

# Obesity and Incontinence

Monkhouse K<sup>1</sup>, Caldwell PHY<sup>1,2</sup>, Barnes L<sup>1,2</sup>

<sup>1</sup>The Children's Hospital at Westmead. Westmead, NSW, Australia,

<sup>2</sup>The University of Sydney. Camperdown, NSW, Australia



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# Is urinary incontinence associated with childhood obesity?



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## Why?

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# Incontinence affects many!

- Nocturnal Enuresis (NE) prevalence is 5-10% in children aged 5-10 yrs of age (Austin et al)
- Daytime Urinary Incontinence (DUI) affects 3-5% of children between 5-17 yrs of age in Australia. (Continence foundation of Australia)



## Why? - Obesity is becoming an epidemic

25% of children aged 5 – 17 years are overweight or obese  
(ABS 2012)



## What do we know?

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- Body Mass Index (BMI) is an established risk factor for urinary incontinence in adults. (Subak & Hunskaar)
- Studies have shown that in women, there is a linear dose-response relationship between BMI and UI. (Wesnes)
- In a 2010 RCT, weight losses of 5-10% were associated with significant improvement in continence in overweight and obese women. (Wing et al)





## What we know and what we don't...

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- Schwartz has shown that urinary incontinence affects more than 10% of obese adolescent girls.

**The relationship between childhood obesity and enuresis had not been fully established.**



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## Food for thought... (unpublished data)

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- **2011:**

- Dr. Saltman and A Prof Caldwell
- 287 patients
- Tertiary referral centre for incontinence

**Key finding:** Females who were overweight and obese had a higher prevalence of DUI than their normal weight counterparts



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## Therefore...

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Knowing that obesity has been proven to be a significant risk factor in urinary incontinence in adult women, we proposed it was important to establish the relationship between excess weight and wetting.

**Understanding this relationship may allow us to better determine how we can best address this condition.**





# Is urinary incontinence associated with childhood obesity?

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## Study aim:

- to determine in children aged 5-18 years of age presenting with incontinence to a tertiary hospital incontinence clinic, whether there is an association between weight, gender and type of incontinence: daytime urinary incontinence, nocturnal enuresis or both.

## Additional risk factors reviewed:

- age, obstructive sleep apnoea (OSA) and constipation



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## Methods

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- retrospective review of medical records over 11 year period
- random sample of 1000 out 2022 patient records chosen
- standardized assessment form used to collect the data from the initial assessment
- each patient's initial assessment form was accessed and reviewed



## Inclusion Criteria

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- Children from age 5-18 years of age with nocturnal enuresis (NE) or daytime urinary incontinence (DUI)
- Children with a minimum wetting frequency of one episode/month were considered to have NE
- Children with a minimum wetting frequency of one episode/month were considered to have DUI



## Exclusion Criteria

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- Children less than 5 years of age
- Children attending first clinic prior to Jan 2004
- Children whom anthropometric data were missing
- Children with a neurological condition affecting bladder control, urological conditions affecting bladder control or conditions which impacted on bowel function



## Patient Demographics

Demographics	Total patients n=862 (%)
<b>Sex (male/female)</b>	465/397 (53.9%/46.1%)
<b>Mean age (years)</b>	8.8 (+/- 2.7)
<b>BMI categories</b>	
Underweight/Normal <sup>a</sup>	622 (72%)
Overweight/Obese <sup>b</sup>	240 (27.8%)
<b>Type of Incontinence (NE)</b>	
Primary	685 (79.5%)
Secondary	108 (12.5%)
<b>NE alone</b>	307 (35.6%)
<b>DUI alone</b>	67 (7.8%)
<b>Combined NE and DUI</b>	488 (56.6%)
<b>Constipation<sup>c</sup></b>	379 (45.2%)
<b>Sleep disordered breathing</b>	236 (27.4%)



## Gender by Wetting Type

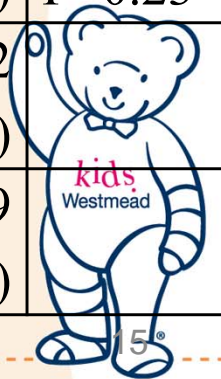
(p <.0001)	NE	DUI	NE & DUI	Total
<b>Female</b> n (%)	103 (25.9%)	53 (13.4%)	241 (60.7%)	397
<b>Male</b> n (%)	204 (43.9%)	14 (3.0%)	247 (53.1%)	465
<b>Total</b>	307	67	488	862





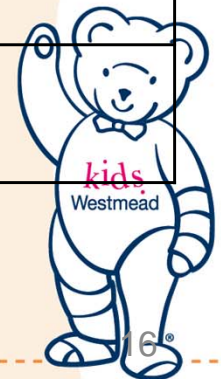
## Frequency and relationships between weight and wetting

Characteristic	Value	Underweight/ Normal	Overweight /Obese	OR (95% CI)	P-value
		n (%)	n (%)		
<b>All patients</b>		n=622	n=240		
<b>Sex</b>	Female	275 (44%)	122 (51%)	1.00 (ref)	P=0.08
	Male	347 (56%)	118 (49%)	0.77 (0.57-1.03)	
<b>Wetting type</b>	NE only	214 (34%)	93 (39%)	1.00 (ref)	P=0.23
	DUI only	45 (7%)	22 (9%)	1.12 (0.64-1.98)	
	NE+DUI	363 (58%)	125 (52%)	0.79 (0.58-1.09)	



## Frequency and relationships between weight and wetting

Characteristic	Value	Underweight/ Normal	Overweight /Obese	OR (95% CI)	P-value
		n (%)	n (%)		
<b>NE (alone or with DUI)</b>		N=577	N=218		
<b>Sex</b>	Females	240 (42%)	104 (48%)	1.00 (ref)	P=0.12
	Males	337 (58%)	114 (52%)	0.78 (0.57-1.07)	
<b>Frequency</b>	<4 episodes per week	99 (17%)	41 (19%)	1.00 (ref)	P=0.59
	≥4 episodes per week	478 (83%)	177 (82%)	0.89 (0.60-1.34)	



## Frequency and relationships between weight and wetting

Characteristic	Value	Underweight/ Normal	Overweight /Obese	OR (95% CI)	P-value
		n (%)	n (%)		
<b>DUI (alone or with NE)</b>		N=408	N=147		
<b>Sex</b>	Females	205 (50%)	89 (61%)	1.00 (ref)	P=0.03
	Males	203 (50%)	58 (39%)	0.66 (0.45-0.97)	
<b>Frequency</b>	<4 episodes per week	197 (48%)	62 (42%)	1.00 (ref)	P=0.20
	≥4 episodes per week	211 (52%)	85 (58%)	1.28 (0.87-1.87)	



## Relationships between weight and other factors which influence wetting

Characteristic	Value	Underweight/ Normal	Overweight/ Obese	OR (95% CI)	P-value
		n (%)	n (%)		
<b>*Constipation (23 missing data)</b>	No	321 (53%)	139 (59%)	1.00 (ref)	P=0.14
	Yes	282 (47%)	97 (41%)	0.79 (0.59-1.08)	
<b>Sleep Disordered Breathing</b>	No	465 (75%)	161 (67%)	1.00 (ref)	P=0.02
	Yes	157 (25%)	79 (33%)	1.45 (1.05-2.01)	



\* Sample size = 839

## Conclusion

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- in a large population of children with incontinence, increased weight was not associated with DUI or NE
- weight does not appear to be an independent risk factor for wetting



## Where to from here?

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- Further population studies in community paediatric populations may be useful to assess whether incontinence is more common in the overweight and obese children in a general population.
- Explore incontinence in the various subpopulations: (teenage girls, children with OSA, children with stress incontinence) and review their associations with weight.





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## Ultimately...

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When faced in a clinical setting with an overweight or obese child who presents with incontinence, regardless the type or the severity; one can be reassured that BMI alone is unlikely to be contributing to the pathophysiology.

In order to aid the child and family, all of whom may be experiencing quality of life issues; one must assess the incontinence holistically and tailor a multifaceted approach to treatment to address the number of confounding factors, which may contribute to the child's wetting.



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- Assoc Professor P Caldwell - invaluable supervisor and incontinence expert
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# Questions?

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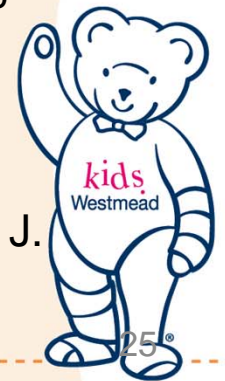
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