

# **Weight loss and Urinary Incontinence**

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# Urinary incontinence

The complaint of **ANY** involuntary leakage of urine

Abrams 2002

Affects millions of women

More common than: diabetes, hypertension, depression or breast cancer

Disability

Lost productivity

Avoidance of sexual activity

Dolan (1999)

# Not Always About Age

A prevalence study of 34,755 women from Norway (EPINCONT)

- Adult life: 20%-30%
- Middle age: 30%- 40%
- Elderly: 30%-50%
  
- Overall: 25%

Hannestad 2000

# Effects on Quality of Life

- Fear of losing bladder control
- Impact on lifestyle and avoidance of activities
- Embarrassment
- Impact on sexual relationships

# Obesity

- A greater problem, in terms of its prevalence, impact on QoL and general health implications

WHO 1997

- Prevalence has reached epidemic proportions
- 300 million obese women worldwide

WHO 2003

- 400,000 deaths per year in USA are obesity related

Allison et al. 1999

# Obesity and urinary incontinence

A strong association reported in many epidemiological studies

- In 28,000 women from the EPINCONT study, increased BMI was strongly associated with all types of UI
- Obese women were three times more at risk of severe UI than those with normal weight

Hannestad 2003

# Obesity and urinary incontinence

- 30982 women from the Nurses' Health Study  
Higher BMI was significantly associated with increasing odds of developing all types of UI

Townsend 2007

- In a study of 7949 women  
Each 5-unit increase in BMI is associated with a 60% increase in the risk of daily UI

Brown 1996

# How does obesity cause incontinence?

How excess weight might cause or aggravate UI is not clear

The following have been proposed as possible mechanisms:

- Increase in intravesical pressure created by accumulation of abdominal fat might overcome the continence mechanism

Bai 2002

# How does obesity cause incontinence?

- Chronic stretch on the endopelvic fascia and pudendal nerve

Noblett 1997

- Disability and mobility problems
- Diabetes mellitus (autonomic neuropathy)

Holmes 2005

# The effect of weight loss on urinary incontinence

- Four interventional trials
  - Deitel 1988
  - Bump 1992
  - Subak 2002
  - Subak 2005
- No objective assessment
- Mechanism of improvement not evaluated

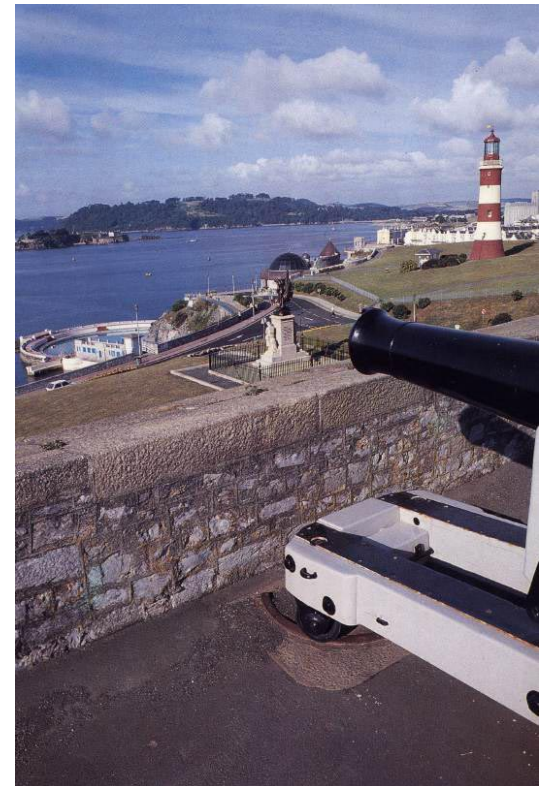
# The Effects of Weight Loss in Obese Incontinent Women

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# Study design

- Original design: RCT
- Final design: prospective cohort study
- Aims:
  - Can weight reduction improve urinary continence in moderately obese women?
  - If yes, what is the mechanism(s)?
- Inclusion Criteria: UI& BMI of 30 to 39.9
- Exclusion Criteria: anti-incontinence surgery, symptomatic prolapse, drug treatment

# Materials and methods

- Weight loss programme
  - Low calorie diet
  - Exercise regimen (light aerobics)
  - Target loss: 5-10% reduction of the baseline weight
  - Anti-obesity drug (Orlistat)
- Primary outcome measures
  - 24 hour pad test
  - Kings Health Questionnaire (KHQ)
- Secondary outcome measures
  - Pelvic floor strength
  - Bladder neck mobility
  - Urodynamics

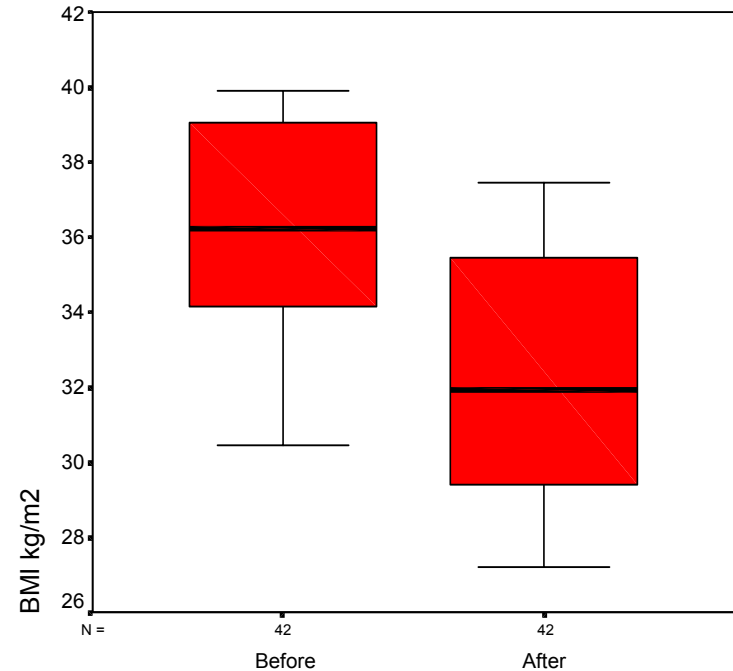
# Results

64 women recruited

42 (65%) achieved a weight loss  $\geq 5\%$

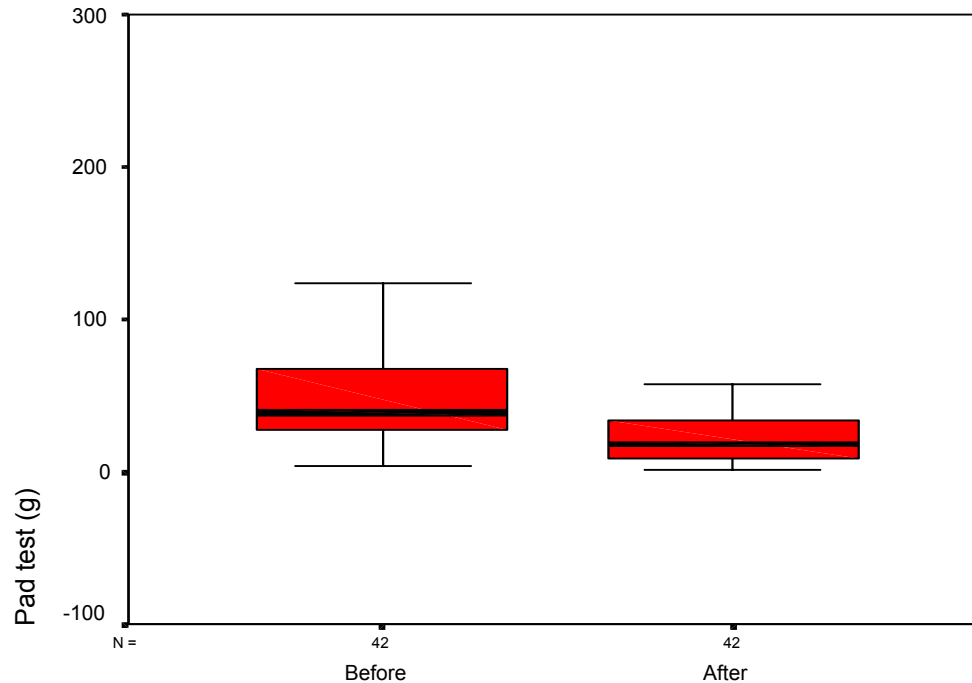
|                                | <b>N (%)</b>                  | <b>Median</b> | <b>IQR</b> |
|--------------------------------|-------------------------------|---------------|------------|
| <b>Age (yrs)</b>               |                               | 53            | 44-62      |
| <b>Parity</b>                  |                               | 2             | 2-3        |
| <b>Weight (kg)</b>             |                               | 94            | 87.8-100.3 |
| <b>BMI (kg/ m<sup>2</sup>)</b> |                               | 36.4          | 34.3-39.1  |
| <b>Menopausal status</b>       | Pre 24(57.1)<br>Post 18(42.8) |               |            |
| <b>History of hysterectomy</b> | 5 (11.9)                      |               |            |
| <b>HRT</b>                     | 2 (4.7)                       |               |            |
| <b>USI</b>                     | 21 (50)                       |               |            |
| <b>Mixed</b>                   | 13 (30.9)                     |               |            |
| <b>DOI</b>                     | 8 (19.1)                      |               |            |

# Weight Loss



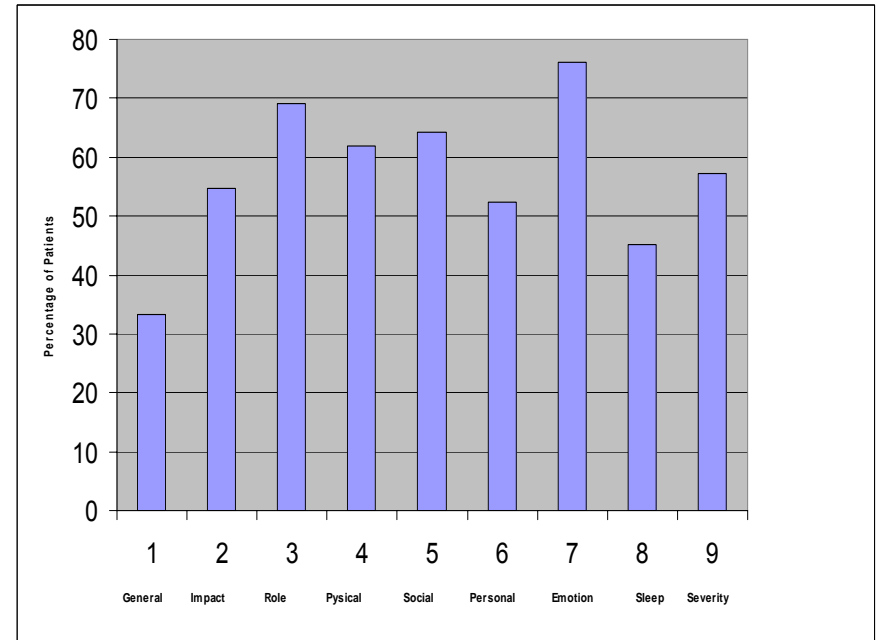
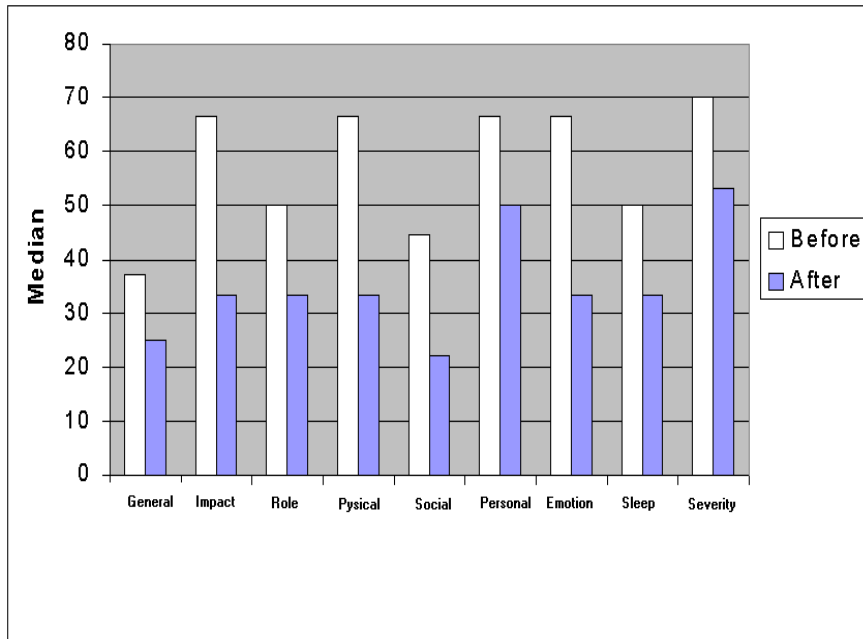
- 22 women lost 5-9% and 20 lost  $\geq 10\%$
- Significant reduction in BMI ( $p < 0.001$ )

# Pad test



Median pad weight was 38.7g at the beginning of the study and 18.5 g after weight loss ( $p < 0.001$ )

# Kings Health Questionnaire

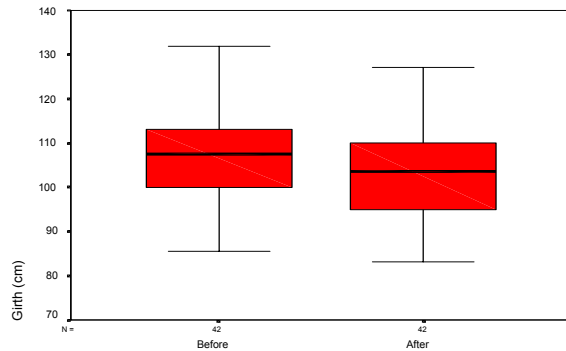


- Statistically significant improvement in all KHQ domains
- Meaningful clinical improvement

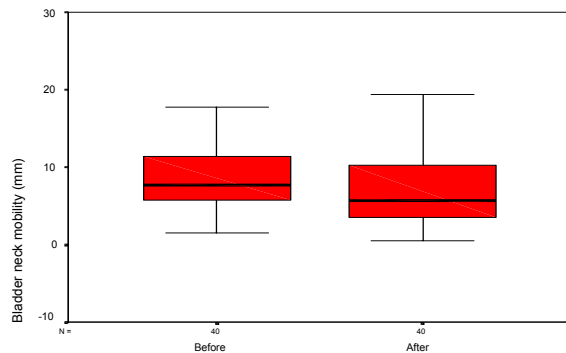
# Urodynamics

|              | Post weight reduction |     |     |       |
|--------------|-----------------------|-----|-----|-------|
| Baseline     | Normal                | USI | DOI | Mixed |
| USI (n=20)   | 8                     | 12  | 0   | 0     |
| DOI (n=8)    | 0                     | 0   | 8   | 0     |
| Mixed (n=8)  | 0                     | 1   | 1   | 6     |
| Total (n=36) | 8                     | 13  | 9   | 6     |

# Mechanism of improvement



- Significant reduction in abdominal girth ( $p < 0.001$ )



- Significant difference in BN mobility ( $p < 0.001$ )

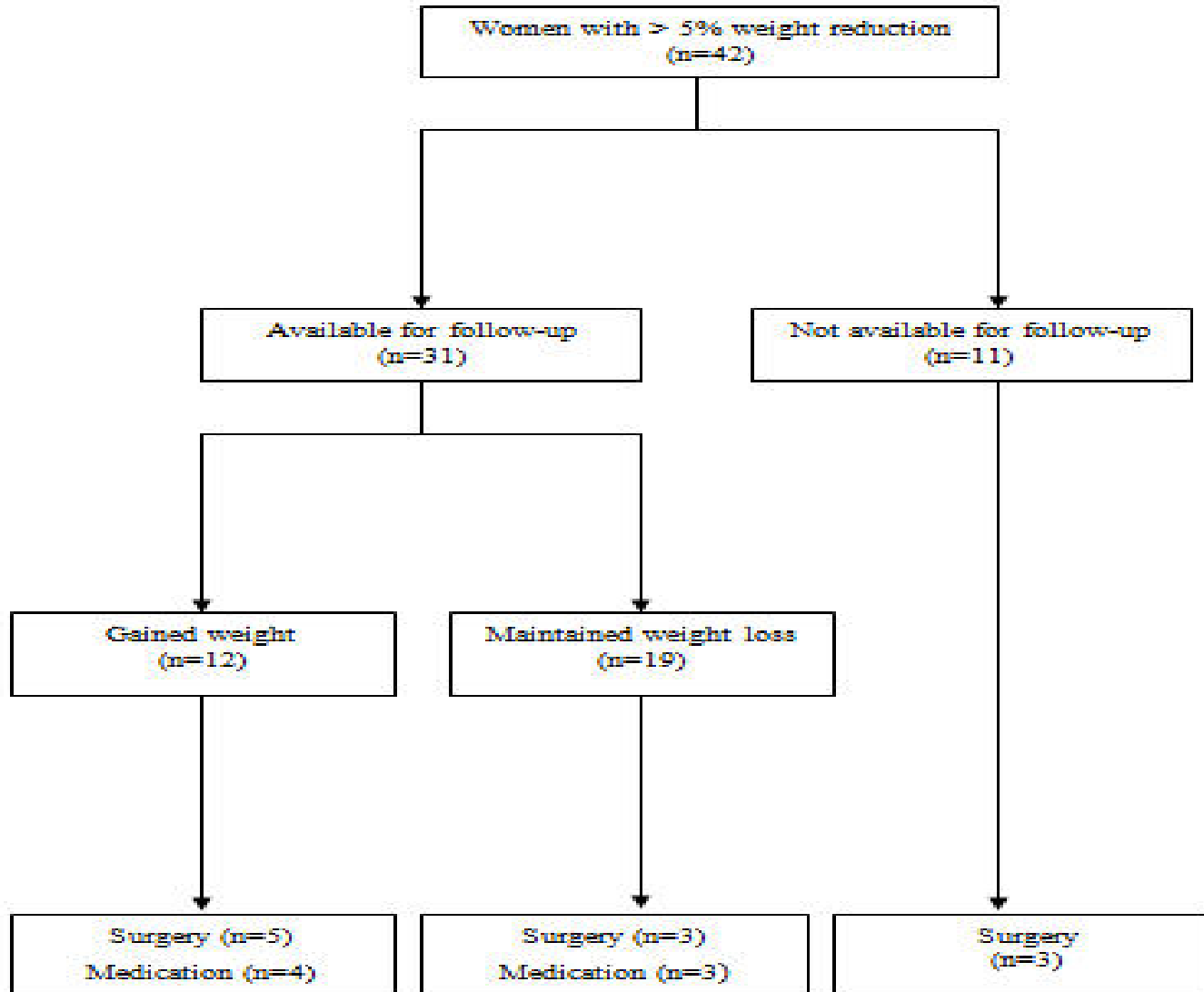
# Long-term follow-up

- Weight loss might not be beneficial in the long-term, as women might regain weight
- This study aimed to assess weight and urinary continence status (in the long-term) in women who improved after weight reduction

# Methods

- The cohort of women who lost  $\geq 5\%$  of their baseline weight was followed-up three years later
- Women were contacted by telephone and invited to attend hospital (weight, KHQ, 24 hour pad test)
- Women were asked about further treatments received for their obesity and UI
- All case notes were reviewed

# Results



# Results

| Domains                  | Baseline | 3-yrs F/U | Mean difference<br>(95% CI) | p value | Post wt.<br>rd. | Mean difference*<br>(95% CI) | P<br>value |
|--------------------------|----------|-----------|-----------------------------|---------|-----------------|------------------------------|------------|
|                          | Mean     |           |                             |         | Mean            |                              |            |
| <b>Ghp</b>               | 38.89    | 30.56     | 8.33<br>(-3.72-20.39)       | 0.163   | 27.78           | -2.78<br>(-11.19-5.63)       | 0.495      |
| <b>Inc. impc.</b>        | 72.22    | 38.89     | 33.33<br>(16.27-50.39)      | 0.001   | 48.15           | 9.26<br>(-10.28-28.79)       | 0.331      |
| <b>Role</b>              | 47.22    | 23.15     | 24.07<br>(5.60-42.54)       | 0.014   | 29.63           | 6.48<br>(-9.88-22.85)        | 0.415      |
| <b>Physical</b>          | 56.48    | 31.48     | 25.00<br>(8.12-41.87)       | 0.006   | 32.41           | 0.93<br>(-13.97-15.83)       | 0.897      |
| <b>Social</b>            | 37.65    | 18.83     | 18.82<br>(7.41-30.24)       | 0.003   | 25.93           | 7.10<br>(-7.76-21.96)        | 0.328      |
| <b>Personal</b>          | 58.82    | 32.05     | 26.77<br>(7.20-54.33)       | 0.015   | 55.13           | 23.08<br>(0.73-45.42)        | 0.044      |
| <b>Emotions</b>          | 56.79    | 22.84     | 33.95<br>(15.92-51.97)      | 0.001   | 29.63           | 6.79<br>(-9.86-23.44)        | 0.401      |
| <b>Sleep/<br/>energy</b> | 58.33    | 50.00     | 8.33<br>(-6.23-22.89)       | 0.224   | 41.67           | -8.33<br>(-23.17-6.51)       | 0.252      |
| <b>Severity</b>          | 70.74    | 40.74     | 30.00<br>(13.98-46.01)      | 0.001   | 54.44           | 13.70<br>(-3.67-31.08)       | 0.114      |

# Conclusion

- Weight loss is an effective treatment for obese incontinent women
- Might reduce the need for surgical and drug therapy
- The favorable effect of weight loss on UI can be maintained in the long-term in a significant proportion of patients
- Might make weight reduction more attractive
- Impact on public health and cost

Int Urogynecol J Pelvic Floor Dysfunct. 2008 Sep;19(9):1251-9. Epub 2008 Apr 18.

## **Moderate weight loss in obese women with urinary incontinence: a prospective longitudinal study.**

Auwad W, Steggles P, Bombieri L, Waterfield M, Wilkin T, Freeman R.

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This study assessed the effect of moderate weight loss in obese women with urodynamically proven urinary incontinence using the International Consultation on Incontinence recommended outcome measures. Sixty-four incontinent women were offered a weight reduction programme with a target loss of 5-10%. This included a low-calorie diet and exercise. An anti-obesity drug (Orlistat) was offered to those who failed to achieve their target. Forty-two (65%) achieved the target weight loss and had significant reduction in body mass index and girth. Weight loss was associated with significant reduction in pad test loss (median difference, 19 g; 95% confidence interval, 13-28 g;  $p < 0.001$ ). There was also a clinical and statistically significant improvement in quality of life measures. These results suggest that weight reduction of 5% of initial body weight can improve urinary incontinence severity and its effects on quality of life in obese women.