

Prevalence and Associated Factors of Chronic Kidney Disease Patients in Wazir Mohammad Akbar Khan Hospital in Kabul, Afghanistan

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Abstract

Background: Chronic Kidney Disease (CKD) is a global health issue affecting a significant portion of the world's population, with diabetes and hypertension as its prime causes. The disease's incidence varies within countries by ethnicity and social determinants, and it contributes substantially to noncommunicable diseases. Accurate assessment and staging of CKD are crucial for appropriate management. This study investigated the prevalence and associated factors of CKD among patients referred to Wazir Mohammad Akbar Khan Hospital in Kabul, Afghanistan.

Methodology: The study utilized a case series-based descriptive design, and the study population comprised 87 CKD patients out of 33,836 patients who visited the hospital's emergency department. Data were collected through multi-stage sampling method, with demographic details and clinical findings analyzed using Excel 2016. All ethical guidelines were strictly adhered to, ensuring participants' voluntary participation and confidentiality.

Result: The results revealed that diabetes mellitus was the primary cause of CKD in 60% of cases, followed by hypertension in 34%. Females comprised 65.5% of CKD patients, with diabetes mellitus being the most common cause in both genders. The majority of patients were between the ages of 41 and 60, and 34.5% of patients

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had associated anemia. The disease stages varied, with the majority of patients in stage 2. The majority of patients (80%) were managed with medical therapy, while 20% required referral to a dialysis center. The majority of CKD patients (79.3%) were from the Central zone. These findings underscore the need for targeted interventions to manage the burden of CKD effectively.

Conclusion:

A study at Wazir Mohammad Akbar Khan Hospital in Kabul found CKD affecting 2.63% of hospitalized patients, mostly caused by diabetes (60%) and hypertension (34%). Females and middle-aged individuals were primarily affected, with anemia as a common comorbidity. Early detection, tailored interventions for diabetes and hypertension, improved dialysis access, and regional focus are necessary to combat CKD's burden in this population.

Keywords: Chronic Kidney Disease (CKD), Kabul Afghanistan, Descriptive study

Introduction

Chronic Kidney Disease (CKD) is a global public health issue with significant implications for morbidity, mortality, and healthcare costs. The global prevalence of CKD is estimated at ~10% of the general population, affecting >800 million adults worldwide among which about 4 million require kidney replacement therapy (KRT) [1]. The definition and classification of chronic kidney disease (CKD) have evolved over time, but current international guidelines define this condition as decreased kidney function shown by glomerular filtration rate (GFR) of less than 60 mL/min per 1.73 m², or markers of kidney damage, or both, of at least 3 months' duration, regardless of the underlying cause. Diabetes and hypertension are the main causes of CKD in all high-income and middle-income countries, and also in many low-income countries. Incidence, prevalence, and progression of CKD also vary within countries by ethnicity and social determinants of health, possibly through epigenetic influence [2]. and also it is characterized by the progressive decline in kidney function over time, leading to the accumulation of waste products and disturbances in fluid and electrolyte balance. CKD is associated with an increased risk of cardiovascular disease (CVD), renal replacement therapy (such as dialysis or transplantation), and death. Understanding the epidemiology, mechanisms, and prevention strategies of CKD is crucial for addressing this growing health burden[3, 4].

Several studies have examined the global prevalence of CKD and its impact on cardiovascular risk. which revealing a high global prevalence of CKD across different populations. and highlight the importance of early detection and management of CKD to reduce its impact on public health[4]. These investigations have delved into the epidemiology of CKD and its relationship with cardiovascular disease (CVD), elucidating the underlying mechanisms involved. The findings underscore the importance of conducting comprehensive risk assessments and implementing targeted interventions to effectively address the cardiovascular risks associated with CKD[5, 6].

CKD also contributes significantly to the overall burden of non-communicable diseases. There has been found substantial impact of CKD on global health, and emphasizing the need for integrated strategies for prevention, early detection, and management of CKD to reduce its burden on healthcare systems [7].

Accurate assessment and staging of CKD are essential for appropriate management. The researches show the glomerular filtration rate (GFR) and albuminuria as diagnostic markers for acute and chronic kidney disease. Their findings highlighted the importance of these markers in the detection and staging of CKD [8]. The association between CKD and adverse outcomes, including mortality and hospitalization, has been well-established [9]. CKD contributes significantly to cardiovascular morbidity and mortality [10].

In addition, CKD is a significant global health challenge associated with increased cardiovascular risk, renal replacement therapy, and mortality. Understanding the epidemiology, mechanisms, and prevention strategies of CKD is essential for mitigating its impact on individuals and healthcare systems. This study conducted to provide valuable insights into the clinical profile and demographics of CKD patients at Wazir Mohammad Akbar Khan Hospital, Kabul, Afghanistan. The study emphasizes the importance of preventive measures, early detection, and comprehensive management strategies to address the burden of CKD on individuals and healthcare systems. Further research and interventions are needed to improve access to care, enhance disease management, and reduce the overall impact of CKD on public health.

Methodology

Study design

This study employed a case series-based descriptive design to investigate the prevalence and associated factors of chronic kidney diseases (CKD) in patients referred to Wazir Mohammad Akbar Khan Hospital during 1395 to 1396 in Kabul Afghanistan.

Study Population

A total number of 33836 patients visited the emergency department of the Wazir Mohammad Akbar Khan Hospital, of these, 3,308 patients were hospitalized for inpatient care, and 87 of them were diagnosed with chronic kidney disease (CKD) and were selected for this study using consecutive sampling. The selected participants aged 15-80 years with male and female gender.

Data Collection

Sampling: The data was collected based on questioner. Multi-Stage Sampling method was employed to select participants from the list of registered patients in the hospital. A sampling interval was determined, and every patient on the list was included in the study.

- Collect demographic data on all participants, including age, sex, ethnicity, education level, and occupation.
- Collect detailed medical history on all participants, including past medical history, family medical history, and current medications.
- Perform physical examinations and clinical examinations on all participants to assess for signs and symptoms of CKD.

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Data Analysis

The samples demographic data included age, sex, ethnicity, education level, and occupation, and clinical findings were entered into Excel 2016 and descriptive statistics (mean, median, mode, standard deviation, variance, frequency) conducted and to identify trends and relationships between variables charts and graphs were used.

Ethical Considerations

Ethical guidelines and regulations were strictly followed throughout the research process. Informed consent was obtained from all participants, ensuring their voluntary participation. Anonymity and confidentiality of the participants' responses were maintained by assigning unique identifiers to the data and ensuring that the data were accessible only to authorized researchers.

Result

A total number of 33836 patients visited the emergency department of the Wazir Mohammad Akbar Khan Hospital, of these, 3,308 patients were hospitalized for inpatient care, and 87 of them were diagnosed with chronic kidney disease (CKD). Table (1)

| NO | Total of patients visited | | Patients who admitted in different diagnoses | | Patients who Admitted with CKD | |
|----|---------------------------|------------|--|------------|--------------------------------|------------|
| | Number | Percentage | Number | Percentage | Number | Percentage |
| 1 | 33836 | 100% | 3308 | 9.8% | 87 | 0.26% |

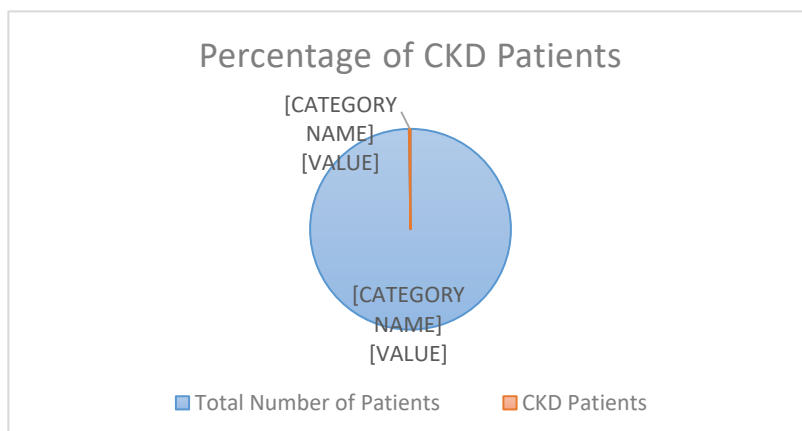


Table (1): The number and percentage of patients visited WMAK hospital.

Chart (1): Patients who admitted with CKD.

Regarding the etiology of CKD in this patient population, diabetes mellitus was the primary cause in 60% of cases, followed by hypertension in 34% of cases and other factors contributing to the remaining 6%. Table (2)

| NO | Etiology | Number of Patients | Percentage |
|----|-------------------|--------------------|------------|
| 1 | Diabetes Mellitus | 52 | 60% |
| 2 | Hypertension | 30 | 34% |
| 3 | Other | 5 | 6% |

Table (2): Classification of etiology of the CKD patients.

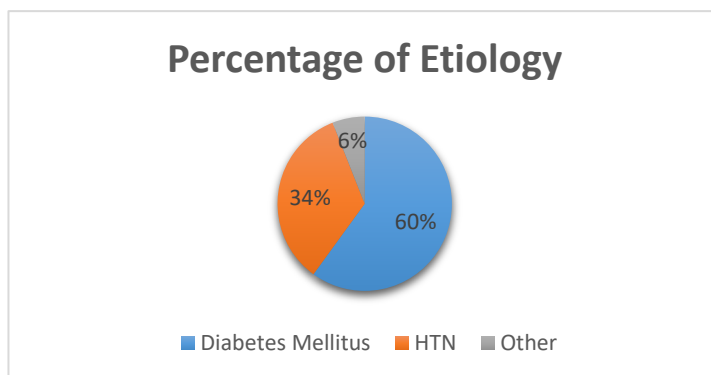
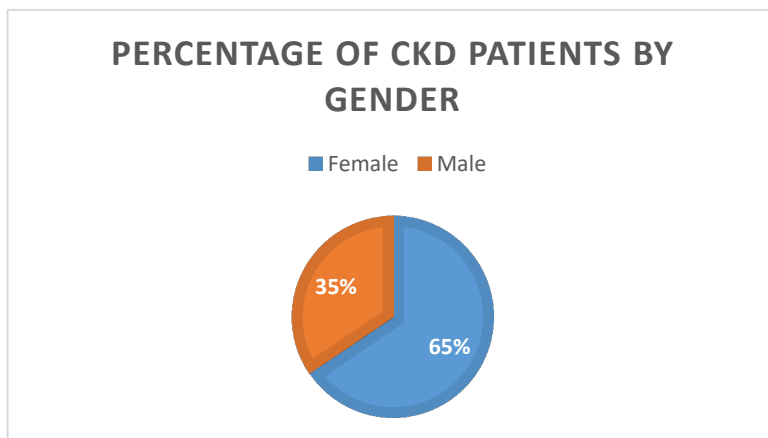


Chart (2): Percentage of etiology of the CKD patients

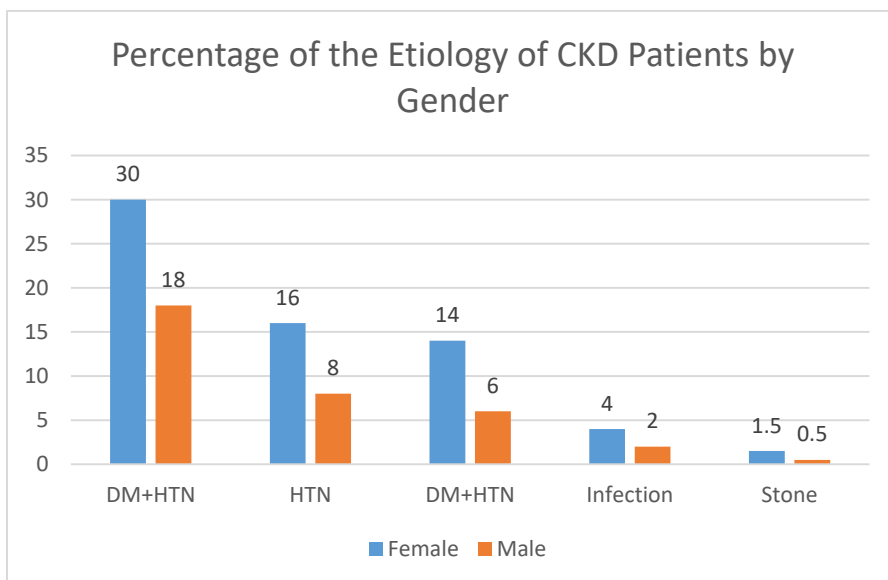
Out of the 87 CKD patients, 65.5% (57) were females, while 34.5% (30) were males. Table (3)

| NO | Sex | Number of Patients | Percentage |
|----|--------|--------------------|------------|
| 1 | Female | 57 | 65.5% |
| 2 | Male | 30 | 34.5% |
| 3 | Total | 87 | 100% |

Table (3): Classification of CKD patients by gender.



The data shows that diabetes mellitus (DM) are the most common causes of CKD in both females and males. Females have a higher proportion of CKD cases caused by DM (30%) than males (18%). Followed by Hypertension (HTN) cause in female (16%) and male (8%), DM+HTN cause in female (14%) and male (6%), Infection cause in female (4%) and male (2%),



stone cause in female (1.5%) and male (0.5%) of all etiology. Chart (4)

Chart (4) Percentage of the etiology of CKD patients by gender.

The majority of patients with CKD (51.7%) were between the ages of 41 and 60. A significant number of patients (26.6%) were also between the ages of 21 and 40. (12.6%) were between 61 and 80. Only a small number of patients (9.1%) were under the age of 20, and no patients were over the age of 81. Table (4)

| NO | Age (year) | Number of Patients | Percentage |
|----|------------|--------------------|------------|
| 1 | < 20 | 8 | 9.1% |
| 2 | 21-40 | 23 | 26.6% |
| 3 | 41-60 | 45 | 51.7% |
| 4 | 61-80 | 11 | 12.6% |
| 5 | >81 | 0 | 0 |
| 6 | Total | 87 | 100% |

Table (4): Classification of CKD patients by age.

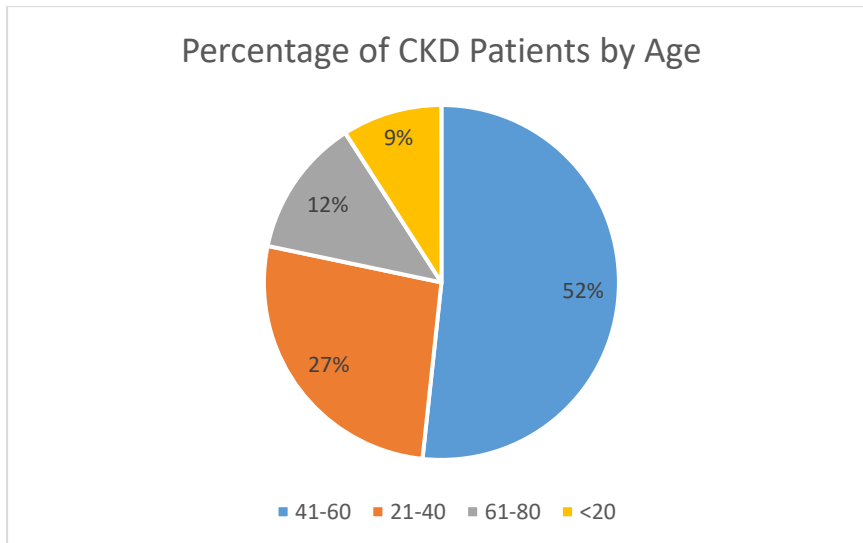
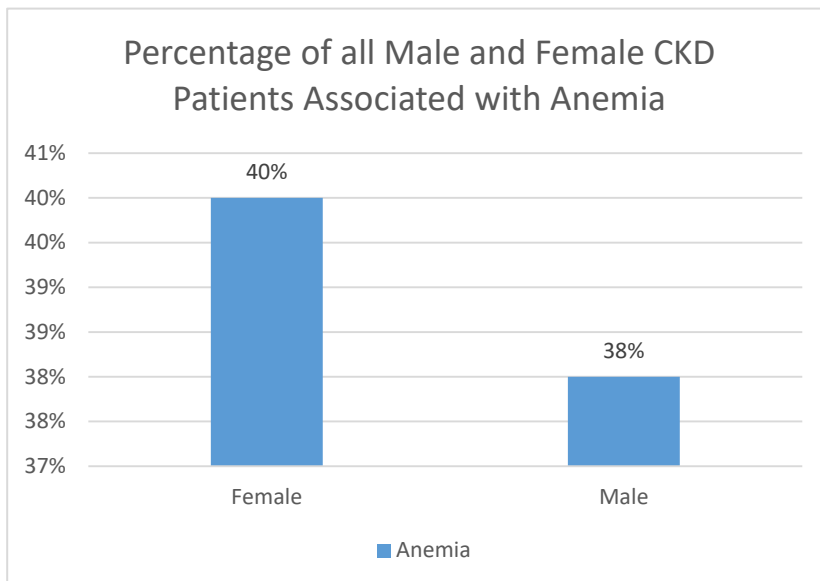


Chart (5): Percentage of CKD patients by age.

Of 87 patients with CKD, 30 (34.5%) patients with 40% of all female and 38% male were associated with anemia. Chart (6)

Chart (6): Percentage of all Male and Female CKD Patients Associated with Anemia.



The patients in study were in different stages of the disease as following: with the majority (40%) in stage 2, (25%) in stage 1 and (25%) in stage 3, (7%) in stage 4 and (3%) in stage 5.

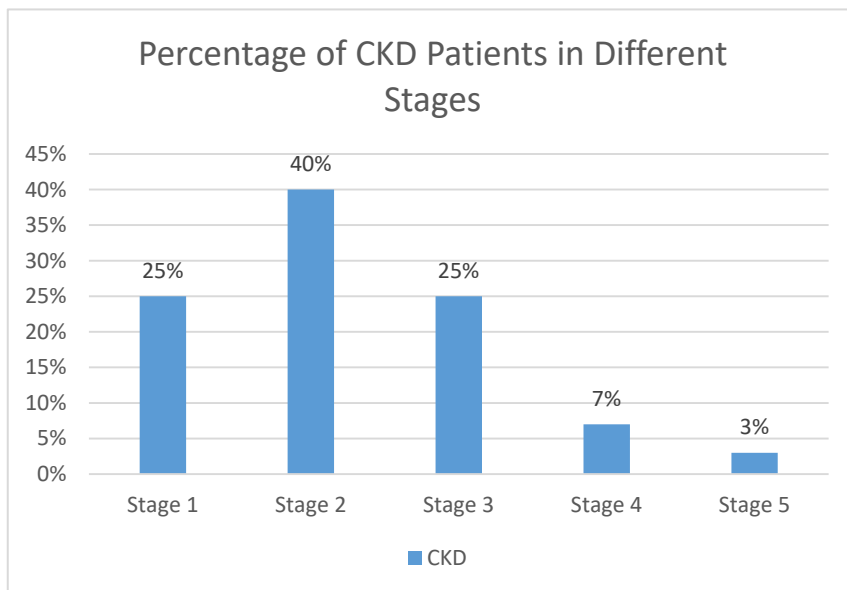


Chart (7): Percentage of CKD Patients in Different Stages.

Regarding treatment modalities, the majority of patients (80%) were managed with medical therapy, while 20% required referral to a dialysis center due to the limited availability of dialysis

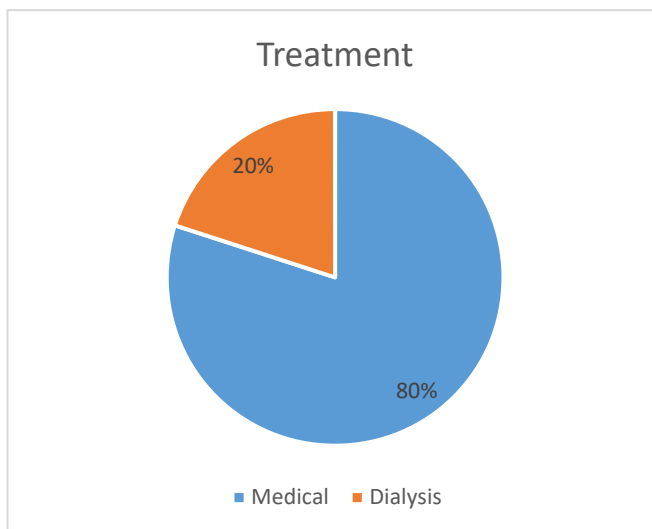


Chart (8): Treatment modalities

The majority of CKD patients (79.3%) were from the Central zone. A small number of patients were from the North zone (5.74%), South zone (8%), and Eastern zone (5.74%). Only a very small number of patients (1.14%) were from the Western zone. Table (5)

| NO | Habitat | Number of Patients | Percentage |
|----|--------------|--------------------|------------|
| 1 | Central zone | ۶۹ | %۷۹٫۳ |
| 2 | North zone | ۵ | %۵٫۷۴ |
| 3 | South zone | ۷ | %۸ |
| 4 | Eastern zone | ۵ | %۵٫۷۴ |
| 5 | Western zone | ۱ | %۱٫۱۴ |
| 6 | Total | ۸۷ | 100% |

Table (5): Classification of Patients by their habitat zone in Afghanistan



Afghanistan's map by zones

Discussion

The following discussion analyzes the results obtained from an evaluation of patients visiting the emergency department of the Wazir Mohammad Akbar Khan Hospital. The results provide valuable insights into the prevalence, etiology, and management of chronic kidney disease (CKD) in this patient population.

Over the period under review, a total of 33,836 patients visited the emergency department, with 3,308 of them being hospitalized for inpatient care. Notably, 87 of these patients were diagnosed with CKD, representing 2.63% of the hospitalized patients [4]. This percentage is significant given the serious implications of CKD for patients' health outcomes and the associated healthcare costs [2].

The etiology of CKD in this patient population, diabetes mellitus (DM) emerged as the primary cause, accounting for 60% of the cases. Hypertension followed at 34%, with other factors contributing to the remaining 6%. The dominance of DM and hypertension as primary causes of CKD aligns with global trends [11]. This underscores the necessity for preventive measures targeting these conditions to mitigate the incidence of CKD [7].

The data also revealed a gender disparity in the prevalence of CKD, with females (65.5%) significantly outnumbering males (34.5%). This is in line with findings from previous studies indicating a higher prevalence of CKD among women compared to men [12]. Interestingly, the data showed that DM was the most common cause of CKD in both genders, albeit with a higher proportion in females.

Regarding age, the majority of patients (51.7%) were between 41 and 60 years. This is consistent with the understanding that CKD prevalence increases with age [13]. However, a significant number of patients (26.6%) were also between 21 and 40 years, indicating that CKD is not confined to older adults.

Interestingly, anemia was associated with 34.5% of the CKD patients, with a slightly higher prevalence in males. This finding aligns with previous research highlighting the frequent occurrence of anemia among CKD patients [14].

The staging of CKD among the patients varied, with the majority (40%) in stage 2, followed by stages 1 and 3 (25% each), and the least (10%) in stages 4 and 5. The high proportion of patients in the earlier stages suggests the potential for timely intervention to slow disease progression [15].

Most of the patients (80%) were managed with medical therapy, while 20% were referred to a dialysis center. This underlines the need for enhanced capacity to handle advanced CKD cases, given the limited availability of dialysis services [16, 17].

Finally, the majority of CKD patients (79.3%) were from the Central zone, with the fewest (1.14%) from the Western zone. This geographical disparity may reflect variations in access to healthcare, lifestyle factors, or genetic predispositions [18-20].

In Addition, these results highlight the significant burden of CKD among patients visiting the Wazir Mohammad Akbar Khan Hospital. The findings underscore the importance of targeted interventions, including preventive measures aimed at high-risk groups, and improvements in healthcare services for CKD management.

Conclusion

Chronic Kidney Disease (CKD) is a global health issue affecting over 800 million adults worldwide, with diabetes mellitus and hypertension being the main causes. The study at Wazir Mohammad Akbar Khan Hospital in Kabul, Afghanistan, found that CKD accounted for 2.63% of hospitalized patients, with DM being the primary cause in 60% of cases and hypertension in 34%. Anemia was a common comorbidity among CKD patients, and the central zone had the highest representation. The study underscores the need for targeted interventions, including preventive measures targeting DM and hypertension, early detection and intervention, and addressing comorbidities like anemia.

Strengths

- CKD prevalence among hospitalized patients was 2.63%, with diabetes mellitus and hypertension as the leading causes.
- Females exhibited a higher prevalence of CKD compared to males.
- The majority of patients were between 41 and 60 years of age.
- Anemia was prevalent among 34.5% of CKD patients.
- Most patients were in stage 2 of CKD, with 80% managed through medical therapy.

Conflicts of Interest:

The authors declare that there are no competing interests.

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