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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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NOCTURNAL ENURESIS SYMPTOMS AND RISK FACTORS AMONG CHILDREN AND ADOLESCENTS IN QASSIM REGION, SAUDI ARABIA

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Abstract.

Background: Nocturnal enuresis (NE), commonly referred to as nighttime bed wetting, is a common condition characterized by involuntary urination during sleep. This condition affects a significant number of children worldwide with a higher prevalence in boys than girls aged 6-12 years old. This study aims to evaluate the symptoms, assess the risk factors and address the response to different management types of this disorder among children and adolescents living in the Qassim region, Saudi Arabia.

Methods: A cross-sectional descriptive study was conducted among parents and caregivers of children and adolescents ranging from 5-18 years of age living in Qassim region, Saudi Arabia. Data collected by using an online survey, effectively disseminated through a multitude of online platforms, including popular websites and social media channels.

Results: A total of 791 respondents participated in the study, with 173 (21.9%) completing the questionnaire, qualifying for inclusion due to having a child experiencing nocturnal enuresis. The participants had a mean age of 9.98 years. Significant gender differences were observed, with a higher frequency observed in boys (68.8%) compared to girls (31.2%). Participants reported positive family history and increased nighttime fluid intake associated factors. Comorbidities showed no significant associations, while lower parental educational status was identified as a contributing factor. The impact of nocturnal enuresis on families and individuals is substantial. Bladder muscle exercises were the most common treatment method, while pharmacological treatment was less frequently employed in our findings.

Conclusion: We concluded that the impact and prevalence of nocturnal enuresis on children and adolescents in the region is significant. The higher incidence in boys, coupled with factors such as positive family history and lower parental educational status, emphasizes the multifaceted nature of this condition. The substantial effect on families underscores the importance of early intervention and support.

Key words. Nocturnal enuresis, bed wetting, enuresis.

Introduction.

Nocturnal enuresis (NE) is the involuntary micturition and nighttime bedwetting in children aged ≥ 5 years [1]. NE is a common issue affecting children and adolescents. After allergic disorders, NE is considered to be the second most common disorder in children 6-14 years old [2]. It is estimated that 15–20% of 5-year-old children, 5% of 10-year-old children and 1% of teenagers are suffering from nocturnal enuresis. Although there is a variation regarding gender affection, it is estimated to be more frequent among boys [3]. Enuresis is classified as primary or secondary. When a child aged ≥ 5 years old has never experienced a time of complete dryness for ≥ 6 consecutive months, this is called primary enuresis. While secondary enuresis is when a time of complete dryness for a minimum of 6 consecutive months is experienced by a child [4].

Enuresis etiologies are not well known. However, bladder dysfunction, low functional capacity of the bladder, abnormal levels of vasopressin, nocturnal polyuria, and abnormal sleep patterns are considered the main pathological causes [5]. Various investigations' results illustrate that enuresis causes could be developmental causes such as differences in the growth of the urinary sphincters of a child, familial or genetic-related causes, obstruction of the upper airway or structural problems in the renal or nervous systems [4,6]. Most studies found only risk factors instead of attributable causes for NE which suggest that the disorder is multifactorial [7]. Multiple developmental disorders, diabetes insipidus, UTIs, emotional situations, and conflicts such as the birth of a new baby, stressful educational conditions, parental divorce, family conflicts, and moving to a new city are identified as risk factors for nocturnal enuresis [6,8].

NE has serious complications for both the child and his parents. NE could exacerbate social, psychological, and cognitive problems, including blushing, embarrassment, decreased self-esteem and aggression [9]. Moreover, behavioural changes such as low self-esteem, isolation, reduced aspiration and increased anxiety were found in many children who suffer from NE. Within the school system, these children often underperform, causing concern for their families and schools [4,8,10].

In Saudi Arabia, the prevalence and associated risk factors of NE have been studied in different regions of the kingdom in the recent years. A cross-sectional study of 352 families with children with NE showed that the prevalence of NE was 18.5% among families, with a higher prevalence on boys. With increasing age, prevalence of NE is decreased [11]. Another article on 505 children showed that 76.4% of participants had NE. The prevalence of NE was 79.5% and 73.3% in boys and girls, respectively. NE is significantly associated with pinworms infection history, non-breastfed children, decreased school achievement, and low father education [12]. Furthermore, another study on 2148 child stated that 31.2% of children had NE. They found no significant association between NE and child gender. However, a significant correlation with child's age and positive family history was found [13].

Since this area has not been addressed in our region, this study aimed to evaluate the symptoms, assess the risk factors, and address the response to different management types of nocturnal enuresis (NE) among children and adolescents living in the Qassim region, Saudi Arabia.

Materials and Methods.

Study design and population:

A cross-sectional study was conducted among parents and caregivers of children and adolescents aged 5-18 years living in Qassim region, Saudi Arabia.

Sample size and sampling method:

A sample size of 791 parents and caregivers who responded to the online survey. This study is mainly a descriptive study, using non-probability convenience sampling of all participants in the online survey.

Data collection:

A self-administered questionnaire in the form of "Microsoft forms" was distributed using various online platforms (websites and social media). The survey collected sociodemographic characteristics, frequency, time, and the factors possibly associated with NE among children and adolescents. The study poses no risk to the participants as it would be conducted as an online survey. The survey began with a detailed clear description of the study, and participation is entirely voluntary. The questionnaire starts only after taking informed consent. There was no participant identifiers in the data collected. The approval of this study was taken from the Committee of Research Ethics at Qassim University.

Data analysis and management:

Data were analyzed using Microsoft Excel software. Categorical variables were described as frequencies and percentages and mean ± standard deviation. The correlation coefficient was calculated to correlate between disease and other variables. P-values of <0.05 were considered to be statistically significant.

Results.

Table (1) illustrates the descriptive statistics of study variables. The study questionnaire was responded by a total of 791; only 173 (21.9%) of them completed the questionnaire and included in the study as they having a child suffering from nocturnal enuresis. Participants' mean age was 9.98 years, 68.8% were male and 31.2% were female. About 65.3% of them were breastfed.

Table 1. *Descriptive Demographic variables.*

	Number (%)
A child suffering from nocturnal enuresis	
Yes	173 (21.9)
No	618 (78.1)
Gender	
Male	119 (68.8)
Female	54 (31.2)
Circumcised	
Yes	116 (97.5)
No	3 (2.5)
Age	
Mean ± SD	9.98 ± 3.3
What is the child's / adolescent's level of education?	
Pre-School	39 (22.5)
Primary School	94 (54.3)
Middle School	30 (17.4)
High School	10 (5.8)
Gestational age of the child	
7 months	5 (2.9)
8 months	12 (6.9)
9 months	156 (90.2)
Mother Smoking	
Yes	2 (1.2)
No	171 (98.8)
Type of delivery	
Vaginal	122 (70.5)
Cesarean	51 (29.5)
Was the child / adolescent admitted to the hospital after birth?	
Yes	35 (20.2)
No	138 (79.8)
Breastfeeding	
Yes	113 (65.3)
No	60 (34.7)
Father's Education level	
College Degree	102 (58.9)
Professional	16 (9.2)
High School	43 (24.9)
Less than High School	12 (6.9)
Does the father work?	
Yes	155 (89.6)
No	18 (10.4)
Mother's Education level	
College Degree	100 (57.8)
Professional	11 (6.4)
High School	36 (20.8)
Less than High School	26 (15.0)
Mother work	
Yes	82 (47.4)
No	91 (5.3)
People live in the household	
> 5	88
5	40
< 5	45
Family's economic status	
Low	6 (3.4)
Average	38 (22.0)
Good	84 (48.6)
Very Good	45 (26.0)
Nocturnal enuresis history of parents during their childhood	
Yes	59 (34.1)
No	114 (65.9)
Nocturnal enuresis history of siblings	
Yes	73 (46.5)
No	84 (53.5)
Increased fluid intake at night	
Yes	95 (54.9)
No	78 (45.1)
Comorbidities	
Yes	10 (5.8)
No	163 (94.2)

Exposure to stressful events	
Yes	17 (9.8)
No	156 (90.2)
Burden of nocturnal enuresis to the family	
Yes	114 (65.9)
No	59 (34.1)
Embarrassment of child from nocturnal enuresis	
Yes	135 (78.0)
No	38 (22.0)
Attempts to treat enuresis	
Yes	116 (67.1)
No	57 (32.9)
A good response to treatment	
Yes	73 (62.9)
No	43 (37.1)
Need for further clinical advice regarding enuresis	
Yes	129 (74.6)
No	44 (25.4)

Table (2) illustrates a comparison between male and female children with nocturnal enuresis in regard to the variables of study. There is no significant impact of either parent or sibling history of enuresis on the occurrence of disease in the relatives. Also, increased fluid intake significantly associated with enuresis especially in male children. There is no significant effect of mother or father work on the enuresis.

	Male (119)	**Female (54)**	**Significance**
Age			
Mean±SD	9.96±3.2	10.02±3.5	NS
Did the mother smoke during pregnancy?			
Yes	2 (1.68)	0 (0)	NS
No	117 (98.3)	54 (100)	
What was the type of delivery of the child / adolescent?			
Vaginal	82 (68.9)	40 (74.1)	NS
Caesarean	37 (31.1)	14 (25.9)	
Was the child/teenager breastfed from the mother's breast?			
Yes	79 (66.4)	34 (63.0)	NS
No	40 (33.6)	20 (37.0)	
Does the father work?			
Yes	104 (87.4)	51 (94.4)	NS
No	15 (12.6)	3 (5.6)	
Does the mother work?			
Yes	51 (42.9)	31 (57.4)	NS
No	68 (57.1)	23 (42.6)	
Is there a history of parents suffering from nocturnal enuresis during their childhood?			
Yes	44 (37.0)	15 (27.8)	<0.05
No	75 (63.0)	39 (72.2)	
Is there a history of siblings suffering from nocturnal enuresis?			
Yes	46 (42.2)	27 (56.2)	<0.05
No	63 (57.8)	21 (43.8)	
Is there an increased fluid intake at night?			
Yes	71 (59.7)	24 (44.4)	<0.05
No	48 (40.3)	30 (55.6)	
Are there any comorbidity?			
Yes	8 (6.7)	2 (3.7)	NS
No	111 (93.3)	52 (96.3)	
Did the child/adolescent get exposed to these stressful events?			
Yes	12 (10.1)	5 (9.3)	NS
No	107 (89.9)	49 (90.7)	
Does nocturnal enuresis impose a burden to the family?			
Yes	69 (58.0)	45 (83.3)	<0.05
No	50 (42.0)	9 (16.7)	
Does nocturnal enuresis cause embarrassment and social shame the child's/adolescent's?			
Yes	89 (74.8)	46 (85.2)	<0.05
No	30 (25.2)	8 (14.8)	
Have attempts been made to treat enuresis?			
Yes	78 (65.6)	38 (70.4)	NS
No	41 (34.4)	16 (29.6)	
Is there a good response to treatment?			
Yes	54 (45.4)	19 (35.2)	<0.05
No	24 (20.2)	19 (35.2)	
Do you think that the family is still in need for further clinical advice regarding enuresis?			
Yes	88 (74.0)	41 (76.0)	NS
No	31 (26.0)	13 (24.0)	

Table (3) illustrates the effect of breast feeding on the variables related to enuresis. There is no significant effect of breast feeding on enuresis variables. Results demonstrate that nocturnal enuresis causes embarrassment and social shame the child as well as their families impose a burden. There is no significant effect of mother or father work on the enuresis.

Correlation between level of parents' education and awareness about enuresis are shown in figures 1-3 and 4. Figure (1) demonstrates the level of education of patients' mothers participating in this study. Figure (2) shows that disease awareness increases with the high level of mother education. The percentage of "Not very aware" is highly increased in the least level of mother education.

Figure (3) demonstrates the level of education of patients' fathers participating in this study. Figure (4) shows that disease awareness increases with the high level of father education. The percentage of "Not very aware" is highly increased in the least level of father education.

Table (4) and figure (5) demonstrate the correlation between types of enuresis management and the prognosis. Results indicate more efficacy of bladder muscle exercise compared to other treatment modalities but without statistical significance noticed.

Table 3. *Correlation of breast feeding with variables.*

	Breast Fed (113)	No Breast Fed (60)	Significance
What is the child's / adolescent's gender?			
Male	79 (69.9)	40 (66.7)	NS
Female	34 (30.1)	20 (33.3)	
Age			
Mean±SD	10.2±3.6	9.5±2.7	NS
Did the mother smoke during pregnancy?			
Yes	1 (0.9)	1 (1.7)	NS
No	112 (99.1)	59 (98.3)	
What was the type of delivery of the child / adolescent?			
Vaginal	85 (75.2)	37 (61.7)	NS
Caesarean	28 (24.8)	23 (38.3)	
Does the father work?			
Yes	101 (89.3)	54 (90.0)	NS
No	12 (10.6)	6 (10.0)	
Does the mother work?			
Yes	49 (43.3)	33 (55.0)	NS
No	64 (56.6)	27 (45.0)	
Is there a history of parents suffering from nocturnal enuresis during their childhood?			
Yes	33 (29.2)	26 (43.3)	NS
No	80 (70.8)	34 (56.7)	
Is there a history of siblings suffering from nocturnal enuresis?			
Yes	45 (44.1)	28 (50.9)	NS
No	57 (55.9)	27 (49.1)	
Is there an increased fluid intake at night?			
Yes	67 (59.3)	28 (46.7)	NS
No	46 (40.7)	32 (53.3)	
Are there any comorbidity?			
Yes	8 (7.1)	2 (3.3)	NS
No	105 (92.9)	58 (96.7)	
Did the child/adolescent get exposed to these stressful events?			
Yes	13 (11.5)	4 (6.7)	NS
No	100 (88.5)	56 (93.3)	
Does nocturnal enuresis impose a burden to the family?			
Yes	78 (69.0)	36 (60.0)	<0.05
No	35 (31.0)	24 (40.0)	
Does nocturnal enuresis cause embarrassment and social shame the child's/adolescent's?			
Yes	91 (80.5)	44 (73.3)	<0.05
No	22 (19.5)	16 (26.7)	
Have attempts been made to treat enuresis?			
Yes	67 (64.4)	40 (66.7)	NS
No	37 (35.6)	20 (33.3)	
Is there a good response to treatment?			
Yes	48 (63.2)	25 (62.5)	NS
No	28 (36.8)	15 (37.5)	
Do you think that the family is still in need for further clinical advice regarding enuresis?			
Yes	89 (78.8)	40 (66.7)	NS
No	24 (21.2)	20 (33.3)	

Table 4. *Correlation between types of management and disease prognosis.*

Types of management	Good prognosis	
	Number	Percentage
Bedwetting alarm (30)	20	66.7
Behavioral treatment (55)	34	61.8
Bladder muscles exercises (6)	5	83.3
Pharmacological treatment (16)	8	50.0

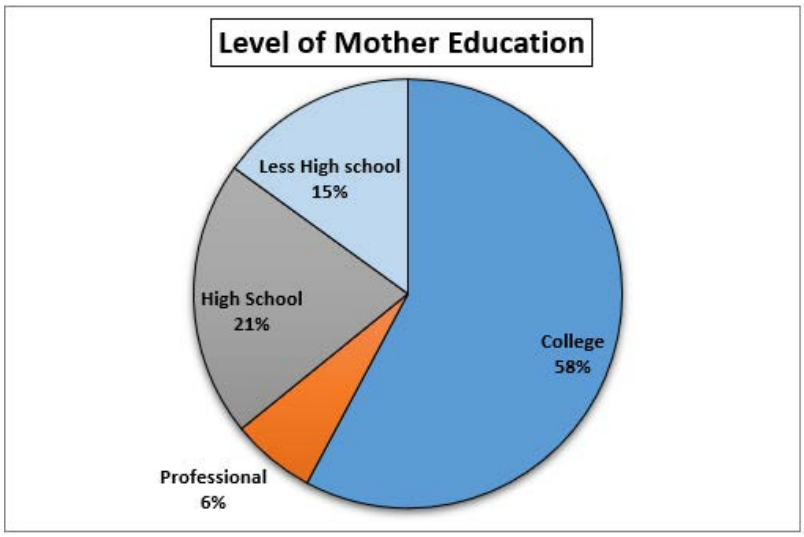

Figure 1. *Education level of patients' mothers.*

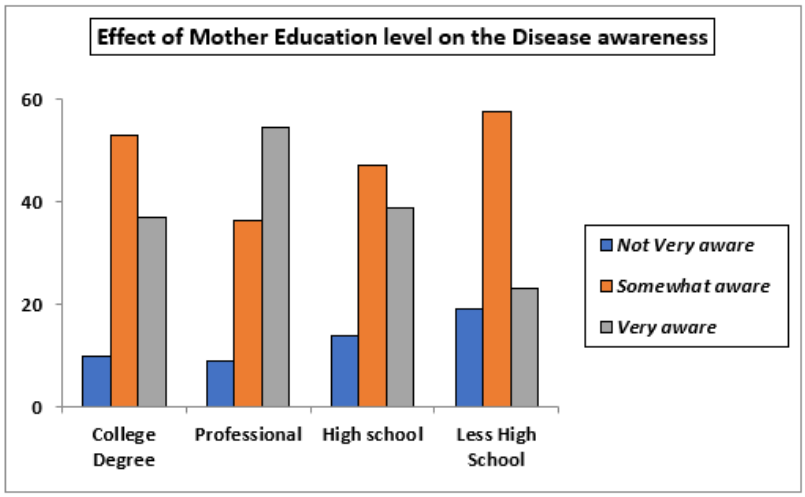

Figure 2. *Correlation between mother Education level and disease awareness.*

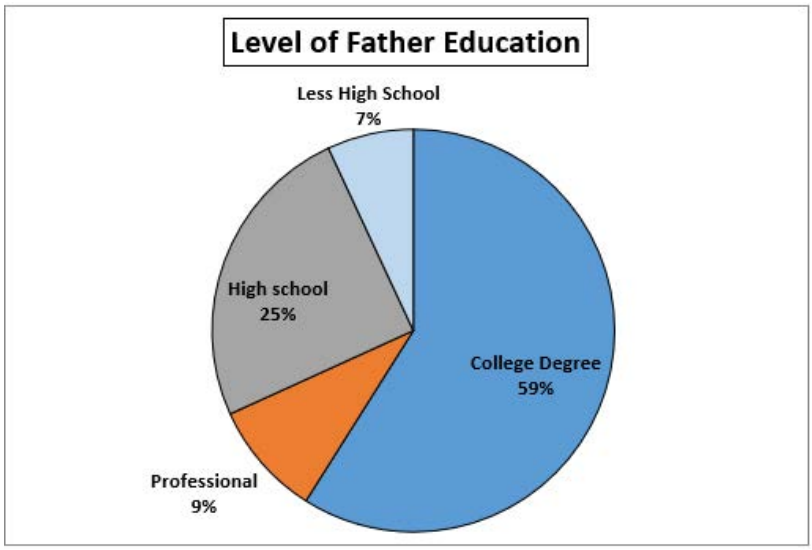

Figure 3. *Education level of patients' fathers.*

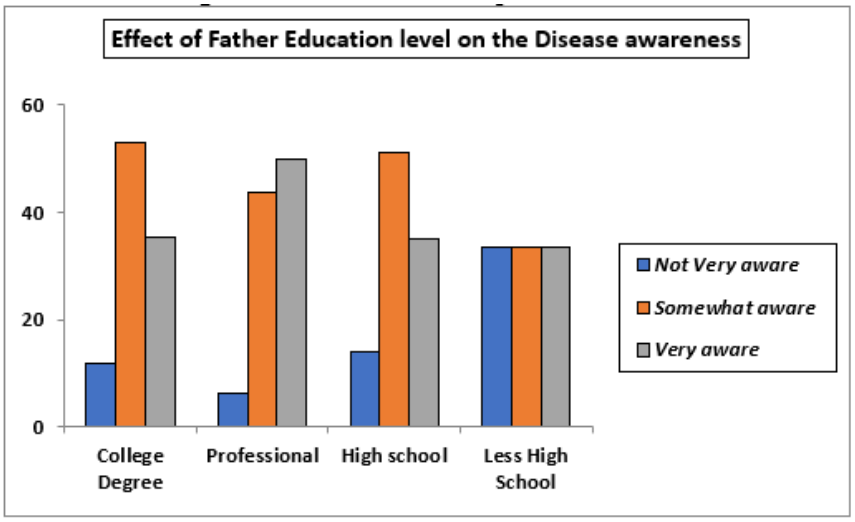

Figure 4. *Correlation between father Education level and disease awareness.*

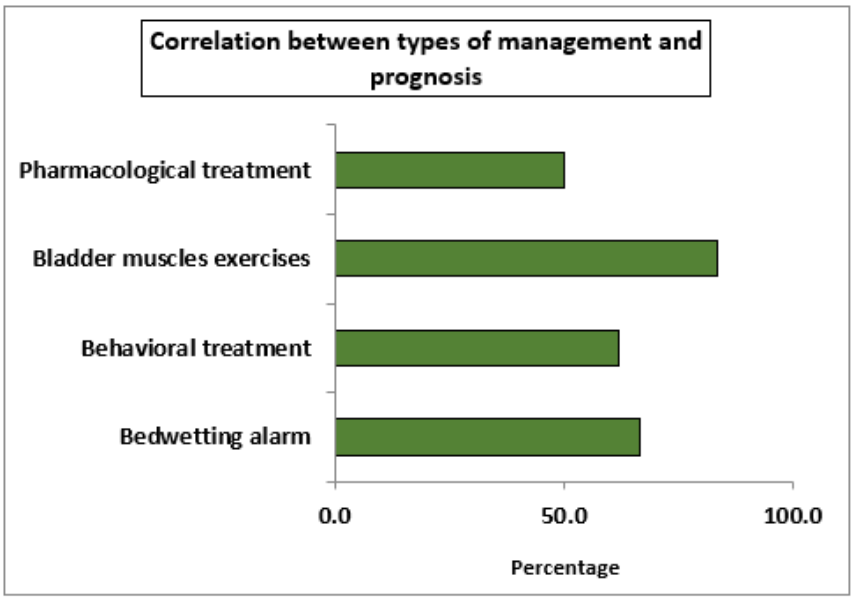

Figure 5. *Correlation between types of management and disease prognosis.*

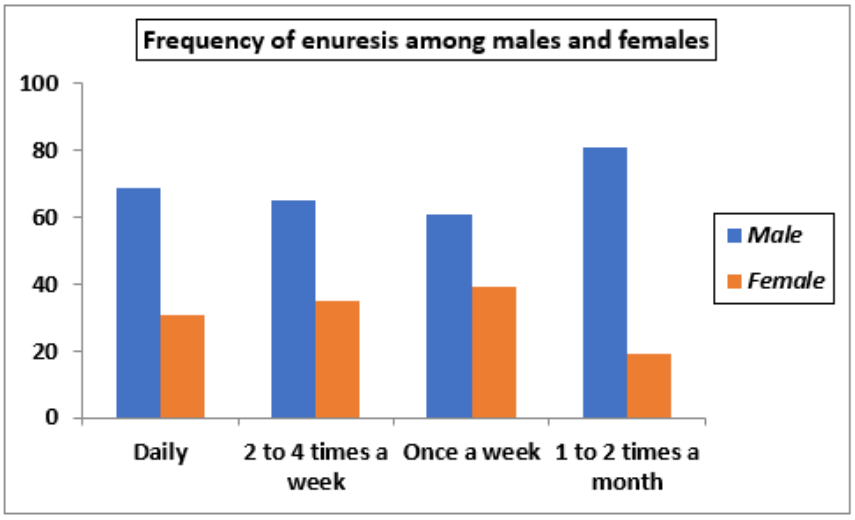

Figure 6. *Frequency of nocturnal enuresis among male and female.*

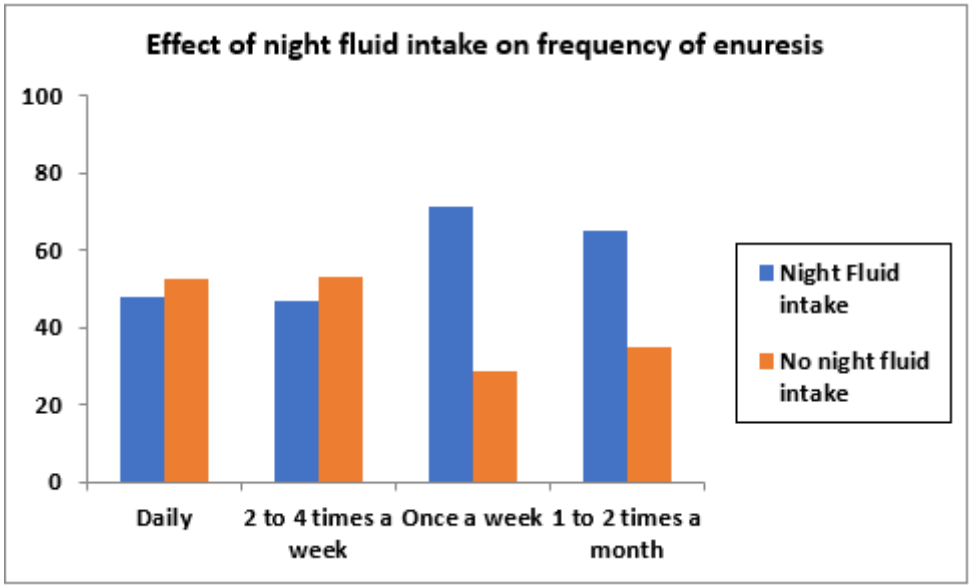

Figure 7. *Effect of increased night fluid intake on frequency of nocturnal enuresis.*

Figure (6) shows the frequency of nocturnal enuresis in male and female patients. Results indicate that frequency of nocturnal enuresis in male patients is higher than that in female (P value < 0.05).

Figure (7) shows the effect of increased night fluid intake on the frequency of nocturnal enuresis. Results indicate that there is no significant effect (P value > 0.05) of increased night fluid intake and frequency of nocturnal enuresis.

Discussion.

Nocturnal enuresis is a public health problem that may cause emotional and social problems for both the child and family. The prevalence of NE varies widely in various countries. These differences between countries may arise from factors such as cultural, racial, environmental, and socio-economic conditions. A study in Turkey found that the prevalence of NE is 9%. This prevalence varies with different age groups [2]. Moreover, another study showed that the prevalence of NE is found to be 12.4% in Slovenian children aged 6 to 15 years old [3]. In India, the prevalence of NE was 11.13% [7]. A study was done in Iran found that the prevalence is 18.7% [10]. However, the prevalence of NE in Saudi Arabia is found to be 31.2% [13]. Another study reported that the prevalence is 18.5%, 76.4% in Riyadh and Jazan, respectively [11,12]. In our study, the prevalence of NE among children and adolescents in Qassim was 21.9%.

Moreover, there were significant differences between the two genders in terms of the frequency of nocturnal enuresis. NE frequency was found higher in boys than girls [2,4,7]. However, other studies found that There are no significant gender differences [10]. Also in Saudi Arabia, different studies found that nocturnal enuresis in males were more than in females [11-13]. In our study, NE was 68.8 in boys compared to 31.2 in girls.

Enuresis is a very common problem in children, which causes embarrassment, stress, and discomfort for them and their families. The cause of NE is generally multifaceted and is the resulting from the integration of physical and psychological factors. Participants believe that NE is associated with positive family history of the same condition in either father, mother, or his siblings. It is also associated with increased fluid intake at night. Different studies showed that Enuretics had crowded families, positive family history, low educational level of parents, jobless father, working mother, single parent, poor school performance, history of urinary tract infection [7,8,10]. Other study showed that NE can be a result of weakness in the muscles of the lower urinary tract, urinary tract nerves damage and psychological effect [13].

In regard to the comorbidities in our results there was no significant association with increased risk of developing NE. Whereas a study conducted in Iran revealed that there is significant correlation if child has UTI, poor school performance, breastfeed, and low birth weight [10]. In addition to that, low educational status of the parents is found as a contributing factor to develop NE. Several sources have addressed the connection between nocturnal enuresis and parental education [7,8,10].

Nocturnal enuresis (NE) can have a significant impact on both the family and the patient by numerus aspects and our study agreed with that. Several studies have highlighted the consequences of NE on various aspects of life. Kiddoo et al. (2012) emphasizes the psychosocial impact of NE on children, leading to decreased self-esteem and emotional well-being [1]. Özkan et al. and Karničnik et al. discuss the negative effects of NE on the quality of life of affected children, including social isolation and impaired academic performance [2,3]. Furthermore, studies conducted in different regions, such as Yemen, rural areas, Istanbul, New Zealand, and Saudi Arabia, provide insights into the prevalence of NE and its implications in diverse populations [6-13]. Together, these studies highlight the physical, emotional, and social challenges associated with NE, emphasizing the need for early intervention and support for affected individuals and their families.

In our study the most common method used for the treatment is bladder muscles exercises and least common is pharmacological treatment. In Bakhtiar et al. study majority of participants was

using herbal medicine as main stay of the treatment of NE [4]. Although a study conducted in Iran and Turkey found out that medications were the most commonly used methods for treatment [8,10]. Several studies in Saudi Arabia agreed that behavioral modification, fluid restriction and bladder emptying before sleep is the preferred option by their subjects [11-13].

Conclusion.

We concluded that the prevalence and impact of nocturnal enuresis on children and adolescents in the region is significant. The higher incidence in boys, coupled with factors such as positive family history and lower parental educational status, emphasizes the multifaceted nature of this condition. The substantial effect on families underscores the importance of early intervention and support.

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