

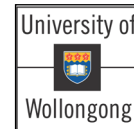


An Australian Government Initiative

Study funded by the Australian Government
Department of Health and Ageing as part of the
National Continence Management Strategy

The Development of the Revised Urinary Incontinence Scale (RUIS)

Jan Sansoni, Nick Marosszky, Emily Sansoni, Graeme Hawthorne



Outline

- ◆ History of Project
- ◆ Instruments
- ◆ Community Survey
- ◆ Psychometric analyses
 - Item endorsement and discrimination
 - Item-total correlations and internal consistency reliability
 - Exploratory factor analysis
- ◆ New instrument – RUIS
- ◆ Descriptive statistics
- ◆ Clinical Data
 - Before and After Treatment
 - Ceiling and Floor Effects
- ◆ Conclusions

Contenance Outcomes Measurement Suite

- ◆ In order to facilitate standardisation of the assessment of incontinence across Australia, and to enhance comparability of research findings, the Contenance Outcomes Measurement Suite (COMS) (Thomas et al., 2006) recommended a number of instruments / scales for the assessment of incontinence in research, specialist and community settings
- ◆ Transparent and systematic evaluation criteria were used throughout this report to evaluate each measure
- ◆ The recommended urinary incontinence scales included the King's Health Questionnaire, the Urogenital Distress Inventory-6 and the Incontinence Severity Index for urinary incontinence
- ◆ There was also an interim recommendation for the Wexner Faecal Continence Grading Scale for faecal incontinence although the authors identified some issues with this instrument

3

Refining Contenance Measurement Tools

- ◆ The COMS report then recommended the inclusion of a number of these incontinence scales in the 2004 South Australian Health Omnibus Survey (SAHOS) to obtain current prevalence estimates and to further assess their measurement properties. This is reported on in *Measuring Incontinence in Australia* (2006)
- ◆ The *Refining Contenance Measurement Tools* study used the SAHOS data to assess the psychometric properties of the Urogenital Distress Inventory-6 (UDI-6) and the Incontinence Severity Index (ISI)
- ◆ Psychometric analyses of the data used both Classical Test Theory and Modern Test Theory (IRT) approaches
- ◆ One aim was to see if better measures of incontinence could be derived from this data

4

Urogenital Distress Inventory-6 (Uebersax et al. 1995)

Do you experience and if so how much are you bothered by:

- Frequent urination
- Urine leakage related to the feeling of urgency
- Urine leakage related to physical activity, coughing or sneezing
- Small amounts of urine leakage (drops)
- Difficulty emptying your bladder
- Pain or discomfort in the lower abdominal or genital area

Responses = Not at all, Slightly, Moderately, Greatly

The score range used was 0 - 18

5

Incontinence Severity Index (Sandvik et al. 2000)

How often do you experience urine leakage?

*Responses = Never, Less than once a month,
A few times a month, A few times a week,
Everyday and/or night*

How much urine do you lose each time?

Responses = None, Drops, Small splashes, More

Severity Index = (points for frequency) x (points for amount)

Range = 0 - 12; producing a three or four level index

6

Community Survey: 2004 SAHOS

- ◆ Sampled all locations throughout SA with 1000+ inhabitants. Sampling from ABS collectors' districts, using a random starting point and every 4th dwelling
- ◆ Response rate = 72%; 4700 households were selected with **3015 interviews**. The sample comprised a total of 1202 males and 1713 females
- ◆ It should be noted that incontinence prevalence in the 75+ age group is probably underestimated as this survey only includes those in community residence
- ◆ For prevalence estimates the data was weighted by probability of selection and ABS 2001 census data to ensure representation; for the psychometric analyses unweighted data was used

7

Item endorsement and discrimination

- ◆ ISI estimated prevalence of urinary incontinence at **24%** overall (*By gender, it would be 38% for females and 10% for males*)
- ◆ UDI-6 estimated prevalence of urinary incontinence at **47%** overall (*For females it would be 60% and for males 33%*)
- ◆ ISI produces prevalence estimates far more consistent with the literature
- ◆ *Some items on the UDI-6 may be gaining endorsement from conditions other than urinary incontinence. If items on frequency of urination and abdominal pain are removed from the UDI-6, prevalence drops to **36%** overall and there is greater case agreement (87%) with ISI. If the emptying bladder item is removed prevalence = **32%***

8

Item-total correlations and internal consistency reliability

- ◆ Cronbach's Alpha for UDI-6 = **0.78**
- ◆ Cronbach's Alpha for ISI = **0.83** (Pearson correlation because ISI is a 2 item scale)

UDI-6: Item-total correlations and Cronbach's alpha

Item	Corrected Item –Total Correlation	Cronbach's Alpha if Item Deleted
Frequent urination	0.56	0.75
Urgency leakage	0.70	0.70
Stress leakage	0.57	0.73
Leak small amount	0.69	0.71
Emptying bladder	0.37	0.78
Pain lower abdominal	0.32	0.79

(Overall Cronbach's Alpha = 0.78)

Exploratory Factor Analysis

Item	Factor 1 (53%)	Factor 2 (14%)
Frequent urination	0.48	0.49
Urgency leakage	0.74	0.33
Stress leakage	0.82	0.09
Leak small amount	0.85	0.22
Emptying bladder	0.14	0.76
Pain lower abdominal	0.09	0.75
Leakage frequency	0.89	0.16
Leakage amount	0.89	0.13

Rotated Factor Matrix: Urinary Items

11

Interpretation

- ◆ Removal of some items from UDI-6 produces prevalence estimates closer to the ISI
- ◆ If items with marginal item-total correlations (emptying bladder and pain in the lower abdominal region) are removed from the UDI-6 its Cronbach's Alpha slightly improves to 0.81
- ◆ The Exploratory Factor Analysis of all urinary items produced a 2 factor structure explaining 67% of the variance. Rotated Factor 1 could be described as **urinary leakage / incontinence** (explains 53% variance) . The second factor could be described as **other urological symptoms** (explains only 14% variance)
- ◆ The 5 Items that loaded most highly on Factor 1 were selected for the **Revised Urinary Incontinence Scale (RUIS)**. Items such as 'emptying bladder' and 'pain lower abdominal' that did not load on this factor were excluded – it appears likely they may also be endorsed by those without urinary incontinence

12

Revised Urinary Incontinence Scale

Do you experience and if so how much are you bothered by:

- Urine leakage related to the feeling of urgency
- Urine leakage related to physical activity, coughing or sneezing
- Small amounts of urine leakage (drops)

Responses = Not at all, Slightly, Moderately, Greatly

How often do you experience urine leakage?

Responses = Never to Every day and/or night

How much urine do you lose each time?

Responses = None, Drops, Small splashes, More

Range = 0 - 16

13

Descriptive Statistics

Females	N	Mean	SD	Median	Range	
ISI	1712	0.98	1.96	0	0	12
UDI-6	1714	2.13	2.72	1	0	18
RUIS	1712	2.47	3.31	1	0	16

Males	N	Mean	SD	Median	Range	
ISI	1204	0.24	0.93	0	0	12
UDI-6	1203	0.98	1.85	0	0	16
RUIS	1203	0.70	1.82	0	0	14

RUIS: Cronbach's Alpha = 0.91

14

Clinical Data: Patient Satisfaction Study

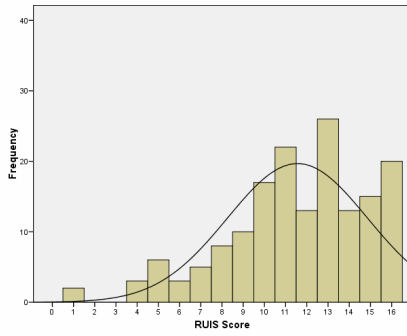
- ◆ Postal survey questionnaire (N = 178 females)
- ◆ Treatment for urinary incontinence in previous 12 months
- ◆ Sites: Royal Women’s Hospital, Melbourne and St. George Hospital, Sydney
- ◆ Treatment included: surgery only, physiotherapy only and mixed approaches
- ◆ RUIS measured retrospectively and concurrently using the THEN-TEST procedure

Clinical Data: Descriptive Statistics

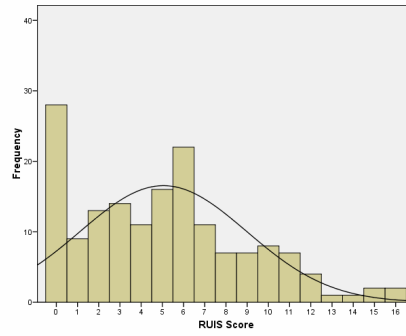
	N	Mean	SD	Median	Range	
RUIS Pre (retrospective)	163	11.56	3.31	12	1	16
RUIS Post (current)	163	5.04	3.93	5	0	16
RUIS Then-test change score	163	6.50	4.67	7	-5	16

RUIS: Before and After Treatment

RUIS Score Histogram Pre-Treatment (n = 163)



RUIS Score Histogram Post-Treatment (n = 163)



Clinical Data: Floor and Ceiling Effects

	%	Freq	N
RUIS Pre (retrospective)			
Percentage of clients at floor	0.0	0	163
Percentage of clients at ceiling	12.3	20	163
RUIS Post (current)			
Percentage of clients at floor	17.2	28	163
Percentage of clients at ceiling	1.2	2	163

Conclusions

- ◆ From a psychometric examination of the properties of the ISI and the UDI-6 a new scale, the RUIS, was developed
- ◆ The RUIS combines the two ISI items with three items (stress, urge, leak small amount) from the UDI-6
- ◆ The scale has good psychometric properties and could be considered by clinicians, researchers and epidemiologists looking for a short, valid and reliable scale of urinary incontinence (as defined by leakage)
- ◆ It is noted that this scale has been derived from statistical modelling and it is currently being further assessed in clinical settings
- ◆ Some clinical data has been collected during a recent patient satisfaction study but further clinical data, particularly from males, needs to be collected

19

Contact Details

AHOC WEB SITE:

<http://chsd.uow.edu.au/ahoc/>

E-MAIL:

marossz@uow.edu.au

20