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Health Consequences of Repeated Non-Prescription Analgesic Use Among Adults Experiencing Recurrent Musculoskeletal Pain

Venu Anand Das Vaishnav[1*] and Neetish Kumar[2]

[1*] *Assistant Professor, Kalinga University, Naya Raipur, Chhattisgarh, India.*

E-mail: ku.venuananddasvaishnav@kalingauniversity.ac.in,

Orcid: https://orcid.org/0009-0005-3775-6156

[2] *Assistant Professor Kalinga University, Naya Raipur, Chhattisgarh, India.*

E-mail: ku.neetishkumar@kalingauniversity.ac.in, Orcid: https://orcid.org/0009-0008-2685-8458

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Abstract

The use of non-prescription analgesics is prevalent in adults who suffer from chronic musculoskeletal pain. While the use of such medication may be able to alleviate pain temporarily, improper usage of the medication can lead to some health problems, especially if the user goes beyond the prescribed dose, takes multiple types of medication simultaneously or uses medication without having full knowledge of the dangers. The health implications that can result from repeated use of non-prescribed analgesics need to be known. In this research, the health implications that can arise from repeated use of non-prescribed analgesics will be assessed. The study focuses on common problems mentioned such as gastrointestinal problems, issues associated with kidneys, heart problems, and liver damage depending on the type of the analgesic, dose, period of time of usage, and personal health condition. Another factor considered is the significance of pain level, availability of OTC drugs, perception of their efficiency, and lack of consultations with medical experts influencing recurring usage of medicines. There is a need for differentiation between correct temporary usage and recurring or long-lasting usage, which should be evaluated. Better awareness among patients, clear instructions regarding medications, and timely medical consultation can prevent unnecessary adverse effects caused by the wrong use of medications.

Keywords: Non-Prescription Analgesics, Musculoskeletal Pain, Repeated Medication Use, Adverse Health Effects, Self-Medication, Medication Safety.

1 INTRODUCTION

1.1 Background of Recurrent Musculoskeletal Pain

Pain that affects the muscles, joints, bones, tendons, and their adjoining structures is referred to as musculoskeletal pain. This type of pain may arise from physical injuries or other related health issues. Many adults suffer from recurrent musculoskeletal pain, which may impair their ability to perform daily tasks and affect their general well-being. Individuals who experience repeated episodes of pain involving their musculoskeletal system have to manage symptoms and see doctors often. Those adults who suffer from recurrent pain may require medications such as analgesics to manage their symptoms

and allow them to function normally in their daily personal and professional life. Persistent musculoskeletal pain can cause individuals to take drugs to relieve the pain. The relationship between pain, taking painkillers, health care usage, and disability has been attempted to be established through studies conducted on individuals with chronic pain conditions (Standnes et al., 2024).

Repeated instances of pain can force people to take any possible way to access drugs to help them solve their problem. Although analgesics will help in providing temporary relief, continued use needs some consideration of dosages, frequency, duration, and the side effects experienced. It is thus important to get information about the drug usage patterns among individuals experiencing frequent musculoskeletal pain.

1.2 Use of Non-Prescription Analgesics for Pain Relief

Analgesics sold over the counter are medications that do not need a prescription and are often used for the treatment of pain and suffering. Over-the-counter analgesics can be made up of paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen and naproxen, depending on the regulations in the locality as well as availability of the drugs. The ease of access as well as convenience of the drugs may result in some individuals consuming them without consulting a doctor. Over-the-counter analgesics can assist in pain relief and aid in the performance of daily activities, but repeated use becomes a source of concern in cases where excessive amounts are taken or the duration is too long.

The topic of using analgesics without medical supervision among people who suffer from musculoskeletal pain has been studied, with researchers finding that the use of non-prescribed medications is one of the components of pain management behavior (Engelbrecht et al., 2024). Self-medication with analgesics may also be affected by previous experience with the medications, their efficacy, and personal factors. A national survey of Spanish people studied various factors that were associated with self-medicated analgesic use, focusing on the importance of personal factors in analyzing the behavior (Carrasco-Garrido et al., 2014). Thus, the analysis of the use of non-prescribed analgesics may reveal more about the ways in which adults manage pain and its health implications.

1.3 Research Problem, Objectives, and Significance of the Study

However, even though there are many non-prescription analgesics available in today's world, the frequent use of analgesics by adults suffering from recurrent musculoskeletal pain could raise issues related to drug safety. People could be taking analgesics on a frequent basis in order to control the recurring pain without realizing the possible repercussions of their frequent or improper use. The dose, frequency, duration, and concomitant use of medicines may result in differences in exposure and risks to health.

The main goal of this study is to evaluate the effects on health of repeated use of non-prescription analgesics by adults suffering from recurrent musculoskeletal pain. In addition to that, the study will

aim at evaluating the practices of self-medication and common analgesics being used. It will also assess the factors influencing repeated drug usage. Specific emphasis is put on the medication frequency, duration of usage, issues faced by patients, and health outcomes. The importance of the study is based on its ability to contribute towards raising medication awareness among adults with recurrent musculoskeletal pain. Evaluation of the practice of repeated analgesic use can prove helpful in identifying those people in need of counseling, risk assessment, or medical evaluation.

2 REVIEW OF LITERATURE

2.1 Patterns of Non-Prescription Analgesic Use and Self-Medication

Self-medication is a term used to describe the use of medicine by individuals to treat their symptoms without having the need for prescriptions and advice from any health professional for every incidence. Over-the-counter analgesics are usually applied in the treatment of pain disorders because of their availability and ease of being a fast remedy. With the scenario involving recurring pain conditions of the musculoskeletal system among adults, the experience of self-medication may arise because of the following reasons: pain recurrence, previous medication that was effective, and the fact that pain is manageable without any medical personnel's intervention.

In one study of patients using analgesics as over-the-counter drugs, factors of pain drug taking were investigated among patients, indicating the significance of taking into account their perception and experience in order to understand the use of analgesics (Mehuys et al., 2019). Regular use can include differences in the frequency of taking medication, the period of its use, and also the choice of analgesic products. This is because the administration of drugs beyond what the doctor's instructions call for results in a higher probability of having side effects. Therefore, the evaluation of self-medication practice requires not only the examination of drug taking but also the assessment of its regularity and conditions.

2.2 Common Analgesics Used for Musculoskeletal Pain

Over-the-counter painkillers for musculoskeletal pains include paracetamol and NSAIDs; however, it is possible that there will be some differences between countries with regard to the usage of these analgesics. Usually, NSAIDs are administered because of their anti-inflammatory and analgesic action. These medications can be applied when it comes to inflammation and pain associated with joints and muscles. Still, the use of such drugs as well as their appropriateness depends on the kind of pain and patient's health condition.

The studies devoted to the safety of coxibs and NSAIDs discuss not only benefits but also disadvantages associated with the use of these drugs, emphasizing the need to evaluate them from the perspective of health issues (Pham & Hirschberg, 2005). Moreover, the analysis of the existing gaps in NSAID prescriptions has paid attention to the situations when the application of NSAIDs is not recommended because of possible risks, related to their usage (Wirth et al., 2024). Thus, it can be

concluded that the choice of analgesics for treatment of repetitive musculoskeletal pain should not depend only on availability or efficiency. Medication should be used with taking into account its instructions, dosages, duration of use, and personal risks.

2.3 Adverse Health Effects of Repeated Analgesic Use

The use of analgesics may also pose certain health problems, especially with high drug dosage, its long-term administration and in case of pre-existing health problems. NSAIDs can pose gastrointestinal, cardiovascular and renal health risks. Among gastrointestinal effects, there are irritation, ulcers and gastrointestinal bleeding, and cardiovascular risks can relate to high blood pressure and cardiovascular events. The role of renal health risks can also not be ruled out, especially if patients suffer from existing renal disorders or other health risks. In particular, the review article dedicated to the cardiovascular effects and safety of non-aspirin NSAIDs underlined the necessity of taking into account cardiovascular health risks when administering these drugs for pain relief (Schjerning et al., 2020). Some studies also explored ways to reduce cardiovascular, gastrointestinal and renal risks of NSAIDs (Davies et al., 2006).

Moreover, adverse effects in relation to the gastrointestinal system and the cardiovascular system have been highlighted in the literature concerning NSAIDs' safety and need to be considered in case of repeated use of this type of medications (Domper Arnal et al., 2022). Another study focused on the gastrointestinal and cardiovascular side effects of NSAIDs, which confirmed the significance of the mentioned issue for clinical pain management (Jones et al., 2008). The safety of medication usage becomes especially relevant in case of adult patients who use analgesics without any professional control. Recommendations on the treatment using NSAIDs in cases of hypertension and/or cardiovascular, renal and gastrointestinal diseases stress the need to consider patients' health status (Szeto et al., 2020).

2.4 Patient-Related Factors and Research Gap

Individual variables could be responsible for the increased and persistent use of non-prescription analgesics by adults with recurrent musculoskeletal pain. Such individual variables are pain intensity, personal history with analgesics, perception of effectiveness, availability of analgesics, knowledge on medication instructions, and health-seeking attitude. People who gain temporary pain relief through using the same medicine can continue to do that every time they get pain, and others might choose to treat themselves because they feel that their problems are not serious enough to seek medical help. Lacking knowledge of side effects and proper dosages could also be responsible for persistent use of medications without due regard to safety of such practice.

Prior studies have looked at the topic of analgesics self-medication, patient-related variables, and risks involved with using NSAIDs. But what are the health implications of repeated self-medication with analgesics among adults with recurrent musculoskeletal pain? A systematic look at medication patterns such as frequency of use, duration of use, and type of medication may be associated with

various health impacts, whereas patient-related variables may affect the continuation of self-medication. A specific look at repeated analgesic use patterns, health impacts reported, and patient-related variables may bring more clarity on medication safety among these patients. The current study attempts to fill this gap through analyzing repeated self-medication with analgesics among adults with recurrent musculoskeletal pain.

3 METHODOLOGY

3.1 Research Design and Study Framework

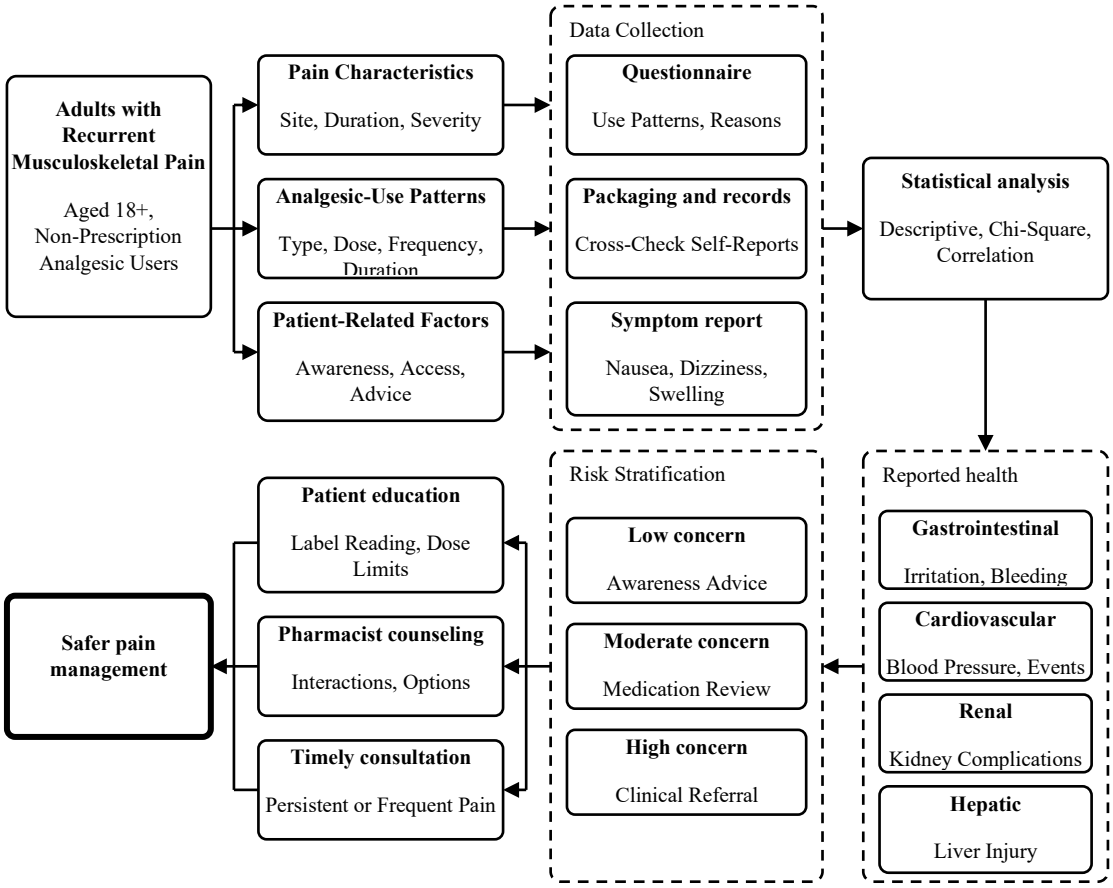


Figure 1: Study Framework for Assessing the Health Consequences of Repeated Non-Prescription Analgesic Use in Adults with Recurrent Musculoskeletal Pain

The research methodology employed in the analysis of the health implications related to repeated analgesic use by adults suffering from recurrent musculoskeletal pain was cross-sectional in nature. The research framework was concerned with the connection between the pain features, patterns of analgesic use, and health implications resulting from such use. The repeated analgesic use was investigated in terms of the frequency and duration of analgesic use, the type of analgesics used, and the causes behind the self-medication behavior. The patient-related variables included the severity of pain, the efficacy of medication, the knowledge about the adverse effects, and access to health services.

Framework from figure 1 connects pain features, patterns of medication use, and patient characteristics to the information gathered and analyzed and the health outcomes reported by patients.

Such information is used for determining the level of drug safety concerns which can be low, moderate, or high.

3.2 Participant Selection and Pain-Related Characteristics

The target population for this study comprised adults aged 18 years and older who had recurrent musculoskeletal pain, which included back pain, neck pain, joint pain, muscle pain, or limb pain. The target population was chosen based on the participants' prior experience of repeated pain occurrences and use of non-prescribed analgesics to relieve the pain. Purposive sampling technique was found to be appropriate for recruiting participants having relevant experience with self-medicating. The participants needed to provide details about their pain conditions and analgesic usage. People suffering from acute medical cases or who were not able to provide reliable information about their medication use were excluded from the research sample. Age, gender, pain locations, pain duration, frequency of pain attacks, pain severity, and prior visit to the health facility for pain management were some characteristics recorded.

3.3 Assessment of Analgesic Use Patterns and Health Consequences

The usage pattern of analgesics was conducted using a well-designed questionnaire to collect data on types of non-prescription analgesics used, frequency of their usage, period of usage, dosages, and causes for taking medications. Commonly used medications were non-steroidal anti-inflammatory drugs (NSAIDs), paracetamol, and other non-prescription pain medications. The participants were also questioned about taking different medications together, taking medications having the same active substance, and following the directions from the packaging of medications. The evaluation of possible adverse health effects included symptoms such as gastric disorders, nausea, dizziness, blood pressure alterations, edema, and other symptoms that occurred during or after repeated analgesic usage. When it was possible, self-reported data were also compared with information from medications packaging, prescriptions, or medical records.

3.4 Measurement Framework, Statistical Analysis, and Ethical Considerations

These variables were grouped into demographic characteristics, pain factors, patterns of analgesics use, awareness of medication safety, and health consequences reported by participants. Repeated analgesic use pattern was defined in terms of factors such as how often they use medication, when they use it, and number of different types of medications used. The health consequences related to medication usage were identified using symptoms reported by the subjects. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to describe characteristics of the subjects and patterns of medication usage. Comparative and association statistics were used to examine the relationship between repeated analgesic use and reported health consequences. The appropriate statistical tests included chi-square test, independent sample t-test, and correlation analysis depending on variables used and their distribution. Ethics involved in this study include informed consent,

voluntariness, confidentiality, and proper handling of data gathered. Subjects were informed that the study cannot be used as substitute for professional medical consultation and advice.

4 RESULTS AND DISCUSSION

4.1 Participant Characteristics and Patterns of Repeated Analgesic Use

The analysis of participant characteristics constitutes an underlying base for the consideration of the use of non-prescription analgesics by adults experiencing repetitive musculoskeletal pain. Various characteristics including demographic and clinical such as age, gender, pain site, pain duration, and pain episodes' frequency are likely to have an impact on the choice and regularity of analgesic medication use. Medication-use characteristics include the determination of the most popular analgesic types, the frequency of consumption, and the period of self-medicating. Individuals may take analgesics sporadically during pain episodes or regularly if symptoms remain and recur. It is necessary to understand the findings by examining the connection between pain characteristics and medication consumption.

4.2 Reported Health Consequences and Medication-Related Risk Factors

However, repeated consumption of non-prescription analgesic medications may be related to various health problems depending on the kind of drug used, dosing, time period of use, and health status of patients. The evaluation of health problems associated with use of the drugs is based on complaints of participants regarding gastrointestinal problems, nausea, dizziness, swelling, and other side effects due to taking the medications. Special attention will be paid to the use of NSAIDs which may be connected to various gastrointestinal, cardiovascular, and renal problems, especially in people with pre-existing health problems and/or prolonged drug use.

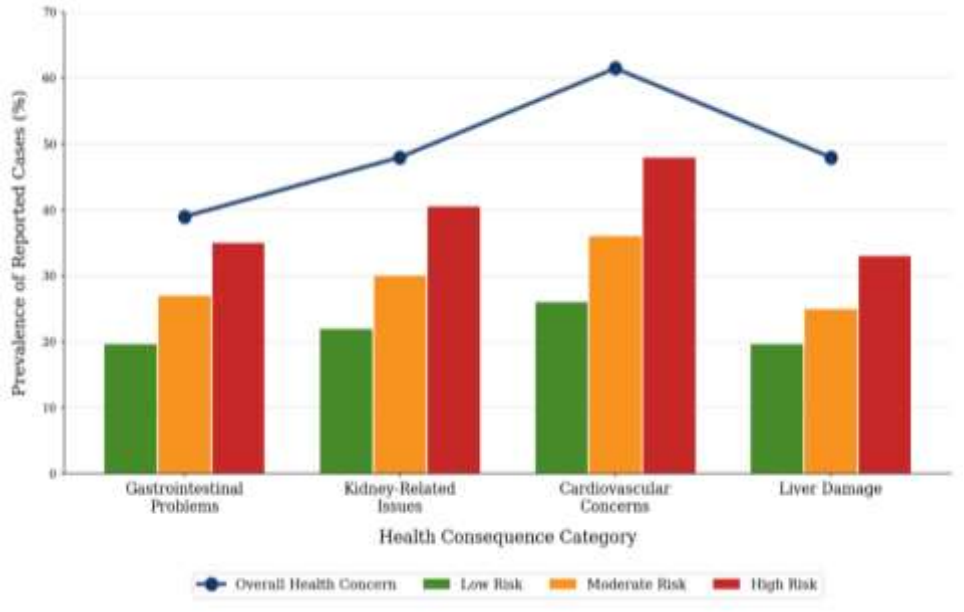


Figure 2: Comparative Graph of Health Consequences Associated with Repeated Non-Prescription Analgesic Use

Medication-related risk factors may be excessive dosing, combination of drugs with the same active ingredient, prolonged use of analgesic drugs, and insufficient knowledge of possible side effects. It is necessary to separate symptoms reported by the participants from adverse drug reactions since this is not a clinical study.

Figure 2 combined bar-and-line graph presents four major health consequences: gastrointestinal problems, kidney-related issues, cardiovascular concerns, and liver damage. It provides a visual comparison of medication-safety risk categories.

4.3 Innovative Risk-Stratification and Medication-Safety Framework for Repeated Analgesic Use

The creation of an innovative medication safety assessment can be considered for enabling the effective evaluation of adults who may need additional assistance in understanding how to use their analgesic medications repetitively and non-prescription. The assessment will take into consideration the following criteria, including pain features, medication use behavior, medication risks, and health effects caused by medication intake. Individuals can be evaluated based on various criteria, such as frequent intake of the medications, prolonged self-treatment, the use of several analgesics, lack of knowledge concerning the proper use of medications, and related health issues. Based on the above criteria, the proposed assessment may place patients in the category of low, moderate, or high medication safety concern. Such an assessment is not supposed to give a clinical diagnosis; its purpose is to raise awareness and provide appropriate assistance to patients.

As shown in table 1, the suggested classification system involves classifying issues related to medication safety based on patterns of analgesic use, risk factors, and required subsequent action. This categorization system serves to inform and refer, but not for clinical diagnosis.

Table 1. Proposed Risk-Stratification Framework for Repeated Non-Prescription Analgesic Use

Medication-Safety Concern Level	**Analgesic-Use Characteristics**	**Potential Risk Indicators**	**Recommended Action**
Low	Occasional Use Following Product Instructions	Short-Term Use, No Reported Adverse Symptoms, Awareness of Dosage Guidance	Continue Label-Guided Use and Monitor Recurring Pain
Moderate	Frequent Use or Repeated Self-Medication	Prolonged Use, Limited Risk Awareness, Recurring Symptoms, Use of Multiple Analgesics	Seek Pharmacist or healthcare Professional Guidance; Review Medication Use
High	Prolonged or Potentially Inappropriate Use	Exceeding Recommended Doses, Duplicate Active Ingredients, Reported Adverse Symptoms, Relevant Health Conditions	Prompt Professional Medication Review and Clinical Assessment

4.4 Implications for Self-Medication Awareness and Safer Pain Management

The importance of raising awareness among adult patients experiencing repeated episodes of musculoskeletal pain regarding the appropriate usage of OTC analgesics is extremely important based on the results obtained from this research. Although these medications are easily available, over consumption of the medication should be handled with caution regarding dosage and duration of the therapy. It is crucial to emphasize the importance of label checking, looking for duplications of active ingredients and getting expert advice in case of repeated pain in education programs. Pharmacies and healthcare professionals can help in this matter through drug counseling; interaction check and pain management recommendations. Alternative approaches for pain relief like exercises and physiotherapy can also be considered when needed.

5 CONCLUSION

5.1 Summary of Findings and Overall Conclusion

The objective of this research paper was to determine the effects on the health of the constant intake of non-medical analgesics by people experiencing musculoskeletal pain. The study model highlighted that the examination of the nature of the pain, medication-use habits, and potential health implications of their combination should be viewed as essential components of self-medication analysis. Frequent use of analgesics could depend on the recurrence rate of the pain condition, medication efficacy, availability of medication, and personal knowledge of medication-related risks. Evaluation of these factors would be useful for revealing unsafe medication-use behaviors that involve extended self-medication, improper dosages, and use of several analgesics.

5.2 Clinical Implications, Limitations, and Future Research Directions

The results of the investigation have significant implications for enhancing the awareness concerning medication safety and promoting safer pain management practices. Healthcare professionals and pharmacists can contribute to minimizing the medication risks by means of individual consultations, medication review, and education about proper dosing and length of treatment. The analysis of patients' pain profile and their painkiller intake may reveal those who need additional medical evaluation. However, it should be noted that due to the cross-sectional nature of the design used, there might be difficulties with establishing the causality between multiple uses of analgesics and their health effects. Moreover, recall bias can affect the self-report of the participants about their medication use and symptoms. In addition, the results obtained in a particular sample may not be applicable to all adult patients with musculoskeletal pain. Therefore, future research may benefit from the use of longitudinal study designs, larger and more diverse samples, as well as clinically validated medication outcomes.

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