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Original Article

Comparative Effectiveness of Etoricoxib and Diclofenac Sodium in Improving Quality of Life Among Osteoarthritis Patients

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Abstract

Background : The effectiveness of etoricoxib versus diclofenac in outpatiens with pain due to osteoarthritis is unclear. There is still debate regarding the relative effectiveness and safety between both in improving the quality of life of OA patients
Aims : To assess the effectiveness of etoricoxib compared to diclofenac by assessing the quality of life outcomes of Osteoarthritis patients using instruments such as the EQ-5D-5L.
Methods : Study design using a cross-sectional study design by looking at the results of the quality of life of patients using NSAIDs in the form of diclofenac sodium and etoricoxib.
Results : The results showed that moderate positive correlation between etoricoxib or diclofenac sodium therapy in OA patients decreasing utility value (0.294; 95% CI = 0.098 – 0.467; p = 0.003). A strong positive correlation was shown between etoricoxib or sodium therapy in OA patients and VAS (0.558; 95% CI = 0.402 – 0.682; p = <0.000). These results indicate that each therapeutic use of etoricoxib or diclofenac sodium can improve the utility value or VAS, or conversely.
Conclusion : The quality of life value of etoricoxib is better than diclofenac sodium, which is 0.924 and there is a positive correlation between the use of etoricoxib and diclofenac sodium in improving quality of life and VAS values in osteoarthritis patients.

Keywords : Diclofenac Sodium, Etoricoxib, Osteoarthritis, QALYs, Utility

INTRODUCTION

Osteoarthritis (OA) is the most common joint disease worldwide, affecting approximately 10% of men and 18% of women over the age of 60 years.[1] The pain and loss of function can be debilitating; in developing countries, the resulting socio-economic burden is substantial, costing between 1–0% and 2–5% of gross domestic product.[2] Traditionally, treatment of osteoarthritis consisted of pain management with joint replacement for end-stage disease.[3–5]

Management of OA has focused on symptom relief, given the limited understanding of etiopathogenesis that hinders the development of appropriate disease-modifying drugs. According to regulations set by the American College of Rheumatology (ACR) and Osteoarthritis Research Society International (OARSI), a basic management of OA includes patient education and self-management, exercises such as strengthening, cardio, balance, neuromuscular, or mind-body exercises, as well as weight management for overweight or obese individuals. Additionally, for knee OA, the guidelines suggest alternative management such as aquatic exercise, walkers, topical and oral nonsteroidal anti-inflammatory drugs (NSAIDs), intra-articular steroid injections, and tibiofemoral bracing.[6, 7] NSAID drugs that are often used as osteoarthritis therapy are non-selective NSAIDs in the form of diclofenac sodium and for selective NSAIDs, etoricoxib.[8,9]

Although these two drugs have been widely used, there is still debate regarding the relative effectiveness and safety between etoricoxib and diclofenac sodium in improving the quality of life of OA patients. Some studies have shown that etoricoxib has a better safety profile regarding the risk of cardiovascular events compared to diclofenac sodium, but its effectiveness in improving overall quality of life still needs to be studied further. This study aims to determine the factors associated with the use of etoricoxib and diclofenac sodium, specifically while comparing the effectiveness of etoricoxib and diclofenac sodium in improving the quality of life of OA patients using the EQ 5D 5L questionnaire.[10,11]

METHODS

This study is an observational study with a cross-sectional study design. Data collection was conducted retrospectively with taking from patients medical record for the previous period and prospectively conducting quality of life data by follow up on the same subjects after the research has begun. This research have ethical approval number 481/UN6.KEP/EC/2024. Secondary data collection was carried out using medical records, while primary data collection to measure quality of life was measured using the EQ-5D-5L questionnaire in the period January 2023 to March 2024. The population in this study were all patients with a diagnosis of osteoarthritis who were undergoing outpatient care at Dr. Rivai Abdullah Hospital during the study period. The sampling technique used purposive sampling on all outpatients with OA at Dr. Rivai Abdullah Hospital in the period January 2023 to December 2023 who met the inclusion and exclusion criteria. The population of OA patients with diclofenac sodium therapy was 207 patients and etoricoxib therapy was 377 patients. Determination of sample size was calculated using the Lemeshow formula because the population size was known. The calculation of the study sample is as follows:

$$\text{Sample quantity of etoricoxib} = \frac{377.1{,}962^2 0{,}2.0{,}8}{0{,}1^2(377-1)+.1{,}96^2 0{,}2.0{,}8} = 53 \text{ patients}$$

$$\text{Sample quantity of diclofenac sodium} = \frac{207.1{,}962^2 0{,}2.0{,}8}{0{,}1^2(207-1)+.1{,}96^2 0{,}2.0{,}8} = 48 \text{ patients}$$

This research analyses data through several stages. First, univariate analysis was used to describe the characteristics of respondents in the form of frequencies and percentages. Second, bivariate analysis was run using the chi-square test to determine the factors associated with the use of sodium and etoricoxib drugs. Third, multivariate analysis with logistic regression test was performed to determine the most influential factors on the use of diclofenac sodium and etoricoxib drugs in OA patients. Fourth, to determine the correlation between the use of diclofenac sodium and etoricoxib drugs on improving the quality of life of OA patients, the Spearman test was conducted.

RESULTS

This study involved 101 outpatient OA patients consisting of 53 patients with etoricoxib therapy and 48 patients with diclofenac sodium therapy. The majority of patients were >60 years old (50.5%), female (73.3%), unemployed (58.4%), and primary school education level (62.4%). All patients were domiciled in Palembang and Banyuasin (100%). Table 1 presents the characteristics of the respondents.

Table 2 shows the results of bivariate analysis using chi-square. The results showed that employment status (p=0.014) was associated with the use of diclofenac sodium and etoricoxib therapy in OA outpatients.

Table 3 shows the results of multivariate analysis using logistic regression test conducted to determine the variables or factors that have the most influence on the use of diclofenac sodium and etoricoxib therapy in outpatient osteoarthritis patients.

TABLE 1
Characteristics of Osteoarthritis Patient Respondents Receiving Etoricoxib or Diclofenac Sodium Therapy

Characteristics	N	%
Age (years olds):		
18–39	0	0
40–59	50	49.5
> 60	51	50.5
Gender		
Male	27	26.7
Female	74	73.3
Employment status		
Work	42	41.6
Not Employed	59	58.4
Education level		
Basic Education	63	62.4
Secondary Education	38	37.6
Domicile		
Palembang or Banyuasin	101	101
Outside of Palembang or Banyuasin	0	0

TABLE 2
Factors Influencing NSAID Use in OA Patients' and 'Correlation Between NSAID Use and Quality of Life Scores

Respondent characteristics	*P* value	OR	95% CI
Ages	0.622	0.821	0.376 – 1.796
Gender	0.599	0.789	0.327 – 1.908
Employment status	0.014	0.896	0.314 – 0.830
Education Level	0.673	0.812	0.039 – 0.353
Number of diagnoses	0.248	0.876	0.127 – 0.273

TABLE 3
The Most Significant Factors Influencing the Administration of Etoricoxib or Diclofenac Sodium Therapy in Osteoarthritis Patients

Respondent characteristics	*P* value	OR	95% CI
Employment status (job)	0.128	1.271	0.934 – 1.731
Number of diagnoses	0.087	0.516	0.242 – 1.100

TABLE 4
Utility, QALY(s) and VAS Values of Osteoarthritis Patients Using Etoricoxib and Diclofenac Sodium Therapy

Therapy	Average utilities	Average QALY(s)	Average VAS
Etoricoxib	0.924	0.924	91.51
Diclofenac sodium	0.792	0.792	83

TABLE 5
Relationship Between Etoricoxib and Diclofenac Sodium Therapy Use and Utility and VAS Values

Factors	*P* value	Direction of Correlation	95% CI
Value of Utility	0.003	0.294	0.098 – 0.467
VAS	< 0.000	0.558	0.402 – 0.682

Utility and VAS values

Table 4 shows the mean values of utility, QALY, and VAS in Osteoarthritis patients using diclofenac sodium and etoricoxib. Respondents showed that the average utility in OA patients with etoricoxib therapy (0.924) was higher than patients with diclofenac sodium therapy (0.792).

Table 5 shows the results of the Spearman test analysis. There was a moderate positive correlation between etoricoxib or diclofenac sodium therapy in OA patients decreasing utility value (0.294; 95% CI = 0.098 – 0.467; $p = 0.003$). A strong positive correlation was shown between etoricoxib or sodium therapy in OA patients and VAS (0.558; 95% CI = 0.402 – 0.682; $p = <0.000$). These results indicate that each therapeutic use of etoricoxib or diclofenac sodium can improve the utility value or VAS, or conversely.

DISCUSSION

Outpatient with osteoarthritis (OA) at Dr. Rivai Abdullah Banyuasin Hospital in this study were mostly older than 60 years (50.5%), female (73.3%), Studies conducted in Turkey, USA, and Canada also showed similar results, with an average age of respondents of 60 years (Lee *et al*., 2017; Nur *et al*., 2018; Pagé *et al*., 2016). Aging has been widely attributed as the main etiologic cause of OA, due to articular cartilage losing water content, experiencing modifications in ECM composition, and chondrocyte depletion.[12,13] Osteoarthritis is most commonly experienced by women compared to men. This is supported by the findings of a meta-analysis, and women also have a higher risk of developing knee and hand OA, especially in the postmenopausal period, which is consistent with the results of our study.[14,15]

The results of the quality of life analysis showed that patients treated with etoricoxib had a utility of 0.924, indicating a near-perfect quality of life equal to 1, when compared to patients treated with diclofenac sodium with a utility of 0.792. While the spearman test analysis showed a significant positive correlation between the use of etoricoxib or diclofenac sodium therapy in reducing utility and VAS values in OA patients. The side effects of each drug type may be attributed to these results, previous studies have shown that etoricoxib has a lower risk of causing gastrointestinal side effects than diclofenac, but a higher risk of cardiovascular side effects is equally demonstrated by both drugs.[16–18] Nonetheless, a meta-analysis study still showed that treatment with diclofenac and etoricoxib were similar as the most effective NSAIDs for OA pain.[19]

A previous study conducted in four hospitals in the north of the West Bank of Palestine showed that older age, lower education level, and employment.[20] These findings are consistent with our study, where the majority of respondents were older than 60 years, had primary school education, and were not employed. Older age is associated with the effects of OA on physical activity, along with social withdrawal which will negatively affect their quality of life.[21] Lower education levels and unemployed patients have a significant influence on patients' quality of life.[20] This is a negative effect associated with less physical activity in patients, resulting in higher levels of stress and depression.[22–24] Cumulative exposure to physically strenuous work, heavy manual lifting, kneeling or squatting, and standing or walking, as well as past cumulative workload may be associated with hospitalization for knee OA.[25]

This study grouped occupations broadly without distinguishing specific physical characteristics (e.g., work duration, repetitive movements, or lifting load). As a cross-sectional design, it cannot establish temporality,

and the broad categorization may lead to non-differential misclassification, potentially underestimating the association between occupation and OA prevalence. Unmeasured confounding from specific occupational factors may also remain. Thus, findings should be interpreted cautiously, and future studies with more detailed exposure assessment are needed.

CONCLUSION

Etoricoxib was associated with higher utility and VAS scores compared to diclofenac sodium, indicating better quality of life outcomes in osteoarthritis patients, which is 0.924 and there is a positive correlation between the use of etoricoxib and diclofenac sodium in improving quality of life and VAS values in osteoarthritis patients

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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