

JOURNAL OF TAZEEZ FOR PUBLIC HEALTH

AN OFFICIAL JOURNAL OF SAUDI HEALTH PROMOTION AND EDUCATION ASSOCIATION

Original article

Knowledge, Attitude, and Practice Regarding Herbal Medicine Among Primary Health Clinic Attendees in Saudi Arabia

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Abstract

Background: Herbal medicine is widely used in Saudi Arabia. Gaps in awareness, disclosure, and safe practice still present in primary care. This study assessed knowledge, attitude, and practice regarding herbal medicine in primary health clinic attendees in Saudi Arabia. **Methods:** A cross-sectional descriptive study was conducted including 436 adult primary health clinic attendees in Saudi Arabia

Published: 14 Oct, 2026

<https://doi.org/10.65759/hgkx8p62>

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using a structured self-administered questionnaire. The questionnaire assessed sociodemographic and clinical characteristics, knowledge, attitudes, and practices related to herbal medicine use. Data were analyzed using SPSS, categorical variables presented as frequencies and percentages. Associations between herbal medicine use and participant characteristics were tested using Chi-square or Fisher's exact tests, with statistical significance set at $p < 0.05$. **Results:** More than two thirds of participants used herbal medicine and 58.9% had used it during the past 12 months. Use was associated with gender, nationality, education, region, chronic disease, and regular medication use. Knowledge was variable with 80.3% knew that patients with chronic disease should consult healthcare providers, 69.3% knew herbs can cause side effects, and 63.1% knew they can interact with prescribed medications. Only 50.5% recognized bleeding risk with blood thinners. More than half supported regulation, 60.8% would stop herbal products if advised by a doctor, 22.5% never informed healthcare providers, 42.0% reported side effects. **Conclusion:** Herbal medicine use was common, with safety and disclosure gaps requiring primary care counseling.

Keywords: Knowledge; Attitude; Practice; Herbal Medicine; Primary Health Clinic

Introduction

Herbal medicine is a major component of complementary and alternative medicine (CAM), including health practices and products used alongside conventional medical care. In Saudi Arabia, herbal medicine is part of a wider cultural, religious, and social pattern of care-seeking, where honey, black seed, myrrh, Quran-related practices, and cupping are commonly reported (1). A recent Saudi meta-analysis estimated that half of the population uses CAM, with variation between studies because of differences in population type, definition of CAM, and measurement methods (2).

PHC is an important setting for studying herbal medicine use as it receives patients with acute complaints, chronic diseases, and preventive care needs. In Eastern Saudi Arabia, more than half of PHC center attendees used CAM, mostly honey (3). In Riyadh, 44.5% of primary care attendees had practiced at least one CAM method, honey healing was the most common method, and family and friends were the main source of information (4). Another Riyadh PHC study found that 65% of adult patients used herbal remedies for themselves, while 42% used them for their children (5).

The safety of herbal medicine is important because many users consider natural products to be harmless. Patients with chronic diseases are especially sensitive group because they often use prescription medications and may be exposed to drug interactions. In Al-Kharj, 63% of patients with chronic diseases had used at least one herbal supplement, and 78% of herbal supplement users did not consult a healthcare provider about their use (6). Among Saudi cancer patients, CAM use was also common and 30% of users discussed it with doctors while 7.7% discussed it with nurses (7).

Healthcare professionals have an important role in reducing unsafe use and improving patient counseling. PHC physicians in Riyadh showed positive attitudes toward CAM, and a small proportion had received CAM-related training, reluctance to discuss CAM with patients was linked to limited knowledge (8). Community pharmacists in Asir showed good knowledge and positive attitudes toward herbal products (9).

In Saudi Arabia, the National Center for CAM regulates selected CAM practices, while herbal products, food supplements, and complementary medicine devices are regulated by the Saudi Food and Drug Authority (10). Despite this regulatory

framework, patient knowledge, attitudes, disclosure behavior, and actual herbal medicine practices still different in regions and patient groups. In the present study we aimed to assess knowledge, attitude, and practice regarding herbal medicine among PHC attendees in Saudi Arabia.

Methodology

This study used a cross-sectional descriptive design based on a structured questionnaire to assess knowledge, attitude, and practice regarding herbal medicine among primary health clinic attendees in Saudi Arabia. The target population included adult male and female attendees aged 18 years and above who visited primary health care clinics for routine care, acute minor illnesses, or follow-up of chronic conditions. Both Saudi and non-Saudi residents were included to reflect the population using primary health care services. Participants were eligible if they were adults, able to understand Arabic, attended a primary health clinic during the data collection period, and agreed to participate. We exclude patients who were clinically unstable, required urgent emergency care, had cognitive or psychiatric conditions limiting reliable response, or were unable to complete the questionnaire.

A structured self-administered questionnaire was used for data collection. The questionnaire included sections covering sociodemographic and clinical characteristics, knowledge regarding herbal medicine, attitudes toward herbal medicine, and practice related to herbal medicine use. Sociodemographic and clinical variables included age, gender, nationality, educational level, region, presence of chronic disease, and regular medication use. The knowledge section assessed awareness of

the definition of herbal medicine, possible side effects, interaction with prescribed medications, safety misconceptions related to natural products, the need for consultation among patients with chronic disease, bleeding risk with blood thinners, disclosure to doctors or pharmacists, and the importance of proper dose and instructions. Attitude items were measured using a Likert-type response format and covered perceived safety, usefulness for minor health problems, preference before medical advice, need for disclosure to healthcare providers, regulation by health authorities, and willingness to stop herbal products if advised by a doctor. Practice items assessed herbal medicine use, and use with prescribed medications, disclosure to doctors or pharmacists, and experience of side effects.

The questionnaire was prepared in a clear Arabic format suitable for primary health clinic attendees. Before final data collection, the tool was reviewed to ensure clarity, relevance, and consistency with the study objectives. Participation was voluntary, and each participant was informed about the purpose of the study before completing the questionnaire. No personal identifying information was collected, and responses were handled confidentially.

Data were entered into Microsoft Excel and analyzed using SPSS. Descriptive statistics were used to summarize the data. Categorical variables were presented as frequencies and percentages. The prevalence of herbal medicine use was calculated for lifetime use and use during the previous 12 months. Associations between herbal medicine use and participants' characteristics, including age, gender, nationality, education, region, chronic disease status, and regular

medication use, were examined using the Chi-square test and Fisher's exact test. A p-value of less than 0.05 was considered significant.

Ethical principles for human research were followed throughout the study. Participants were informed that their participation was voluntary, that they could withdraw at any time, and that refusal to participate would not affect their medical care. The present study-maintained confidentiality and used the collected data only for research purposes.

Results

A total of 436 participants were included in the analysis. More than two thirds of participants (73.2%) were aged 18 to 30 years, followed by those aged 31 to 40 years (24.5%) and 41 to 50 years (2.3%). Males represented 235 participants (53.9%), while females represented 201 participants (46.1%). Most participants were Saudi nationals (81.7%), had university education (66.5%), and lived in the Central region (60.3%). Chronic disease was reported by 134 participants (30.7%), and 126 participants (28.9%) reported regular prescription medication use (Table 1).

Herbal medicine use differed significantly by gender, nationality, educational level, region, chronic disease status, and regular medication use. Use was higher among males than females (72.8% vs. 63.7%, $p = 0.042$) and higher among Saudi participants than non-Saudi participants (72.8% vs. 50.0%, $p < 0.001$). Educational level was associated with use ($p = 0.003$), and the highest proportions observed in participants with primary education (100.0%) and secondary education (79.6%). Regional difference was significant ($p = 0.012$), and the highest use was reported in the Central region

(74.1%) while the lowest in the Western region (50.0%). Participants with chronic disease reported more use than those without chronic disease (81.3% vs. 62.9%, $p < 0.001$), and those taking regular medication also reported greater use than those not taking regular medication (76.2% vs. 65.5%, $p = 0.029$). Age showed no statistically significant association with herbal medicine use ($p = 0.055$) (Table 2).

Knowledge responses showed variable awareness in the eight knowledge items. The highest correct "Yes" response was for the need of chronic disease patients to consult a healthcare provider before using herbs (80.3%), followed by the definition of herbal medicines as plant products used for health or treatment (76.8%) and the need to inform doctors or pharmacists about herbal use (71.8%). Awareness was lower regarding bleeding risk when herbs are used with blood thinners, where 50.5% answered "Yes" and 33.7% were not sure. For the statement that herbal products are always safe because they are natural, 46.8% answered "No," while 32.6% answered "Yes" (Table 3, Fig. 1).

Attitudes toward herbal medicine were mixed toward regulation and medical guidance. More than half of participants agreed or strongly agreed that herbal products should be regulated by health authorities (56.2%), and 60.8% agreed or strongly agreed that they would stop using an herbal product if advised by a doctor. Agreement was also observed for the usefulness of herbal medicines in minor health problems (46.3%) and the need to tell doctors or pharmacists about herbal use (48.2%). 35.8% agreed or strongly agreed that herbal medicines are safe because they are natural, and 32.3% preferred herbal medicines before seeking medical advice (Table 4, Fig. 2).

Regarding practice, 257 participants (58.9%) had used herbal medicine during the past 12 months, while 180 participants (41.3%) reported using herbal medicine together with prescribed medication. Disclosure to healthcare professionals

varied with 47.5% always informed a doctor or pharmacist, 30.0% sometimes informed them, and 22.5% never did so. Side effects after herbal medicine use were reported by 183 participants (42.0%) (Table 5, Fig. 3).

Table 1. Sociodemographic and clinical characteristics of participants

Characteristic	Category	n (%)
Age	18-30	319 (73.2)
	31-40	107 (24.5)
	41-50	10 (2.3)
Gender	Male	235 (53.9)
	Female	201 (46.1)
Nationality	Saudi	356 (81.7)
	Non-Saudi	80 (18.3)
Education	Illiterate	20 (4.6)
	Primary	15 (3.4)
	Secondary	49 (11.2)
	University	290 (66.5)
	Postgraduate	62 (14.2)
Region	Central	263 (60.3)
	Eastern	58 (13.3)
	Western	40 (9.2)
	Southern	59 (13.5)
	Northern	16 (3.7)
Chronic disease	No	302 (69.3)

Characteristic	Category	n (%)
Regular medication	Yes	134 (30.7)
	No	310 (71.1)
	Yes	126 (28.9)

Table 2. Association between herbal medicine use and participants' characteristics

Characteristic	Category	Yes n (%)	No n (%)	Total	p-value
Age	18-30	212 (66.5)	107 (33.5)	319	0.055
	31-40	77 (72.0)	30 (28.0)	107	
	41-50	10 (100.0)	0 (0.0)	10	
Gender	Male	171 (72.8)	64 (27.2)	235	0.042
	Female	128 (63.7)	73 (36.3)	201	
Nationality	Saudi	259 (72.8)	97 (27.2)	356	<0.001
	Non-Saudi	40 (50.0)	40 (50.0)	80	
Education	Illiterate	10 (50.0)	10 (50.0)	20	0.003
	Primary	15 (100.0)	0 (0.0)	15	
	Secondary	39 (79.6)	10 (20.4)	49	
	University	188 (64.8)	102 (35.2)	290	
	Postgraduate	47 (75.8)	15 (24.2)	62	
Region	Central	195 (74.1)	68 (25.9)	263	0.012
	Eastern	39 (67.2)	19 (32.8)	58	
	Western	20 (50.0)	20 (50.0)	40	
	Southern	35 (59.3)	24 (40.7)	59	
	Northern	10 (62.5)	6 (37.5)	16	
Chronic disease	No	190 (62.9)	112 (37.1)	302	<0.001

Characteristic	Category	Yes n (%)	No n (%)	Total	p-value
	Yes	109 (81.3)	25 (18.7)	134	
Regular medication	No	203 (65.5)	107 (34.5)	310	0.029
	Yes	96 (76.2)	30 (23.8)	126	

Table 3. Knowledge regarding herbal medicine

Knowledge item	Not sure n (%)	No n (%)	Yes n (%)
K1: plant products used for treatment	86 (19.7)	15 (3.4)	335 (76.8)
K2: can cause side effects	67 (15.4)	67 (15.4)	302 (69.3)
K3: can interact with prescribed medications	117 (26.8)	44 (10.1)	275 (63.1)
K4: always safe because natural	90 (20.6)	204 (46.8)	142 (32.6)
K5: chronic disease patients should consult provider	57 (13.1)	29 (6.7)	350 (80.3)
K6: herbs with blood thinners may increase bleeding risk	147 (33.7)	69 (15.8)	220 (50.5)
K7: tell doctor/pharmacist about herbal use	79 (18.1)	44 (10.1)	313 (71.8)
K8: used according to proper dose/instructions	104 (23.9)	46 (10.6)	286 (65.6)

Table 4. Attitude toward herbal medicine

Attitude item	Strongly disagree N (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree N (%)
A1: safe because natural	88 (20.2)	65 (14.9)	127 (29.1)	112 (25.7)	44 (10.1)
A2: useful for minor health problems	75 (17.2)	35 (8.0)	124 (28.4)	140 (32.1)	62 (14.2)
A3: prefer before medical advice	73 (16.7)	87 (20.0)	135 (31.0)	92 (21.1)	49 (11.2)
A4: necessary to tell doctor/pharmacist	75 (17.2)	40 (9.2)	111 (25.5)	55 (12.6)	155 (35.6)

Attitude item	Strongly disagree N (%)	Disagree (%)	Neutral N (%)	Agree N (%)	Strongly agree N (%)
A5: should be regulated by health authorities	47 (10.8)	30 (6.9)	114 (26.1)	125 (28.7)	120 (27.5)
A6: would stop if doctor advised	42 (9.6)	35 (8.0)	94 (21.6)	127 (29.1)	138 (31.7)

Table 5. Practice related to herbal medicine

Practice item	Response distribution, n (%)
P1: ever used herbal medicine	Yes: 299 (68.6); No: 137 (31.4)
P2: used during past 12 months	Yes: 257 (58.9); No: 179 (41.1)
P6: used with prescribed medication	Yes: 180 (41.3); No: 256 (58.7)
P7: informed doctor/pharmacist	Always: 207 (47.5); Sometimes: 131 (30.0); Never: 98 (22.5)
P8: experienced side effect	Yes: 183 (42.0); No: 253 (58.0)

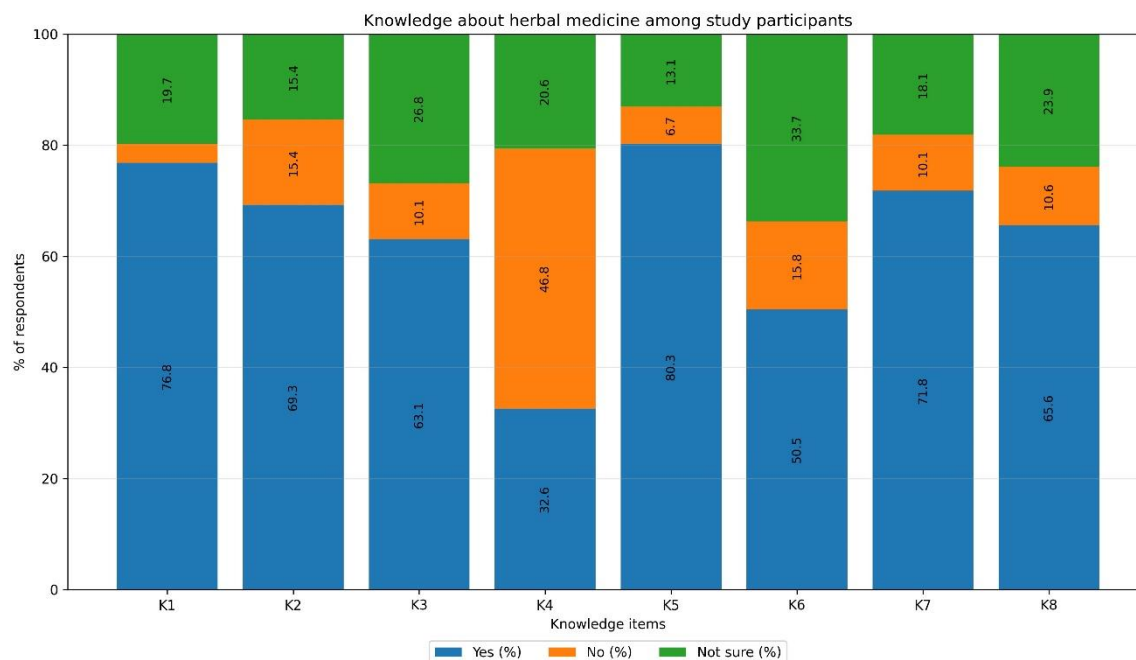


Fig 1: Knowledge

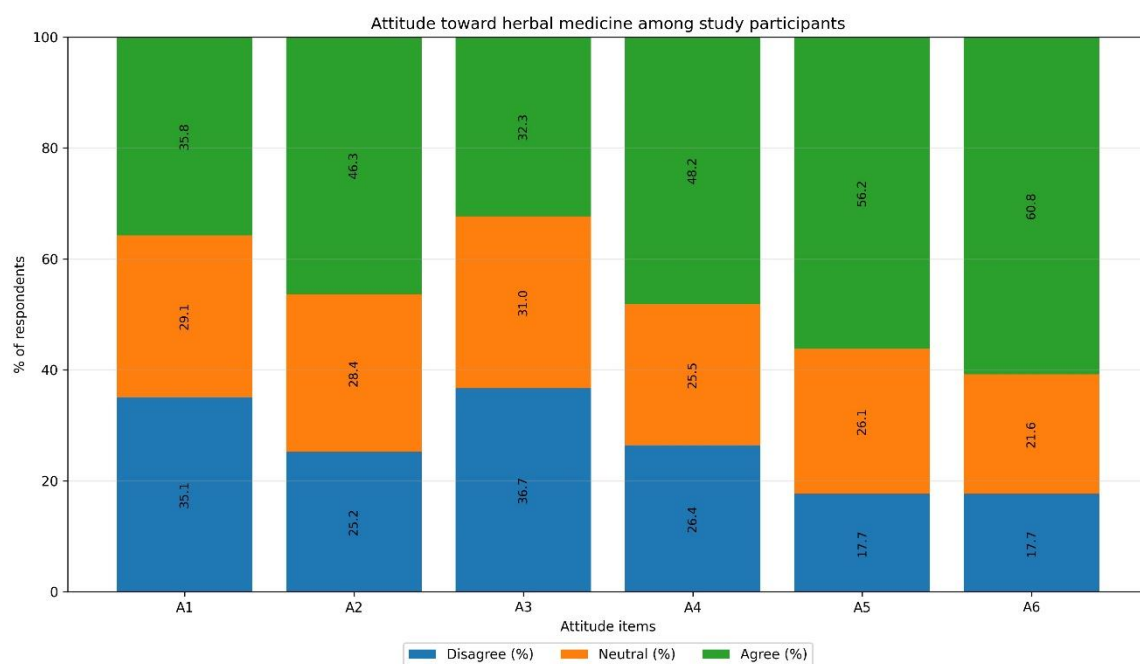


Fig 2: Attitude

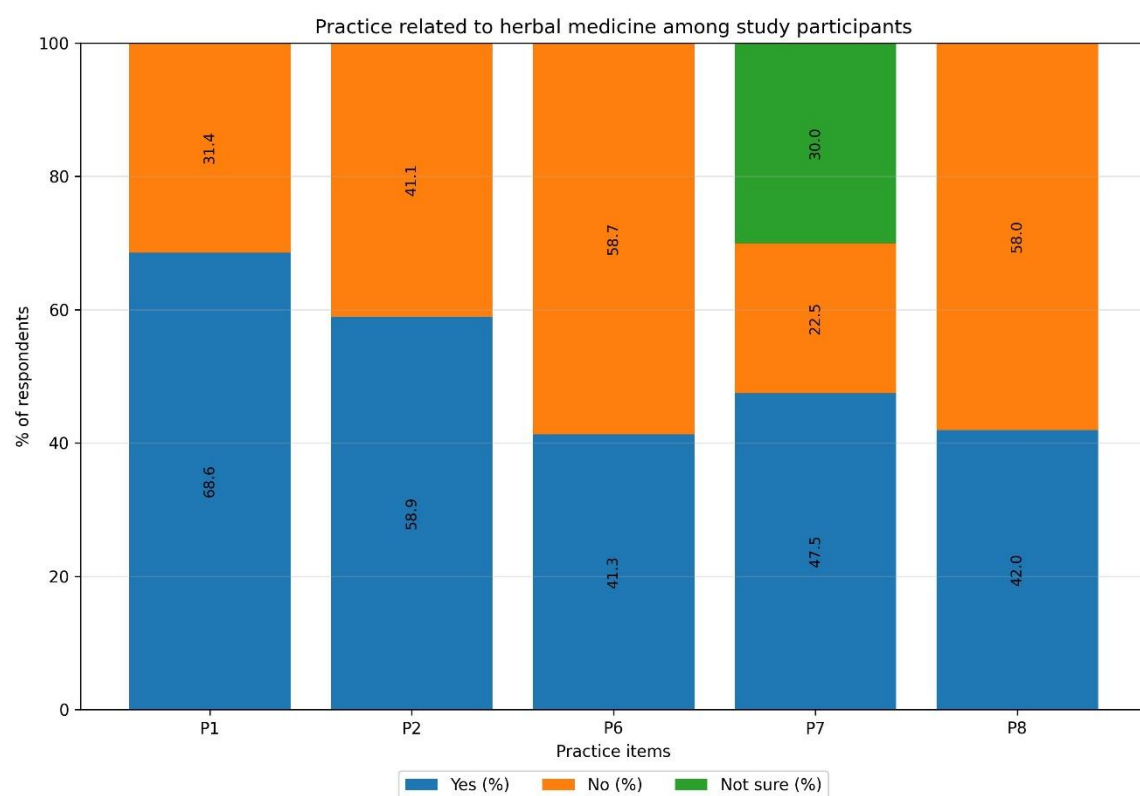


Fig 3: Practice

Discussion

The present study showed that herbal medicine use was common in PHC attendees in Saudi Arabia, with 68.6% reporting previous use and 58.9% reporting use during the past 12 months. This prevalence is higher than the 42.2% reported in the general population in Jeddah, and lower than the high rates reported in some Riyadh and multiregional Saudi surveys, where CAM or traditional recipe use reached 84.6% to 88.4% (11), (12), (13). The difference is related to study setting, population structure, regional culture, and definition of herbal medicine. A lower prevalence was reported in Al-Aziziah, Riyadh, where 19.9% used traditional medicine during the previous six months (14).

Recent Saudi literature found that herbal medicine is embedded in health behavior. Studies in family medicine clinic attendees, pregnant women, diabetic patients, and cancer patients reported frequent CAM or herbal medicine use (15), (16), (17), (7). CAM use was higher among participants with chronic disease and those using regular prescription medications. In Al-Kharj 63% of chronic disease patients used herbal supplements, and another study found at least one drug–herbal interaction in 92.26% of chronic disease patients who used herbal products and prescribed drugs (6), (18).

In our study, most participants recognized that chronic disease patients should consult healthcare providers before using herbs, and knew that herbs can cause side effects or interact with prescribed medicines. Only half recognized bleeding risk when herbs are used with blood thinners, and one third believed that herbal products are always safe

because they are natural. We found advance when we compare our study awareness with recent study on herb–drug interactions, which found predominantly low to moderate public knowledge and emphasized the need for targeted educational interventions (19). The high rate of reported side effects in our study agrees with the national adult survey that reported frequent herbal medicine use and side effects (20).

More than half of participants agreed that herbal products should be regulated, and most agreed they would stop herbal use if advised by a doctor. This aligns with earlier Riyadh data which show public support for CAM regulation, specialized services, and health education (12). It also agrees with findings in PHC physicians, where most agreed that physicians need knowledge about CAM and that health authorities should regulate CAM practice (8). Pharmacists have a role in this area, as community pharmacists in Asir showed good knowledge and positive attitudes toward herbal products (9).

In the present study, 22.5% never informed doctors or pharmacists about herbal medicine use, and 47.5% always did. Similar under-disclosure was reported among pregnant women, cancer patients, and chronic disease patients, where many users did not discuss herbal or CAM use with healthcare providers (16), (7), (18). Our findings indicate that routine medication history in PHC should include direct questions about herbal medicine, mainly among patients with chronic disease, regular medication use, pregnancy-related conditions, and other vulnerable clinical groups.

Conclusion

We found that herbal medicine use was common in PHC attendees in Saudi Arabia, with frequent use during the last year. Many participants recognized the need for healthcare consultation and regulation, but we observed important gaps in knowledge about safety, herb–drug interactions, and bleeding risk. Use was higher in participants with chronic disease and regular medication use. Disclosure to doctors and pharmacists was incomplete. PHC providers should routinely ask about herbal medicine use and provide counseling to support safer patient practices.

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