



## Testing inter-rater reliability of the Urostomy Education Scale



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### ABSTRACT

**Purpose:** Previous research has validated the Urostomy Education Scale as a standardised evidence based tool to document patients' level of stoma self-care skills. The aim of this study was to test the scale's inter-rater reliability among urology nurses in a continuous validation of the Urostomy Education Scale.

**Methods:** During the study period from June 2011 to September 2012, 38 ward nurses performing standard stoma care attended 150 validation sessions evaluating 70 patients' level of stoma self-care skills using the Urostomy Education Scale. In pairs, the nurses randomly observed the patients during a training episode involving change of a stoma appliance. Data were categorised into three groups to investigate the impact of nurses' experience on reliability: comparing two inexperienced nurses, two experienced or one of each. Data were compared for agreement by testing variation between groups and analysing Bland Altman Plots with Limits of Agreement.

**Results:** The variation in scores was not influenced by the nurses' level of experience ( $p > 0.05$ ). Reliability was found to be high with Bland Altman Plot and Limits of Agreement documenting that 84% of scores (95% CI (Confidence interval): 74; 89) were within a range of 2 points.

**Conclusion:** The Urostomy Education Scale demonstrates high reliability irrespective of nurses' different levels of experience. The results are clinically relevant and contribute to a precise documentation of stoma self-care skills. The tool ensures evidence based patient education and can provide a high standard of communication in transitions between sectors.

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### 1. Introduction

Radical cystectomy (RC) remains the standard treatment in patients with high risk non-invasive bladder cancer and muscle-invasive bladder cancer. RC is the surgical removal of the bladder and considered the most advanced surgical procedure in uro-oncology (Stenzl et al., 2012). RC affects the patient's daily life (Shih and Porter, 2011; Singer et al., 2013; Wright and Porter, 2007), often profoundly, and can result in a wide range of impairments in aspects of daily living such as those related to the urinary diversion, fatigue and altered body image (Froehner et al., 2009; Novotny et al., 2013; Hautmann et al., 2013; Mohamed et al., 2014; Zulkowski et al., 2014). As suggested in the literature the basic goals for optimisation and early rehabilitation are to prevent or reduce post-surgical impairment, thus enabling the patient to confidently return to daily activities or working life and to maintain an acceptable quality of life (QoL) (Jack et al., 2011; Singh et al., 2013).

Historically, the main focus within the stoma care literature has been on the experiences of the affected individual. There is mounting evidence that stoma self-care ability is the most important variable predicting positive adjustment to life with a stoma (Piwonka and Merino, 1999). Confidence in changing the stoma appliance and stoma self-care skills have been suggested to significantly increase the perception of QoL (Brown and Randle, 2005; Geng et al., 2009; Marquis et al., 2003; Metcalf, 1999; O'Connor, 2005; Wu et al., 2007).

Generally, education in stoma self-care occurs during the patient's recovery in hospital after surgery. However, sessions of reinforcement and follow up are suggested to be limited after discharge and unmet needs are not well described (Mohamed et al., 2014). To improve stoma self-care skills, daily education in stoma care has been recommended (Metcalf, 1999; Vujnovich, 2008) and the literature also demonstrates discussion as to whether stoma care should be managed by well-informed and experienced ward nurses or specialised stoma care nurses (Black, 2009; Brown and Randle, 2005; O'Connor, 2005; Rust, 2007; Wound, 2010). To assure quality of care, standardised supportive care plans should be

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available that allow for the key areas of care intervention to be identified. However, the use of standardised care plans is not intended to offer a ‘one size fits all approach to care’ and patients’ individual needs must be considered and used to individualise the standardised plans (Metcalfe, 1999; O’Connor, 2005; O’Shea, 2001). So far, there are no available standard care plans although international societies in the field of stoma care have provided practice guidelines and recommendations (Geng et al., 2009; Wound, 2010; Zulkowski et al., 2014) that could assist their construction.

A greater empirical attention to and a precise evidence based tool in stoma care are considered to be warranted. In general validated tools unique to stoma care are lacking and clinical practice is mainly based on clinical consensus. However, few studies have evaluated scales measuring QoL (Baxter et al., 2006; Gilbert et al., 2010; Grant et al., 2004; Marquis et al., 2003; Shih and Porter, 2011). Patient education is constantly evolving as evidenced by the recent introduction of the Urostomy Education Scale (UES) (Kristensen et al., 2013). This tool documents the patient’s level of stoma self-care skills and has been validated in different European countries concerning face, content and construct validity with promising results (Kristensen et al., 2013; Sublett, 2013). The UES contains internationally recognised minimum standards in stoma care categorised into seven skills considered necessary for changing a stoma appliance (Kristensen et al., 2013). The seven skills are: reaction to the stoma, removing the stoma appliance, measuring the stoma diameter, adjusting the size of the urostomy diameter in a new stoma appliance, skin care, fitting a new stoma appliance and the procedure for emptying stoma collection devices. Each skill is rated on a four-point scale ranging from 0 to 3 points depending on the patient’s need for support. The total score ranges from 0 to 21 points with higher scores indicating a higher level of independence to perform stoma self-care. Detailed information of the UES has been published previously (Jensen et al., 2013; Kristensen et al., 2013).

The UES makes it possible to perform a quantitative and evidence based measurement of the patient’s level of stoma self-care skills at various points of their care journey. Both the need for and the importance of this tool has been demonstrated to support a population with specific care needs in uro-oncology (Sublett, 2013). However, to optimise evidence informed care, the tool needs to confirm reliability. Reliability refers to the reproducibility, stability or consistency of information (Abramson and Abamson, 1999). The aim of this study was to test the inter-rater reliability among uro-oncology nurses with different levels of experience in educating patients to obtain stoma self-care skills.

The hypotheses were:

1. The UES is reliable with no variation in scores between groups of nurses with different levels of experience.
2. The UES is considered reliable if Limits of Agreement (LOA) document that more than 85% of total scores are within a range of two points.
3. The UES is considered reliable if LOA for each skill documents that more than 95% of scores are within a range of one point.

## 2. Methods

### 2.1. Participants

The study was a single centre validation study performed within the Urology department of a major teaching hospital in Denmark between 2011 and 2012. In total, 38 ward nurses skilled in stoma care attended 150 validation sessions evaluating 70 patients’ level of stoma self-care skills using the UES.

### 2.2. Sample

Pre-trial considerations were based on a pilot study referring to phase one in the validation process and reported previously in the literature (Kristensen et al., 2013). Aiming for a level of agreement of no less than 85% between observers (nurses skilled in stoma care) revealed a need for a minimum sample of 150 validation sessions. This would provide an estimated 95% confidence interval (CI) between 80% and 90% which was considered relevant for clinical practice.

### 2.3. Data collection

All of the 150 validation sessions included a total change of the stoma appliance performed on any postoperative day. According to local guidelines the patients were educated and instructed by nurses dedicated to advanced postoperative care following radical cystectomy. This group of nurses were randomly assigned to the in-ward patients with regards to their working schedule and administrated by an external staff-coordinator who was not involved in the clinical work. During hospitalisation the same patients were able to participate in more than one session and thereby represent different post-operative days. However, to avoid bias the same nurse was neither allowed to score the same patient more than once nor to be responsible for the primary care with the patient during the previous two days of caring.

To evaluate whether long-term experience in stoma care impacts on reliability, the ward nurses (observers) were divided into two categories partly informed by Patricia Benner’s ‘From Novice to Expert’ model (Benner, 2000).

- 1) *The inexperienced nurse*: This was deemed to represent the advanced beginner or competent nurse with  $\leq 2\frac{1}{2}$  years of experience in teaching stoma care.
- 2) *The experienced nurse*: This was deemed to represent the proficient or expert nurse with  $> 2\frac{1}{2}$  years of experience in teaching stoma care.

Novices were excluded from this study and the level of nurses’ experience was defined and monitored at baseline. Every nurse remained in the same category throughout the study period to secure independence of data. Moreover, as the personal stress level was expected to have a possible impact on the accuracy of the validation process this was measured in all nurses before every session using the Numerical Rating Scale (NRS) (Alzahem et al., 2011).

All observers were introduced to the UES before the commencement of the study. They attended the validation sessions in pairs and completed a full evaluation of the patient’s self-care skills using the UES. The combinations of the two observers were:

- a) Inexperienced nurse versus inexperienced nurse
- b) Experienced nurse versus experienced nurse
- c) Experienced nurse versus inexperienced nurse

The scoring process was blinded to both patients and staff. During the session the observers were not allowed to discuss the process either with the patient nor the nurse in charge of changing the appliance. The score of each skill was given immediately at the patient’s bedside and the final assessment was handed over to the project nurse at the end of the session.

The nurses and patients involved in the validation sessions were described with clinical and demographic variables (Table 1).

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