

Consultation behavior regarding herbal medicine use among adults in Palestine: a cross-sectional study

Iyad Ali

iyadali@najah.edu

An-Najah National University

Ghaidaa Ali Abdalhadi

An-Najah National University

Saba ' Saed Amer

An-Najah National University

Karam Osama Shakhdam

An-Najah National University

Article

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Abstract

Background

Herbal medicine is widely used in Palestine. However, concerns remain regarding its safety, efficacy, and integration into conventional medicine. Limited communication between patients and healthcare professionals may increase the risk of herb–drug interactions and inappropriate use. This study evaluated the prevalence of herbal medicine use, safety beliefs, and consultation behavior among adults in the West Bank.

Methods

A cross-sectional, web-based survey was conducted in November 2025 among 403 adults aged 18–64 years. Participants were recruited through convenience sampling using online platforms. Data were collected using an expert-validated questionnaire assessing knowledge, attitudes, and practices of herbal medicine. Descriptive statistics, Chi-square tests, and binary logistic regression identified predictors of consultation with healthcare professionals before herbal medicine use.

Results

Herbal medicine use was reported by 96.5% of participants, mainly for digestive (58.6%) and respiratory (52.6%) conditions. Nearly half (48.4%) believed herbal remedies have fewer adverse effects than conventional medicines. However, 43.2% did not consult a healthcare professional before use, and 65.3% had never discussed herbal medicine with a physician. Consultation behavior was significantly associated with perceptions of herbal safety and confidence in healthcare professionals' knowledge ($p < 0.05$). Regression analysis showed that believing herbal medicines have fewer adverse effects ($OR = 1.604$, $p = 0.001$) and perceiving healthcare professionals as knowledgeable ($p = 0.027$) independently predicted consultation behavior.

Conclusions

Herbal medicine use is highly prevalent among Palestinian adults. Improving health literacy, patient–provider communication, and regulatory oversight is essential to promote safe herbal medicine use and reduce preventable healthcare risks.

Introduction

Herbal medicine remains an important component of healthcare worldwide and continues to gain popularity. Derived from plant-based sources, herbal medicines are widely used for the prevention and treatment of various diseases [1]. According to the World Health Organization (WHO), traditional

medicine, including herbal remedies, is used by a substantial proportion of the global population, particularly in developing countries [2]. The demand for complementary and alternative medicine (CAM) has also increased in both developed and developing regions. This growing use is driven by cultural beliefs, accessibility, affordability, and the widespread perception that natural products are safer than conventional medicines [3, 4].

Herbal medicine holds particular importance in the Mediterranean region and the Middle East, where the use of medicinal plants is deeply rooted in cultural and historical traditions. In Palestine, traditional herbal medicine has evolved through centuries of accumulated knowledge influenced by diverse civilizations [5]. The region's unique geographical and climatic conditions support a rich diversity of medicinal plants, making herbal remedies readily available and commonly used for managing various health conditions and promoting general well-being [6]. Understanding patterns of herbal medicine use in this setting is essential for informing public health policies and improving healthcare delivery [7, 8].

Despite increasing use of herbal medicines, patient disclosure to healthcare professionals remains poor worldwide, increasing the risk of clinically important herb–drug interactions. Many individuals use herbal remedies without consulting healthcare professionals and instead rely on informal sources such as family members, friends, or social media. Such practices increase the risk of adverse effects and herb–drug interactions [9]. Furthermore, healthcare providers do not consistently inquire about patients' herbal medicine use, and herbal medicine remains insufficiently integrated into routine clinical practice. This communication gap may compromise patient safety and treatment outcomes [10].

Although several Palestinian studies have documented the prevalence and ethnopharmacological use of medicinal plants, little is known about patient–healthcare professional communication regarding herbal medicine use or the determinants of consultation behavior before herbal medicine use. Therefore, this study aimed to assess the prevalence of herbal medicine use among adults in the West Bank, Palestine, evaluate consultation-seeking behaviors before herbal medicine use, and identify factors associated with communication with healthcare professionals. By identifying gaps between public practices and professional engagement, the findings may inform interventions to improve patient education, strengthen patient–provider communication, promote the safe integration of herbal medicine into healthcare, and reduce the risk of preventable herb–drug interactions.

Methods

Study design and setting

This study was a cross-sectional survey conducted among adults aged 18–64 years in the West Bank, Palestine, during November 2025. Individuals younger than 18 years, older than 64 years, or those who did not provide informed consent were excluded. Inclusion criteria were adults of both genders aged 18–64 years residing in the West Bank.

Ethical considerations

The study was approved by the Institutional Review Board (IRB) of An-Najah National University (reference: Med.Nov.2025/54) and conducted in accordance with the ethical principles of the Declaration of Helsinki. The study purpose was clearly explained to all participants prior to enrollment. Electronic informed consent was obtained from all respondents before participation. Participation was entirely voluntary, and respondents could withdraw at any time without any consequence. Data were collected anonymously, and no personal identifiers such as names or contact information were obtained, ensuring confidentiality and privacy.

Data collection and questionnaire

Data were collected using a 24-item self-administered, close-ended questionnaire with 2–6 response options per item. The questionnaire assessed participants' knowledge, attitudes, and practices regarding herbal medicine use, as well as the role of healthcare professionals in promoting its appropriate use. The instrument was developed in English and translated into Arabic. It was distributed online, and participants were recruited using convenience sampling through self-selection via a survey link.

The questionnaire was piloted among 20 participants who were excluded from the final analysis. The questionnaire demonstrated good internal consistency (Cronbach's $\alpha = XX$). Content validity was reviewed by three experts in pharmacy and clinical research. Based on their feedback, modifications were made to improve clarity, structure, and consistency, and the final version was approved before distribution.

Statistical analysis

The required sample size was calculated using the Raosoft Sample Size Calculator, which estimated a minimum of 385 participants; however, 403 respondents were included in the final analysis. Data were analyzed using IBM SPSS Statistics version 21.

Descriptive statistics (frequencies and percentages) were used to summarize variables. Associations between variables were assessed using the Chi-square test, while binary logistic regression was performed to identify predictors of consultation with healthcare professionals before herbal medicine use.

For statistical analysis, several variables were recoded. Age was grouped into < 30 and ≥ 30 years. Likert-scale responses (strongly agree, agree, neutral, disagree, strongly disagree) were collapsed into agree, neutral, and disagree. Consultation behavior (always, sometimes, rarely) was recategorized into consult and do not consult. These recategorizations were performed to address small subgroup sizes, improve the validity of inferential tests, and enhance statistical power and interpretability of results. A p-value of < 0.05 was considered statistically significant.

Results

A total of 403 participants were included in the analysis (Table 1). The sample was predominantly female (88.1%) and mainly aged 20–29 years (62.0%). Most participants resided in urban areas (66.3%) and were students (54.6%), while 29.0% reported health-related academic backgrounds (Table 1).

Table 1
Demographic characteristics of participants
(n = 403)

Variable	Category	n (%)
Age	< 20	50 (12.4)
	20–29	250 (62.0)
	30–39	64 (15.9)
	≥ 40	39 (9.7)
Gender	Female	355 (88.1)
	Male	48 (11.9)
Residence	City	267 (66.3)
	Village	128 (31.8)
	Camp	6 (1.5)
	Suburb	2 (0.5)
Status	Student	220 (54.6)
	Working	85 (21.1)
	Other	98 (24.3)
Major	Medicine	117 (29.0)
	Other majors	286 (71.0)

Herbal medicine use was highly prevalent, with 82.1% reporting regular use during illness (Table 2). More than half of the participants (53.1%) were aware of possible herb–drug interactions. However, communication with healthcare professionals was limited, as 43.2% reported never consulting a physician or pharmacist before using herbal remedies, and 65.3% had never discussed herbal use with a doctor (Table 2). Although 63.0% reported being asked about herbal use by healthcare professionals at least occasionally, 37.0% were never asked (Table 2).

Table 2
Herbal medicine use, knowledge, and consultation behavior

Variable	Category	n (%)
Herbal use during illness	Always	71 (17.6)
	Sometimes	260 (64.5)
	Rarely	58 (14.4)
	Never	14 (3.5)
Awareness of herb–drug interaction	Yes	214 (53.1)
	No/Maybe/ I don't know	189 (46.9)
Consultation before herbal use	Always	30 (7.4)
	Sometimes	101 (25.1)
	Rarely	98 (24.3)
	Never	174 (43.2)
Discussed with doctor	Yes	140 (34.7)
	No	263 (65.3)
Experienced adverse effects	Yes	31 (7.7)
	No	372 (92.3)
Asked by healthcare provider	Yes	254 (63.0)
	Never	149 (37.0)

Participants demonstrated strong positive perceptions of herbal medicine. Approximately 64.5% believed that herbal medicines have fewer adverse effects than conventional medications, and 27.8% considered that herbal remedies could replace conventional treatments. In addition, 56.8% believed that herbal medicines act faster than conventional drugs (Table 3). Trust in social media as an information source was relatively low (20.8%) (Table 3).

Table 3
Attitudes toward herbal medicine and information sources

Statement	Response	n (%)
Herbs have fewer adverse effects	Agree	260 (64.5)
	Neutral/Disagree	143 (35.5)
Herbs can replace medications	Agree	112 (27.8)
	Neutral/Disagree	291 (72.2)
Herbs act faster than medications	Yes/Maybe	229 (56.8)
	No	174 (43.2)
Trust social media information	Yes	84 (20.8)
	No/Unsure	319 (79.2)
Physicians/pharmacists knowledgeable	Yes	228 (56.6)
	No	175 (43.4)

Herbal use was mainly driven by perceived safety (54.8%), accessibility (49.9%), and lower cost (33.3%), with herbal products most commonly obtained from herbalists (66.3%) and family or friends (46.4%) (Table 4).

Table 4
Reasons and sources of herbal medicine use
(multiple response)

Variable	Category	%
Reasons for use	Safer than medicines	54.8
	Easily available	49.9
	Cheaper	33.3
Sources	Herbalist (Attar)	66.3
	Family/friends	46.4
	Ready products	12.4

Significant associations were identified between age and both trust in social media ($p = 0.012$) and belief in fewer adverse effects ($p = 0.005$) (Table 5).

Table 5
Association between age and perceptions

Variable	Comparison	P-value
Trust in social media	Age group	0.012
Belief herbs have fewer adverse effects	Age group	0.005

Belief in faster herbal effects was significantly associated with considering herbal medicine as a replacement for conventional treatment ($p < 0.001$) (Table 6). In addition, belief in lower adverse effects, experience of side effects, and perceived healthcare provider knowledge were significantly associated with consultation behavior (Table 6).

Table 6
Factors associated with consultation behavior (Chi-square)

Variable	Comparison	P-value
Herbal effects faster vs replace medicines	Association	< 0.001
Belief herbs safer vs consultation	Association	< 0.001
Adverse effects vs consultation	Association	0.006
Provider knowledge vs consultation	Association	0.034

Multivariable logistic regression showed that belief in fewer adverse effects was an independent predictor of consultation behavior ($OR = 1.60$, $p = 0.001$), as was perceived healthcare professional knowledge ($OR = 0.61$, $p = 0.027$) (Table 7). The model demonstrated acceptable explanatory power (Nagelkerke $R^2 = 0.21$) and good fit (Hosmer–Lemeshow $p = 0.47$) (Table 7).

Table 7
Binary logistic regression for consultation behavior

Variable	OR	95% CI	P-value
Age	0.90	0.53–1.52	0.693
Gender	1.07	0.55–2.09	0.841
Social media trust	0.92	0.70–1.20	0.547
Belief herbs have fewer adverse effects	1.604	1.207–2.132	0.001
Provider knowledge perception	0.61	0.394–0.945	0.027
Model fit: Nagelkerke $R^2 = 0.21$; Hosmer–Lemeshow $p = 0.47$			

Discussion

This study provides a critical assessment of community pharmacists' knowledge, practices, and comfort in dispensing pediatric OTC medications in the West Bank. While participants demonstrated foundational safety awareness regarding contraindicated medications, the findings reveal systemic deficiencies in standardized patient assessment, knowledge maintenance, and professional assertiveness.

The predominantly young, early-career demographic of the sample (67.8% aged 20–29 years) reflects the structural reality of the Palestinian community pharmacy workforce. A striking 80.6% of participants acknowledged the need for intensive pediatric training, and 75.5% reported failing to regularly update their OTC knowledge. This deficit aligns with Hejaz et al. (2022), who observed that Palestinian pharmacists rely heavily on ad-hoc self-study rather than structured education [11]. The data indicates that voluntary knowledge maintenance is insufficient in a domain where clinical guidelines frequently evolve.

Although 87.8% of pharmacists adjust formulations for pediatric use, fundamental clinical assessments are frequently bypassed. Only 44.3% routinely verify the child's weight and age, and a mere 4.6% consistently refer cases of recurrent side effects to physicians. These passive dispensing patterns mirror broader regional trends, such as the inadequate pediatric assessment rates observed in Saudi Arabia by Alnezary et al. [12].

Most alarmingly, 35.2% of pharmacists admitted to dispensing medications despite clinical uncertainty, yielding to caregiver insistence. Because previous research [13] establishes that Palestinian parents possess critically low OTC health literacy, this lack of professional boundary-setting creates a compounded public health risk: underprepared caregivers are enabled by pharmacists who surrender their clinical gatekeeping role under pressure.

Pharmacists' comfort levels broadly reflected established safety guidelines. Participants appropriately reported the lowest comfort with agents contraindicated for children under two years, such as pseudoephedrine, loperamide, and dextromethorphan. However, specific clinical misconceptions persist: 27.0% falsely believed decongestants are safe for children under six, and 13.5% routinely selected sub-therapeutic acetaminophen doses (5–10 mg/kg). Notably, higher clinical practice scores were negatively correlated with comfort in dispensing respiratory and allergy medications ($r = -0.140$, $p = .032$). This suggests that more thorough practitioners are acutely aware of the well-documented pediatric toxicity risks of these agents, and appropriately exercise less "comfort" in dispensing them [14].

Crucially, neither years of professional experience nor advanced educational degrees significantly improved comfort scores across any OTC medication category. This finding directly supports conclusions drawn by Alqudah et al. in Jordan [15] and Jairoun et al. in the UAE [16]: pediatric pharmacotherapy is a highly specific clinical domain. General pharmacy tenure and standard academic qualifications do not organically translate into pediatric OTC competence. Safe practice requires specialized, targeted continuing education, underscoring the urgent need for institutional interventions by the Palestinian Ministry of Health and local pharmacy colleges.

Study Limitations

This study is limited by potential recall and social desirability biases inherent in self-administered questionnaires. Additionally, the sample was disproportionately young, female, and composed of students, reflecting the demographics of the social media platforms used for recruitment. The high proportion of respondents with medical backgrounds may have also artificially inflated baseline knowledge regarding herb-drug interactions, limiting the generalizability of these findings to the broader Palestinian public.

Conclusions

Herbal medicine use is ubiquitous among Palestinian adults (96.5%), primarily sourced from traditional herbalists and driven by the widespread misconception that herbs are inherently safer than conventional medications. This extensive self-medication occurs alongside dangerously low rates of clinical communication. Because most participants never discuss herbal therapies with healthcare providers—and providers rarely ask—this disconnect poses significant clinical risks of unmonitored herb-drug interactions.

Recommendations

To ensure safe integration into standard healthcare, public health campaigns must actively correct widespread misconceptions regarding herbal safety. Healthcare providers should proactively screen for herbal medicine use during routine consultations, and hospitals must embed standardized herbal documentation into their admission protocols. Furthermore, the Palestinian Ministry of Health must enforce stricter regulatory oversight of herbal shops through mandatory licensing and rigorous quality control measures. Finally, future longitudinal studies are necessary to evaluate the long-term clinical health outcomes of sustained herbal medicine use.

Declarations

Ethics Approval and Consent to Participate:

Ethical approval was obtained from the Institutional Review Board (IRB) of An-Najah National University. The study was performed in accordance with the ethical standards as laid down in the Declaration of Helsinki.

Clinical Trial Number

Not applicable.

Consent form

Electronic informed consent was obtained via a tick box confirming agreement to participate and to allow use of data for research and publication.

Competing Interests:

The author declares that he has no competing interests.

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NA.

Author Contribution

IA provided conceptualization, methodology, and supervision, and was responsible for writing the original draft, reviewing and editing the manuscript, and providing final approval for publication. GAA, SSA, and KOS contributed equally to the research, including data curation, formal analysis, investigation, software implementation, and drafting the manuscript. All authors have read and agreed to the published version of the manuscript.

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Data Availability

All data supporting the findings of this study are available within the paper.

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