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Article

Self-Medication Among Patients with Chronic Conditions in Iraq: A Cross-Sectional Analysis of Prevalence and Predictors in a Resource-Constrained Setting

Athraa Bzaiea [1,*], Abdulkareem Alhusseini[1], Hadeer Hussain[1], Rusul Yaaqoub[1], Farah Taher[1], Ahmed Mokhtar[2] and Mohamed Abdul Qadir[3]

[1]College of Pharmacy, National University of Science and Technology is a Private institution in Nasiriyah, Thi-Qar, Iraq

[2] Clinical Pharmacy, University of Khartoum, Sudan

[3] Pharmacy Practice, Sudan International University, Sudan

[*]**Corresponding author Email:** athraa.r.shuaibth@nust.edu.iq

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Abstract

Background: Patients with chronic diseases often resort to self-medication due to financial constraints and restricted access to healthcare. This behavior raises significant concerns, especially regarding antimicrobial resistance and adverse health effects. However, data on self-medication practices among chronically ill patients in Iraq remain limited. ***Objective:*** To assess the prevalence of self-medication among Iraqi patients with chronic diseases and identify the demographic, clinical, and sociocultural factors influencing this behavior. ***Methodology:*** A cross-sectional study was conducted between March and April 2025, involving 398 adult patients with chronic illnesses from both urban and rural areas in Iraq. Data were collected using a validated structured questionnaire and analyzed using descriptive statistics, Chi-square tests, and multivariable logistic regression to identify independent predictors of self-medication. ***Results:*** Self-medication was reported by 54.02% of participants. Higher rates were observed among women (58.1%), low-income individuals (67.4%), those with multiple chronic conditions (66.0%), and urban residents (89.3% vs. 59.6% rural; $p<0.001$). Independent predictors included urban residency (OR 3387.6), younger age (OR 0.85), and having multiple chronic conditions (OR 57.5) (all $p<0.001$). ***Conclusion:*** Self-medication is prevalent among chronically ill Iraqi patients and is significantly influenced by socioeconomic and clinical factors. Urgent policy and educational interventions are needed to mitigate associated risks.

Keywords: Self-medication, chronic disease, Iraq, antimicrobial resistance, urban-rural disparity, health behavior, pharmacist-led intervention.

1. Introduction

The practice of self-medication, which involves taking pharmaceutical substances without professional medical supervision, presents an expanding threat to global public health, affecting primarily people with chronic health conditions. People consume over-the-counter medications and leftover prescriptions or use alternative treatments after diagnosing themselves or receiving advice from non-professionals. Individuals with chronic medical conditions regularly administer self-treatment for recurring symptoms or minor perceived health problems without proper knowledge of medication risks.

The widespread adoption of self-medication practices results from multiple socioeconomic, structural, and cultural factors. Limited access to healthcare services, financial constraints, long consultation wait times, and personal medication experiences are the main drivers [3–5]. People see self-medication as both economical and quicker than

seeking professional medical care when they deal with minor or recurring symptoms. Despite the apparent advantages of self-medication, numerous serious risks, such as misdiagnosis and adverse drug reactions, along with dangerous drug interactions and antimicrobial resistance development, overshadow these benefits, particularly with antibiotic use [4,6].

Patients living with chronic conditions like diabetes and hypertension face significantly increased risk due to their complex medication regimens, which require sustained treatment over time [2,5,10]. Patients often think they understand their health needs well enough to modify or start treatments without checking with their doctors. Self-management behaviors among patients can produce harmful effects such as treatment failure and increased disease symptoms alongside delays in obtaining medical care. Patients with chronic conditions often keep unused medications at home and tend to reuse old prescriptions for new health problems.

Countries with poor healthcare access and lax pharmaceutical regulations show significantly higher instances of self-medication practices [5–7]. The Middle East and North Africa region feature structural health system gaps alongside cultural norms promoting self-care and easy access to non-prescription drugs, which intensify problems in many low- and middle-income countries [5,12–13].

The chronic disease burden continues to climb in Iraq due to persistent socio-political instability and economic challenges alongside insufficient healthcare resources. Existing research highlights an increasing pattern of self-medication practices within Iraq's population [5,11]. The research area suffers from an essential lack of specific data on self-medication behaviors among patients who have chronic illnesses in this context. The problem worsens due to cultural acceptance of self-care, pharmacy access without strong prescription rules, and inadequate health literacy. Health professionals must understand the scale and root causes of self-medication within this vulnerable population to create effective public health interventions.

This research investigates the prevalence of self-medication among patients with chronic diseases in Iraq, aiming to identify key demographic, clinical, and sociocultural factors that influence this behavior. The findings are intended to inform national policy development regarding prescription drug management, enhance pharmacist-based medication guidance, and promote health literacy by highlighting patterns and risk factors associated with self-medication. Furthermore, this research contributes to international discussions on proper medicine use. It seeks to mitigate the risks associated with improper self-medication in contexts characterized by fragile health systems and limited resources.

2. Materials and Methods

2.1 Study Design

Through a descriptive and analytical cross-sectional study, researchers examined the prevalence and factors that determine self-medication practices among chronic disease patients in Iraq. The study used a cross-sectional design to record behavioral patterns alongside their demographic, clinical and sociocultural predictors at a specific moment. The cross-sectional study design functions optimally for public health surveillance in scenarios where time constraints and resource limitations prevent extended longitudinal follow-up studies.

2.2 Study Setting and Population

This research took place across multiple governorates of Iraq to cover both urban and rural areas and achieve representative findings that improve external validity. The study recruited participants from outpatient clinics, community pharmacies, and primary healthcare centers. The selection of these locations depended on their role as regular access points for patients who manage chronic conditions.

The study included adult patients over 18 years old who had an established diagnosis of a chronic condition like hypertension or cardiovascular disease and attended the study sites for treatment follow-up or prescription refills. Research participants were accepted without regard to their gender or socioeconomic status as long as they had the mental capacity to provide informed consent and the ability to answer a structured questionnaire. The study excluded individuals with cognitive impairments, those facing acute medical conditions requiring emergency care, and participants who declined to participate.

2.3 Sample Size Determination

Researchers used the conventional formula for population proportion estimation in cross-sectional studies to calculate sample size.

$$n = Z^2 \times p \times (1 - p) / d^2$$

Where:

n = required sample size

Z stands for standard normal deviation, corresponding to a 95% confidence level of 1.96.

The estimated proportion of self-medication was assumed to be 50% for sample size optimization.

d = margin of error (5%)

The required minimum sample size calculation resulted in 384 participants. The research team increased the calculated sample size from 384 to 422 to account for an expected 10% non-response rate. The analysis included 398 participants who completed the questionnaire.

2.4 Sampling Technique

A non-probability convenience sampling technique was employed. The researchers approached participants successively throughout the working hours at each chosen health facility. To stratify sampling across urban and rural localities, efforts were undertaken to reduce selection bias and enhance representativeness. The recruitment strategy involved a distribution of participant enrollment throughout both weekdays and weekends to ensure a more diverse range of patient demographics.

2.5 Instrumentation and Data Collection Tool

To gather information, researchers used a structured questionnaire that had been pre-tested through an extensive review of past studies, World Health Organization guidelines, and public health expert consultations. Clinical pharmacists, epidemiologists, and social scientists validated the questionnaire's face and content. The research team also performed a pilot test with 20 chronic disease patients to improve the clarity of the questionnaire items and ensure cultural relevance.

The ultimate questionnaire consisted of five essential domains.

1. **Sociodemographic profile**: The sociodemographic profile includes age, gender, marital status, education, income, occupation, and residential location.
2. **Clinical characteristics**: The questionnaire asks about patients' chronic disease types, illness duration, and any additional health problems while monitoring their existing treatment plans.
3. **Self-medication behavior**: The study investigated self-medication behavior by tracking medication usage (prescription or OTC) without medical supervision during the previous six months.
4. **Healthcare access and availability**: The study assessed healthcare access based on the number of medical visits patients made, closeness to healthcare facilities and their assessments of how easy it is to obtain medical care.
5. **Sociocultural influences**: Self-medication practices are shaped by perceived norms, family or peer influence, pharmacist interactions, and traditional beliefs.

2.6 Data Collection Procedure

The research team collected data over six weeks, starting in March and ending in April 2025. Pharmacists and public health officers who underwent training performed face-to-face interviews in Arabic to guarantee that interviewees understood the questions. Forms were self-administered in locations where literacy levels were adequate. Interviews took place in secluded spaces inside health facilities to maintain privacy and reduce response bias.

Interviews lasted 15 to 25 minutes. The quality assurance protocol involved conducting random cross-checks on 10% of questionnaires and weekly debriefing sessions with data collectors to address and solve any arising problems.

2.7 Definition of Variables

Primary outcome variable: Self-medication describes the deliberate utilization of pharmaceutical products without professional medical advice to manage symptoms or complaints of chronic illnesses for the previous six months.

Independent variables: The independent variables of the study included age, gender, education level, income, number of chronic illnesses, disease duration, residential area (urban vs. rural), healthcare accessibility, and perceived sociocultural norms.

2.8 Statistical Analysis

The SPSS version 25.0 program received all completed questionnaires for statistical analysis after they were coded. Two independent researchers performed data double-entry to confirm accuracy. The research team applied descriptive statistics to provide an overview of the study population's demographic and clinical features. The analysis presented categorical variables as frequencies and percentages and summarized continuous variables through means and standard deviations.

The research team conducted a Chi-square bivariate analysis to study the relationship between self-medication

practices and various categorical independent variables. The analysis of continuous variables involved using independent t-tests. All variables demonstrating statistical significance with p-values less than 0.05 entered the multivariable logistic regression model.

The research team used multivariable logistic regression analysis to determine independent factors that predict self-medication. The study presented adjusted odds ratios (AORs) alongside their 95% confidence intervals (CIs). The study evaluated multicollinearity between variables through variance inflation factors (VIF). The researchers employed the Hosmer–Lemes how test to evaluate the model's goodness of fit.

2.9 Ethical Considerations

An Iraq Institutional Review Board (IRB) gave ethical clearance to the study protocol with Approval Number REC/NUST/05-2025. Before participating in the research, every participant received comprehensive details about the study's purpose and nature and signed a written informed consent form. The study team ensured participant confidentiality by anonymizing all data and storing it in encrypted digital formats accessible solely to the primary investigators.

The research followed the Declaration of Helsinki principles and national ethical standards for studies involving human participants.

2.10 Limitations

This study has several limitations. Findings cannot be generalized beyond the sampled regions because convenience sampling methodology was used. Individual responses can suffer from recall bias and social desirability bias, which becomes especially problematic when reporting sensitive activities like non-prescription drug usage. The cross-sectional study design prevents definitive causal conclusions, meaning the observed associations cannot be reliable predictors for future behaviors. The research offers a significant understanding of self-medication habits in a population lacking extensive study during a growing healthcare system pressure.

3. Results

3.1 Prevalence of Self-Medication

The frequency of self-treatment among chronic disease patients reached 54.02 percent, which shows that most study participants practice self-medication, as shown in Table 1. The high prevalence of unsupervised drug use demands targeted interventions to protect vulnerable populations from associated risks.

Table 1. Prevalence of Self-Medication

Category	Count (n=398)	Percentage (%)
Self-Medication	215	54.02
No Self-Medication	183	45.98

3.2 Demographic and Socioeconomic Characteristics

A higher percentage of women (58.1 percent) practiced self-medication when compared to men (41.9 percent). While gender was not associated significantly with self-treatment (p = 0.6880), income levels showed a significant trend: Individuals from low-income backgrounds tended to self-treat at a rate of 67.4% because they faced financial obstacles to obtaining health care, The data are summarized in Table 2.

Table 2. Demographic and Socioeconomic Characteristics and Self-Medication

Variable	Category	Self-medication (n=215)	No Self-Medication (n=183)	Total (n=398)	p-value
Gender	Male	90 (41.9%)	73 (39.9%)	163 (40.9%)	0.680
	Female	125 (58.1%)	110 (60.1%)	235 (59.1%)	
Education	Primary	60 (27.9%)	48 (26.2%)	108 (27.1%)	0.167
	Secondary	88 (40.9%)	61 (33.3%)	149 (37.4%)	
	Tertiary	67 (31.2%)	74 (40.4%)	141 (35.4%)	
Income	Low	145 (67.4%)	92 (50.3%)	237 (59.5%)	<0.05
	Middle	50 (23.3%)	65 (35.5%)	115 (28.9%)	

3.3 Clinical Characteristics

Patients suffering from three to four chronic diseases showed a 66.1% incidence rate of self-medication. In contrast, those with chronic diseases persisting for more than five years demonstrated a 74.0% rate of self-medication, as shown in Table 3.

Table 3. Clinical Characteristics and Self-Medication

Variable	Category	Self-medication (n=215)	No Self-Medication (n=183)	Total (n=398)	p-value
Chronic Conditions	1–2	73 (34.0%)	104 (56.8%)	177 (44.5%)	<0.001
	3–4	142 (66.0%)	79 (43.2%)	221 (55.5%)	
Disease Duration	≤5 years	56 (26.0%)	85 (46.4%)	141 (35.4%)	<0.001
	>5 years	159 (74.0%)	98 (53.6%)	257 (64.6%)	

The difficulty in managing several diseases for extended periods likely drives patients toward self-treatment since they feel familiar with their treatment methods.

3.4 Sociocultural Characteristics

The connection between urban residential living and self-treatment practices becomes evident through its high prevalence rate of 89.3% compared to 59.6%; statistical evidence supports this link (p 0.001) because urban areas offer better drugstore access.

The availability of healthcare services plays a role in self-treatment practices, and areas with limited healthcare access show higher prevalence rates, although this correlation lacks statistical significance (p = 0.182), as shown in Table 4.

Table 4. Sociocultural Characteristics and Self-Medication

Variable	Category	Self-medication (n=215)	No Self-Medication (n=183)	Total (n=398)	p-value
Urban Residence	Yes	192 (89.3%)	109 (59.6%)	301 (75.6%)	<0.001
	No	23 (10.7%)	74 (40.4%)	97 (24.4%)	
Accessibility	Poor	76 (35.3%)	34 (18.6%)	110 (27.6%)	0.182
	Fair	90 (41.9%)	88 (48.1%)	178 (44.7%)	
	Good	49 (22.8%)	61 (33.3%)	110 (27.6%)	

3.5 Logistic Regression Analysis

The logistic regression model revealed crucial predictors that influence self-treatment behavior. The strongest predictors for self-treatment were urban residents, with a coefficient of 3387.59 (p 0.001), and chronic diseases, with a coefficient of 57.49 (p 0.001).

The analysis found that younger children profoundly increased the likelihood of self-medication (OR=0.85, p 0.001), as shown in Table 5.

Table 5. Regression Analysis of Predictors of Self-Medication

Variable	Coefficient	Std. Error	z-value	p-value	Odds Ratio (95% CI)
Intercept	-7.361	1.311	-5.613	<0.001	-
Age	-0.164	0.023	-7.013	<0.001	0.85 (0.81–0.89)
Urban Residence	8.130	1.112	7.308	<0.001	3387.59 (383.93–9999.99)
Chronic Conditions	4.053	0.541	7.485	<0.001	57.49 (19.97–170.38)
Disease Duration	-0.050	0.044	-1.136	0.256	0.95 (0.87–1.04)

4. Discussion

This study demonstrates substantial evidence for widespread self-medication in Iraqi chronic condition patients due to multiple demographic, clinical, and sociocultural influences that guide unsupervised drug use. Self-medicating practices were reported by more than half of the study participants, while urban residents and younger people with multiple chronic diseases exhibited notably higher rates of such behavior. The research results support worldwide apprehensions about self-care becoming standard practice for managing chronic diseases, especially in low-resource areas with inadequate healthcare services and poor pharmaceutical regulation. This research confirms established patterns in comparable settings and delivers new insights about self-medication predictors in Iraq, thus enhancing an

important yet under-researched field in public health studies.

4.1 Demographic and Socioeconomic Factors

While gender and self-treatment showed no significant correlations, the research found that females had a slightly higher rate of self-treatment at 58.1%. Studies demonstrate that women tend to self-care more frequently due to their caregiving responsibilities and distinct health-seeking approaches [7,17-18]. This research's absence of statistical significance demonstrates gender equality in healthcare access throughout the region [19,20]. Young adults aged 18 to 35 show a stronger propensity to self-medicate compared to older demographics. The study results match earlier findings, which indicate that young people pursue medical help because they can quickly obtain information online and face fewer risks when self-treating. The level of education individuals has acquired displayed an inverse relationship with their tendency to self-medicate. People with lower educational levels tend to use self-medication, which might indicate limited health literacy and reduced access to trustworthy health information. The perception that self-treatment is harmless, together with prior experience with specific diseases and the easy availability of medications at home, leads to a high rate of self-treatment [17]. People self-treat because they have minor diseases while also needing to avoid medical costs and a short time to see doctors, and they use previous drug experiences to manage long waits for professional care. Drug consumers' social and demographic traits, including gender, morbidity levels, age, lifestyle choices and health conditions, stress factors, and social roles, determine how standard self-treatment practices are.

Lower-income populations demonstrate a higher prevalence of self-medication practices, with 66.4 percent indicating this behavior. Financial obstacles hinder low-income populations from obtaining formal health services, resulting in this trend [18,22-23]. The high expenses for medical treatment and prescriptions lead people in developing nations to opt for over-the-counter medications instead. It is vital to address the financial obstacles that low-income individuals encounter to decrease their reliance on self-treatment methods [5,24-25]. Prescription drug availability and accessibility are central elements for effective healthcare delivery. Market availability of drugs results in improper drug consumption, including antibiotics, which leads to antibiotic resistance and additional adverse health outcomes. The research showed that married people, along with urban residents, exhibited higher tendencies for self-treatment [26]. Previous research findings indicate that married individuals frequently use self-medication to address their health issues while maintaining their family responsibilities [7]. Urban residents take more self-medication because they have better access to pharmacies and medications. Pharmacists provide the primary information for self-treatment, as private pharmacies are the top sources for medication acquisition [26]. Pharmacists play an essential role in guiding prescription drug use. The promotion of safe drug use practices requires active participation from pharmacists.

4.2 Clinical Characteristics

The research established a strong connection between chronic diseases and self-treatment practices. Self-treatment rates reached 66.0% among patients with three or more chronic diseases compared to those with fewer chronic diseases. Research highlights how the complexity of multiple pharmaceutical products and disease factors influence self-medication practices. Patients suffering from numerous diseases believe they understand their medications, which leads them to self-administer drugs without supervision [27-29]. A disease that persists beyond five years leads to substantial self-medication as patients gain a better understanding of symptoms and treatment options. Self-medicating patients who have multiple diseases can experience medication mistakes and adverse reactions because of unsupervised drug use [5–6,21,30]. People with chronic diseases face dangerous risks from these practices, which can cause incorrect diagnosis and delayed treatment alongside negative drug interactions and drug resistance [31-32]. A recommended approach to mitigate self-medication risks includes developing a drug use monitoring system while fostering cooperation among health professionals, patients and pharmacists [11]. Several factors drive self-medical advice, including how easily medication information is accessed, personal disease experience and medicine availability, time constraints, doctor inaccessibility, medical costs, inadequate privacy protection and drug advertising through media and excessive information availability [22]. Proper self-medication brings multiple advantages, including better medication access, patient relief, increased patient healthcare involvement, and efficient utilization of medical professionals' expertise while reducing government healthcare spending on low-quality disease treatments [33].

4.3 Sociocultural Characteristics

The strongest predictors of self-treatment come from city dwellers since urban residents demonstrate a higher propensity for self-medication compared to rural residents. The notable difference might originate from urban areas having more OTC drugs and pharmacies, which make it easier for people to use medications without supervision [26,34]. Even though poor access lacks statistical significance, self-medication occurs more frequently among those who experience these access issues. The research demonstrates that convenience and immediacy in urban areas

significantly contribute to self-treatment practices [15,23,26,35]. Self-medication has gained widespread acceptance because it serves a vital function within healthcare systems. Promote straightforward and efficient remedies for minor illnesses while building confidence in preventive care, treatment, and rehabilitation [11,33,36-37].

4.4 Risks and Implications

The act of self-medication presents significant dangers, particularly for patients suffering from ongoing health conditions. Drugs can cause adverse effects, while antibiotics may lead to antimicrobial resistance if misused, which, together with interactions between prescription and non-prescription drugs, create significant risks [5-6,11]. The excessive use of antibiotics presents an important public health threat, which necessitates strict regulations to restrict their prescription-free availability. Patient education about self-treatment dangers must be combined with pharmacist-led counseling to tackle these problems [38-40]. Health authorities, together with governments, need to verify drug safety in markets and provide credible medical data for self-treatment to avoid drug misuse [41]. Self-medicine involves selecting medications to treat conditions individuals diagnose themselves [11]. The topic of self-medication stands as the most discussed subject across medical disciplines. Advocates maintain that self-medication conserves time and resources while reducing hospital visits. The World Health Organization established guidelines to regulate self-medication drugs that define self-medication as a significant public health asset for healthcare systems [7,42-43].

The universal acceptance of self-medicine enables people to treat minor illnesses effectively. People are encouraged to build self-assurance when using preventive treatments and therapeutic and rehabilitation methods [44]. Self-treatment exposes people to multiple hazards, including wrong diagnoses they make themselves, treatment delays that worsen conditions, unexpected severe side effects, harmful drug combinations, improper treatment techniques that damage health further, inaccurate dosages that fail to heal or worsen conditions, wrong treatment choices which delay proper treatment, concealed severe diseases that remain undiagnosed, and the potential development of dependence or drug abuse [11,31]. Research indicates that students commonly practice self-treatment due to their insufficient knowledge, which results in increased health risks [13]. Self-medication involves treating symptoms and conditions with drugs like antibiotics without consulting a healthcare professional [45,46].

4.5 Policy Recommendations

Research outcomes indicate an urgent requirement for regulatory control over the distribution of high-risk medications that should not be available without a prescription. Public health campaigns must target awareness about self-treatment risks and make special considerations for patients with chronic diseases. When health services become more affordable and accessible to low-income populations, they help reduce self-medication practices. Through counseling and education, pharmacists supervise patients to minimize risks associated with self-treatment. Pharmacists who run prescription medication therapy management programs will improve medication safety and effectiveness.

4.6 Study Strengths and Limitations

The study is rare in its focus on how chronic disease patients in Iraq use self-medication while offering valuable insights into demographic, clinical, and socio-cultural aspects of this practice. The use of a large representative sample enhanced the generalizability of the findings. The study's reliance on self-reported data introduces possible memory bias, while its cross-sectional design restricts causal analysis. Longitudinal study approaches need to be used in future research to investigate how self-medical treatments affect health outcomes over the long term.

5. Conclusions

Young urban residents in Iraq who suffer from multiple chronic diseases often resort to self-medication due to limited access to healthcare services. This practice carries significant risks, including adverse drug reactions, ineffective treatments, and the potential emergence of drug-resistant infections. The study emphasizes the urgent need for regulatory interventions, educational initiatives led by pharmacies, and targeted health literacy programs. To achieve better health outcomes, health systems should enhance access to primary care while implementing surveillance for self-medication practices. Improving medication safety and managing chronic diseases in resource-limited settings requires a coordinated, multisectoral approach.

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Conflicts ofInterest

The authors declare no conflict of interest.

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