

How to Cite:

Ponniah, H., & Woon, Y. H. (2022). Statistical analysis: Who is more vulnerable to develop nephrolithiasis?. *International Journal of Health Sciences*, 6(S2), 6737–6740.
<https://doi.org/10.53730/ijhs.v6nS2.6630>

Statistical analysis: Who is more vulnerable to develop nephrolithiasis?

Harshini Ponniah

Pusat GENIUS@Pintar Negara, Universiti Kebangsaan Malaysia, 43600 UKM
Bangi, Selangor, Malaysia

You Huay Woon

Pusat GENIUS@Pintar Negara, Universiti Kebangsaan Malaysia, 43600 UKM
Bangi, Selangor, Malaysia.

Abstract---Kidney stones or also known as nephrolithiasis is the hard stones that usually begins as tiny crystals found in the kidney. The aim of this study is to identify the common age and gender in developing kidney stones. The methods used to collect the age and gender data are via patients with nephrolithiasis who are admitted in the hospital as well as from the database of the hospital. The findings demonstrate that the peak age for the occurrence of kidney stones is from 30 to 69 years old. Meanwhile, the male patient with nephrolithiasis is higher compared to the females.

Keywords---age, gender, kidney stones, nephrolithiasis, Malaysia.

Introduction

Nephrolithiasis is the formation of hard stones that typically begin as tiny crystals in the kidneys. From time to time, the kidneys remove chemicals from our body to maintain a normal and healthy condition. Substances such as calcium and oxalate that have been filtered into the urine would form tiny crystals (Bolen et al., 2022). Occasionally, not all the crystals develop into hard stones, or kidney stones. The stones are composed of approximately 80% calcium oxalate (CaOx), with a small percentage of calcium phosphate (CaP). There are some kidney stones that can be removed from the body without being noticed, attributable to their small size. However, some stones will continue to grow until they cause obstruction in the ureter, which connects the kidney and bladder together. The occurrence of nephrolithiasis is considered alarming.

Kidney stones typically do not exhibit any symptoms until they start to move around within the kidneys, or pass into the ureter. The development of kidney stones has been influenced by risk factors. Risk factors related to kidney stones

differ based on different population groups and environmental factors. Risk factors increase the risk of the occurrence of kidney stones (Sjahruddin et al., 2022). Previous researches have shown that the incidence of kidney stones can be associated with gender and age. Meanwhile, gender and age are factors that are related to everyone. In view of this, this study aims to determine the common gender and age of patients with nephrolithiasis.

Materials and Methods

Two methods were used to gather the age and gender of patients with nephrolithiasis from two hospitals in Malaysia. Information on age and gender were collected from the local database of the hospitals. A consent was given before accessing the data from the databases. The confidentiality of the patients was protected at all times. Meanwhile, the age and gender of the patients who were admitted to the hospital were recorded. Two methods have been employed in this study to have the current and previous data for analysis. An informed consent was obtained from the patients, and their participation was anonymous. The collected data were summarized and presented in the form of figure.

Results

Figure 1 demonstrates the age and gender of patients with nephrolithiasis participating in this study. This analysis included 70 patients, composed of 46 males and 24 females. The age range was classified into seven categories, i.e. 20 – 29, 30 – 39, 40 – 49, 50 – 59, 60 – 69, 70 – 79 and 80 – 89. The distribution of patients with nephrolithiasis ranges from 20 to 89 years old. According to Figure 1, there are 15 patients with nephrolithiasis at the age of 60 – 69, followed by 14 patients between 30 – 39 years old and 13 patients between 40 – 49 and 50 – 59 years old. Meanwhile, there are eight patients and four patients in the age range of 70 – 79 and 20 – 29, respectively. The age range with the least number of patients is 80 – 89 years old, i.e. 3 patients, and all of the patients are male.

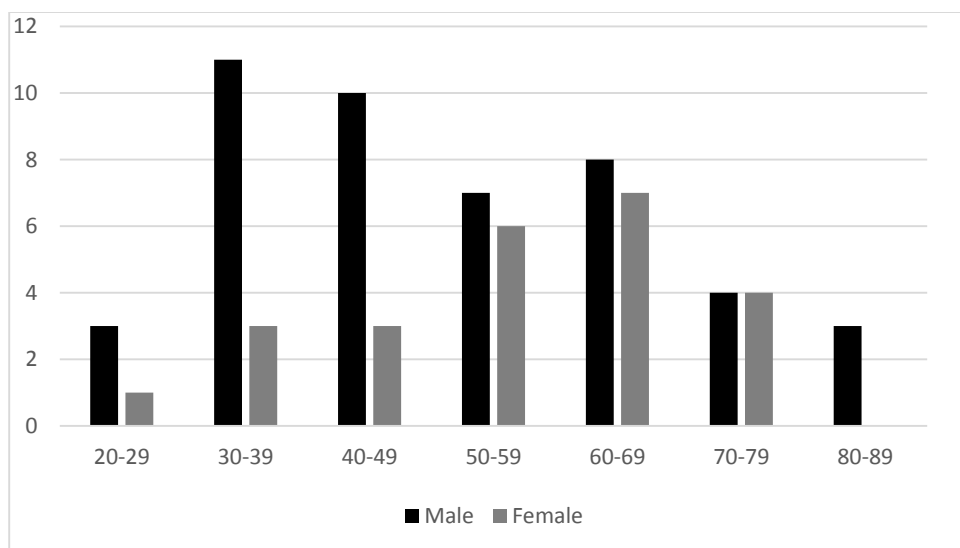


Figure 1. Distribution of patients with nephrolithiasis by age and gender.

Discussion

Figure 1 shows that the majority of patients with nephrolithiasis were male patients (65.71%). This is consistent with previous data, suggesting that males are more prone to have kidney stones compared to females (Khalili et al., 2021, Gillams et al., 2021). Although kidney stones affect all age groups, men have a higher chance in experiencing kidney stones during their lives. Figure 1 shows that the majority of patients were in the age range of 30 to 69 years old (78.57%). Meanwhile, most of the patients in the age range of 30 to 39 and 40 to 49 were males, with 78.57% and 76.92%, respectively. In contrast, female patients with nephrolithiasis were mainly in the age of 50-59 and 60-69, with 46.15% and 46.67%, respectively. Based on previous research, the peak incidence of nephrolithiasis occurs in those aged 35 to 45 years old (Mukasa and Sung, 2020). Nonetheless, the incidence of nephrolithiasis can affect anyone at any age. In view of this, these findings can assist in increasing the awareness among the public to take precautions to prevent the development of kidney stones.

Conclusion

The prevalence of kidney stones is increasing on a global scale. In this study, we noticed that age and gender play an important role in the development of kidney stones. In light of this, by identifying the common age and gender, the burden of the disease on society and the individual can be reduced. The findings of this study are useful to health care providers in planning preventive measures for kidney stone disease.

Acknowledgement

We would like to express our sincere gratitude to the hospitals and patients who have involved in this study.

References

- Bolen, E., Stern, K., Humphreys, M., Brady, A., Leavitt, T., Zhang, N., & Keddiss, M. (2022). Urine metabolic risk factors and outcomes of patients with kidney transplant nephrolithiasis. *Clinical Kidney Journal*, 15(3), 500-506, <https://doi.org/10.1093/ckj/sfab208>
- Dr. Ritika Malik, Dr. Aarushi Kataria and Dr. Naveen Nandal, Analysis of Digital Wallets for Sustainability: A Comparative Analysis between Retailers and Customers, *International Journal of Management*, 11(7), 2020, pp. 358-370.
- Gillams, K., Juliebø-Jones, P., Juliebø, S.Ø., & Somani, B. K. (2021). Gender differences in kidney stone disease (KSD): Findings from a systematic review. *Current Urology Reports*, 22, <https://doi.org/10.1007/s11934-021-01066-6>
- Khalili, P., Jamali, Z., Sadeghi, T., Esmaeili-nadimi, A., Mohamadi, M., Moghadam-Ahmadi, A., Ayoobi, F., & Nazari, A. (2021). Risk factors of kidney stone disease: a cross-sectional study in the southeast of Iran. *BMC Urology*, 21, <https://doi.org/10.1186/s12894-021-00905-5>
- Kumar, S. (2022). A quest for sustainium (sustainability Premium): review of sustainable bonds. *Academy of Accounting and Financial Studies Journal*, Vol. 26, no.2, pp. 1-18

- Mukasa, D., & Sung, J. (2020). A prediction model of nephrolithiasis risk: A population-based cohort study in Korea. *Investigative and Clinical Urology*, 61, 188-199, <https://doi.org/10.4111/icu.2020.61.2.188>
- Sehgal.P, Kumar.B, Sharma.M, Salameh A.A, Kumar.S, Asha.P (2022), Role of IoT In Transformation Of Marketing: A Quantitative Study Of Opportunities and Challenges, *Webology*, Vol. 18, no.3, pp 1-11
- Sjahruddin, H., Nugroho, B. S., Sembiring, T. B., Bangkara, A. B. M. A. S., & Fatmawati, E. (2022). The relevance of public knowledge and the degree of health: Public health literacy study. *International Journal of Health Sciences*, 6(1), 469-480, <https://doi.org/10.53730/ijhs.v6n1.4978>