GEORGIAN MEDICAL NEWS

ISSN 1512-0112

NO 9 (366) Сентябрь 2025

ТБИЛИСИ - NEW YORK

ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

Monthly Georgia-US joint scientific journal published both in electronic and paper formats of the Agency of Medical Information of the Georgian Association of Business Press. Published since 1994. Distributed in NIS, EU and USA.

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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Содержание:

GEORGIAN MEDICAL NEWS
No 9 (366) 2025

THE INCIDENCE OF URINARY TRACT INFECTION AMONG PATIENTS TREATED WITH VARIABLE DOSES OF DAPAGLIFLOZIN: A COMPARATIVE STUDY

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Abstract.

Background: The Kidney plays a vital role in regulating glucose homeostasis through various mechanisms; one such mechanism involves glucose filtration and reabsorption. In a healthy individual, both kidneys filtrate about 180 grams of glucose daily; all of this filtrated glucose is reabsorbed in proximal tubules through sodium-glucose cotransporter 1 and 2 (SGLT1 and SGLT2). In diabetic patients, the plasma glucose level increases, which will lead to a rise in glucose filtration to exceed the reabsorption capacity of SGLT and hence glucosuria. SGLT2 expression is increased in patients with diabetic type 2. This leads to an increase in renal threshold of glucose from 180mg/dl in healthy individuals to 220 mg/dl in diabetic patients, which consequently leads to an increase in plasma glucose level. SGLT2 inhibitor, also known as (gliflozin), lowers plasma glucose and Hb1AC by increasing renal glucose excretion through inhibition of renal glucose reabsorption without causing hypoglycemia it has a modest glycemic control effect.

Objectives: To compare the incidence and severity of UTI in patients treated with different doses of dapagliflozin and to evaluate whether high doses have a greater risk of UTI.

Subjects and Methods: This study was conducted as a retrospective study involving a total of 100 patients diagnosed with type 2 diabetes mellitus, all of whom were treated at AL Diwaniyah teaching hospital. The participants were categorized into two groups: the first group received 10 mg of dapagliflozin, while the second group was administered 5 mg. To be included in this study, the patients had to be first prescribed either Dapagliflozin 10 mg or Dapagliflozin 5 mg during the period of 1 January 2024 to 30 June 2024. Participants were not eligible for inclusion if they were receiving insulin therapy, had incomplete medical records, died during the study period, or did not respond to telephone contact

Results: Both the 5 mg and 10 mg groups of Dapagliflozin have a similar clinical and demographic profile, with a higher prevalence of aged, female, and hypertensive individuals. Dapagliflozin's cardiometabolic benefits are consistent with its predominantly hypertensive status, but the larger percentage of smokers may suggest a link between smoking and the circumstances that call for it. Overall, most features of the two groups are similar, with the 10 mg group having somewhat more patients in the 50–60 age range and more females. This study found that Urination frequency is higher in the group taking 10 mg of dapagliflozin (~55%) than in the group taking 5 mg (~25%). Additionally, the 10 mg group experienced a greater level of urgency to pee (~48%) than the 5 mg group did (~20%). About 15% of the 10 mg group and 7-8% of the 5 mg group experienced dysuria, or unpleasant urination, which is the least common symptom. Regarding frequency and urgency, there are statistically significant differences ($P<0.01$). While regarding dysuria, the difference doesn't reach the significance limit ($P = 0.07$).

Conclusion: The findings show persuasive evidence of a dosage-dependent rise in urinary tract infection signs in dapagliflozin-treated individuals, particularly at the 10 mg dose. The findings emphasize the importance of doctors closely monitoring patients for indications of genitourinary infections, specifically those receiving greater dosages. Because glycosuria plays an important role in raising infection risk, lower dosages or alternative therapy may be considered for individuals who are more likely to develop UTIs. Further research is needed to investigate long-term treatment techniques that maintain glycemic control and infection prevention in dapagliflozin patients.

Key words. Dapagliflozin, incidence of UTI, diabetic patient.

Introduction.

The kidney is critically involved in the hemostasis of glucose through various mechanisms; one such mechanism involves glucose filtration and reabsorption. In a healthy individual, both kidneys filtrate about 180 grams of glucose daily; all this filtrated glucose is reabsorbed in proximal tubules through sodium-glucose cotransporter 1 and 2 (SGLT1 and SGLT2) [1,2]. In diabetic patients, the plasma glucose level increases, which leads to a rise in glucose filtration to exceed the reabsorption capacity of SGLT and hence glucosuria [3]. SGLT2 expression is increased in patients with diabetic type 2 This led to an increase in renal threshold of glucose from 180mg\dl in healthy individuals to 220 mg\dl in diabetic patients, which consequently led to the rise in plasma glucose level [4]. SGLT2 inhibitor, also known as (gliflozin), lowers plasma glucose and Hb1AC by increasing renal glucose excretion through inhibition of renal glucose reabsorption without causing hypoglycemia it has a modest glycemic control effect [5,6]. Three gliflozins are available in the market (empagliflozin, canagliflozin, and dapagliflozin) [6]. Beyond diabetes mellitus, SGLT2 inhibitors have many clinical benefits. SGLT2 inhibitors reduce blood pressure, hospital admissions, and cardiovascular mortality in patients with left ventricular heart failure [7-11]. In addition, SGLT2 inhibitors have a novel nephroprotective effect through mitigating glomerular hyperfiltration and reducing urinary albumin excretion in addition to lowering intraglomerular pressure [12]. The progression of kidney disease and death due to renal causes is reduced by SGLT2 inhibitors. SGLT2 inhibitors have a favorable effect on metabolic profile in women with polycystic ovarian syndrome mediated by lowering body mass index, waist circumference, and total body fat [13]. Urinary

tract infection is one of the most common infections; 50 % of females and 20 % of males experience at least one-time urinary tract infection in their lifetime. Patients with diabetes are 1.2 to 2 time more likely to encounter urinary tract infection [8], glycosuria play a central role in the heightened susceptibility of diabetic patients to urinary tract infection that arises from different interrelated mechanisms as create a good media for the growth of microorganism in addition glycosuria increase the virulence of gram positive streptococcus by enhance the adherence of this microorganism to bladder epithelium and intensify resistance to antimicrobial LL-37 [14,15]. In addition, glycosuria encourages biofilm formation by modifying the gene expression of uropathogenic *E. coli* (UPEC) the primary causative microorganism of urinary tract infection, which will lead to an increase in the attachment and survival of UPEC in the urinary tract [16]. Glycosuria also alters the host immune defense through attenuating antimicrobial peptide production, which plays a vital role in the body's defense mechanism against infection [17]. Other mechanisms by which glycosuria induces urinary tract infection involve dysbiosis, where the growth glucose glucose-fermenting pathogens like *Escherichia* while inhibit growth of beneficial microorganisms is inhibited [18,19]. SGLT2 inhibitors work by increasing urinary glucose excretion. Therefore, we conducted this study to evaluate their effect on the incidence of urinary tract infections in patients with diabetes mellitus.

Materials and Methods.

Patient Population:

This study was conducted as a retrospective study involving a total of 100 patients diagnosed with type 2 diabetes mellitus, all of whom were treated at Al Diwaniyah teaching hospital. The participants were categorized into two groups: the first group received 10 mg of dapagliflozin, while the second group was administered 5 mg. To be included, the patients must have initiated treatment with either dose of dapagliflozin as their first oral antidiabetic medication. Patients were recruited between January 1 and June 30, 2024. Participants were not eligible for inclusion if they were receiving insulin therapy, had incomplete medical records, died during the study period, or did not respond to telephone contact. Records were deemed insufficient if they included only a pre-treatment (baseline) visit or lacked documentation of treatment initiation. Additionally, patients with documented evidence of urinary tract infection (UTI) before initiating Dapagliflozin were not included in this study.

Study Design:

Patient data acquisition was performed in two phases. A review of the medication record (MR) was the first section. Data such as age, sex, occupation, BMI, body temperature, test findings, prescribed anti-diabetic medications, and concurrent medications were gathered by reviewing the MRs of all selected patients. Blood parameters such as hemoglobin A1c (HbA1c), fasting plasma glucose (FPG), serum creatinine (SCr) and urinalysis (bacterial count, white blood cell count, and urinary glucose) were among the pertinent laboratory data.

The next part of data acquisition via patients questions about their histories of UTI events not documented in hospital records, this made sure that as many UTI occurrences as possible were recorded. There were two parts to the questions. The first question inquired if the patient had ever received a UTI diagnosis outside of the hospital (for example, at a clinic or drugstore) during oral anti-diabetic medication treatment. In the second section, the patient was questioned if they had previously experienced any UTI-related symptoms. Acute dysuria, fever, frequency, urine incontinence, suprapubic discomfort, hematuria, or lumbar pain were among them. Patients were asked to describe the event's timing if they could, if they gave a favorable response to either of the two sections.

Outcome Measurement:

The study's main finding was that patients experienced UTIs for the first time following anti-diabetic medication treatment. In this study, a patient was considered to have experienced a UTI if they met any of the following criteria. First, a physician at Diwaniyah Teaching Hospital. Second, following treatment, a patient received at least one of these lab results: (1) there were few, moderate, or severe reports of bacteria in the urine; or (2) there were more than 10 cells/mm3 of urine leukocytes.

A patient was considered to have experienced a symptomatic urinary tract infection if they report acute dysuria, either alone or accompanying fever, in addition to at least one of the following symptoms: increased urinary frequency, urinary incontinence, suprapubic discomfort, hematuria or lower back pain. A UTI diagnosis made at an outpatient medical clinic was also considered indicative of a UTI event

The secondary outcome of the study was defined as the duration between the initiation of oral anti-diabetic therapy and the onset of the first documented urinary tract infection. The risk factors for UTIs were examined using pertinent laboratory data and patient characteristics, such as age, sex, BMI, religious affiliation, occupational status, and biochemical markers such as HbA1c, FBS, and SCr.

Statistical Analysis:

The demographic and clinical profiles of the study population were evaluated using descriptive statistics, including frequencies, means, and percentages. The Chi-Square test was utilized to assess the difference of UTI between patients treated with 10 mg with dapagliflozin and those who were treated with dapagliflozin 5 mg. The Mann-Whitney test was used to compare the difference among symptoms and symptom severity between the two groups. All the statistical analyses were carried out using IBM SPSS Statistics software version 25 with statistical significance defined as $p < 0.05$.

Results.

100 diabetic individuals who satisfied the inclusion requirements were gathered for analysis between January 2024 and 30 June 2024. All of the enrolled patients' baseline characteristics are listed in Table 1.

The demographic and clinical characteristics of two groups of patients who are taking dapagliflozin 5mg and 10mg are illustrated in Table 1, which provides information regarding their gender, age, smoking habits, and hypertension status.

Both the 5 mg and 10 mg groups of Dapagliflozin have a similar clinical and demographic profile, with a higher prevalence of

aged, female, and hypertensive individuals. Dapagliflozin's cardiometabolic benefits are consistent with its predominantly hypertensive status, but the larger percentage of smokers may suggest a link between smoking and the circumstances that call for it. Overall, most features of the two groups are similar, with the 10 mg group having somewhat more patients in the 50–60 age range and more females.

Table 1. *Demographic table.*

		Dapagliflozin 5mg (N=50)	**Dapagliflozin 10mg (N=50)**
Age	**40-50**	10	8
	50-60	15	20
	More than 60	25	22
Gender	**Male**	20	15
	Female	30	35
Smoking	**Smoker**	32	30
	Non smoker	18	20
Hypertension	**Hypertensive**	35	32
	Non hypertensive	15	18

As shown in Figure 1, the Urination frequency is higher in the group taking 10 mg of dapagliflozin (~55%) than in the group taking 5 mg (~25%). Additionally, the 10 mg group experienced a greater level of urgency to pee (~48%) than the 5 mg group did (~20%). About 15% of the 10 mg group and 7-8% of the 5 mg group experienced dysuria, or unpleasant urination, which is the least common symptom. Regarding frequency and urgency, there are statistically significant differences (P<0.01). While

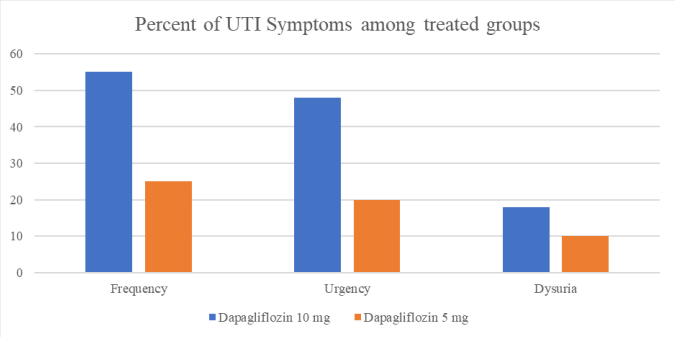

Figure 1. *Percent of UTA symptoms among treated groups.*

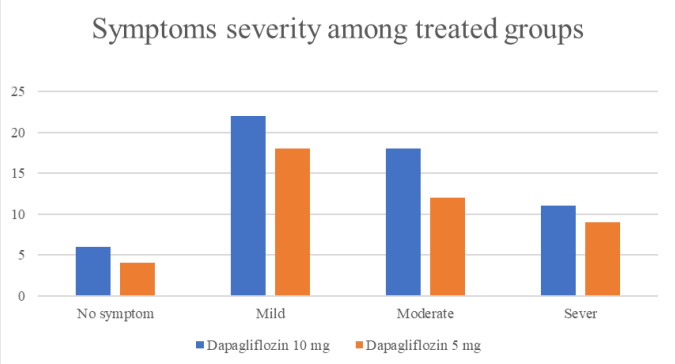

Figure 2. *Symptoms of severity among treated groups.*

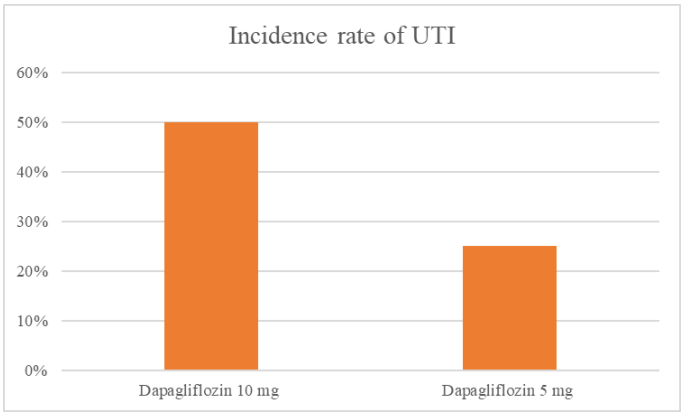

Figure 3. *Incidence rate of UTI.*

regarding dysuria, the difference doesn't reach the significance limit (P = 0.07).

As shown in Figure 2, there was no statistically significant difference in symptom severity between the two groups, P>0.5 (The P value was 0.2 for mild, 0.16 for moderate, and 0.4 for severe). Among 50 patients treated with 10 mg of dapagliflozin, 25 patients developed UTI compared to 10 patients treated with 5 mg of dapagliflozin, the risk of UTI was higher in patient treated with 10 mg of dapagliflozin compared to patients treated with 5 mg of dapagliflozin, the relative risk was 2.5. a two fisher's exact test show a statistically significant difference in the incidence of UTI between the two groups P Value <0.01, Figure 3.

Discussion.

Dapagliflozin, an inhibitor of the sodium-glucose co-transporter 2 (SGLT2), can improve cardiovascular outcomes and manage type 2 diabetes (T2D). Urinary tract infections (UTIs), a side effect that is especially significant considering its influence on patients' quality of life, have been associated with its usage. The primary pharmacological explanation for this elevated risk is associated with glycosuria, which is a result of the renal tubule obstruction of glucose reabsorption. The resultant increased urine glucose content greatly increases the danger of UTIs by providing the perfect conditions for bacterial development [20].

Dapagliflozin has been shown to have a dose-dependent connection with the occurrence of UTI symptoms, including frequency and urgency. Urinary frequency (about 50%) and urgency (45%) rates were considerably greater in patients receiving a 10 mg dosage of dapagliflozin than in those receiving a 5 mg dose, as illustrated in Figure 1. These changes were statistically significant (P < 0.01), according to statistical analysis.

The variance between both doses fails to reach statistical significance in terms of dysuria (painful urination) (P = 0.07). According to this, dysuria may be impacted by more than only glucose excretion in the urine, even though greater doses of dapagliflozin considerably raise the risk of frequency and urgency [21]. These results are consistent with other studies that found a dose-dependent association between urinary tract symptoms and dapagliflozin dosage. Higher dosages of SGLT2 inhibitors, such as dapagliflozin, have been shown to increase

glycosuria in T2D patients, increasing the risk of genitourinary infections [22,23].

Higher doses increase the amount of glucose in the urinary system, which encourages the growth of bacteria and raises the incidence of UTI symptoms.

Furthermore, some clinical observations have highlighted the dose-dependent nature of urinary tract infection risks, showing that patients receiving higher doses of dapagliflozin (10 mg) experienced more cases of dysuria, more frequently, and with greater urgency than patients receiving lower doses (5 mg). Indeed, a number of studies have demonstrated that SGLT2 inhibitors, such as dapagliflozin, are associated with a higher risk of lower urinary tract infections, which can manifest as symptoms such as urgency, frequency, and dysuria, particularly when the dosage is raised [24].

These findings' clinical ramifications indicate that patients taking greater dosages of dapagliflozin should be thoroughly watched for UTI symptoms, especially urgency and frequency of urination. Furthermore, the occurrence of these negative effects may be decreased by preventive interventions, including routine urine screening, patient education regarding personal hygiene, and possibly the use of prophylactic antibiotics in high-risk patients [25].

The absence of statistical significance implies that, despite variations in symptom intensity between the two groups, these differences are not strong enough to show a clinically significant effect of the larger dosage. Small variations in symptom severity might not necessarily have practical implications for patient outcomes.

This study is retrospective and primarily relies on telephone interviews with patients, making it vulnerable to recall bias. Incorporate a "Limitations" section within the Discussion and meticulously evaluate the influence of these biases on the findings.

Conclusion.

The findings show persuasive evidence of a dosage-dependent rise in urinary tract infection signs in dapagliflozin-treated individuals, particularly at the 10 mg dose. The findings emphasize the importance of doctors closely monitoring patients for indications of genitourinary infections, specifically those receiving greater dosages. Because glycosuria plays an important role in raising infection risk, lower dosages or alternative therapy may be considered for individuals who are more likely to develop UTIs. Further research is needed to investigate long-term treatment techniques that maintain glycemic control and infection prevention in dapagliflozin patients.

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