



## Research Article

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## Health Promotion Practice: A Cross-sectional Study among Community Pharmacists in Baghdad, Iraq

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## Abstract

**Background:** The role of community pharmacists goes beyond dispensing of medicines; it includes health promotion (HP) and prevention of chronic disease. **Objectives:** To evaluate the level of HP among community pharmacies in Baghdad and determine the associated factors and barriers to this practice. **Methods:** The current investigation was a cross-sectional study conducted among community pharmacists in Baghdad, Iraq. An online questionnaire was used to collect data, and participants were recruited using convenience sampling. An HP score was calculated to quantify this practice. To analyze differences in HP practice between demographic groups, descriptive statistics and independent t-tests were used. Barriers were examined using exploratory factor analysis. **Results:** Data were collected from 670 pharmacists who completed questionnaires. The mean HP practice score was  $4.1 \pm 1.16$ , which indicates moderate engagement in HP. Significant differences in HP scores were observed by pharmacy location and employment type, but not by gender. Most pharmacists reported providing HP activities daily (79.4%), the most common being adherence counselling (95.8%) and verbal education on the use of medicines (67.8%). There were three crucial categories of barriers to engagement in HP related to "the patient," "organizational," and "lack of training." **Conclusions:** Community pharmacists in Baghdad showed moderate engagement in HP activities, with greater involvement in medication counselling and less in other preventive services. Effective organizational policies, training, and the addition of systematic HP policies are necessary to improve public health practice by pharmacists in Iraq.

**Keywords:** Community pharmacy; Counselling; Health promotion; Iraq; Public health; Role of the pharmacist.

ممارسة تعزيز الصحة: دراسة مقطعية بين الصيادلة العاملين في صيدليات المجتمع في بغداد، العراق

## الخلاصة

**الخلفية:** لا يقتصر دور الصيدلي في صيدليات المجتمع على صرف الأدوية فقط، وإنما يمتد ليشمل التوعية الصحية وتعزيز الصحة والوقاية من الأمراض المزمنة. **الاهداف:** هذه الدراسة تهدف الى تقييم مستوى ممارسة تعزيز الصحة من قبل الصيادلة في بغداد، وتحديد العوامل المؤثرة والمعوقات المرتبطة بهذه الممارسة. **الطرائق:** تم اجراء دراسة مقطعية بين الصيادلة العاملين في صيدليات المجتمع في بغداد، العراق. وقد تم استخدام استبيان الكتروني لجمع البيانات مع اعتماد اسلوب العينة الملائمة في اختيار المشاركين. وتم احتساب درجة ممارسة تعزيز الصحة ثم جرى تحليل الفروقات بين المجموعات الديموغرافية باستخدام الاحصاء الوصفي واختبار (T) للعينة المستقلة. كما تم تحليل المعوقات باستخدام تحليل العوامل الاستكشافية. **النتائج:** شملت الدراسة 670 صيدلي اكملوا الاستبيان بالكامل. بلغ متوسط درجة ممارسة تعزيز الصحة 4.1 مما يشير الى مستوى متوسط من هذه الممارسة. لوحظت فروق في هذه الممارسة تبعا لموقع الصيدلية ( $P=0.002$ ) ونوع الدوام ( $P<0.001$ )، دون وجود فروق نسبة الى جنس الصيادلة. افاد معظم الصيادلة بممارسة أنشطة تعزيز الصحة يوميا (79.4%) وكان اكثرها شيوعا هو تقديم ارشادات حول الالتزام بالدواء (95.8%)، والتثقيف الشفوي حول استخدام الادوية (67.8%). كما وكشفت نتائج تحليل العوامل عن ثلاث فئات رئيسية من المعوقات وهي معوقات متعلقة "بالمريض"، "معوقات تنظيمية"، "معوقات نقص التدريب". **الاستنتاجات:** اظهر الصيادلة في بغداد مستوى متوسط من المشاركة في تعزيز الصحة، مع تركيز اكبر على الارشاد الدوائي مقارنة بالخدمات الوقائية الاخرى. هناك حاجة الى تبني سياسات تنظيمية فعالة وتوفير برامج تدريبية وادماج استراتيجيات منهجية لتعزيز الصحة بهدف تحسين دور الصيادلة في تعزيز الصحة العامة في العراق.

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## INTRODUCTION

HP is a crucial component of public health practice and an effective strategy for preventing chronic diseases and enhancing quality of life. The World Health Organization (WHO) defines health promotion as the "process of enabling people to increase control over, and improve, their health," highlighting the concepts of empowerment, education, and supportive environments [1]. This shifts the focus of medical care from treatment to prevention and self-care, emphasizing the importance of community-based health specialists in proactively promoting population health. In this scenario, community

pharmacists, as the most accessible health care professionals, can also contribute to this objective by counselling patients, educating them about health issues, and offering disease-prevention services [2,3]. Their public exposure provides unique opportunities for early intervention, behavioral change, and minor ailment management [4]. Research from different parts of the world reinforced the importance of pharmacists in advancing the quality of care and promoting positive lifestyle changes. For example, research in the United Kingdom, Canada, and the United States has confirmed that pharmacists participating in primary healthcare

services help patients avoid hospitalization, improve adherence to prescribed therapy, and aid in the control of chronic illnesses [5-7]. Management programs for hypertension and diabetes mellitus implemented by pharmacists showed positive changes in clinical outcomes and patient care experiences [8,9]. Likewise, the community pharmacist's role in vaccination, cardiovascular risk screening, and smoking cessation counselling has been recognized as a valuable public health service and a cost-effective strategy [10,11]. In the context of Iraq, the healthcare system is still suffering from years of conflict, lacking basic infrastructure, and unequal healthcare access. Community pharmacists are among the most accessible healthcare practitioners, particularly in Baghdad, where they are the first port of call for a variety of patient conditions [12]. However, information on promoting health in the community pharmacy setting is not yet available. Therefore, it became essential to understand the current practices and barriers faced by Iraqi community pharmacists in the context of the growing burden of chronic diseases and the need for preventive care. Understanding this will help formulate relevant policies and educational programs to strengthen HP. Furthermore, investigating the barriers that pharmacists encounter in their daily work will help develop initiatives for HP in pharmacy practice. Thus, this study aims to assess the level of HP practice among community pharmacists in Baghdad and its associated factors and to identify the challenges and barriers they face in delivering this practice.

## METHODS

### *Study design*

A cross-sectional study was conducted among community pharmacists in Baghdad from June to August 2025. A convenience sampling technique was used to recruit participants. An online WHO-adopted questionnaire was used to capture pharmacists from different parts of the city, making data collection very flexible. Baghdad is the capital of Iraq and was chosen because it is multicultural and offers a variety of community pharmacies and urban and peri-urban health care settings. The city is divided into two regions, Al-Karkh and Al-Rusafa, each with several districts that vary in socioeconomic status and the level of health care services provided. The study aimed to recruit pharmacists from both sides of the city to achieve a balanced, all-encompassing understanding of health promotion activities in this community health setting.

### *Study population and sampling*

During data collection, the target population consisted of licensed pharmacists practicing in community pharmacy settings. The study included participants working on a part-time or full-time practice schedule who could complete the online questionnaire. The survey link was distributed through professional pharmacist social media

groups (i.e., Facebook, WhatsApp, and Telegram); emails were sent through the academic and professional networks, along with a freely accessible link, which was posted on pharmacy community professional forums and other community pages. This approach to recruiting participants is effective in engaging healthcare staff in online survey research [13,14]. The exclusion criteria were pharmacists who were not actively practicing in community pharmacies, a lack of electronic consent, and duplicate entries.

### *Sample size calculation*

The sample size calculation was based on Cochran's technique for sample size determination in the social sciences, with an alpha level of 0.05, a margin of error of 5%, and a 95% confidence level [15]. The required sample size was 384; however, to prevent non-response bias, the researchers initially contacted 700 pharmacists. At the end of data collection, a total of 670 responses met the eligibility criteria and were kept for the analysis.

### *Study instruments*

An online self-completing questionnaire was used for gathering data. The tool was adapted from the WHO health promotion framework for primary care [16,17]. Additional structure and phrasing were applied to the items to address pharmacy practice health services in the Eastern Mediterranean Region [18]. The final version of the questionnaire contains five sections, starting with the sociodemographic characteristics in section one. Section two comprises questions related to the frequencies and types of HP activities provided in the pharmacy. In section three, questions about medication counselling and adherence were included. The last two sections contain questions about the topics discussed with patients and the barriers and supports needed to implement HP in community pharmacies. A panel of three experts in clinical pharmacy and public health content validated the modified questionnaire for its applicability in the Baghdad community practice setting. The content validity index for the questionnaire items and the scale used met the recommended standards [19]. Additionally, the instrument was piloted among 20 community pharmacists to assess the questionnaire's ease of understanding and practicality. The text then underwent a few minor changes to improve the language structure. The internal consistency assessment indicated sufficient reliability, with Cronbach's alpha exceeding 0.70 for the HP practice and barrier domains [20]. An HP practice score was developed from five questionnaire items to measure pharmacists' active involvement in this practice. The total score was calculated from items 3 to 7, focusing on the frequency of providing HP breadth, patient counselling, and advice. Totally, it ranged from 0 to 12, with higher values reflecting greater involvement in HP. The scoring method of each question is presented in Table 1.

**Table 1:** The scoring method of health promotion practice

Items	Value of the score
Q3: frequency of providing health promotion	Daily=4, weekly=3, monthly=2, rarely=1, never=0
Q4: Types of health promotion provided services	1 score for each selected service (ranged from 0-5)
Q5: Counselling on medication adherence	Yes=1, No=0
Q6: Counselling lifestyle modification	Yes=1, No=0
Q7: Advice on communicable disease prevention	Yes=1, No=0

### Ethical considerations

This study underwent initial review by the university's Institutional Review Board (Number: 0084), which oversees all university research, and it was confirmed that the ethical considerations, including informed consent, risks, and voluntary participation, had been met. All participants provided consent after receiving full disclosure of the study's objectives, including its purpose, and confirmed that their participation was voluntary. Participants were informed that the gathered information would be kept confidential and used for academic purposes only.

### Statistical analysis

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 22. Responses were checked first for completeness, duplication, and eligibility. The distribution of HP practices and the sociodemographic factors of respondents were summarized using means with standard deviations ( $\pm$ SD) for continuous variables and frequencies and percentages for categorical variables. The HP practice score was analysed as a continuous variable. The normality of the HP score distribution was assessed using the Shapiro-Wilk test, as well as histograms and Q-Q plots. As the scores were approximately normally distributed, independent sample t-tests were used to determine the mean difference in these scores by gender (male and female), type of pharmacy (full-time and part-time), and location (Al-Karkh and Al-Rusafa). An alpha level of 0.05 or less ( $p < 0.05$ ) was considered significant. In addition, an analysis of barriers to HP was conducted using Exploratory Factor Analysis (EFA) to identify the underlying obstacles to this practice. Before conducting EFA, sampling adequacy and suitability of data for EFA were confirmed using the Kaiser-Meyer-Olkin (KMO) measure (KMO=0.78) and Bartlett's test of sphericity ( $\chi^2 (15) = 612.4, p < 0.001$ ). The principal component extraction method with varimax rotation was applied. Factors were retained based on eigenvalues greater than 1.0 and the interpretation of the scree plot, and items loading 0.40

were retained in the factor. The items within each factor were tested for communalities to determine if they were sufficiently represented.

### RESULTS

The study engaged 670 of 700 community pharmacists, yielding a response rate of 95.7%. More than half of pharmacists were females ( $n = 387, 57.76\%$ ). Most of the respondents ( $n = 483, 72.09\%$ ) worked part-time in a community pharmacy. In addition, around two-thirds of respondents were working in the Al-Rusafa region of Baghdad ( $n = 435, 64.93\%$ ). These attributes demonstrate the relative balance in the distribution of community pharmacists. The demographic information of respondents is shown in Table 2.

**Table 2:** Demographic data of respondents (n=670)

Variables	n(%)	
Gender	Male	283(42.24)
	Female	387(57.76)
Type of Pharmacy	Part-time	483(72.09)
	Full-time	187(27.91)
Location	Al-Karkh	235(35.07)
	Al-Rusafa	435(64.93)

To determine the extent of HP provided during daily working hours, the pharmacists were asked about the relative frequency of various patient education activities undertaken during their work. The analysis indicated that most of them perceived themselves as doing it daily ( $n = 532, 79.4\%$ ). The most frequently provided patient education component was verbal counselling on the use of prescribed medicines ( $n = 454, 67.76\%$ ). The analysis of responses to the question of whether pharmacists counsel patients on medication adherence indicated that an overwhelming majority of pharmacists indeed perform this function as part of their daily work ( $n = 642, 95.8\%$ ). This analysis also confirmed that a significant number of pharmacists counsel patients on various aspects of lifestyle change ( $n = 509, 76.0\%$ ). Furthermore, more than two-thirds of pharmacists also counsel patients on practices to avoid infections ( $n = 453, 67.6\%$ ). All responses related to HP practice in community pharmacies are provided in Table 3.

**Table 3:** Health promotion practices given by the community pharmacists

Items of health promotion practice	n (%)	
How often do you promote health to patients in your pharmacy?	Daily	532(79.4)
	Weekly	78(11.6)
	Monthly	32(4.8)
	Rarely	28(4.2)
	Never	-
Which health promotion services do you provide at your pharmacy?	Verbal Counseling	454(67.8)
	Advice on managing chronic disease	140(20.9)
	Counselling on lifestyle changes	42(6.3)
	Educational leaflets or brochures	146(21.8)

Do you counsel patients on the importance of medication adherence?	Media shows in the pharmacy	130(19.4)
	Yes	642(95.8)
	No	28(4.2)
Do you advise patients on lifestyle changes?	Yes	509(76.0)
	No	161(24.0)
Do you provide any advice on preventing communicable diseases?	Yes	453(67.6)
	No	217(32.4)
Mean of total score		4.1±1.16

The total HP practice score for all respondents showed notable clustering at 4 out of 12 (4.1±1.16, median= 4.0). It ranged from 2 to 9, indicating that none of the respondents reported either extremely low (0-1) or full engagement (10-11) in this practice. Additionally, differences in HP scores were analysed with respect to demographic variables, as shown in Table 4. It showed that the difference between males and females was not significant ( $p= 0.531$ ). However, pharmacists in the Al-Karkh part of Baghdad scored markedly more than their colleagues in the Al-Rusafa region ( $p=0.002$ ). Moreover, full-time pharmacists scored dramatically higher than their part-time colleagues ( $p< 0.001$ ).

**Table 4:** Differences in health promotion practice according to demographic variables

Demographics		Mean±SD	p-value
Gender	Male	4.08±1.16	0.531
	Female	4.13±1.15	
Location	Karkh	4.31±1.36	0.002
	Rusafa	3.99±1.02	
Type of Pharmacy	Part-time	3.92±0.96	<0.001
	Full-time	4.57±1.46	

Pharmacists were asked about several components of HP practice, as shown in Table 5.

**Table 5:** Components of health promotion practices among community pharmacists

Components		n(%)
Topic discussed	Diet and nutrition	400(59.7)
	Proper use of medications	247(36.9)
	Physical activity	149(22.2)
	Smoking cessation	105(15.7)
	Prevention of diseases	84(11.5)
Medication Counselling	Antibiotics	352(52.5)
	Painkillers	225(33.6)
	Psychotropics	192(28.7)
	Antihypertensive drugs	145(21.7)
	Medications for diabetes	126(18.8)
Source of Information	Online resources	282(42.1)
	Pharmacy professional network	218(32.5)
	Continuing education	203(30.3)
	Government health communications	177(26.5)

Regarding the topics they discussed with patients, the most discussed topics were diet and nutrition (n=400, 59.7%), followed by proper use of medications (n= 247, 36.9%), physical activity (n= 149, 22.2%), smoking cessation (n= 105, 15.7%), and prevention of diseases (n= 84, 11.5%). Concerning medications that are most frequently the subject of counselling in the pharmacy, the most common were antibiotics (n= 352, 52.5%), followed by painkillers (n=225, 33.6%), psychotropics (n= 192, 28.7%), antihypertensive drugs (n= 145, 21.7%), and medications for diabetes (n= 126, 18.8%). Respondents of this study reported numerous ways of tracking health issues. Online resources (n= 282, 42.1%) were the most mentioned, followed by the pharmacy professional network (n= 218, 32.5%), continuing education (n= 203, 30.3%), and reliance on government health communications (n= 177, 26.5%). Self-reported barriers to HP activities in community pharmacies were also sought. The most frequent response was lack of time (n=382, 57.0%), followed by lack of support from health services (n=248, 37.0%), lack of resources and teaching aids (n=105, 15.7%), lack of personnel (n= 89, 13.3%), lack of interest from patients (n= 49, 7.3%), and lack of training (n= 8, 7.2%). Concerning support for HP, pharmacists indicated multiple types of support that, if

provided, would enhance their ability to promote health. These were more training on HP issues (n= 291, 43.4%), in partnership with the local health department (n=212, 31.6%), improved patient education materials (n= 177, 26.4%), and reimbursements (n=151, 22.5%). An exploratory factor analysis was utilized to understand the barriers that pharmacists faced during HP, as shown in Table 6. Three separate variables emerged from the study. The first factor, allocated to patient-related barriers, loaded highly on the barriers “lack of time” (0.55) and “lack of patient interest” (-0.78), indicating obstacles associated with workload and patient involvement. The second factor dealt with organizational barriers, which loaded most heavily on “limited governmental support” (0.65), indicating the existence of institutional and organizational barriers. Furthermore, factor three accounted for the barrier of training and was characterized mainly by an “insufficient training in HP” (0.53). These three underlying dimensions collectively accounted for 100% of the variance of the factor analysis model. As a result, these dimensions were “patient-related barriers,” which explain 48.6% of the variance; “institutional barriers,” which account for 30.2% of the variance; and “barriers to professional advancement,” which account for 21.3% of the variance.

**Table 6:** Factor analysis of barriers facing community pharmacy in promoting health

Barriers	Factor 1	Factor 2	Factor 3	Communality	Eigenvalue	Explained variance (%)
Lack of time	0.549	-0.422	-0.242	0.538	0.989	48.55
Lack of patient interest	-0.781	-0.077	-0.157	0.640	0.989	48.55
Limited resources	0.035	0.080	-0.134	0.026	0.615	30.18
Lack of staff	0.107	-0.006	-0.068	0.016	0.615	30.18
Limited governmental support	0.240	0.649	-0.210	0.523	0.615	30.18
Insufficient training in health promotion	0.086	0.053	0.532	0.293	0.433	21.27

## DISCUSSION

This study investigated the levels of engagement in HP among community pharmacists in Baghdad, as well as the enabling factors and barriers to the provision of such practice. The findings revealed that community pharmacists integrate primary HP activities, such as verbal medication counselling and medication adherence support, into their practice. However, it also indicated that the scope and range of HP practices are still relatively poor. Previous information from the countries of the Middle East showed that pharmacists are willing to engage in HP activities, but this was limited by several constraints related to public perception of pharmacists' role, available resources, and training [21,22]. Similar observations have been reported internationally, where pharmacists have been allocated a central role in preventive health and well-being strategies, but the incorporation into everyday practice has been inconsistent due to workload and challenges of system integration [23,11]. The study found that community pharmacists in Baghdad conducted a sizable amount of patient education each day, suggesting easy public access to a pharmacist. This reinforces global advocacy to expand pharmacists' roles from product-centered dispensing to more patient-centered health services [2, 24]. Findings also revealed that the rate of medication adherence counselling is remarkably high, consistent with results from Jordan and the Gulf region, where pharmacists reported high participation in medication-related education [25,26]. However, other counselling services like lifestyle modification and prevention of communicable diseases are yet to be fully utilized. This suggests that pharmacists' function is still mainly regarded as responsive to a clinical case rather than proactive in public health services, which is the case in most Middle Eastern countries [27]. Overall, this study indicates that HP practice by community pharmacists is moderate. As reported previously, the role of a pharmacist in preventive HP is recognized in practice, but implementation remains selective, fragmented, and uncoordinated [28]. In addition, disparities in HP levels were observed across pharmacy locations and work schedule types. The highest level of HP observed in the Al-Karkh region of Baghdad may be due to differences in the workload, patient population, and socio-economic factors. While the highest level of HP offered by pharmacists working on a full-time schedule may be due to several factors, such as these pharmacists holding higher positions, they are more likely to pursue prolonged patient education and are less constrained by

time. The findings of this study also showed that the most frequently discussed subjects with patients were diet and nutrition, proper medication use, and physical activity. These were in line with the primary global goal of HP and preventive services in the community pharmacies [17]. The common practice of counselling patients with antibiotics and pain medications illustrates the pharmacist's responsibility in antimicrobial stewardship and rational use of medicines, which are both critical and neglected public health problems in Iraq [29]. Among the barriers pharmacists face in providing HP, the lack of time emerged as the most relevant. Similar findings from Saudi Arabia identified the same barrier, in which pharmacists consistently reported workload and business pressure as the major factors restricting the provision of HP activities [22]. This challenge is also evident in other global studies. For example, in Argentina, community pharmacists indicated that time constraints and high patient volume precluded detailed patient counselling [30]. Similarly, in Ethiopia, competing workplace responsibilities and inadequate staffing were underscored as primary barriers to pharmacists' participation in HP activities [31]. Further, factor analysis identified three distinct components of the barriers. They were particularly "patient-related barriers," "institutional barriers," and "barriers to professional advancement." This is in line with a previous study conducted in Ethiopia, which found that the absence of institutional coordination and unclear task assignment negatively impacts pharmacists' willingness and confidence to participate in various HP activities [32]. Similarly, in Rwanda, evidence showed that the absence of professional advancement within continuing education, along with scant regulatory oversight, is a significant barrier to the incorporation of HP in the pharmacy practice [33]. Also, global information showed that the lack of policy integration, a heavy workload, and the absence of a broad public health framework in community pharmacies continue to prevent pharmacists from fully participating in HP activities [11]. Overall, the findings of this study suggest that community pharmacists in Baghdad are underutilized as a public health workforce and that with appropriate policy, professional support, and structured pharmacy practice, HP can be a core component of the services provided in the country.

### Study limitations

This study has some limitations. First, it relied on self-reported data, which is susceptible to social and recall biases. Second, the use of a convenience sample may

limit generalizability to all regions of Iraq. Finally, the study did not assess patient health, and thus conclusions on the direct influence of pharmacists' health promotion on public health are limited.

## Conclusion

Community pharmacists in Baghdad have a moderate level of HP practice. This level is affected by the location of community pharmacies in the city and the type of working schedules in these pharmacies. Additionally, community pharmacists are active in several key areas of HP, especially medication counselling and adherence support, but have limited participation in other preventive health services. The barriers that hindered HP mainly were related to patients, institutions, and a lack of professional education. Tailored education, more organized HP approaches, and increased support from the health care system are crucial to enable pharmacists to be actively engaged in HP in Iraq.

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## Conflict of interests

The author declares no conflict of interest.

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## Data sharing statement

Supplementary data can be shared with the corresponding author upon reasonable request.

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