewhat   | 0                     | 0.0%           |
| 4                                                                                         | Very much  | 3                     | 50.0%          |
| <b>Total responses</b>                                                                    |            | <b>6</b>              | <b>100%</b>    |

Of the 7 carers, three indicated they needed to check the person's pad/product overnight and four did not (see Table 21)

**Table 21. Number of carers having to check the person's pad/product overnight**

| Do you check the person's pad/product overnight? |     | <i>n</i> of responses | % of responses |
|--------------------------------------------------|-----|-----------------------|----------------|
| 1                                                | Yes | 3                     | 42.9%          |
| 2                                                | No  | 4                     | 57.1%          |
| <b>Total responses</b>                           |     | <b>7</b>              | <b>100%</b>    |

Of the three carers who indicated they needed to check the person's pad/product overnight, the number of checks varied from 'not at all' (n=1) to twice (n=2) to > twice (n=1) (see Table 22).

**Table 22. Number of checks per night**

| If yes (3/7 respondents, 42.9%), how often? |                 | n of responses | % of responses |
|---------------------------------------------|-----------------|----------------|----------------|
| 1                                           | Not at all      | 1              | 33.3%          |
| 2                                           | Once            | 0              | 0.0%           |
| 3                                           | Twice           | 1              | 33.3%          |
| 4                                           | More than twice | 1              | 33.3%          |
| Total responses                             |                 | 3              |                |

Most carers (n=4) indicated they changed the person's pad/product between 1-3 times a day (see Table 23)

**Table 23. Number of times carers change the person's pad/product during the day**

| How often is the person's pad/product changed daily? |                   | n of responses | % of responses |
|------------------------------------------------------|-------------------|----------------|----------------|
| 1                                                    | 1-3 times per day | 4              | 57.1%          |
| 2                                                    | 3-5 times per day | 1              | 14.3%          |
| 3                                                    | >5 times per day  | 2              | 28.6%          |
| 4                                                    | Every hour        | 0              | 0.0%           |
| Total responses                                      |                   | 7              | 100%           |

#### Informal carers' health-related quality of life

The following section details the pre and post intervention scores from the EQ-5D-3L. Developed by the Euro Quality of Life Group, the EQ-5D-3L is a non-disease-specific measure of health status. It consists of two components:

- A descriptive system measuring five dimensions (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression); total scores range from 5 to 15, with higher scores indicating greater levels of health impairment.
- The EQ Total Health Today (THT) visual analog scale (VAS) which is scored between 0 ("worst health") and 100 ("best health").

Seven informal carers completed the EQ-5D-3L at baseline. Their average score 8.0 (n=7) (Lowest: 5; highest: 10), **indicating low health-related quality of life**. The average score on the EQ THT VAS at baseline was  $68.9 \pm 21.3$  (n=7) (Lowest: 30; highest: 91).

#### Informal carers' self-rated burden of care

The following section details the pre and post intervention scores from the Zarit Burden Interview -12 (ZBI-12). The ZBI is a screening instrument to screen for carer burden. It consists of 12 items that are scored on Likert scales from 0 ("never") to 4 ("nearly always"), to provide a total score ranging from 0 to 48. ZBI scores >20 indicates a "high burden", scores between 10-20 is considered "mild to moderate" burden, and scores <10 "no to mild" burden.

Complete data were available from 5 informal carers at baseline. Their average ZBI-12 score was 25.2 (n=5) (Lowest: 7; highest: 40). Importantly, 3 of these 5 respondents had a total score > 20, **indicating high risk of carer burden**.

## Findings from staff surveys

The following section presents data from staff surveys conducted prior to training (n=17), immediately following training (n=10) and 4 weeks post intervention (n=4).

### Demographics

Most staff members were nurses (n=9) (8 RNs and 1 EN), 7 were support workers and one was an Allied Health employee. Most had considerable experience of working in aged care, with 7 staff members having worked between 10-20 years and 2 having 20+ years of experience. Eleven had worked in the same role for 1-5 years and most (n=11) were working on a permanent part-time basis. Of the 7 support workers, 4 had a formal traineeship and 3 did not.

### The individual costs associated with the use of continence products

Data on this outcome of interest was insufficient to estimate the costs associated with using continence products.

### Impact on nurses' and support workers' confidence to manage incontinence

An analysis of data showed all scores on the knowledge and confidence scale increased from pre to post training (see Table 24). For some items, scores doubled. Specifically, prior to training, staff scored low on being able to know how often a customer experienced UI and knowing how much urine in lost. Post training, scores doubled and were sustained at the post implementation stage. The data suggest staff confidence to manage incontinence increased over time.

**Table 24. Change in staff survey responses over time**

| On a scale of 1 to 10 (where 1 is not at all and 10 is very), please rate <u>how easy</u> it is to:        | Pre-training (n=17) | Post-training (n=10) | Post-implementation (n=4) |
|------------------------------------------------------------------------------------------------------------|---------------------|----------------------|---------------------------|
| Know how often a customer experiences an episode of urinary incontinence                                   | 4.1 ± 2.3           | 8.3 ± 1.5            | 8.0 ± 2.5                 |
| Know how much urine is being passed                                                                        | 3.4 ± 2.8           | 8.2 ± 1.8            | 7.8 ± 2.2                 |
| On a scale of 1 to 10 (where 1 is not at all and 10 is very), please rate <u>how confident</u> you are to: | Pre-training (n=17) | Post-training (n=10) | Post-implementation (n=4) |
| Help a customer select the right continence pad/product                                                    | 5.4 ± 2.1           | 7.2 ± 1.5            | 8.5 ± 1.3                 |
| Help a customer apply a continence pad/product                                                             | 7.8 ± 1.9           | 9.1 ± 1.2            | 9.8 ± 0.5                 |
| Develop individualised continence care plans                                                               | 5.4 ± 2.5           | 7.4 ± 1.2            | 8.0 ± 0.8                 |
| Recommend an individualised toileting schedule                                                             | 5.4 ± 2.4           | 7.5 ± 1.3            | 8.3 ± 0.5                 |
| Know how much fluid to recommend for each customer                                                         | 5.2 ± 2.5           | 6.1 ± 1.9            | 7.0 ± 2.7                 |
| Recommend a pad check and change program                                                                   | 5.3 ± 2.3           | 7.5 ± 1.7            | 7.5 ± 1.7                 |
| Recommend an individualised toileting schedule combined with a pad check and change program                | 5.2 ± 2.4           | 7.5 ± 1.4            | 7.3 ± 1.7                 |

Data in this table are presented as mean ± standard deviation.

## 2. Qualitative data

Three staff members volunteered to be interviewed about their opinions about the impact of the technology on their workload and on older peoples' and carers' acceptance of the technology and impact on their quality of life. Their exposure to the intervention varied, with two participants stating that they had very little experience.

### Unreliable technology

Staff reported that several older people and family carers found the technology to be unreliable which in some cases, was thought to be due to poor connectivity and in other cases, due to the sensor being unable to detect low volume voids. This was a source of angst for these older people and family carers, as well as for participating staff who had to problem-solve the issues. If staff were unable to problem solve the issue by phone, they reported having to conduct a home visit. In some cases, participants' negative experiences with the technology resulted in a reluctance to engage with the technology and to withdraw from the trial, according to staff.

*There was a problem of nothing transferred and then we've got people thinking they've passed urine and it's showing, but it's not It is a mismatch between the client's experience of incontinence and the information from the sensor. So, they felt that they'd had episodes of incontinence, but then when we looked at the report, that report didn't show that any urine had been passed into the pad (Int 3).*

*So where was a couple of people who withdrew because when doing it twice, no data was sent. It was blank like the data was blank (Int 3).*

### Variable levels of acceptance of the technology by older people

Whilst some older people and carers embraced the technology, others didn't according to staff. In some cases, carers felt the technology validated that they were doing a good job to both themselves and other family members

*So, and one of them in particularly they sort of said that it allowed them to evidence to the rest of the family that they were doing a good job*

However, for the most part, staff felt that most of the older persons and caregivers required high levels of support to understand and use the technology effectively as well as to engage in the trial. For some carers, engaging with the technology reportedly increases their burden of care.

*I think for the carers that were already dealing with somebody that was having issues with continence, they were already on the back foot and potentially not seeing how that was going to help them right then and there (Int 1).*

*I think they just felt that it just wasn't the right time for them to sort of do it and they felt that it was going to be a burden (Int 3).*

Staff described challenges convincing older people and carers to trial a different type of pad to manage incontinence, even when the technology produced data indicating a more cost-effective pad would be beneficial. In part, this was due to them not being convinced of the benefit or value.

*"the technologies needed earlier....You know when people first present with incontinence issues that that's really when the technology is of the greatest benefit. The reason I say that is because what I found was there was a lot of people set in their ways,*

*OK. So they've already seen GPs, they've already seen continence nurses. They're already buying products and what they were was set in their ways. They were like, I always change my pad five times a day regardless.*

*It's very difficult for people to change their habits, particularly if it's the elderly, and to embrace new technology because we were dealing with elderly (Int 2).*

*Most of their concerns were about the fact that, what's the point? I've already got continence products that I'm happy with, you're not going to do something different like this isn't going to show me anything different. They were already happy with the products that they were using. They didn't see that they'd got any issues and didn't see the benefit of what we were offering (Int 3).*

*And even when we were giving them the evidence that they didn't need to, they didn't always want to change that pattern, that they'd already sort of got. And they didn't always want to change their product (Int 3).*

### The tyranny of distance and lack of onsite support

Staff described difficulties providing the levels of support they felt older people and family carers needed due to the distance involved. Logistical challenges arose due to the vast geographical area covered, impacting the coordination and implementation of the intervention.

*We definitely had to spend time with them to make sure that they got the technique of getting it on and off before they had to do the 72 hours (Int 3).*

*I've got people that lived probably an hour and a half, two hours away from where I lived. If they had a problem I couldn't solve over the phone, this meant a 2-hour drive to go and resolve it (Int 3).*

### Targeting the technology for a more controlled environment

Staff indicated that the technology may be more beneficial in a residential aged care setting, rather than in the community. Staff attributed this to a more controlled environment with onsite professional caregivers. Staff also reported that the technology could be useful in the disability sector.

*I don't have much exposure to disabilities, but I guess. In situations where we're trying very hard to get the clients out and about and experiencing things and to sort of protect against the shame of embarrassing incidents (Int 1).*

*It appeared to me that it was geared towards residential, where the people in control were the primary caregivers or the professionals. Here, we were relying very much on the participant and their level of skill and understanding (Int 2).*

*[Would be beneficial] in residential where the customer isn't, I mean it's meant to be their home, but realistically they're not in control of what happens to them around continence management (Int 2).*

*I definitely think there's a place for it within disability services, whereas obviously with children and stuff, when there's like neurological sort of aspects to it where we know that there's never going to be that gained control (Int 3).*

## Discussion

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This project was designed to explore the feasibility and acceptability of using sensor wear technology to improve the capacity of the community aged care workforce to identify the continence care needs of community dwelling older people with UI and to implement targeted individualised continence care. The primary outcome of interest was older peoples' perceived social support which was a proxy for social isolation. Secondary outcomes were their quality of life, carers' self-rated burden of care and quality of life, and nurses' and support workers' confidence to manage incontinence. Data were also sought on the individual and organisational data on costs associated with the use of pads and changes in pad type. The trial failed to recruit sufficient numbers of people in order to demonstrate any differences in these outcomes.

Nevertheless, an analysis of available data from older people and interviews with staff who participated, indicated the older people identified as having low health and low levels of social support, indicating they were a high risk for social isolation. Levels of incontinence varied in severity. Baseline data from surveys of informal carers also suggest low levels of self-reported health and a high burden associated with caring. The vulnerability of this cohort was confirmed through interviews with staff who had trialled the technology. They described a sample who required high levels of support to engage with the research and to trial the technology.

The qualitative findings about the unreliability of the technology some participants experienced warrant further investigation. The finding is, however consistent with other research which has described challenges associated with using this type of technology (Nikoletti 2004, Raepsaet 2021 and Long 2015). There could be several reasons for the fact that some participants' sensor data failed to digitally transmit. For example, the technology was based on a 3G network. However, during the life of the project, there was a switch to a 5G network. Moreover, some participants reported gaps in the reliability and speed of the internet (i.e. internet dead zones). These are important factors to take into account for the broadscale roll out of the technology in the community.

The low rates of engagement by older people and informal carers in the project were disappointing and also warrant further investigation. Whether people would have trialled the technology without it being tied to a research project is an important consideration. Based on qualitative feedback, a key barrier to carer's participation was the desire to minimise any further burden. Similarly, many older people and carers were not convinced of there being any material benefit to them as they were reportedly 'happy' with their current forms of continence management.

Interviewees described variable levels of acceptance of trialling technology by older people and informal carers. Compounding this barrier is the impact of the stigma associated with incontinence. In order to participate in the project, older people needed to have self-report UI. It is widely recognised that most people with incontinence do not seek professional help (Milsom 2023); up to 70% based on a recent large population-based study of 26,466 women (Raasthoj 2019). Indeed, most people adopt a range of emotional and behavioural strategies to conceal the true nature and severity of symptoms, including family carers (Rantall 2023; Drennan 2011) and formal carers (Ostaszkievicz 2013).

## Limitations

Given the small sample size from which the data are drawn, the findings from this study need to be interpreted with caution. The data from older people and family carers is drawn from baseline surveys. Hence, the study does not claim to have demonstrated impact or comparable data on older people or family carers. The inability to recruit a sample size sufficient to demonstrate differences in the primary outcome of interest (i.e. perceived social support) raises several questions. Firstly, there is the question about the feasibility of conducting research on UI in a community setting among older people with complex needs. Secondly, is the question of whether the technology itself was suitable for this cohort, and if so, the best ways to optimise its use for community-dwelling older people with complex needs.

## Conclusion

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Although the project did not result in comparable data, it nevertheless yielded data to answer the question of the feasibility and acceptability of the technology to augment current approaches to identify and manage the continence care needs of care dependent community-dwelling older people with UI. Our experience of conducting the trial in the community with older people and informal carers, and nurses and support workers suggests the technology and its use in this cohort warrants further consideration in terms of (i) its reliability, (ii) the levels of support some individuals may require engaging with it, and (iii) the most appropriate way to introduce it to this cohort. Indeed, several people suggested it would have greater uptake and benefit in residential aged care homes where professional carers are available on a 24-hour basis and could monitor its use, or by continence nurse advisors working in the community. The technology warrants further consideration before it is marketed directly to consumers.

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# Appendices

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## Appendix A. Older person survey of continence management

1. How much time would you estimate that continence care takes per day? (including changing clothes, pad and hygiene)
  - a. <30 mins
  - b. 1-2 hours
  - c. 3-4 hours
  - d. More than 4 hours
2. How long have you been experiencing bladder leakage?
  - a. < 6 months
  - b. 1-3 years
  - c. Over 4 years
3. Do you have concerns about going because of a lack of information about when to change the pad?
  - a. Yes
  - b. No

If yes, how concerned are you?

- a. A little
  - b. Somewhat
  - c. A lot
4. How often do you experience leakage from your pad?
  - a. A few times a day
  - b. Once a day
  - c. A few times a week
  - d. Not at all
5. Do you feel you have the knowledge/tools you need to manage your bladder leakage?
  - a. Not at all
  - b. A little
  - c. Somewhat
  - d. Very much
6. How easy or difficult do you find managing your bladder leakage?
  - a) Very easy
  - b) Easy
  - c) Neither easy or difficult
  - d) Difficult
  - e) Very difficult
7. How confident are you that the absorbent product you are wearing is the right one for your

needs?

- a. Not confident
- b. Somewhat confident
- c. Confident
- d. Very confident

8. Do you experience skin rashes around where the pad sits?

- a. Yes
- b. No

9. Do you have a carer to assist with your bladder needs?

- a. Yes (if yes, complete 11)
- b. No (if no, complete 10)

10. How do you determine when your continence product needs to be changed? (can tick more than one response)

- a. When it leaks
- b. When it smells
- c. When I check the pad
- d. When the pad wetness indicator is full
- e. When a carer is present
- f. When it looks full
- g. If there is any wetness in it at all
- h. I change on a pre-determined schedule
- i. I get an alert on my phone or from a nursing assistant to change
- j. Other\_\_\_\_\_

11. How does your carer determine when your continence product needs to be changed (can tick more than one response)

- a. When it leaks
- b. When it smells
- c. When I ask them to
- d. When the pad wetness indicator is full
- e. When it looks full
- f. If there is any wetness in it at all
- g. They change on a pre-determined schedule
- h. They get an alert on a phone or from a nursing assistant to change
- i. Other\_\_\_\_\_

12. To what extent do you and the person that cares for you agree on when your pad needs to be changed?

- a. Not at all
- b. A little
- c. Somewhat
- d. Very much

13. How often is the product you use changed daily?

- a. Hourly
- 2. 1-3 times per day

- b. 3-5 times per day
- c. > 5 times per day

14. Does the product you use need to be changed overnight?

Yes

No

15. If yes, how often?

- a. Not at all
- b. Once
- c. Twice
- d. More than twice

16. Does the need to change the product overnight affect your coping abilities the next day?

- a. None
- b. A little
- c. Somewhat
- d. A lot

17. Can you tell us what product(s) you are currently using

- a. Morning\_\_\_\_\_
- b. Afternoon\_\_\_\_\_
- c. Night\_\_\_\_\_

## Appendix B: The Lubben Social Network Scale – 6

### LUBBEN SOCIAL NETWORK SCALE – 6 (LSNS-6)

*FAMILY: Considering the people to whom you are related by birth, marriage, adoption, etc...*

1. How many relatives do you see or hear from at least once a month?

0 = none 1 = one 2 = two 3 = three or four 4 = five thru eight 5 = nine or more

2. How many relatives do you feel at ease with that you can talk about private matters?

0 = none 1 = one 2 = two 3 = three or four 4 = five thru eight 5 = nine or more

3. How many relatives do you feel close to such that you could call on them for help?

0 = none 1 = one 2 = two 3 = three or four 4 = five thru eight 5 = nine or more

*FRIENDSHIPS: Considering all of your friends including those who live in your neighborhood*

4. How many of your friends do you see or hear from at least once a month?

0 = none 1 = one 2 = two 3 = three or four 4 = five thru eight 5 = nine or more

5. How many friends do you feel at ease with that you can talk about private matters?

0 = none 1 = one 2 = two 3 = three or four 4 = five thru eight 5 = nine or more

6. How many friends do you feel close to such that you could call on them for help?

0 = none 1 = one 2 = two 3 = three or four 4 = five thru eight 5 = nine or more

## Appendix C. The EQ-5D-3L

Under each heading, please tick the ONE box that best describes your health TODAY.

### MOBILITY

- I have no problems in walking about ☐
- I have some problems in walking about ☐
- I am confined to bed ☐

### SELF-CARE

- I have no problems with self-care ☐
- I have some problems washing or dressing myself ☐
- I am unable to wash or dress myself ☐

### USUAL ACTIVITIES *(e.g. work, study, housework, family or leisure activities)*

- I have no problems with performing my usual activities ☐
- I have some problems with performing my usual activities ☐
- I am unable to perform my usual activities ☐

### PAIN / DISCOMFORT

- I have no pain or discomfort ☐
- I have moderate pain or discomfort ☐
- I have extreme pain or discomfort ☐

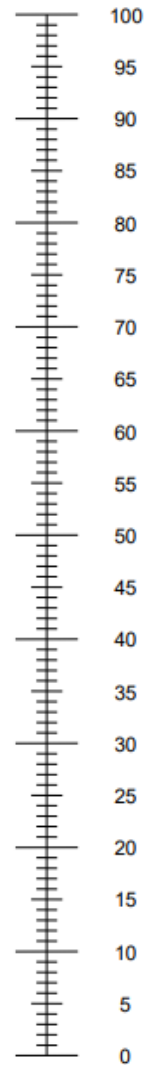
### ANXIETY / DEPRESSION

- I am not anxious or depressed ☐
- I am moderately anxious or depressed ☐
- I am extremely anxious or depressed ☐

- We would like to know how good or bad your health is TODAY.
- This scale is numbered from 0 to 100.
- 100 means the best health you can imagine.  
0 means the worst health you can imagine.
- Please mark an X on the scale to indicate how your health is TODAY.
- Now, write the number you marked on the scale in the box below.

YOUR HEALTH TODAY =

The best health  
you can imagine



The worst health  
you can imagine

## Appendix D. The International Consultation on Incontinence Questionnaire- Urinary Incontinence Short Form

|                                                                                                                                                 |                                           |                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/><br>Initial number | ICIQ-UI Short Form<br><b>CONFIDENTIAL</b> | <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/><br>DAY MONTH YEAR<br><b>Today's date</b> |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Many people leak urine some of the time. We are trying to find out how many people leak urine, and how much this bothers them. We would be grateful if you could answer the following questions, thinking about how you have been, on average, over the PAST FOUR WEEKS.

**1 Please write in your date of birth:**

DAY MONTH YEAR

**2 Are you (tick one):**

Female ☐ Male ☐

**3 How often do you leak urine? (Tick one box)**

|                                 |                          |   |
|---------------------------------|--------------------------|---|
| never                           | <input type="checkbox"/> | 0 |
| about once a week or less often | <input type="checkbox"/> | 1 |
| two or three times a week       | <input type="checkbox"/> | 2 |
| about once a day                | <input type="checkbox"/> | 3 |
| several times a day             | <input type="checkbox"/> | 4 |
| all the time                    | <input type="checkbox"/> | 5 |

**4 We would like to know how much urine you think leaks.**  
**How much urine do you usually leak (whether you wear protection or not)?**  
*(Tick one box)*

|                   |                          |   |
|-------------------|--------------------------|---|
| none              | <input type="checkbox"/> | 0 |
| a small amount    | <input type="checkbox"/> | 2 |
| a moderate amount | <input type="checkbox"/> | 4 |
| a large amount    | <input type="checkbox"/> | 6 |

**5 Overall, how much does leaking urine interfere with your everyday life?**  
*Please ring a number between 0 (not at all) and 10 (a great deal)*

|            |   |   |   |   |   |   |   |   |   |              |
|------------|---|---|---|---|---|---|---|---|---|--------------|
| 0          | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10           |
| not at all |   |   |   |   |   |   |   |   |   | a great deal |

**6 When does urine leak? (Please tick all that apply to you)**

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| never – urine does not leak                            | <input type="checkbox"/> |
| leaks before you can get to the toilet                 | <input type="checkbox"/> |
| leaks when you cough or sneeze                         | <input type="checkbox"/> |
| leaks when you are asleep                              | <input type="checkbox"/> |
| leaks when you are physically active/exercising        | <input type="checkbox"/> |
| leaks when you have finished urinating and are dressed | <input type="checkbox"/> |
| leaks for no obvious reason                            | <input type="checkbox"/> |
| leaks all the time                                     | <input type="checkbox"/> |

**Thank you very much for answering these questions.**

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## Appendix E. Informal carer survey of continence management

1. Do you and the person you care for/are responsible for live in the same home/apartment?
  - a. Yes
  - b. No
2. How long have you been providing care for this person?
  - a. < 6 months
  - b. 1-3 years
3. Over 4 years
3. How many hours per week do you provide care (either in person or by phone or both)?
  - a. 1-2 hours
  - b. 3-4 hours
  - c. 5-8 hours
  - d. 8-12 hours
  - e. More than 12 hours
  - f. 24/7
4. How much time would you estimate that continence care takes per day?
  - a. <30 mins
  - b. 1-2 hours
  - c. 3-4 hours
  - d. More than 4 hours
5. How long has the person had incontinence?
  - a. < 6 months
  - b. 1-3 years
  - c. Over 4 years
6. Do you have concerns about going out with the person because of a lack of information about when to change the pad?
  - a. Yes
  - b. No

If yes, how concerned are you?

  - a. A little
  - b. Somewhat
  - c. A lot
7. How often does the person experience leakage from their pad?
  - a. A few times a day
  - b. Once a day
  - c. A few times a week
  - d. Not at all
8. Do you feel you have the knowledge/tools you need to manage incontinence?

- a. Not at all
  - b. A little
  - c. Somewhat
  - d. Very much
9. How easy or difficult do you find managing this person's incontinence?
- a) Very easy
  - b) Easy
  - 4. Neither easy nor difficult
  - c) Difficult
  - d) Very difficult
10. What product are they using?
- a) Morning
  - b) Afternoon
  - c) Night
11. How confident are you that the continence product the person is wearing is correct?
- a. Not confident
  - b. Somewhat confident
  - c. Confident
  - d. Very confident
12. Does the person experience skin rashes around where the pad sits?
- a. Yes
  - b. No
13. How do you determine when the person's continence product needs to be changed? (can tick more than one response)
- a. When it leaks
  - b. When it smells
  - c. When the person asks
  - d. When I check the pad
  - e. When the pad wetness indicator is full
  - f. When it looks full
  - g. If there is any wetness in it at all
  - h. When I am there to visit
  - i. I change on a pre-determined schedule
  - j. I get an alert on my phone or from our nursing assistant to change
  - k. They change their own pad
14. How often is the person's pad changed daily?
- a. Hourly
  - b. 1-3 times per day
  - c. 3-5 times per day
  - d. > 5 times per day
15. Do you need to check the person's pad overnight?
- a. Yes
  - b. No

16. If yes, how often?
- a. Not at all
  - b. Once
  - c. Twice
  - d. More than twice
17. If you need to check the person's pad overnight, what is the impact on your coping abilities?
- a. None
  - b. A little
  - c. Somewhat
  - d. A lot
18. To what extent do you and the person agree on when their pad needs to be changed?
- a. Not at all
  - b. A little
  - c. Somewhat
  - d. Very much
19. Please feel free to comment further on anything you think is important in relation to caring for the person

## Appendix F. The Zarit Burden Interview-12

|                                                                                                          | "Never"<br>(0) | "Rarely"<br>(1) | "Sometimes"<br>(2) | "Quite frequently"<br>(3) | "Nearly always"<br>(4) |
|----------------------------------------------------------------------------------------------------------|----------------|-----------------|--------------------|---------------------------|------------------------|
| <b>Do you feel...?</b>                                                                                   |                |                 |                    |                           |                        |
| That because of the time you spend with your relative that you don't have enough time for yourself?      |                |                 |                    |                           |                        |
| Stressed between caring for your relative and trying to meet other responsibilities (work/family)?       |                |                 |                    |                           |                        |
| Angry when you are around your relative?                                                                 |                |                 |                    |                           |                        |
| That your relative currently affects your relationship with family members or friends in a negative way? |                |                 |                    |                           |                        |
| Strained when you are around your relative?                                                              |                |                 |                    |                           |                        |
| That your health has suffered because of your involvement with your relative?                            |                |                 |                    |                           |                        |
| That you don't have as much privacy as you would like because of your relative?                          |                |                 |                    |                           |                        |
| That your social life has suffered because you are caring for your relative?                             |                |                 |                    |                           |                        |
| That you have lost control of your life since your relative's illness?                                   |                |                 |                    |                           |                        |
| Uncertain about what to do about your relative?                                                          |                |                 |                    |                           |                        |
| You should be doing more for your relative?                                                              |                |                 |                    |                           |                        |
| You could do a better job in caring for your relative?                                                   |                |                 |                    |                           |                        |

- Short form ZBI-12 validated as screening tool in advanced illness including dementia and cancer
- Total ZBI-12 score: summation of 12 items (0 to 4 points per item, total score range 0 to 48)
- Copyrighted, but available for free use by clinicians and for non-funded academic research
- Suggested guidelines for scoring:
  - 0-10: no to mild burden
  - 10-20: mild to moderate burden
  - >20: high burden

## Appendix G. Staff survey

### Section 1: Demographic information

**Question 1:** Are you of Aboriginal and/or Torres Strait Islander origin?

- Aboriginal
- Torres Strait Islander
- Both Aboriginal and Torres Strait Islander
- No
- Prefer not to answer
- Don't know

**Question 2:** Are you from a Culturally or Linguistically Diverse (CALD) background?

- Yes
- No
- Prefer not to answer

**Question 3:** Would you describe your employment as;

- Permanent Full-time
- Permanent Part-time
- Casual/Contractor
- Agency or sub-contractor staff – Full time
- Agency or sub-contractor staff – Part time

**Question 4:** How would you describe your occupation type?

- Nurse
  - Nurse Practitioner
  - Registered Nurse
  - Enrolled Nurse
- Personal Care Worker
  - PCW
  - PCW (formal traineeship)
- Allied Health
  - Occupational Therapist
  - Physiotherapist
  - Dietitian
  - Exercise Physiologist
  - Speech Therapist
  - Diversional Therapist
  - Lifestyle co-ordinator
  - Aboriginal and Torres Strait Islander Health Worker/Practitioner
  - Podiatrist
  - Psychologist
  - Pharmacist
  - Social Worker
  - Allied Health - other
  - Allied Health Assistant

**Question 5:** How long have you worked in aged care?

- 0-5 years

- 5-10 years
- 10-20 years
- 20+ years

**Question 6:** How long have you worked in your current role?

- 0-5 years
- 5-10 years
- 10-20 years
- 20+ years

**Question 7:** On a scale of 1-10, how confident are you have the knowledge and skills to care for clients with urinary incontinence? \_\_\_\_\_

## **Section 2: Staff log of time spent managing incontinence**

A project specific survey for staff to estimate the average daily time spent managing incontinence for each participating client with UI for one day, to be self-completed at baseline and 4 weeks post intervention. This includes: (i) The number of pad changes pre and post and (ii) staff time spent on each pad change pre and post.

|           | <b>Pre-intervention number of pads in 24 hr period</b> | <b>Post intervention number of pads in 24 hr period</b> |
|-----------|--------------------------------------------------------|---------------------------------------------------------|
| Client 1  |                                                        |                                                         |
| Client 2  |                                                        |                                                         |
| Client 3  |                                                        |                                                         |
| Client 4  |                                                        |                                                         |
| Client 5  |                                                        |                                                         |
| Client 6  |                                                        |                                                         |
| Client 7  |                                                        |                                                         |
| Client 8  |                                                        |                                                         |
| Client 9  |                                                        |                                                         |
| Client 10 |                                                        |                                                         |
| Client 11 |                                                        |                                                         |

### **Section 3: Staff knowledge and skill survey**

#### **Pre training**

1. On a scale of 1 to 10 (1= not at all easy / 10 = very easy) please rate how easy it is to:
  - Know how often a customer is urinating?
  - Know how much urine is being voided
2. On a scale of 1 to 10 (1= not at all confident / 10 = very confident) please rate how confident you are to:
  - Help a customer select the right continence product
  - Help a customer apply a continence product
  - Develop individualised continence care plans
  - Recommend an individualised toileting schedule
  - Understand the level of fluid intake required
  - Recommend a pad check and change program
  - Recommend an individualised toileting schedule combined with a pad check and change program

#### **Immediately post training**

1. On a scale of 1 to 10 (1= not at all easy / 10 = very easy) please rate how easy it is to:
  - a. Know how many times a customer is urinating using TENA Identifi?
  - b. Know how much urinating a customer is voiding using TENA Identifi?
2. On a scale of 1 to 10 (1= not at all confident / 10 = very confident) please rate how confident you are to:
  - a. Help a customer select the right continence product
  - b. Help a customer apply a continence product
  - c. Develop individualised continence care plans
  - d. Recommend an individualised toileting schedule
  - e. Understand the level of fluid intake required
  - f. Recommend a pad check and change program using TENA Identifi?
  - g. Recommend an individualised toileting schedule combined with a pad check and change program using TENA Identifi?
  - h. Train family carers and Customers on the use of TENA Change indicator
  - i. Trouble shoot continence changes based on use of the TENA Change Indicator
  - j. Advise on when to re assess using TENA Identifi
  - k. Reassess using TENA Identifi

3. On a scale of 1 to 10 (1= not at all relevant / 10 = very relevant) please indicate how relevant the education was for the tasks you need to perform for customers
4. On a scale of 1 to 10 (1= not at all interesting / 10 = very interesting) please indicate how interesting the education was
5. On a scale of 1 to 10 (1= not at all clear / 10 = very clear) please indicate how clear the information was to understand and then implement
6. On a scale of 1 to 10 (1= Not confident / 10 = confident) please indicate how confident you feel to train carers and other staff in use of the TENA Identifi and TENA Change Indicator technology

#### **Four weeks post training**

1. On a scale of 1 to 10 (1= not at all easy / 10 = very easy) please rate how easy it is to:
  - a. Know how many times a Customer is urinating using TENA Identifi?
  - b. Know how much urinating a Customer is voiding using TENA Identifi?
2. On a scale of 1 to 10 (1= not at all confident / 10 = very confident) please rate how confident you are to:
  - a. Help a Customer select the right continence product
  - b. Help a Customer apply a continence product
  - c. Develop individualised continence care plans
  - d. Recommend an individualised toileting schedule
  - e. Understand the level of fluid intake required
  - f. Recommend a pad check and change program using TENA Identifi?
  - g. Recommend an individualised toileting schedule combined with a pad check and change program using TENA Identifi?
  - h. Train family carers and Customers on the use of TENA Change indicator
  - i. Trouble shoot continence changes based on use of the TENA Change Indicator
  - j. Advise on when to re assess using TENA Identifi
  - k. Reassess using TENA Identifi
3. On a scale of 1 to 10 (1= Not confident / 10 = confident) please indicate how confident you feel in training carers and other staff in use of the TENA Identifi and TENA Change Indicator technology

## Appendix H. Qualitative interview schedule

### ***Section 1: Demographic information***

**Question 1:** Are you of Aboriginal and/or Torres Strait Islander origin?

- Aboriginal
- Torres Strait Islander
- Both Aboriginal and Torres Strait Islander
- No
- Prefer not to answer
- Don't know

**Question 2:** Are you from a Culturally or Linguistically Diverse (CALD) background?

- Yes
- No
- Prefer not to answer

**Question 3:** Would you describe your employment as;

- Permanent Full-time
- Permanent Part-time
- Casual/Contractor
- Agency or sub-contractor staff – Full time
- Agency or sub-contractor staff – Part time

**Question 4:** How would you describe your occupation type?

- Nurse
  - Nurse Practitioner
  - Registered Nurse
  - Enrolled Nurse
- Personal Care Worker
  - PCW
  - PCW (formal traineeship)
- Allied Health
  - Occupational Therapist
  - Physiotherapist
  - Dietitian
  - Exercise Physiologist
  - Speech Therapist
  - Diversional Therapist
  - Lifestyle co-ordinator
  - Aboriginal and Torres Strait Islander Health Worker/Practitioner
  - Podiatrist
  - Psychologist
  - Pharmacist
  - Social Worker

- Allied Health - other
- Allied Health Assistant

**Question 5:** How long have you worked in aged care?

- 0-5 years
- 5-10 years
- 10-20 years
- 20+ years

**Question 6:** How long have you worked in your current role?

- 0-5 years
- 5-10 years
- 10-20 years
- 20+ years

**Question 7:** On a scale of 1-10, how confident are you have the knowledge and skills to care for clients with urinary incontinence? \_\_\_\_\_

## ***Section 2: Interview prompts***

- Impact on staff workload – positive and negative
- Perceived impact on clients' quality of life
- Perceived impact on clients' quality of sleep
- Perceived impact on clients' family carers' quality of life
- Extent to which the sensor technology assisted in identifying the frequency and severity of UI
- Impact on staff decisions about what pad to use
- Perceived impact on number of pads clients used
- Perceived impact on clients' ability to socialise
- Perceived impact on reducing clients' risk of being admitted to residential care
- Ease of use of the technology
- Perceived client and carer acceptability of the technology
- Recommendations for implementing the technology in other community based aged care organisations
- Ability to better distinguish between individuals who are suitable for an individualised toileting assistance program, a pad check and change program with TENA Change Indicator, or a combination of both.

## Appendix I. Data files

# OLDER PERSON: LSNS-6

## Baseline

| LSNS-6 – Older Persons (BASELINE)                                                    |                        |                       |                |
|--------------------------------------------------------------------------------------|------------------------|-----------------------|----------------|
| How many relatives do you see or hear from at least once a month?                    |                        | <i>n</i> of responses | % of responses |
| 1                                                                                    | None                   | 1                     | 9.1%           |
| 2                                                                                    | 1                      | 1                     | 9.1%           |
| 3                                                                                    | 2                      | 2                     | 18.2%          |
| 4                                                                                    | 3 or 4                 | 2                     | 18.2%          |
| 5                                                                                    | 5 - 8                  | 4                     | 36.4%          |
| 6                                                                                    | 9 or more              | 1                     | 9.1%           |
|                                                                                      | <b>Total responses</b> | <b>14</b>             | <b>100%</b>    |
|                                                                                      |                        |                       |                |
| How many relatives do you feel at ease with that you can talk about private matters? |                        | <i>n</i> of responses | % of responses |
| 1                                                                                    | None                   | 2                     | 15.4%          |
| 2                                                                                    | One                    | 3                     | 30.8%          |
| 3                                                                                    | Two                    | 4                     | 15.4%          |
| 4                                                                                    | 3 or 4                 | 2                     | 15.4%          |
| 5                                                                                    | 5 to 8                 | 2                     | 15.4%          |
| 6                                                                                    | 9 or more              | 0                     | 0.0%           |
|                                                                                      | <b>Total responses</b> | <b>13</b>             | <b>100%</b>    |
|                                                                                      |                        |                       |                |
| How many relatives do you feel close to such that you could call on them for help?   |                        | <i>n</i> of responses | % of responses |
| 1                                                                                    | None                   | 1                     | 7.1%           |
| 2                                                                                    | One                    | 5                     | 35.7%          |
| 3                                                                                    | Two                    | 3                     | 21.4%          |
| 4                                                                                    | 3 or 4                 | 4                     | 28.6%          |
| 5                                                                                    | 5 to 8                 | 1                     | 7.1%           |
| 6                                                                                    | 9 or more              | 0                     | 0.0%           |
|                                                                                      | <b>Total responses</b> | <b>13</b>             | <b>100%</b>    |
|                                                                                      |                        |                       |                |
| How many of your friends do you see or hear from at least once a month?              |                        | <i>n</i> of responses | % of responses |
| 1                                                                                    | None                   | 2                     | 15.4%          |
| 2                                                                                    | One                    | 2                     | 15.4%          |
| 3                                                                                    | Two                    | 3                     | 23.1%          |
| 4                                                                                    | 3 or 4                 | 2                     | 15.4%          |
| 5                                                                                    | 5 to 8                 | 2                     | 15.4%          |
| 6                                                                                    | 9 or more              | 2                     | 15.4%          |
|                                                                                      | <b>Total responses</b> | <b>13</b>             | <b>100%</b>    |
|                                                                                      |                        |                       |                |
| How many friends do you feel at ease with that you can talk about private matters?   |                        | <i>n</i> of responses | % of responses |
| 1                                                                                    | None                   | 5                     | 35.7%          |
| 2                                                                                    | One                    | 5                     | 35.7%          |

|                                                                                         |                        |                              |                       |
|-----------------------------------------------------------------------------------------|------------------------|------------------------------|-----------------------|
| 3                                                                                       | Two                    | 2                            | 14.3%                 |
| 4                                                                                       | 3 or 4                 | 2                            | 14.3%                 |
| 5                                                                                       | 5 to 8                 | 0                            | 0.0%                  |
| 6                                                                                       | 9 or more              | 0                            | 0.0%                  |
|                                                                                         | <b>Total responses</b> | <b>14</b>                    | <b>100%</b>           |
|                                                                                         |                        |                              |                       |
| <b>How many friends do you feel close to such that you could call on them for help?</b> |                        | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                       | None                   | 7                            | 50.0%                 |
| 2                                                                                       | One                    | 3                            | 21.4%                 |
| 3                                                                                       | Two                    | 2                            | 14.3%                 |
| 4                                                                                       | 3 or 4                 | 2                            | 14.3%                 |
| 5                                                                                       | 5 to 8                 | 0                            | 0.0%                  |
| 6                                                                                       | 9 or more              | 0                            | 0.0%                  |
|                                                                                         | <b>Total responses</b> | <b>14</b>                    | <b>100%</b>           |

#### Post intervention

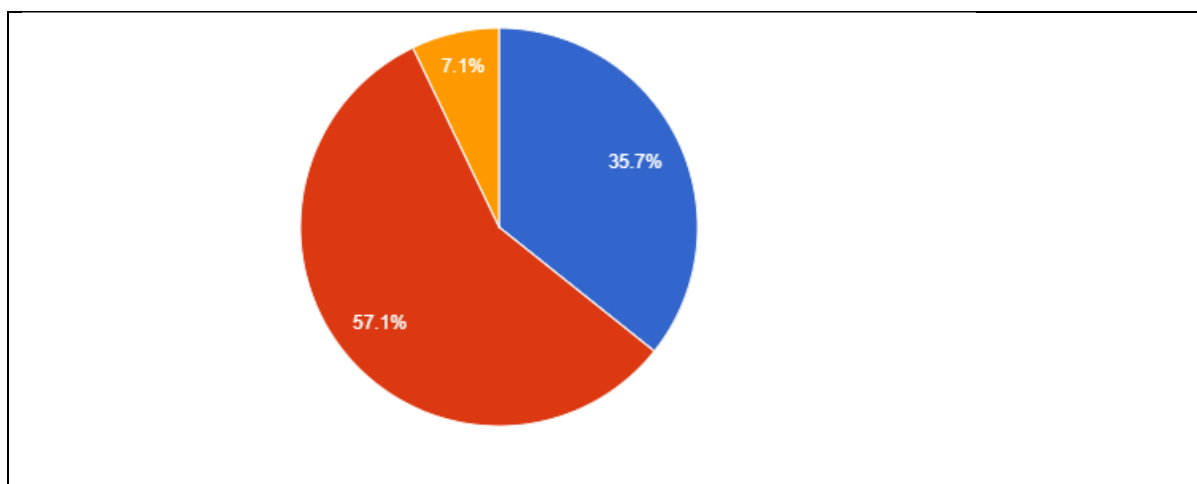
| <b>LSNS-6 – Older Persons (4 Week POST-INTERVENTION)</b>                                    |                        |                              |                       |
|---------------------------------------------------------------------------------------------|------------------------|------------------------------|-----------------------|
| <b>How many relatives do you see or hear from at least once a month?</b>                    |                        | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                           | None                   | 0                            | 0.0%                  |
| 2                                                                                           | 1                      | 1                            | 25.0%                 |
| 3                                                                                           | 2                      | 1                            | 25.0%                 |
| 4                                                                                           | 3 or 4                 | 1                            | 25.0%                 |
| 5                                                                                           | 5 - 8                  | 0                            | 0.0%                  |
| 6                                                                                           | 9 or more              | 1                            | 25.0%                 |
|                                                                                             | <b>Total responses</b> | <b>4</b>                     | <b>100%</b>           |
|                                                                                             |                        |                              |                       |
| <b>How many relatives do you feel at ease with that you can talk about private matters?</b> |                        | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                           | None                   | 0                            | 0.0%                  |
| 2                                                                                           | One                    | 0                            | 0.0%                  |
| 3                                                                                           | Two                    | 2                            | 66.7%                 |
| 4                                                                                           | 3 or 4                 | 1                            | 33.3%                 |
| 5                                                                                           | 5 to 8                 | 0                            | 0.0%                  |
| 6                                                                                           | 9 or more              | 0                            | 0.0%                  |
|                                                                                             | <b>Total responses</b> | <b>3</b>                     | <b>100%</b>           |
|                                                                                             |                        |                              |                       |
| <b>How many relatives do you feel close to such that you could call on them for help?</b>   |                        | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                           | None                   | 0                            | 0.0%                  |
| 2                                                                                           | One                    | 0                            | 0.0%                  |
| 3                                                                                           | Two                    | 2                            | 66.7%                 |
| 4                                                                                           | 3 or 4                 | 1                            | 33.3%                 |
| 5                                                                                           | 5 to 8                 | 0                            | 0.0%                  |
| 6                                                                                           | 9 or more              | 0                            | 0.0%                  |
|                                                                                             | <b>Total responses</b> | <b>3</b>                     | <b>100%</b>           |

| How many of your friends do you see or hear from at least once a month?            |                        | <i>n</i> of responses | % of responses |
|------------------------------------------------------------------------------------|------------------------|-----------------------|----------------|
| 1                                                                                  | None                   | 1                     | 33.3%          |
| 2                                                                                  | One                    | 0                     | 0.0%           |
| 3                                                                                  | Two                    | 0                     | 0.0%           |
| 4                                                                                  | 3 or 4                 | 1                     | 33.3%          |
| 5                                                                                  | 5 to 8                 | 0                     | 0.0%           |
| 6                                                                                  | 9 or more              | 1                     | 33.3%          |
|                                                                                    | <b>Total responses</b> | <b>3</b>              | <b>100%</b>    |
|                                                                                    |                        |                       |                |
| How many friends do you feel at ease with that you can talk about private matters? |                        | <i>n</i> of responses | % of responses |
| 1                                                                                  | None                   | 1                     | 33.3%          |
| 2                                                                                  | One                    | 0                     | 0.0%           |
| 3                                                                                  | Two                    | 1                     | 33.3%          |
| 4                                                                                  | 3 or 4                 | 1                     | 33.3%          |
| 5                                                                                  | 5 to 8                 | 0                     | 0.0%           |
| 6                                                                                  | 9 or more              | 0                     | 0.0%           |
|                                                                                    | <b>Total responses</b> | <b>3</b>              | <b>100%</b>    |
|                                                                                    |                        |                       |                |
| How many friends do you feel close to such that you could call on them for help?   |                        | <i>n</i> of responses | % of responses |
| 1                                                                                  | None                   | 1                     | 25.0%          |
| 2                                                                                  | One                    | 0                     | 0.0%           |
| 3                                                                                  | Two                    | 1                     | 25.0%          |
| 4                                                                                  | 3 or 4                 | 2                     | 50.0%          |
| 5                                                                                  | 5 to 8                 | 0                     | 0.0%           |
| 6                                                                                  | 9 or more              | 0                     | 0.0%           |
|                                                                                    | <b>Total responses</b> | <b>4</b>              | <b>100%</b>    |
|                                                                                    |                        |                       |                |

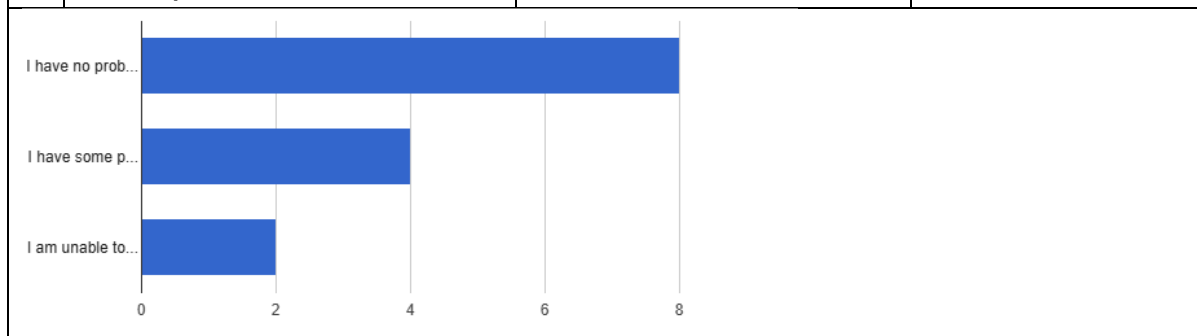
### OLDER PERSON: EQ-5D-3L

#### Baseline

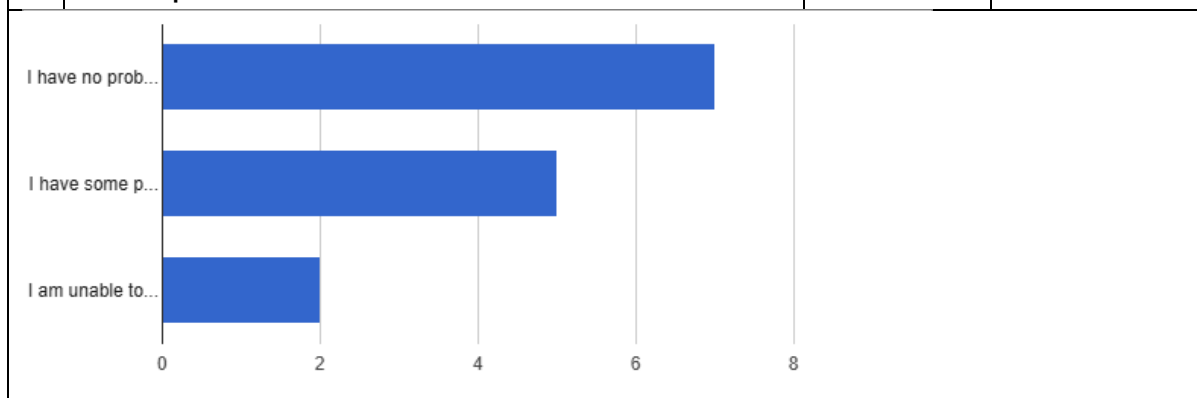
| EQ-5D-3L – Older Persons (BASELINE) |                                       |                       |                |
|-------------------------------------|---------------------------------------|-----------------------|----------------|
| Mobility                            |                                       | <i>n</i> of responses | % of responses |
| 1                                   | I have no problems in walking about   | 5                     | 35.7%          |
| 2                                   | I have some problems in walking about | 8                     | 57.1%          |
| 3                                   | I am confined to bed                  | 1                     | 7.1%           |
|                                     | <b>Total responses</b>                | <b>14</b>             | <b>100%</b>    |



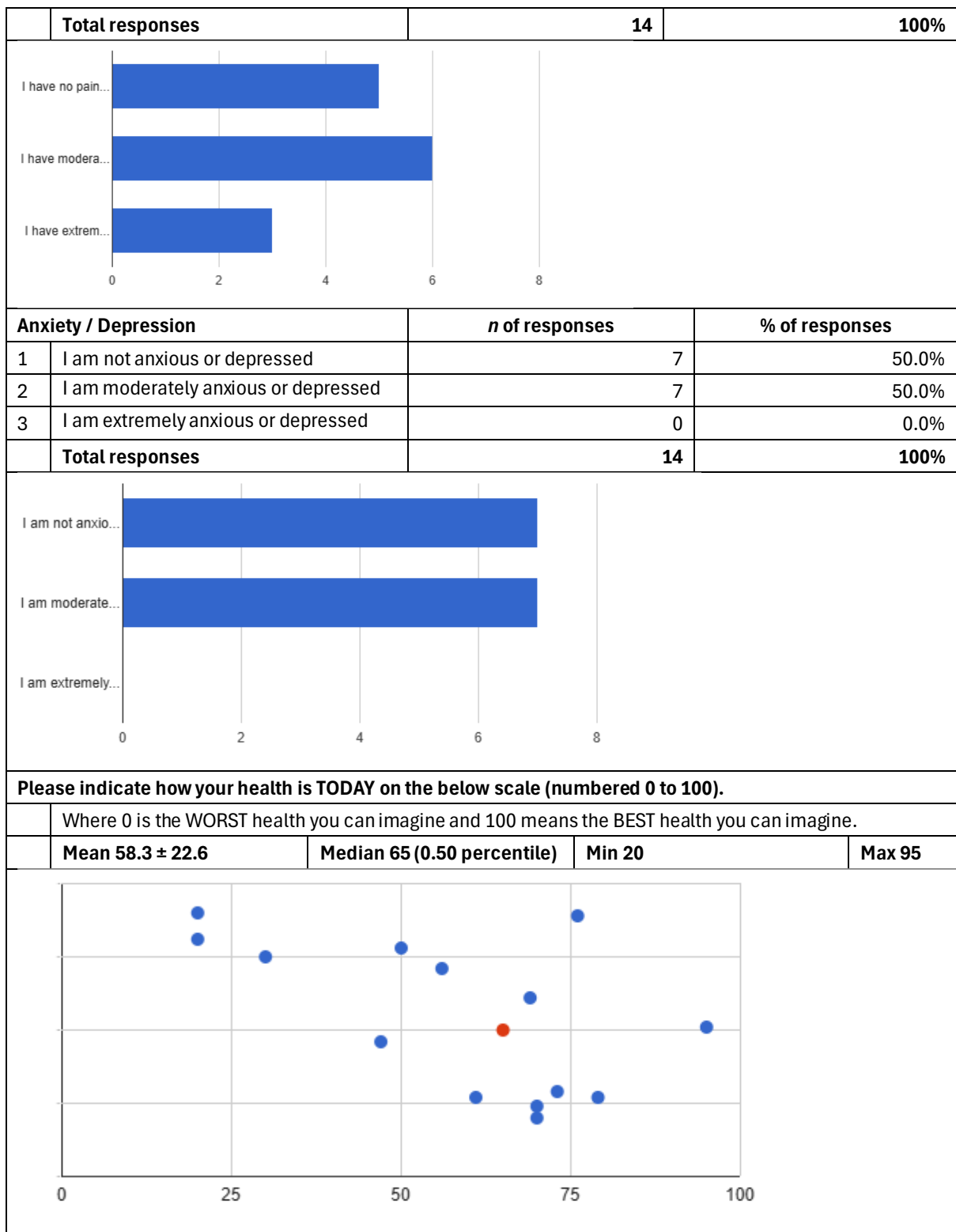
| Self-care       |                                                 | <i>n</i> of responses | % of responses |
|-----------------|-------------------------------------------------|-----------------------|----------------|
| 1               | I have no problems with self-care               | 8                     | 57.1%          |
| 2               | I have some problems washing or dressing myself | 4                     | 28.6%          |
| 3               | I am unable to wash or dress myself             | 2                     | 14.3%          |
| Total responses |                                                 | 14                    | 100%           |



| Usual activities (work, study, housework, family or leisure activities) |                                                     | <i>n</i> of responses | % of responses |
|-------------------------------------------------------------------------|-----------------------------------------------------|-----------------------|----------------|
| 1                                                                       | I have no problems performing my usual activities   | 7                     | 50.0%          |
| 2                                                                       | I have some problems performing my usual activities | 5                     | 35.7%          |
| 3                                                                       | I am unable to perform my usual activities          | 2                     | 14.3%          |
| Total responses                                                         |                                                     | 14                    | 100%           |

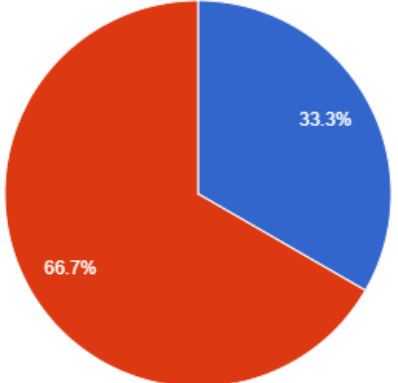


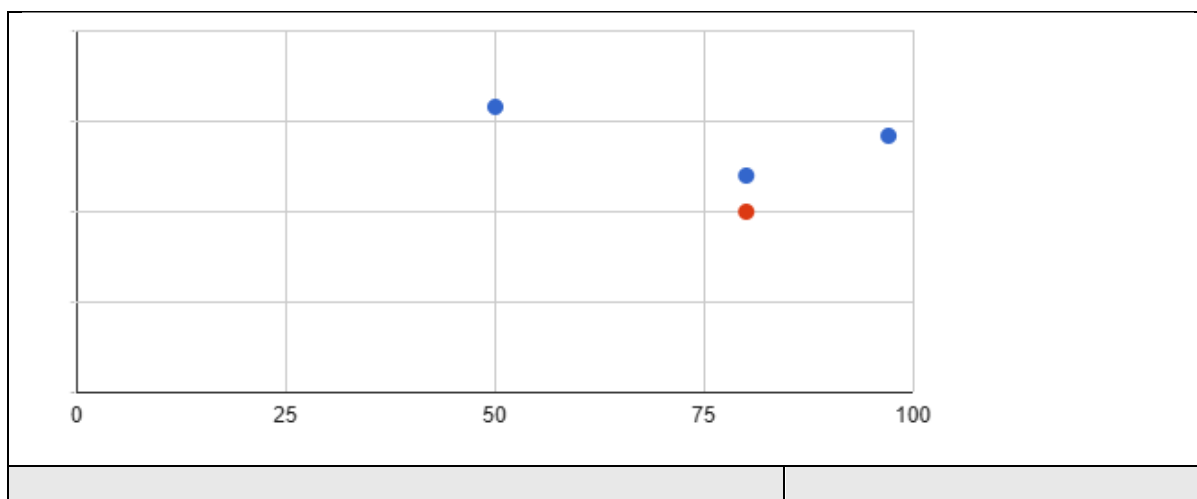
| Pain / Discomfort |                                    | <i>n</i> of responses | % of responses |
|-------------------|------------------------------------|-----------------------|----------------|
| 1                 | I have no pain or discomfort       | 5                     | 35.7%          |
| 2                 | I have moderate pain or discomfort | 6                     | 42.9%          |
| 3                 | I have extreme pain or discomfort  | 3                     | 21.4%          |



#### Post intervention

EQ-5D-3L – Older Persons (4 WEEK POST-INTERVENTION)

| Mobility                                                                                   |                                                     | <i>n</i> of responses              | % of responses            |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------|---------------------------|
| 1                                                                                          | I have no problems in walking about                 | 1                                  | 33.3%                     |
| 2                                                                                          | I have some problems in walking about               | 2                                  | 66.7%                     |
| 3                                                                                          | I am confined to bed                                | 0                                  | 0.0%                      |
|                                                                                            | <b>Total responses</b>                              | <b>3</b>                           | <b>100%</b>               |
|           |                                                     |                                    |                           |
| Self-care                                                                                  |                                                     | <i>n</i> of responses              | % of responses            |
| 1                                                                                          | I have no problems with self-care                   | 1                                  | 33.3%                     |
| 2                                                                                          | I have some problems washing or dressing myself     | 1                                  | 33.3%                     |
| 3                                                                                          | I am unable to wash or dress myself                 | 1                                  | 33.3%                     |
|                                                                                            | <b>Total responses</b>                              | <b>3</b>                           | <b>100%</b>               |
| Usual activities (work, study, housework, family or leisure activities)                    |                                                     | <i>n</i> of responses              | % of responses            |
| 1                                                                                          | I have no problems performing my usual activities   | 1                                  | 33.3%                     |
| 2                                                                                          | I have some problems performing my usual activities | 1                                  | 33.3%                     |
| 3                                                                                          | I am unable to perform my usual activities          | 1                                  | 33.3%                     |
|                                                                                            | <b>Total responses</b>                              | <b>3</b>                           | <b>100%</b>               |
| Pain / Discomfort                                                                          |                                                     | <i>n</i> of responses              | % of responses            |
| 1                                                                                          | I have no pain or discomfort                        | 2                                  | 66.7%                     |
| 2                                                                                          | I have moderate pain or discomfort                  | 0                                  | 0.0%                      |
| 3                                                                                          | I have extreme pain or discomfort                   | 1                                  | 33.3%                     |
|                                                                                            | <b>Total responses</b>                              | <b>3</b>                           | <b>100%</b>               |
| Anxiety / Depression                                                                       |                                                     | <i>n</i> of responses              | % of responses            |
| 1                                                                                          | I am not anxious or depressed                       | 1                                  | 33.3%                     |
| 2                                                                                          | I am moderately anxious or depressed                | 2                                  | 66.7%                     |
| 3                                                                                          | I am extremely anxious or depressed                 | 0                                  | 0.0%                      |
|                                                                                            | <b>Total responses</b>                              | <b>3</b>                           | <b>100%</b>               |
| Please indicate how your health is TODAY on the below scale (numbered 0 to 100).           |                                                     |                                    |                           |
| Where 0 is the WORST health you can imagine and 100 means the BEST health you can imagine. |                                                     |                                    |                           |
|                                                                                            | <b>Mean 75.7 ± 23.8</b>                             | <b>Median 80 (0.50 percentile)</b> | <b>Min 50      Max 97</b> |

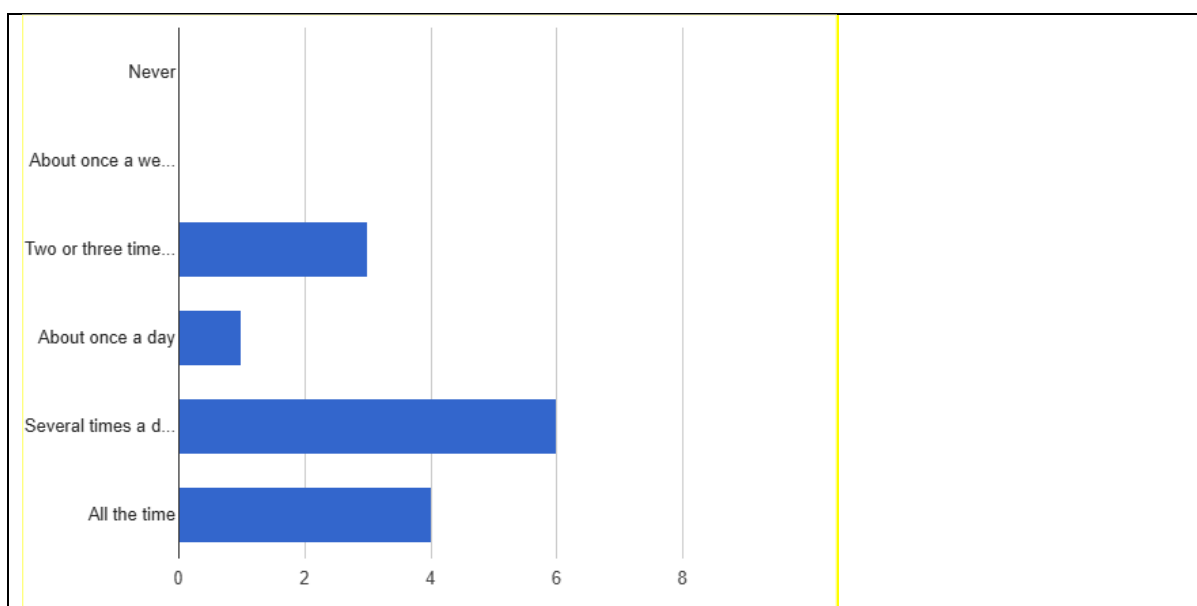


## OLDER PERSON: ICIQ-UI SF

### Baseline

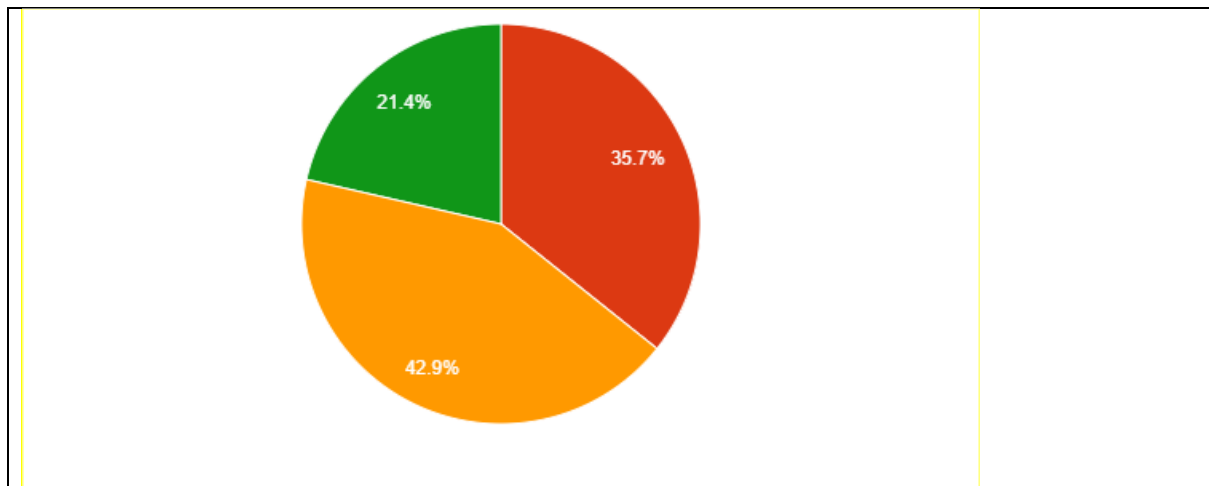
At baseline, 6 (42.9%) of older people indicated they experiences 'urine leakage' several times a day, 3 (21.4%) reportedly experienced 2-3 episodes a week, and 1 (7.1%) 'about once a day (see Figure x).

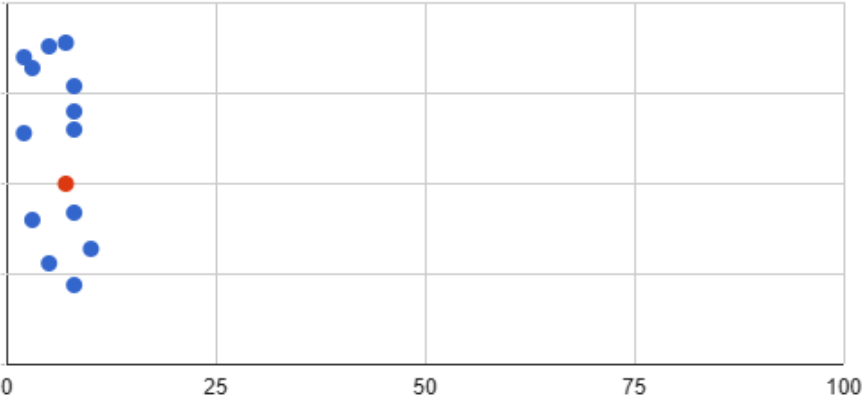
Figure x. ICIQ-Older person frequency of urine leakage

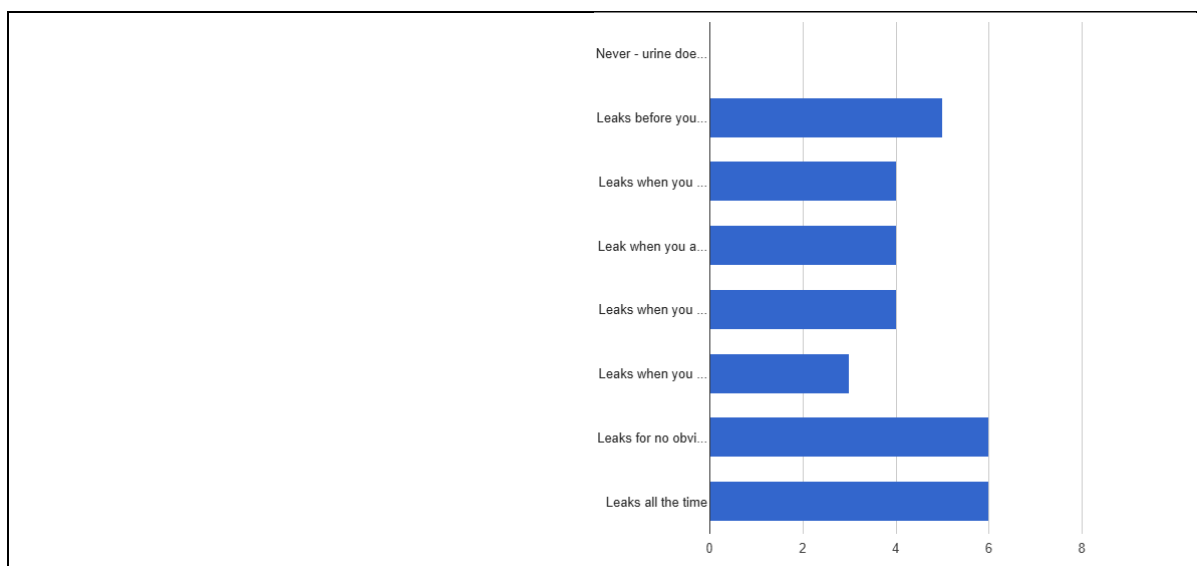


Six (42.9%) older people rated the amount of urine leakage as 'a moderate amount', 4 (35.7%) rated it as 'a small amount', and 3 (21.4%) reported the amount was 'large' (see Figure x).

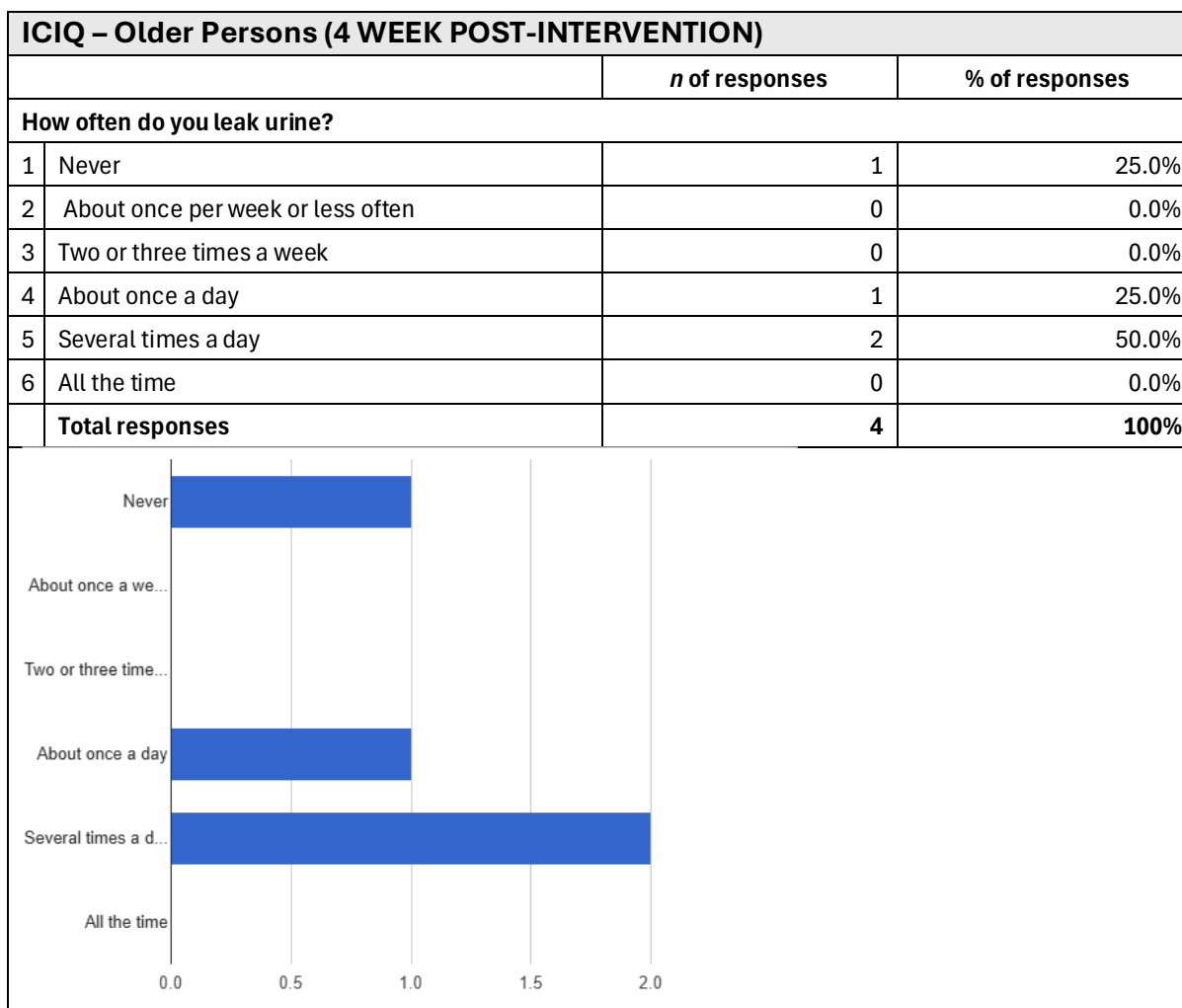
Figure x. Amount of urine leakage



| Overall, how much does leaking urine interfere with your everyday life?             |                                                  |                            |                   |        |
|-------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------|-------------------|--------|
|                                                                                     | Between 0 (not at all) and 10 (a great deal)     |                            |                   |        |
|                                                                                     | Mean 5.9 ± 2.7                                   | Median 7 (0.50 percentile) | Min 2             | Max 10 |
|  |                                                  |                            |                   |        |
| Average ICIQ score (n=14):                                                          |                                                  |                            | 13.0              |        |
| Lowest score: 6                                                                     |                                                  |                            | Highest score: 19 |        |
| When does urine leak (tick all that apply)?                                         |                                                  |                            |                   |        |
| 1                                                                                   | Never – urine does not leak                      |                            | 0                 | 0.0%   |
| 2                                                                                   | Leaks before you can get to the toilet           |                            | 5                 | 35.7%  |
| 3                                                                                   | Leaks when you cough or sneeze                   |                            | 4                 | 28.6%  |
| 4                                                                                   | leaks when you are asleep                        |                            | 4                 | 28.6%  |
| 5                                                                                   | Leaks when you are physically active/exercising  |                            | 4                 | 28.6%  |
| 6                                                                                   | When you have finished urinating and are dressed |                            | 3                 | 21.4%  |
| 7                                                                                   | For no obvious reason                            |                            | 6                 | 42.9%  |
| 8                                                                                   | Leaks all the time                               |                            | 6                 | 42.9%  |
| Total respondents                                                                   |                                                  |                            | 14                |        |

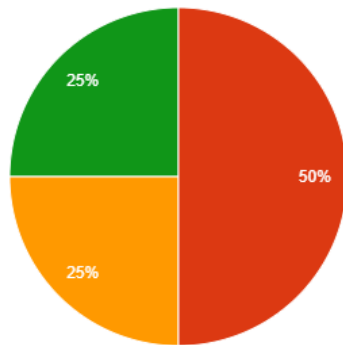


## Post intervention



**How much urine do you usually leak (whether you wear protection or not)?**

|   |                        |          |             |
|---|------------------------|----------|-------------|
| 1 | None                   | 0        | 0.0%        |
| 2 | A small amount         | 2        | 50.0%       |
| 3 | A moderate amount      | 1        | 25.0%       |
| 4 | A large amount         | 1        | 25.0%       |
|   | <b>Total responses</b> | <b>4</b> | <b>100%</b> |



**Overall, how much does leaking urine interfere with your everyday life?**

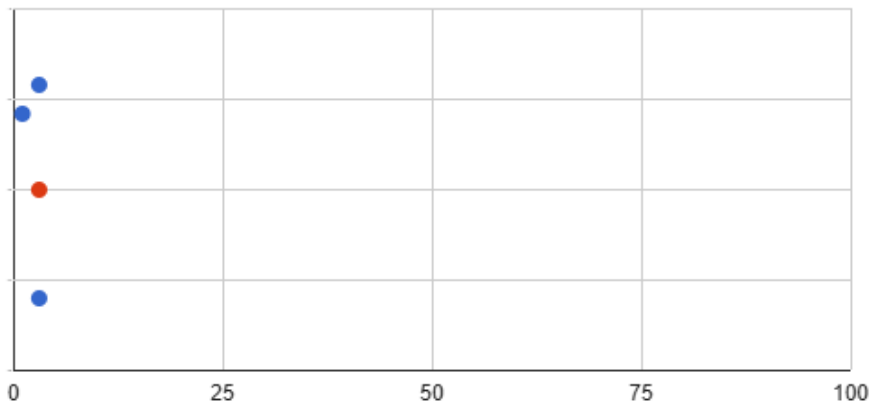
Between 0 (not at all) and 10 (a great deal)

**Mean 2.33 ± 1.2**

**Median 3 (0.50 percentile)**

**Min 1**

**Max 3**

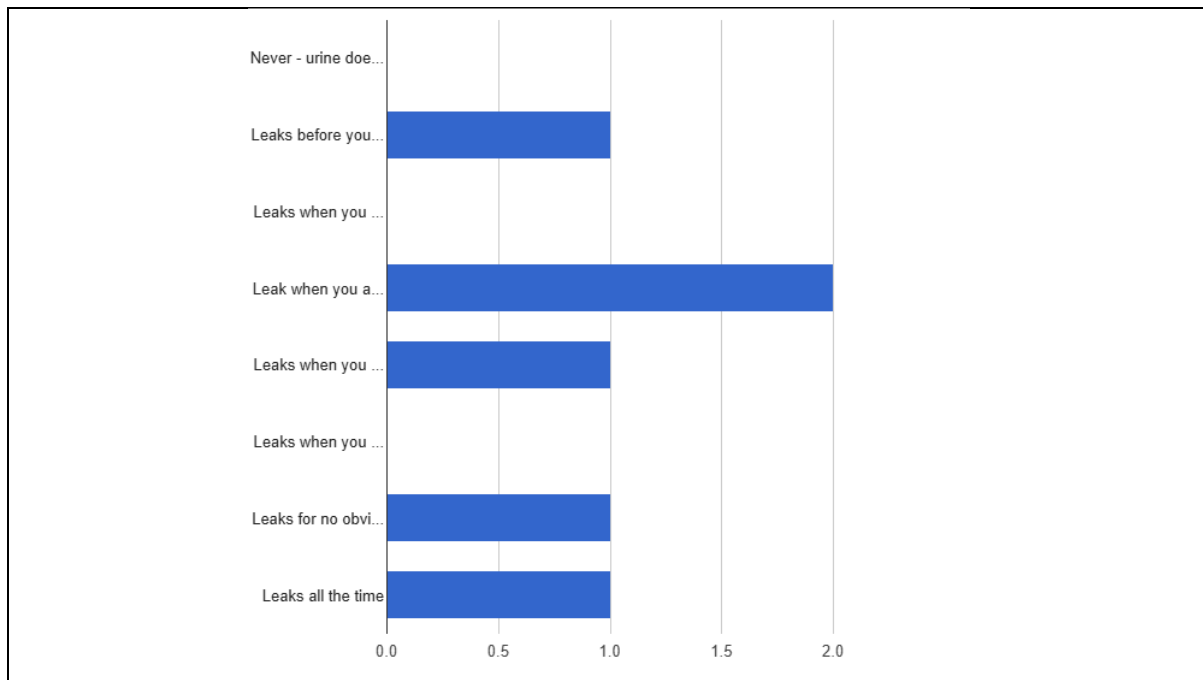


**Average ICIQ score (n=3) 9.3**

**Lowest score: 7 Highest score: 12**

**When does urine leak (tick all that apply)?**

|   |                                                  |          |       |
|---|--------------------------------------------------|----------|-------|
| 1 | Never – urine does not leak                      | 0        | 0.0%  |
| 2 | Leaks before you can get to the toilet           | 1        | 33.3% |
| 3 | Leaks when you cough or sneeze                   | 0        | 0.0%  |
| 4 | leaks when you are asleep                        | 2        | 66.7% |
| 5 | Leaks when you are physically active/exercising  | 1        | 33.3% |
| 6 | When you have finished urinating and are dressed | 0        | 0.0%  |
| 7 | For no obvious reason                            | 1        | 33.3% |
| 8 | Leaks all the time                               | 1        | 33.3% |
|   | <b>Total respondents</b>                         | <b>3</b> |       |



## INFORMAL CARERS – EQ-5D-3L

### Baseline

| EQ-5D-3L – Informal Carer                                               |                                                     |                       |                |
|-------------------------------------------------------------------------|-----------------------------------------------------|-----------------------|----------------|
| Mobility                                                                |                                                     | <i>n</i> of responses | % of responses |
| 1                                                                       | I have no problems in walking about                 | 4                     | 44.4%          |
| 2                                                                       | I have some problems in walking about               | 4                     | 44.4%          |
| 3                                                                       | I am confined to bed                                | 1                     | 11.1%          |
|                                                                         | <b>Total responses</b>                              | <b>9</b>              | <b>100%</b>    |
| Self-care                                                               |                                                     | <i>n</i> of responses | % of responses |
| 1                                                                       | I have no problems with self-care                   | 5                     | 62.5%          |
| 2                                                                       | I have some problems washing or dressing myself     | 2                     | 25.0%          |
| 3                                                                       | I am unable to wash or dress myself                 | 1                     | 12.5%          |
|                                                                         | <b>Total responses</b>                              | <b>8</b>              | <b>100%</b>    |
| Usual activities (work, study, housework, family or leisure activities) |                                                     | <i>n</i> of responses | % of responses |
| 1                                                                       | I have no problems performing my usual activities   | 3                     | 42.9%          |
| 2                                                                       | I have some problems performing my usual activities | 2                     | 28.6%          |
| 3                                                                       | I am unable to perform my usual activities          | 2                     | 28.6%          |
|                                                                         | <b>Total responses</b>                              | <b>7</b>              | <b>100%</b>    |
| Pain / Discomfort                                                       |                                                     | <i>n</i> of responses | % of responses |
| 1                                                                       | I have no pain or discomfort                        | 3                     | 42.9%          |
| 2                                                                       | I have moderate pain or discomfort                  | 3                     | 42.9%          |

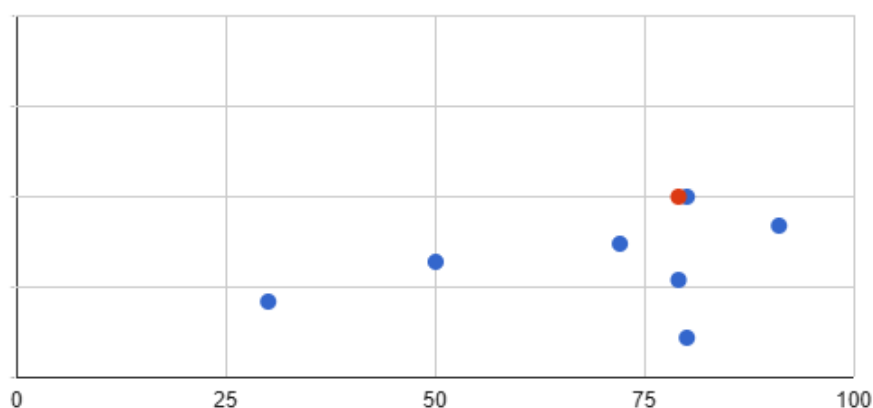
|                        |                                   |          |             |
|------------------------|-----------------------------------|----------|-------------|
| 3                      | I have extreme pain or discomfort | 1        | 14.3%       |
| <b>Total responses</b> |                                   | <b>7</b> | <b>100%</b> |

| <b>Anxiety / Depression</b> |                                      | <b><i>n</i> of responses</b> | <b>% of responses</b> |
|-----------------------------|--------------------------------------|------------------------------|-----------------------|
| 1                           | I am not anxious or depressed        | 4                            | 57.1%                 |
| 2                           | I am moderately anxious or depressed | 3                            | 42.9%                 |
| 3                           | I am extremely anxious or depressed  | 0                            | 0.0%                  |
| <b>Total responses</b>      |                                      | <b>7</b>                     | <b>100%</b>           |

Please indicate how your health is TODAY on the below scale (numbered 0 to 100).

Where 0 is the WORST health you can imagine and 100 means the BEST health you can imagine.

**Mean 68.9 ± 21.3**      **Median 79 (0.50 percentile)**      **Min 30**      **Max 91**



**EQ-5D-3L SCORE:**

**1= No problem**

**2=some problems**

**3= extreme problems**

## INFORMAL CARERS – ZBI-12

### Baseline

| <b>ZBI-12 – Informal Carer</b>                                                                             |               |                              |                       |
|------------------------------------------------------------------------------------------------------------|---------------|------------------------------|-----------------------|
| <b>For the next questions, please answer how often you have felt the below:</b>                            |               |                              |                       |
| <b>That because of the time you spend with your relative that you don't have enough time for yourself?</b> |               | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                                          | Never         | 0                            | 0.0%                  |
| 2                                                                                                          | Rarely        | 4                            | 44.4%                 |
| 3                                                                                                          | Sometimes     | 0                            | 0.0%                  |
| 4                                                                                                          | Quite often   | 1                            | 11.1%                 |
| 5                                                                                                          | Nearly always | 4                            | 44.4%                 |
| <b>Total responses</b>                                                                                     |               | <b>9</b>                     | <b>100%</b>           |
|                                                                                                            |               |                              |                       |
| <b>Stressed between caring for your relative and trying to meet other responsibility (work/family)?</b>    |               | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                                          | Never         | 1                            | 16.7%                 |

|                                                                                                                 |                        |                              |                       |
|-----------------------------------------------------------------------------------------------------------------|------------------------|------------------------------|-----------------------|
| 2                                                                                                               | Rarely                 | 0                            | 0.0%                  |
| 3                                                                                                               | Sometimes              | 2                            | 33.3%                 |
| 4                                                                                                               | Quite often            | 0                            | 0.0%                  |
| 5                                                                                                               | Nearly always          | 3                            | 50.0%                 |
|                                                                                                                 | <b>Total responses</b> | <b>6</b>                     | <b>100%</b>           |
|                                                                                                                 |                        |                              |                       |
| <b>Angry when you are around your relative?</b>                                                                 |                        | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                                               | Never                  | 1                            | 20.0%                 |
| 2                                                                                                               | Rarely                 | 1                            | 20.0%                 |
| 3                                                                                                               | Sometimes              | 2                            | 40.0%                 |
| 4                                                                                                               | Quite often            | 0                            | 0.0%                  |
| 5                                                                                                               | Nearly always          | 1                            | 20.0%                 |
|                                                                                                                 | <b>Total responses</b> | <b>5</b>                     | <b>100%</b>           |
|                                                                                                                 |                        |                              |                       |
| <b>That your relative currently affects your relationship with family members or friends in a negative way?</b> |                        | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                                               | Never                  | 3                            | 50.0%                 |
| 2                                                                                                               | Rarely                 | 0                            | 0.0%                  |
| 3                                                                                                               | Sometimes              | 0                            | 0.0%                  |
| 4                                                                                                               | Quite often            | 3                            | 50.0%                 |
| 5                                                                                                               | Nearly always          | 0                            | 0.0%                  |
|                                                                                                                 | <b>Total responses</b> | <b>6</b>                     | <b>100%</b>           |
|                                                                                                                 |                        |                              |                       |
| <b>Strained when you are around your relative?</b>                                                              |                        | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                                               | Never                  | 1                            | 16.7%                 |
| 2                                                                                                               | Rarely                 | 3                            | 50.0%                 |
| 3                                                                                                               | Sometimes              | 1                            | 16.7%                 |
| 4                                                                                                               | Quite often            | 1                            | 16.7%                 |
| 5                                                                                                               | Nearly always          | 0                            | 0.0%                  |
|                                                                                                                 | <b>Total responses</b> | <b>6</b>                     | <b>100%</b>           |
|                                                                                                                 |                        |                              |                       |
| <b>That your health has suffered because of your involvement with your relative?</b>                            |                        | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                                               | Never                  | 2                            | 40.0%                 |
| 2                                                                                                               | Rarely                 | 0                            | 0.0%                  |
| 3                                                                                                               | Sometimes              | 1                            | 20.0%                 |
| 4                                                                                                               | Quite often            | 1                            | 20.0%                 |
| 5                                                                                                               | Nearly always          | 1                            | 20.0%                 |
|                                                                                                                 | <b>Total responses</b> | <b>5</b>                     | <b>100%</b>           |
|                                                                                                                 |                        |                              |                       |
| <b>That you don't have as much privacy as you would like because of your relative?</b>                          |                        | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                                               | Never                  | 1                            | 16.7%                 |
| 2                                                                                                               | Rarely                 | 1                            | 16.7%                 |

|                                                                                     |                        |                              |                       |
|-------------------------------------------------------------------------------------|------------------------|------------------------------|-----------------------|
| 3                                                                                   | Sometimes              | 2                            | 33.3%                 |
| 4                                                                                   | Quite often            | 1                            | 16.7%                 |
| 5                                                                                   | Nearly always          | 1                            | 16.7%                 |
|                                                                                     | <b>Total responses</b> | <b>6</b>                     | <b>100%</b>           |
|                                                                                     |                        |                              |                       |
| <b>That your social life has suffered because you are caring for your relative?</b> |                        | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                   | Never                  | 0                            | 0.0%                  |
| 2                                                                                   | Rarely                 | 2                            | 40.0%                 |
| 3                                                                                   | Sometimes              | 0                            | 0.0%                  |
| 4                                                                                   | Quite often            | 0                            | 0.0%                  |
| 5                                                                                   | Nearly always          | 3                            | 60.0%                 |
|                                                                                     | <b>Total responses</b> | <b>5</b>                     | <b>100%</b>           |
|                                                                                     |                        |                              |                       |
| <b>That you have lost control of your life since your relative's illness?</b>       |                        | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                   | Never                  | 1                            | 20.0%                 |
| 2                                                                                   | Rarely                 | 0                            | 0.0%                  |
| 3                                                                                   | Sometimes              | 2                            | 40.0%                 |
| 4                                                                                   | Quite often            | 1                            | 20.0%                 |
| 5                                                                                   | Nearly always          | 1                            | 20.0%                 |
|                                                                                     | <b>Total responses</b> | <b>5</b>                     | <b>100%</b>           |
|                                                                                     |                        |                              |                       |
| <b>Uncertain about what to do about your relative?</b>                              |                        | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                   | Never                  | 0                            | 0.0%                  |
| 2                                                                                   | Rarely                 | 1                            | 16.7%                 |
| 3                                                                                   | Sometimes              | 4                            | 66.7%                 |
| 4                                                                                   | Quite often            | 0                            | 0.0%                  |
| 5                                                                                   | Nearly always          | 1                            | 16.7%                 |
|                                                                                     | <b>Total responses</b> | <b>6</b>                     | <b>100%</b>           |
|                                                                                     |                        |                              |                       |
| <b>You should be doing more for your relative?</b>                                  |                        | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                   | Never                  | 1                            | 16.7%                 |
| 2                                                                                   | Rarely                 | 1                            | 16.7%                 |
| 3                                                                                   | Sometimes              | 3                            | 50.0%                 |
| 4                                                                                   | Quite often            | 1                            | 16.7%                 |
| 5                                                                                   | Nearly always          | 0                            | 0.0%                  |
|                                                                                     | <b>Total responses</b> | <b>6</b>                     | <b>100%</b>           |
|                                                                                     |                        |                              |                       |
| <b>You could do a better job of caring for your relative?</b>                       |                        | <b><i>n</i> of responses</b> | <b>% of responses</b> |
| 1                                                                                   | Never                  | 0                            | 0.0%                  |
| 2                                                                                   | Rarely                 | 1                            | 14.3%                 |
| 3                                                                                   | Sometimes              | 4                            | 57.1%                 |

|                      |                        |                      |                          |
|----------------------|------------------------|----------------------|--------------------------|
| 4                    | Quite often            | 2                    | 28.6%                    |
| 5                    | Nearly always          | 0                    | 0.0%                     |
|                      | <b>Total responses</b> | <b>7</b>             | <b>100%</b>              |
|                      |                        |                      |                          |
| <b>ZBI-12 SCORE:</b> |                        |                      |                          |
| <b>Never = 0</b>     | <b>Rarely = 1</b>      | <b>Sometimes = 2</b> | <b>Quite often = 3</b>   |
|                      |                        |                      | <b>Nearly always = 4</b> |

## STAFF

### Demographics

| Survey Responses – Staff (n = 17)      |                        |                |                |
|----------------------------------------|------------------------|----------------|----------------|
| How long have you worked in aged care? |                        | n of responses | % of responses |
| 1                                      | 0-5 years              | 4              | 23.5%          |
| 2                                      | 5-10 years             | 4              | 23.5%          |
| 3                                      | 10-20 years            | 7              | 41.2%          |
| 4                                      | 20+ years              | 2              | 11.8%          |
|                                        | <b>Total responses</b> | <b>17</b>      | <b>100%</b>    |

| How long have you worked in your current role? |                        | n of responses | % of responses |
|------------------------------------------------|------------------------|----------------|----------------|
| 1                                              | 0-5 years              | 11             | 64.7%          |
| 2                                              | 5-10 years             | 2              | 11.8%          |
| 3                                              | 10-20 years            | 4              | 23.5%          |
| 4                                              | 20+ years              | 0              | 0.0%           |
|                                                | <b>Total responses</b> | <b>17</b>      | <b>100%</b>    |

| Would you describe your employment as: |                              | n of responses | % of responses |
|----------------------------------------|------------------------------|----------------|----------------|
| 1                                      | Permanent - FT               | 4              | 23.5%          |
| 2                                      | Permanent - PT               | 11             | 64.7%          |
| 3                                      | Casual/ contractor           | 1              | 5.9%           |
| 4                                      | Agency or subcontractor – FT | 1              | 5.9%           |
| 5                                      | Agency or subcontractor - PT | 0              | 0.0%           |
|                                        | <b>Total responses</b>       | <b>17</b>      | <b>100%</b>    |

| How would you describe your occupation type? |                        | n of responses | % of responses |
|----------------------------------------------|------------------------|----------------|----------------|
| 1                                            | Nurse                  | 9              | 52.9%          |
| 2                                            | Support worker         | 7              | 41.2%          |
| 3                                            | Allied health          | 1              | 5.9%           |
|                                              | <b>Total responses</b> | <b>17</b>      | <b>100%</b>    |

| If you selected Nurse, please select from the below: |                    | n of responses | % of responses |
|------------------------------------------------------|--------------------|----------------|----------------|
| 1                                                    | Nurse practitioner | 0              | 0.0%           |
| 2                                                    | Registered nurse   | 8              | 88.9%          |

|          |                        |          |             |
|----------|------------------------|----------|-------------|
| <b>3</b> | Enrolled nurse         | <b>1</b> | <b>1.1%</b> |
|          | <b>Total responses</b> | <b>9</b> | <b>100%</b> |

| If you are a Support Worker, do you have a formal traineeship? |                        | <i>n</i> of responses | % of responses |
|----------------------------------------------------------------|------------------------|-----------------------|----------------|
| 1                                                              | Yes                    | 4                     | 57.1%          |
| 2                                                              | No                     | 3                     | 42.9%          |
|                                                                | <b>Total responses</b> | <b>7</b>              | <b>100%</b>    |
| If you selected Allied Health, please elaborate:               |                        | <i>n</i> of responses | % of responses |
| 1                                                              | Lifestyle coordinator  | 1                     | 100.0%         |

### Confidence to manage incontinence

| Staff – PRE-TRAINING ( <i>n</i> = 17)                                                                  |                            |       |        |
|--------------------------------------------------------------------------------------------------------|----------------------------|-------|--------|
| On a scale of 1 to 10 (where 1 is not at all and 10 is very), how confident are you:                   |                            |       |        |
| That you have the knowledge and skills to care for clients with urinary incontinence?                  |                            |       |        |
| Mean 7.0 ± 1.9                                                                                         | Median 8 (0.50 percentile) | Min 2 | Max 9  |
|                                                                                                        |                            |       |        |
| On a scale of 1 to 10 (where 1 is not at all easy and 10 is very easy), please rate how easy it is to: |                            |       |        |
| Know how often a customer experiences an episode of urinary incontinence                               |                            |       |        |
| Mean 4.1 ± 2.3                                                                                         | Median 4 (0.50 percentile) | Min 0 | Max 7  |
| Know how much urine is being passed                                                                    |                            |       |        |
| Mean 3.4 ± 2.8                                                                                         | Median 3 (0.50 percentile) | Min 0 | Max 10 |
|                                                                                                        |                            |       |        |
| On a scale of 1 to 10 (where 1 is not at all and 10 is very), please rate how confident you are to:    |                            |       |        |
| Help a customer select the right continence pad/product                                                |                            |       |        |
| Mean 5.4 ± 2.1                                                                                         | Median 5 (0.50 percentile) | Min 1 | Max 9  |
|                                                                                                        |                            |       |        |
| Help a customer apply a continence pad/product?                                                        |                            |       |        |
| Mean 7.8 ± 1.9                                                                                         | Median 8 (0.50 percentile) | Min 3 | Max 10 |
|                                                                                                        |                            |       |        |
| Develop individualised continence care plans?                                                          |                            |       |        |
| Mean 5.4 ± 2.5                                                                                         | Median 6 (0.50 percentile) | Min 0 | Max 9  |
|                                                                                                        |                            |       |        |
| Recommend an individualised toileting schedule?                                                        |                            |       |        |
| Mean 5.4 ± 2.4                                                                                         | Median 6 (0.50 percentile) | Min 0 | Max 9  |
|                                                                                                        |                            |       |        |
| Know how much fluid to recommend for each customer?                                                    |                            |       |        |
| Mean 5.2 ± 2.5                                                                                         | Median 6 (0.50 percentile) | Min 0 | Max 8  |
|                                                                                                        |                            |       |        |
| Recommend a pad check and change program?                                                              |                            |       |        |

|                                                                                                     |                            |       |       |
|-----------------------------------------------------------------------------------------------------|----------------------------|-------|-------|
| Mean 5.3 ± 2.3                                                                                      | Median 5 (0.50 percentile) | Min 0 | Max 9 |
| <b>Recommend an individualised toileting schedule combined with a pad check and change program?</b> |                            |       |       |
| Mean 5.2 ± 2.4                                                                                      | Median 5 (0.50 percentile) | Min 0 | Max 9 |

|                                                                                                                               |                              |       |        |
|-------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------|--------|
| <b>Staff – POST-TRAINING (n = 10)</b>                                                                                         |                              |       |        |
| <b>On a scale of 1 to 10 (where 1 is not at all and 10 is very), how confident of the below are you?</b>                      |                              |       |        |
| <b>Know how many times a customer experiences an episode of urinary incontinence after using TENA Identifi?</b>               |                              |       |        |
| Mean 8.3 ± 1.5                                                                                                                | Median 8.5 (0.50 percentile) | Min 5 | Max 10 |
| <b>Know how much urine is being passed after using TENA Identifi?</b>                                                         |                              |       |        |
| Mean 8.2 ± 1.8                                                                                                                | Median 9 (0.50 percentile)   | Min 5 | Max 10 |
| <b>Help a customer select the right continence pad/product?</b>                                                               |                              |       |        |
| Mean 7.2 ± 1.5                                                                                                                | Median 7.5 (0.50 percentile) | Min 5 | Max 9  |
| <b>Help a customer apply a continence pad/product?</b>                                                                        |                              |       |        |
| Mean 9.1 ± 1.2                                                                                                                | Median 9.5 (0.50 percentile) | Min 7 | Max 10 |
| <b>Develop individualised continence care plans?</b>                                                                          |                              |       |        |
| Mean 7.4 ± 1.2                                                                                                                | Median 8 (0.50 percentile)   | Min 5 | Max 9  |
| <b>Recommend an individualised toileting schedule?</b>                                                                        |                              |       |        |
| Mean 7.5 ± 1.3                                                                                                                | Median 8 (0.50 percentile)   | Min 5 | Max 9  |
| <b>Know how much fluid to recommend for each customer?</b>                                                                    |                              |       |        |
| Mean 6.1 ± 1.9                                                                                                                | Median 7 (0.50 percentile)   | Min 2 | Max 8  |
| <b>Recommend a pad check and change program after using TENA Identifi?</b>                                                    |                              |       |        |
| Mean 7.5 ± 1.7                                                                                                                | Median 8 (0.50 percentile)   | Min 4 | Max 10 |
| <b>Recommend an individualised toileting schedule combined with a pad check and change program after using TENA Identifi?</b> |                              |       |        |
| Mean 7.5 ± 1.4                                                                                                                | Median 8 (0.50 percentile)   | Min 4 | Max 9  |
| <b>Support family carers and customers to use the TENA Change Indicator?</b>                                                  |                              |       |        |
| Mean 7.6 ± 1.8                                                                                                                | Median 8 (0.50 percentile)   | Min 4 | Max 10 |
| <b>Troubleshoot continence changes based on use of the TENA Change Indicator?</b>                                             |                              |       |        |
| Mean 7.4 ± 1.5                                                                                                                | Median 8 (0.50 percentile)   | Min 4 | Max 9  |
| <b>Advise on when to re-assess using TENA Identifi?</b>                                                                       |                              |       |        |

|                                                                                                                                                                                                                |                              |       |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------|--------|
| Mean 6.9 ± 1.3                                                                                                                                                                                                 | Median 7 (0.50 percentile)   | Min 4 | Max 9  |
| <b>Re-assess using TENA Identifi?</b>                                                                                                                                                                          |                              |       |        |
| Mean 6.8 ± 2.7                                                                                                                                                                                                 | Median 7.5 (0.50 percentile) | Min 1 | Max 10 |
| <b>On a scale of 1 to 10 (1=not at all relevant, 10=very relevant), please indicate how relevant the education was for the support you provide to your customers.</b>                                          |                              |       |        |
| Mean 8.7 ± 1.6                                                                                                                                                                                                 | Median 9 (0.50 percentile)   | Min 5 | Max 10 |
| <b>On a scale of 1 to 10 (1=not at all interesting, 10=very interesting), please indicate how interesting the education was.</b>                                                                               |                              |       |        |
| Mean 8.7 ± 1.6                                                                                                                                                                                                 | Median 9 (0.50 percentile)   | Min 5 | Max 10 |
| <b>On a scale of 1 to 10 (1=not at all clear, 10=very clear), please indicate how clear the information was to understand and then implement.</b>                                                              |                              |       |        |
| Mean 8.5 ± 1.3                                                                                                                                                                                                 | Median 9 (0.50 percentile)   | Min 6 | Max 10 |
| <b>On a scale of 1 to 10 (1=not at all confident, 10=confident), please indicate how confident you feel to support carers and other staff in using the TENA Identifi and TENA Change Indicator technology.</b> |                              |       |        |
| Mean 7.8 ± 1.7                                                                                                                                                                                                 | Median 7.5 (0.50 percentile) | Min 5 | Max 10 |

|                                                                                                                 |                              |       |        |
|-----------------------------------------------------------------------------------------------------------------|------------------------------|-------|--------|
| <b>Staff – POST-IMPLEMENTATION (n = 4)</b>                                                                      |                              |       |        |
| <b>On a scale of 1 to 10 (where 1 is not at all and 10 is very), how confident of the below are you?</b>        |                              |       |        |
| <b>Know how many times a customer experiences an episode of urinary incontinence after using TENA Identifi?</b> |                              |       |        |
| Mean 8.0 ± 2.5                                                                                                  | Median 8.5 (0.50 percentile) | Min 5 | Max 10 |
| <b>Know how much urine is being passed after using TENA Identifi?</b>                                           |                              |       |        |
| Mean 7.8 ± 2.2                                                                                                  | Median 8 (0.50 percentile)   | Min 5 | Max 10 |
| <b>Help a customer select the right continence pad/product?</b>                                                 |                              |       |        |
| Mean 8.5 ± 1.3                                                                                                  | Median 8.5 (0.50 percentile) | Min 7 | Max 10 |
| <b>Help a customer apply a continence pad/product?</b>                                                          |                              |       |        |
| Mean 9.8 ± 0.5                                                                                                  | Median 10 (0.50 percentile)  | Min 9 | Max 10 |
| <b>Develop individualised continence care plans?</b>                                                            |                              |       |        |
| Mean 8.0 ± 0.8                                                                                                  | Median 8 (0.50 percentile)   | Min 7 | Max 9  |
| <b>Recommend an individualised toileting schedule?</b>                                                          |                              |       |        |
| Mean 8.3 ± 0.5                                                                                                  | Median 8 (0.50 percentile)   | Min 8 | Max 9  |
| <b>Know how much fluid to recommend for each customer?</b>                                                      |                              |       |        |
| Mean 7.0 ± 2.7                                                                                                  | Median 8 (0.50 percentile)   | Min 3 | Max 9  |

|                                                                                                                                                                                                                   |                              |       |        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------|--------|
|                                                                                                                                                                                                                   |                              |       |        |
| <b>Recommend a pad check and change program after using TENA Identifi?</b>                                                                                                                                        |                              |       |        |
| Mean 7.5 ± 1.7                                                                                                                                                                                                    | Median 8 (0.50 percentile)   | Min 5 | Max 9  |
|                                                                                                                                                                                                                   |                              |       |        |
| <b>Recommend an individualised toileting schedule combined with a pad check and change program after using TENA Identifi?</b>                                                                                     |                              |       |        |
| Mean 7.3 ± 1.7                                                                                                                                                                                                    | Median 7.5 (0.50 percentile) | Min 5 | Max 9  |
|                                                                                                                                                                                                                   |                              |       |        |
| <b>Support family carers and customers on the use of TENA Change Indicator?</b>                                                                                                                                   |                              |       |        |
| Mean 8.5 ± 1.0                                                                                                                                                                                                    | Median 9 (0.50 percentile)   | Min 7 | Max 9  |
|                                                                                                                                                                                                                   |                              |       |        |
| <b>Troubleshoot continence changes based on use of the TENA Change Indicator?</b>                                                                                                                                 |                              |       |        |
| Mean 7.8 ± 1.0                                                                                                                                                                                                    | Median 7.5 (0.50 percentile) | Min 7 | Max 9  |
|                                                                                                                                                                                                                   |                              |       |        |
| <b>Advise on when to re-assess using TENA Identifi?</b>                                                                                                                                                           |                              |       |        |
| Mean 7.8 ± 2.1                                                                                                                                                                                                    | Median 8 (0.50 percentile)   | Min 5 | Max 10 |
|                                                                                                                                                                                                                   |                              |       |        |
| <b>Re-assess using TENA Identifi?</b>                                                                                                                                                                             |                              |       |        |
| Mean 7.5 ± 2.1                                                                                                                                                                                                    | Median 7.5 (0.50 percentile) | Min 5 | Max 10 |
|                                                                                                                                                                                                                   |                              |       |        |
| <b>On a scale of 1 to 10 (1=not at all confident, 10=confident), please indicate how confident you feel in supporting carers and other staff in using the TENA Identifi and TENA Change Indicator technology.</b> |                              |       |        |
| Mean 8.3 ± 1.3                                                                                                                                                                                                    | Median 8 (0.50 percentile)   | Min 7 | Max 10 |
|                                                                                                                                                                                                                   |                              |       |        |

