

The extent of the relationship between analgesics and kidney failure Kidney Services Center Benghazi and Benghazi Medical Center

¹Asma Ahmed Mohammed,²Mustafa Abdelaziz,³Dareen El Shareef Jadullah, ⁴Abdulmunem Mohammed Abdulmunem.

¹Lecturer at Faculty of pharmacy, Qurina International University, Benghazi– Libya, orcid.org/0009-0007-2064-2608 Email: asmaahmadmohammedaltargi@qiu.edu.ly.

²lecturer at Faculty of medical Sciences, Qurina International University-Benghazi - Libya. <https://orcid.org/000-0002-4468> E-mail: mohamedmustafaabdelaziz@qiu.edu.ly.

³Lecturer at Faculty of pharmacy, Qurina International University, Benghazi– Libya, orcid.org/0009-0007-2064-2608 Email: dareenelshareef@qiu.edu.ly

⁴Lecturer at Faculty of medical Sciences, Qurina International University-Benghazi - Libya. <https://orcid.org/0009-0005-7902-1334> E-mail: menemobed@qiu.edu.ly.

Received: April 15, 2025

Revised: May 6, 2025

Accepted: May 26, 2025

Published online: Jul 10, 2025

Abstract— Background: Non-steroidal anti-inflammatory drug (NSAID) consumption has been associated to a higher risk of kidney problems. After NSAID administration, short-term use has been shown to resolve renal side effects. **Aim:** To investigate the impact of long-term NSAID use on kidney function and its association with the onset and progression of kidney failure, with a focus on the mechanisms underlying kidney injury and potential risk factors. **Methods:** Its analytical cross-sectional study was conducted to assess and patients in Benghazi Libya, was done by using constructive form questionnaire based on previous studies. **Results:** This cross-sectional study was aimed to assess the related between factor of random consumption of NSAID and kidney failure among patients in different Benghazi-hospitaies . First in results were sociodemographic factors. As seen below all the participants in the study consider different ages 34.3.% of them their age range between (46-60) ,28.7. % range (31-45) ,23.3 % over 60 , 12.7% range (31-45)and only 1. % were under 1878.3% They had kidney failure, while 21.7% not They found that they did not suffer from kidney failure found that people with kidney failure had a family history of(.32.7%) while (69.3%). They have no family history It was found that the percentage of people who take NSAIDs on a monthly (37.3%) , (22.7%) Weekly, (3.3%) Daily, (28.7%) Rarely and (8%) They never take it .(7%) of patients had Swelling in the feet or ankles after take NSAID ,(2.3%) decreased urination,(4.3%) General fatigue and (86.3%) hadn't any Symptoms. Patients were asked whether health centers provide sufficient information about NSAID. and it was found that(71.7%) said no and (28.3%) Obtain information. whether doctor advised to reduce or stop using NSAIDs due to kidney concerns (83%) said no and (17%) **Conclusion:** we conclude, while NSAIDs are effective in managing pain and inflammation, their potential to cause kidney failure, particularly with long-term use, must be recognized and

addressed through informed patient education and proactive healthcare management.

Keywords: Analgesics, Painkillers, on-Steroidal Anti-Inflammatory Drugs (NSAIDs),Nephrotoxicity, Acute Kidney Injury (AKI)

1. INTRODUCTION

Most diseases are often accompanied by pain of varying severity, from mild to severe pain. Therefore, one of the treatments is pain relief, which improves the patient's health, including among these injuries such as fractures, rheumatic diseases, headaches, diabetes, and other diseases. But the frequent use of these analgesics of various types and doses randomly and for a long time, whether with a medical prescription or not, and the patient's lack of awareness of their risks, as well as the lack of awareness from the pharmacist or doctor, led to an adverse effect of these medications on the patient's health. Among these injuries is the patient's injury after a period of time. Kidney failure.

The new AKI terminology of acute renal failure emphasizes that the disease spectrum extends from less severe forms of injury to more advanced injury when acute kidney failure may require dialysis (Mehta,., *et al*, 2007). Acute kidney injury (AKI) is defined as an abrupt loss of kidney function that occurs within a few hours or days and can result in a number of complications, including high serum potassium levels, metabolic acidosis, fluid imbalance, uremia, and even death.Because of the aging population and the numerous comorbidities that are linked to it, AKI is becoming more prevalent globally (Bagshaw, *et al* ,2007; Waikar .,*et al* 2008). The systematic measurement of serum creatinine and quantification of hourly diuresis favor the comprehensive

detection of AKI in hospitalized patients. AKI is particularly common in critically ill patients who require intensive care. In some countries, the frequency of AKI in ICU has been observed to vary from 5% to 60 % (Uchino, *et al.* , 2005; Joannidis and, Metnitz 2005). The lack of standardization of the definition of AKI until recently can explain the variations between research. High mortality, longer hospital stays, and higher expenses are linked to AKI in the intensive care unit, particularly for patients who need hemodialysis (Lameire , *et al.* , 2005). The situation is considerably more critical in sub-Saharan Africa (SSA), where the majority of intensive care units lack enough staffing and equipment (Okafor ,2009).

The high prevalence of infectious diseases like HIV and malaria, the availability of potentially nephrotoxic drugs and medicinal plants over-the-counter, the late presentation of patients to healthcare services, and the lack of hemodialysis centers—which, when they do exist, are out of reach for the vast majority of the population—make AKI a difficult problem in low-resource settings (Adu ,2013; Mokoli., , *et al.* 2008). Although the incidence of AKI is constantly rising globally, little is known about the burden and outcomes of AKI in intensive care units in low-resource settings.

Aspirin (acetylsalicylic acid), initially obtained from the bark of the willow tree, was the first non-steroidal anti-inflammatory medications (NSAID) and has been used in many forms to treat human illness for centuries. Despite being used for millennia, the mechanism of action of aspirin was not known until 1971, when Vane and his colleagues discovered that it prevented the formation of all prostaglandins. This discovery earned them the 1982 Nobel Prize in Medicine (Vane, 1971; Vane, and., Botting, 1987).

Researching aspirin side effects, such as stomach bleeding, after Vane revealed that aspirin blocked prostaglandin formation sparked a quest for chemically identical medications with comparable analgesic and anti-inflammatory qualities but no related adverse effects. (Awtry., and Loscalzo 2000). Aspirin causes irreversible COX inhibition because platelets lack DNA and cannot produce new COX enzymes, unlike later generation NSAIDs that cause reversible COX inhibition (Clarke, *et al.* 1991)

The NSAID family of medications, which includes both prescription and over-the-counter (OTC) versions, has been widely used in sports medicine. In order to minimize pain and inflammation and hasten an injured athlete's return to competition, NSAIDs are frequently used to treat acute soft tissue injuries. However, current research suggests that the short term benefits of NSAID therapy may adversely impair the long-term recovery of injured soft tissues (Hertel, 1997).

Sports medicine has made extensive use of the NSAID family of drugs, which includes both prescription and over-the-counter (OTC) forms. NSAIDs are commonly used to treat acute soft tissue injuries in order to reduce pain and inflammation and speed up an injured athlete's return to competition. NSAID therapy's short-term advantages, however, may negatively affect injured soft tissues' long-term recovery, according to recent studies. (Hertel, 1997).

The effects of COX-inhibiting drugs vary depending on the tissue. For instance, ibuprofen primarily affects COX in the peripheral tissues, while acetaminophen inhibits COX in the central nervous system. In terms of dosage and duration of treatment, analgesic doses typically equal 50–75% of anti-inflammatory doses, and the effects of COX-inhibiting medications are also dose-dependent. [Vane, and Botting, 1987; Amadio , *et al.* , 1993; Koester, 1993). Nonprescription, or over-the-counter, NSAIDs are available at dosages that mainly provide analgesic and antipyretic effects but lack anti-inflammatory properties.

AKI developed in more than half of the critically ill patients in this cohort, which significantly increased short-term mortality. This underscores the importance of preventing, detecting, and managing AKI early on, as well as providing dialysis in the intensive care unit (Masewu, *etal.*, 2016).

1.2.Objective:

To investigate the impact of long-term NSAID use on kidney function and its association with the onset and progression of kidney failure, with a focus on the mechanisms underlying kidney injury and potential risk factors.

1.3.Aim:

1. To assess the renal toxic effects of NSAIDs and their contribution to acute kidney injury (AKI) and chronic kidney disease (CKD) in patients with predisposing risk factors (e.g., hypertension, diabetes, and dehydration).
2. To explore the biochemical and physiological pathways involved in NSAID-induced kidney damage, including the role of prostaglandins and renal blood flow.
3. To evaluate the incidence and severity of kidney failure in individuals using NSAIDs chronically, and identify patient characteristics that may increase susceptibility to kidney dysfunction.
4. To provide evidence-based recommendations for the safe use of NSAIDs in individuals with compromised kidney function or those at risk for kidney failure.

2.Methodology

2.1.Study design:

Its analytical cross-sectional study was conducted to assess and patients in Benghazi Libya, was done by using constructive form questionnaire based on previous studies. This study was conducted at central hospitals in Benghazi .

2.2.Population and data collection:

A total of (300) participants in this study from both genders, as number of n (120) from female and n (180) from male aged between (18-over 60) years old.

This study was conducted as face-to-face interview with participants were visited those hospitals and clinic, data was collected from patients from first to 15th of December -2024.

2.3.Statistical analysis:

In this study statistical analysis was performed by using SPSS Software package for windows version 28. Descriptive statistics were presented categorical variables were expressed as frequencies and percentages.

All data was represented in graphical and tabular form. Chi-square test was employed to evaluate the differences in between each variable in the study.

2.4.Ethical considerations:

The study was approved by Qurina University-pharmacy department, All procedures performed in studies involving human participants were in accordance with the ethical standards.

3.Results

3.1 Descriptive Results:

Table (1) and Figure(1): This cross-sectional study was aimed to assess the relate between factor of random consumption of NSAID and kidney failure among patients in different Benghazi-hospitlaies . First in results were sociodemographic factors. As seen below all the participants in the study consider different ages 34.3.% of them their age range between (46-60) ,28.7. % range (31-45) ,23.3 % over 60 , 12.7% range (31-45)and only 1. % were under 18.

Table 1. Age frequency and percent.

Age			
Percent	Frequency		
1.0	3	Under18	Valid
12.7	38	18-30	
28.7	86	31-45	
34.3	103	46-60	
23.3	70	Over 60	
100.0	300	Total	

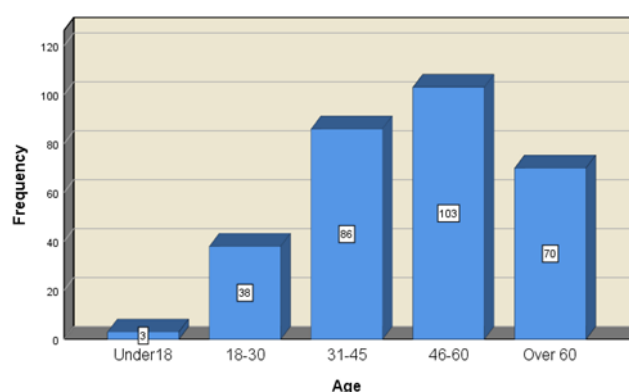


Figure 1.Age curve.

Table (2) and Figure(2): The population of this study consisted of 300 patients ,as 60% of them were male patients and less than the half of them found female participants .

Table 2. Sex frequency and percent.

Gender			
Percent	Frequency		
60.0	180	Male	Valid
40.0	120	Female	
100.0	300	Total	

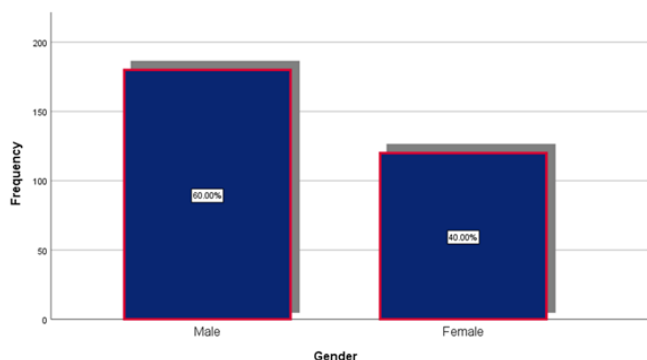


Figure 2.sex curve.

Table (3) and Figure(3): As noted bellow more than half of participants 78.3% They had kidney failure, while 21.7% They found that they did not suffer from kidney failure.

Table 3. The incidence rate of kidney failure frequency and percent.

The incidence rate of kidney failure			
Percent	Frequency		
78.3	235	Yes	Valid
21.7	65	No	
100.0	300	Total	

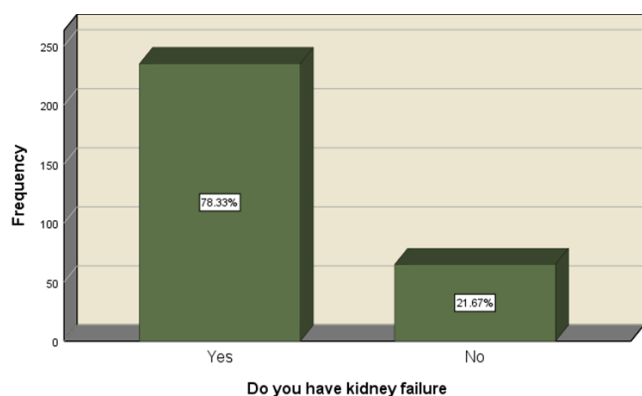


Figure 3. The incidence rate of kidney failure.

Table (4) and Figure(3): As seen below It was found that people with kidney failure had a family history of(.32.7%) while (69.3%). They have no family history.

Table 4. The relationship of family history frequency and percent.

Do You have a family history of kidney disease			
Percent	Frequency		
32.7	98	Yes	Valid
67.3	202	No	
100.0	300	Total	

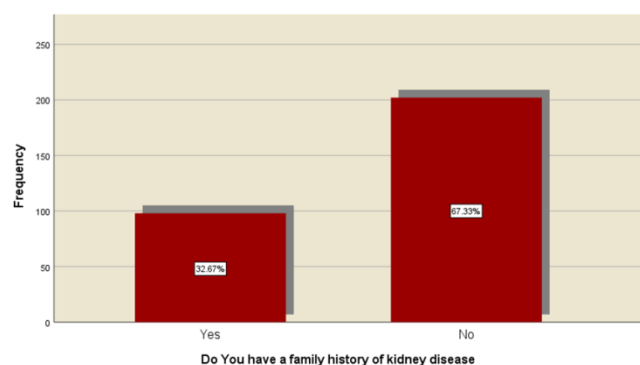


Figure 4. The percentage to disease related to family history.

Table (5) and Figure(5): As noted below It was found that the percentage of people who take NSAIDs on a monthly (37.3%) , (22.7%) Weekly, (3.3%) Daily, (28.7%) Rarely and (8%) They never take it.

Table 5. NSAID intake rate frequency and percent.

How often do you typically use NSAIDs			
Percent	Frequency		
3.3	10	Daily	Valid
22.7	68	Weekly	
37.3	112	Monthly	
28.7	86	Rarely	
8.0	24	Never	
100.0	300	Total	

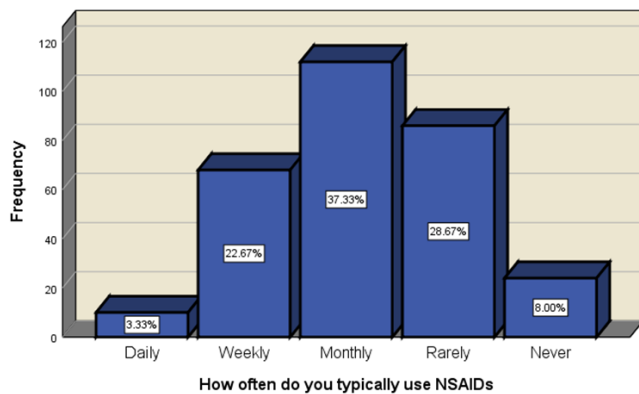


Figure 5. The percentage of NSAID intake rate.

Table 7. Symptoms frequency and percent.

Have you experienced any of the following symptoms after using NSAIDs			
Percent	Frequency		
7.0	21	Swelling in the feet or ankles	Valid
2.3	7	Decreased urination	
4.3	13	General fatigue	
86.3	259	None of the above	
100.0	300	Total	

Table (6) and Figure (6): As noted below It was found that the percentage of people who use NSAIDs as Pain relief was (88.7%) while for Inflammation was (3%) and for None was (3%).

Table 6 . Use frequency and percent.

How often do you use NSAIDs for			
Percent	Frequency		
88.7	266	Pain relief	Valid
8.3	25	Inflammation	
3.0	9	None	
100.0	300	Total	

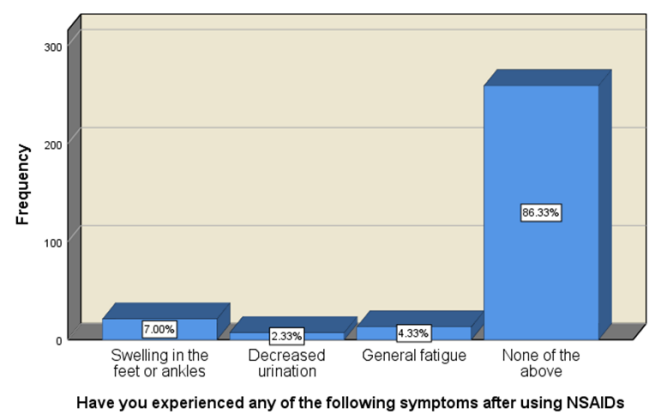


Figure 7. The percentage of Symptoms of NSAID.

Table (8) and Figure (8): As seen below patients were asked whether health centers provide sufficient information about NSAID. and it was found that (71.7%) said no and (28.3%) Obtain information.

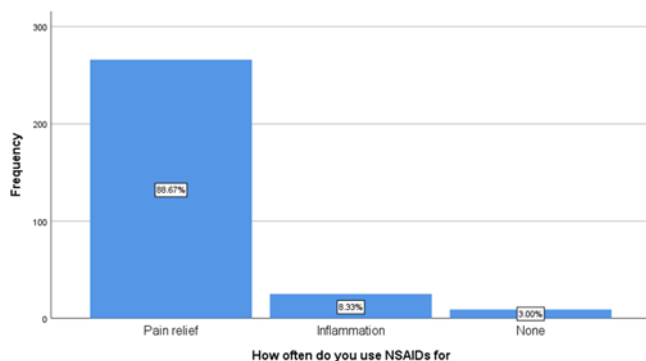


Figure 6. The percentage of use NSAID.

Table (7) and Figure (7) : As seen below (7%) of patients had Swelling in the feet or ankles after take NSAID, (2.3%) decreased urination, (4.3%) General fatigue and (86.3%) hadn't any Symptoms.

Table 8. Healthcare education frequency and percent.

Has a healthcare provider ever informed you that NSAIDs could affect your kidney function?			
Percent	Frequency		
28.3	85	Yes	Valid
71.7	215	No	
100.0	300	Total	

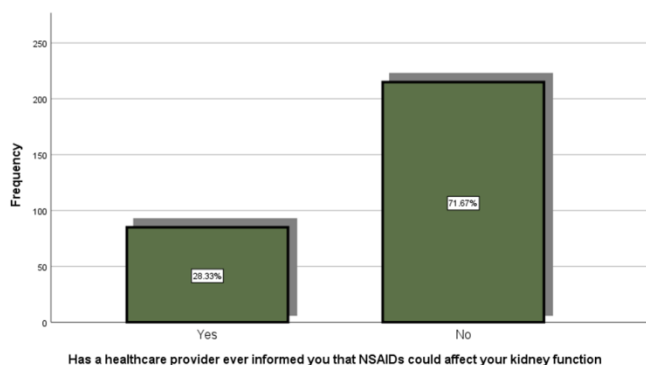


Table (9) and Figure(9) : As noted bellow patients were asked whether doctor advised to reduce or stop using NSAIDs due to kidney concerns (83%) said no and (17%) said yes.

Table 9. Doctor's advice frequency and percent.

Has a doctor ever advised you to reduce or stop using NSAIDs due to kidney concerns			
Percent	Frequency		
17.0	51	Yes	Valid
83.0	249	No	
100.0	300	Total	

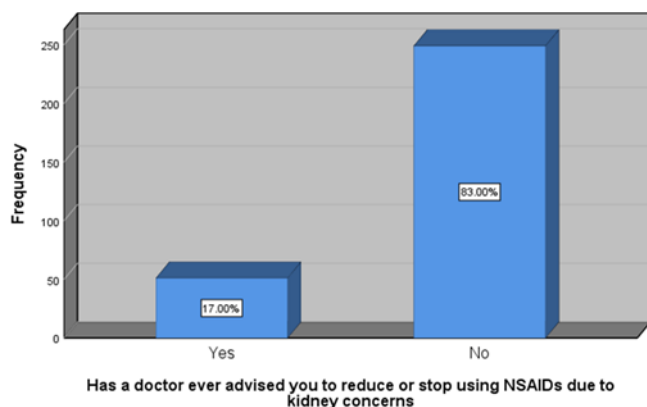


Figure 9. The Doctor's advice curve.

Table (10) and Figure (10) :As shown below (24.3%)patients knew that prolonged use of NSAID causes kidney failure . and (75.7%) They didn't know.

Table 10. prolonged NSAID use frequency and percent.

Were you aware that prolonged NSAID use could lead to kidney problems			
Percent	Frequency		
24.3	73	Yes	Valid
75.7	227	No	
100.0	300	Total	

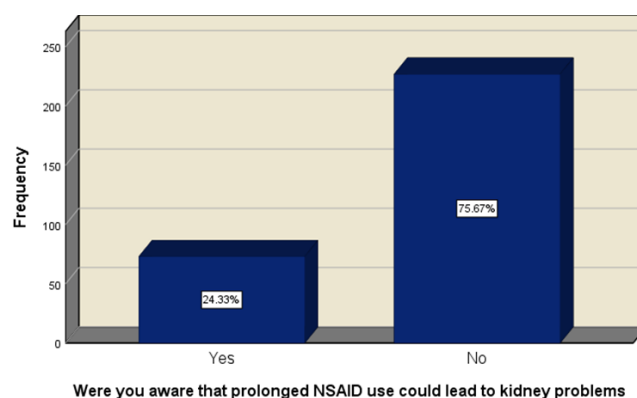


Figure 10. long-term NSAID use and patients' knowledge curve.

Table (11) and Figure(11): As seen below wide range of side effets has been found wasused by participants as highest percent was no side effects (36.7%) , second (Hypoglycemia) (16.3%) , third Depression , Emotional stress and losing energy(8%) , fourth hypotension and Hypoglycnia (7%), fifth Vomiting and Anemia , bad food (5%) ,then weren't use any drugs without ask a doctor (4%), thenMild nausea , swelling Dialysis Dependency and Feel cold (2.3%), Cramping , low energy , emotional change , Strict diet(2%) , Difficulty breathing , Dry mouth or thirst(1.7%), B.P, Feel cold and hungry (1.3%) , Physical limitations , Isolation feeling different (0.7%) , High costs of treatments, Stone (0.3%).

Table 11. renal dialysis & consequences frequency and percent.

What are the harmful consequences after renal dialysis			
Percent	Frequency		
2.3	7	Feel cold	Valid
36.7	110	None	
1.3	4	Feel cold and hungry	
16.3	49	Hypoglycemia	
7.0	21	hypotension and Hypoglycemia	
5.0	15	Vomiting	
0.3	1	Stone	
0.7	2	Isolation feeling different	
2.3	7	Dialysis Dependency	
0.3	1	High costs of treatments	
2.0	6	Strict diet	
0.7	2	Physical limitations	
5.0	15	Anemia , bad food	
1.3	4	B.P	
4.0	12	Don't use any drugs without ask a doctor	
8.7	26	Depression , Emotional stress and losing energy	
2.0	6	Cramping , low energy , emotional change	
1.7	5	Difficulty breathing , Dry mouth or thirst	
2.3	7	Mild nausea , swelling	
100.0	300	Total	

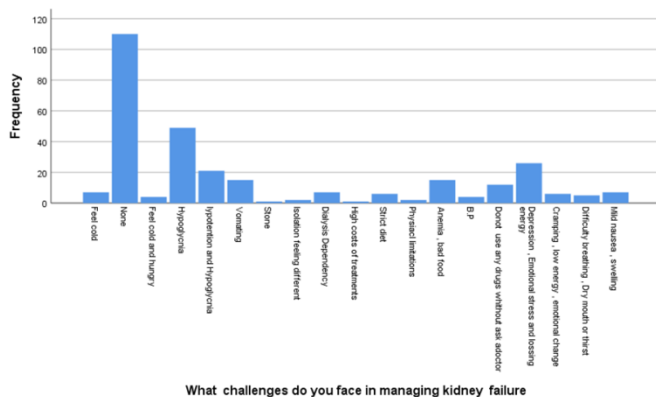


Figure 11. renal dialysis & consequences curve.

2.3. Statistical Results:

Table(12-13) and Figure (12):The data presents a cross-tabulation of the relationship between age groups and kidney failure status. It suggests there is a noticeable trend where the prevalence of kidney failure increases with age, particularly in individuals aged 46 and above. The Pearson Chi-Square statistic of 45.593 indicates a significant association between age and kidney failure (assuming the p-value is less than 0.05). In other words, age appears to influence the likelihood of developing kidney failure, with older individuals being more likely to have this condition.

Table 12. Age * kidney failure Cross tabulation.

Age * Do you have kidney failure Cross tabulation				
Total	Do you have kidney failure			
	No	Yes		
3	2	1	Under18	Age
38	20	18	18-30	
86	27	59	31-45	
103	10	93	46-60	
70	6	64	Over 60	
300	65	235	Total	

Table 13. The relation between Age and kidney failure by Chi-Square Tests.

Chi-Square Tests			
Asymptotic Significance (2-sided)	df	Value	
0.000	4	45.593 ^a	Pearson Chi-Square
		300	N of Valid Cases

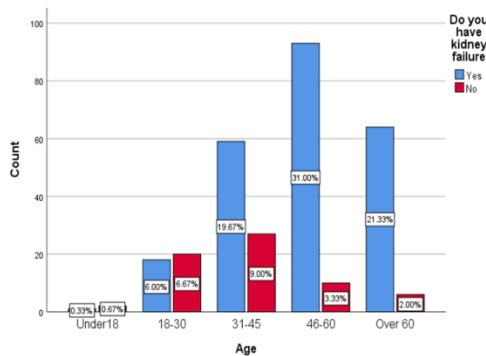


Figure 12.Age and kidney failure curve.

Table(14-15) and Figure (13): As seen below The results suggest that individuals with a family history of kidney disease are more likely to experience kidney failure compared to those without such a history. Specifically, 90 individuals with a family history of kidney disease report having kidney failure, compared to only 145 individuals without a family history of kidney disease who report kidney failure. The Pearson Chi-Square value is 15.637, indicating a statistically significant association between family history of kidney disease and the occurrence of kidney failure. evidenced by the p-value being less than 0.05 (indicating statistical significance). Therefore, family history appears to be an important risk factor for kidney failure.

Table 14. family history * kidney failure Cross tabulation.

Do You have a family history of kidney disease Cross tabulation				
Total	Do you have kidney failure			
	No	Yes		
98	8	90	Yes	Do You have a family history of kidney disease
202	57	145	No	
300	65	235	Total	

Table 15.The relation between family history and kidney failure by Chi-Square Tests.

Chi-Square Tests			
Asymptotic Significance (2-sided)	Df	Value	
0.000	1	15.637 ^a	Pearson Chi-Square
		300	N of Valid Cases

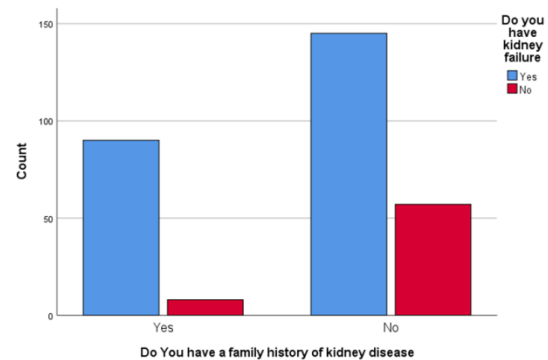


Figure 13. The relation between family history and kidney failure .

Table (16-17) and Figure (14): As seen The Pearson Chi-Square value of 27.458 indicates a strong association between the frequency of NSAID usage and kidney failure, with a significant p-value likely below 0.05. The results suggest that the more frequently an individual uses NSAIDs, the higher the likelihood they have kidney failure.

Table 16. use NSAIDs * kidney failure Cross tabulation.

How often do you typically use NSAIDs * Do you have kidney failure Cross tabulation				
Total	Do you have kidney failure			
	No	Yes		
10	1	9	Daily	How often do you typically use NSAIDs
68	3	65	Weekly	
112	21	91	Monthly	
86	32	54	Rarely	
24	8	16	Never	
300	65	235	Total	

Table 17.The relation between the use of NSAIDs and kidney failure by Chi-Square Tests.

Chi-Square Tests			
Asymptotic Significance (2-sided)	df	Value	
0.000	4	27.458 ^a	Pearson Chi-Square
		300	N of Valid Cases

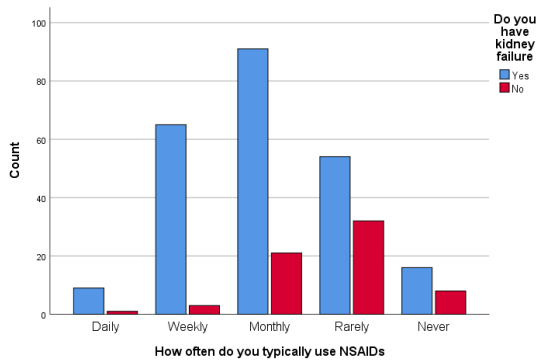


Figure (14): The relation between use and kidney failure.

Table(18-19) and Figure (15): As seen The Pearson Chi-Square value is 26.599, suggesting a statistically significant relationship between being informed about the potential effects of NSAIDs on kidney function and the likelihood of having kidney failure. The p-value associated with this Chi-Square statistic is likely less than 0.05, indicating that the two variables.

Table 18. healthcare education NSAIDs * kidney failure Cross tabulation.

Has a healthcare provider ever informed you that NSAIDs could affect your kidney function * Do you have kidney failure Cross tabulation				
Total	Do you have kidney failure			
	No	Yes		
85	35	50	Yes	Has a healthcare provider ever informed you that NSAIDs could affect your kidney function
215	30	185	No	
300	65	235	Total	

Table 19. The relationship between healthcare education NSAIDs & kidney failure by Chi-Square Tests.

Chi-Square Tests			
Asymptotic Significance (2-sided)	Df	Value	
0.000	1	26.599 ^a	Pearson Chi-Square
		300	N of Valid Cases

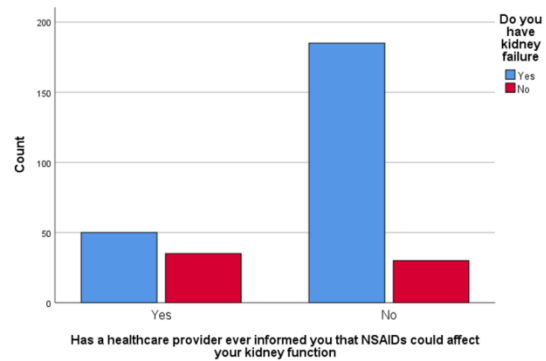


Figure 15. The relationship between healthcare education NSAIDs & kidney failure .

Table(20-21) and Figure (16): As seen below describe The Pearson Chi-Square value is 23.343, indicating a statistically significant relationship between being advised by a doctor to reduce or stop NSAID use and the occurrence of kidney failure. The p-value associated with this Chi-Square value is likely less than 0.05, indicating that the two variables—doctor's advice to reduce or stop NSAIDs and kidney failure—are associated.

Table 20. Doctor's advice* kidney failure Cross tabulation.

Has a doctor ever advised you to reduce or stop using NSAIDs due to kidney concerns * Do you have kidney failure Cross tabulation				
Total	Do you have kidney failure			
	No	Yes		
51	24	27	Yes	Has a doctor ever advised you to reduce or stop using NSAIDs due to kidney concerns
249	41	208	No	
300	65	235	Total	

Table 21. The relationship between Doctor's advice & kidney failure by Chi-Square Tests.

Chi-Square Tests			
Asymptotic Significance (2-sided)	df	Value	
0.000	1	23.343 ^a	Pearson Chi-Square
		300	N of Valid Cases

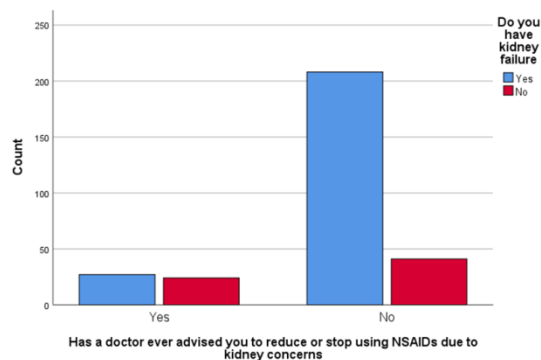


Figure 16. The relationship between Doctor's advice & kidney failure .

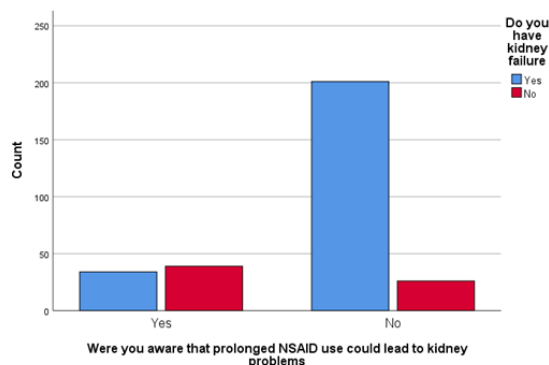


Figure 17 The relationship between prolonged NSAID use & kidney failure .

Table(22-23) and Figure (17): As seen below The Pearson Chi-Square value is 57.330, which is a very high value, suggesting a statistically significant relationship between awareness of NSAID-related kidney problems and the occurrence of kidney failure. The p-value associated with this Chi-Square statistic is likely very small ($p < 0.05$), indicating that the two variables are significantly related.

Table (22). prolonged NSAID use * kidney failure Cross tabulation.

Were you aware that prolonged NSAID use could lead to kidney problems * Do you have kidney failure Cross tabulation				
Total	Do you have kidney failure			
	No	Yes		
73	39	34	Yes	Were you aware that prolonged NSAID use could lead to kidney problems
227	26	201	No	
300	65	235	Total	

Table 23. The relationship between prolonged NSAID use & kidney failure by Chi-Square Tests.

Chi-Square Tests			
Asymptotic Significance (2-sided)	Df	Value	
0.000	1	57.330 ^a	Pearson Chi-Square
		300	N of Valid Cases

Table(24-25) and Figure (18): As seen below The Pearson Chi-Square value is 51.215, indicating a statistically significant association between the challenges faced in managing kidney failure and the occurrence of kidney failure. The p-value associated with this Chi-Square statistic is likely very small ($p < 0.05$), suggesting that the challenges individuals face in managing kidney failure are significantly related to whether or not they have kidney failure.

Table(24). renal dialysis & consequences Cross tabulation.

What are the harmful consequences after renal dialysis?* Do you have kidney failure Cross tabulation				
Total	Do you have kidney failure			
	No	Yes		
7	0	7	Feel cold	What challenges do you face in managing kidney failure
110	44	66	None	
4	1	3	Feel cold and hungry	
49	3	46	Hypoglycemia	
21	1	20	lypotention and Hypoglycemia	
15	0	15	Vomating	
1	0	1	Stone	
7	3	4	Dialysis Dependency	
1	0	1	High costs of treatments	
6	3	3	Strict diet	
2	0	2	Physiact limitations	

15	2	13	Anemia , bad food
4	0	4	B.P
12	3	9	Donot use any drugs whithout ask adoctor
26	2	24	Depression , Emotional stress and lossing energy
6	1	5	Cramping , low energy , emotional change
5	0	5	Difficulty breathing , Dry mouth or thirst
7	2	5	Mild nausea , swelling
300	65	235	Total

Table 25. The relationship between renal dialysis & consequences by Chi-Square Tests.

Chi-Square Tests			
Asymptotic Significance (2-sided)	df	Value	
0.000	18	51.215 ^a	Pearson Chi-Square
		300	N of Valid Cases

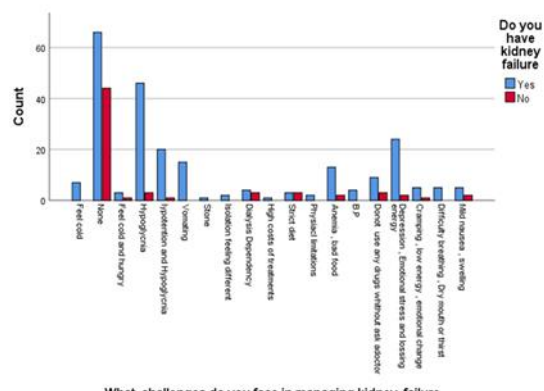


Figure 18. The relationship between renal dialysis & consequences.

4. Discussions

With an estimated daily consumption of over 30 million, nonsteroidal anti-inflammatory medicines (NSAIDs) are one of the most widely used drug classes worldwide (Singhand Triadafilopoulos, 1999). NSAIDs limit prostaglandin (PG) synthesis by blocking the cyclooxygenase (COX) enzyme, which results in anti-inflammatory, analgesic, and antipyretic effects. There are two known isoforms of this enzyme: COX-1 and COX-2. Important targets for adverse clinical outcomes linked to NSAID usage include the kidneys and the gastrointestinal tract (Gambaro and Perazella, 2003) . Every year, about 2.5 million Americans suffer from renal problems brought on by NSAIDs(Sandhu, and Heyneman, 2004).

. As any medication, NSAIDs can result in acute interstitial nephritis (ARF) a few days after starting NSAID therapy due to an allergic hypersensitivity reaction. When conventional NSAIDs are used in this situation, kidney function typically returns. If not, prednisone treatment (1 mg/kg daily) must to be taken into account. Chronic interstitial nephritis with interstitial fibrosis and chronic renal impairment can be caused by long-term NSAID use(Hörl , 2010).

This study began by asking about the relationship between age and kidney failure, and this was the result It suggests there is a noticeable trend where the prevalence of kidney failure increases with age, particularly in individuals aged 46 and above60, This is relatively consistent with by (Ravani, *et al* ,2020)aging were associated with increased prevalence of kidney failure, this association will be likely confined to people younger than 75 years and concentrated among those younger than 65 years who have a relatively high risk of kidney failure and who may maintain long life expectancy after developing kidney failure.

Also, in present study Specifically, 90 individuals with a family history of kidney disease report having kidney failure, compared to only 145 individuals without a family history of kidney disease who report kidney failure similar to (Kim, *et al*, 2023) 6512 and 119,971 events in patients with and without an affected family member with ESRD, respectively.

value of 27.458 indicates a strong association between the frequency of NSAID usage and kidney failure, with a significant p-value likely below 0.05 This contradicts by (Hayashi, *et al*,2021) found no significant difference in the number of patients with kidney failure severity increasing by at least one grade over 24 months, regardless of NSAID type.

According to the study, it was found that there is a strong relationship between dialysis and its consequences This is more or less consistent with (Vadakedath and Kandi,2017). Dialysis patients have a cardiovascular risk that is 10–20 times

higher than that of the general population. The risk of hypertension and cardiac disease is increased by the inflammatory kidneys and the dialysis procedure, which further impair endothelial function.

5. Conclusion and Future scope

NSAIDs are widely accessible to the general public over-the-counter. It could result in the conclusion that they are harmless medications rather than harmful ones. From a nephrological perspective, they are not benign and can be harmful, based on our experience and a review of the literature. Therefore, national drug agencies should update the population's over-the-counter status of NSAIDs. In the context of an aged population living in the community, a high cumulative NSAID exposure is linked to a higher risk of rapid CKD progression. These findings imply that chronic exposure to any NSAID should be avoided and that nonselective NSAIDs and selective COX-2 inhibitors should be used with caution in older adult patients with CKD. Health awareness of the danger of its indiscriminate use and early detection are very important to reduce the incidence of kidney failure and the consequences of dialysis.

References

- Adu D. (2013). Haemodialysis treatment for end stage chronic kidney disease and acute kidney injury in Africa. *Ghana medical journal*, 47(1), 1–2.
- Amadio, P., Jr, Cummings, D. M., & Amadio, P. (1993). Nonsteroidal anti-inflammatory drugs. Tailoring therapy to achieve results and avoid toxicity. *Postgraduate medicine*, 93(4),
<https://doi.org/10.1080/00325481.1993.11701639>
- Awtry, E. H., & Loscalzo, J. (2000). Aspirin. *Circulation*, 101(10), 1206–1218.
<https://doi.org/10.1161/01.cir.101.10.1206>
- Bagshaw, S. M., Uchino, S., Bellomo, R., Morimatsu, H., Morgera, S., Schetz, M., Tan, I., Bouman, C., Macedo, E., Gibney, N., Tolwani, A., Oudemans-van Straaten, H. M., Ronco, C., Kellum, J. A., & Beginning and Ending Supportive Therapy for the Kidney (BEST Kidney) Investigators (2007). Septic acute kidney injury in critically ill patients: clinical characteristics and outcomes. *Clinical journal of the American Society of Nephrology : CJASN*, 2(3), 431–439.
- Clarke, R., Daly, L., Robinson, K., et al. (1991) Hyperhomocysteinemia: An Independent Risk Factor for Vascular Disease. *The New England Journal of Medicine*, 324, 1149–1155.
- Gambaro, G., & Perazella, M. A. (2003). Adverse renal effects of anti-inflammatory agents: evaluation of selective and nonselective cyclooxygenase inhibitors. *Journal of internal medicine*, 253(6), 643–652.
- Hayashi, K., Miki, K., Kajiyama, H., Ikemoto, T., & Yukioka, M. (2021). Impact of non-steroidal anti-inflammatory drug administration for 12 months on renal function. *Frontiers in Pain Research*, 2, 644391.
- Hertel, J. (1997). The role of nonsteroidal anti-inflammatory drugs in the treatment of acute soft tissue injuries. *Journal of Athletic Training*, 32(4), 350.
- Hörl W. H. (2010). Nonsteroidal Anti-Inflammatory Drugs and the Kidney. *Pharmaceuticals (Basel, Switzerland)*, 3(7), 2291–2321.
- Joannidis, M., & Metnitz, P. G. (2005). Epidemiology and natural history of acute renal failure in the ICU. *Critical care clinics*, 21(2), 239–249.
- Lameire, N., Van Biesen, W., & Vanholder, R. (2005). Acute renal failure. *Lancet (London, England)*, 365(9457), 417–430.
[https://doi.org/10.1016/S0140-6736\(05\)17831-3](https://doi.org/10.1016/S0140-6736(05)17831-3)
- Kim, J. Y., Chun, S. Y., Lim, H., & Chang, T. I. (2023). Association between familial aggregation of chronic kidney disease and its incidence and progression. *Scientific reports*, 13(1), 5131
- Koester M. C. (1993). An Overview Of The Physiology And Pharmacology Of Aspirin And Nonsteroidal Anti-inflammatory Drugs. *Journal of athletic training*, 28(3), 252–259.
- Masewu, A., Makulo, J. R., Lepira, F., Amisi, E. B., Sumaili, E. K., Bukabau, J., Mokoli, V., Longo, A., Nlandu, Y., Engole, Y., Ilunga, C., Mosolo, A., Ngalala, A., Kazadi, J., Mvuala, R., Athombo, J., Aliocha, N., Akilimali, P. Z., Kilembe, A., Nseka, N., ... Jadoul, M. (2016). Acute kidney injury is a powerful independent predictor of mortality in critically ill patients: a multicenter prospective cohort study from Kinshasa, the Democratic Republic of Congo. *BMC nephrology*, 17(1), 118.
- Mehta, R. L., Kellum, J. A., Shah, S. V., Molitoris, B. A., Ronco, C., Warnock, D. G., Levin, A., & Acute Kidney Injury Network (2007). Acute Kidney Injury Network: report of an initiative to improve outcomes in acute kidney injury. *Critical care (London, England)*, 11(2), R31.

- Mokoli, M.V., *et al.* (2008) Prognostic Factors of ARI at the University Clinics of Kinshasa. *Annales Africaines de Médecine*, 1, 34-44.
- Okafor, C.I., Omousulu, D.N., Okafor, C.O., Ihekwebaba, E.C. and Chineke, H.N. (2009) Prevalence and Attitude towards Needle Stick Injuries among Medical Practitioners in Nnewi, Southeast Nigeria. *Journal of Medicine in the Tropics*, 12, 26-29.
- Ravani, Quinn, Lam, Hemmelgarn, Manns, James, Joanne, , Tonelli(2020). Association of Age With Risk of Kidney Failure in Adults With Stage IV Chronic Kidney Disease in Canada, *JAMA Network Open*.
- Sandhu, G. K., & Heyneman, C. A. (2004). Nephrotoxic potential of selective cyclooxygenase-2 inhibitors. *The Annals of pharmacotherapy*, 38(4), 700–704.
- Singh, G., & Triadafilopoulos, G. (1999). Epidemiology of NSAID induced gastrointestinal complications. *The Journal of rheumatology. Supplement*, 56, 18–24.
- Uchino, S., Kellum, J. A., Bellomo, R., Doig, G. S., Morimatsu, H., Morgera, S., Schetz, M., Tan, I., Bouman, C., Macedo, E., Gibney, N., Tolwani, A., Ronco, C., & Beginning and Ending Supportive Therapy for the Kidney (BEST Kidney) Investigators (2005). Acute renal failure in critically ill patients: a multinational, multicenter study. *JAMA*, 294(7), 813–818.
- Vadakedath, S., & Kandi, V. (2017). Dialysis: a review of the mechanisms underlying complications in the management of chronic renal failure. *Cureus*, 9(8).
- Vane J. R. (1971). Inhibition of prostaglandin synthesis as a mechanism of action for aspirin-like drugs. *Nature: New biology*, 231(25), 232–235.
- Vane, J.; Botting, R. Inflammation and the mechanism of action of anti-inflammatory drugs. *FASEB J.* 1: 89-96; 1987.
- Waikar, S. S., Liu, K. D., & Chertow, G. M. (2008). Diagnosis, epidemiology and outcomes of acute kidney injury. *Clinical journal of the American Society of Nephrology : CJASN*, 3(3), 844–861.
- injury. *Clinical journal of the American Society of Nephrology : CJASN*, 3(3), 844–861.