CHAPTER I

INTRODUCTION

STATEMENT OF THE PROBLEMS

" Enuresis " , the term itself is derived from the Greek " enourein " and denotes only the voiding of urine , over the years the term has acquired both a pathological and a nocturnal connotation. Daytime wetting is correctly referred to as diurnal enuresis , while nighttime wetting is referred to as nocturnal enuresis.

Functional enuresis is defined by DSM IV as " repeated voiding of urine during the day or at night into bed or clothes at least twice per week for at least 3 months or else must cause clinically significant distress or impairment in school , academic or other important areas of functioning." The child must also have reached an age at which continence could definitely be expected. (DSM IV utilizes a chronological age of 5 as a cutoff or a mental age of 5 for those children with developmental delays). The wetting must not be the result of the direct physiological effects of substance or a general medical condition. (e.g., diabetes , spina bifida , seizure disorder).

There are three subtypes of enuresis : nocturnal (nighttime wetting) , diurnal (daytime wetting) and mixed (day and night wetting). Almost all of enuretic children have nocturnal enuresis which is usually defined as repeated involuntary passage of urine during sleep in the absence of any identified physical abnormality in children aged above 5 years. Although the condition is not psychogenic , it is often associated with psychiatric disorder and enuretic children are frequently referred to psychiatrist for treatment.

The prevalence of enuresis decreases with increasing age.Thus,82 percent of 2-year olds . 49 percent of 3-year olds , 26 percent of 4-year olds and 7-10 percent of 5 year olds have been reported to be enuretic on a regular basic. However , prevalence rates vary, depending on the population studied , severity of the disorder and the tolerance for the symptoms in various cultures and socioeconomic group.[1] For example , in the Isle of Wight Study found that 15.2% of boys were wet less often than once a week , while only 6-7% wet at least once a week. The corresponding figures for girls were 12.2 and 3.2%. By the age 14 only 1.9% of boys were wet less often than once a week , and 1.1% were at least once a week, with the corresponding figures for girls being 1.2 and 0.5%.[2] A Scandinavian study of 3,206 , 7-year old Children found an overall prevalence of 9.8% ; 6.4% of this group was accounted for by children with night wetting , 1.8% by day wetting and 1.6% by those with mixed day and night wetting.[3] An 8-year longitudinal study in New Zealand found a prevalence of 7.4% for nocturnal enuresis in 8-year olds. This figure was accounted for by 3.3% with primary enuresis and 4.1% with secondary enuresis.[4] Bed wetting is equally common in each sex until 5 years, then boys predominate, so that by age of 11 , they are twice as likely to be wet as girls.[5]

Normal bladder control is acquired gradually and is influenced by neuromuscular and cognitive development , socio - emotional factors , toilet training and possibly genetic factors (about 75 percent of enuretic children have a first-degree relative who is or was enuretic. The concordance rate is higher in monozygotic twins than in dizygotic twins). Difficulties in one or more of those areas may delay urinary continence.

DSM IV cites a spontaneoues remission rate at around 10 percent per year after age 5 years. The likelihood that a child will be continent spontaneously is reduced sharply after age 4.,[6] and associated psychopathology is more commonly found in the child who is still incontinent at age more than 3 years.[7]

There are at least 3 reasons for diagnosing the children as enuretics if they still have bedwetting after the age of 5 years.

1. The developmental perspective : the child should be continent for the daytime at the age about 2 -2.5 years and for the nighttime at the age about 3 -3.5 years , not more than the age of 4 years.

2. The likelihood for the child to be continent spontaneously is reduced sharply after age of 4 years.

3. The associated psychopathology is more common in enuretic after the age of 4 years.

Thereby the enuretics after the age of 5 years should be treated properly to prevent further complications such as psychosocial , family and behavior problems , and when enuretic child is treated successfully , his behavior , mood and social adjustment change for the better.[8]

Eventhough psychotherapy may be helpful for managing the behavioral disorders that accompany enuresis, it appears to have little effect on primary enuresis itself, with recent studies showing a success rate of 20% which may largely be accounted for by spontaneous remission.[9] Psychotherapy may be more useful for those children with secondary enuresis especially those whose episodes begin after a traumatic event or parental divorce.

Approximately a third of enuretics referred for treatment were not given any treatment, a third were prescribed medication and the remainder a miscellany of interventions. Only 3% were prescribed a night alarm system (pad and bell), the only known curative treatment.[10] These findings are a cause of concern because the same study found that about a third of 5 - 13 year old enuretics were greatly distressed by their symptoms.

The traditional treatment methods (night lifting and fluid restriction before bed) are common sense measures frequently adopted by the parents. The failure of a parent after trying either one or both methods of traditional treatment may be an indication of a negative or negligent attitude towards the condition of the child. Studies of the treatment efficacy are not well-established but suggested that, although the procedures

may lead to a small initial reduction in wetting frequency , the effect is short - lived.[11] A good response to one of these techniques may be one of the reasons why professional advice is not sought.

Regarding the night alarm , Pfaundler devised an alarm system to alert nursery nurses to when an infant needed changing. He also tried the apparatus on an enuretic child and noted that the enuresis improved. Despite this early report of a successful treatment of enuresis, the method was only applied irregularly until Mowrer , working from conditioning theory , developed a similar device[12] (pad and bell). The Mowrer apparatus consisted of an auditory alarm linked to two electrodes , separated in one way or another, upon which the child slept. When the child was incontinent the urine established contact between the two electrodes , the alarm sounded to wake the child up.

Although the night alarm (pad and bell) offers the only known cure of enuresis (cure most commonly defined as 14 nights of continuous dryness , with the night alarm varies from 50 to 100% , mostly 80%) , it is a difficult procedure that tends to be unpopular for clinicians (who are much more likely to prescribe medication). One of the inconveniences of night alarm is that it takes weeks before cure is obtained. Cure is usually reached during the second month of treatment. In some studies premature termination rates run as high as 48%.[14]

In Thailand , before last 3 years , there are only 2 available treatment methods for enuresis, i.e., medication and traditional one (night lifting and fluid restriction),which are not so effective. Pad and bell is the treatment which has been used at first in Department of Psychiatry , Siriraj hospital for 3 years and we found that the remission rate was about 70-80 percent.

At Siriraj Hospital , we found quite often the enuretics both in pediatric and psychiatric field . Almost 75-80% of patients have never received any treatment except the traditional method[9] because most physicians have an idea that there is no need to

use interventional technicue and often suggest the enuretics to use only traditional method and wait.

So if we can establish the magnitude of difference between these two treatment methods , i.e., traditional method and night alarm (pad and bell) in remission rate and the advantages and disadvantages of pad and bell compared to the traditional method , it will be a very useful guideline for the physicians to improve their masteries of enuresis treatment techniques in Thailand.

PURPOSES OF THE SYUDY

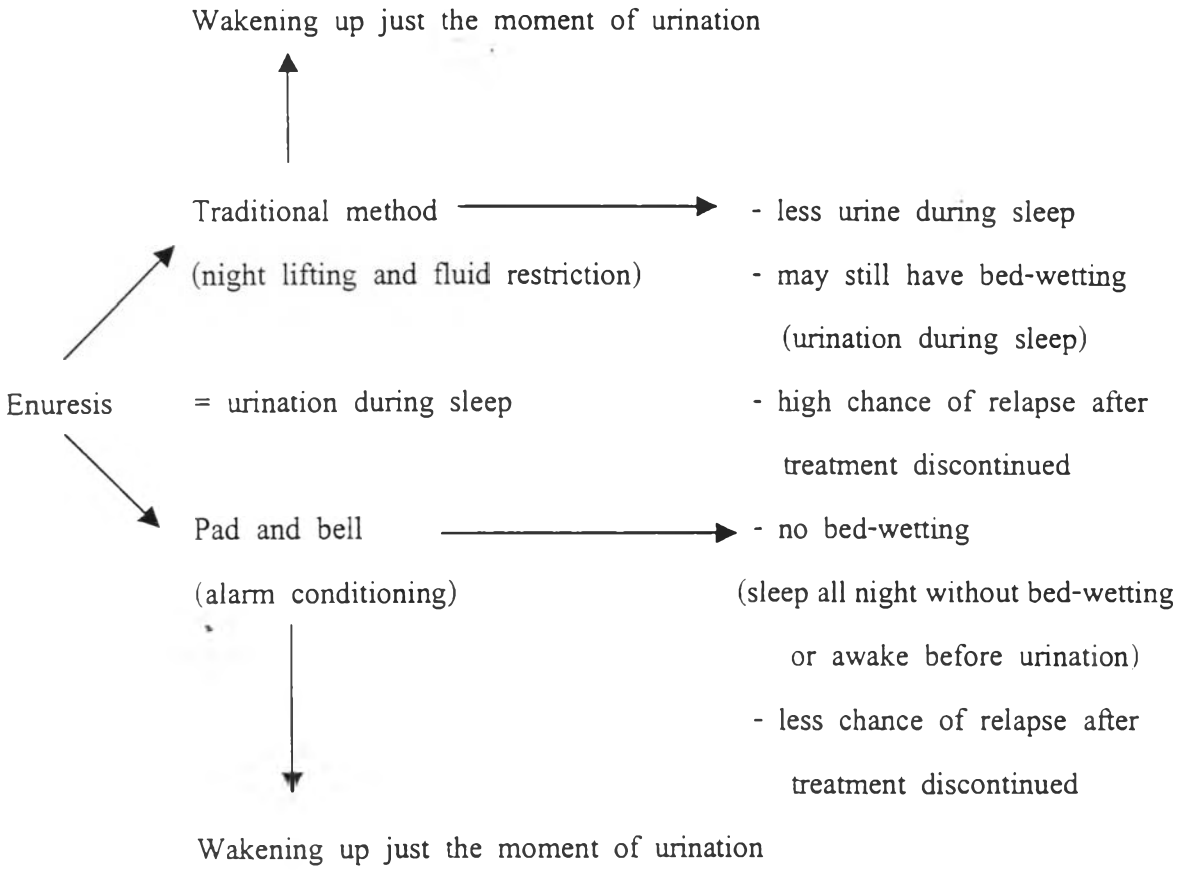
1. To evaluate the magnitude of difference in remission rate between two enuresis treatment methods : pad and bell compared to traditional one.

2. To identify the advantages and disadvantages of the enuresis treatment with pad and bell compared to traditional method.

3. To consider which method should be the first choice of treatment.

CONCEPTUAL FRAMEWORK

- negative effect of operant conditioning.
- without operant conditioning.
- only some degree of classical conditioning



RESEARCH QUESTIONS

Primary research question

Does treatment with pad and bell given to enuretic children above 6 years old produce a 30% more in no bed-wetting at least 14 consecutive days compared to the traditional method ?

Secondary research questions

1. What are the advantages of enuresis treatment with pad and bell compared to the traditional method ?
2. What are the disadvantages of enuresis treatment with the traditional method ?
3. Is it still appropriate to choose the traditional method as the first choice for the enuresis treatment ?

HYPOTHESIS

1. Pad and bell has a remission rate of at least 30% more than the traditional method.
2. Pad and bell has a less relapse rate than the traditional method.
3. Pad and bell takes fewer days to reach remission than the traditional method.
4. Pad and bell has fewer wetnights before reaching remission than the traditional method.
5. Pad and bell is associated with more satisfaction score than the traditional method.

Assumption

1. Pad and bell is accepted as an effective treatment for enuresis and mainly used in the Western countries. In Thailand , the pad and bell has been available only in Psychiatric department , Siriraj hospital for 3 years.

2. Almost all Thai enuretics used only the traditional method and do not know what they should do for further treatment.

3. Pad and bell as well as the traditional method do no harm to the children.

EXPECTED BENEFITS AND APPLICATION

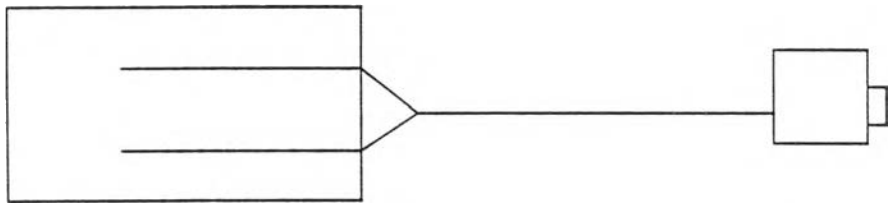
Enuresis is a very common problem in children but few of them have received an appropriate and effective treatment because before last 3 years , there were only 2 available treatment methods of enuresis, i.e., medication and traditional one (night lifting and fluid restriction) which were not very effective and had some side effects from drugs which most physicians prescribed. In addition , most physicians themselves had an idea that there was no need to use any interventional technique and often suggested the enuretics to use only the traditional method.

So the result of this study will be very important to show the difference between the new technique and the traditional one that will be very useful to implement to change and improve the mastery of enuresis treatment technique in Thailand equivalent to the Western standard , and can apply to treat all Thai enuretic patients.

KEY WORDS

1. Nocturnal enuresis : Repeated involuntary passage of urine during sleep at least 2 nights weekly in the absence of any identified physical , organic causes in children aged above 5 years.

2. Pad and bell : Consists of an auditory alarm linked to two sensors (electrodes), separated in one way inside the pad , when the child is incontinent the urine make contact between two electrodes (close - circuit) and the alarm sounded to wake the child.



(pad) (sound generating device)

Mechanism of pad and bell can be explained in at least 2 models of learning theory

2.1. Classical conditioning

alarm ⟶ child wake

(unconditioning stimulus) (unconditioning response)

urinate + alarm ⟶ child wake

(conditioned) + (conditioning) (conditioning response)

urinate ⟶ child wake

(conditioned stimulus) (conditioned response)

2.2. Operant conditioning

3. Traditional method : Waking the child at the regular time before the child has bed-wetting and fluid restriction at least one hour before bed.