

Understanding Anti-Inflammatory & NSAID Agents: A Public Awareness Study

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Abstract- *Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) represent one of the most widely prescribed as well as over-the-counter medications globally. They are routinely used for the management of pain, fever, and inflammation, and have become an integral part of both clinical practice and self-care. Despite their widespread availability and therapeutic value, public awareness regarding the safe use of NSAIDs remains inadequate. Many individuals consume these medications without appropriate medical guidance, leading to unmonitored and prolonged use. The misuse of NSAIDs is associated with several well-documented adverse effects, including gastrointestinal irritation, peptic ulceration, bleeding tendencies, renal impairment, and an increased risk of cardiovascular events. Lack of knowledge about proper dosage, contraindications, and drug interactions further increases the likelihood of preventable complications. This underscores the urgent need to strengthen patient education, encourage responsible prescribing, and regulate self-medication practices. Awareness campaigns, patient counselling, and the inclusion of clear, accessible information on drug labels can play a pivotal role in bridging the knowledge gap. Improving public understanding of NSAID use will not only enhance therapeutic outcomes but also significantly reduce the healthcare burden caused by adverse drug reactions.*

Keywords- NSAID's, Aspirin, defence mechanism, awareness, knowledge gap, symptoms, medical guidance, anti-inflammatory agents

I. INTRODUCTION

Inflammation is a natural defence mechanism of the human body, triggered in response to infections, injuries, or harmful stimuli. While it plays a crucial role in healing and protection, uncontrolled or prolonged inflammation can be detrimental, leading to persistent pain, tissue damage, swelling, and the progression of chronic diseases such as arthritis, cardiovascular disorders, and autoimmune conditions. To manage these conditions, anti-inflammatory agents are widely prescribed as they help reduce

inflammation, alleviate pain, and improve the quality of life in patients with both acute and chronic illnesses [1, 2].

Among these agents, Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) remain the most commonly used class [3]. They exert their action primarily by inhibiting cyclooxygenase enzymes (COX-1 and COX-2), which are responsible for the synthesis of prostaglandins -chemical mediators involved in pain perception, fever regulation, and the inflammatory response. By decreasing prostaglandin production, NSAIDs effectively reduce pain, fever, and swelling. Widely used examples include ibuprofen, aspirin, diclofenac, and naproxen, which are available through both prescription and over-the-counter formulations, making them easily accessible to the general population [4].

Despite their therapeutic benefits, NSAIDs are not free from risks. Prolonged or unsupervised consumption can cause gastrointestinal complications such as bleeding and peptic ulceration, while patients with kidney disease, cardiovascular disorders, or a history of gastric ulcers require special caution and medical supervision. Moreover, concurrent use with alcohol or anticoagulants like warfarin significantly increases bleeding risks.

Unfortunately, public awareness regarding these safety considerations remains inadequate [5]. Misuse, incorrect dosing, and self-medication practices are common, often resulting in preventable adverse drug reactions. Therefore, patient education, awareness campaigns, and clear labelling are essential to ensure the safe, effective, and rational use of NSAIDs.

II. LITERATURE REVIEW

Non-steroidal anti-inflammatory drugs (NSAIDs) are among the most widely used medications worldwide, primarily employed for the relief of pain, fever, and inflammation. They exert their effects by inhibiting cyclooxygenase enzymes (COX-1 and COX-2), thereby reducing prostaglandin synthesis, a central mediator in inflammatory pathways [6,7]. Despite their clinical benefits, several studies indicate that public awareness regarding the

safe use and potential risks of NSAIDs remains limited. For example, a systematic review and meta-analysis on self-medication practices in India reported that approximately 53.6% of the population engages in self-medication, with NSAIDs among the most frequently used drugs [2]. Similarly, a study among clinicians in Mumbai highlighted widespread prescribing of NSAID fixed-dose combinations even in contraindicated situations, reflecting gaps in rational drug use [8].

Gender-specific patterns have also been observed. Patil reported that 42% of urban Indian women self-medicated for dysmenorrhea, with over one-third relying on mefenamic acid or similar NSAIDs [9]. Internationally, surveys reveal that more than 20% of participants were unaware of gastrointestinal risks associated with NSAID use, and nearly half perceived them as completely safe due to over-the-counter availability [10]. The issue of pharmacovigilance has been emphasized in recent literature, noting that NSAIDs contribute significantly to adverse drug reactions in India, yet public knowledge about reporting systems and safe practices remains poor [3]. Collectively, these studies demonstrate a persistent gap in public knowledge regarding safe NSAID usage, highlighting the need for awareness campaigns, stricter regulation of over-the-counter availability, and improved patient counselling [11].

III. ASPIRIN AND ITS MARKET SIGNIFICANCE

Aspirin, a widely recognized NSAID, continues to maintain global relevance. According to the *Aspirin Global Market Report 2024* by The Business Research Company, the market grew from US\$2.47 billion in 2023 to US\$2.59 billion in 2024, representing a compound annual growth rate (CAGR) of 4.9%, and is projected to reach US\$3.2 billion by 2028. Key growth drivers include the rising prevalence of chronic conditions such as arthritis and cardiovascular disease, pharmaceutical innovations like the Vazalore capsule, and a global shift toward self-care practice [12]. The Asia-Pacific region emerged as the largest market in 2023, reflecting strong demand in emerging economies.

This market overview underscores aspirin's global significance, not only as a common over-the-counter drug but also as a growing health commodity. Its widespread availability and expanding applications reinforce the importance of public awareness regarding safe use, appropriate dosing, potential side effects, and self-medication practices [13].

IV. LINK TO CURRENT STUDY

The reviewed literature demonstrates that while NSAIDs, and aspirin in particular, are widely used and increasingly important in global health, public awareness of their safe use, potential side effects, and appropriate self-medication remains limited. Studies highlight significant gaps in knowledge across populations, including risks related to dosage, contraindications, and long-term use, as well as gender-specific patterns in self-medication. Coupled with the growing global market for aspirin and its broad availability, these findings underscore the need to systematically assess current public knowledge and perceptions. This research aims to address that gap by evaluating awareness levels, usage patterns, and safety practices related to aspirin among the general population, thereby providing insights that can inform education, policy, and public health initiatives.

V. METHODOLOGY

Purpose of the Study

The primary objective of this study was to evaluate public awareness regarding the use, benefits, and safety precautions of Aspirin, a widely used non-steroidal anti-inflammatory drug (NSAID). Aspirin is readily available over-the-counter and is commonly employed for pain relief, fever reduction, and cardiovascular prevention, including heart attack and stroke prophylaxis. Despite its widespread use, concerns remain about improper self-medication, lack of awareness of contraindications, and potential side effects such as gastrointestinal bleeding, hypersensitivity reactions, and Reye's syndrome. Assessing public knowledge on these aspects is essential for promoting safe and informed use. The study also aimed to investigate self-medication patterns and the sources of information relied upon by the public when deciding to use Aspirin.

Research Design

A cross-sectional descriptive survey design was employed, as it enables the collection of data from a defined population at a single point in time, allowing simultaneous assessment of knowledge, attitudes, and behaviours. The survey was conducted online over a period of one month, and participation was entirely voluntary. A total of 550 respondents completed the questionnaire. This design facilitated efficient data collection from a diverse sample, providing a comprehensive snapshot of current public awareness and practices regarding Aspirin use.

Survey Questionnaire

The primary research instrument was a structured, self-administered questionnaire developed using Google Forms. The questionnaire consisted of 17 questions organized into five sections. The Demographic Information section captured age, gender, and educational background to explore variations in awareness. The General Knowledge section assessed understanding of Aspirin's therapeutic uses, including its analgesic, antipyretic, anti-inflammatory, and antiplatelet effects. The Dosage and Precautions section included items related to correct dosage, contraindications, and safe use in special populations such as children, pregnant women, and individuals with comorbidities [14]. The Side Effects section evaluated awareness of risks, including gastrointestinal bleeding, hypersensitivity, and Reye's syndrome. The Self-Medication Practices section explored the frequency of use without prescription, reasons for self-medication, and preferred information sources, including healthcare professionals, family/friends, and online resources [15].

The questionnaire employed multiple-choice, yes/no, and short-answer items, providing both quantitative and qualitative insights. Its design emphasized clarity and simplicity to ensure accurate responses from participants with diverse educational backgrounds. This methodology allowed for a detailed evaluation of public knowledge, attitudes, and behaviours regarding Aspirin, identifying areas where awareness and education could be enhanced.

Sample Age Distribution

The survey included a total of 550 participants. The age distribution indicated that the majority were young adults aged 18–25 years, followed by progressively smaller proportions in the older age groups. Specifically, 331 participants (60.2%) were aged 18–25 years, 123 participants (22.3%) were aged 26–35 years, 59 participants (10.7%) were aged 36–45 years, and 37 participants (6.8%) were aged 46 years and above.

This distribution demonstrates that young adults represented the dominant group in the survey, likely reflecting their higher engagement with online platforms and surveys. In contrast, older respondents were comparatively underrepresented, which should be taken into account when interpreting the findings.

VI. ETHICAL CONSIDERATIONS

The study adhered to ethical research standards throughout:

- **Informed Consent:** Participants were provided with a consent statement at the start of the questionnaire and informed about the purpose of the study. No personal identifiers were collected.
- **Voluntary Participation:** Participation was entirely voluntary, with the option to withdraw at any time.
- **Anonymity:** Responses were anonymous and used solely for academic purposes.
- **Sensitive Data Handling:** Questions were neutrally designed to avoid discomfort or judgment.
- **Risk-Free Participation:** The study posed no physical or psychological risk.
- **Data Protection:** Responses were stored securely in Google Forms and later analyzed using password-protected files.
- **Ethical Compliance:** Although formal institutional review board approval was not required, the study followed principles of honesty, transparency, and respect for participants.

VII. RESULTS

The survey revealed varied knowledge and perceptions regarding Aspirin use. Pain relief (45.6%), fever reduction (16.5%), and heart attack prevention (9.7%) were the most recognized uses, while 10.7% were unsure. Only 43.7% correctly identified Aspirin as the active ingredient, with 26.6% selecting Acetaminophen. Common side effects included stomach upset (30%), allergic reactions (30%), and bleeding (21%), though only 18.6% had personally experienced them. For low-dose Aspirin, respondents cited pain relief (40.6%), heart attack prevention (25.7%), and stroke prevention (7.9%), with 36.3% unsure. Frequency of use varied: occasionally (45.8%), never (23.8%), daily (15.8%), and 14.9% unsure. Awareness of risks and safety was mixed: 44.6% noted potential kidney damage, 35.3% reported concerns with NSAID allergies, and 34.7% indicated use in ulcer patients should be medically supervised. Knowledge gaps were evident regarding therapy duration, bleeding risk, cognitive benefits, and pediatric use. For children under 18, 29.7% reported it should be used only under supervision, while 18.8% were unsure. Overall, the findings highlight significant gaps in public understanding of Aspirin's benefits, risks, and safe usage.

VIII. DISCUSSION

The survey conducted among 550 participants revealed both encouraging levels of awareness and persistent misconceptions regarding the use of aspirin. A considerable proportion of respondents (45.6%) correctly identified aspirin as a drug used primarily for pain relief. However, far fewer

participants recognized its critical preventive role in reducing the risk of heart attacks and strokes. This finding highlights a limited understanding of aspirin's cardio protective benefits, which is one of its most significant medical uses.

Knowledge about the drug's active ingredient was also lacking. Many respondents confused aspirin with other commonly used medications such as ibuprofen or acetaminophen, suggesting that the general population often struggles to differentiate between analgesics. Similarly, awareness of the correct low-dose aspirin (81 mg) prescribed for preventive therapy was limited, and misconceptions about the safe duration of use were common. These gaps in knowledge raise concerns about the potential for inappropriate self-medication and misuse.

When it came to side effects, only a minority of respondents reported having personal experiences, yet many were aware of possible risks, including gastrointestinal bleeding and stomach ulcers. Nonetheless, confusion persisted regarding aspirin's safety in patients with pre-existing ulcers, kidney disease, and especially in children under 18 years of age. The latter is of particular concern, as aspirin use in children carries the risk of Reye's syndrome, a rare but potentially life-threatening condition.

Overall, the findings demonstrate that while aspirin remains a widely used drug, public knowledge about its safe dosage, risks, and preventive benefits is inadequate. These insights underscore the importance of public health education, improved pharmacist counselling, and medical supervision to ensure the safe and effective use of aspirin.

IX. CONCLUSION

This survey clearly shows that although aspirin is widely known as a medicine for pain relief, public awareness about its safe dosage, preventive role in heart health, and possible side effects is still inadequate. Misconceptions, such as confusing aspirin with other medicines and lack of knowledge about risks in children or patients with ulcers, highlight gaps in community health education. From a public health perspective, these findings emphasize the importance of awareness campaigns, pharmacist counseling, and medical guidance [16]. Educating people about when and how aspirin should be used can reduce the risks of self-medication, prevent complications like bleeding, and ensure that its true benefits, especially in preventing heart attacks and strokes-are properly utilized. In conclusion, strengthening public awareness and health literacy about aspirin is essential for promoting safer practices and better health outcomes in society.

X. FUTURE RECOMMENDATIONS

Looking ahead, it is clear that more needs to be done to ensure people use aspirin safely and effectively. Public awareness campaigns can make a real difference by sharing simple, clear information about when aspirin should be used, the correct low-dose for heart protection, and the risks linked to unsupervised or prolonged use. Pharmacists, who are often the first point of contact when people buy medicines, can be encouraged to guide patients about dosage and possible side effects, helping to prevent common mistakes. Doctors, too, can play an important role by discussing aspirin use with patients at risk of heart disease and clearing up confusion with other painkillers. Clearer packaging and labeling, with easy-to-understand warnings, would further support safer use. Beyond this, teaching basic medicine safety in schools and community workshops could help build lifelong awareness. Finally, further studies in larger populations are needed to monitor progress. Together, these efforts can make aspirin use safer, more informed, and truly beneficial for society.

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