

CK Yeung 楊重光  
 JDY Sihoe 司徒達燕  
 FKY Sit  
 W Bower  
 B Sreedhar  
 JTF Lau 劉德輝

# Epidemiological study of primary nocturnal enuresis (bed-wetting) in young adults in Hong Kong

## Key Messages

1. Over 2% of young adults in Hong Kong have persistent bed-wetting and experience negative psychosocial effects from the disorder. Unlike the condition in early childhood, the prevalence remains constant with advancing age. Thus, enuretic symptoms that persist into adulthood are unlikely to disappear with time.
2. A significant proportion (53%) of adult sufferers had either moderate or severe forms of enuresis, with wetting occurring more than 3 nights per week.

## Introduction

Although it is well known that up to 19% of children do not have perfect bladder control at night, until recently nobody knew whether the problem also occurred in Hong Kong Chinese adults. An epidemiological study of 21 000 children (5-19 years) in Hong Kong revealed that at 7 years of age, 10.9% of boys and 9.4% of girls still experienced bed-wetting.<sup>1</sup> Although the overall prevalence decreased as the children became older, the proportion of frequent or severe bed-wetters who wet more than 3 nights per week progressively increased with increasing age. Perhaps symptom frequency is associated with a higher chance of persistent enuretic symptoms into later life.<sup>1</sup> Such persistent symptoms may also be associated with underlying bladder dysfunction. Clearly a more detailed evaluation of the epidemiology and characteristics of nocturnal enuresis in adults was indicated.

The aims of the present study were to identify the prevalence and characteristics of nocturnal enuresis among young adults in Hong Kong, and to assess any adverse effects of the disorder on the socio-economic and psychological status of those affected.

## Methods

This study was conducted from September 2000 to February 2002.

### Sample size

Researchers from the Division of Paediatric Surgery at the Chinese University of Hong Kong explored this question by surveying 8500 adults over the telephone.

### Study design

Adults between the ages of 16 and 40 years were randomly selected and telephone contact was attempted on up to three occasions during evenings and weekends. If the individual was available and willing, interviewers asked some general questions about their demographic background and then connected each person to a confidential Infoline service.

### Study instrument

Questions about enuretic symptoms, the social and psychological impact of bed-wetting, and self-esteem were asked by recorded messages and answers automated. Three hundred age-matched adults who did not have any symptoms of bed-wetting were similarly interviewed for comparison.

## Results

Nearly 3% of all men and 2% of women under the age of 40 years admitted to having problems with bladder control whilst asleep. One quarter of the sufferers experienced the problem every night, while around half were wet up to 3 nights in the week. This frequency of wetting indicates severe symptoms and dispels the myth that the condition improves as individuals become older, indicating that bed-wetting in adults is very unlikely to cease spontaneously.

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Department of Surgery, The Chinese University of Hong Kong, Shatin, NT, Hong Kong SAR, China

CK Yeung, JDY Sihoe, FKY Sit, W Bower, B Sreedhar

Centre for Clinical Trials and Epidemiological Research, The Chinese University of Hong Kong, Shatin, NT, Hong Kong SAR, China  
 JTF Lau

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Principal applicant and corresponding author:  
 Prof CK Yeung  
 Department of Surgery, The Chinese University of Hong Kong, Shatin, NT, Hong Kong SAR, China  
 Tel: (852) 2632 2953  
 Fax: (852) 2637 7974  
 E-mail: ckyeung@cuhk.edu.hk

The research team compared 300 people who did not have night bladder problems with the adults who did and found that sufferers were significantly more likely to have low self-esteem. This difference was most marked in single male enuretic sufferers, who had significantly lower scores than both male controls and female enuretic sufferers. Evaluation of depression, using The Centre for Epidemiological Studies Depression Scale, revealed that all adults reporting nocturnal enuresis had significantly higher depression scores than the controls who did not wet the bed during sleep ( $P < 0.004$ ). This difference was unrelated to gender or marital status.

The affected group also reported more difficulty falling sleeping and woke up more often during the night or very early in the morning. Up to 40% of adults with bed-wetting felt that the problem affected their employment performance and social and family interactions. There was no significant gender difference in psychological impact. Despite all the negative effects of this disorder, it seems that very few people knew how to manage the problem. Only 34.5% of females and 50% of males had sought help, including medical advice to ameliorate their bed-wetting symptoms.

Problems at night do not appear to occur in isolation, as significantly more sufferers compared to the controls reported experiencing bladder urgency, needing to toilet frequently, or some wetness during the day. All such symptoms were significantly more common in subjects with nocturnal enuresis compared to the normal controls. Overall, 29.6% of enuretic sufferers reported increased daytime urinary frequency, and the prevalence increased significantly with increasing age. Urinary urgency was reported in 37.2% of subjects with nocturnal enuresis. Daytime urinary incontinence was significantly more prevalent in women; overall it was reported in 18.4% of affected subjects. The prevalence of both urgency and incontinence was unrelated to age.

Compared to controls, significantly less enuretic subjects reached tertiary education (33.4% vs 17.8% respectively;  $P < 0.01$ ), and significantly fewer subjects with nocturnal enuresis and either urinary incontinence or urinary frequency reached tertiary education. Females with enuresis or incontinence or both symptoms reported significantly lower educational levels than similarly affected males.

## Discussion

Data from this study indicate that over 2% of young adults in Hong Kong have persistent bed-wetting and experience negative psychosocial effects from the disorder. Unlike the condition in early childhood, its prevalence remains relatively unchanged with advancing age. Thus, enuretic symptoms that persist into adulthood are unlikely to disappear.

Findings from this study highlight the fact that a

significant proportion (53%) of adult sufferers had either moderate or severe forms of enuresis, with wetting occurring more than 3 nights per week. This is in stark contrast to enuretic frequency observed in the paediatric population, where the majority of affected children experience bed-wetting episodes less than once per week.<sup>1-5</sup> It also suggests that primary nocturnal enuresis in adults may represent a more pronounced and refractory form of the condition that persists from childhood.

In recent years the condition of nocturnal enuresis has become better understood. It is currently believed that three factors interact to determine whether a person can be dry during the night. First, the bladder must have the ability to store the urine made by the kidneys during sleep. Second, the brain needs to be able to respond to messages to wake when the bladder is near its limit of storage. Third, the amount of urine produced by the kidneys should not exceed the holding capacity of the bladder. It is now recognised that nocturnal enuresis is a heterogeneous disorder with various underlying pathophysiological mechanisms. Recent studies have shown that abnormal bladder function, including small bladder capacity, instability during sleep and detrusor overactivity due to bladder outflow obstruction, are common among enuretic children with severe refractory symptoms and treatment failure.<sup>6-10</sup> If bed-wetting in adults represents a more pronounced and refractory form of the condition persisting from childhood, then perhaps many adult enuretic patients may also have some form of bladder dysfunction. This study revealed significantly more urinary symptoms (frequency, urgency, and incontinence) suggestive of underlying bladder dysfunctions in adult enuretic sufferers as compared to unaffected controls. Similar findings among adult enuretics have been reported previously.<sup>1-13</sup> Collectively, these studies and ours suggest that adult sufferers are likely to have one or more underlying disorder of the urinary bladder that has not been recognised.

Further study of this group of adult enuretic patients, who generally have more pronounced and persistent symptoms than most affected children, may add to the understanding of bladder dysfunction in the complex pathogenesis of this disorder. As intervention studies on effective treatment in this population are scarce, the issue of adult enuresis management warrants further research. Ultimately the ability to provide sufferers with a clear explanation of the problems underlying their symptoms, and effective relevant treatment options, will allow the clinician to impact both the causative physiology and its psychological ramifications.

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