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Review article

Management of enuresis: Need to focus on parents' knowledge and practice

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Abstract

The most important reason for treating enuresis is to minimize the embarrassment and anxiety of the child and the frustration experienced by the parents. Most children with enuresis feel very much alone with their problem. Family members with a history of enuresis should be encouraged to share their experiences and offer moral support to the child. The knowledge that another family member had and outgrew the problem can be therapeutic. A positive attitude and motivation to be dry are important components of treatment. Children with enuresis benefit from a caring and patient parental attitude; punishment has no role to play in care. A positive approach by the physician is also important for instilling confidence and enhancing compliance. Many children have given up on achieving dryness, and an optimistic attitude must be encouraged. Behavioral modification with positive reinforcement may enhance treatment results. Consistent follow-up is important to assess therapeutic results. In this we would discuss enuresis, its management with focus on knowledge and practices of parents of enuretic children.

Keywords: Enuresis, nursing practices, parents' knowledge, nursing.

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1. Introduction

A nation's most important and precious resource is its children who constitute its hope for continued achievement and productivity. Childhood is the most significant period in every one's life. Every child needs a caring and conducive environment to grow in to a potentially healthy human being in every perspective. [1] Family, neighborhood and the society altogether play a vital role in contributing to the maximum growth and development of a child. It has been observed that a large number of children are in a very unhealthy and intimidating environment both biological and psychological areas affecting their overall psychosocial development. So children are facing behavioral problems mainly due to psychological disturbances. Among the psychological problems, enuresis is one of the most prominent problems seen in children.

Enuresis: diagnosis and cause

Enuresis is defined "as repetitive voiding of urine, either during the day or night, at inappropriate places". [2] Technically, enuresis is diagnosed only after 5 years of age. The most common cause is psychological, e.g. emotional disturbances, insecurity, sibling rivalry, death of parents. A study estimated growing number of teenagers and adults are suffering from the problem of bed-wetting. [3] It has been reported that at the age of five years, more than one in six children still wet the bed. Most of them grow out of it on their own. By the age of 10, only one in 15 still wet the bed. Even in adulthood, one in

100 still suffers from the problem. [4] Bed-wetting is the most common urological problem seen in children during sleep (medically referred to as sleep enuresis or nocturnal enuresis). About 10-20% of 5 to 6 year olds are known to wet their beds. It is estimated that there are around 80-110 million enuretic children in the world. [5]

A child care depends on understanding of parents, about the growth and development of the child. Growth and development are the primary markers to assess the child for any problem. Normally the child achieves the bladder and bowel control between the age of 18 and 24 months. If the child does not achieve the bladder control till the age of 5 years it leads to enuresis. [6] Bhatia *et al* estimated that 15% of children wet past the age of 3 years while 80% of enuretic children wet only during night time while 15% during day and night and rest during day only. [7] Five million to 7 million children in the United States have primary nocturnal enuresis (night time bed-wetting). Although increasing attention has been focused on nocturnal enuresis and increasing numbers of families have sought assistance from their physicians, questions remain regarding the etiology and management of this condition. [8]

Glazener and Evans (2002) reported that Nocturnal enuresis (bedwetting) is a socially disruptive and stressful condition which affects around 15-20% of five year olds, and up to 2% of young adults. Although there is a high rate of spontaneous remission, the social, emotional and psychological costs can be great. [9] According to a study, 75% of children are consistently dry at night by 3 years of age and 90% by 5 years of age. Enuresis is more common in children who have experienced psychological problem. [10]

Management of enuresis

Enuresis can be effectively treated with imipramine, an antidepressant with a side effect of urinary retention. Elimination disorder responds to behavioral approaches, such as a pad with a warning bell foe enuresis and positive reinforcement for continence. For children with a disruptive behavior disorder, psychological treatment of that disorder may result in improvement in elimination disorder. [11] Viswanathan and Desai (2005) enumerated psychological treatment: parents are advised to reassure the child rather than punish him. Lapses should not be magnified as this makes the child tense and anxious and consequently enuresis persists. The child should be advised not to worry and told that many other children have the same problem. He should be assured that he will grow out of it. He should be constantly encouraged and rewarded when he does not wet his bed at night. [12]

According to a study, simple behavioral methods of treating bedwetting include reward systems such as star charts given for dry nights, lifting or waking the children at night to urinate, retention control training to enlarge bladder capacity (bladder training) and fluid restriction. Simple behavioral methods may be effective for some children, but further trials are needed, in particular in comparison with treatments known to be effective, such as desmopressin, tricyclic drugs and alarms. However, simple methods could be tried as first line therapy before considering alarms or drugs, because these alternative treatments may be more demanding and may have adverse effects. [9] Buttler *et al* (2005) conducted a study to understand, the strategies parents adopt, both during the child's development and currently, to help their child overcome bed-wetting. They had tried restricting night-time fluids and lifting being the predominant methods employed. In terms of treatment interventions, the enuresis alarm had been employed. [13]

Mellon and Melanie (2000) reviewed the medical and psychological literature concerning enuresis treatments. A systematic search of the medical and psychological literature was performed. Several review studies and numerous well-controlled experiments have clearly documented the importance of the basic urine alarm alone as a necessary component in the treatment of enuresis or combined with the "Dry-Bed Training" intervention, establishing them as "effective treatments". Other multicomponent behavioral interventions that also include the urine alarm such as "Full Spectrum Home Training" have

further improved the outcome for bed-wetter. It recommends a bio-behavioral perspective in the assessment and treatment of bed-wetting and suggests that combining the urine alarm with desmopressin offers the most promise and could well push the already high success rates of conditioning approaches closer to 100%. Much important work is yet to be completed that elucidates the mechanism of action for the success of the urine alarm and in educating society about its effectiveness so that its availability is improved. [14] It is also important to exclude any physical basis for the enuresis by history, examination and if necessary, investigations of the renal tract. Most clinicians would consider that specific treatment in addition to reassurance and advice, is only indicated when the child is around 6 years old. The decision to treat is influences by parental attitudes and motivation as well as by the restrictions and limitations imposed by enuresis on the child's daily life. [15]

According to Gupte (2009), a prompt treatment is essential or the child may continue to have enuresis plus added emotional problems in adolescence. Treatment is as a rule not required before 6 years of age. If the underlying disease is detected it should be treated. [16] In other words treatment of enuresis is: 1) psychotherapy and training in the form of a) reassurance to the parents and the child. Parents should be told to encourage the child in having dry nights. in fact, they should offer special pat and even reward on occasions when the child does not wet the bed, b) restriction of too much water ad drinks at bed time and insisting on his voiding before retiring, c) waking him up once or twice to void during night and d) discouragement of punishment, 2) bladder-strengthening exercises, 3) using an electric alarm device, 4) drugs.

Behrman, Klingman and Nelson (1996) explained the best approach to the treatment is to assure parents that the problem is self-limited and to eliminate punitive measures that may adversely affect the psycho logic development of the child. [17] Nasal administration at bedtime of Desmopresin (DDVP), as synthetic analogue of ADH stops bedwetting in 60-75 % of children during its administration but does not cure the condition permanent. Desmopresin is more effective when there is family history of enuresis. The role of imipramine and conditioning alarm devices is limited.

The management also depends on understanding of possible specific causative factors and appropriate measures to tackle any stressors. Often in addition the following general instructions are helpful: 1) reward child for dry nights, 2) once bed wetting occurs, older children should be asked to wash their own clothes and soiled bed sheets, 3) children should not be given any fluids after dinner, 4) waking the child 1 to 2 hrs after sleep to void urine again may help, 5) punishment and humiliation by parents or siblings should be discouraged, 6) behavioral techniques may also be used, 7) Pharmacological agents tried in the condition include imiprmine or amitriptyline orally. The effect of medication is however, temporary one. [18]

Knowledge of mothers about management of children with Enuresis

It has been observed that mothers lack in knowledge about management of enuresis. Dunlop (2005) conducted a telephone survey of 745 parents or guardians of children aged 3 to 14 years to determine their knowledge and attitudes about primary nocturnal enuresis (PNE). Most of them did not know that PNE is a physical problem. Although 82% would want healthcare providers to discuss PNE with them if their child older than 6 years wet the bed, most would be uncomfortable initiating the dialogue. According to parents, healthcare providers either never or rarely discuss Primary Nocturnal enuresis. For the benefit of their young patients, healthcare providers must initiate discussion about PNE.[19]

Cox and Croghan (2001) conducted a survey to examine parents' and caregivers of children with bedwetting problems' attitudes to, and knowledge of, enuresis and enuresis services in southern Derbyshire. The results of the study led to the formulation of recommendations to improve services available to children with enuresis, their parents and careers. [20]

The present knowledge does not allow us to identify the right treatment for any child with nocturnal enuresis. Treatment strategy proposes to let the child and the family choose mode of therapy themselves after having received full information about the options. [21] De Sousa *et al* conducted a study to establish the prevalence of enuresis in school children and to determine contributing factors along with treatment methods used in these children. The parents of 1473 children aged between 6-10 years completed a self-administered semi-structured questionnaire. The response rate was 89.2%. The overall prevalence of enuresis was 7.6%. A positive family history of enuresis was seen in 28.6% children; 14.3% of the children had daytime wetting as well. Only 24.1% of the parents had taken their child to a doctor for the problem. Family stressors, significant birth history and lower socioeconomic status were present to a larger extent in the enuretic group. This study reports on the prevalence of enuresis in school-going children and stresses on the need for parental education and awareness about this problem. [22]

Tripathi and Srivastava (2008) conducted a cross-sectional school based study in 1011 school going children of 5-12 year age group from 10 primary schools of Lucknow. Data were collected via questionnaire completed by children. The prevalence of enuresis and other disorders were found. The results showed prevalence of primary enuresis was present in 72.9 per cent of affected children and nocturnal enuresis was in 57.2 percent. Factors associated with enuresis were due to home conflicts in 42.9 percent, parental concern about the problem of children was present in only in 42.9 percent of parents. It was concluded that significant relationship was found between prevalence of enuresis with age, parental bedwetting, home conflicts, poor scholastic performance of children, lack of parental concern and knowledge, and working status of mother. [23]

Kelleher *et al* (1997) conducted a study to describe the types of voiding dysfunction common to children, review pertinent literature on enuresis, discuss treatment options, and explore the nurse's role in identifying and managing children with voiding difficulties. Children beyond the age of normal toileting who continue with uncontrolled urination either during the day, at night, or both were included. There is widespread misunderstanding among parents, teachers, and primary care providers on the causes and management options for these children. It was implicated that paediatric nurses are in key positions to identify children with voiding problems. Once the problem has been acknowledged, nurses can assess the problem and its impact on the family; educate parents, children, and others regarding causes; discuss management options; and refer children for medical intervention when necessary. [24]

Hackett *et al* interviewed randomly selected 8-12 years old children of 1403 parents. Subsamples of children underwent psychiatric, physical and psychometric evaluations. The results showed that 18.6% children had an episode of enuresis in the past year and 4.3% in the past week. Enuresis was associated with parents' education, physical and psychiatric symptoms in the child, poor academic achievement and lax parental attitudes to toilet training. The associations of enuresis suggested a multi-factorial model in which parental competence was prominent. This study de-emphasized the importance of neurodevelopmental factors in enuresis in this age group. [25]

Practices of mothers about management of children with Enuresis

Stover *et al* conducted a study to evaluate the effects of a contingency contracting program to eliminate nocturnal enuresis of three children ages 5 to 12. The program was implemented by the children's primary caregivers, two of whom were foster parents and the third a case worker in the foster care system. The program was a package intervention that included a written contingency contract, positive reinforcement for dry nights, removal of pull-ups, and a morning clean-up procedure when nocturnal enuresis occurred. A non-concurrent multiple baseline across children design was used to evaluate the effects of the intervention. Results showed that the contingency contracting program was

effective in eliminating nocturnal enuresis across all three participants. The results were discussed in relation to the advantages of behavioral, non-pharmacological approaches to nocturnal enuresis and to the particular importance of successfully resolving such problems for children who are in foster care. [26]

Bower *et al* conducted a study to evaluate the impact of enuresis on the children and their families and to identify common methods of managing enuresis. A self-administered questionnaire was completed voluntarily by the parents of 5-12-year-old 2292 children during attendance at electoral polling booths in Sydney, Australia. The prevalence of marked nocturnal enuresis (at least weekly) and marked day wetting was 5.1% and 1.4%, respectively. There was a moderate but significant relationship between the frequency of enuretic episodes and the parental concern score. Of the enuretic children, 34% had consulted with a health worker. These children were 1.4 years older and wet more frequently than those enuretic children who had not sought help. The management of enuresis involved a mean of 3.9 strategies, primarily behavioural techniques administered by the family. The lowest cure rate was seen in the children who wet more frequently. Significantly more of the dry children woke spontaneously at night to void compared with the enuretic children. There was a trend towards greater spontaneous arousal in the children who wet less frequently. These results suggested that prevalence rates for day and night wetting in Australia are similar to those in previous studies reported from the northern hemisphere. Australian families did not report a high level of concern about Enuresis, even in the older child. The problem was managed primarily within the family. [27]

Osungbade and Oshiname (2003) conducted a cross-sectional study to determine the prevalence and perception of the condition among children in Igbo-Ora, a rural community in southwestern Nigeria. Four hundred parents/guardians were interviewed and information obtained on 644 children aged 6-12 years. Overall enuresis prevalence was 17.6% (19.9% among boys and 14.9% among girls). The reported causes of nocturnal enuresis included urinary tract infection (33.5%), excessive play (27.5%) and deep sleep (25%). A majority (74.5%) of the respondents would use herbs or traditional medicine to treat Enuresis, while only 6.8% of the respondents sought orthodox healthcare facilities for its management. Only 18 (25%) of the 71 parents/guardians with Enuretic children had ever consulted a health worker. [28]

Wong (2004) conducted a study to assess the child's attitudes and his parents' perceptions to enuresis to improve their commitment to therapy. In a prospective questionnaire survey 105 Chinese children aged 9.5±1.8 years (68 boys, 37 girls) with severe PNE were recruited from nine public hospitals in Hong Kong. Both patients and parents were interviewed. The majority of parents (86%) thought that PNE was abnormal and was caused by renal, psychological, or brain problems. Arousal difficulties occurred in 88% of the children. Parents felt troublesome (71.4%), angry (19%), and ashamed (11.4%) of their children. Although 77% of the parent praised their children for being dry, 57% still punished their children for enuretic episodes. In conclusion, Hong Kong children with PNE were embarrassed by bedwetting while their parents had mixed-feeling of being worried (about organic illness), troublesome, angry and ashamed. A punitive attitude was still common in our local community and this may adversely affect the parent-child relationship and their commitment to treatment. [29]

Roger (1996), conducted a study among 25 outpatient clients and adopted an ‘outpatient’ model of supervising the treatment of bedwetting amongst child clients of a social services department is described. The treatment technique used was the generally effective ‘enuresis alarm’, or ‘bell-and-pad’. Fifteen out of a total of 25 concluded courses of treatment were successful, with average treatment duration of 14.9 weeks. Both this outcome, and the rate of drop-out before completion of treatment (ten cases) are comparable with those obtained with non social services clients, and the use of the enuresis alarm with children in care was found to

be quite practicable. A high relapse rate (43%) was, however, found for social services clients, and relapse usually following a placement change or other major stress. [30]

Tuygun *et.al* randomly applied enuretic alarm therapy in 35 monosymptomatic nocturnal enuresis (MNE) patients (group 1) and desmopressin therapy in 49 MNE patients (group 2). The success and rebound rates after 3 and 6 months were determined. We also applied enuretic alarm therapy as a secondary treatment in 19 group 2 patients with complete rebound after 6 months (group 3). The success rates of patients who have received primary and secondary enuretic alarm therapy were compared. The success rates for groups 1 and 2 were 82.65 and 81.63%, respectively at 3 months and 54.28 and 26.53%, respectively at 6 months. The success rates in group 3 were 84.21 and 52.63%, respectively, at 3 and 6 months. When these success rates were compared between groups 1 and 3, no statistically significant difference was found. Prior pharmacotherapy did not increase success rates of alarm therapy in our MNE patients. [31]

Jodorkovsky (2001) conducetd a randomized, double-blind, placebo-controlled, crossover trial of Korean Hand Therapy (KHT) for 5 weeks in 26 children (ages 5-13 years) enrolled from the author's pediatric practice. Eleven children were randomized to group 1 and 15 to group 2 It was to examine the efficacy and safety of Korean Hand Therapy (KHT) acupuncture for primary nocturnal enuresis in children. Intervention done was to activate the points of bladder, kidney, and cerebral function were stimulated with an E-beam machine during active intervention. During the placebo period, patients were connected to the machine with nonfunctioning cords. Main outcome measures percentage of completely dry nights for each time period (baseline, study period 1, and study period 2 following crossover). Secondary outcomes were cure rate at 3 months and reported adverse effects. The degree of improvement was higher in the children who started the treatments with real cords. Improvement was also noted during the study period 2, regardless of the status of the cords. However, the improvement was statistically significant for the children who switched from fake to real cords. Of all the children, 53% were cured 3 months after completing the study. This study suggests that acupuncture is a safe and effective treatment option for primary nocturnal enuresis. Hand therapy appears to exert its beneficial effect through both placebo and direct effects. [32]

Chao *et al* concluded that primary MNE (PMNE) was often not openly discussed in Asian societies. We report the parental view of PMNE in Singapore, its impact on patients and their families and the traditional beliefs and its influence on subsequent management. A screening questionnaire was used in evaluating 30 children enrolled in a clinical trial on the use of oral Desmopressin for the treatment of PMNE. PMNE was familial in 56.7% of patients. Fifty per cent of them were previously unevaluated. Earlier remedial attempts included bedtime fluid restriction and voiding (100%), incentive measures (43.3%), traditional practices (26.7%), punishment (20%), drugs (16.7%), psychotherapy (100%) and bladder training (3.3%). Perceived causes of PMNE were maturational delay (50%), deep sleep (50%), familial (43.3%), behavioural problems (43.3%) and excessive fluid intake (26.7%). Reasons for seeking treatment included restricted outdoor activities (90%), parental fatigue (86.7%), disrupted sleep for the household (46.7%) and fear of underlying pathology (26.7%). Perceived adverse effects on patients included social stigma (83.3%), disrupted sleep (33.3%) and impaired school performance (13.3%). PMNE can thus be a chronic distressing problem in Asian communities. [33]

Capozza (1991) conducted a study to assess the comparative therapeutic efficacy of Desmopressin (DDAVP) and acupuncture among 40 children suffering from primary nocturnal enuresis, aged between 5 and 14 years, were included. Children were divided into four groups of 10: group A was treated with DDAVP; group B was treated with acupuncture, group C was treated with DDAVP and acupuncture and group D was treated with placebo (control). The trial design included 3 periods: observation (2 weeks),

treatment (8 weeks) and follow-up (4 weeks). Nineteen children completed the study. The efficacy of treatment, which was expressed as a percentage of dry nights, was high in both the DDAVP and acupuncture groups, when used separately. The combined treatment of DDAVP and acupuncture appeared to be the most efficacious both in terms of the percentage of dry nights at the end of treatment and in relation to the stability of results, even after the end of the study. [34]

Seth and Schulman (2000) conducted a study to determine the effectiveness of various treatments for nocturnal enuresis in a large, diverse population of children. A retrospective cohort review of patients with nocturnal enuresis was undertaken. All patients selected treatment after a single visit that included a history, examination, and demonstration of treatments. Families were contacted after one year to determine what treatment they chose and whether their child still wet. Families primarily chose an alarm (31%), followed by desmopressin acetate (22%) and oxybutynin (9%). Some preferred no treatment (23%). Fifty-six percent of patients using the alarm were completely dry compared to 18% using desmopressin acetate, 16% using oxybutynin, and 28% receiving no treatment. In a heterogeneous population, after one year of single visit, children whose parents chose the nocturnal enuresis alarm were most likely to be completely dry [35].

Saldano *et al* (2007) reported physician advised treatment is much better than parent advised treatment. They conducted a non-randomized study between January 2004 and January 2006 which included 119 patients with primary nocturnal enuresis. A total of 76 children received the physician advised treatment plan and used an alarm, oxybutynin, desmopressin, an elimination diet and a bowel program, as indicated. Forty-three children received a parent-chosen alternative treatment plan, which consisted of single or combination of treatments involving an alarm, oxybutynin, desmopressin and an elimination diet or bowel program. Parents from each group completed an intake survey that measured functional bladder capacity using a 3-day home diary and they identified demographic variables. Follow-up at 2 weeks and 12 weeks showed that the group of children who followed physician advised treatment for primary nocturnal enuresis showed significantly earlier remission of primary nocturnal enuresis than children who followed the parent choice treatment. [36]

A study evaluated the current incidence and management of nocturnal enuresis in France. A survey was conducted amongst 3,803 school children (5 to 10 years old). In addition, management plan of nocturnal enuresis proposed by various specialists was collected. The incidence of nocturnal enuresis was found to be 9.2%. As a specific treatment, drugs (oxybutynin 48%, desmopressin 22%, imipramine 12%) were prescribed more often than alarms as drugs proved to be more effective than alarms. Forty-eight percent of the mothers of enuretic children considered that doctors do not pay enough attention to this problem. Options for specific treatments of nocturnal enuresis vary from one specialist to another. A consensus about the most appropriate management approach to nocturnal enuresis is needed. Management of voiding dysfunction should be part of the medical curriculum. [37]

Conclusion

Parents have lack of knowledge about management of children with enuresis and different practices followed in management of children with enuresis. There is an urgent to aware the parents which can result in improvement in child care. Family members with a history of enuresis should be encouraged to share their experiences and offer moral support to the child. The knowledge that another family member had and outgrew the problem can be therapeutic.

A positive attitude and motivation to be dry are important components of treatment. Children with enuresis benefit from a caring and patient parental attitude; punishment has no role to play in care. A positive approach by the physician is also important for instilling confidence and enhancing compliance

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