Novelty Journals

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 12, Issue 2, pp: (23-39), Month: May - August 2025, Available at: www.noveltyjournals.com

The Effect of a Health Education Program on the Mothers Having Children Suffering from Nocturnal Enuresis

Eman Ramadan Saber Ahmed [(1)], Dr. Amany Mohamed Saad [(2)], Dr. Ons Said El- Zayat [(3)]

Assistant Lecturer of Community Health Nursing Faculty of Nursing, Beni Suef University [(1)]

Assistant professor of Community Health Nursing, Faculty of Nursing, Helwan University [(2)]

Assistant professor of Community Health Nursing, Faculty of Nursing, Helwan University [(3)]

DOI: https://doi.org/10.5281/zenodo.15533813

Published Date: 28-May-2025

Abstract: **Nocturnal enuresis is a common distressing disorder that carries a significant burden. This disorder has psychological, social and financial consequences for the families and their children. The aim of this study is to: evaluate the effect of a health educational program on the mothers having children suffering from nocturnal enuresis. Design: A quasi-experimental design (pre and post- test) was utilized. Setting: This study was conducted at outpatient clinics affiliated to the Health Insurance at Beni-Suef governorate in school health unit of health insurance. Sample: Purposive samples of 259 mothers have children diagnosed with nocturnal enuresis. Tools: One tool, structured interviewing questionnaire, contained four parts, demographic characteristics of mothers and their children, past and present medical history of children, mothers' knowledge regarding nocturnal enuresis, mothers' attitude regarding nocturnal enuresis and mothers' reported practices regarding nocturnal enuresis. Results: There was 8.1% of studied mothers had good level of total knowledge about nocturnal enuresis at pre educational program. While improved to 81.0% of them at post educational program. Also, there was 41.7% of studied mothers had positive attitude regarding nocturnal enuresis at pre educational program. While improved to 88.0% of them at post educational program. Also, there was 39.4% of the studied mothers had satisfactory level of total reported practices regarding nocturnal enuresis at pre educational program. While improved to 90.0% of them at post educational program. Conclusion: There was a marked improvement in mother's knowledge, attitude and reported practices regarding nocturnal enuresis at post educational program with a highly statistically significant difference. Recommendation: Continuous health educational program for mothers of children with nocturnal enuresis is essential to update their knowledge and skills about advanced treatment strategies.**

Keywords: **Mothers, Health Education Program, Nocturnal Enuresis.**

1. INTRODUCTION

Nocturnal enuresis (NE), also known as nighttime bedwetting, is defined as involuntary discharge of urine during sleep in children older than 5 years of age with two or more episodes per month for a period of at least 3 consecutive months and must have a negative impact on other important areas of functioning. NE is more common in younger children, affecting 15–20% of five-year-olds, and it occurs about twice as often in boys compared to girls **(Kuru et al., 2023).**

Nocturnal enuresis is classified as monosymptomatic NE and poly or non-monosymptomatic NE according to the presence of additional lower urinary tract symptoms. Monosymptomatic NE present without any manifestations of lower urinary tract (LUT) dysfunction, while poly or non-monosymptomatic NE presents with many manifestations of lower urinary tract dysfunction such as abnormal low or high voiding frequency, voiding difficulties, urgency and daytime incontinence. NE

also is classified as primary and secondary NE according to the history of dryness. Primary NE is diagnosed in a child who has never attained nighttime dryness, while secondary NE is when the child has achieved period of dryness for at least 6 months and starts up NE again **(Ong et al., 2024).**

Nocturnal enuresis is common in children, but its pathophysiology is still not fully understood. Nocturnal enuresis is a complex and multifactorial condition, which points to genetic, biological, and psychological mechanisms as underlying factors. The pathophysiology of NE is not yet fully understood; however, latest research has identified three main pathophysiological mechanisms: nocturnal polyuria due to decreased levels of antidiuretic hormone (arginine vasopressin, AVP), sleep and arousal disorders and bladder dysfunction associated with nocturnal over activity of the detrusor muscle **(Angeli et al., 2023).**

Several risk factors are attributed to development of NE such as being male, family history of NE, poor parental education, low birth weight, psychological or mental stress and long-term use of disposable diaper. Sibling's history of NE in childhood, obesity, sleep disorders (such as obstructive sleep apnea), psychological problems and recurrent urinary tract infection are considered the most common risk factors of NE among children **(Albadrani et al., 2024).**

Nocturnal enuresis presents a socially stigmatizing and distressing challenge that impacts the quality of life for both children and parents. NE can negatively impact the child's social and psychological well-being. NE is associated with a detrimental impact on academic performance, emotions, and social lives of affected children and their families. Previous surveys have revealed that NE is the third most disruptive life events to children's lives, ranked only after divorce and parental conflict. If left untreated, it may result in poor self-esteem, avoidance of social activities like camps and sleep-overs behavioral problems as well as parental stress **(Fung et al., 2024).**

Management strategies for NE encompass both pharmacological and non-pharmacological approaches, tailored to factors such as coexisting disorders, NE subtype, severity, child motivation, and parental compliance. While secondary NE treatment is managed by treating underlying medical conditions, primary NE is typically managed with medications (notably desmopressin for monosymptomatic (MNE) and anticholinergic for non-monosymptomatic (NMNE), enuresis alarm, behavioral interventions and dietary intervention **(Nigri et al., 2024).**

Mothers are the primary caregivers who are responsible for helping their children learn the skills of being dry so they must have sufficient knowledge and competent practices regarding their enuretic children's condition. Mothers whose children suffer from NE tend to keep their condition secret due to social and cultural issues. So, mothers need to be equipped with sufficient knowledge, positive attitude, necessary skills and coping mechanisms when dealing with their enuretic children for overcoming the problem **(Abu El Soud et al., 2023).**

Health education program is important for successfully decreasing recurrence of NE among children, increase awareness and to reach sufficient knowledge regarding NE. Education program includes appropriate interventions for the affected child and family to decrease the potential consequences of family stress, social withdrawal, and low self-esteem of enuretic child. The health education program can also be a means of providing psychosocial support, which is an essential part of caring for the stress that constitutes psychological burden on mothers. It is important for the mothers to understand that the child is not alone **(El kersh et al., 2022).**

Community health nurse occupies an important position as an initiator regarding the solution of NE and educational services for mothers and their children about the problem of NE and strategies for its management. As the community health nurse has important roles in maintaining the health and wellbeing of the child and its family, he/she is considered a key person in providing care, education, counseling, guidance, and support to the child with NE. Explaining and providing accurate and correct information about the illness to the mothers has a great impact on success of treatment to ensure compliance with treatment recommendation, increase the success rate of the treatment and reduce recurrences of disease and reduce negative consequences **(Yilmaz & Büyük, 2022).**

Significance of the study

In Egypt, there is no current document regarding the true incidence of nocturnal enuresis among children. Though, according to a study done by **(Rady et al. , 2017)** the prevalence of nocturnal enuresis in Egyptian children (6-12 year olds) was estimated to range between 10.4% and 15.7%. Also, according to a study done by **(Mohamed et al., 2019),** the prevalence rate was 14.5% with a higher frequency for boys than girls (16.5% versus 12.6% correspondingly) while, primary enuresis has a prevalence of 11.5% and 3.2% for secondary enuresis.

The prevalence NE in Egypt has not been accurately determined due to under-reporting, but individual studies in different Egyptian Governorates have estimated a prevalence rate. For example, in Elbehira Governorate, the prevalence of nocturnal enuresis was 13.9% in children (6-12 year olds) as stated by **(Elazzazy et al., 2022).** In Gharbia Governorate, the prevalence of NE was 14.3% in children (6-12 year olds) as stated by **(Salem et al., 2020).** In Sharkia Governorate, the prevalence of nocturnal enuresis was 8.8 % in children (6-12 year olds) as stated by **(Ahmed et al., 2022).**

Nocturnal enuresis is a common and hidden problem among children in many families in Egypt, and parents tend to keep this condition secret due to social and cultural issues. Parents who have children with NE are financially, physically and mentally drained, therefore parents must be equipped with adequate knowledge, skills and coping mechanisms when dealing with their children with NE to overcome the problem. NE can cause countless problems to children and their families if left untreated and it can result in many psychological consequences and poor scholastic achievements **(Abu El Soud et al., 2023).**So, this study will be conducted to evaluate the effect of a health education program on the mothers having children suffering from nocturnal enuresis.

Aim of the study

This study aims to evaluate the effect of a health education program on the mothers having children suffering from nocturnal enuresis through:

- ❖ Assessing mothers' knowledge, attitude and reported practices regarding nocturnal enuresis.
- ❖ Planning and implementing a health education program to mothers regarding nocturnal enuresis.
- ❖ Evaluating the effect of a health education program regarding nocturnal enuresis.

Research Hypothesis:-

Implementing a health education program will improve mothers' knowledge, attitude and reported practices regarding nocturnal enuresis.

2. SUBJECTS AND METHODS

Research design:

A quasi-experimental research design was applied to achieve the aim of this study.

Setting:

The outpatient clinics affiliated to the Health Insurance at Beni-Suef governorate in school health unit of health insurance.

Subjects:

Purposive samples of 259 mothers have children diagnosed with nocturnal enuresis. The mothers have been selected according to the following inclusion criteria:

1- Mothers with children diagnosed with nocturnal enuresis.

2- Child age from 6-12 years.

3- Child free from other physical and psychological illnesses

4- Mothers accepting to participate in the study.

The Sample size was calculated by the following equation:

n = N [1+ N (e 2)] **(Adam, 2020).**

n = Sample size

N = Population size is 786

e = 0.5 is level of perception

n = 786 [1+786 (0.0025)] = 259

The actual size of sample was 259 through year 2023-2024.

Tools for data collection:

Data was collected using the following one tool:

Structured interviewing questionnaire was designed based on literature review and approved by supervisors. It was written in simple Arabic language and consists of four parts.

First part:

(A) Demographic characteristics of mothers and their children: This part contained of 8 items, it includes data about mother's age, mother's educational level, mother's occupation, place of residence, monthly income, child age, child gender and child order in the family

(B) Past and present medical history of children: This part contained of 9 items, it includes data about onset of the disease, taken medication, causes of the disease, kinds of nocturnal enuresis, frequency of nocturnal enuresis, presence of constipation ,presence of urinary symptoms ,punishment of the child and family history of nocturnal enuresis

Part II: Mothers' knowledge regarding nocturnal enuresis: This part contained of 12 questions, it concerned with mother's knowledge about nocturnal enuresis such as meaning of NE, the most vulnerable group for NE, types, common causes of NE, the important anatomical causes for NE, risk factor for NE, complication of NE, psychological effect of NE, main management for NE, the factors that contribute to the success of NE management, main control measures of NE and the methods of prevention of NE.

- **Scoring system:** The questionnaire was contained of 12 questions, each question evaluated as "the correct answer was scored as one grade and the incorrect answer or don't know was scored as a zero".

- The total scores of the questionnaire were 12 grades. These scores were summed and converted into a percent score. It was classified into 3 categories:

  * **Good** knowledge if score ≥ 75% (9-12 grades).
  * **Fair** knowledge if score from 50-<75% (6- < 9 grades).
  * **Poor** knowledge if score <50 % (< 6 grades).

Part III: Mothers' attitude regarding nocturnal enuresis: Developed by (Mohamed et al., 2019): It includes 17 items and it concerned with mothers' attitude regarding NE such as mother think that NE does not cause anxiety and/or fear, NE can be resolved by time, NE can control by adhering to the recommended interventions, early diagnosis of NE helps prevent complications, complications of NE are serious, behavioral therapy is more effective than medication, periodic follow up is very important for NE control, toilet training is necessary for NE control, teaching the child to clean his clothes and bed is so important, family give support and needed help, NE is a lifelong disease, NE is an embarrassing and shameful disease, herbal treatment is more effective than medications, In case of NE, the child deserve punishment, NE can prevent from social activities and visits, It is better not to talk about child NE with others and feel shy from child NE.

- **Scoring system:** Mother's attitude regarding nocturnal enuresis was contained of 17 items, the scale using a 3-point scale that ranges from 3 for "Agree", 2 for "Neutral" to 1 for "Disagree". The total scores of the scale were 51 grades.

- These scores were summed and converted into a percent score. It was classified into 2 categories:

  * **Positive attitude** if score ≥ 60%. (30.6 - 51 grades).
  * **Negative attitude** if score from - < 60% (17- < 30.6 grades).

Part IV: Mothers' reported practices regarding their children with nocturnal enuresis Developed by (Essawy, 2018): It consisted of 32 items. Concerned with mother's reported practices regarding their children with NE such as physical care (10 items), psychological care (6 items), the pharmacological therapy (4 items) , bladder strengthening training (3 items), behavior training (5 items) , attention training for dry bed (2 items) and rewarding for behavior modification (2 items).

- **Scoring system:** Mother's reported practices regarding their children with NE were contained of 32 items, the scale using a 3-point scale that ranges from 3 for "Always", 2 for "Sometimes" to 1 for "Never". The total scores of the scale were 96 grades.

- These scores were summed and converted into a percent score. It was classified into 2 categories:

  * **Satisfactory practice** if score ≥ 60%. (57.6 - 96 grades).

  * **Unsatisfactory practice** if score from < 60%. (32- < 57.6 grades).

Validity:-

The validity of developed tool was tested through a panel of three experts in Community Health Nursing in Faculty of Nursing, Helwan University to review relevance of the tools for comprehensiveness, accuracy, understanding and applicability.

Reliability*:*

Testing the reliability of the tools through Alpha Cronbach reliability analysis.

Tool	No. of items	Alpha Cronbach	Internal consistency
Mothers' Knowledge regarding nocturnal enuresis	12	0.961	Good
Mothers' Attitude regarding nocturnal enuresis	17	0.845	Acceptable
Mothers' reported practices regarding nocturnal enuresis	32	0.855	Acceptable

Ethical considerations:

An official permission to conduct the proposed study was being obtained from the Scientific Research Ethics Committee, Faculty of Nursing Helwan University. Participation in the study was voluntary and subjects was be given complete full information about the study and their role before signing the informed consent. The ethical considerations was include explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information where it was not be accessed by any other party without taking permission of the participants. Ethics, values, culture and beliefs was be respected.

II- Operational Item:

Preparatory phase:

It was include reviewing of past, current, national and international literature and theoretical knowledge related to nocturnal enuresis, covering various aspects of the study using books, articles, internet, periodicals and journals to develop tools for data collection.

Pilot study:

The pilot study has been conducted to test clarity of questions, applicability and efficiency of tool. It also aimed to ensure simplicity, relevance and feasibility of conduction of the study tool. It has been conducted on 10 % (26) of mothers. The results of the pilot study helped in refining the interview questionnaire and to schedule the time framework. No modification was done so; the participants of pilot study were included from the main study sample.

Field work:

The researcher met mothers and explained the aim of the study and its components after obtaining formal consent from the participants. The questionnaire were distributed and completed by researcher from studied mothers to assess their knowledge, attitude and reported practices at pre intervention phase. The researcher educates mothers about nocturnal enuresis after divided them into groups, each group was educated by sessions.

Data was collected from beginning of October 2023 to the end of the March 2024, a period of six months and the researcher was attended two days (Sunday and Tuesday) per week from 9 am-12 pm in the study setting till completion of the questionnaire. The time needed to complete the questionnaire was about 25 - 35 minutes. The effect of the educational program was assessed after the end of the educational program by using the same tool at preprogram assessment phase.

A health educational program was conducted through four phases: preparatory, assessment, planning and implementation and evaluation phase.

- **Preparatory phase:** Using books, journals, and magazines that were readily available, review of the past and present relevant literature covering all elements of nocturnal enuresis disorder was conducted in order to construct the data collection tools. The goal is to create study tools by understanding the research concept.
- **Assessment phase:** The study tools were used to assess mothers' knowledge, attitude and reported practices regarding nocturnal enuresis disorder prior to the implementation of the planned educational program.
- **Phase of planning and implementation:**
- It was conveyed to all participants in the program that the goal of creating the educational content was to enhance the mothers' knowledge, attitude, and reported practices toward NE.
- The program's contents cover the definition, causes, risk factor, types, diagnosis, complications, management, and prevention of NE.
- Educational program was designed according to mothers' needs the researcher created a booklet that provided mothers with prevention on NE.
- There were ten groups, each group consisting of twenty-six mothers. Eighth sessions were required to implement the program, and each one lasted between 30 to 45 minutes at special room at outpatient clinics affiliated to the Health Insurance at Beni-Suef governorate in school health unit of health insurance.
- The educational methods used in the study were lecture, group discussion, brain storming, demonstration, re-demonstration and role play.
- The researcher used a variety of supportive materials as papers, colored posters, power point, handouts and booklet prepared by researcher.

Theoretical part:

- **First session:** At the beginning of the first session, the researcher welcomes and introduces self to mothers; an orientation to objectives of the program was given, set an agreement on the time and duration of sessions. The researcher provides a trust, warm and secure atmosphere between mothers group to relieve anxiety, tension, and increase the motivation to participate in all sessions of the educational program. They were given the pretest questionnaire (pre-program test). This session covered goal and objectives of the program, outlines of the program and introduction about NE.
- **Second session:** Covered meaning, prevalence of NE, diagnostic criteria and types of nocturnal enuresis.
- **Third session:** Covered causes, risk factors, physical, psychological, social impact of nocturnal enuresis on child and impact on family.
- **Fourth session:** Covered diagnosis of NE and recommended summary of instruction needed to maintain healthy life style to prevent NE.

Practical part:

- **Fifth session:** Covered management of nocturnal enuresis (behavioral therapy of NE which consists of simple behavioral therapy and complex behavioral therapy).
- **Sixth session:** Covered other methods management of nocturnal enuresis which includes pharmacological therapy, non-behavioral therapy, combination therapy and complementary therapy.
- **Seventh session:** This session interested in summary of instruction needed to maintain healthy diet, benefits of adopting healthy behaviors to prevent NE and instructions for improving attitude toward NE.
- **Eighth session:** This session covered role of community health nurses in management and prevention of NE.

- **Evaluation Phase:** This phase aims to evaluate the effect of a health educational program to mothers regarding improving knowledge, attitude and reported practices regarding prevention of NE by using the same questionnaire of pretest.

Ethical considerations:

An official permission to conduct the proposed study was obtained from the Scientific Research Ethics Committee, Faculty of Nursing, Helwan University. Participation in the study was voluntary and subjects were given complete full information about the study and their role before signing the informed consent. The ethical considerations were include explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information where it not be accessed by any other party without taking permission of the participants. Informed consent was taken from mothers to conduct the study. Objectives, tools and study technique were illustrated to gain their cooperation. Ethics, values, culture and beliefs were respected.

III: Administrative Items:

Approval to carry out this study was obtained from dean of Faculty of Nursing, Helwan University and official permission was obtained and directed to the general manager of Health Insurance of Beni-Suef Governorate asking for cooperation and permission to conduct the study.

IV: Statistical Analysis:

The collected data organized, tabulated and statistically analyzed using Statistical Package for Social Science (SPSS) version 25 for windows, running on IBM compatible computer. Descriptive statistics were applied (e.g. frequency, percentages, mean and standard deviation). Qualitative variables were compared using qui square test (x^2) as the test of significance, and Paired T test (t) used to compare between means of quantitative variables. Pearson correlation test (r) was used to test the correlation between studied variables. Reliability of the study tools was done using Cronbach's Alpha. A significant level value was considered when $p < 0.05$ and a highly significant level value was considered when $p < 0.01$. No statistical significance difference was considered when $p > 0.05$.

3. RESULTS

Table (1): Frequency distribution of the studied mothers according to their demographic data (n=259).

Mothers` demographic data	No.	%
Age (years)		
20-<25	90	34.8
25-<35	112	**43.2**
35-<45	46	17.8
45- ≤ 60	11	4.2
Mean ± SD **34.93±6.54**		
Educational level		
Can't read and write	9	3.5
Read and write	44	17.0
Basic education	68	26.3
Secondary education	119	**45.9**
University education and more	19	7.3
Mother's occupation		
Housewife	130	**50.2**
Employed	129	49.8
Place of residence		
Urban	65	25.1
Rural	194	**74.9**

Novelty Journals

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 12, Issue 2, pp: (23-39), Month: May - August 2025, Available at: www.noveltyjournals.com

Monthly income		
Save and enough	28	10.8
Not enough	131	**50.6**
Enough	100	38.6

Table (1): Shows that, 43.2% of the studied mothers were aged between 25-<35 years old, the mean SD of age was 34.93±6.54 years. Also, 45.9% of them have secondary education. Moreover, 50.2% of them were housewife. Furthermore, 74.9% of them reside at rural areas. Also, 50.6% of them haven't enough income.

Table (2): Frequency distribution of the studied children according to their demographic data (n=259).

Demographic characteristics of studied children	No.	%
Age (years)		
6 - <9	205	**79.2**
9 - ≤ 12	54	20.8
Mean ± SD	**8.96 ± 2.63**	
Gender		
Male	182	**70.3**
Female	77	29.7
Child's order in the family		
First	100	**38.6**
Second	93	35.9
Third	48	18.5
Fourth and more	18	6.9

Table (2): Shows that, 79.2% of the studied children were in the age group 6 - <9 years old, the mean SD of age was 8.96 ± 2.63 years. Also, 70.3% of them were male. Moreover, 38.6% of them were the first child in the family.

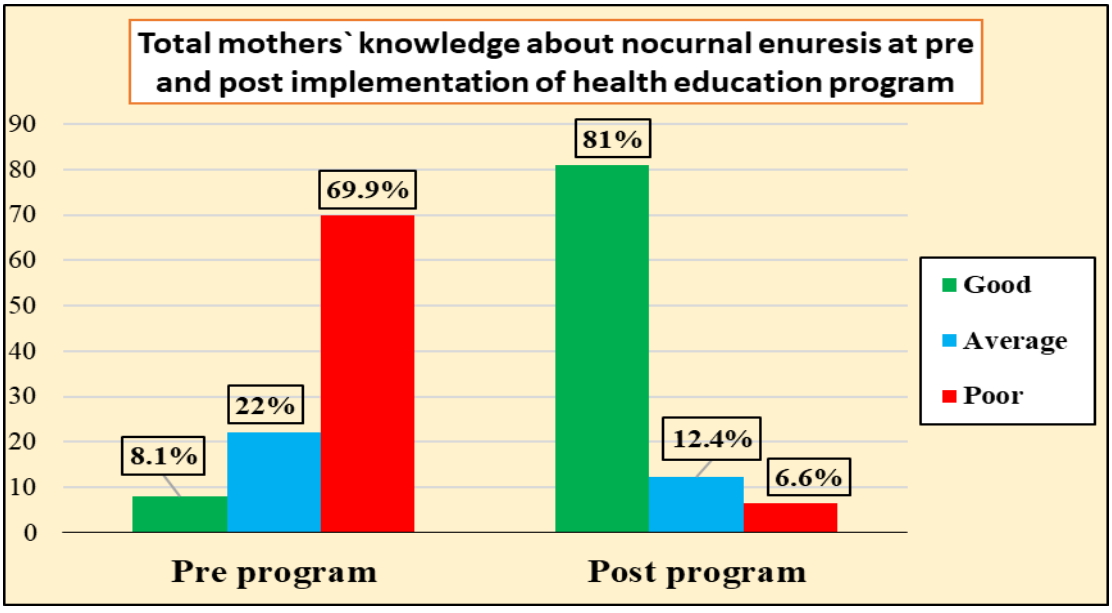

Figure (1): Percentage distribution of total mothers' knowledge about nocturnal enuresis at pre and post implementation of health education program (n=259).

Figure (1): Shows that, 8.1% of the studied mothers had good level of total knowledge about nocturnal enuresis at pre implementation of health education program. While improved to 81.0% had good level of total knowledge at post implementation phase.

Novelty Journals

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 12, Issue 2, pp: (23-39), Month: May - August 2025, Available at: www.noveltyjournals.com

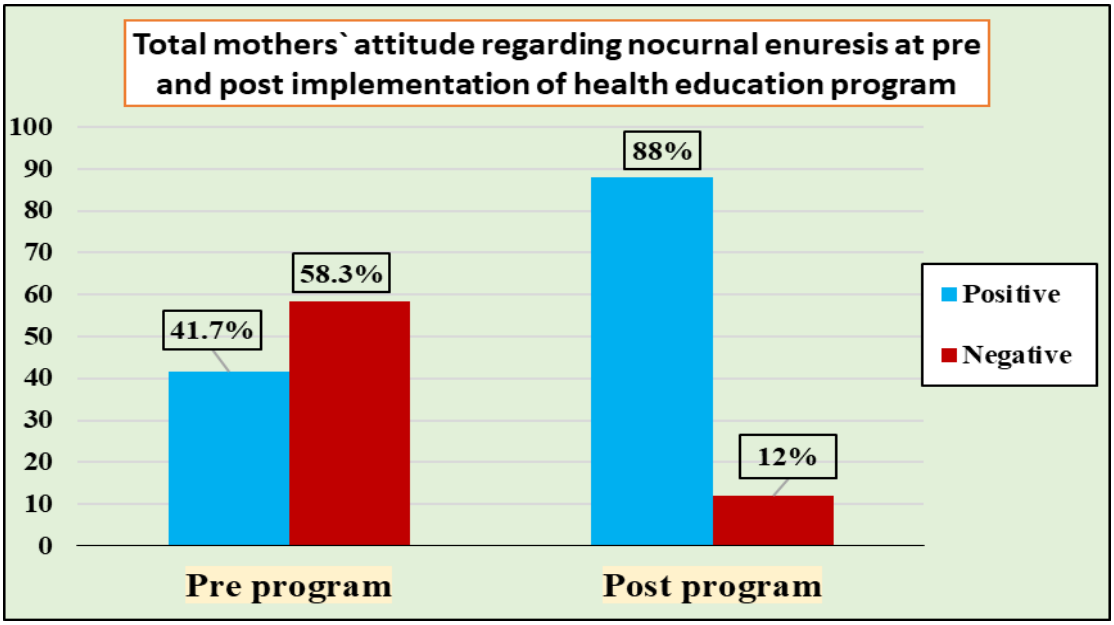

Figure (2): Percentage distribution of total mothers' attitude regarding nocturnal enuresis at pre and post implementation of health education program (n=259).

Figure (2): Shows that, 41.7% of the studied mothers had positive attitude regarding nocturnal enuresis at pre implementation of health education program. While improved to 88.0% at post implementation of health education program.

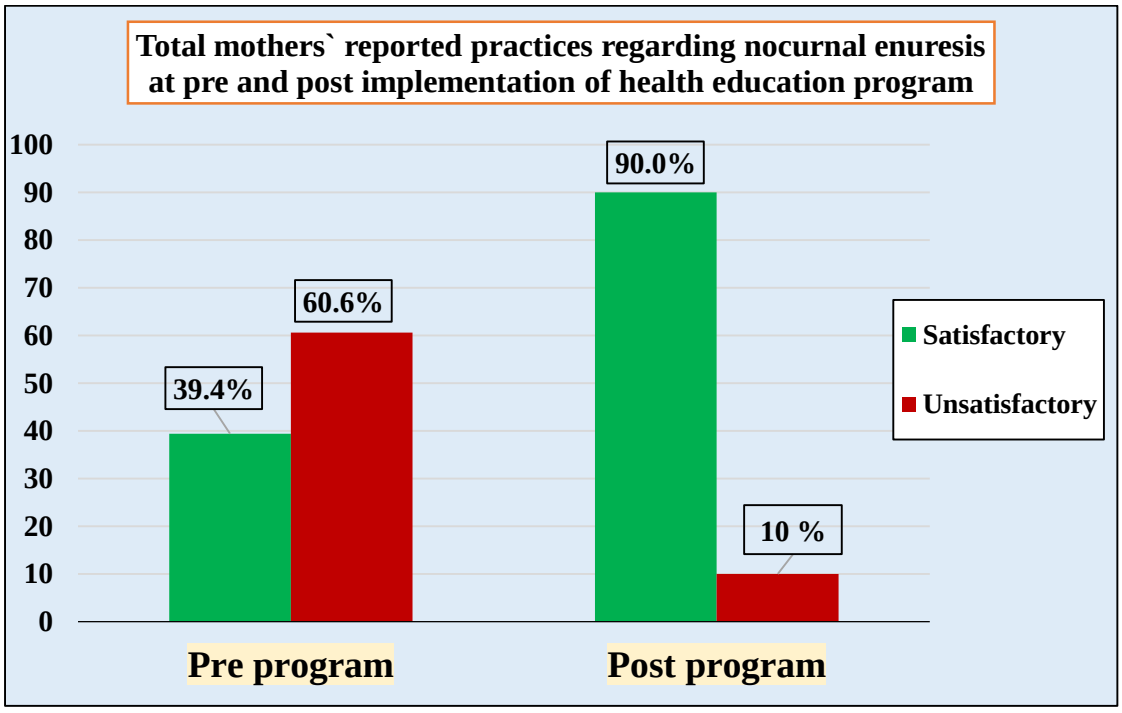

Figure (3): Percentage distribution of total mothers' reported practices regarding nocturnal enuresis at pre and post implementation of health education program (n=259).

Figure (3): Shows that, 39.4% of the studied mothers have satisfactory level of total reported practices regarding nocturnal enuresis at pre implementation of health education program. While changed to 90.0% at post implementation of health education program.

Novelty Journals

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 12, Issue 2, pp: (23-39), Month: May - August 2025, Available at: www.noveltyjournals.com

Part (VI): Relations between the studied variables.

Table (3): Relations between socio demographic characteristics of the studied mothers and their total knowledge regarding nocturnal enuresis at pre and post implementation of health education program (n=259).

Socio-demographic data	Total knowledge at pre-program						X^2	P-Value	Total knowledge at post-program						X^2	P-Value
	Good (n=21)		Average (n=57)		Poor (n=181)				Good (n=210)		Average (n=32)		Poor (n=17)			
	No.	%	No.	%	No.	%			No.	%	No.	%	No.	%		
Age (years)																
20-<25	8	38.1	27	47.4	55	30.4	**13.92**	**0.031***	70	33.3	14	43.8	6	35.3	**4.291**	**0.636**
25-<35	8	38.1	23	40.3	81	44.8			94	44.8	12	37.5	6	35.3		
35-<45	2	9.5	7	12.3	37	20.4			37	17.6	4	12.5	5	29.4		
45- ≤ 60	3	14.3	0	0.0	8	4.4			9	4.3	2	6.2	0	0.0		
Education level																
Can't read and write	0	0.0	0	0.0	9	5.0	**19.65**	**0.12***	1	0.5	1	3.1	7	41.2	**164.3**	**0.000****
Read and write	1	4.8	8	14.0	35	19.4			15	7.1	19	59.4	10	58.8		
Basic education	9	42.9	13	22.8	46	25.4			66	31.4	2	6.3	0	0.0		
Secondary education	7	33.3	35	61.4	77	42.5			111	52.9	8	25.0	0	0.0		
University education and more	4	19.0	1	1.8	14	7.7			17	8.1	2	6.2	0	0.0		
Occupation																
Housewife	10	47.6	16	28.1	104	57.5	**15.03**	**.000****	105	50.0	14	43.8	11	64.7	**1.967**	**0.374**
Employed	11	52.4	41	71.9	77	42.5			105	50.0	18	56.2	6	35.3		
Place of residence																
Urban	7	33.3	16	28.1	42	23.2	**1.371**	**0.504**	53	25.2	10	31.2	2	11.8	**2.025**	**0.324**
Rural	14	66.7	41	71.9	139	76.8			157	74.8	22	68.8	15	88.2		
Monthly income																
Save and enough	4	19.0	5	8.8	19	10.5	**8.330**	**0.080**	24	11.4	4	12.5	0	0.0	**18.16**	**0.001****
Not enough	12	57.2	36	63.2	83	45.9			94	44.8	22	68.8	15	88.2		
Enough	5	23.8	16	28.0	79	43.6			92	43.8	6	18.7	2	11.8		

X^2 = Chi square test. No significant at p > 0.05. *Significant at p ‹ 0.05. **highly significant at p ‹ 0.01.

Table (3): Presents that, there was highly statistically significant relation between total mothers' knowledge at pre-program and their occupation at (P= < 0.01). Also, there was a statistically significant relation with their age, and educational level at (P= < 0.05). While there was no statistically significant relation with their place of residence and monthly income at (P= > 0.05). In addition, the results reveal that, there were highly statistically significant relation between total mothers' knowledge at post-program and their educational level and monthly income at (P= < 0.01). While there was no statistically significant relation with their age, occupation and residence at (P= > 0.05).

Table (4): Relations between socio demographic characteristics of the studied mothers and their total attitude regarding nocturnal enuresis at pre and post implementation of health education program (n=259).

Socio-demographic data	Total attitude at pre-program				X^2	P-Value	Total attitude at post-program				X^2	P-Value
	Positive (n=108)		Negative (n=151)				Positive (n=228)		Negative (n=31)			
	No.	%	No.	%			No.	%	No.	%		
Age (years)												
20-<25	44	40.7	46	30.5	**3.80**	**0.283**	80	35.1	10	32.3	**1.09**	**0.779**
25-<35	44	40.7	68	45.0			100	43.9	12	38.7		
35-<45	15	13.8	31	20.5			39	17.1	7	22.6		
45- ≤ 60	5	4.6	6	4.0			9	3.9	2	6.4		

Education level												
Can't read and write	2	1.9	7	4.6	**7.15**	**0.128**	1	0.4	8	25.8		
Read and write	12	11.1	32	21.2			23	10.1	21	67.8		
Basic education	32	29.6	36	23.8			68	29.8	0	0.0	**127.71**	**0.000****
Secondary education	55	50.9	64	42.4			117	51.3	2	6.4		
University education and more	7	6.5	12	8.0			19	8.4	0	0.0		
Occupation												
Housewife	48	44.4	82	54.3	**2.44**	**0.118**	111	48.7	19	61.3	**1.73**	**0.188**
Employed	60	55.6	69	54.7			117	51.3	12	38.7		
Place of residence												
Urban	25	23.1	40	26.5	**0.374**	**0.541**	58	25.4	7	22.6	**0.119**	**0.731**
Rural	83	76.9	111	73.5			170	74.6	24	77.4		
Monthly income												
Save and enough	12	11.1	16	10.6	**1.525**	**0.467**	28	12.3	0	0.0		
Not enough	59	54.6	72	47.7			104	45.6	27	87.1	**19.11**	**0.000****
Enough	37	34.3	63	41.7			96	42.1	4	12.9		

X^2 = Chi square test. No significant at p > 0.05. *Significant at p ‹ 0.05. **highly significant at p ‹ 0.01.

Table (4): Presents that, there was no statistically significant relation between total mothers' attitude with their age, educational level, occupation, place of residence and income at (P= > 0.05). In addition, the results reveal that, there was highly statistically significant relation between total mothers' attitude at post-program and their educational level and income at (P= < 0.01). While there was no statistically significant relation with their age, occupation and residence at (P= > 0.05).

Table (5): Relations between demographic characteristics of the studied mothers and their total reported practices regarding nocturnal enuresis at pre and post implementation of health education program (n=259).

Socio-demographic data	Total reported practices at pre- program				X^2	P-Value	Total reported practices at post- program				X^2	P-Value
	Satisfactory (n=102)		Unsatisfactory (n=157)				Satisfactory (n=233)		Unsatisfactory (n=26)			
	No.	%	No.	%			No.	%	No.	%		
Age (years)												
20-<25	34	33.3	56	35.7	**1.15**	**0.763**	77	33.0	13	50.0		
25-<35	44	43.1	68	43.3			103	44.3	9	34.6	**3.751**	**0.290**
35-<45	18	17.7	28	17.8			42	18.0	4	15.4		
45- ≤ 60	6	5.9	5	3.2			11	4.7	0	0.0		
Education level												
Can't read and write	1	1.0	8	5.1	**8.64**	**0.071**	3	1.3	6	23.1		
Read and write	13	12.7	31	19.7			26	11.1	18	69.2		
Basic education	25	24.5	43	27.4			68	29.2	0	0.0	**97.30**	**0.000****
Secondary education	52	51.0	67	42.7			117	50.2	2	7.7		
University education and more	11	10.8	8	5.1			19	8.2	0	0.0		
Occupation												
Housewife	48	47.1	82	52.2	**0.661**	**0.416**	116	49.8	14	53.8	**0154**	**0.694**
Employed	54	52.9	75	47.8			117	50.2	12	46.2		
Place of residence												
Urban	25	24.5	40	25.5	**0.031**	**0.861**	63	25.1	2	7.7	**4.657**	**0.031***
Rural	77	75.5	117	74.5			194	74.9	24	92.3		
Monthly income												
Save and enough	12	11.8	16	10.2	**0.227**	**0.893**	27	11.6	1	3.9		
Not enough	52	51.0	79	50.3			109	45.8	22	84.6	**13.40**	**0.000****
Enough	38	37.2	62	39.5			97	41.6	3	11.5		

X^2 = Chi square test. No significant at p > 0.05. *Significant at p ‹ 0.05. **highly significant at p ‹ 0.01.

Table (5): Presents that, there was no statistically significant relation between total mothers reported practices with their age, educational level, occupation, place of residence and income at (P= > 0.05). In addition, the results reveal that, there was highly statistically significant relation between total mothers' attitude at post-program and their educational level and income at (P= < 0.01). Also, there was a statistically significant relation with their place of residence level at (P= < 0.05). While there was no statistically significant relation with their age and occupation at (P= > 0.05).

4. DISCUSSION

Nocturnal enuresis (NE) is childhood disorder that generates countless problems to children and their families. Nocturnal enuresis or bedwetting is the most common childhood disorder in which episodes of urinary incontinence occur during sleep. The cause of NE is complex and often multifactorial. NE is classified as primary (PNE) when bladder control has never been achieved or Secondary Nocturnal Enuresis (SNE) clinically diagnosed when incontinence reoccurs after achieving 6 months of dryness. NE is a distressing and socially isolating condition that affects up to 20% of five-year-olds **(Akram et al., 2025).**

Health education plays a vital role in improving the quality of life for children and parents in NE. Through health education, parents can be informed of NE's negative effects on their children and accurate treatment is an effective way of dealing with NE. At the same time, health education can also enhance children's self-confidence and alleviate anxiety and low self-esteem caused by NE. So, providing appropriate information on NE is critical for improving children's psychological well-being and quality of life **Zhu et al., (2024).**

Demographic characteristics of studied mothers and children suffering from nocturnal enuresis:

Demographic characteristics of studied mothers:

Regarding to mother's age, the results of the current study demonstrated that, more than two fifths of studied mothers were ages ranged from 25 - < 35 years. These results approved with study performed by **Alarfaj et al., (2024),** whose conduct study in Saudi Arabia (n = 616) and entitled as " Parental perception of nocturnal enuresis in a local region of Saudi Arabia "who stated that, 41 % of studied mothers were ages ranged from 25 - < 35 years. From the researcher point of view, these results might be due to the lack of experience of mothers regard to training toilet skills for their children at this age, also mothers at this age may have less experience with child development and common childhood issues like NE.

Related to mother's educational level, the results of the current study revealed that, more than two fifths of studied mothers had secondary education. These results matched with study performed by **Chavadannavar, (2023),** whose conduct study in India (n= 100) and entitled as " Knowledge and attitude of mothers regarding nocturnal enuresis and its management among primary school children" who found that, 46.8 % of studied mothers had secondary education. From the researcher point of view, these results might be due to that mothers with higher levels of education may have greater awareness of child development, health issues, and available resources. This can lead to earlier recognition of NE as a potential problem and seeking appropriate help, also education level may influence parenting practices, such as toilet training methods, communication styles, and responses to bedwetting incidents.

As regard to mother's occupation of the studied children, the results of the current study detected that, half of studied mothers were housewives. These results agreed with study performed by **Çaran et al., (2025),** whose conduct study in İstanbul, Turkey (n = 58) and entitled as " The effects of maternal depression on children with primary monosymptomatic nocturnal enuresis" who found that, 52.4% of studied mothers were housewives. From researcher point of view, these results might be due to that working mothers have a better chance of obtaining information and knowledge regarding NE compared to a housewife mothers.

Concerning to place of residence, the results of the current study showed that, about three quarters of studied mothers were lived in rural area. These results disagreed with study performed by **Yazilitaş et al., (2023),** whose conduct study in Ankara, Turkey (n =80) and entitled as " Anxiety and depression in children with primary monosymptomatic nocturnal enuresis and their mothers "who found that, 85.9% of studied participants were live in the urban areas. From researcher point of view, these results might be due to that rural areas often have fewer healthcare facilities and specialists compared to urban areas, also these results might be due to limited awareness and education among mothers regarding nocturnal enuresis to manage the problem early in rural areas.

Related to the monthly income, the results of the current study showed that, half of studied mothers had not enough income per month. These results was in agreement with study performed by **Alanazi et al., (2022),** whose conduct study in Arar, Saudi Arabia (n= 420) and entitled as " Prevalence of nocturnal enuresis among children and its association with the mental health of mothers in Northern Saudi Arabia " who found that, 65.5% of studied mothers had insufficient incomes per month. From researcher point of view, these results might be due to that families with insufficient income may have less access to regular healthcare, including checkups and specialist care. This can lead to undiagnosed or untreated medical conditions that contribute to NE.

Demographic characteristics of studied children:

Regarding to age of the studied children, the results of the current study showed that, more than three quarters of studied children in the age group 6 - <9 years old (the mean SD of age was 8.96 ± 2.63 years). These results matched with study performed by **Sadeq et al., (2022),** whose conduct study in Al-Yarmouk, Iraq (n = 372) and entitled as " Nocturnal enuresis distribution and associated factors at Al-Yarmouk Teaching Hospital" who stated that, 79.5 % of studied children were aged ranged from 6 -< 9 years (Mean 8.2±2.4). From researcher point of view, these results might be due to that children in this age group are still developing full control over their bladder functions. Their bladders might not be large enough to hold urine for the entire night.

Concerning to gender of the studied children, the results of the current study showed that, more than two thirds of studied children were male. These results was in agreement with study performed by **Nishizaki et al., (2023),** who conduct study in Japan (n = 696) and entitled as "Comparison of the characteristics and factors influencing hospital visits among children with nocturnal enuresis in Japan: The Hirakata–Urayasu population-based cohort study ”who found that, 69.3 % of studied children were male. From researcher point of view, these results might be due to that bladder control process is directly linked with developmental maturity and females usually mature faster on average than males.

As regard to child's order in the family, the results of the current study found that, more than one third of studied children were the first child in the family. These results disagreed with study performed by **Nnubia et al., (2024),** whose conduct study in Nigeria (n= 820) and entitled as " Prevalence, perceived risk factors and effects of enuresis among school-age children in Nsukka Local Government Area, Enugu State, Nigeria " who reported that, 63 % of studied children were the second born child . From researcher point of view, these results might be due to that mothers of first children may have less experience with toilet training, recognizing cues that their child needs to use the bathroom, and managing common childhood issues like bedwetting. This inexperience could lead to delays in addressing the issue or less effective management strategies.

Mothers’ knowledge about nocturnal enuresis at pre and post implementation of health educational program:

Regarding total mothers’ knowledge about nocturnal enuresis, the current study presented that minority of the studied mothers had good level of total knowledge about nocturnal enuresis at pre implementation of health education program. While improved to more than four fifths of studied mothers had good level of total knowledge at post implementation phase. This result was in agreement with, **Radhakrishnan, (2023),** who carried out study entitled "Effectiveness of bladder retraining program on knowledge, bedwetting frequency, relapse rate and quality of life among children with nocturnal enuresis at selected schools in Nashik, Maharashtra" in India (n =160) and explained that none of studied mothers had adequate knowledge regarding NE before program and in posttest, 85 % of them had adequate knowledge after program. From the researcher point of view, these results highlight the positive influence of a health education program on outcomes related to knowledge of NE.

Mothers’ attitude regarding nocturnal enuresis at pre and post implementation of health educational program:

Related to total mothers’ attitude regarding NE, the finding of the current study revealed that, there was a significant improvement in total mothers’ attitude regarding NE at post implementation of health education program with a highly statistically significant difference at (P= < 0.01). As evidence, two fifths of the studied mothers had positive attitude regarding NE at pre implementation of health education program. While improved to majority of them at post implementation of health education program had positive attitude regarding NE.

This was in the same line with **Ali et al., (2023)** who carried out study entitled " Effects of educational intervention on mothers' behavior modification regarding NE among children aged 5-12 years " in Pakistan (n =150) and clarified that, 4 % of studied mothers had positive attitude regarding NE before program and in posttest 84.8 % of them had positive attitude after program. From the researcher point of view, these results might be due to health educational program offered mothers the opportunity to gain knowledge and develop a greater awareness of NE, which in turn contributed to more positive attitude. From the researcher point of view, this result reflects effect of a health educational program that enhance mothers' attitude regarding nocturnal enuresis.

On the other hand, these results was in disagreement with study performed by **Chavadannavar, (2023),** whose conduct study in India (n= 100 mothers) and entitled as " Knowledge and attitude of mothers regarding nocturnal enuresis and its management among primary school children" who found that, 91 % of studied mothers had total neutral attitude scores regarding nocturnal enuresis and its management after evaluation of management with the overall mean attitude scores 68.65 % with SD 5.81.

Mothers' reported practices regarding nocturnal enuresis at pre and post implementation of health educational program.

Related to total mothers' reported practices subscales regarding NE at pre and post implementation of health education program, the results of the current study showed that, there was a marked improvement in all subscales of mothers' reported practices regarding NE at pre and post implementation of health education program with a highly statistically significant difference at (P= < 0.01). As evidence, nearly two fifths of the studied mothers had satisfactory level of total reported practices regarding NE at pre implementation of health education program. While improved to majority of them at post implementation of health education program.

This result was supported by study conducted by **Abu El Soud et al., (2023),** who studied " Effectiveness of bidirectional multimodal intervention program on nocturnal enuresis reduction among school age children in Mansoura City, Egypt " in Mansoura City, Egypt (n =126) and reported that, none of the studied mothers had satisfactory total reported practices scores about care for their children with NE pre-program which shifted to 95.2% of them had satisfactory total reported practices scores immediate post and post 3 months after program implementation with a statistical significant difference at p= 0.000. From researcher point of view, this result reflects effect of a health educational program that enhances mothers' reported practices regarding NE.

On the other hand, these results was in disagreement with study performed **Mohamed et al., (2025),** who studied "Designed nursing program on mothers' knowledge, practices and its effect on their children with nocturnal enuresis" in Egypt, who illustrated that, 81.7% of the studied mothers had unsatisfactory self-reported practices regarding nocturnal enuresis before the program which decreased to 0.0% of them after three months with a highly statistically significant difference (P value < 0.001).

Relations between the studied variables:

Regarding relations between demographic characteristics of the studied mothers and their total knowledge regarding NE at pre and post implementation of health education program, the current study presented that, there was highly statistically significant relation between total mothers' knowledge at pre-program and their occupation at (P= < 0.01). Also, there was a statistically significant relation with their age, and educational level at (P= < 0.05). While there was no statistically significant relation with their place of residence and monthly income at (P= > 0.05). In addition, the results reveal that, there were highly statistically significant relation between total mothers' knowledge at post-program and their educational level and monthly income at (P= < 0.01). While there was no statistically significant relation with their age, occupation and residence at (P= > 0.05)**.** This result was in disagreement with **Mohamed et al., (2025),** who mentioned that there are no statistically significant differences between the total knowledge level of the studied mothers and their demographic data before the program. While, this result was in accordance with **Ali et al., (2023),** there were highly statistically significant relation between total mothers' knowledge at post-program and their educational level and monthly income and there was no statistically significant relation with their age, occupation and place of residence.

Concerning to relations between demographic characteristics of the studied mothers and their total attitude regarding NE at pre and post implementation of health education program, the current study revealed that, there was no statistically significant relation between total mothers' attitude at pre-program with their age, educational level, occupation, place of residence and income at (P= > 0.05). In addition, the results reveal that, there was highly statistically significant relation between total mothers' attitude at post-program and their educational level and income at (P= < 0.01). While there was no statistically significant relation with their age, occupation and place of residence at (P= > 0.05)**.**This result was in agreement with **Krishnan et al., (2023),** who reported that there was a significant association between pretest attitude levels of rural mothers regarding NE and education of mother and there was no significant association between pretest attitude scores and other demographic variables. In addition, this result was in accordance with **Mohamed et al., (2019),** who clarified that there was a highly statistically significant association between mother's attitude at post application of the learning package and their educational level and monthly income. From the researcher point of view, a possible explanation for this finding is that mothers with higher levels of education and income were more responsive to the health educational program's content and strategies, resulting in a more pronounced shift in their attitude regarding NE.

As regard to relations between demographic characteristics of the studied mothers and their total reported practices regarding NE at pre and post implementation of health educational program, the current study found that, there was no statistically significant relation between total mothers reported practices with their age, educational level, occupation, place of residence and income at (P= > 0.05). In addition, the results reveal that, there was highly statistically significant relation between total mothers' reported practices at post-program and their educational level and income at (P= < 0.01). Also, there was a statistically significant relation with their place of residence level at (P= < 0.05). While there was no statistically significant relation with their age and occupation at (P= > 0.05)**.** These results agreed with study performed by **Mahmoud et al., (2021),** who described that there was no statistically significant relation between total mothers reported practices and other variables of personal characteristics before intervention and stated that there was no statistically significant relation with mother's age and occupation and there was statistically significant relation between total mothers' reported practices at post-program and their educational level and place of residence after 6 months intervention.

Also, this result supported with **El kersh et al., (2022),** who stated that there was statistically significant relation between total mothers reported practices and family income at one month after implementing of learning package. From the researcher point of view, higher education levels may have enabled mothers to better understand and process the information and apply it to their specific situations. Higher income levels may have provided mothers with greater access to resources (e.g., medical care, educational materials), allowing them to implement the recommended practices. The significant relationship with place of residence suggests that social and cultural factors may have an impact on the adoption of the practice due to access to health care facilities and cultural beliefs about NE.

5. CONCLUSION

Based on the results of the present study and answered research hypothesis, it can be concluded that:

There was a marked improvement in studied mothers' knowledge about nocturnal enuresis post a health educational program with a highly statistically significant difference. In addition, there was a marked improvement in all items of studied mothers' attitude toward nocturnal enuresis post a health educational program with a highly statistically significant difference. Furthermore, there was a marked improvement in all items of studied mothers' reported practices toward nocturnal enuresis post a health educational program with a highly statistically significant difference. The results of the current study reveal that, there were highly statistically significant relation between total mothers' knowledge at post-program and their educational level and monthly income at (P= < 0.01). While there was no statistically significant relation with their age, occupation and residence at (P= > 0.05)**.** In addition, the results reveal that, there was highly statistically significant relation between total mothers' attitude at post-program and their educational level and income at (P= < 0.01). While there was no statistically significant relation with their age, occupation and place of residence at (P= > 0.05)**.** In addition, the results reveal that, there was highly statistically significant relation between total mothers' reported practices at post-program and their educational level and income at (P= < 0.01). Also, there was a statistically significant relation with their place of residence level at (P= < 0.05). While there was no statistically significant relation with their age and occupation at (P= > 0.05)**.**

6. RECOMMENDATIONS

Based on the results of the current study, the following recommendations are suggested.

- Continuous health educational program for mothers of children with NE is essential to update their knowledge and skills about advanced treatment strategies.
- Early counseling and investigation should be directed at mothers with regard to toilet training, especially for families with a positive history of NE among their children.
- Conducting an educational program for mothers, focusing on the negative impacts of punishment and promoting alternative, reward-based strategies for behavior modification and engaging parents in supporting their children's psychological well-being.

For further research:

- Further researcher on a larger sample size and another setting is recommended for generation.

REFERENCES

[1] **Abu El Soud, S. G. A., Ahmed, D. E. S. K., & Abozed, H. W. (2023):** Effectiveness of Bidirectional Multimodal Intervention Program on Nocturnal Enuresis Reduction among School Age Children in Mansoura City, Egypt. Assiut Scientific Nursing Journal, 11(38), 22-35.

[2] **Adam, A. M. (2020):** Sample size determination in survey research. Journal of Scientific Research and Reports, 26(5), 90-97.

[3] **Ahmed, S. M. E. S., Shedeed, S. A. S., Morsy, R. A. A., & Said, H. S. (2022):** Frequency and Risk Factors of Nocturnal Enuresis among Primary School Children in Sharkia Governorate. *The Egyptian Journal of Hospital Medicine*, *88*(1), 3470-3476.

[4] **Akram, J., Basu, A., Hossain, M. S., Bhattacharyya, S., Shamim, S., Debnath, P., ... & Mukherjee, S. K. (2025):** A double-blind, randomized, placebo-controlled trial of individualized homeopathic medicinal products in the treatment of nocturnal enuresis in children. *EXPLORE*, *21*(1), 103077.

[5] **Alanazi, A. N. H., Alanazi, R. S. M., Alanazi, E. N., Alanazi, R. M., & Rabbani, U. (2022):** Prevalence of Nocturnal Enuresis Among Children and Its Association With the Mental Health of Mothers in Northern Saudi Arabia. *Cureus*, *14*(2), 1-10.

[6] **Alarfaj, H. M., Almaqhawi, A., Kamal, A. H., Bshait, M. S. B., Al Abdulqader, A., Albarqi, M., ... & Zakaria, O. (2024):** Parental perception of nocturnal enuresis in a local region of Saudi Arabia. Journal of Medicine and Life, 17(1), 73-80.

[7] **Albadrani, M. S., Alluqmani, T. A., Alsehli, O. H., Alsaedi, M. S., Alrehaili, H. S., Aljabri, A. A., & Tobaiqi, M. A. (2024):** Knowledge and Awareness of Adults towards Nocturnal Enuresis in Children among the Medina Population. *Children*, *11*(6), 640-.651.

[8] **Ali, S. G., Masih, S., Sarwar, H., & Asif, A. (2023):** Effects of educational intervention on mothers' behavior modification regarding nocturnal enuresis among children aged 5-12 years. CEMJP, 31(4), 650-654.

[9] **Angeli, M., Bitsori, M., Rouva, G., & Galanakis, E. (2023).** The role of the autonomic nervous **system** in nocturnal enuresis. *Journal of Pediatric Urology*, *19*(1), 6-18.

[10] **Çaran, B., Hacıhamdioğlu, D., & Özgürhan, G. (2025):** The Effects of Maternal Depression on Children with Primary Monosymptomatic Nocturnal Enuresis. Cam ve Sakura Medical Journal, 4(3), 88-94.

[11] **Chavadannavar, M. P. (2023):** Knowledge and Attitude of Mothers regarding Nocturnal Enuresis and its Management among Primary School Children. Nursing Journal of India, 114(6), 268-274.

[12] **El kersh, N.F.B., Bahgat, R.S., & Younis, A. A. (2022):** Effect of Implementing Learning Package on Controlling Nocturnal Enuresis for Children and their Mothers. International Journal of Novel Research in Healthcare and Nursing, 9(1), 253-267.

[13] **Elazzazy, S. A. E. H., Abdo, S. A. E. F. M., Ayad, K. M. A., & Atlam, S. A. E. (2022):** Socio Behavioral Factors Associated with Nocturnal Enuresis among Primary School Children in Abo Homous, Elbehira, Egypt. Journal of Advances in Medicine and Medical Research, 34(11), 68-79.

[14] **Essawy, M. A., El Sharkawy, A., & Basuony, G. M.(2018): Caregivers'** Management For Their Children With Nocturnal Enuresis. IOSR Journal of Nursing and Health Science (IOSR-JNHS), 7(5), 12-23.

[15] **Fung, A. C., Lee, M. H., Leung, J. L., Chan, I. H., & Wong, K. K. (2024):** Internet health resources on nocturnal enuresis: a readability, quality, and accuracy analysis. European Journal of Pediatric Surgery, 34(01), 084-090.

[16] **Krishnan, H. V., Joseph, P., & Prakash, M. (2023):** Effect of Educational Package on Knowledge of Rural Mothers Regarding nocturnal enuresis. International Journal of Innovative Research and Advanced Studies, 8(1), 16-19.

[17] **Kuru, K., Ansell, D., Hughes, D., Watkinson, B. J., Gaudenzi, F., Jones, M., ... & Degoede, C. (2023):** Treatment of nocturnal enuresis using miniaturised smart mechatronics with artificial intelligence. IEEE Journal of Translational Engineering in Health and Medicine, 12, 204-214.

[18] **Mahmoud, S. F., Mahmoud, F. A. A. E. S., & Ibrahim, M. E. (2021):** Effect of Educational Intervention on Mothers of Children with Nocturnal Enuresis. American Journal of Nursing Research, 9(4), 143-155.

[19] **Mohamed, R. A., El-Sheikh, O. Y., & Noaman, A. (2019):** Applying Health Education Learning Package for Mothers Regarding Nocturnal Enuresis. American Journal of Nursing, 7(4), 561-573. doi: 10.12691/ajnr-7-4-18.

[20] **Mohamed, S. A., Masoed, E. S., Abdel-Gawad, A. H., & Sayed, Y. M. (2025):** Designed Nursing Program on Mothers' Knowledge, Practices and its effect on their Children with Nocturnal Enuresis. Minia Scientific Nursing Journal, 17(2), 13-27.

[21] **Nigri, P., Nigri, L., & Peccarisi, L. (2024):** Overview on the management of nocturnal enuresis in children in general pediatrics. Global Pediatrics, 9(1), 100207.

[22] **Nishizaki, N., Tsuji, S., Akagawa, S., Hirano, D., Takahashi, K., Shimizu, T., & Kaneko, K. (2023):** Comparison of the characteristics and factors influencing hospital visits among children with nocturnal enuresis in Japan: The Hirakata–Urayasu population based cohort study. International Journal of Urology, 30(4), 408-414**.**

[23] **Nnubia, U. I., Umennuihe, C. L., Nwauzoije, E. J., & Okeke, M. M. (2024):** Prevalence, perceived risk factors and effects of enuresis among school-age children in Nsukka Local Government Area, Enugu State, Nigeria. International Journal of Home Economics, Hospitality and Allied Research, 3(1), 202-218.

[24] **Ong, L. M., Chan, J. M. F., Koh, G. E. M. Y., Pamela, E., Gopal, W., Leow, E. H. M., & Ng, Y. H. (2024):** Approach to nocturnal enuresis in children. *Singapore Medical Journal*, *65*(4), 242-248.

[25] **Radhakrishnan, P. R. (2023):** Effectiveness of bladder retraining programme on knowledge, bedwetting frequency, relapse rate and quality of life among children with nocturnal enuresis studying in selected schools in nashik Maharashtra.Shodhganga a reservoir of Indian theses @ INFLIBNET, Chapter IV,124-198.

[26] **Rady, H., Elsayied, H., & Elhafez, A., (2017):** The Relation between Parent's Perception and Perceived Competence of School Age Enuretic Children. Journal of Nursing and Health Science, 6(6), 42-54.

[27] **Sadeq, S. A., Al-Ani, W. A., & Sadeq, W. A. (2022):** Nocturnal enuresis distribution and associated factors at Al-Yarmouk Teaching Hospital. Iraqi Journal of Community Medicine, 35(2), 77-83.

[28] **Salem, M. E. A., El Shazly, H. M., Younis, F., & Derbala, S. M. (2020):-** Epidemiology of nocturnal enuresis among primary school children (6–12 years) in Gharbia Governorate. Menoufia Medical Journal, 33(1), 50-54.

[29] **Yazilitaş, F., Açikel, B., Çakici, E. K., Güngör, T., Çelikkaya, E., Eroğlu, F. K., ... & Bülbül, M. (2023):** Anxiety and depression in children with primary monosymptomatic nocturnal enuresis and their mothers. *Children's Health Care*, *52*(4), 381-390.

[30] **Yilmaz, E. Ş., & Büyük, E. T. (2022):** Effect of education given to children with enuresis on quality of life. Journal of Pediatric Urology, 17(5), 648.e1-648.e7.

[31] **Zhu, L., Xie, D., Wang, X., & Zhou, P(2024):** Improving the quality of life of children and parents with nocturnal enuresis: the role of health education. Frontiers in Pediatrics, 12, 1464465**.**