

Age of menarche in contemporary British teenagers and those born between 1950 and 1965

Reference	Region	No of participants	Date of birth	Median age of menarche (95% CI)
Tanner <sup>4</sup>	London	7000	1950-7	13.0 (12.9 to 13.1)
Roberts et al <sup>11</sup>	North east England	1307	1954-9	13.3 (13.2 to 13.4)
Billewicz et al <sup>102</sup>	North east England	699	1962	13.4 (13.3 to 13.5)
Roberts et al <sup>103</sup>	North west England	1274	1960-5	13.3 (13.2 to 13.4)
Current study				
	Southern England	575	1982-6	13.1 (12.8 to 13.2)
	North west England	358		12.9 (12.7 to 13.2)
	South Wales	233		12.9 (12.6 to 13.2)
Overall		1166		12.9 (12.8 to 13.1)

Medians determined using probit method in earlier studies and survival analysis in current study.

and mid 20th centuries.<sup>2-4</sup> Secondly, even though no appreciable recent decrease in menarcheal age has occurred, almost one girl in eight reaches menarche

while still at primary school. This needs to be taken into account when providing sanitary facilities and health information for female pupils in primary school.

We thank all the participants for their help.

Contributors: PHW and DGC had the idea for the paper and designed the study with support from KO and SJCT. JAG carried out the analyses. PHW drafted the paper, with contributions from all authors. PHW and DGC will act as guarantors for the paper.

Funding: This study was funded by the Wellcome Trust (grant 051187/Z/97/A).

Competing interests: None declared.

- 1 Ellen B. Too much, too young... *Observer*, 18 Jun 2000;1:4.
- 2 Eveleth PB, Tanner JM. *Worldwide variation in human growth*, 2nd ed. Cambridge: Cambridge University Press, 1990.
- 3 Whincup PH, Cook DG, Adsheed F, Taylor S, Papacosta O, Walker M, et al. Cardiovascular risk factors in British children from towns with widely differing adult cardiovascular mortality. *BMJ* 1996;313:79-84.
- 4 Tanner JM. Trend towards earlier menarche in London, Oslo, Copenhagen, the Netherlands and Hungary. *Nature* 1973;243:95-6.

(Accepted 15 December 2000)

## Validity study of the severity index, a simple measure of urinary incontinence in women

Janet Hanley, Ann Capewell, Suzanne Hagen

Lothian Primary Care NHS Trust, Edenhall Hospital, Musselburgh EH21 7TZ

Janet Hanley  
research manager

Royal Victoria Hospital, Edinburgh EH4 2DN

Ann Capewell  
consultant physician  
in medicine of the elderly

Nursing Research Initiative for Scotland, Faculty of Health, Glasgow Caledonian University, Glasgow G4 0BA

Suzanne Hagen  
research adviser/  
statistician

Correspondence to:  
J Hanley  
Janet.Hanley@lpct.scot.nhs.uk

*BMJ* 2001;322:1096-7

Lack of a universally accepted, easily applied, outcome measure is one reason why urinary incontinence in women is poorly evaluated and treated.<sup>1</sup> The severity index, developed by Sandvik et al, is short and simple enough for use in almost any context.<sup>2</sup> We evaluated the reliability, validity, and sensitivity to change of the severity index in a wide range of women in Scotland.

### Methods and results

The severity index comprises the following two questions. How often do you experience urine leakage (0 = never, 1 = less than once a month, 2 = one or several times a month, 3 = one or several times a week, 4 = every day and/or night)? How much urine do you lose each time (1 = drops or little, 2 = more)? The total score is the score for the first question multiplied by the score for the second question (0 = dry, 1-2 = slight, 3-4 = moderate, 6-8 = severe). We added the category "dry" for women whose urinary incontinence was cured. A version of the index splitting the "severe" category into severe and very severe has recently been published.<sup>3</sup>

To investigate test-retest reliability, the revised index was administered to study participants twice, three days apart. To assess validity, 48 hour urinary diaries and measures of urine leakage over 48 hours (calculated by weighing of pads) were collected. To test sensitivity to change, participants being treated for their urinary incontinence completed the measures again 12 weeks after either surgery or first attendance at a non-surgical continence clinic. Age, physical

disability (Barthel index),<sup>4</sup> and cognitive disability (abbreviated mental test) were also recorded.<sup>5</sup>

Data were collected from women with stable incontinence not undergoing treatment, identified via community nurses; women undergoing initial assessment and non-surgical treatment at a continence clinic; and women awaiting surgical treatment (colposuspension) for stress incontinence. Those included were medically stable and either were cognitively intact (abbreviated mental test  $\geq 8$ ) or had a carer to help them.

Overall, 237 women were recruited (table). Community patients were significantly older ( $F_{2,234} = 113.6$ ,  $P < 0.001$ ), more cognitively impaired (Kruskal-Wallis  $\chi^2 = 34.1$ ,  $P < 0.001$ ), and more physically disabled ( $\chi^2 = 88.8$ ,  $P < 0.001$ ) than women in the two treatment groups. They also experienced greater urine leakage ( $\chi^2 = 31.6$ ,  $P < 0.001$ ) and more episodes of incontinence ( $\chi^2 = 26.8$ ,  $P < 0.001$ ).

Most women (202; 88%) recorded the same severity index response category on days 1 and 4 ( $\kappa = 0.78$ ,  $P < 0.001$ ). Test-retest reliability for each question was also good ( $\kappa = 0.69$  for question 1 and 0.83 for question 2,  $P < 0.001$  for both).

Higher severity index categories were associated with increasing urine leakage ( $r = 0.36$ ,  $P < 0.001$ ). Median urine leakage over 48 hours was 32 g for those in the "slight" category, 29 g for "moderate," and 143 g for "severe" ( $\chi^2 = 14.9$ ,  $P < 0.001$ ; mean ranks 41.8, 50.2, and 80.7 respectively). There was a similar association between severity index category and number of episodes of incontinence ( $r = 0.55$ ,  $P < 0.001$ ). The

median number of episodes of urinary incontinence over 48 hours was 0 for slight, 1 for moderate, and 6 for severe ( $\chi^2 = 67.3$ ,  $P < 0.001$ ; mean ranks 52.4, 79.0, and 141.1). These significant associations suggest that the severity index is measuring what it is intended to measure, the severity of the physical condition.

Sixty per cent of women in the two treatment groups moved to a lower severity index category after intervention. The surgery group had a significantly greater improvement in severity index than the clinic group (Mann-Whitney U test 442.5,  $P < 0.001$ ). Change in severity index category was significantly related to both change in amount of urine leakage ( $\chi^2 = 8.4$ ,  $P = 0.015$ ) and number of episodes of incontinence ( $\chi^2 = 24.1$ ,  $P < 0.001$ ). The severity index thus detected changes in these measures of urinary incontinence associated with treatment.

## Comment

The severity index is a short, simple, valid, reliable, and sensitive measure of urinary incontinence in women. It can therefore be recommended for routine use.

Contributors: JH contributed to the idea for and design of the study and conducted the research in Lothian and the initial drafting and revision of the paper. AC contributed to the idea for and design of the study and revision of the paper and negotiated access to clinical services in Lothian. SH was the research group leader, contributed to the idea for and design of the study and revision of the paper, conducted the research in Ayrshire, and analysed the data. Violet Millar negotiated access to clinical services in Ayrshire. Jean Donaldson collected data in Lothian. Louisa Sheward collected data in Ayrshire. JH, AC, and SH will act as guarantors for this paper.

Funding: Research grant from the Scottish Office Department of Health Chief Scientist Office.

Competing interests: None declared.

- 1 Elser DM, Fantl JA, McClish DK, and the Continence Program for Women Research Group. Comparison of "subjective" and "objective" measures of severity of urinary incontinence in women. *NeuroUrol Urodyn* 1995;14:311-6.
- 2 Sandvik H, Hunskaar S, Seim A, Hermstad R, Vanvik A, Bratt H. Validation of a severity index in female urinary incontinence and its implementation in an epidemiological survey. *J Epidemiol Community Health* 1993;47:497-9.

Baseline characteristics, measures of incontinence, and number (percentage) in each severity index category by patient group

	Patient group		
	Community	Continence clinic	Surgical
<b>Baseline</b>			
No	79	75	83
<b>Characteristics:</b>			
Mean (SD) age (years)	76 (12)	50 (14)	50 (12)
Mean (SD) Barthel score (maximum=20)	15.7 (3.2)	18.5 (1.1)	18.2 (0.9)
Mean (SD) abbreviated mental test score (maximum=10)	8.5 (1.5)	9.2 (0.8)	9.5 (0.9)
<b>Severity index category:</b>			
Slight	5 (6)	16 (21)	8 (10)
Moderate	16 (20)	33 (44)	18 (22)
Severe	58 (73)	26 (35)	57 (69)
<b>Measures of incontinence:</b>			
Median (range) urine leakage (g) in 48 hours	292 (5-3257)	41 (1-898)	32 (2-822)
Median (range) episodes of leakage in 48 hours	6.5 (0-47)	1 (0-24)	4 (0-23)
<b>After treatment</b>			
No	0	60*	69*
<b>Severity index category:</b>			
Dry		1 (2)	41 (59)
Slight		15 (25)	7 (10)
Moderate		27 (45)	17 (25)
Severe		17 (28)	4 (6)
<b>Measures of incontinence:</b>			
Median (range) urine leakage (g) in 48 hours		0 (0-542)	0 (0-32)
Median (range) episodes of leakage in 48 hours		0 (0-37)	0 (0-3)

\*Eighty five of these women (29 from the continence clinic and 56 surgical patients) reported in their urinary diaries that they were dry over 48 hours and declined to wear pads. A weight of urine of zero was assumed, although this could not be validated.

- 3 Sandvik H, Seim A, Vanvik A, Hunskaar S. A severity index for epidemiological surveys of female urinary incontinence: comparison with 48 hour pad-weighting tests. *NeuroUrol Urodyn* 2000;19:137-45.
  - 4 Mahoney FI, Barthel DW. Functional evaluation: the Barthel index. *Maryland State Medical Journal* 1965;14:61-5.
  - 5 Hodkinson HM. Evaluation of a mental test score for assessment of mental impairment in the elderly. *Age Ageing* 1972;1:233-8.
- (Accepted 23 January 2001)

## Correction

*Hepatitis associated with Kava, a herbal remedy for anxiety*

An editorial error occurred in this drug point by Escher and colleagues (20 January, p 139). The proprietary name for Kava should have been given as Laitan [not Laitain].

## A memorable patient

### A magnificent woman

Usually she saw one of my colleagues about her chronic polycythaemia vera, osteoarthritis, oesophagitis, asthma, hypertension, and hypercholesterolaemia. My turn came when she had a fixed drug eruption. It wasn't too difficult to sort out with some judicious juggling of her medication. She was suitably impressed and started to see me with all her other problems, none of which I could solve. Gradually it dawned on me that she wasn't necessarily expecting a cure, more an explanation and a shared approach.

She was massively built but "carried herself well" (as my mother would have said). She was scarily intelligent and an accomplished cook, painter, and gardener. Her father, a Jewish urologist, had been turned out of several different countries across Europe. After a wealthy and privileged start her family had suffered hunger and poverty. Her father eventually became a general practitioner in a Nottinghamshire colliery town, where he was

highly respected. In her own way she demanded respect. One could hide nothing from her.

At Christmas her polycythaemia switched into myeloid leukaemia. She demanded a frank prognosis, and her haematologist told her that she might not even get home for a final time. She summoned her solicitor and one of her doctors. It was the day after Boxing Day. To have ignored her request would have been like refusing to go to Buckingham Palace. I sat by the hospital bed blowing noisily into her tissues as she calmly informed me which sculpture or painting was to go to which doctor and why.

After her death I went to collect my painting. I would never have forgotten this fierce, independent, magnificent woman, but she was making sure that I wouldn't. It is, however, rather enormous (just like her).

Jane Rakowski *general practitioner, Liverpool*