Official Name: Prevalence And Risk Factor Of Overactive Bladder Syndrome Among Egyptian Medical Students And Their Impact On Health-Related Quality Of Life, Cross-Sectional Study

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Introduction

Overactive bladder (OAB) is defined as sudden, urgent desire to urinate (urgency) accompanied by frequency and nocturia, with or without urgent urinary incontinence in the absence of urinary tract infection (UTI)(Abrams et al., 2003; D'Ancona et al., 2019). This condition can significantly decrease the quality of life of these patients(Foley et al., 2019), as it can humiliate their actions, affect their relationships with others, and it can also affect their productivity. Due to all these effects, several studies have linked the increase in overactive bladder symptoms with an increase in anxiety and depression rates.(Coyne et al., 2004; Lai et al., 2016; Mehr et al., 2022). A recent cross-sectional study in the UK and Sweden, called EpiLUTS, included 10,000 participants. They found a statistically significant increase in anxiety and depression rates among both men and women in both the UK and Sweden, with a slight increase in men than women(Coyne et al., 2011)

On the other hand, there are several risk factors such as overweight, smoking, diabetes, and hypertension (Chae et al., 2018; Link et al., 2011; Tähtinen et al., 2011). In a previous cross-sectional study in Jordan, they found a correlation between an increase in risk factors such as age group, history of trauma, stressful life, and medication, and overactive bladder symptoms among medical students(Abuorouq et al., 2024).

Several studies have assessed the prevalence of overactive bladder among different population age groups, ethnicities, or genders with varying results. It was rated to be 11.8% in a multicenter cross-sectional study including several countries in Canada and Europe (Germany, Italy, Sweden, and the UK (Irwin et al., 2006), while in the USA it was estimated to be 16% (Stewart et al., 2003). All these studies were conducted on the general population; however, in China, it was about 6% among university students (Liang et al., 2022).

In the Arab world, several cross-sectional studies have also assessed the prevalence of overactive bladder, including students, and its effect on the quality of life. Hajjar 2022 (Hajjar et al., 2022) assessed its prevalence among Lebanese female nulliparae university students. They showed that nocturia and frequency were the most common symptoms that bothered students. They also found a statistical correlation between smoking, drinking coffee, or tea, and increased symptoms. Also, drinking soft drinks was associated with an increase in urinary leakage. Additionally, Abuorouq 2024(Abuorouq et al., 2024) and Shawahna 2021(Shawahna et al., 2021)

Cross-sectional studies were conducted on medical students in Jordan and Palestine, respectively. They reported a prevalence of 44.5% and 54.1%, respectively. Shawahna 2021(Shawahna et al., 2021) reported a statistically significant correlation between gender or stressful life and a decrease in quality of life.

Rational

In Egypt, the prevalence of overactive bladder is underestimated. A single previous multinational cross-sectional study across several Arab countries, including Egypt, was conducted. (Al Edwan et al., 2021) was conducted in Egypt, Algeria, Jordan, and Lebanon among women. They reported a prevalence of 57.5% among Egyptian women.

Since this study, no study has been conducted to further assess its prevalence in different age or gender groups in Egypt. Taking into consideration the stressful life of medical students in Egypt, and several life risk factors they face, we will conduct this cross-sectional study.

No previous cross-sectional study was conducted on the medical students in Egypt before.

We aim to assess the prevalence of overactive bladder among Egyptian medical students. We will also assess the risk factors associated with an increase in this condition and its effect on their quality of life.

Research Questions

What is the prevalence of the overactive bladder among Egyptian medical students, how can this affect their quality of life, and what are the risk factors that can increase its prevalence?

Hypothesis

We hypothesize that overactive bladder is a common condition in Egyptian medical students.

Aim:

Improve the quality of life of medical students by addressing the prevalence of overactive bladder and its risk factors

Objective

- To assess the prevalence of overactive bladder among Egyptian medical students.
- To assess its effect on their quality of life
- To address the risk factors that can increase the prevalence of this condition.

Methodology

A. Technical design

- **Study design:** Analytical cross-sectional study
- **Study sitting:** a medical student in Egypt will be accessed through an online questionnaire.
- **Study population**: Egyptian Medical students studying medicine in Egypt.
- **Time**: 2025-2026
- **Inclusion criteria**
  - ➢ Medical student studying human medicine in Egypt
  - ➢ Their age ranges from 18 to 27 years old
  - ➢ Egyptian person
- **Exclusion criteria**
  - ➢ Incomplete data
  - ➢ Wrong data in the questionnaire
  - ➢ Students refuse to participate

- **Sampling**

We calculated the sample size based on the total medical students in Egypt, which is 121,320, according to the Central Agency for Public Mobilization and Statistics (CAPMAS) 2023-2024(*Capmas*, n.d.). The expected prevalence of overactive bladder is 50%(Abuorouq et al., 2024; Shawahna et al., 2021). Using the total sample size, expected prevalence rate, an 80% power, 95% confidence interval (95% CI), and a 5% error margin, we calculated the sample size via Epi Info version 7.2.60(*Epi InfoTM | CDC*, n.d.) to become 384, and adding a 10% non-response rate, the final sample size will be 422 students

- **Sampling techniques**: The convenient sampling will be applied in this study

B. Operational design

- **Pilot study**: We will perform a pilot study to assess the readability of the questionnaire. We will perform it on 40 students, and any changes in the questionnaire will be made. Pilot study data will be excluded from the data analysis
- **Study field**: an online questionnaire will be shared through social media platforms such as WhatsApp, Facebook, or Telegram.

Data collection method

Students are required to fill out the online questionnaire. It is divided into three main categories.

1. Sociodemographic data in which we ask about students' age, sex, and academic year. We also ask about their life risk factors, such as body weight, presence of chronic disease, previous surgery, stressful life, and soft drinks(Abuorouq et al., 2024).
2. Questions about the presence of overactive bladder symptoms.(Coyne et al., 2015) The questions are taken from the 6-item ask about the presence of overactive bladder symptoms in the past 4 weeks
   This scale consists of 6 items, and each one has 6 available answers that range from not at all, which indicates the absence of the symptoms, to a very great deal, which indicates the presence of these symptoms. The score of each question ranges from 1 to 6, and the total score is 36. A score of 18 or more indicates the presence of the overactive bladder symptoms

3. Part 3 asks about the quality of life affected by the overactive bladder. This part is taken from the quality of life questionnaire part of the Overactive Bladder Symptom and Health-Related Quality of Life Short-Form (OAB-q SF)(Coyne et al., 2015). This is a 13-item questionnaire, each one has 6 answers (None of the time, a little of the time, some of the time, A good bite of the time, Most of the time, All of the time). Each question scores from 1 to 6, so the total score ranges from 13 to 78

- **Statistical analysis**

We will summarize the data first according to its type. Categorical data will be summarized into numbers and percentages, while continuous data will be assessed for normality first; if it is normally distributed, we will use mean and standard deviation (SD), and if not, median and interquartile range will be used (IQR).

Differential statistics will be conducted via the Mann-Whitney U test. We will assess the difference between the baseline data, such as sex, academic year, on the overactive bladder prevalence and its effect on quality of life.

Also, we intended to perform a logistic regression to assess the relation between overactive bladder symptoms and quality of life, and the relation between risk factors, such as history of UTI, soft drinks, coffee, or tea, on the presence of overactive bladder symptoms.

All statistics will be conducted using SPSS version 29.

C. Administrative design

- **Ethical considerations**
  - ➢ The study protocol will be approved by the Institutional Review Board of Zagazig University, Faculty of Medicine
  - ➢ Study participants will be included after informed consent.
- **Confidentiality and data retention**

Data collected will be kept confidential.

- **Risks and benefits of the participants**

There is no cost for this study

Results

Collected data will be presented in tables and suitable graphs, and analyzed according to

standard statistical methods.

Discussion

Discussion will be done on the results compared to relevant literature and scientific

research

References

Abrams, P., Cardozo, L., Fall, M., Griffiths, D., Rosier, P., Ulmsten, U., Van Kerrebroeck, P., Victor, A., & Wein, A. (2003). The standardisation of terminology in lower urinary tract function: Report from the standardisation sub-committee of the International Continence Society. *Urology*, *61*(1), 37–49. https://doi.org/10.1016/S0090-4295(02)02243-4

Abuorouq, S., Al-Zubi, M., Al-Ali, A. M., Aloqaily, L. H., Talafha, M. A., Migdadi, A. M., & Serhan, H. A. (2024). The prevalence of probable overactive bladder and associated risk factors among medical students in Jordan: a cross-sectional study. *BMC Urology*, *24*(1). https://doi.org/10.1186/s12894-023-01394-4

Al Edwan, G., Abdelazim, M. S., Salhab, S. E., Jamal, Y. M., & Soliman, M. A. (2021). The Prevalence of Overactive Bladder Symptoms in Women in Algeria, Egypt, Jordan and Lebanon: A Cross-Sectional Population-Based Survey. *Advances in Therapy*, *38*(2), 1155–1167. https://doi.org/10.1007/s12325-020-01588-4

Capmas. (n.d.). Retrieved January 31, 2025, from https://www.capmas.gov.eg/HomePage.aspx

Chae, J., Yoo, E.-H., Jeong, Y., Pyeon, S., & Kim, D. (2018). Risk factors and factors affecting the severity of overactive bladder symptoms in Korean women who use public health centers. *Obstetrics & Gynecology Science*, *61*(3), 404. https://doi.org/10.5468/ogs.2018.61.3.404

Coyne, K. S., Payne, C., Bhattacharyya, S. K., Revicki, D. A., Thompson, C., Corey, R., & Hunt, T. L. (2004). The Impact of Urinary Urgency and Frequency on Health-Related Quality of Life in Overactive Bladder: Results from a National Community Survey. *Original Article Impact of OAB On*, *7*. https://doi.org/10.1111/j.1524-4733.2004.74008.x

Coyne, K. S., Sexton, C. C., Kopp, Z. S., Ebel-Bitoun, C., Milsom, I., & Chapple, C. (2011). The impact of overactive bladder on mental health, work productivity and health-related quality of life in the UK and Sweden: Results from EpiLUTS. *BJU International*, *108*(9), 1459–1471. https://doi.org/10.1111/j.1464-410X.2010.10013.x

Coyne, K. S., Thompson, C. L., Lai, J. S., & Sexton, C. C. (2015). An overactive bladder symptom and health-related quality of life short-form: Validation of the OAB-q SF. *Neurourology and Urodynamics*, *34*(3), 255–263. https://doi.org/10.1002/nau.22559

D'Ancona, C., Haylen, B., Oelke, M., Abranches-Monteiro, L., Arnold, E., Goldman, H., Hamid, R., Homma, Y., Marcelissen, T., Rademakers, K., Schizas, A., Singla, A., Soto, I., Tse, V., de Wachter, S., & Herschorn, S. (2019). The International Continence Society (ICS) report on the terminology for adult male lower urinary tract and pelvic floor symptoms and dysfunction. *Neurourology and Urodynamics*, *38*(2), 433–477. https://doi.org/10.1002/NAU.23897

Epi Info™ | CDC. (n.d.). Retrieved January 13, 2025, from https://www.cdc.gov/epiinfo/index.html

Foley, S., Choudhury, N., Huang, M., Stari, A., Nazir, J., & Freeman, R. (2019). Quality of life in patients aged 65 years and older with overactive bladder treated with mirabegron across eight European countries: Secondary analysis of BELIEVE. *International Journal of Urology*, *26*(9), 890–896. https://doi.org/10.1111/IJU.14050

Hajjar, R., Tsolakian, I., Chaaya, M., Daher, A., & Bazi, T. (2022). Overactive bladder syndrome in nulliparous female university students: prevalence and risk factors including waterpipe smoking. *International Urogynecology Journal*, *33*(5), 1207–1223. https://doi.org/10.1007/s00192-021-05004-5

Irwin, D. E., Milsom, I., Hunskaar, S., Reilly, K., Kopp, Z., Herschorn, S., Coyne, K., Kelleher, C., Hampel, C., Artibani, W., & Abrams, P. (2006). Population-Based Survey of Urinary Incontinence, Overactive Bladder, and Other Lower Urinary Tract Symptoms in Five Countries: Results of the EPIC Study. *European Urology*, *50*(6), 1306–1315. https://doi.org/10.1016/J.EURURO.2006.09.019

Lai, H. H., Rawal, A., Shen, B., & Vetter, J. (2016). The Relationship Between Anxiety and Overactive Bladder or Urinary Incontinence Symptoms in the Clinical Population. *Urology*, *98*, 50–57. https://doi.org/10.1016/j.urology.2016.07.013

Liang, Y., Si, G. W., Hu, H. J., Zhang, Z. W., Song, C. P., Dou, Q. F., & Wen, J. G. (2022). Prevalence, Risk Factors, and Psychological Effects of Overactive Bladder in Chinese University Students. *International Neurourology Journal*, *26*(4), 342–348. https://doi.org/10.5213/INJ.2244188.094

Link, C. L., Steers, W. D., Kusek, J. W., & McKinlay, J. B. (2011). The Association of Adiposity and Overactive Bladder Appears to Differ by Gender: Results From the Boston Area Community Health Survey. *The Journal of Urology*, *185*(3), 955–963. https://doi.org/10.1016/J.JURO.2010.10.048

Mehr, A. A., Kreder, K. J., Lutgendorf, S. K., Ten Eyck, P., Greimann, E. S., & Bradley, C. S. (2022). Daily symptom associations for urinary urgency and anxiety, depression and stress in women with overactive bladder. *International Urogynecology Journal*, *33*(4), 841–850. https://doi.org/10.1007/s00192-021-05033-0

Shawahna, R., Hijaz, H., Jallad, K., Abushamma, M., & Sawafta, M. (2021). Prevalence of overactive bladder symptoms and their impact on health-related quality of life of medical and dentistry students: a multicenter cross-sectional study. *BMC Urology*, *21*(1), 142. https://doi.org/10.1186/s12894-021-00909-1

Stewart, W. F., Van Rooyen, J. B., Cundiff, G. W., Abrams, P., Herzog, A. R., Corey, R., Hunt, T. L., & Wein, A. J. (2003). Prevalence and burden of overactive bladder in the United States. *World Journal of Urology*, *20*(6), 327–336. https://doi.org/10.1007/S00345-002-0301-4/METRICS

Tähtinen, R. M., Auvinen, A., Cartwright, R., Johnson, T. M., Tammela, T. L. J., & Tikkinen, K. A. O. (2011). Smoking and bladder symptoms in women. *Obstetrics and Gynecology*, *118*(3), 643–648. https://doi.org/10.1097/AOG.0B013E318227B7AC