

Prevalence and Quality of Life Among Children with Mono Symptomatic Nocturnal Enuresis at Benha City, Egypt

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Received: 17 October 2023

Accepted: 13 September 2024

Abstract:

Background: Nocturnal enuresis (NE) is a distressing experience for children and their families, and successful treatment invariably improves their quality of life.

Objectives: To quantify the prevalence of mono symptomatic nocturnal enuresis among children attending outpatient family health clinics at Benha city, identification of associated risk factors and to assess their quality of life.

Methods: This is a comparative cross-sectional study conducted among children (5-15 years) attending outpatient family health clinics at Benha city. Complete medical examination and a brief questionnaire were distributed to screen the children, after their approval consent to fill a well-designed questionnaire. **Results:** Prevalence of NE was 16.2 %, statistical analysis showed non-significant difference among studied groups regarding number of brothers, order of birth, parents' occupation, history of constipation, family history of NE ($p>0.05$). There was a statistical significant difference among studied groups regarding sex, age, parents' education, socioeconomic level, period of using diapers, and education success and impact QOL ($p<0.05$). **Conclusion:** The frequency of NE declines by aging process. This study suggests that enuretic children

have low QoL when compared to non-enuretic ones. This finding reinforces the need of a reliable therapeutic approach early in life, with a multidisciplinary group to prevent them from this loss.

Keywords: Nocturnal enuresis, prevalence, risk factors and quality of life.

Introduction

Nocturnal Enuresis (NE) as an involuntary voiding of urine during sleep, with a frequency of at least twice a week, in children older than 5 years in the absence of congenital or acquired defects of the central nervous system. In Egypt a study conducted in two governorates in south of Egypt found that the prevalence of NE was 18 %^[1, 2].

The risk factors for NE include long-term use of disposable diaper (DD), being male, difficulty in awakening at night, mental stress, poverty, and family environment^[3, 4].

Enuresis is a clinical condition with a multifactorial etiology that generates great impacts on social relationships, self-esteem, family relationships, and even the academic life of children and adolescents with nocturnal enuresis. Nocturnal enuresis has a negative influence on health related quality of life (HRQoL), in both the children and their families^[5, 6].

And many have reported psychological and social distress. Research has shown that bedwetting children have a poor self-image and lower self-esteem than their healthy peers^[7, 8].

This, in turn, may cause psychosocial dysfunction. Consequently, 20%–30% of children with NE show some degree of psychological distress, with a higher risk of behavioral problems. Frequently, the psychological and developmental damage may actually be more significant and devastating to the child than the symptom of enuresis itself. With this regard, nocturnal enuresis is evaluated as an important public health problem^[9, 10].

The aim of the study is to evaluate the prevalence of nocturnal enuresis among children aged 5-15 years old in Benha city, in addition to study risk factors associated with nocturnal enuresis among enuretic children and its effect on quality of life in this area.

Subjects and Methods:

1- Study design: A cross-sectional study.

2- Study setting: from each unit of the three family health care units available at Benha city [Family Medicine Outpatient Clinic at Benha University Hospital, Benha Family Health center (1) and Benha Family Health center (2)] in the same catchment area, an equal representative sample size was selected randomly through a well-structured sampling technique.

3- Study period: This study was carried out over one year; from the first of March 2021 to the end of February 2022.

4- Subjects: The sample size was 462. Children were selected through a systemic random sampling technique and fulfilling the inclusion criteria of the study.

Inclusion criteria:

- Children age between 5-15 years attending Family Medicine Outpatient clinic at Benha University Hospital.
- Sex: Both males and females

Exclusion criteria:

- Children with Known co morbid conditions that cause enuresis: daytime incontinence.
- Anatomic abnormalities: hydronephrosis, vesico ureteric reflux (VUR).
- Recurrent urinary tract infection.
- Dysuria, neurogenic bladder.
- Developmental delay.
- Mental retardation.
- Diabetes Mellitus, diabetes insipidus.
- Spina bifida and epilepsy
- Previous history of urologic surgery.
- Non-responders and refusals

Tools of the study: Data were collected via an interview questionnaires and full clinical examination as follow: -

A) Basic information Questionnaire (with written informed consent): For collection of socio-demographic data and assessment of socio-economic status according to a modified score from El-Gilany et al in 2012 and for collection of data related to risk factors of nocturnal enuresis. Modified questionnaire was

based on a similar study by Hashem et al., in 2013. [11, 12]

B)- Complete history taking & complete general medical examination.

C)- The Paediatric Incontinence Questionnaire (PinQ) for Assessment of quality of life of children with mono symptomatic nocturnal enuresis. The questionnaire has also been used to measure changes in QoL during therapy [13, 14].

Statistical Analysis

By using SPSS statistical program (Statistical Package for Social Sciences) version 22.0 for Windows (IBM SPSS Inc, Chicago, IL, USA) for data entry and analysis. A significant p-value was considered positive if less than 0.05.

Ethical consideration:

An approval from Research Ethics Committee (REC) in Benha faculty of medicine was obtained. Study No.: Ms.27.2.2021.

An informed oral consent was obtained from the patients before participation, the

researcher told the patient about aim of the work, confidentiality of the patient's data and the patient's right to receive medical advice even if he/she refused to participate.

Results

Figure (1) shows that the prevalence of NE among the studied group was 16.2%.

Table (1) shows that there was statistical significant difference between children with NE and those without it regarding parents' education as more cases suffering from NE were seen in less educated parents. Illiteracy rate among fathers of children with NE estimated to be 22.7 % versus only 0.8% among normal group ($p < .001$). Similarly, illiteracy rate among mothers of children with NE estimated to be 20 % versus only 2.6% among normal group ($p < .001$). There was no statistical significant difference between positive and negative NE groups regarding other social data like father occupation, residence and number of family members.

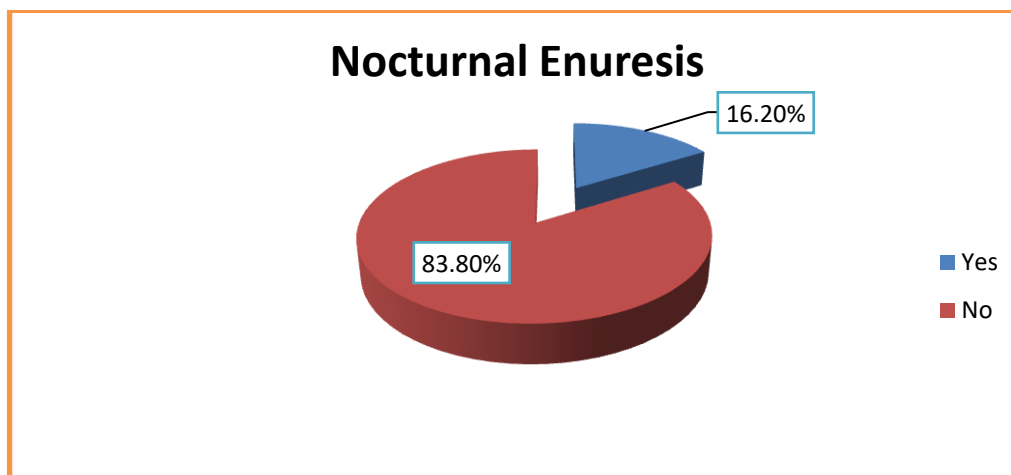


Figure (1): Prevalence of nocturnal enuresis among the studied group.

Table (1): Comparison between children with nocturnal enuresis and others according to social data.

Nocturnal enuresis Variables	children with enuresis (75)		children without enuresis (387)		Statistical test	P value
	No	%	No	%		
Father education						
Illiterate	17	22.7	3	0.8	$X^2=72.8$	<.001(HS)
Educated	34	45.3	238	61.5		
Highly educated	24	32.0	146	37.7		
Mother education						
Illiterate	15	20	10	2.6	$X^2=37.4$	<.001(HS)
Educated	29	38.7	195	50.4		
Highly educated	31	41.3	182	47.0		
Father occupation						
Don't work	0	0.0	1	0.3	FET= 0.90	0.751
Non-professional worker	1	1.3	12	3.1		
Professional worker	74	98.7	374	96.6		
Mother occupation						
Don't work	53	70.7	264	68.2	$X^2= 0.19$	0.911
Non-professional worker	1	1.3	5	1.3		
Professional worker	21	28.0	118	30.5		
Residence						
Rural	48	64.0	223	57.6	$X^2= 1.1$	0.305
Urban	27	36.0	164	42.4		
No. of family						
<5	13	13	90	23.3	$X^2= 1.3$	0.259
≥5	62	82.7	297	76.7		

Table (2) shows statistical significant difference between cases with NE and cases without it regarding period of using diapers and night bed wetting as 88 % of cases with NE had history of using diapers more than 1 year versus 73.4% of normal group ($p=0.007$). It was noticed that 50.7% of children with NH had history of night bed wetting 1-2 times per week and 49.3% of them had history of night bed wetting every night ($p= 0.001$). It was noticed that there was no statistical significant difference between cases with NE and cases without NE regarding toilet training, get up pattern, time of sleep, and play before sleeping. There was statistical significant difference between cases with NE and cases without NE regarding sleep problems and daytime habits as 20 % children suffering from NE had snoring during sleeping , 70.7% of them had deep sleep, 53.3% of them ate sweets and 26.7% of them had soft drinks during daytime.

Table (3) shows that there was no statistical significant difference between cases with NE and cases without NE regarding presence of frightening event to the child, history of UTI, back distortion, constipation, History of parent NE, History of sibling NE and psychological stress. There was statistical significant difference between cases with NE and cases without NE regarding patient behavior in case of bed wetting, child behavioral trait and education success as 81.3% of children suffering from NE suffered punishment from their parents, 26.7% of them were shy and 24% of them were sensitive. Children with NE had less school achievement than children not having NE 48 % versus 98.7%.

Table (4) shows that quality of life of (56%) of the children was mildly affected, (42.7%) was moderately affected, while only (1.3%) was severely affected. Figure (2) Show Score of different quality of life domains among NE in children.

Table (2): Comparison between cases of nocturnal enuresis and others according to toilet habits.

Nocturnal enuresis	children with enuresis (75)		children without enuresis (387)		Statistical test	P value
	No	%	No	%		
Period of diapers						
<1year	9	12.0	103	26.6	7.31	0.007**
>1year	66	88.0	284	73.4		
Night bed wetting						
No	0	0	387	100	447.4	0.001**
1-2/week	38	50.7	0	0		
Every night	37	49.3	0	0		
Toilet training						
Reward	58	77.3	318	82.4	X ² = 1.07	0.59
Punishment	8	10.7	32	8.3		
Threat	9	12.0	36	9.3		
Sleep problems						
Snoring	15	20	41	10.6	X ² = 10.443	.034(S)
Speak & sleep	6	8	66	17.1		
Teeth grinding	1	1.3	21	5.4		
Walk & sleep	0	0	1	0.3		
Deep sleep	53	70.7	258	66.7		
Get up pattern						
Easy	29	38.7	161	41.6	FET= 0.224	0.64
Hard	46	61.3	226	58.4		
Time of sleep						
Before 9pm	4	5.3	7	1.8	X ² = 4.60	0.10
9-11pm	27	36.0	172	44.4		
After 11pm	44	58.7	208	53.7		
Play before sleepin						
No	9	12.0	84	21.7	X ² = 5.59	0.061
Sometimes	43	57.3	222	57.4		
Usually	23	30.7	81	20.9		
Daytime habits						
Soft drinks	20	26.7	163	42.1	X ² = 9.473	.009(HS)
Sweets	40	53.3	185	47.8		
<50ml water	15	20.0	39	10.1		

Table (3): Comparison between cases of nocturnal enuresis and others according to parent behavior, child behavior trait, frightening event and education success.

Nocturnal enuresis Variables	Children with enuresis (75)		Children without enuresis (387)		Statistical test	P value
	No	%	No	%		
Parent behavior						
Punishment	61	81.3	188	48.6	X ² = 27.126	<.001 (HS)
Careless	14	18.7	199	51.4		
Child behavioral trait						
Withdrawal	1	1.3	18	4.7	FET= 12.65	0.035*
Sensitive	18	24.0	91	23.5		
Very sensitive	2	2.7	3	0.8		
Shy	20	26.7	130	33.6		
Non-cultured	1	1.3	0	0.0		
Crude	5	6.7	8	2.1		
Normal	28	37.3	137	35.4		
Frightening event						
Yes	2	2.7	12	3.1	FET= 0.0	1.0
No	73	97.3	375	96.9		
Education success						
Yes	36	48	382	98.7	X ² = 116.4	<.001 (HS)
No	39	52	5	1.3		
History of UTI						
Yes	0	0.0%	1	0.3%	.194	.66
No	75	100.0%	386	99.7%		
Back distortion						
Yes	0	0.0%	1	0.3%	.194	.66
No	75	100.0%	386	99.7%		
Chronic Constipation						
Yes	0	0.0%	3	0.8%	.782	.68
No	75	100.0%	384	99.2%		
History of parent NE						
Yes	0	0.0%	3	0.8%	.782	.68
No	75	100.0%	384	99.2%		
History of sibling NE						
Yes	0	0.0%	9	2.3%	1.981	.37
No	75	100.0%	378	97.7%		
Psychological stress						
Violence	0	0.0%	5	1.3%	6.154	.52
Divorce	2	2.7%	3	0.8%		
Newborn child	4	5.3%	42	10.8%		
Change housing	1	1.3%	3	0.8%		
Disappointment	2	2.7%	9	2.3%		
None	66	88.0%	325	84%		

Table (4): Impact of NE on child’s Quality of Life.

Impact of NE on child’s QOL	No.	%
Mild impact	42	56%
Moderate impact	32	42.7%
Severe impact	1	1.3%
Total	75	100%

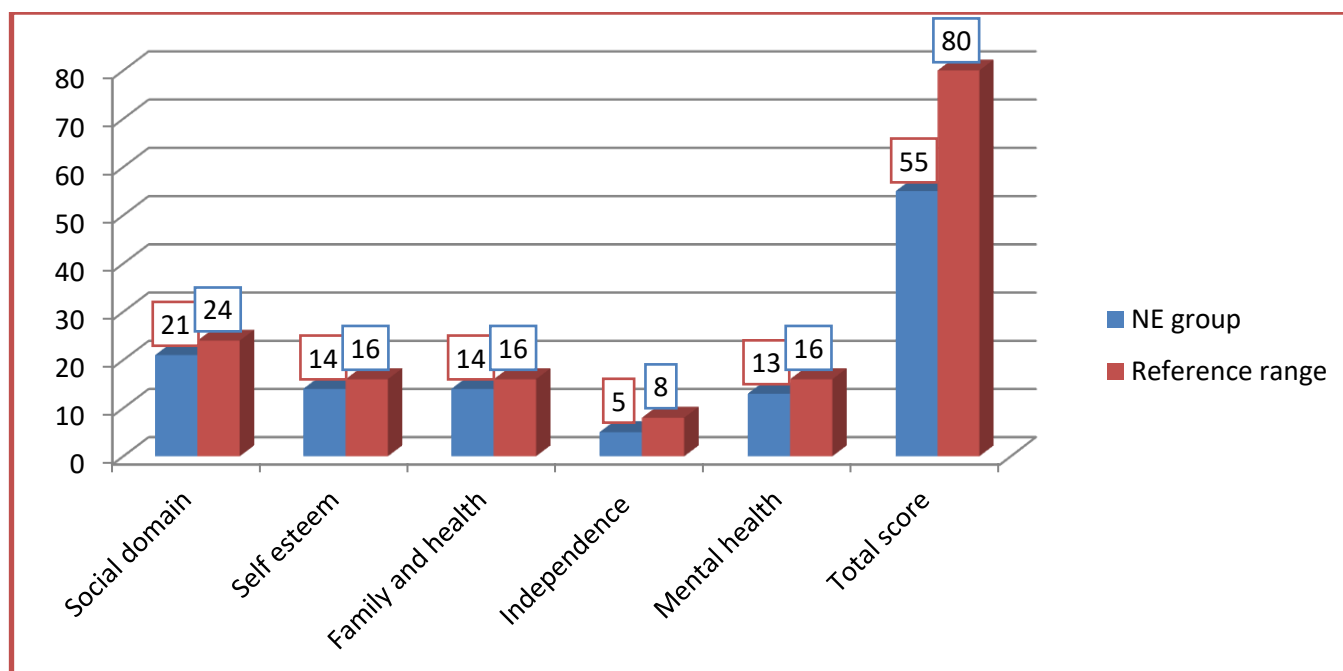


Figure (2): Score of different Quality of life domains among NE in children.

Discussion:

NE is a common health problem among Egyptian children, as in many other populations. The frequency of nocturnal enuresis among the selected children was found to be 16.2%. Compared to our findings, the prevalence of NE was 18% in another Egyptian study and 6.8% in Iran [15].

The disparity in the prevalence could be due to the different definitions used in different studies and the differences in the study participants and sampling. Furthermore, these differences can also be attributed to varying underreported behaviors in different settings as this condition may be stigmatized and

therefore parents may not report NE in their children. The prevalence of NE in our study (16.2%) was different from previous reports, the prevalence of NE in Northern Saudi Arabia was 23.9% [2, 16].

In Turkey the overall occurrence of NE was 7.5–16.2%, and, in Iran, the prevalence was 8–18.7%. Furthermore, found that the prevalence of NE in Spanish school-age children was 7.8%. In China, NE prevalence was found to vary by region, ranging from 4.07 to 10.3%, and NE occurred more frequently with boys [17, 18].

According to a study done in Turkey by Dolgun et al., there is no relationship between the prevalence of enuresis and

the parents' educational level, the number of children in the family, the child's gender, the age at which the child first learned to walk or talk, the age at which toilet training was initiated, the season in which it was initiated, or the use of the toilet during toilet training. There is also no statistically significant relationship between the family income level and the incidence of enuresis. In contrast to our findings, it was observed that socioeconomic level significantly affected the prevalence of enuresis. These results may have been caused by an unequal number of cases in the two research groups, as well as the fact that the study's families came from lower- and middle-income levels rather than from higher income brackets. Another explanation for the outcome could be that the families' replies to the questionnaire did not accurately reflect their genuine income levels ^[19].

A study found no links between nocturnal enuresis and factors like divorce, nocturnal enuresis in the past in either parent or both parents, sharing a bedroom, breastfeeding, a child's academic failure, the birth of a new baby, a change in residence, the child's age, the child's birth order, educational level, maternal age, paternal age, family size, parental death, and the number of siblings, which agreed relatively with our results except in the child's age and parents' educational level in our results NE was found more in children aged years than older children. We also found NE was more in children of less educated parents ^[20].

It may be difficult to study QoL in relation to a specific disease due to other social, cultural, economic, and familiar factors that may interfere in this subject. The data presented in this study, which used a matched population, strongly suggests that children with enuresis have a worsening of their QoL. These findings are significant for families and physicians dealing with enuretic children because their disease is frequently viewed as a

minor issue, and as a result, it is neglected and ignored, with the consequences affecting the present and, in many cases, the future of these children.

The present study showed that quality of life (QoL) of was affected mildly in (56%) of the children and, (42.7%) was moderately affected, while only (1.3%) was severely affected. Which agreed with a study, that demonstrates that children with enuresis have lower QoL when compared to normal ones, with 2.87 times more chances of loss in their QoL than those non-enuretic when evaluated with the use of the AUQEI questionnaire ^[21].

Both Bachmann et al. and Deshpande et al. found that self-esteem and mental health were the most affected domains, but their studies had broader inclusion criteria, including patients irrespective of the type of urinary incontinence, whereas we looked specifically at children with NE. In our study, most of children had mild to moderate affection of QoL ^[14, 22].

The present study has some limitations. The number of patients is small, but even though was sufficient to demonstrate the differences in QoL between those with and without enuresis. Other factors that could affect QoL were not studied and further studies with uni- and multivariate analysis need to be done to better investigate this matter in conjunction with enuresis.

Conclusion

This study suggests that enuretic children have low QoL when compared to non-enuretic ones. This finding reinforces the need of a reliable therapeutic approach early in life, with a multidisciplinary group to prevent them from this loss. Gender and age did not influence in QoL in this population. Enuresis is a pediatric public health problem that associated with smaller age, low socioeconomic factors, low educational level, long period of using diapers (> 1 year), eating sweets, and soft drinks before sleeping and GIT troubles as enterobiasis in addition a lot of emotional

and psychological problems. It leads to low self-esteem, some secondary psychological problems and low school success. Most of the children with enuresis do not have adequate attention about enuresis and didn't receive any professional treatment.

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To cite this article: Sabry A. Salem , Eman M. El- Araby , Omima M. Abd El- Hie , Marwa M. Mohasseb, Nada M. Abdo. Prevalence and Quality of Life Among Children with Mono Symptomatic Nocturnal Enuresis at Benha City, Egypt. BMFJ 2024;41(8):398-407.