

Effect of Implementing Learning Package on Controlling Nocturnal Enuresis for Children and their Mothers

Naglaa Fathey Bassiouny El kersh¹, Rahma Soliman bahgat²,
Amal Abo El-Azm Abd El-Rahman Younis³

¹Bachelor of Nursing, Tanta university

²Prof of Pediatric Nursing, Faculty of Nursing, Tanta University

³lecturer of pediatric Nursing, Faculty of Nursing, Tanta University

Abstract: Nocturnal enuresis (NE) is a widespread and distressing condition that can have a deep impact on the young children behavior, Emotional and social life and can be defined as involuntary urination during sleep. The study aimed: to Determine the effect of implementing learning package on controlling nocturnal enuresis for children and their mothers. **Subjects and method:** A convenience sampling of sixty mothers and their Enuretic children for participated in the study. The study was conducted at: Pediatric outpatient Nephrology clinic of Tanta Main University Hospital and Kafer Elshiekh General Hospital affiliated to Ministry of Health and Population. Two tools were used for data collection: structured interview schedule, Mothers self-reported practices regarding nocturnal enuresis. **Results** There was a statistically significant difference of total mothers' knowledge and practice scores and control nocturnal enuresis of enuretic children before and after learning package. The study was concluded that mothers showed an improvement in their knowledge and practices about nocturnal enuresis, enuretic children showed an improvement in control their enuresis after the implementation of the learning package. The study was recommended that Ongoing learning package must be designed and implemented for mothers at the pediatric out patient nephrology clinic for the importance of maintaining the check-ups. Conducting educational programs for the parents about the harms of using punishment and substitute it with other rewards for behavior modification and involving them in the task of maintaining their Childs' psychological health. Psychological health awareness lectures and television programs designed especially for parents and children with different psychological problem.

Keywords: Children, controlling nocturnal enuresis, learning package, mothers.

I. INTRODUCTION

Childhood nocturnal enuresis (NE) is a health malady that requires immediate attention and management since untreated conditions establish long-term psychosocial hazards to children as well as to their parents. NE is defined in as an involuntary voiding of urine during sleep with a frequency of at least twice a week over the course of at least three months in children aged more than five years. It occurs in the absence of congenital or acquired defects of the central nervous system or to any structural abnormality of the urinary tract that is abnormal in relation to the child's mental age. As well, it is a common psychosomatic symptom that presents both alone and/or in conjunction with other disorders in children and adolescents. ⁽¹⁾

In terms of etiology, nocturnal enuresis is a multi-factorial problem with biological and psychosocial, aspects interacting with child's risk factors. Acute psychological trauma in early childhood originating from a variety of situations such as disturbed homes, enforced separation from the mother, birth of a sibling and resultant rivalry, bullying at school, parental

conflicts, and child abuse, all these occurring beyond 5 years of age are considered as risk factors to enuresis. It has been reported that these stressors cause loss of even previously learned urethral sphincter control, particularly in vulnerable children. In addition, a family history of nocturnal enuresis is found in most children. ⁽²⁾

Incidence of primary nocturnal enuresis is 77% among children who have both parents with a history of primary nocturnal enuresis. This rate decreased to 43% in children who have just one parent with a history of primary nocturnal enuresis and to 15% in children who have no parental history of primary nocturnal enuresis. ⁽³⁾

In Egypt, nocturnal enuresis was recorded with a prevalence rate of 14.5% with a higher frequency for boys than girls (16.5% versus 12.6% respectively). Enuresis was found to be the most common type of behavior disorder among primary school age children (6-12 years). In Egypt on the magnitude of the problem of enuresis stated that the prevalence rate of primary enuresis in school children was found to be 11.5%, however secondary enuresis was 3.2%. ^(4,5)

Parental attitudes toward a child's bed-wetting might play important role in relation to successful treatment and potential improvement of negative consequences, and can make the difference in how a child feels about his bed-wetting problem. Parental attributions for child's enuresis had positive outcomes on parent practices, and parental adjustment. So it is important for nurses to take appropriate intervention for the affected child and family caregiver because of the potential consequences of family stress, social withdrawal, and poor self-esteem. Together, parents and children should work on ways to diminish feelings of failure and look for ways to encourage good feelings. ^(6,7)

Some parents perceive enuresis as a medical problem, and so tend to seek medical help, in addition, some parents, having strong religious beliefs tend to seek help from traditional healers. ⁽⁸⁾

Nurses as providers of primary healthcare play a major role in improving the knowledge, attitude, and practice of mothers regarding nocturnal enuresis. They have access to homes, community resources, and developed relationships with possible referral sources for instance schools and the families themselves. As well, they are perfectly located to offer support and to push families to come forward to discuss the problem for achieving and maintaining an optimal level of functioning and reducing the complications. ⁽⁹⁾

Educating parents to manage child enuresis is a process can teach the parents some strategies of behavioral therapy such as positive reinforcement which can be initiated by setting up a diary or chart to monitor progress and establishing a system to reward the child for each night that he or she is dry. ⁽¹⁰⁾

As well dry bed training also may be part of a comprehensive program to treat enuresis. This therapy involves an age-appropriate explanation of how the brain and the bladder communicate, taking the mystery out of enuresis by educating the child and family, teaching relaxation techniques, and having the child practice imagery of awakening to urinate in the toilet or staying dry all night. It can be combined with an alarm system. Dry-bed training involves waking the child on a progressive schedule at decreasing intervals over several nights. ⁽¹⁰⁾

Mothers should understand the problem of enuresis, because their role is essential to success in the process of management. They should take responsibility for helping the child to learn the skill of being dry. Mothers are the main caregivers for their children, so nurses as providers of primary health care play a major role in improving knowledge, attitude and practice of mothers regarding their children with enuresis. Also, providing special parenting program was associated with lower levels of parental dysfunction, greater parental self-efficacy, less parental distress, and relationship conflict. ⁽¹¹⁾

Psychosocial support is an essential part of stress care which is a psychological burden on mothers. It is important for the mothers to understand that the child is not alone. The child should be included in the treatment plan; this helps increase the child's motivation to become dry and discuss potential strategies with the family to reduce stressors on the child or to help the child cope with the stressors. ⁽¹²⁾

Significance of study

Childhood is the most significant period in every one's life. Every child needs a caring and conducive environment to grow into a potentially healthy human being in every perspective. The parents play the key role in caring for the child and they should know the causes and consequences of enuresis if not treated. It will help the parents as well as nursing practitioners in caring for the children. ⁽⁴⁾

II. AIM OF THE STUDY

The aim of the present study was to: -

Determine the effect of implementing learning package on controlling nocturnal enuresis for children and their mothers

Research hypotheses:

- Mothers knowledge and practice are expected to be improved after implementation of learning package related to nocturnal enuresis for children.
- Enuretic children are expected to control their bladder after implementation of learning package related to nocturnal enuresis for their mothers.

III. SUBJECTS & METHOD

Research design:

A quasi-experimental research design was used in the present study.

Setting:

The study was conducted at: Pediatric outpatient Nephrology clinic of Tanta Main University Hospital and Kafer El-sheikh General Hospital which affiliated to Ministry of Health and Population

Subjects: -

A Convenience sampling of 60 mothers and their enuretic children who were attended the previously mentioned settings who followed the criteria of selection and who are willing to participate in the study was included.

Criteria for selection:

Mothers who have at least one enuretic child above 5 years from both sexes who diagnosed with non-organic nocturnal enuresis and free from any chronic diseases.

Power analysis

Sample size was calculated using Epi- info software statistical package created by world health organization

The criteria used for sample size calculation as follows:

- 95% confidence limit
- 80%power of the study with margin of error of 5%

Tools of Data Collection:

Two tools were used in the current study as the following:

Tool I: Structured interview schedule: It was developed by the researcher after reviewing the recent literature to collect data. It was consisted of the following parts:

Part 1: Socio-demographic characteristic of the mothers: such as age, marital status, level of education, occupation, residence, number of family members under their responsibility, number of children

Part 2: Bio socio-demographic characteristic related to the child: as age, sex, academic class, birth order, type of enuresis, duration of enuresis, frequency of bed wetting, daytime urination, somatic behavioral symptoms, factors aggravating enuresis and sleep pattern.

Part 3: Mother's knowledge related to nocturnal enuresis: It was assessed mothers' knowledge regarding nocturnal enuresis as: definition, types, risk factors, associated manifestations, diagnostic measures, complications, and management.

Scoring system of mothers' knowledge:

Three levels of scoring for question were used as follow:

- Correct and complete answer was scored (2)
- Correct and incomplete answer was scored (1)
- Don't know or incorrect answer was scored (0)

The total score was e calculated and classified as follows:

- Less than 65% were considered low level of knowledge.
- From 65-to less than 75% were considered moderate level of knowledge.
- From 75-100% were considered high level of knowledge.

Tool (II): Mothers self-reported practices regarding nocturnal enuresis⁽¹²⁾ It was used to assess mothers' practices related nocturnal enuresis according to Learning Package. It was classified into three categories; dietary intake and fluid restriction, bladder training and behavior modification.

1) Dietary intake and fluid restriction:

- Eat a vitamin–rich diet as vitamin C from fruits and vegetables that is associated with decreased urinary urgency.
- Don't eat diet contain caffeinated beverages and sweets foods, avoid carbonated beverages and dairy product chocolate before bed time.
- Restricting fluid and citrus juice for 2hours prior to bed is necessary.

2) Bladder training: It is an important form of behavior therapy that can be effective in treating urinary incontinence

Three bladder training method are used:

- a-Kegel exercises
- b-Delayed urination
- c-Scheduled bathroom trips

a-Teaching Kegel Exercises:

- Empty the bladder before beginning.
- Contract the pelvic floor muscles and hold for a count of 10sec.
- Relax the muscles completely for a count of 10sec.
- Stand and perform 10 sec of these contractions.
- Implement Kegel exercises three times a day for their child for a total of 90 contractions a day.

b- Delayed urination:

- Keep track of the volume and time of liquids intake.
- Keep track of the number and time of each toilet visit.
- Do not go to the toilet as preventive measure, for instance before going for a walk, wait until toilet visit is really necessary.
- When the child feels the urge, sit for a moment. The pressure may abate and you can delay your visit to the toilet.
- Do not drink excessive quantities of liquids in the evening. Note that coffee, tea and beer push the child to more frequent emptying than other beverages.

- Sometimes during bladder exercises it may come to uncontrolled loss of larger amounts of urine because you are trying to delay the emptying of bladder. This is normal and it will stop at some point during exercises.

c-Schedule bathroom trips: A diary that records voiding times and voided volumes, leakage episodes, pad usage and other information such as fluid intake, degree of urgency, and degree of incontinence.

3)Behavior modification: Behavior modifications are generally used as adjuncts to a primary behavioral intervention such as pelvic floor muscle training or behavioral training with urge suppression strategies. Lifestyle changes include fluid management, reducing caffeine and other bladder irritant, weight control, and managing constipation. Behavior modification is focuses on improving bladder control by modifying voiding habits such as with scheduled voiding or delayed voiding.

-Motivational therapy: This process was used to allay guilt by positive reinforcement through a diary or chart to monitor progress and establishing a system to reward the child for each night that he or she is dry, child will participate in morning clean up in wetting night.

-Discourage teasing and bullying from sibling: Decrease shame and guilt and provide high self-esteem for child.

-Encourage child to say positive words: Words can help in controlling voiding of bladder as the bladder fills up at night when we are asleep, the bladder tap will not go to sleep and should wake up when the bladder is full.

-Using an alarm system: (put beside the child) this approach includes dry bed training and classic conditioning therapy as in the use of alarm therapy, this is used to have the child self-awaken to void.

-The portable alarm: put on the child clothes: the alarm makes a sound or vibratory alarm when urine is sensed in the underwear or pant, the alarm wakes the child or parent from sleep the device can be discontinued when the child has had three consecutive weeks of dry night.

-Hypnotherapy: Teaching relaxation techniques and having the child practice imagery of awakening to urinate in the toilet it can combined with an alarm system.

Use of waking schedules to ease arousing from sleep and involving: for the first night waking the child each hour the second night after three hours.

-Reward system: Positive reward for agreed behavior rather than dry night was used.

-Engaging the child in activities that increase self-confidence.

The scoring system

The score of mothers' practices for each item was ranged from 0-2

- Not done or incorrectly done was score (0).
- Done correctly and incomplete was score (1).
- Done correctly and complete was score (2).

The total score of mothers' practices was calculated and classified to:

- Less than 65% of total practice score was considered unsatisfactory level of practice.
- From 65 % and more of total practice score was considered satisfactory level of practice

Method

The study was accomplished through the following steps:

1-Administrative process:

Official permission to conduct the study was obtained from the director of pediatric out-patient nephrology clinic of Tanta University Hospital and Pediatric out-patient nephrology clinic of Kafer-Elshiekh University to obtain their approval and cooperation during the study.

2-Ethical considerations:

The nature of the study would not cause any harm or pain to the entire sample. Oral consents were obtained from mothers and their enuretic children to participate in the study after explaining the aim of the study and their right to withdraw from the study at any time without providing a reason and without any potential. enuretic children and their mothers were informed about the confidentiality of their information and it was used only for the purpose of the study.

3- Tools Development:

Structured questionnaire sheet consisted of two tools were used for data collection; **Tool I:** Structured interview Schedule: It was developed by the researcher after extensive reviewing of recent literature. It consisted of three parts, **Part I:** Socio-demographic characteristics of the mothers. **part2:** bio socio-demographic characteristics of the studied children. **Part 3:** Knowledge of mothers with their enuretic children regarding nocturnal enuresis. **Tool II:** It consisted of mothers, self-reported practice regarding nocturnal enuresis according to learning package was classified in to three categories dietary intake and fluid restriction. bladder training and behavior modification.

4-Content validity: The tools were presented to a jury of five experts in the field of pediatric nursing to check content validity clarity, relevance, comprehensiveness, understanding, applicability, and ease for implementation. The content validity index was 98.5%.

5- Reliability of the developed tools was tested through internal consistency. The value of Cronbach's alpha coefficient was 0.845

6- A pilot study:

A pilot study was carried out before starting the data collection. It was done on a sample of 6 mothers with their enuretic children to test clarity, visibility, and applicability of the study tools. This pilot was excluded from the study.

Phases of the study: The study was conducted through four phases:

1-Assessment phase:

It was done by the researcher for all study subjects to assess the studied mothers and their enuretic children who meet the inclusion and exclusion criteria of this study. The researcher also, firstly met pediatric and nephrology doctors and nurses to explain the purpose and the educational intervention of the study to gain their cooperation after taking permission from related authorities. During the initial interview, the purpose of the study and the procedures were explained and the oral consent was obtained from the participants.

The subjects were assured that all information would be confidential to assure the confidentiality of the participants. Children who meet the inclusion criteria of the studied sample were interviewed by the researcher and their parents in the waiting area. The mothers were asked about their characteristics, socio-demographic of the children, knowledge about nocturnal enuresis and oral assessment of enuretic children to answer the question of (tool I). The researcher assesses mother's self-report practice before implementation of learning package (Tool II). Afterward, the researcher explained to the mother how to make control on dietary intake and fluid restriction, bladder training and behavior modification.

2- Planning phase:

The educational intervention was developed by the researcher based on literature review according to mothers' education needs and expected outcomes criteria were formulated, different methods and materials for educational intervention were used including PowerPoint presentations, small lectures, and group discussion.

3- Implementation phase:

The researcher attended 9:30 am or 10.00 am till 12.00 pm for two days per week in the previously mentioned settings to collect the data and meet the mothers and their enuretic children in the waiting area. The researcher met the study subjects individually or in groups from two or three mothers with their enuretic children according to the availability of them.

They attended the five sessions about: Health education was implemented by the researcher for all study subjects using interactive lectures and video presentation. Study subjects was attended for three sessions and scheduled in the morning. The time for each session will be about 20 – 30 minutes.

First session: It was focused on the definition of enuresis, types, risk factors and associated manifestations,

Second session: It was included demonstrate how to apply practice to dietary intake and fluid restriction.

Third session: it was focused on how to implement of bladder training.

Fourth session: it was focused on behavior modification used for children.

Fifth session: It was focused on the diagnostic measures, complications, and management measures.

The expected duration for collecting data will be approximately six months and duration of the study will be taken within one year.

4- Evaluation phase:

- The effect of learning package was evaluated three times pre, immediate and post one month of implementation of learning package program using the tools of the study (tool I and II).
- Data was collected over a period of eight months from the beginning of March 2020 to October 2020.

Statistical analysis:

The collected data were organized, tabulated, and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 26, SPSS Inc. Chicago, IL, USA). For quantitative data, the range, mean, and standard deviation were calculated. For qualitative data, a comparison between two groups and more was done using Chi-square test (χ^2). For comparison between more than two means of parametric data, F value of ANOVA test was calculated. Correlation between variables was evaluated using Pearson's correlation coefficient (r). Significance was adopted at $P < 0.05$ for the interpretation of the results of tests of significance. ⁽¹³⁾

IV. RESULTS

Table (1): shows the Percentage distribution of socio-demographic data of the studied mothers. It was observed that (75.0%) of the studied mothers their age from 30-<40 years, while less than 20.0% of them their age was from 20-<30 years with the mean age of 33.23 ± 4.16 years or rest of them (20%), as illustrated in figure (1). it was observed most of studied mothers (88.3%) were married and rest of them were divorced. Regarding their educational level it was also showed that 40.0% of the studied mothers completed their secondary education and less than one quarter of them (21.7%) had preparatory and university education for both as illustrated in figure (2). Regarding mother's occupation, more than half of them (56.7 %) were working while, 43.3% of them were housewives. the same table indicates that more than half (55.0%) of the studied mothers were from rural area. This table also illustrates 51.7% of the studied mothers had from 1- 3 children and the rest of them (48.3%) had from 3 – 6 children.

Table (2): shows percentage distribution of biosocial characteristics of the studied children. As regards their age, it was evident that most of the studied children (86.7%) were from five to ten years with a mean age of 8.273 ± 2.28 years. Regarding their sex, it was clear that 55.0% of the studied children were males and 45.0% of them were females. In addition, less than one quarter of the studied children (23.3%) were complete primary three education. It was observed that less than half of them (41.7%) of them were in the second birth order and 28.3 % were in the first birth order.

Figure (1) Illustrates percentage distribution of the studied children regarding to their enuresis. It was observed that less than two thirds (61.7%) of studied children had second type of enuresis. More than half of them (55.0%) had enuresis from three years and more than 20.0% of them had enuresis from one year. As regard to frequency of bed wetting, it was observed that less than half of the studied children (43.3%) bet wet their bed one time night and 30.0% of them two times night. About 36.7%, 31.7% and 30.0% of the studied children urinate during daytime two, four or more and three times respectively,

In relation to somatic behavioral symptoms, it was observed that more than half (55.0%) of the studied children appeared low self-confidence, isolated from the classmates, violence with others and feelings of guilt and helplessness. Related to factors aggravating enuresis, the most of the studied children (80.0%) had increase enuresis due to inability to perceive a full bladder during sleep and excess weight with weak bladder muscle for both. this table also show that all of the studied children (100.0%) had a troubled sleeping as illustrated in figure (2)

Table (3) Illustrates percentage distribution of total score of the studied mothers' knowledge about nocturnal enuresis before, immediate and one month after implementing of learning package. It was noticed that all of mothers had poor knowledge before the learning package, while about two thirds (63.3%) and (60,0%) of them had good knowledge immediate and one month after the learning package respectively. As regard to the mean of total knowledge score were 2.183 ± 1.62 , 10.933 ± 1.76 , and 9.100 ± 2.28 before, immediate and one month after the learning package respectively with a statistically significant difference where (P= 0.0001).

Figure (3) Illustrates Percentage distribution and mean of total mothers' scores self-reported practices regarding nocturnal enuresis before and throughout phases of learning package it was noticed that all of mothers (100.0%) had un satisfactory practice before the learning package, while all of them (100.0%) and the majority of them (96.7%) had satisfactory practice immediate and one month after the health education respectively. As regard to the mean of total practice score were 21.73 ± 5.23 , 73.81 ± 4.0 , and 62.70 ± 5.49 before, immediate and one month after the learning package respectively with a statistically significant difference (P= 0.0001).

Table (4): Illustrates correlation between levels of total mothers' knowledge and practice related to nocturnal enuresis before, immediate, and one month after the learning package. It was noticed that there was negative correlation between levels of total mothers' knowledge and practice before the learning package, while there was positive correlation with a statistically significant difference where immediate and one month after respectively (P= 0.027 and 0.034)

Table (1): Percentage distribution of studied mothers regarding their sociodemographic characteristics.

Socio-demographic characteristic	(n=60)	
	No	%
Age years:		
20-<30	12	20.0
30-<40	45	75.0
≥40	3	5.0
Range	23– 41	
Mean ± SD	33.23 ± 4.16	
Marital status		
Married	53	88.3
Widowed	5	8.4
Divorced	2	3.3
Education level:		
Primary education	10	16.6
Preparatory education.	13	21.7
Secondary education.	24	40.0
University education.	13	21.7
Mother's occupation:		
Working	34	56.7
Housewife	26	43.3
Residence		
Rural	33	55.0
urban	27	45.0
Number of family member		
3 – 4	15	25.0
5 – 6	41	68.3
≥ 7	4	6.7
Range	3 – 7	
Mean ± SD	5.15 ± 1.08	

Number of children		
1 – 3	31	51.7
3 – 6	29	48.3
Range	1 – 6	
Mean ± SD	3.30 ± 1.07	

Table (2): Percentage distribution of studied children regarding their Biosocial characteristics.

Socio-demographic characteristic	(n=60)	
	No	%
Age years:		
5 – 10	52	86.7
> 10 – 15	8	13.3
Range	5 – 14	
Mean ± SD	8.273 ± 2.28	
Sex:		
Male	33	55.0
Female	27	45.0
Academic class:		
Kindergarten	10	16.7
Primary 1	6	10.0
Primary 2	7	11.7
Primary 3	14	23.3
Primary 4	10	16.7
Primary 5	5	8.3
Primary 6	1	1.7
Preparatory 1	4	6.7
Preparatory 2	2	3.3
Preparatory 3	1	1.7
Birth order:		
First	17	28.3
Second	25	41.7
Third	14	23.3
Fourth and more	4	6.7

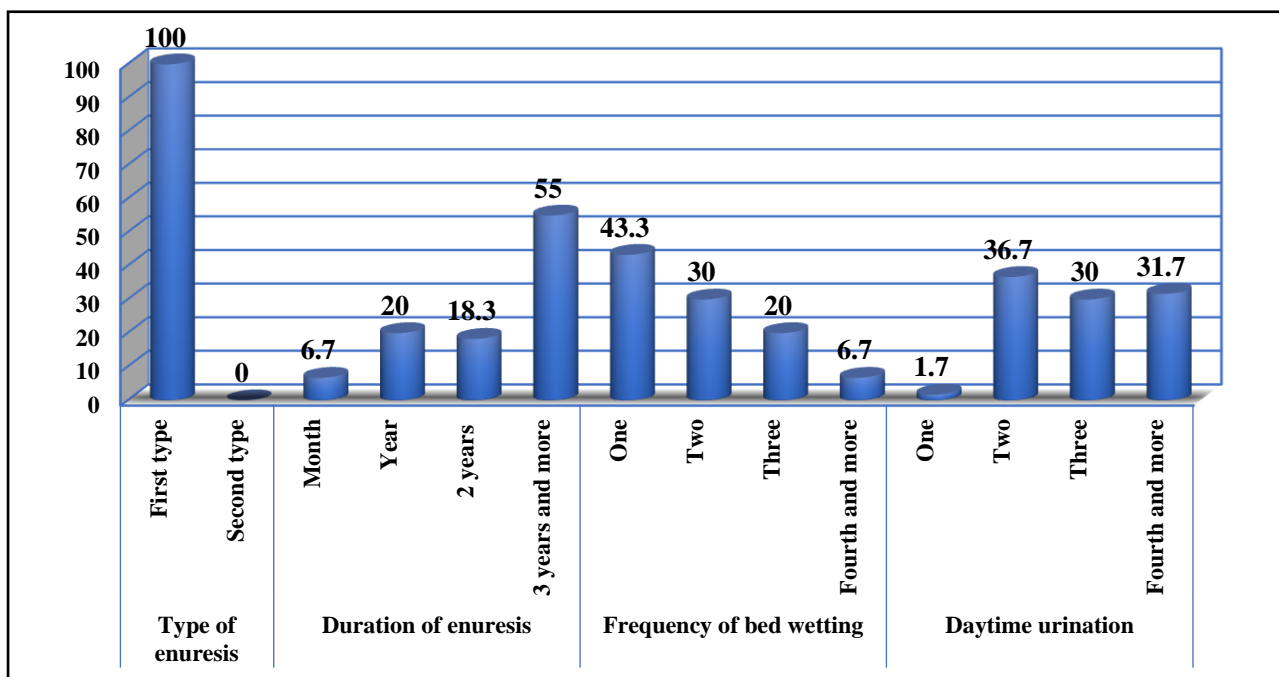


Figure (1): percentage distribution of the studied children regarding to enuresis.

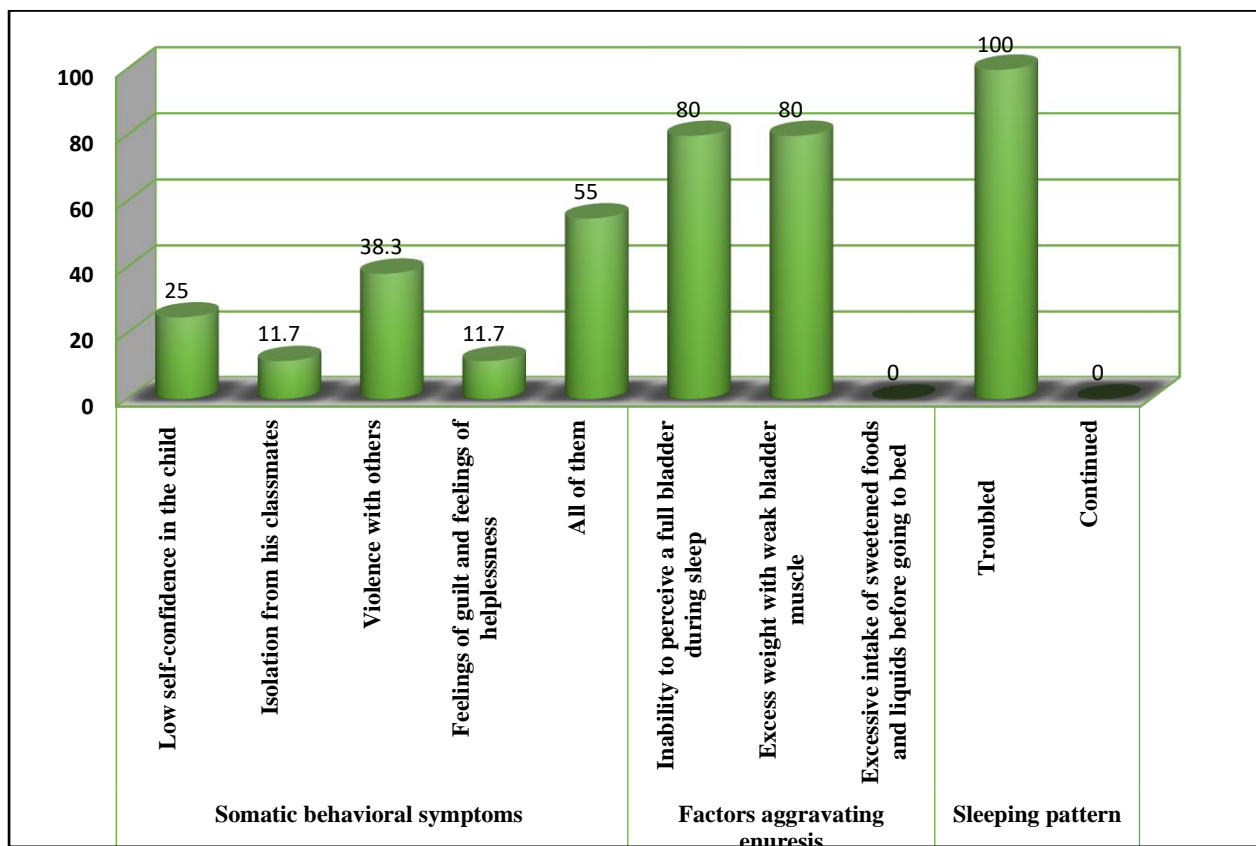


Figure (2): characteristics of the studied children regarding to somatic behavioral symptoms, factors aggravating enuresis and sleeping pattern.

Table (3): Percentage distribution and mean of total score of the studied mother’s knowledge about nocturnal enuresis before, immediate and one month after implementing of learning package.

Total knowledge about nocturnal enuresis	Before implementing of learning package (n=60)		Immediate after implementing of learning package (n=60)		One month after implementing of learning package (n=60)		χ^2	P
	No	%	No	%	No	%		
Levels of total knowledge:								
Poor knowledge (0 – 9)	60	100.0	14	23.3	18	30.0	89.727	0.0001*
Fair knowledge (10)	0	0.0	8	13.4	6	10.0		
Good knowledge (11 – 14)	0	0.0	38	63.3	36	60.0		
Total knowledge scores							F value	P
Range (0 - 14)	0 - 7		7 – 14		5 - 13		350.002	0.0001*
Mean ± SD	2.183 ± 1.62		10.933 ± 1.76		9.100 ± 2.28			

*Statistically significant difference at (P<0.05)

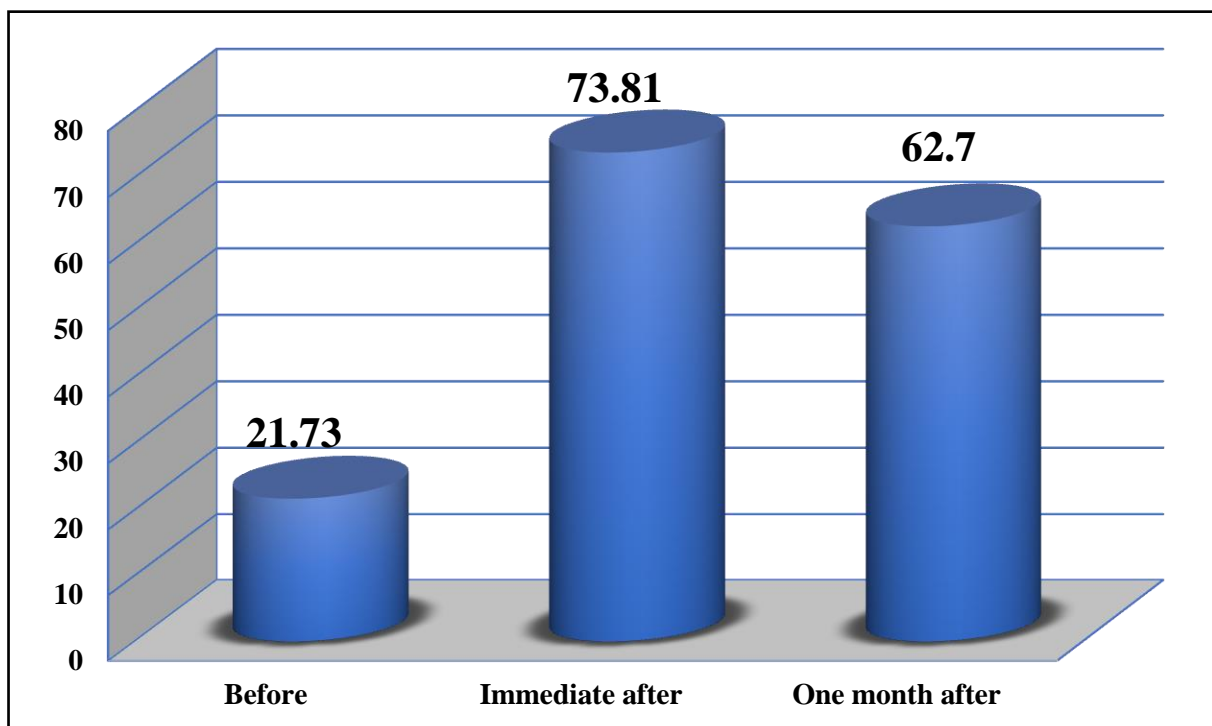


Figure (3): Mean of total mothers' scores of self-reported practices regarding nocturnal enuresis before and throughout phases of learning package

*Statistically significant difference at (P<0.05)

Table (4): Correlation between levels of total mothers' knowledge and practice related to nocturnal enuresis before, immediate, and one month after the learning package.

Total practice scores	Total knowledge scores													
	Before		Immediate after						One month after					
	Poor knowledge		Poor knowledge		Fair knowledge		Good knowledge		Poor knowledge		Fair knowledge		Good knowledge	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Unsatisfactory practice	60	100.0	0	0.0	0	0.0	0	0.0	2	3.3	0	0.0	0	0.0
Satisfactory practice	0	0.0	14	23.3	8	13.4	36	63.3	16	26.7	6	10.0	36	60.0
r	-0.188		0.234						0.123					
P	0.151		0.027*						0.034*					

*Statistically significant difference at (P<0.05)

V. DISCUSSION

School age is a period of development that starts from 6-12 years, in which the child is directed away from the family group and is centered on the wide world of peer relationship. Nocturnal enuresis is the second most common disorder among children after allergic disorders and is one of the most problems during childhood. It refers to the inability of control of urination and involuntary urination in a child during night in an age period the bladder function control must be achieved. ⁽¹⁴⁾

Nocturnal enuresis in children aged five to sixteen years is seen worldwide in all cultures. It can have a dramatic psychological and emotional impact on young children and strictly affect their quality of life. ⁽¹⁵⁾ It is a frustrating problem for parents since they are classically the one responsible for the clean up after an accident and are typically charged with finding a cure for the problem. As well, parents often treat enuresis as a psychological problem. For that reason, parental perception can often cause psychological damage to children suffering from nocturnal enuresis, through punishment, shaming, and lack of support. Parental concern is often not high and as a result, most children are not treated at all. ⁽¹⁶⁾

Regarding sociodemographic characteristics of the studied mothers, the present study revealed that three quarters of mothers aged from 30-<40 years, Less than half of them completed their secondary education, more than half of them were working and from rural. That may affect the mothers' ability to use booklet to gain the required information although they are not have enough time to provide good care and apply gained practice about child enuresis.

The result of the current study was in an agreement with **Osman et al (2019)** who mentioned in his study that the majority of mothers were in the third decade of age, more than two thirds having intermediate education and more than half of them were from rural. A similar finding was demonstrated in the study by **Elbahnasawy and Elnagar (2018)** who proved that a higher relative risk of enuresis in children was observed in families with a mother with a relatively lower education. In the same line, another previous research carried out by **Inan et al (2018)** who reported that the higher prevalence of enuresis occurs in families where mother has a lower level of education. ⁽¹⁷⁻¹⁹⁾

The current study revealed that more than half of the enuretic children were males. This was explained by wariness of parents for their boys, while their daughters for fear that the condition might affect a marriage. However, it may be attributed to difference in anatomical structure of the urinary system between males and females. This finding may be attributed to the culture of mothers of enuretic children residing rural areas who are over interested in boys more than girls, accompanying the boys to seek medical treatment for them. This result was in agreement with **Ali et al (2019)** who found that nocturnal enuresis is more prevalent and prolonged in boys than in girls. In this line, **Osman et al (2019)** who observed a higher percentage of boys than girls was detected among the children with enuresis. ^(17,20)

It was evident in the present study that most of the enuretic children aged from five to ten years. This finding may be due to an inadequate experience and knowledge of a mother about correct toileting and lack of awareness about how to deal with their children. This finding was similar to the study conducted by **El-Sayed et al (2018)** who found that the highest incidence of enuresis in a sample of Egyptian primary school children was among children in the age 8-10 years. ⁽²¹⁾

The current study revealed that enuretic children ranked between first and second or higher birth order. This may be due to the mothers of those children having many children with additional loads in providing care to the enuretic child as well as siblings which increases the burden of mothers in addition to lack of parents' awareness about psychological factors related to the occurrence of enuresis, also the repercussions of families with a lot of kids were found not only on the economic conditions, but also on family dynamics, level of medical and psychological care for enuretic child, as well as family conflicts. In agreement with this result, **Yousef et al (2017)** and **Hashem et al (2018)** who reported that the higher frequency of enuresis was observed in children of lower socioeconomic status especially in cases of inadequate clothes and large crowded families. ^(22,23)

Regarding the period of child enuresis in years. It was observed that, more than half of child had enuresis more than three years and all of them suffered from primary type of nocturnal enuresis. This may be due to that the age of enuretic children at the present study was 5 to 15 years; school age children and entering school may be stressful event for them. This finding was in agreement with **Salih et al (2018)** and **Mohammed et al. (2019)** who mentioned that school age children had enuresis more than three years and suffered from primary enuresis ^(24,25)

In relation to somatic behavioral symptoms, it was observed that more than half of enuretic children appeared low self-confidence, isolation from his classmates, violence with others, feelings of guilt and helplessness. These results may be due to that children with a bedwetting problem often suffer from shame and guilt, may have feelings of failure and view themselves as different from others. Children with a bedwetting problem are afraid of being discovered by their peers, and often fear teasing and humiliation by their own siblings and relatives. These results agreed with **El-bahnasawy and Elnagar (2019)** who found in their study that two thirds of the studied children had low self-esteem ⁽¹⁸⁾. Also, **Tal (2019)** added that the children who suffer from nocturnal enuresis can experience loss of self-esteem, humiliation and social

isolation. In addition, **Helmy et al (2018)** who found that there was a significantly lower total self-esteem of studied group than control group was in agreement with these findings.^(26,27)

Regarding total score of the studied mother's knowledge about nocturnal enuresis before, immediate and one month after implementing of learning package. It was noticed that all of studied mothers had poor knowledge before implementing of learning package, while about two thirds of them had good knowledge immediate and one month after implementing of learning package respectively. As regard to the mean of total knowledge score were 2.183 ± 1.62 , 10.933 ± 1.76 , and 9.100 ± 2.28 before, immediate and one month after implementing of learning package respectively with a statistically significant difference. This may be attributed to the unavailability of health information delivered to them by qualified healthcare professionals. These results point to the great need for health information in structured interventions related to nocturnal enuresis.

The results of the present study were in agreement with studies of **El-said et al (2018)**, **Moulhee et al (2017)** and **Paste (2018)** who mentioned that the educational program had a positive effect on the knowledge of mothers regarding nocturnal enuresis.^(21, 28, 29) Also these results were in an agreement with **Najeib (2017)** who stated that there was a highly significant differences in parent's knowledge in pre-test and post-tests results and reveal that the educational program is easy and simple to all participants and the parent's knowledge can be developed and improved through applying this program and gives parents an opportunity to continue and promote their knowledge.⁽³⁰⁾

Regarding the percentage distribution and mean of total mothers' scores self-reported practices regarding nocturnal enuresis before and throughout phases of health education It was noticed that all of mothers had un satisfactory practice before the learning package, while all of them and the majority of them had satisfactory practice immediate and one month after implementing learning package respectively. This may be due to the effect of implementing learning package about nocturnal enuresis provided the mothers with the needed help, confidence and motivation to gain more and drier nights. This affects their attitude in a positive way. A similar study was done by **Fagundes et al (2019)** who showed that one-third of the parents had an encouraging practice toward children with nocturnal enuresis, expressed words of comfort and praised their children for being dry. As well a study by **Osman et al (2019)** supported the results of the current study and showed that mothers gain confidence and motivation for their practice after implementation of health education.^(17,31)

There was positive correlation with a statistically significant difference between mothers, knowledge and practice immediate and one month after implementing learning package respectively. This revealed that the mothers who have a good knowledge about enuresis also had a positive and proper practice in dealing with their children with enuresis. Mothers gain a lot of information help in provide good practice with their children. **Duraphe (2020)** who clarified that the positive attitude was alleviated by good knowledge, and proper practice was alleviated by good knowledge together with positive attitude too was in agreement with this findings⁽³²⁾

VI. CONCLUSION

Based on the findings of the present study, it can be concluded that mothers showed an improvement in their knowledge and practices about nocturnal enuresis after implementation of the learning package. There was a statistically significant difference of total mother's knowledge and practice scores before and after implementing learning package. Enuretic children an improvement in control their bladder after the implementation of the learning package.

VII. RECOMMENDATIONS

Based on the findings of the present study, the following recommendations are suggested:

- 1- Ongoing learning package must be designed and implemented for mothers at the pediatric out patient nephrology clinic for the importance of maintaining check-up.
- 2- Educational program for nurses must be done to increase their knowledge and practice in the pediatric outpatient nephrology clinic.
- 3-Conducting an educational program for the parents about the harms of using punishment and substitute it with other rewards for behavior modification and involving them in the task of maintaining their children's psychological health.
- 4-Education for nursing students about the effect of enuresis on quality of life for enuretic children in the basic curriculum.

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