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RATIONALITY OF PRESCRIBING ANALGETIC MEDICATIONS IN ELDERLY OSTEOARTHRITIS PATIENTS AT ASSUYUTHIYYAH PATI HOSPITAL

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Abstract

The increasing number of elderly raises many diseases including musculoskeletal disorders and osteoarthritis, which can cause joint pain. Incorrect treatment can cause toxicity, side effects, and reduced effectiveness of the drug given. The purpose of this study was to determine the rationality of prescribing analgesic drugs to elderly osteoarthritis patients at Assuyuthiyyah Pati Hospital for the January- December 2022 period. This type of research is quantitative and non-experimental with the sampling method using total sampling. The data collection method was retrospective with a sample of medical record data for elderly patients at Assuyuthiyyah Pati Hospital for the period January-December 2022. Data analysis used a frequency test. The results of this study found that the incidence of osteoarthritis was more common in women, the most common age of those who suffer from osteoarthritis is 60-75 years with the most comorbid disease being hypertension. The most frequently prescribed analgesic drug is meloxicam, and there is rationality for prescribing it in elderly osteoarthritis patients. In conclusion, judging by gender characteristics, women suffer more from osteoarthritis, namely 48 patients (75%), the most age of those who suffer from osteoarthritis, namely 60-75 years, 42 patients (65.6%) and the most comorbid disease, namely hypertension, as many as 11 patients (17.2%). The most frequently prescribed analgesic drug was meloxicam 43 prescriptions (60.6%) and rationality was 100% for the right indication, patient and time interval for administration as well as the right diagnosis 78.1%, the right drug 82.8% and the right dose 71, 9%.

Keywords: Rationality, analgesic drugs, osteoarthritis, elderly patients, medical records

INTRODUCTION

The increasing number of elderly people (seniors) gives rise to various kinds of problems for the elderly, their families and society. This is directly proportional to the emergence of several diseases in the elderly. Musculoskeletal disorders experienced by non-specific arthritis patients include myalgia, osteoarthritis and gouty arthritis, arthralgia, low back pain and frozen shoulder (Tandirerung et al., 2019). Arthritis is a general term to refer to cases of inflammation in the joint area. Osteoarthritis is a disease that occurs due to inflammation of the joints that occurs in the cartilage which is characterized by pain when pressure is placed on the affected joint. In more severe cases, pain can interfere with the patient's movement (Setiati et al., 2014). The rational use of medicines in health service facilities is an effort to develop health to achieve safe and quality health services.Based on the background above, it is necessary to evaluate the rationality of using analgesic drugs in elderly osteoarthritis patients at the Assuyuthiyyah Pati Hospital with the hope of increasing the rationality of drug prescribing at the Assuyuthiyyah Pati Hospital, especially for osteoarthritis patients

METHODS

This study was an analytical quantitative descriptive using a retrospective method for retrieving prescription indicator data, namely research based on existing data without treating test subjects. The location of this research was carried out at the Outpatient Installation of Assuyuthiyyah Pati Hospital. The sample in this study is a prescription for elderly patients suffering from outpatient osteoarthritis at the Assuyuthiyyah Pati Hospital in January - December 2022. The instrument used in this research was

a patient medical record based on age, gender, diagnosis of comorbidities, dose size given, and frequency of administration and the literature used is the Rheumatology Pocket Book, Pharmacotherapy Handbook, Drug Information Handbook, Rheumatoid Arthritis Book, Pharmaceutical Care for Arthritis. Analyze the rationality of prescribing analgesic drugs based on the accuracy of diagnosis, drug, indication, patient, dose and administration time interval., dose and administration time interval.

RESULTS AND DISCUSSION

From the results of data collection regarding the rationality of prescribing analgesic drugs for elderly patients at the Assuyuthiyyah Pati Hospital for the January-December 2022 period, 156 prescriptions were obtained for elderly osteoarthritis patients and the inclusion criteria were 64 prescriptions.

Results of analgesic drug prescribing for elderly osteoarthritis patients based on patient characteristics

a. Gender Characterized

From the results of prescribing analgesic drugs for elderly osteoarthritis patients at the Assuyuthiyyah Pati Hospital, based on gender, the majority of those suffering from osteoarthritis were female, namely 48 patients with a percentage of 75%.

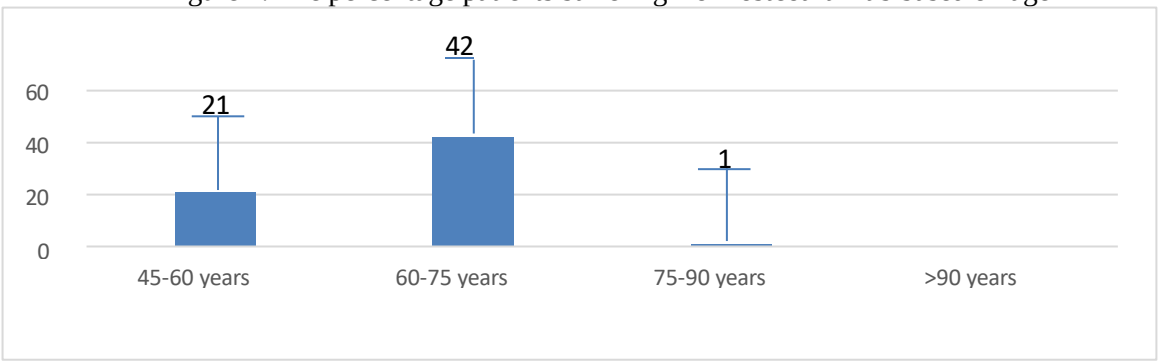
No.	Gender	Number	Persentage (%)
1.	Female	48	75
2.	Male	16	25
	Total	**64**	**100**

Table 1. Prescribing based on gender characteristics

Based on Table 1, women have a higher risk of being diagnosed with osteoarthritis than men. This is due to anatomical differences, previous health history, and genetic and hormonal problems. These results are in line with research by Putri et al. (2022) that more female patients suffer from osteoarthritis, namely 28 patients (73.7%) because women are at higher risk of suffering from knee OA, especially women aged over 50 years. This research is also in line with Sasono et al. (2020) who said that the hormone estrogen in women influences the incidence of OA.

b. Age Characterized

Figure 1. The percentage patients suffering from osteoarthritis based on age



Based on Figure 1 above, osteoarthritis patients at Assuyuthiyyah Pati Hospital are mostly aged 60-75 years, with 42 patients (65.6%). The results of this research are in line with the research of Khairunnisa et al. (2022) which was conducted at UNS Hospital from 7 June – 19 July 2021, that the research subjects were mostly aged 60-69 years, amounting to 56%. According to Loeser (2013), as we age, cartilage experiences ageing, subchondral tissue becomes stiffer, and neuromuscular changes occur which increases the risk of osteoarthritis

c. Comorbidities Characterized

Table 2. Percentage of Characterized Based on Comorbidities

Comorbidities	Number Comorbidities	Percentage (%)
Without comorbidities	19	29,7
Hypertension + Gastritis	3	4,7
Diabetes mellitus (DM)	4	6,3
Hypertension + Chronic Kidney Disease	1	1,6
Hypertension	11	17,2
DM + Hypertension	2	3,1
Hypertension + Hypercholesterolemia + Dyspepsia	1	1,6
Neuropathy	3	4,7
Acute respiratory infections	2	3,1
Hypercholesterolemia	1	1,6
Lower Back Pain	4	6,3
Frozen Shoulder	1	1,6
Dyspepsia	2	3,1
Hypertension + Lower Back Pain	2	3,1
Lower Back Pain + Gastritis	1	1,6
Hypertension + Gout	1	3,3
DM + Gastritis	2	3,1
GAD + Gastritis	1	1,6
Hypertension + Neuropathy + Vertigo	1	1,6
Gastritis	1	1,6
Hypertension + Vertigo	1	1,6
Total	64	**100,0**

Based on Table 2 above, the most common comorbidity suffered by elderly osteoarthritis patients at Assuyuthiyyah Pati Hospital for the January-December 2022 period is hypertension in 11 patients with a percentage of 17.2%. The results of this study are in line with research by Lo et al. (2022) that there is a statistically significant relationship between hypertension and radiographic knee osteoarthritis adjusted for BMI (Body Mass Index). The results of this study are also in line with research by Zhang et al. (2017) that meta-analysis studies show a significant relationship between hypertension and radiological and symptomatic knee osteoarthritis. In people with hypertension, blood vessels narrow which causes blood flow to the bones located beneath the cartilage to become limited. According to Vohra et al. (2015), limited blood flow to the cartilage causes the supply of blood and nutrients to the cartilage to be disrupted, causing cartilage damage.

d. Profile of Use of the Most Frequently Prescribed Analgesic Drugs

Table 3. Profile of Use of the Most Frequently Prescribed Analgesic Drugs

Medicine name	Number Medicinal Item	Percentage (%)
Meloxicam	43	60,6
Paracetamol	8	11,3
Etoricoxib	1	1,9
Diclofenac Sodium	16	22,5
Ibuprofen	3	4,2
Total	**71**	**100,0**

Based on Table 3 the most frequently prescribed analgesic drug is Meloxicam with 43 prescriptions with a percentage of 60.6%. According to Adiansyah et al. (2021), meloxicam is the most frequently prescribed therapeutic option because meloxicam works by selectively blocking the COX-2 enzyme. Therefore, the gastrointestinal side effects associated with COX-2 inhibition are much milder than those associated with COX-1 inhibition.The results of this research are in line with Saputri's (2021) research that the highest prescribing profile for osteoarthritis drugs in the Outpatient Pharmacy Installation at Haji Hospital Jakarta for the January – March 2020 period was meloxicam with a percentage of 34.6%. The results of this study are also in line with research by Nopitasari (2022) that the treatment for elderly OA patients at the NTB Provincial General Hospital that was most frequently prescribed was meloxicam at 49.31%.

d. Characterized by the appropriate diagnosis, treatment, the appropriate drugs, dosage and duration, the appropriate of prescribing analgesic drugs in elderly osteoarthritis patients

1. Accurate of diagnosis

From the research results, the correct diagnosis was obtained with a percentage of 100%. Presented in table 4

Table 4. The result of an accurate diagnosis

No.	Information	Number Prescription (N=64)	Persentage (%)
1.	Accurate	50	78,1
2.	Anaccurate	14	21,9
	Total	**64**	**100**

Based on Table 4, the results showed that the diagnosis was 78.1% accuracy from a total of 64 prescriptions that met the inclusion criteria. Prescribing medication is said to be rational if it meets the accuracy of the diagnosis. The diagnosis of osteoarthritis is confirmed by the patient's X-ray results which can be seen from the patient's medical record data at the hospital Assuyuthiyyah Pati at the time of data collection. X-ray results based on the Kellgren Lawrence reference standard diagnosed osteoarthritis. The 14 appropriate prescriptions were for patients diagnosed with osteoarthritis but no X-ray results. The results of this research are also by Samosir's (2018) research at the Singosari Community Health Center, Pematangsiantar City in 2018 which obtained 100% treatment results according to the condition experienced by the patient if the diagnosis was correct

2. Corrected medication prescribing

Table 5. The result of corrected medication prescribing

No.	Information	Number Prescription (N=64)	Persentage (%)
1.	Corrected	53	82,8
2.	Incorrected	11	17,2
	Total	**64**	**100**

Based on Table 5, the results showed that 53 prescriptions (82.8%) were correct for a total of 64 prescriptions that met the inclusion criteria. 53 prescriptions are the reference standard for Pharmaceutical Care for Rheumatoid Arthritis Patients where the medication prescribed is appropriate to the patient's condition. Where it is said that the medication is appropriate if the administration of the medication is by the accuracy of the therapeutic class the type of medication is appropriate to the diagnosis and the therapeutic benefits are proven. The 11 prescriptions (17.2%) that were inappropriate for medication were patients receiving NSAID therapy aged >60 years with comorbid diseases without being given gastrointestinal medication. According to research by Idacahyati et al. (2020) in the elderly, drug side effects often occur because the body's metabolism is getting weaker.

3. Appropriate drug indication

Table 6. The result of Appropriate drug indication

No.	Information	Number Prescription (N=64)	Persentage (%)
1.	Appropriate	64	100
2.	Inappropriate	–	–
Total		**64**	**100**

Based on Table 6, the results showed 100% appropriate indications from a total of 64 recipes that met the inclusion criteria. The administration of the drug is by the diagnosis and indications and has proven therapeutic benefits based on the reference standards of the Indonesian Rheumatology Association in 2014. For example, in patients who receive diclofenac sodium to reduce their pain. Giving analgesic drugs to osteoarthritis patients is intended to reduce pain without or accompanied by inflammation.

The results of this research are research by Isngadi (2018) at the Robert Wolter Mongisidi Manado TNI AD Hospital which obtained 100% accurate results indicating that the medication given was by the diagnostic indications experienced by the patient.

4. Correct of patient

Table 7. The result of the correct patient

No.	Information	Number Prescription (N=64)	Persentage (%)
1.	Correct patient	64	100
2.	Incorrect patient	–	–
Total		**64**	**100**

Based on Table 7, the percentage of patient accuracy is 100% based on the Drug Information Handbook literature. This shows that the prescription of analgesic drugs is appropriate to the patient's condition, and is not contraindicated by the patient's condition. This research is also in line with Avianty's (2017) research at PKU Muhammadiyah Hospital Yogyakarta for the period September 2016 – March 2017 which obtained 100% correct patient results.

5. Correct dosage

Table 8. The result of the correct dosage

No.	Information	Number Prescription (N=64)	Persentage (%)
1.	Correct dosage	46	71,9
2.	Incorrect dosage	18	28,1
	Total	**64**	**100**

Based on Table 8, 18 patients received prescriptions for incorrect doses based on the Pharmacotherapy Approach, 11th edition literature. Dipiro et.al (2020) Inappropriate prescriptions include patients who receive excessive dose therapy and patients who receive insufficient dose therapy. Patients who received excessive dose therapy were patients who received meloxicam 15 mg therapy in 2x1 doses. Based on the Pharmacotherapy Approach literature, 11th edition, the initial dose of meloxicam is 7.5 mg once a day and the dose can be increased to 15 mg once a day with a maximum dose of 15 mg once a day. So giving Meloxicam at a dose of 15 mg twice a day is not appropriate. Patients who received less dose therapy included patients who received paracetamol 250 mg 2 x 1, diclofenac sodium 25 mg 2 x 1, and ibuprofen 400 mg 1 x 1 and 2 x 1. Based on the Pharmacotherapy Approach literature, 11th edition, the dose of paracetamol is 325–500 mg 3 times a day with a dose of 4 grams per day. Meanwhile, the dose of diclofenac sodium for osteoarthritis is 100–150 mg per day divided into 2–3 times. Ibuprofen has a dose range of 1,200 -3,200 mg per day divided into 3-4 doses. According to research by Alifiah (2018), prescribing excessive doses of medication can increase the risk of side effects, and underprescribing

medication can result in the desired drug therapy not being achieved.

6. Correct dosing interval

Table 9. The result of the correct dosing interval

No.	Information	Number Prescription (N=64)	Persentage (%)
1.	Correct	64	100
2.	Incorrect	–	–
Total		**64**	**100**

This research on the exact time interval for administering medication to elderly osteoarthritis patients is by the Drug Information Handbook standards which can be seen in Appendix 9 page 92, that the use of meloxicam 1-2 times a day is a maximum of 15 mg per day because the half-life is around 20 hours. Meanwhile, the use of diclofenac sodium is 100-150 mg in 2-3 divided doses. For example, in the recapitulation of administration time intervals in attachment 9 page 92, patient number 9 received meloxicam once a day and paracetamol 3 times a day. In the Drug Information Handbook, meloxicam is taken 1-2 times a day and paracetamol 3-4 times a day. So these drugs are said to be at the right time interval for administration. The results of this research are also in line with research by Islamiyah et al. (2021) at the Bandung City Community Health Center which obtained 100% accurate results at the time interval for administering the drug. The time interval for administering the drug in a day must be considered because the time interval for administering the drug influences the desired therapeutic effect.

Conclusion

Prescribing analgesic drugs for elderly osteoarthritis patients at Assuyuthiyyah Pati Hospital for the period January-December 2022, that female gender characteristics 75%, ages 60-75 years suffer most from osteoarthritis, amounting to 65.6%, 45 patients with comorbidities, the most common comorbidity is hypertension at 17.2%

References

Adiansyah, E. E. P. S., Ariyani, H. and Hendera. 2021. Literature study of the effects of using non-steroidal anti-inflammatory drugs (NSAIDs) on the gastrointestinal system. Journal of Current Pharmaceutical Sciences, 5(1): 418– 428.

Alifiah, B. W. 2018. Evaluation of the rationality of analgesic use in hip osteoarthritis patients with total HIP replacement at the Prof. DR. R Soeharso Orthopedic Hospital, Surakarta in 2017. Thesis published. Surakarta: Undergraduate Program at the Faculty of Pharmacy, Muhammadiyah University of Surakarta

Avianty, D. I. K. A. 2017. Rationality of drug use and therapeutic outcomes for outpatient osteoarthritis patients at RSPKU Muhammadiyah Yogyakarta for the period September 2016 - March 2017. Thesis published. Yogyakarta: Gadjah Mada University Undergraduate Program.

DiPiro JT, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells, dan L. Michael Posey. 2020, Pharmacotherapy: A Pathophysiologic Approach 11th edition, McGraw-Hill Education Publiser

Idacahyati, K., Nofianti, T., Aswa, G.A. et al. 2020. Relationship between the incidence of non-steroidal anti-inflammatory side effects with age and gender. Indonesian Journal of Pharmacy and Pharmaceutical Sciences, 6(2): 56.

Islamiyah, A. N., Suherman, L.P., Ambarsundari, et al. 2021. Study of antidiarrheal prescribing patterns for children in Bandung City Health Centers. Pharmacoscript, 4(1): 41–57.

Isngadi S,N,I,P, 2018, Evaluation of the Use of Nsaid (Nonsteroidal Anti-Inflammatory Drug) in Osteoarthritis Outpatients at the TNI Ad Robert Wolter Mongisidi Hospital, Manado

Khairunnisa, A. D., Tandiyo, D. K. and Hastami, Y. 2022. The relationship between the waist and hip circumference ratio (RLPP) and the degree of pain in knee osteoarthritis patients at UNS Hospital. Plexus Medical Journal, 1(1): 24–31.

Lo, K., Au, M., Ni, J., et al. 2022. Association between hypertension and osteoarthritis: A systematic review and meta-analysis of observational studies. Journal of Orthopedic Translation, 32: 12–20.

Loeser, R. F. 2013. Aging processes and the development of osteoarthritis, Current Opinion in Rheumatology, 23(1): 1–7.

Nopitasari, B. L. 2022. Study of drug use in elderly osteoarthritis patients in the outpatient installation of the NTB Provincial General Hospital for the 2019 period. Lumbung Pharmacy; Journal of Pharmaceutical Sciences.3(2): 246–253.

Putri, R. A. A., Scientist, M. I. and Darmawan. 2022. Factors associated with the incidence of knee osteoarthritis in farmers in Bhakti Mulya village, Bengkayang district. Journal of Medicine and Health, 6(2): 169–179.

Samosir, W. 2018. The rationality of using NSAIDs in rheumatic osteoarthritis outpatients at the Singosari Community Health Center, Pematangsiantar City in 2018. 2-tricks: Tunas-Tunas Health Research, 8(11): 94–100.

Saputri, A. D. 2021. Profile of osteoarthritis drug prescribing in the outpatient pharmacy installation at Haji Hospital Jakarta for the period January – March 2020. Scientific paper published. Jakarta: Health Polytechnic Diploma Study Program, Ministry of Health, Jakarta II.

Sasono, B., Amanda, N. A. and Desak, N. S. S. D. 2020. Dominant factors in osteoarthritis sufferers at RSUD dr. Mohamad Soewandhie, Surabaya, Indonesia', Udayana Medika Journal, 9(11): 1–7.

Setiati, S., Alwi, I., Sudoyo, A. W., et al. 2014. Internal medicine. Jakarta: Interna Publishing.

Sun, X., Zhen, X., Hu, X., et al. 2019. Osteoarthritis in the middle-aged and elderly in China: Prevalence and influencing factors. International Journal of Environmental Research and Public Health, 16(23).

Tandirerung, F. J., Male, H. D. C. and Mutiarasari, D. 2019. The relationship between body mass index and musculoskeletal disorders in pre-elderly and elderly patients at Kamonji Health Center, Palu. Tadulako Health Journal, 5(2): 9–17

Vohra, I., Singh, A., Ali, S.,. 2015. Correlation of hypertension with the severity of osteoarthritis of knee. *International Journal of Biomedical Research*, 6(05) : 5.

Zhang, Y. M., Wang, J. dan Liu, X. G. 2017. Association between hypertension and risk of knee osteoarthritis. *Medicine (United States)*, 96(32) : 1–7.