



## The Relationship Between Non-Steroidal Anti-Inflammatory Drug (NSAID) Consumption and the Incidence of Gastritis among Outpatients at the Internal Medicine Clinic of RSUD Prof. Dr. W.Z. Johannes Kupang

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### ABSTRACT

**Background:** Gastritis is an inflammatory condition of the gastric mucosa with high prevalence worldwide, especially in developing regions. At RSUD Prof. Dr. W. Z. Johannes Kupang, reported cases increased from 99 in 2021 to 257 in 2023. This research focuses on identifying the association between the type, frequency, and duration of Non-Steroidal Anti-Inflammatory Drug (NSAID) use and gastritis among outpatients.

**Methods:** An analytical observational approach with a cross-sectional design was applied involving 56 patients selected through purposive sampling at the Internal Medicine Clinic. Data were obtained from questionnaire-based interviews and medical record reviews. Bivariate testing was conducted using the contingency coefficient correlation method in SPSS.

**Results:** Thirteen of the 56 participants (23%) were confirmed with gastritis. NSAID use was reported in 84% of respondents, mainly non-selective preparations. Most consumed NSAIDs only when symptoms appeared and for less than five days. Statistical analysis indicated no significant association for frequency ( $p=0.052$ ) or duration of intake ( $p=0.052$ ), and a weak significance for NSAID class ( $p=0.047$ ).

**Conclusion:** NSAID usage patterns showed no meaningful relationship with gastritis incidence among outpatients at RSUD Prof. Dr. W. Z. Johannes Kupang, which may relate to the low intensity and short duration of use.

**KEYWORDS:** Gastritis, NSAIDs, Outpatients.

### INTRODUCTION

Gastritis is defined as an inflammatory condition affecting the gastric mucosa and is recognized as a persistent global health problem, with case numbers continuing to rise significantly<sup>1</sup>. The global prevalence is reported to reach 50.8% in developing countries and 34.7% in developed regions<sup>2</sup>. In Indonesia, the prevalence reaches 40.8%, with 274,396 documented cases out of a population of 238,452,952 according to the World Health Organization<sup>3</sup>. Gastritis also ranks fourth among the 50 most frequently treated diseases in Indonesian hospitals.<sup>1</sup>

Preliminary records from the Outpatient Department of RSUD Prof. Dr. W. Z. Johannes Kupang show a continuous rise in the number of gastritis cases. In 2021, 99 cases were reported, followed by 131 in 2022, and by 2023 the number increased to 257 cases. Multiple factors contribute to the development of gastritis, including the use of aspirin or Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), *Helicobacter pylori* infection, alcohol intake, smoking, psychological stress, irregular meal patterns, and frequent consumption of spicy or acidic foods.<sup>4</sup> Additional non-modifiable risk factors include age, gender, and family history.<sup>5</sup> NSAIDs are widely prescribed for pain management<sup>6</sup> and are commonly used for symptom control.<sup>7</sup> Their pharmacological action can weaken the protective mechanisms of the gastrointestinal mucosa<sup>7</sup> and may lead to mucosal injury extending into the small intestine, known as enteropathy<sup>8</sup>. Prolonged or unsupervised use potentially increases the risk of gastrointestinal bleeding, hypertension, and heart failure<sup>7,9</sup>.



Research examining the association between NSAID use and gastritis demonstrates varied results. Cahyani et al. (2023) reported that NSAID consumption habits and limited knowledge contributed to gastritis incidence in Ende Regency<sup>9</sup>. Dasril et al. (2022) identified a relationship between dietary patterns, NSAID intake, and coffee consumption among the community in Kerinci, Jambi.<sup>10</sup>Nuramalia (2021) and Hilyati et al. (2023) reported no significant relationship between NSAID consumption frequency and the onset of gastritis symptoms.<sup>11,12</sup> Nandini et al. (2022) described a weak and statistically insignificant association between a history of NSAID use and gastritis incidence.<sup>13</sup>

Considering the rise in gastritis cases at RSUD Prof. Dr. W. Z. Johannes Kupang and the varied findings from previous literature, this study aims to examine the relationship between NSAID consumption and the incidence of gastritis among outpatients at the Internal Medicine Clinic of RSUD Prof. Dr. W. Z. Johannes Kupang.

## METHODS

This study employed an analytical observational method using a cross-sectional design. The research was conducted at the Internal Medicine Clinic of RSUD Prof. Dr. W. Z. Johannes Kupang from November to December 2024. The study population consisted of all outpatients attending the clinic, and a purposive sampling technique was used to recruit 56 respondents who met specific criteria. Eligible participants were aged 18–65 years. Patients were excluded if gastritis was associated with *Helicobacter pylori* infection, if they smoked more than 20 cigarettes per day, consumed more than three cups of coffee daily, drank alcohol more than three times weekly, or had a history of clinical stress recorded in their medical files.

The variables examined included NSAID consumption, type of NSAID (non-selective or COX-2 selective), frequency, and duration of use as independent variables, while gastritis incidence served as the dependent variable. Data were obtained through structured interviews using a validated and reliable questionnaire and supported with medical record reviews. The questionnaire yielded a Cronbach's Alpha value of 0.743, indicating reliability. Data collection began with providing study information to participants, followed by informed consent signing. Interviews were carried out under nursing staff supervision, and gastritis diagnoses were confirmed through medical records.

Data were processed using SPSS. Univariate analysis described respondent characteristics and variable distribution, while bivariate analysis used the Contingency Coefficient Correlation test to evaluate the relationship between NSAID consumption patterns and gastritis. This study received ethical approval from the Health Research Ethics Committee of the Faculty of Medicine and Veterinary Medicine, Nusa Cendana University (certificate number 91/UN15.21/KEPK/2024). All respondents participated voluntarily, and confidentiality of personal information was maintained.

## RESULT

Data collection was carried out at the Internal Medicine Clinic of RSUD Prof. Dr. W. Z. Johannes Kupang from November to December 2024. A total of 56 respondents were included after meeting the inclusion and exclusion criteria. All data were obtained through structured interviews and verification of medical record documentation to ensure diagnostic accuracy for gastritis. Baseline characteristics were grouped by sex, age, and occupation to illustrate the demographic composition of the study population. The distribution is presented in Table 1. Female respondents represented the majority group (58.9%), with most participants within the late adult age range of 54–65 years (42.9%). The most common occupation was housewife (30.4%), followed by private sector workers (17.9%).

**Table 1. Distribution of Respondent Characteristics (n=56)**

Characteristics	Frequency (n)	Percentage (%)
<b>Gender</b>		
Male	23	41.1
Female	33	58.9
<b>Age Group</b>		
18–29 years	8	14.3
30–41 years	7	12.5



Characteristics	Frequency (n)	Percentage (%)
42–53 years	17	30.4
54–65 years	24	42.9
<b>Occupation</b>		
Housewife	17	30.4
Private sector employee	10	17.9
Civil servant/Teacher	8	14.3
Pensioner	6	10.7
Farmer	5	8.9
Student	5	8.9
Others	5	8.9

Univariate analysis was performed to describe the distribution of gastritis incidence and NSAID consumption among respondents. The findings are summarized in Table 2. From 56 respondents, 23.2% (n=13) were clinically diagnosed with gastritis. NSAID use was reported by 83.9% of participants within the past three months. Among the 47 NSAID users, non-selective agents were most commonly used (91.5%) with dominant choices being Paracetamol (49%), Mefenamic Acid (30%), and Ibuprofen (11%). Symptomatic use was frequent, with 87.2% consuming NSAIDs only during pain or fever. Short-term use (<5 days) was reported by 97.9% of users. Most respondents consumed NSAIDs after meals (93.6%), and only 6.4% stated experiencing post-consumption side effects.

**Table 2. Incidence of Gastritis and NSAID Consumption Overview**

Variable	Category	Frequency (n)	Percentage (%)
<b>Incidence of Gastritis</b>	Diagnosed	13	23.2
	Not Diagnosed	43	76.8
<b>NSAID Consumption</b>	Yes	47	83.9
	No	9	16.1

Bivariate analysis using the Contingency Coefficient Correlation test was conducted to examine the association between NSAID consumption patterns and gastritis incidence. The results are shown in Table 3. The statistical findings indicate no significant association between general NSAID consumption and gastritis (p=0.433). A weak positive association was observed for the NSAID class variable (p=0.047, r=0.278), suggesting differences in risk between non-selective and COX-2 selective agents. Frequency and duration of use showed p-values of 0.052 and did not demonstrate a meaningful relationship with gastritis incidence. The short-term and intermittent use patterns observed among most respondents were considered supportive of this outcome.

**Table 3. Bivariate Analysis Results (Correlation with Gastritis)**

Independent Variable	Correlation Coefficient (r)	p-value
NSAID Consumption	0.104	0.433
Drug Class	0.278	0.047
Frequency of Use	0.273	0.052
Duration of Use	0.273	0.052



## DISCUSSION

This study explored the association between Non-Steroidal Anti-Inflammatory Drug (NSAID) consumption and the incidence of gastritis among outpatients at RSUD Prof. Dr. W. Z. Johannes Kupang. A high proportion of respondents reported NSAID use (83.9%), yet the statistical analysis indicated no significant association between overall consumption and gastritis incidence ( $p=0.433$ ). The result reflects the concept that NSAID-related gastric injury is influenced by several elements beyond drug exposure alone, including dosage, drug formulation, duration of use, mucosal defense capacity, and individual susceptibility.<sup>14,15</sup>

The absence of significance in the frequency and duration variables ( $p=0.052$ ) corresponds with the observed consumption pattern in this research. Most respondents used NSAIDs only during symptomatic events (87.2%) and for less than five days (97.9%). Pharmacological studies describe that prolonged suppression of COX-1 activity contributes to reduced prostaglandin protection and increases the likelihood of mucosal disruption.<sup>7,16</sup> Gastric injury typically progresses under long-term or continuous exposure, whereas short-term administration tends to cause minimal structural impact. The results show similarity to findings reported by Nuramalia (2021) and Hilyati et al. (2023), which highlight limited risk in short-term NSAID users.<sup>11,12</sup>

A statistically significant association was identified in relation to NSAID class ( $p=0.047$ ). The majority of participants consumed non-selective NSAIDs (91.5%), including Mefenamic Acid and Ibuprofen. These drugs block both COX-1 and COX-2, resulting in reduced prostaglandin synthesis that naturally protects the gastric lining.<sup>17,18</sup> COX-2 selective agents maintain more gastric integrity as their action spares COX-1 mediated mucosal protection, which explains the positive correlation observed in the analysis ( $r=0.278$ ). The pattern implies that the pharmacodynamic characteristics of non-selective NSAIDs elevate relative risk even under short-term administration.

The respondent habit of taking NSAIDs after meals (93.6%) likely contributed to the moderated clinical presentation. Food intake increases mucus and bicarbonate secretion, reduces direct irritation, and provides a buffer against gastric acid exposure.<sup>19</sup> The exclusion of heavy smokers, alcohol users, and individuals with high coffee consumption further reduced confounding variables in this population. These circumstances align with previous findings from Nandini et al. (2022), which concluded that NSAID consumption alone is insufficient to trigger gastritis when other modifiable risks are minimized.<sup>13</sup>

Several methodological considerations accompany this study. The cross-sectional approach represents a single time-point assessment that does not establish temporal causality. Self-reported NSAID usage increases the possibility of recall inaccuracy, and the study did not quantify dosage detail or exact administration timing. The findings nonetheless provide practical value for clinical practice at RSUD Prof. Dr. W. Z. Johannes Kupang, indicating that symptom-based use, short exposure duration, and consumption alongside meals constitute protective behavior in minimizing NSAID-related gastric effects among outpatients.

## CONCLUSION

The study concludes that the consumption of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) did not show a significant association with the incidence of gastritis among outpatients at the Internal Medicine Clinic of RSUD Prof. Dr. W. Z. Johannes Kupang. The overall prevalence of gastritis in the studied population was relatively low at 23.2% (13 of 56 respondents), despite the high rate of NSAID use, which reached 83.9%. Most respondents used non-selective NSAIDs, with Paracetamol, Mefenamic Acid, and Ibuprofen identified as the most frequently consumed drugs. The pattern of use among participants was characterized by short duration, as 97.9% reported use for fewer than five days and primarily for symptomatic relief (87.2%). In addition, the majority consumed the medication no more than twice daily. These usage characteristics indicate a low-risk pattern, which may explain the absence of a significant relationship between NSAID consumption and gastritis incidence in this study population.

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