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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 ВИНТИ 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 ВИНТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

### WEBSITE

[www.geomednews.com](http://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](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. Корректур авторам не высылаются, 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 computer-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.nlm.nih.gov/bsd/uniform_requirements.html)  
[http://www.icmje.org/urm\\_full.pdf](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 საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ 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 შედეგების 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 ფხიხლებში 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.

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## ASSESSMENT OF THE RELATIONSHIP BETWEEN OVERACTIVE BLADDER AND FUNCTIONAL CONSTIPATION, IN QASSIM REGION, SAUDI ARABIA

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### Abstract.

**Introduction:** Urinary urgency that is abrupt and uncontrollable, sometimes accompanied by increased frequency of voiding during the day and nocturia, is a set of symptoms known as an overactive bladder (OAB). An increasing number of people are concerned about the health effects of overactive bladder and symptoms of functional constipation, such as straining and painful, irregular bowel movements.

**Methods:** A sample of 556 members of the general population of the Qassim region of Saudi Arabia were used in this randomized descriptive cross-sectional survey study. Online surveys were filled out by the participants, who were guaranteed anonymity.

**Results:** The incidence of functional constipation was 25.2%, and the prevalence of overactive bladder (OAB) was 34.4%. There was a statistically significant correlation ( $p = 0.025$ ) between the OAB and functional constipation. A history of pelvic surgery (OR = 1.80,  $p = 0.047$ ), diabetes mellitus (OR = 1.52,  $p = 0.021$ ), female gender (OR = 1.84,  $p = 0.003$ ), smoking (OR = 2.31,  $p = 0.001$ ), and an overactive bladder (OR = 2.81,  $p < 0.001$ ) were all significant predictors of functional constipation. Female gender [AOR = 1.722; 95% CI = 1.149–2.580;  $p = 0.008$ ], having colorectal surgery [AOR = 5.461; 95% CI = 1.094–27.253;  $p = 0.038$ ], and having hypertension [AOR = 0.458; 95% CI = 0.219–0.955;  $p = 0.037$ ] were all substantially linked to the prevalence of overactive bladder (OAB). Furthermore, there was a significant correlation between a greater incidence of OAB and being a student [AOR = 0.611; 95% CI = 0.405–0.924;  $p = 0.019$ ] or unemployed [AOR = 0.515; 95% CI = 0.267–0.993;  $p = 0.048$ ].

**Conclusion:** Overactive bladder (OAB) is linked to functional constipation, and smoking, being a woman, having diabetes, and having had pelvic surgery are common risk factors for functional constipation. Additionally, there was a strong correlation found between a higher prevalence of OAB and female gender, colorectal surgery, hypertension, and being a student or unemployed person. The substantial prevalence of these illnesses among the people living in Saudi Arabia's Qassim region is demonstrated by these data, underscoring the urgent need for education and awareness campaigns.

**Key words.** Overactive bladder, pelvic floor, bladder function, bowel function, constipation, bowel dysfunction.

### Introduction.

An overactive bladder (OAB) is a group of urinary tract symptoms in the absence of an infection or prior disease, it is characterized by sudden, uncontrollable urine urgency, which

may be followed by incontinence, increased daytime voiding frequency, and nocturia [1]. These symptoms do not always indicate the presence of an underlying illness or infection [2]. Clinical studies and observations indicate that the predominant symptom of OAB is urinary urgency, which is characterized by an abrupt and involuntary need to urinate [3,4]. The urge manifests due to fear of urine leakage [1]. The most common causes of urge inconstitence that have been documented include coughing, sneezing, and physical activity [3].

According to studies, people with OAB may wake up many times at night to urinate and urinate about eight times during the day [1,4]. Despite the lack of a clear organic cause, functional constipation is a condition frequently linked to OAB that is characterized by complicated and irregular bowel movements that pass painfully with significant straining. The symptoms that are used to make a diagnosis are the frequency and consistency of bowel movements, the symptoms that accompany them, and the length of time they last [5]. Abdominal distention, pain, vomiting, and urine symptoms are frequently present in cases with functional constipation, which can range from small, hard stools to large, painful stools. Rome IV criteria offer helpful diagnostic tools because the condition's presentation is obscure, particularly in infants and toddlers [6].

Numerous epidemiological studies conducted in various countries have demonstrated the vast variation in OAB prevalence rates [3-5]. 19000 persons over the age of 18 participated in a cross-sectional telephone survey performed by EPIC Research. An OAB prevalence of 11.8%, evenly split between the sexes, was found in the study [7]. A nationwide survey of 2,289 Saudi women who were not pregnant found that 54.1% of them had OAB [8]. A connection between OAB and functional constipation may be suggested by the pressure that deposited stool puts on the rectum [5]. In the general population of Qassim, Saudi Arabia, this study intends to explore the connection between functional constipation and an overactive bladder.

### Methodology.

**Study design:** This study, which used a cross-sectional design, was carried out among adults in the Kingdom of Saudi Arabia's (KSA) Al-Qassim region between August 2023 and July 2024. The purpose of the study was to evaluate the connection between functional constipation and an overactive bladder in the Qassim region of Saudi Arabia.

**Inclusion and exclusion criteria:** For this study, all male and female residents of the Al-Qassim region who were at least 18 years old met the inclusion criteria. In order to take part in the



study, the participants had to give their informed consent. The survey included speakers of Arabic and English. Those who did not want to participate and those who did not reside in the Al-Qassim region were excluded.

**Sampling technique:** Participants were selected for this study using a non-probability convenience sampling technique based on their availability and willingness to take part within the allotted study period.

**Sample Size:** To determine the sample size, the study used the Cochran sample size calculation. The following is the formula:  $n = Z^2 p (1 - p) / d^2$ . where  $d$  is the margin of error (5%), 50% is the preset fraction,  $Z$  is the crucial for 95% CI, and  $n$  is the sample size. This formula determined that 384 was the smallest allowable sample size. However, we choose to expand the sample size to 556 respondents in order to improve the study's dependability.

#### Data collection tools and procedures:

A validated questionnaire was distributed to participants via phone calls, online platforms, and clinical visits as the main method of gathering data. Participants were informed of the study's goals before to their involvement, and verbal consent was acquired. To accommodate all participants, the questionnaire has been translated into Arabic and English. It was divided into six sections: the Bristol Stool Chart, Overactive Bladder Symptom Scores (OABSS), General Health Status, Informed Consent, and Socio-Demographic Information. To make sure it was in line with the goals of the study, the questionnaire was created using recent literature as a guide. Ten respondents participated in a pilot study to evaluate the readability and comprehension of the questionnaire. The main study did not include these pilot study participants. The final version of the questionnaire was disseminated to the adult population in the Al-Qassim region of Saudi Arabia after taking into account input from the pilot study.

#### Data analysis:

After data collecting was finished, the information was first cleaned up by entering it into an Excel database. Duplicates, incomplete entries, and outliers have to be found and removed during this process. After that, SPSS software version 27 was used to code and import the cleaned data for in-depth analysis. Frequencies and counts were used to summarize categorical variables. To investigate the variables that predict the onset of functional constipation, univariate analysis was performed.

#### Ethical considerations:

Before data collecting began, ethical approval from the Qassim ethics committee was obtained. Any connection between participants and their responses was avoided by removing personal identifiers from the dataset in order to protect participant anonymity. In order to ensure that participation was free from coercion, study participants were fully informed about the study's objectives, methods, possible risks, and advantages before willingly giving their assent.

#### Results.

The online survey was filled up by 556 individuals. The bulk of the participants, 269 (48.4%), were students, with a mean

**Table 1.** Socio-demographic information of the Participants (N=556).

Socio-demographic information	Category	Frequency and proportion n (%)
Gender	Female	361 (64.9%)
	Male	195 (35.1%)
Region of residency	Qassim region	509 (91.5%)
	Others	47 (8.5%)
Nationality	Saudi	528 (95.0%)
	Non-Saudi	28 (5.0%)
Employment status	Students	269 (48.4%)
	Non-employed	61 (11.0%)
	Employed	181 (32.6%)
	Retired	27 (4.9%)
	Others	18 (3.2%)
Age (Years)	Mean ± SD	34.7 ±11.44
Height (cm)	Mean ± SD	174.6 ± 18.31
Weight (Kgs)	Mean ± SD	71.2 ± 19.27

Socio-demographic information presented in frequencies (n) and proportion (%)

**Table 2.** General health status.

Questions	Categories	Frequency and Proportion n (%)
Are you a smoker?	Yes	56 (10.1%)
	No	486 (87.4%)
	Previous smokers	14 (2.5%)
Have you done colorectal surgery?	Yes	9 (1.6%)
	No	547 (98.4%)
Have you done pelvic surgery	Yes	22 (4.0%)
	No	534 (96.0%)
Do you have diabetes mellitus	Yes	27 (4.9%)
	No	529 (95.1%)
Do you have hypertension	Yes	35 (6.3%)
	No	521 (93.7%)
Do you have irritable bowel syndrome?	Yes	139 (25.0%)
	No	417 (75.0%)
Have you done any urinary tract surgery?	Yes	5 (2.6%)
	No	190 (97.4%)
Have you given birth?	Yes	116 (32.1%)
	No	245 (67.9%)
How many times you gave birth?	More than five	37 (10.2%)
	Three to five times	63 (17.5%)
	One to two times	32(8.9%)
	None	229 (63.4%)

General health status of participants presented in frequencies (n) and proportion (%)

age, height, and weight of 34.7 years, 174.6 cm, and 71.2 kg, respectively. Of these, 361 (64.9%) were female, and 509 (91.5%) were inhabitants of the Qassim region, while 528 (95.0%) were Saudi nationals.

The participants' overall health status is shown in Table 2. The results showed that 486 (87.4%) of the participants were non-smokers, whereas 56 (10.1%) were smokers and 14 (2.5%) had formerly smoked. Of the responders, 22 (4.0%) had undergone pelvic surgery, while just 9 (1.6%) had undergone colorectal surgery. According to the results, diabetes mellitus affected 27 (4.9%) of the respondents. Of them, 139 (25.0%) had irritable bowel syndrome, and 35 (6.3%) had hypertension. While 116 (32.1%) of the female respondents had given birth, 63 (17.5%) of whom had done so three or five times, five (2.6%) of the male respondents had undergone urinary tract surgery.

The prevalence of overactive bladder (OAB) is depicted in Figure 1. The majority of participants (65.6%) did not have OAB symptoms, although nearly one-third (34.4%) did.

The participants' score for overactive bladder symptoms is shown in Table 3. Of the participants, 221 (39.7%) woke up to urinate at least once during night, but the majority, 435 (78.2%), urinated seven or less times between dawn and night. Of the participants, 185 (33.3%) experienced the urge to urinate fewer than once per week, which they found difficult to resist. Because they are unable to postpone the sudden urge to urinate, 25 (4.5%) of the participants leak urine around once a day.

The prevalence of functional constipation is seen in Figure 2. The majority of patients (74.8%) did not have functional constipation symptoms, although nearly a quarter (25.2%) did.

The patients' evaluation of how the constipation has affected their lives during the last two weeks is displayed in Table 4. A significant number of individuals reported feeling so full that they felt like bursting 84 (15.1%); they also reported feeling extremely humiliated about spending so much time in the restroom, especially when they were away from home

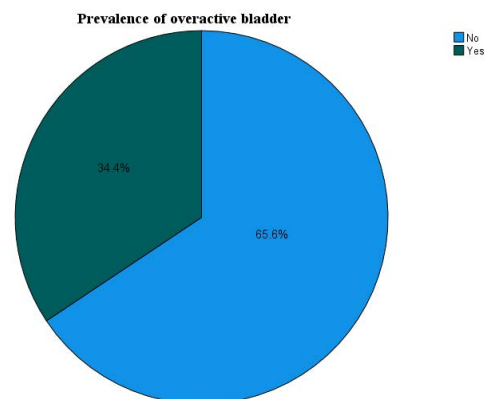


Figure 1. Prevalence of overactive bladder.

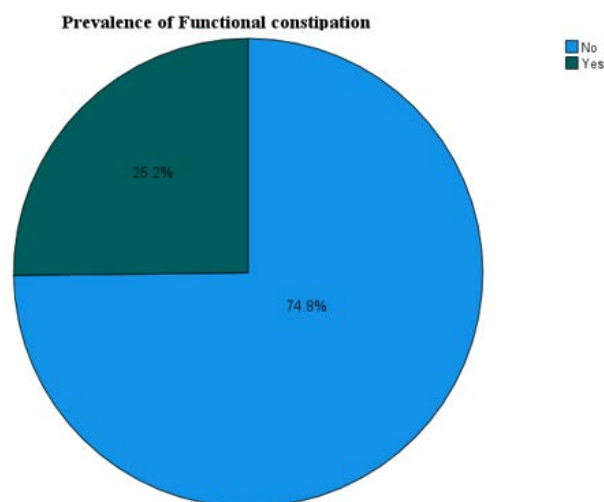


Figure 2. Prevalence of functional constipation.

Table 3. Overactive bladder symptoms score.

Questions	Categories	Frequency and Proportion n (%)
How often do you usually urinate from the time you wake up in the morning until you go to bed at night	7 or less	435 (78.2%)
	8-15	197 (37.0%)
	15 or more	111 (20.0%)
How often do you generally get up to urinate during the night before waking up in the morning?	0	261 (46.9%)
	1	221 (39.7%)
	2	50 (9.0%)
	3 or more	24 (4.4%)
How frequently do you experience a sudden urge to urinate that is hard to postpone?	Not at all	180 (32.4%)
	Less than once a week	185 (33.3%)
	About once a day	58 (10.4%)
	5 times a day	7 (1.3%)
How frequently do you experience urine leakage because you cannot delay the sudden urge to urinate?	Once a week or more	104 (18.7%)
	Not at all	428 (77.0%)
	Less than once a week	86 (15.5%)
	About once a day	25(4.5%)
	5 times a day	2 (0.4%)
Once a week or more	9(1.6%)	

Overactive bladder symptoms scores presented in frequencies (n) and proportion (%)

42 (7.6%). Nonetheless, participants reported high levels of satisfaction with their treatment 90 (16.2%), the frequency of their bowel movements 99 (17.8%), the regularity of their bowel movements 94 (16.9%), and the time it takes for food to pass through their intestines 103 (18.5%).

The findings of the univariate logistic regression analysis, which identified variables linked to functional constipation, are shown in Table 5. Variables like gender, smoking status, history of pelvic surgery, diabetes mellitus, and overactive bladder were all analyzed. Having an overactive bladder (OR = 2.81,  $p < 0.001$ ), smoking (OR = 2.31,  $p = 0.001$ ), being female (OR = 1.84,  $p = 0.003$ ), having diabetes mellitus (OR = 1.52,  $p = 0.021$ ), and having had pelvic surgery in the past were all significant predictors of functional constipation (OR = 1.80,  $p = 0.047$ ).

The prevalence of overactive bladder (OAB) and functional constipation were shown to be statistically significantly correlated ( $p = 0.025$ ) in the data (Table 6).

The prevalence of overactive bladder was found to be statistically significantly correlated with a number of factors, including gender, employment status, colorectal surgery, hypertension, and irritable bowel syndrome ( $p=0.001^*$ ,  $p < 0.001^*$ ,  $p, 0.036^*$ ,  $0.018^*$ , and  $p = 0.003^*$ ), according to the results (Table 7). Nevertheless, there was no statistically significant correlation ( $p > 0.05$ ) between the prevalence of overactive bladder and other participant characteristics.

**Table 4.** Participants assessment of constipation.

Statement	Not at all	A little bit	Moderately	Quite a bit	Extremely
Felt bloated to the point of bursting	225(40.5%)	178(32.0%)	84(15.1%)	48(8.6%)	84(15.1%)
Felt heavy because of your constipation	286(51.4%)	137(24.6%)	64(11.5%)	55(9.9%)	14(2.5%)
Felt any physical discomfort	271(48.7%)	146(26.3%)	91(16.4%)	37(6.7%)	11(2.0%)
Felt the need to have a bowel movement but not been able to	285(51.3%)	131(23.6%)	99(17.8%)	31(5.6%)	10(1.8%)
Been embarrassed to be with others.	365(65.6%)	97(17.4%)	52(9.4%)	28(5.0%)	14(2.5%)
I have been eating less and less because I am unable to have regular bowel movements.	429(77.2%)	75(13.5%)	35(6.3%)	10(1.8%)	7(1.3%)
Had to be careful about what to eat	287(51.6%)	151(27.2%)	59(10.6%)	37(6.7%)	22(4.0%)
Had a decreased appetite	402(72.3%)	91(16.4%)	37(6.7%)	19(3.4%)	7(1.3%)
I have been concerned about not having the ability to decide what I eat.	385(69.2%)	90(16.2%)	49(8.8%)	22(4.0%)	10(1.8%)
I have felt embarrassed about spending so much time in the bathroom when I am away from home.	308(55.4%)	117(21.0%)	52(9.4%)	37(6.7%)	42(7.6%)
I have felt self-conscious about needing to use the bathroom frequently when I'm not at home.	327(58.8%)	110(19.8%)	59(10.6%)	27(4.9%)	33(5.9%)
I have been concerned about the need to alter my daily routine.	378(68.0%)	83(14.9%)	44(7.9%)	27(4.9%)	44(7.9%)
My condition has made me feel irritable.	370(66.5%)	104(18.7%)	36(6.5%)	19(3.4%)	14(2.5%)
Been upset by your condition	299(53.8%)	137(24.6%)	50(9.0%)	26(4.7%)	27(4.9%)
Felt obsessed by your condition	426(76.6%)	71(12.8%)	19(3.4%)	14(2.5%)	6(1.1%)
Felt stressed by your condition	379(68.2%)	96(17.3%)	38(6.8%)	14(2.5%)	13(2.3%)
Felt less self-confidence because of your condition	424(76.3%)	60(10.8%)	27(4.9%)	11(2.0%)	16(2.9%)
Felt in control of your condition	288(51.8%)	97(17.4%)	70(12.6%)	36(6.5%)	50(9.0%)
I have been anxious about not knowing when I will be able to have a bowel movement.	359(64.6%)	94(16.9%)	46(8.3%)	24(4.3%)	15(2.7%)
I have been increasingly troubled by my inability to have a bowel movement.	377(67.8%)	79(14.2%)	42 (7.6%)	19(3.4%)	20(3.6%)
I have been concerned that my condition might deteriorate.	367(66.0%)	89(16.0%)	41(7.4%)	24(4.3%)	18(3.2%)
I felt as though my body wasn't functioning correctly.	326(58.6%)	105(18.9%)	51(9.2%)	32(5.8%)	22(4.0%)
I've experienced fewer bowel movements than I would prefer.	337(60.6%)	106(19.1%)	51(9.2%)	25(4.5%)	17(3.1%)
Content with the frequency of your bowel movements	139(25.0%)	110(19.8%)	101(18.2%)	85(15.3%)	99(17.8%)
Pleased with the consistency of your bowel movements	157(28.2%)	101(18.2%)	90(16.2%)	92(16.5%)	94(16.9%)
Content with the duration it takes for food to move through your intestines	157(28.2%)	101(18.2%)	98(17.6%)	75(13.5%)	103(18.5%)
Satisfied with your treatment	187(33.6%)	82(14.7%)	91(16.4%)	57(10.3%)	90(16.2%)

Participants' assessment of constipation presented in frequencies (n) and proportion (%)

**Table 5.** Univariate logistic regression (factors predicting the development of Functional constipation).

Factor		P-value	Odds ratio	Confidence interval	
Gender	Female	0.003*	1.84	0.36	0.72
	Male	0.732	1.24	0.52	0.84
Smoking	Yes	0.001*	2.31	0.23	0.41
	No	0.853	1.32	0.52	0.61
	Previous smoker	0.532	2.09	0.31	0.56
Previous colorectal surgery	Yes	0.143	2.61	0.33	0.63
	No	0.521	2.12	0.41	0.59
Previous pelvic surgery	Yes	0.047*	1.80	0.32	0.42
	No	0.421	1.78	0.51	0.64
Diabetes mellitus	Yes	0.021*	1.52	0.38	0.47
	No	0.321	2.10	0.32	0.49
Hypertension	Yes	0.215	1.43	0.63	0.77
	No	0.123	1.39	0.73	0.81
Overactive bladder	Yes	<	2.81	1.42	2.58
	No	0.001*			
		0.723	2.85	1.16	3.12

Univariate logistic regression

\*Significant at p<0.05 level.

**Table 6.** The association between overactive bladder and functional constipation.

	Prevalence of OAB			p-value
	Category	No	Yes	
Prevalence of functional constipation	No	284 (68.3%)	132 (31.7%)	0.025*
	Yes	81 (57.9%)	59 (42.1%)	

Association between prevalence of AOB and the prevalence of functional constipation

\* Significant at  $p < 0.05$  level.

**Table 7.** The association between socio-demographic characteristics and prevalence of overactive bladder (AOB).

Variables	Prevalence of AOB			p-value
	Category	No	Yes	
Gender	Female	100(27.7%)	261 (72.3%)	0.001*
	Male	80(41.0%)	115 (59.0%)	
Region of residency	Qassim region	339(66.6%)	170 (33.4%)	0.119
	Others	26(55.3%)	21(44.7%)	
Nationality	Saudi	169(32.0%)	359 (68.0%)	0.423
	Non-Saudi	11 (39.3%)	17 (60.7%)	
Employment status	Students	109(40.5%)	160 (59.5%)	<0.001*
	Non-employed	18 (29.5%)	43 (70.5%)	
	Employed	46(25.4%)	135 (74.6%)	
	Retired	3 (11.1%)	24 (88.9%)	
	Others	4 (22.2%)	14 (77.8%)	
Smoking	Yes	17 (30.4%)	39 (69.6%)	0.626
	No	160(32.9%)	326 (67.1%)	
	Previous smokers	3 (21.4%)	11 (78.6%)	
Undergone colorectal surgery	Yes	0 (0.0%)	9 (100.0%)	0.036*
	No	180(32.9%)	367 (67.1%)	
Undergone pelvic surgery	Yes	9 (40.9%)	13 (59.1%)	0.383
	No	171(32.0%)	363 (68.0%)	
Diabetes mellitus	Yes	5 (18.5%)	22 (81.5%)	0.115
	No	175(33.1%)	354 (66.9%)	
Hypertension	Yes	5 (14.3%)	30 (85.7%)	0.018*
	No	175(33.6%)	346 (66.4%)	
Irritable bowel syndrome	Yes	31 (22.3%)	108 (77.7%)	0.003*
	No	149(35.7%)	268 (64.3%)	
Undergone urinary tract surgery	Yes	1 (20.0%)	4 (80.0%)	0.552
	No	179(32.0%)	372 (67.5%)	

Association between participants' socio-demographic characteristics and prevalence of AOB

\* Significant at  $p < 0.05$  level

**Table 8.** Multivariate logistic for the association between variables and prevalence of AOB.

Factor	AOR	95% CI	P-value
Gender			
Male	Ref		
Female	1.722	1.149 – 2.580	0.008 **
Employment status			0.011 **
Employed	Ref		
Student	0.611	0.405 – 0.924	0.019 **
Others	1.380	0.496 – 3.838	0.537
Non-employed	0.515	0.267 – 0.993	0.048 **
Retired	1.884	0.812 – 4.373	0.140
Undergone colorectal surgery			
No	Ref		
Yes	5.461	1.094 – 27.253	0.038**
Hypertension			
No	Ref		
Yes	0.458	0.219 – 0.955	0.037 **
Irritable bowel syndrome			
No	Ref		
Yes	1.131	0.741 – 1.727	0.568

AOR – Adjusted Odds Ratio; CI – Confidence Interval

\*\* Significant at  $p < 0.05$  level.

Overactive bladder (OAB) was more common in women (AOR = 1.722; 95% CI = 1.149–2.580;  $p = 0.008$ ), those who had had colorectal surgery (AOR = 5.461; 95% CI = 1.094–27.253;  $p = 0.038$ ), and those with hypertension (AOR = 0.458; 95% CI = 0.219–0.955;  $p = 0.037$ ), according to the multivariate regression model (Table 8). Additionally, there was a significant correlation between a greater incidence of OAB and being a student (AOR = 0.611; 95% CI = 0.405–0.924;  $p = 0.019$ ) or unemployed (AOR = 0.515; 95% CI = 0.267–0.993;  $p = 0.048$ ).

### Discussion.

The purpose of the study was to assess the association between functional constipation and an overactive bladder in the adult population in the Qassim region of Saudi Arabia. The majority of the participants primarily consisted of female participants residents of Qassim region and Saudi nationals. According to the study's findings, individuals' functional constipation and overactive bladder were significantly correlated. These results are consistent with those of Sampaio et al., who found in their sample a statistically significant association between overactive bladder and functional constipation [9]. The substantial burden that overactive bladder (OAB) and functional constipation place on the populace is demonstrated by the prevalence rates of both diseases, which were 34.4% and 25.2%, respectively. To improve knowledge of the causes, symptoms, risk factors, and interventions to lessen the negative effects of these disorders on the population, there is a need for increased awareness and educational initiatives.

The study found that smoking, being a woman, having diabetes, and having had pelvic surgery in the past are major risk factors for functional constipation. Furthermore, research discovered that a higher prevalence of overactive bladder (OAB) was substantially correlated with having a history of colorectal surgery, hypertension, and being a student or unemployed person. According to the study, smokers experienced functional constipation at a higher rate than both non-smokers and previous smokers. The results reveal that smoking exacerbated functional constipation symptoms in both men and women with overactive bladder symptoms, according to a study by Coyne et al. [10]. Compared to men, women were more likely to experience functional constipation, according to the study. According to a similar study by Maeda et al., women were more likely than males to experience functional constipation when they experienced overactive bladder symptoms [11]. According to the results of the current study, those with diabetes mellitus were more likely than those without the disease to experience functional constipation. The study's results are consistent with a Panayi et al. study that found diabetes mellitus to be a risk factor for the development of functional constipation linked to an overactive bladder [12]. Furthermore, a higher likelihood of developing functional constipation was predicted by those who had previously had pelvic surgery. This is consistent with the research by Mugie et al. that found a strong link between the onset of functional constipation and pelvic surgery [13]. According to the study, some people woke up at least once during the night to urinate, while the majority only urinated seven times or less between morning and sleep. For one-third of the individuals, the urge to urinate, which was difficult to postpone, occurred

fewer than once every week. This conclusion highlights a low quality of life that led to despair and anxiety. Schmidt and Santos concluded in similar results that functional constipation was linked to a lower quality of life for both men and women [14]. Furthermore, the study found that a significant percentage of subjects experienced the urge to void but were unable to do so, highlighting a typical sign of functional constipation. Additionally, the study found that the majority of participants were so ashamed about spending so much time in the restroom, especially when they were away from home, and that they felt so bloated that they were about to explode. The results highlight the detrimental consequences of functional constipation linked to an overactive bladder [15]. On the other hand, individuals were rather happy with how frequently they had regular bowel movements. The results highlight the need to be careful not to ignore bowel dysfunction and the risks of underestimating the importance of bowel dysfunction symptoms when they are present [16].

There were a number of intrinsic limitations to this study. The survey's cross-sectional design precluded the establishment of causal correlations between variables. Additionally, because online questionnaires were used, answers were self-reported without being verified, which could introduce biases. The study was limited to the Qassim region of Saudi Arabia, which limits generalizability and makes it difficult to extrapolate results to the larger Saudi population.

### Conclusion.

Overall, the study discovered a correlation between functional constipation and an overactive bladder in the general population of Qassim, Saudi Arabia. An overactive bladder, smoking, gender, diabetes mellitus, and prior pelvic surgeries were determined to be responsible for increasing severity of functional constipation among the population. The study's results call for public awareness campaigns about the potential risks of ignoring, underestimating or overlooking the symptoms associated with overactive bladder and functional constipation among the general population in Saudi Arabia.

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