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Pattern of Analgesic Use among Iraqi Adults Residing in Baghdad: A Pilot Study of Over-the-Counter and Prescription Use

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ABSTRACT:

Background: Analgesics are widely used medicines, and non-prescription use may expose patients to avoidable adverse effects and drug interactions. Previous Iraqi studies have documented self-medication and over-the-counter (OTC) medicine use, but the present work was designed as a small pilot study in the general adult population of Baghdad to explore the feasibility of a Knowledge, Attitudes, and Practices (KAP) survey and to describe preliminary patterns of analgesic use.

Objective: To pilot a KAP questionnaire and describe analgesic-use patterns, sources of analgesics, reasons for use, awareness of potential drug interactions, and perceptions and practices related to analgesic safety among adults residing in Baghdad.

Methods: A descriptive cross-sectional pilot study was conducted in Baghdad, Iraq, from January to May 2026. Sixty adults were recruited by non-probability convenience sampling. Participants completed a structured questionnaire in Arabic through paper administration. The questionnaire covered demographic characteristics and KAP domains. Because individual-level data were not available for reconstruction of contingency tables, the analysis was limited to frequencies and percentages; no inferential statistical tests were justifiable.

Results: Thirty-nine of 60 participants (65.0%) reported analgesic use during the preceding 3 months. Paracetamol (30.0%), ibuprofen (25.0%), and diclofenac (18.3%) were the most frequently reported analgesics. Pharmacy was the reported source for 26 participants (43.3%), followed by a physician (18; 30.0%) and previous use (16; 26.7%). Only 17 participants (28.3%) reported awareness of potential drug interactions, whereas 20 (33.3%) reported no awareness and 23 (38.3%) were uncertain. Twenty-five participants (41.7%) regarded analgesic use as safe, 15 (25.0%) as sometimes safe, and 20 (33.3%) as unsafe.

Conclusion: This pilot study suggests that analgesic use and non-prescription acquisition are important areas for further investigation in Baghdad. The findings should not be interpreted as population prevalence estimates because of the small convenience sample and the limitations of the study-specific questionnaire. A larger study using a formally validated Arabic instrument and probability-based sampling is warranted.

INTRODUCTION

Analgesics are commonly used medicines for the management of pain. They include acetaminophen (paracetamol), nonsteroidal anti-inflammatory drugs (NSAIDs), local anesthetics, opioids, and other agents used in selected pain conditions. Paracetamol has analgesic and antipyretic effects, whereas NSAIDs reduce prostaglandin synthesis through cyclooxygenase inhibition. Although these medicines are effective when appropriately used, NSAIDs may cause gastrointestinal, cardiovascular, renal, and hypersensitivity-related adverse effects, while inappropriate use of paracetamol may also result in clinically important toxicity [1–3].

Self-medication is generally understood as the selection and use of medicines by individuals to treat self-recognized symptoms without consultation with a healthcare professional. Self-medication is a frequent practice throughout the world, with prevalence rates ranging from 32.5–81.5%, per various research [4]. The oral availability and accessibility of many analgesics make self-medication particularly feasible. Previous work in Iraq has described frequent analgesic use for headache, general body pain, and other minor conditions, with community pharmacies and non-physician recommendations contributing to medicine acquisition [5].

Recent Iraqi evidence also supports the importance of this issue. A study of pharmacy students in Baghdad reported a high prevalence of self-medication and substantial reliance on pharmacists and OTC medicines [6]. More recently, a nationwide survey of Iraqi pharmacists found that NSAIDs were the most commonly recommended OTC medication category and identified continuing gaps in recognition of adverse drug reactions and drug interactions [7]. These studies, however, focused on specific populations—patients in a Baghdad community, pharmacy students, or pharmacists—rather than a small general-adult pilot sample examining analgesic use together with knowledge, attitudes, and practices.

This pilot study is intended to describe preliminary patterns in a general adult sample, assess the feasibility of a KAP-oriented questionnaire, identify potentially important knowledge and practice gaps, and generate information needed to design a larger, methodologically robust study. The study specifically examines analgesic use during the previous 3 months, reported sources and reasons for use, awareness of drug interactions, perceived safety, leaflet-reading behavior, timing and duration of use, receipt of advice, and dose-increase behavior.

METHODS

Study design and setting

This was a descriptive cross-sectional pilot study conducted in Baghdad, Iraq, between January and May 2026. The manuscript has been restructured according to the reporting principles of the STROBE statement for cross-sectional studies [8] as a reporting guideline rather than a validation instrument; it was used to improve transparency of reporting.

Participants and sampling

The submitted study included 60 adults residing in Baghdad. For the revised pilot-study framework, participants were defined as adults aged 18 years or older. Data were collected using a structured questionnaire in English, designed based on previous similar studies and modified to suit the study objectives.

Questionnaire and variables

A structured questionnaire (appendix 1), designed by the authors, was administered in Arabic and comprised four domains

Section A: Demographic Data:

- Gender • Age • Education level

Section B: Knowledge:

- Awareness of side effects • Awareness of drug interactions • Reading medication leaflet

Section C: Attitude

- Perception of safety of OTC analgesics • Concern about potential side effects

Section D: Practice

• Use of analgesics in the last 3 months • Type of analgesic used • Source of medication • Reason for use • Waiting time before use • Duration of use • Use of other advice • Dose increase behavior • Preventive use • Use without prescription

Inclusion criteria were adults aged 18 years and above, residents of Baghdad, people willing to participate in the study. While exclusion Criteria comprise: individuals under 18 years, those who did not complete the questionnaire, and individuals refused to participate. Physicians, pharmacists, nurses, or other healthcare professionals were not deliberately included.

The sources used to design the questionnaire included previous literature, particularly work addressing analgesic use, self-medication, and OTC medicine practices [4–6, 8–13]. Because the original item-level questionnaire was not supplied as a validated instrument, individual questions were treated as descriptive survey items rather than as a validated composite KAP scale.

Data collection

Participants were approached in Baghdad and completed the questionnaire either on paper, electronically. Responses were collected anonymously. Participants were informed about the aim of the study, and their participation was voluntary.

Ethical considerations

No approving institutional ethics committee with an approval/reference number was possible to provide. However, verbal informed consent was obtained from all participants, confidentiality and anonymity were maintained, and data were used only for research purposes.

Sample size and pilot rationale

The final sample consisted of 60 participants. The sample was not calculated to estimate a population prevalence with a specified precision. Instead, it represents a feasibility-oriented pilot sample used to explore questionnaire administration, response patterns, and preliminary signals that can inform a larger study. Consequently, the results are descriptive and should not be generalized to the wider Baghdad or Iraqi adult population.

Statistical analysis

Participant's continuous data were dealt with by MS Excel 2019 program and presented as frequencies and percentages. Percentages were recalculated from the reported frequencies using $N = 60$ as the denominator for the categorical items presented as single-response items in the source dataset and the $N=39$ denominator for multiple-response items with the use of analgesics from various sources. Since it is a pilot study, no inferential statistics were used.

RESULTS

Sixty participants were included in the final descriptive analysis. The sample comprised 31 males (51.7%) and 29 females (48.3%). Participants were distributed across four age categories: 18–25 years, 15 (25.0%); 26–35 years, 18 (30.0%); 36–50 years, 15 (25.0%); and 50 years or older, 12 (20.0%). Educational attainment was primary education in 19 participants (31.7%), secondary education in 9 (15.0%), college education in 15 (25.0%), and postgraduate education in 17 (28.3%).

Table 1. Demographic characteristics of the pilot sample ($N = 60$).

Variable	Category	n	%
Sex	Male	31	51.7
	Female	29	48.3
Age	18–25 years	15	25.0
	26–35 years	18	30.0
	36–50 years	15	25.0
	≥50 years	12	20.0
Education	Primary	19	31.7

	Secondary	9	15.0
	College	15	25.0
	Postgraduate	17	28.3

Knowledge-related responses are summarized in Table 2. Seventeen participants (28.3%) reported awareness of potential drug interactions, 20 (33.3%) reported no awareness, and 23 (38.3%) reported that they did not know. The most frequently reported reason for using medication without a prescription was lower cost (15; 25.0%), followed by physician unavailability (13; 21.7%), expectation of fast relief (12; 20.0%), privacy (11; 18.3%), and saving time (9; 15.0%).

Table 2. Knowledge-related responses (N = 60).

Item	Response	n	%
Awareness of drug interactions	Yes	17	28.3
	No	20	33.3
	Don't know	23	38.3
Reason for use without prescription	Cheap	15	25.0
	Doctor unavailable	13	21.7
	Fast relief	12	20.0
	Privacy	11	18.3
	Save time	9	15.0

Attitude-related responses are shown in Table 3. Fifteen participants (25.0%) were very concerned about medication use, 11 (18.3%) were somewhat concerned, 17 (28.3%) were neutral, and 17 (28.3%) were not concerned. Twenty-five participants (41.7%) considered analgesic use safe, 15 (25.0%) considered it safe only sometimes, and 20 (33.3%) did not consider it safe. Preventive use was reported as always by 19 participants (31.7%), often by 12 (20.0%), sometimes by 13 (21.7%), and never by 16 (26.7%).

Table 3. Attitude-related responses (N = 60).

Item	Response	n	%
Concern about medication use	Very concerned	15	25.0
	Somewhat	11	18.3
	Neutral	17	28.3
	Not concerned	17	28.3
Perceived safety of medication use	Yes	25	41.7
	Sometimes	15	25.0
	No	20	33.3

Preventive use	Always	19	31.7
	Often	12	20.0
	Sometimes	13	21.7
	Never	16	26.7

Frequency of analgesic use as practice is shown in Figure 1. Thirty-nine participants (65.0%) reported analgesic use during the preceding 3 months, whereas 21 (35.0%) did not. The reported analgesic categories were paracetamol (18; 30.0%), ibuprofen (15; 25.0%), diclofenac (11; 18.3%), and other NSAIDs (16; 26.7%).

Practice-related responses are summarized in Table 4, which shows that the reported source of medication was a pharmacy for 26 participants (43.3%), a physician for 18 (30.0%), and previous use for 16 (26.7%). Back pain was the most frequently reported reason for analgesic use (16; 26.7%), followed by fever (15; 25.0%), other reasons (11; 18.3%), menstrual pain (10; 16.7%), and headache (8; 13.3%). Regarding leaflet reading, 7 participants (11.7%) reported always reading the leaflet, 13 (21.7%) often, 24 (40.0%) sometimes, and 16 (26.7%) never. Previous experience was the most frequently reported source of recommendation (19; 31.7%), followed by a doctor (16; 26.7%), pharmacist (13; 21.7%), and friend/family (12; 20.0%).

For waiting time before using an analgesic, 9 participants (15.0%) reported immediate use, 21 (35.0%) waited several hours, 17 (28.3%) waited until the next day, and 13 (21.7%) tried a non-drug approach first. Duration of use was 1–2 days in 20 participants (33.3%), 3–5 days in 18 (30.0%), 1 week in 11 (18.3%), and more than 1 week in 11 (18.3%). Thirty-one participants (51.7%) reported receiving other advice, while 29 (48.3%) did not. Dose increase was reported by 36 participants (60.0%).

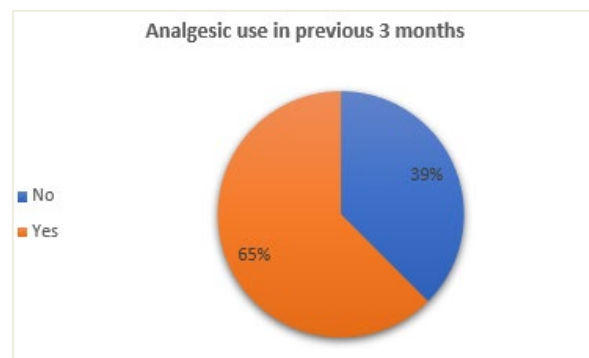


Figure 1: Frequency of Analgesics Intake (N=60)

Table 4-2: Practice-related responses (reported frequencies; denominator as supplied in the source dataset, N = 39).

Practice variable	Response	n = 39	%
Reported analgesic type	Paracetamol	12	30
	Ibuprofen	10	25
	Diclofenac	7	18.3
	Other NSAIDs*	10	26.7

Source of medication	Doctor	12	30
	Pharmacy	17	43.3
	Previous use	10	26.7
Reason for use	Back pain	10	26.7
	Fever	10	25
	Headache	5	13.3
	Menstrual pain	7	16.7
	Other	7	18.3
Reading medication leaflet	Always	5	11.7
	Often	8	21.7
	Sometimes	16	40
	Never	10	26.7
Source of recommendation	Doctor	10	26.7
	Pharmacist	8	21.7
	Friend/family	8	20
	Previous experience	12	31.7
Waiting time before use	Immediately	6	15
	After hours	14	35
	Next day	11	28.3
	Try non-drug first	8	21.7
Duration of use	1–2 days	13	33.3
	3–5 days	12	30
	1 week	7	18.3
	>1 week	7	18.3
Received other advice	Yes	20	51.7
	No	19	48.3

Increased the dose	Yes	23	60
	No	16	40

*Other NSAIDs reported in the source dataset included naproxen and Ponstan.

DISCUSSION

This pilot study provides preliminary descriptive information on analgesic use and related KAP domains among 60 adults in Baghdad. The main finding was that 39 participants (65.0%) reported analgesic use during the preceding 3 months. Paracetamol, ibuprofen, and diclofenac were the most frequently reported analgesic categories (Table 4-1). The results also indicate substantial reliance on pharmacies and previous experience as sources of analgesics, together with limited awareness of potential drug interactions (Table 4-2).

The findings are broadly compatible with previous Iraqi evidence showing that self-medication and non-prescription medicine use are common. Mohammed's Baghdad community study reported analgesic use for common pain conditions and highlighted non-physician sources of advice [5]. In another study of pharmacy students, 63.3% reported self-medication, with pharmacies being a major source of medicines and analgesics/antipyretics representing a substantial medication category [6]. A nationwide Iraqi pharmacist survey published in 2025 likewise found that NSAIDs were the most commonly recommended OTC medication category and identified gaps in recognition of adverse drug reactions and drug interactions [6]. These comparisons support the relevance of the topic while also emphasizing that the populations and methods differ substantially.

Only 28.3% of respondents reported awareness of potential drug interactions, while 38.3% reported that they did not know. This finding suggests that future studies should examine not only whether analgesics are obtained without prescription but also whether users understand contraindications, interactions, maximum doses, duration of use, and circumstances requiring professional assessment.

The pattern of reported sources is also important. Pharmacy acquisition accounted for 43.3% of responses, compared with 30.0% attributed to physicians and 26.7% to previous use. These findings should not be interpreted as evidence that pharmacists are responsible for inappropriate use. Community pharmacists can be an important source of appropriate advice, and the recent Iraqi pharmacist survey supports strengthening standardized counseling and medication-safety practices [9]. The appropriate implication is that both public education and consistent professional counseling should be strengthened.

The reported practice items also identify potentially useful targets for a larger study. In particular, 26.7% reported never reading the medication leaflet, 51.7% reported receiving additional advice, and 60.0% reported increasing the dose. These findings may be regarded as signals for hypothesis generation rather than estimates of unsafe analgesic behavior. A validated instrument and standardized definitions should be used in future work to determine whether dose escalation reflects appropriate adjustment, misunderstanding, or potentially unsafe self-medication.

Strengths and limitations

A pilot framing is appropriate to start with when interpreting the apparent frequency of analgesic use. A convenience sample of 60 adults cannot provide a reliable estimate of analgesic-use prevalence in Baghdad. The purpose of this work is better understood as feasibility assessment and preliminary signal detection. The study also provides an opportunity to identify deficiencies in the original questionnaire before undertaking a larger survey, particularly the need for consistent response options, formal translation and cultural adaptation, and psychometric validation.

A relative strength of this study could be its focus on transparent descriptive reporting. The study addresses a locally relevant medication-safety problem and includes several practical domains of analgesic use rather than focusing only on prevalence.

Several limitations must be considered. First, the sample was small and obtained by convenience sampling from Baghdad; therefore, external validity is limited and the results should not be generalized to Iraqi adults as a whole. Second, the questionnaire was study-specific and no formal validation, reliability assessment, or documented forward/backward translation

was available in the submitted materials. Third, an assessment of non-response bias is not possible at this stage. Moreover, the ethics committee name and approval number were not feasible as an integral necessity.

Implications for a future definitive study

A subsequent study should use a formally validated Arabic questionnaire developed through forward translation. The sampling strategy should be probability-based where feasible and should be more specific in the target population and exclusion of healthcare professionals whether it is part of the research question. Individual-level data should be emphasized so that associations between demographic factors and KAP outcomes can be analyzed appropriately. The larger study should also prespecify clinically relevant outcomes such as categorical frequency of analgesic use, maximum daily dose, duration, concurrent medicines, contraindications, and adverse effects.

CONCLUSION

This pilot cross-sectional KAP study found that 65.0% of the 60 participating adults reported analgesic use during the preceding 3 months. Paracetamol, ibuprofen, and diclofenac were the most frequently reported analgesics, and pharmacies were the most frequently reported source. Awareness of potential drug interactions was limited, while perceptions of analgesic safety varied.

Declarations

Ethics approval and consent to participate

The submitted manuscript states that participation was voluntary and that responses were collected anonymously. The name of the approving ethics committee and approval/reference number were not provided at this stage.

Consent for publication

Not applicable; no individually identifiable participant information is presented.

Conflict of Interest

Conflict of interest was reported.

Authors' contributions

Both authors shared the common CRediT roles as conceptualization, methodology, data curation, writing, and validation

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