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Misuse of Non-SteroidalAntiInflammatory Drugs in Chronic hypertensive patients in samawah city

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Abstract

Nonsteroidal anti-inflammatory drugs (NSAIDs) are among the most commonly used and over-the-counter medications for pain relief and control of inflammation. Unsupervised NSAID ingestion may cause dangerous consequences by blocking blood pressure control in patients with chronic hypertension. These effects result from sodium and fluid retention, inhibition of vasodilatory prostaglandins, and increased vascular resistance. NSAIDs may also antagonize antihypertensive drugs, particularly the angiotensin-converting enzyme inhibitors and the angiotensin receptor blockers. This study was conducted to examine the effect of nonsteroidal agent abuse on the blood pressure of hypertensive patients in Samawah city, Iraq, and assess the level of abuse, pattern of intake, patient knowledge of risks, and compliance with prescribed antihypertensive medications .

The sample consisted of 150 hypertensive patients, of whom most were in the 46 to 60-year age group; females made up 70.7% of the total. Forty-seven percent of the cohort used NSAIDs, with 56.7% of users doing so without medical guidance. A higher prevalence of change in blood pressure was also found in NSAID users (33.3%), among whom 22% experienced an elevation in blood pressure. Although statistical tests did not significant to show a significant difference in systolic or diastolicpressure between users and nonusers of these medications, the clinical implications are nonetheless interesting. Furthermore, the knowledge gap was high, with 62% of participants being unaware of the cardiovascular and renal risks of NSAID use. A weak, but statistically significant correlation was found between medication adherence and systolic pressure and the number of first-line antihypertensive drugs, and diastolic pressure .

In conclusion, the misuse of NSAIDs is common and can be devastating for patients with high blood pressure, especially low health literacy patients. These data highlight the importance of patient education, improved physician-patient communication, and the adoption of safer, evidence-based alternatives for pain management to reduce blood-pressure instability and associated complications .

Keywords: chronic hypertension, nonsteroidal anti- inflammatory drugs, Iraq.

Introduction

The interaction of management of hypertension and the non- steroidal anti-inflammatory drugs (NSAIDs) is an issue of clinical challenge, which is particularly important because hypertension and the use of NSAIDs are both so common worldwide. [1] Hypertension represents a prevalent global burden of health (being present in more than one billion people) and is responsible for some 9.4 million deaths annually globally. It is a key risk factor for cardiovascular diseases, such as coronary artery disease (CAD), heart failure, stroke peripheral arterial disease, and chronic kidney disease.[2] Hypertension is often associated with other comorbidities, including obesity's diabetes. and dyslipidemia, which increases the risk even more for various complications.

Even if effective treatments are available, many patients remain untreated or receive inadequate treatment .[3] Blood pressure is determined by genetic, hormonal, and environmental factors, and values that are slightly higher than the so-called “normotensive” range are associated with a significant increase in cardiovascular risk. Age, sex, health habits, and other medical conditions all contribute to a person's vulnerability to high blood pressure. If hypertension is not treated, it may lead to a heart attack, stroke, or kidney failure.[4] That is why early recognition and correct treatment are very important. Knowing the causes and risk factors of hypertension can help us control and prevent the disease. [5] The World Health Organization has found that rates for hypertension are increasing in both developed and developing nations. Every year, millions of people die; they primarily die from cardiovascular events, including heart attacks and strokes.[6] Hence, the management of hypertension is one of the most crucial public health objectives worldwide.[7]

Nonsteroidal anti-flammatory drugs or nonsteroidal anti- inflammatory drugs, for short, called NSAIDs, are readily available by prescription and over the counter.[8] Common examples include ibuprofen, naproxen, and aspirin, and are amongst the most widely used medications in the world.[9]. They are employed in therapies that cover a full spectrum of disorders, ranging from acute types of pain and inflammation to chronic diseases such as arthritis[10]. NSAIDs are also successful as anti- inflammatory agents in conditions such as tendinitis, bursitis, and autoimmune diseases [11]. Nonetheless, there are significant risks associated with the liberal use of NSAIDs. Gastrointestinal ulcers, gastritis and bleeding, renal impairment, cardiovascular risk potentiation due primarily to anti-platelet effects, haemorrhagic diathesis, Hypersensitivity including rashes and a range of urticarial from mild erythema to angio-oedema; hepatic toxicities also may occur. [12] Consequently, the use of NSAIDs needs to be considered on a risk- benefit basis in every patient [13].

NSAIDs are successful in reducing the symptoms and signs of pain, inflammation, yet they pose a particularly difficult challenge for hypertensive patients. Data clearly show that NSAID use increases blood pressure, compromises antihypertensive treatment, and increases the risk of CV events (in particular with chronic administration). The inappropriate use of NSAIDs in this group is a complex problem, largely driven by patient factors. Knowledge of these determinants is important for interventions to be effective in decreasing inappropriate use of NSAIDs as well as their consequences.

A major contributor to misuse is patients’ unawareness of the dangers of NSAIDs on blood pressure control and cardiovascular health. Many are also unaware that NSAIDs can negate the effect of antihypertensive and exacerbate preexisting hypertension. The literature has repeatedly shown that this knowledge deficit leads to the uncontrolled use of NSAIDs, often in order to attenuate pain complaints

and without regard to their potential wider harm to health [14].

Aim of the Study

This study aims to assess the impact of nonsteroidal anti- inflammatory drug (NSAID) abuse on hypertensive subjects in Samawa City, Iraq. It is designed to ascertain the prevalence of NSAID abuse, patterns, and consequences of misuse on blood pressure control, knowledge in patients and health care providers about potential risks, and management strategies to minimize risk

Patients and Methods

Study Design

A cross-sectional study design was used to assess the impact of NSAID abuse on blood pressure control among the hypertensive patients using a pre-tested questionnaire.

Study Population

The study population included hypertensive patients in Samawa City, Iraq, who were users of NSAIs either at the time or previously.

Inclusion Criteria

Adults formally diagnosed with hypertension.

Patients using NSAIDs at presentation or history of use. Residents of Samawa City.

Exclusion Criteria

Patients who had not been diagnosed with hypertension. Never a user of NSAIDs.

Subjects with missing or unreliable answersinteropRequire

VALIDATION

Subjects who gave any invalid or incomplete responses were omitted from the study.

Study Setting

The study was done in different health centers and community settings in Samawa City. Structured field data were obtained from hypertensive patients.

Sample (Participants)

A total of 150 hypertensive patients were enrolled through convenience sampling.

Instruments

The main instrument for data collection was a structured questionnaire containing 23 items in seven parts to obtain detailed patient information.

Section 1: Demographic Data

This part was used to collect demographic background such as age, gender, level of education, and profession.

Section 2: Clinical Features: Clinical Features

This portion included seven questions on medical information, including time since diagnosis of hypertension, current antihypertensive medication and dosages' compliance with prescribed treatment, perceived efficacy of therapyand self-reported blood pressure change related to NSAID use. Patients who reported changes were asked to report the nature of the changes.

Section 3: Lifestyle Factors – Included four questions related to dietary habits, frequency of physical activity, smoking status, and alcohol consumption.

Section 4: General health perception – Two items that evaluate the patients' global self-perception of health and knowledge of risks related to NSAID use in hypertensive persons.
Section 5: NSAID Utilization - It included four questions about current consumption of OTC non-steroidal anti-inflammatory drugs (NSAIDs), frequency of taking them, history of use without medical consultation, and reasons for self-medication without consult.
Section 6: Blood Pressure Measurement Information on blood pressure measurement was collected using two questions: the last time BP was taken, and how often they took measurements at home.
Section 7: Other Information -Permitted patients to offer other comments or information they deemed pertinent to the study population.

Data Collection

The data were collected from paper and computer-based questionnaires, as well as interviews conducted directly by the research team with patients at academic centers and community locations. Manually collected and digital responses were filed, preprocessed in Microsoft Excel, and transferred for comprehensive statistical computing.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed under SPSS. Descriptive statistics were used to describe the sample (means, standard deviation, percentages, and frequencies). Bivariate data and p-values were used to examine the relationship between NSAID use and BP control .

Results

In terms of age structure, 55.3% of participants were aged 46-60 years, and 29.3% were aged 60+ (predominantly middle-aged and older adults). Females accounted for 70.7% of the sample, and this may interfere with the generalizability of the results. Regarding education, 76% of respondents had less than a high school education, which may limit health literacy and medication adherence. In addition, 68% reported unemployment, which implies financial constraints that may hinder access to routine healthcare and treatment.

Table 5.1: Distribution of Participants According to Demographic Characteristics.

		Frequency.	Percent.
Age	Under 18	0	0
	18-30	4	2.7
	31-45	19	12.7
	46-60	83	55.3
	Over. 60	44	29.3

		F	%
Sex	Male	44	29.3
	Female	106	70.7
	Total		
Educational Level	Less than high school	114	76
	High school graduate	12	8.0
	Some college	3	2.0
	College graduat	19	12.7
	Postgraduate	2	1.3
	Total		
Employment. Status	Employed	22	14.7
	Unemployed	102	68.0
	Retired	12	8
	Student	3	2.0
	Other	11	7.3

Description of the hypertension duration varied among the study participants; 40.7% of the participants were diagnosed for 1-5 years, while 31.3% were diagnosed for more than 10 years, which highlights the chronic nature of the disease and the associated long-term management issues.

Regarding treatment, the most commonly used antihypertensive drugs were angiotensin receptor blockers (26%), angiotensin-converting enzyme inhibitors (24%), and not specified (24%.(

Medication adherence was relatively good: 70% of patients reported always taking their prescribed regimen. However, a minority (8%) of participants reported infrequent adherence to their medications; these participants were at great risk for uncontrolled hypertension. Most respondents (70.7%) felt their prescribed therapy was good for controlling their BP.

Regarding the treatment with NSAIDs, 33.3% of users reported alterations in BP due to the use of these drugs, with a greater proportion of this effect being BP increase (22%).

Table 5.2: Distribution of Clinical Characteristics of Participants

How long have you been diagnosed with hypertension?	**Less than 1 year**	**16**	**10.7**
	1-5 years	**61**	**40.7**
	6-10 years	**26**	**17.3**
	Over 10 years	**47**	**31.3**
Current Blood Pressure Medications (Check all that apply)	**ACE inhibitors (e.g., enalapril, lisinopril)**	**36**	**24.0**
	Angiotensin II receptor blockers (ARBs) (e.g., losartan, valsartan	**39**	**26.0**
	Beta-blockers (e.g., metoprolol, propranolol)	**17**	**11.3**
	Calcium channel blockers (e.g., amlodipine, nifedipine	**15**	**10.0**
	Diuretics (e.g., hydrochlorothiazide, furosemide	**7**	**4.7**
	Other	**36**	**24.0**
Antihypertensive Medication Dose	**Low**	**53**	**35.3**
	Moderate	**79**	**52.7**
	High	**18**	**12.0**
How often do you take your antihypertensive medication as prescribed	**Always**	**105**	**70.0**
	Often	**9**	**6.0**
	Sometimes	**20**	**13.3**
	Rarely	**12**	**8.0**
	Never	**4**	**2.7**
Do you feel that your antihypertensive medication effectively controls your blood pressure?	**Yes, completely**	**106**	**70.7**
	Yes, to some extent	**38**	**25.3**
	No, not at all	**6**	**4.0**
•Have you experienced any changes in your blood pressure levels that you attribute to NSAID use?	**Yes**	**50**	**33.3**
	No	**99**	**66.0**
	Not sure	**0**	**0**
If yes, please describe the observed changes:	**Increase in blood pressure**	**33**	**22.0**
	Decrease in blood pressure	**15**	**10.0**
	No noticeable change		

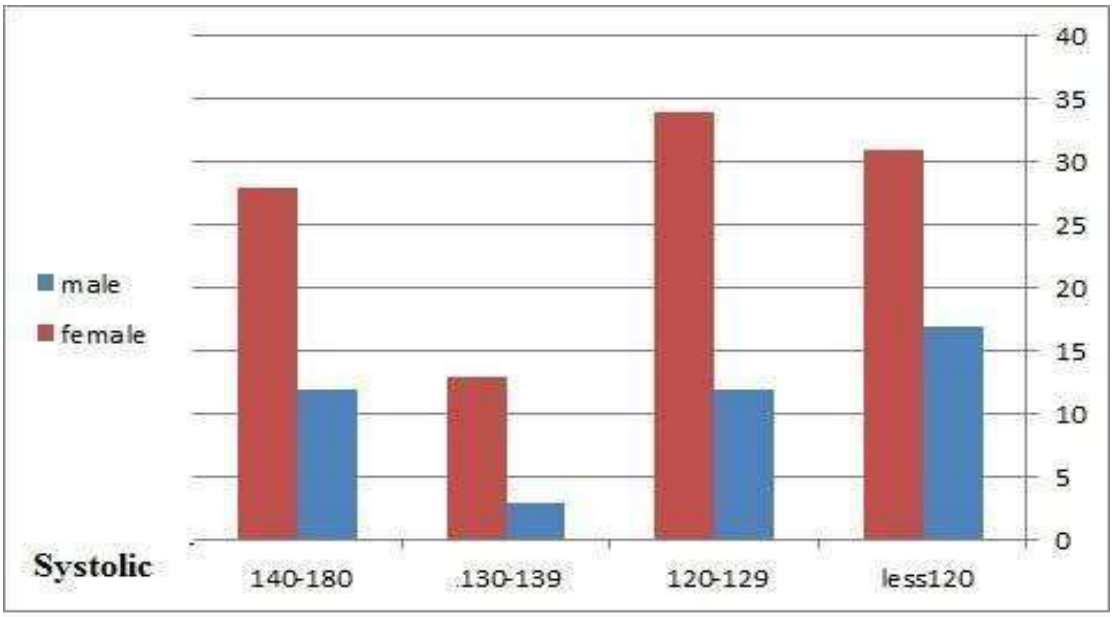

Figure 5.1: Bar chart showing the relationship between categories of systolic blood pressure and gender.

No significant relationship between gender and systolic blood pressure categories was observed ($p > 0.05$); however, clinically, trends suggest differences in blood pressure distribution by gender

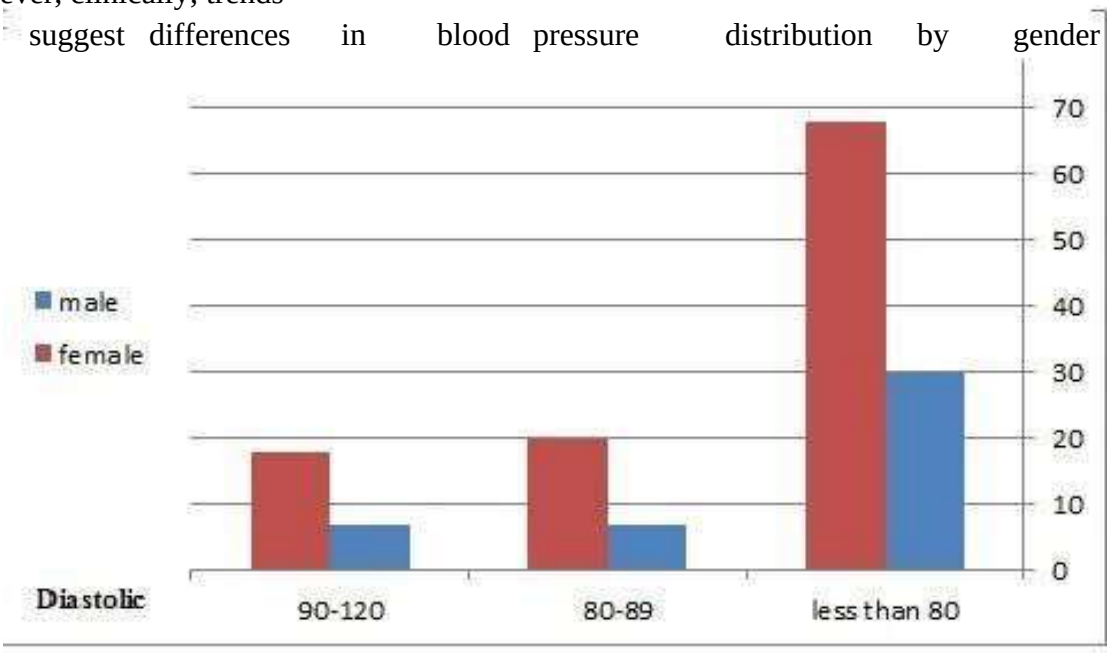

Figure 5.2 shows a curve fit to parameter estimates of the relationship between diastolic blood pressure and gender (left-hand axis) and mean blood pressure (right-hand axis).

Gender did not have a significant effect on DBP ($p > 0.05$), although clinical patterns suggest the possibility of gender-related differences.

Regarding overall health perception, most participants described their health as fair (40.7%) or poor (22%), and they appeared concerned about their well-being. Knowledge about the possible risks of taking NSAIDs in patients with hypertension was minimal, with only 38% of study participants showing adequate knowledge on the subject, and therefore, urgent need for better patient education.

NSAIDs were used pretty often, by 40.7% of the participants. Importantly, the highest number (56.7%) of users took these drugs without advice from a medical professional, mainly for pain relief.

Variables	Class	F.	%
using any over-the-counter NSAIDs for pain relief	yes	61	40.7
	no	89	59.3
do you use NSAIDs per week?	Less than once a week	25	16.7
	1-2 times a week	20	13.3
	3-5 times a week	9	6.0
	Daily	7	4.7
used NSAIDs without consulting your healthcare provider?	yes	85	56.7
	no	65	43.3
If yes, please specify the reasons for using NSAIDs without consultation:	Pain relief	61	40.7
	Inflammation	22	14.7
	Other	1	0.7
	Total	84	56.0
How would you rate your overall health	Excellent	15	10.0
	Good	41	27.3
	Fair	61	40.7
	Poor	33	22.0
potential risks of NSAID use in hypertensive patients	Yes	57	38.0
	No	93	62.0

5.4:Distribution of General Health Perception Among Participants

Discussion

The present study results (i.e., the largest difference was observed in the 46–60 years age group, followed by those over 60 years) also suggest a possible health benefit among elderly hypertensive subjects. This finding is in line with previous reports, which have consistently shown an age-related escalated risk of hypertension. Young adults (<45 years) were under-represented in both the Likoma and Karonga populations, which is potentially indicative of delayed diagnosis or poor health-seeking behaviour amongst this group.

Patients had been hypertensive for more than one year, highlighting the chronic nature of their condition and the need for long- term management with dietary modification as well, in view of implications on management, particularly regarding interactions with non-steroidal anti-inflammatory drugs (NSAIDs). A large proportion of patients were prescribed ARBs and ACEIs, since these have well- established efficacy for the treatment of hypertension and are considered relatively safe in terms of renal function. However, the benefits of both types are often reduced by NSAID intake.

About one-third of the individuals in the study claimed to be experiencing changes in their blood pressure because of the use of NSAIDs, and a significant percentage showed high blood pressure readings. This observation corresponds to the well-described effects of NSAIDs on renal physiology, including inhibition of prostaglandin synthesis, sodium retention, and increased vascular resistance. The latter effects are of special importance for patients dependent on the renin- angiotensin-aldosterone system (e.g., those being prepped with ACEIs or ARBs). Conversely, a small number of patients reported decreased blood pressure, presumably due to NSAID-mediated inhibition of renin synthesis. Such a reduction was not observed in the majority of participants. This may be because NSAIDs have individual effects which may be dependent on dose, concomitant administration of other medications (such as diuretics), and renal function.

Blood pressure control:

The overall results showed that although most subjects had normal systolic readings, a significant proportion had stage II hypertension, indicating inadequate blood pressure control in this population. Diastolic readings were also better managed, although the low home monitoring rate (23.3%) indicates a possible barrier to participants in the management of hypertension, as well as the importance of patient involvement in self-monitoring practice.

Although the risks of NSAID use are well known, there were no statistically significant differences observed between users and non-users of NSAIDs in terms of systolic or diastolic blood pressure. "This highlights the importance of single-patient monitoring and further study to learn more about patient-specific responses." Similarly, no significant correlations were found between gender or age and blood pressure. However, a slight trend towards higher blood pressure with increasing age was discernible, in line with physiological ageing processes described in other studies.

In contrast, the effects of different NSAIDs on blood pressure have been variable, as found in previous studies. For example, Pope et al. (1993) reported that indomethacin and naproxen had a significantly positive effect on the blood pressure, while ibuprofen and aspirin had a more limited effect. Bavry et al (2011) highlighted the cardiovascular risk associated with long-term NSAID use in patients with hypertension.[15] In line with these findings, our study found a high prevalence of NSAID consumption among hypertensive patients, in which 56.7% consumed NSAIDs spontaneously. In comparison, 33.3%

reported changes in blood pressure, of which 22% had increases. Nonetheless, the statistical test indicated no significant difference in BP between NSAID users and non- NSAID users ($p > 0.05$), which might be explained by marked individual variation in response to NSAIDs, depending on NSAID types duration of use, doses and individual clinical characteristics**. [16**]

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