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Prevalence, Attitude and Practice of Herbal Medicine in Bahrain

Huda J. Habib[1], Abdelrahman N. Ibrahim[1], Sherry N. Nasralla[1]* and Adnan A. Bekhit[1,2]

1. Pharmacy Program, Allied Health Department, College of Health and Sport Sciences, University of Bahrain, Kingdom of Bahrain
2. Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Alexandria University, Alexandria 21521, Egypt

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*Corresponding author
Sherry N. Nasralla

Email:
snasralla@uob.edu.bh

ABSTRACT

In the last few years, there has been a growing interest in using herbs worldwide for treating various diseases, however, there is not much knowledge about the prevalence of herbal medicine (HM) use in Bahrain. The objective of this study is to assess the prevalence, attitude, perception, and practice of using HMs by the Bahraini population. A cross-sectional study was conducted on 694 individuals aged 18–65 years from the Kingdom of Bahrain. A snowball non-random sampling design with an electronically distributed structured questionnaire was used to collect data. The questionnaire had 19 questions divided into four themes. Information was obtained on sociodemographic characteristics, perceptions, attitudes, and the practice of using HMs among participants. Most of the respondents (73.5%) were females. 73.6% of the participants were interested in HMs, and approximately 90.5% were interested in receiving more information about HMs. It was found that 92.4% of participants declared to have used HMs; with 86.7% of them applying HMs for therapeutic purposes; 61.6% of them reporting partially successful efficacy. 85.6% of the sample believed that the reason for using herbs was the lower rate of side effects compared to conventional medicines. More than half of the participants thought that herbs were safer than conventional medicines (61.8%). Additionally, most of the participants used the internhica and social media as their main sources of information (80.5%), while 78.9% got information about herbs from friends. It was also found that there were several sociodemographic characteristics that affected individuals' perceptions, practices, and attitudes; age and gender being the most common. HM usage is increasing in Bahrain for therapeutic purposes, and thus, it is vital to create trusted channels enhancing knowledge and awareness of the Bahraini population about the proper use of herbs and their potential side effects.

Keywords: Herbal Medicine, Health, Bahrain, Traditional Recipe

INTRODUCTION

Since the beginning of time, humans have tried to use nature to manage their illnesses. In the same way that the use of animals was initially instinctual, so was the use of plants (Li & Weng, 2017). It is quite challenging to determine the exact moment when plants were first used as drugs; however, evidence suggests that plants were used as medicines for the first time around 60000 years ago (Applequist & Moerman, 2011). In India, China, and Egypt, scripts describing medicinal plants date back to about 5000 years ago, and at least 2500 years ago in Greece and Central Asia (Ang-Lee, 2001). During those times, therapy was empirical due to the limited knowledge about disease etiology or plant efficacy and utilization. As the rationale for using medicinal plants to cure certain ailments came to light, the empirical framework for their use was increasingly discarded and their usage was restricted based on the facts (Sakai & Morimoto, 2022).

Plants have found application in traditional medicine for the treatment, control, prevention, and management of many conditions (Sofowora *et al.*, 2013). This led to a growing demand for herbal medicines (HMs) among consumers. The global herbal medicine market is currently estimated to be worth US $83 billion, with Europe having the

largest share, and is expected to reach US $5 trillion by the year 2050 (Unnikrishnan *et al*, 2020). In Arab societies, 80% of the people rely on HMs for the treatment and prevention of diseases. Most of the research was focused on patients with chronic illnesses and showed that the prevalence of herbal medicine use varied from 20% to 85.7% in Palestine and Jordan (Ang-Lee, 2001; Otoom *et al*, 2006, Abdo *et al*, 2013). Only a few studies have shown that the general population in the United Arab Emirates uses herbal products extensively (43.2%) (AlBraik *et al*, 2008). In Saudi Arabia, 76% of the population use herbs for skin diseases such as allergy and psoriasis, and 31.8% use them for the management of liver disease (Elolemy & AlBedah, 2012).

There are several sources from which people may obtain information on herbs. Studies have shown that family, friends and self-education were the most common resources, where traditional herbal knowledge is passed down from generation to generation (Akyol *et al*, 2011; Al-Ghamdi *et al*, 2017). Television, internet, and scientific programs were also preferred because of their accessibility to a broad population sector. On the other hand, scientific research sources were less frequently visited, and most patients generally didn't report discussing HMs with their healthcare providers, resulting in referral to healthcare providers being the least reported resource (Abdelmola *et al*, 2021).

The purpose of this study is to assess the prevalence, attitudes, perceptions, and practices of using HMs by the Bahraini population and to determine factors affecting them.

MATERIALS AND METHODS

Study Design

This cross-sectional study was conducted on 694 individuals aged between 18 and 65 years, including citizens and residents of the Kingdom of Bahrain. The data for the study was collected between September 2022 and January 2023 through an online/hard copy questionnaire covering the elements of the study. The ideal sample size calculated according to Slovin's formula was found to be 384 individuals.

Survey Tool

The questionnaire used was adapted from research done in Saudi Arabia, with some modifications implemented to suit the objectives of the current study. The main changes involved exclusion of questions related to participants' residence areas as Bahrain is a small country compared to Saudi Arabia, modification of the occupation categories to better suit theS research goals and adapting the local currency for the salary related question. The questionnaire consisted of 19 questions divided into four themes (Abdelmola *et al*, 2021). The first theme comprised six questions about sociodemographic characteristics including age, gender, education level, occupation, salary, and chronic diseases. The second theme included three questions about perceptions on using HM versus conventional medicine. The third theme contained three questions about attitudes toward traditional recipes, with regards to safety and source of reliable information about herbs. The fourth theme had seven questions about practices with regards to the use of HMs as well as sources of information. The questionnaire was developed in the English language and was translated back-to-back into the Arabic language to ensure its comprehensibility to a wider sector of the population since Arabic is the mother tongue of citizens of Bahrain.

Survey Distribution

To ensure broader access to the study population, a snowball non-random design approach to survey distribution was used. The non-random snowball sampling design was applied to ensure efficient recruitment of the target population, users of HM. Since it was difficult to identify users of HM among the population within the limited research time frame and considering the reserved cultural nature of the Bahraini population, the non-random snowball design was selected. Furthermore, it would have been challenging and time consuming without relying on connections and referrals within the Bahraini community. Visits were conducted to various hospitals, health centres, clinics, and community pharmacies in the different governorates of Bahrain between 27 October and 5 November 2022. During the visits, participants who met the inclusion criteria completed the consent form prior to participating in the study. A QR code for the questionnaire on a Microsoft Form link was provided. The respondents voluntarily completed the questionnaire and were not financially compensated for their participation. None of the respondents required assistance in completing the questionnaire. The study was approved by the Scientific Publication and Research Committee, College of Health and Sport Sciences, University of Bahrain (ethical recommendation number 33/2022-23).

Table I. Distribution of the sociodemographic characteristics (Total n=694)

Characteristic		n (%)
Gender	Female	510 (73.5)
	Male	184 (26.5)
Age	18 - 25 years	361 (52)
	26 - 40 years	132 (19)
	>40 years	201 (29)
Education level	High school or below	153 (22)
	University or above	541 (78)
Occupation	Student	292 (42.1)
	Unemployed	129 (18.6)
	Employed	230 (33.1)
	Retired	43 (6.2)
Salary	None	394 (56.8)
	<350 BD	86 (12.4)
	350 – 1000 BD	164 (23.6)
	>1000 BD	50 (7.2)
Chronic diseases	None	394 (56.8)
	Hypertension	69 (9.9)
	Diabetes	44 (6.3)
	Obesity	141 (20.3)
	Anaemia	95 (13.7)
	Other	115 (16.6)

Pilot study

A pilot study was conducted on 10 participants (1.77%) who had experience with using HMs to test the research tool and to determine the time needed to complete the questionnaire. Participants who were involved in the pilot study were included in the total sample since no adjustment was needed.

Statistical Analysis

SPSS software version 26 was used for data entry and analysis. Frequencies and percentages were computed for the categorical variables. A Chi-Square test was used to determine whether there was a significant association between two categorical variables. Binary logistic regression was used to determine the factors that have an impact on the dichotomous dependent variable. A P-value of less than 0.05 was considered statistically significant.

RESULTS AND DISCUSSION

The study included 694 participants. Almost half of which were aged between 18 and 25 years old (n=361, 52%), 19% (n=132) were between 26 and 40 years old, while the group older than 40 years accounted for 29% (n=201) of the total participants. Most participants were female (n=510, 73.5%) and 26.5% (n=184) were male. Moreover, about 78% of the participants held university degrees, while 22% did not (Table I).

In terms of occupational status, most participants (n=292, 42.1%) were students, 33.1% (n=230) were employed, 18.6% (n=129) were unemployed and 6.2% (n=43) were retired. Participants were divided into four categories according to financial status: 56.8% (n=394) did not have a source of income as the majority of this category were students; 12.4% (n=86) earned less than 350 Bahraini Dinar (BD) (approximately 928 USD) per month; 23.6% (n=164) earned between 350 and 1000 BD (approximately 928 – 2,652 USD) per month; and 7.2% (n=50) earned more than 1000 BD (approximately 2,652 UDS) per month. Most participants (n=394, 56.8%) did not suffer from chronic diseases, while 20.3% (n=141) were obese, 13.7% had anaemia (n=95), 9.9% had HTN (n=69), and the lowest percent had diabetes (6.3%, n=44). Other chronic diseases such as anaemia, and hypertension were reported by 16.6% (n=115) of the participants (Table I).

Table II. Perceptions on using HMs versus conventional medicine (Total n=694)

Perception	n (%)
Reasons for using herbal medicine	
It is easy to access	471 (67.9)
Less cost	462 (66.6)
Less side effects than conventional medicine	594 (85.6)
Hereditary traditions	485 (69.9)
Others	185 (26.7)
HMs help reduce intake of conventional medicine	
Yes	72 (11.2)
No	214 (33.4)
Sometimes	355 (55.4)
Action in case of experiencing side effect due to the use of HMs	
Stop taking herb	404 (58.2)
Change to another herb	59 (8.5)
Consult the doctor	231 (33.3)

Table III. Attitudes toward traditional recipes (Total n=694)

Attitude	n (%)
Interest in traditional recipes	
Yes	511 (73.6)
No	183 (26.4)
Herbs are safer than conventional medicines	
Yes	396 (61.8)
No	87 (13.6)
Don't know	158 (24.6)
Need to have more information on herbal medicines	
Yes	628 (90.5)
No	27 (3.9)
Don't know	39 (5.6)

When participants were asked about the reason for using HMs, 85.6% (n=594) of them believed that HMs had fewer side effects compared to conventional medicines, while other reasons for using HMs included hereditary traditions, ease of access, and lower cost, reported at 69.9% (n=485), 67.9% (n=471), and 66.6% (n=462), respectively (Table II). Such beliefs and practices within the society may have implications on efficacy of drug therapy and possible incidence of drug-herb interactions among users of HMs in Bahrain.

Only 11.2% (n=72) of total participants claimed that using HMs kept them away from taking conventional medicines while approximately 33.4% (n=214) mentioned that it did not (Table II). Furthermore, on suffering from any side effects due to HM use, more than half of the participants (n=404, 58.2%) stated that they would stop taking the herb, while 8.5% mentioned they would change to another herb, and the remaining participants (n=231, 33.3%) would consult their physician.

The participants' attitudes towards traditional recipes where more than two-thirds (n=511, 73.6%) of the sample were interested in using traditional recipes, while only 26.4% (n=183) were not interested (Table III). This was in line with the findings of Abdelmola *et al*. (2021) where most of the participants (80.9%) from Saudi Arabia showed interest in traditional recipes for therapeutic purposes. Among participants who used herbs, (n=641, 92.4%), more than half (n=396, 61.8%) thought that herbs were safer than conventional medicines, while only 13.6% (n=87) did not believe they were safer and 24.6% (n=158) were unsure.

Table IV. Practices of using herbs (Total n=694)

Practice		n (%)
Use of herbs for medicinal purposes	Yes	641 (92.4)
	No	53 (7.6)
Reason for using herbs	Immunotherapy	435 (67.9)
	Therapeutic	556 (86.7)
	Cosmetic	434 (67.7)
	Other	213 (33.2)
Source of purchasing HMs	Pharmacy	195 (30.4)
	Local market (Attar)	538 (83.9)
	Herbal shop (Supplemental shop)	509 (79.4)
	Online	226 (35.3)
	Other	127 (19.8)
Efficacy of HMs	Successful	229 (35.7)
	Partially successful	395 (61.6)
	Not effective	17 (2.7)
Information sources on HMs	TV	124 (19.3)
	Internet / social media	516 (80.5)
	Friends	506 (78.9)
	Attar	300 (46.8)
	Doctor / Pharmacist	266 (41.5)
	Other	209 (32.6)
Family members who use herbs for medical purposes	Yes	449 (64.7)
	No	115 (16.6)
	Don't know	130 (18.7)
Friends and colleagues who use herbs for medical purposes	Yes	363 (52.3)
	No	93 (13.4)
	Don’t know	238 (34.3)

Regarding the practices of using herbal medicines, 92.4% (n=641) of the total sample had used herbs before, and most of them (n=556, 86.7%) claimed they used herbs for therapeutic reasons (Table IV). It is worth mentioning that similar findings in Saudi Arabia were reported by Al Akeel *et al*. (2018) with 88.7% of the respondents using herbal medicine for therapeutic purposes, with 61.2% claiming it was effective.

Furthermore, there were two main sources of information regarding herbal medicines; namely the internet (80.5%, n=516) and friends (78.9%, n=506), followed by the herbalist (Attar in the Arabic language) and the doctor/pharmacists at a percentage of 46.8% (n = 300) and 41.5% (n = 266) respectively (Table IV). The least used source of information regarding HMs was the television reported by only 19.3% (n=124) of the participants.

There is a significant association between gender and ease of access as a reason for using herbs (P=0.041) (Table V). Also, there was a notable relation between age and low side effects, as well as hereditary traditions as reasons for using herbs, with P values of <0.001 and 0.013, respectively. Participants aged between 26 and 40 were found to be the age group most likely to use herbs because they have fewer side effects (93.9%), while in the age group of 18 to 25 years, 78.7% claimed they used herbs due to the lack of side effects. Nevertheless, the age group of 18-25 years old were the most likely to use herbs due to hereditary traditions (74.8%, n=270).

Table V. Association between sociodemographic characteristics and perception of using HMs

Characteristics	Reason for using HMs					Potential of HMs keeping the user away from taking conventional medicine			Action on encountering a side effect because of using HMs		
	Easy to access	Less cost	Less side effects	Hereditary traditions	Other	Yes	No	Sometimes	Stop taking herb	Change herb	Consult doctor
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Gender											
Female	335 (65.7)	329 (64.5)	436 (85.5)	366 (71.8)	128 (25.1)	47 (9.9)	163 (34.3)	265 (55.8)	311 (61)	40 (7.8)	159 (31.2)
Male	136 (73.9)	133 (72.3)	158 (85.9)	119 (64.7)	57 (31)	25 (15.1)	51 (30.7)	90 (54.2)	93 (50.5)	19 (10.3)	72 (39.1)
P-value	0.041	0.055	0.900	0.072	0.122	0.178			0.048		
Age											
18 - 25 years	238 (65.9)	243 (67.3)	284 (78.7)	270 (74.8)	74 (20.5)	27 (8.3)	104 (32.1)	193 (59.6)	186 (51.5)	30 (8.3)	145 (40.2)
26 - 40 years	95 (72)	88 (66.7)	124 (93.9)	86 (65.2)	40 (30.3)	19 (15)	39 (30.7)	69 (54.3)	88 (66.7)	8 (6.1)	36 (27.3)
>40 years	138 (68.7)	131 (65.2)	186 (92.5)	129 (64.2)	71 (35.3)	26 (13.7)	71 (37.4)	93 (48.9)	130 (64.7)	21 (10.4)	50 (24.9)
P-value	0.428	0.875	<0.001	0.013	<0.001	0.066			0.001		
Education level											
High school	111 (72.5)	105 (68.6)	131 (85.6)	108 (70.6)	55 (35.9)	18 (13)	31 (22.5)	89 (64.5)	89 (58.2)	18 (11.8)	46 (30.1)
University	360 (66.5)	357 (66)	463 (85.6)	377 (69.7)	130 (24)	54 (10.7)	183 (36.4)	266 (52.9)	315 (58.2)	41 (7.6)	185 (34.2)
P-value	0.160	0.541	0.990	0.830	0.003	0.009			0.215		
Occupation											
Student	193 (66.1)	199 (68.2)	227 (77.7)	220 (75.3)	63 (21.6)	18 (6.9)	82 (31.7)	159 (61.4)	155 (53.1)	26 (8.9)	111 (38)
Unemployed	89 (69)	82 (63.6)	118 (91.5)	86 (66.7)	44 (34.1)	20 (16.1)	37 (29.8)	67 (54)	78 (60.5)	12 (9.3)	39 (30.2)
Employed	166 (72.2)	156 (67.8)	208 (90.4)	151 (65.7)	64 (27.8)	28 (12.7)	85 (38.5)	108 (48.9)	143 (62.2)	18 (7.8)	69 (30)
Retired	23 (53.5)	25 (58.1)	41 (95.3)	28 (65.1)	14 (32.6)	6 (16.2)	10 (27)	21 (56.8)	28 (65.1)	3 (7)	12 (27.9)
P-value	0.089	0.496	<0.001	0.066	0.038	0.026			0.397		
Salary											
None	268 (68)	267 (67.8)	326 (82.7)	282 (71.6)	102 (25.9)	35 (9.8)	111 (31.1)	211 (59.1)	223 (56.6)	35 (8.9)	136 (34.5)
<350 BD	62 (72.1)	59 (68.6)	76 (88.4)	58 (67.4)	27 (31.4)	11 (12.8)	27 (31.4)	48 (55.8)	49 (57)	6 (7)	31 (36)
350 – 1000 BD	105 (64)	102 (62.2)	146 (89)	114 (69.5)	46 (28)	25 (16.2)	54 (35.1)	75 (48.7)	97 (59.1)	17 (10.4)	50 (30.5)
>1000 BD	36 (72)	34 (68)	46 (92)	31 (62)	10 (20)	1 (2.3)	22 (50)	21 (47.7)	35 (70)	1 (2)	14 (28)
P-value	0.530	0.600	0.095	0.519	0.493	0.025			0.417		
Hypertension											
Yes	46 (66.7)	44 (63.8)	65 (94.2)	44 (63.8)	29 (42)	9 (14.1)	21 (32.8)	34 (53.1)	34 (49.3)	10 (14.5)	25 (36.2)
No	425 (68)	418 (66.9)	529 (84.6)	441 (70.6)	156 (25)	63 (10.9)	193 (33.4)	321 (55.6)	370 (59.2)	49 (7.8)	206 (33)
P-value	0.822	0.603	0.032	0.243	0.002	0.749			0.106		
Diabetes											
Yes	31 (70.5)	33 (75)	40 (90.9)	28 (63.6)	11 (25)	8 (19.5)	12 (29.3)	21 (51.2)	21 (47.7)	8 (18.2)	15 (34.1)
No	440 (67.7)	429 (66)	554 (85.2)	457 (70.3)	174 (26.8)	64 (10.7)	202 (33.7)	334 (55.7)	383 (58.9)	51 (7.8)	216 (33.2)
P-value	0.704	0.221	0.299	0.351	0.797	0.220			0.048		
Obesity											
Yes	91 (64.5)	90 (63.8)	124 (87.9)	95 (67.4)	40 (28.4)	19 (14.4)	47 (35.6)	66 (50)	78 (55.3)	13 (9.2)	50 (35.5)
No	380 (68.7)	372 (67.3)	470 (85)	390 (70.5)	145 (26.2)	53 (10.4)	167 (32.8)	289 (56.8)	326 (59)	46 (8.3)	181 (32.7)
P-value	0.343	0.440	0.373	0.467	0.607	0.273			0.736		
Anaemia											
Yes	66 (69.5)	66 (69.5)	83 (87.4)	69 (72.6)	30 (31.6)	8 (9.5)	29 (34.5)	47 (56)	53 (55.8)	5 (5.3)	37 (38.9)
No	405 (67.6)	396 (66.1)	511 (85.3)	416 (69.4)	155 (25.9)	64 (11.5)	185 (33.2)	308 (55.3)	351 (58.6)	54 (9)	194 (32.4)
P-value	0.718	0.519	0.595	0.530	0.243	0.863			0.282		
Other											
Yes	72 (62.6)	71 (61.7)	104 (90.4)	79 (68.7)	52 (45.2)	12 (11.2)	35 (32.7)	60 (56.1)	64 (55.7)	14 (12.2)	37 (32.2)
No	399 (68.9)	391 (67.5)	490 (84.6)	406 (70.1)	133 (23)	60 (11.2)	179 (33.5)	295 (55.2)	340 (58.7)	45 (7.8)	194 (33.5)
P-value	0.186	0.229	0.105	0.761	<0.001	0.986			0.302		

The association between three sociodemographic characteristics and the use of herbs for medical purposes (Table VI). The first association was with age, with a P value of 0.022. Participants aged between 26 and 40 years were the highest age group to use herbs for medicinal purposes (96.2%, n=127), while participants above 40 years old were the second highest group (94.5%, n=190). The age group with the least use of HMs was between 18 and 25 years old (89.8%, n=324). The second association, with a P value of 0.002, was with occupation; unemployed and employed were both equally represented at 96.1%, while students and the retired were almost equally represented at 88.7% and 86%, respectively. The third association was with salary, with a P value of 0.013. Participants with salaries less than 350 BD used herbs for medicinal purposes at a rate of 100%; while those with salaries between 350 and 1000 BD used herbs for medicinal purposes at a rate of 93.9%. Participants with salaries greater than 1000 BD used herbs for medicinal purposes at a rate of 88%.

This cross-sectional study on assessing the prevalence, attitudes, perceptions, and practices of using HMs by Bahraini population yielded a total sample size 694, of which more than two thirds of were females (73.5%). This may be because women may be obsessed with their beauty and the use of cosmetic products that contain herbs or through direct application to their skin. For example, they use *Acasia concinna* (shikaka) which is an Indian plant for hair growth and as prophylaxis from dandruff (Joshi, 2013).

Table VI. Association between sociodemographic characteristics and practice of using herbs

	Use of HMs for medicinal purposes		Medicinal Reason for use				Efficacy of HM		
Characteristics	**Yes**	**No**	**Immunotherapy**	**Therapeutic**	**Cosmetic**	**Other**	**Successful**	**Partially successful**	**Not effective**
	n (%)	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**
Gender									
Female	475 (93.1)	35 (6.9)	319 (67.2)	411 (86.5)	385 (81.1)	147 (30.9)	166 (34.9)	297 (62.5)	12 (2.5)
Male	166 (90.2)	18 (9.8)	116 (69.9)	145 (87.3)	49 (29.5)	66 (39.8)	63 (38)	98 (59)	5 (3)
P-value	0.201		0.518	0.788	<0.001	0.038	0.718		
Age									
18 - 25 years	324 (89.8)	37 (10.2)	207 (63.9)	273 (84.3)	233 (71.9)	87 (26.9)	103 (31.8)	213 (65.7)	8 (2.5)
26 - 40 years	127 (96.2)	5 (3.8)	90 (70.9)	112 (88.2)	92 (72.4)	47 (37)	56 (44.1)	66 (52)	5 (3.9)
>40 years	190 (94.5)	11 (5.5)	138 (72.6)	171 (90)	109 (57.4)	79 (41.6)	70 (36.8)	116 (61.1)	4 (2.1)
P-value	0.022		0.088	0.156	0.001	0.002	0.098		
Education level									
High school	138 (90.2)	15 (9.8)	98 (71)	121 (87.7)	95 (68.8)	55 (39.9)	54 (39.1)	81 (58.7)	3 (2.2)
University	503 (93)	38 (7)	337 (67)	435 (86.5)	339 (67.4)	158 (31.4)	175 (34.8)	314 (62.4)	14 (2.8)
P-value	0.253		0.371	0.713	0.748	0.062	0.617		
Occupation									
Student	259 (88.7)	33 (11.3)	164 (63.3)	216 (83.4)	190 (73.4)	70 (27)	84 (32.4)	169 (65.3)	6 (2.3)
Unemployed	124 (96.1)	5 (3.9)	94 (75.8)	114 (91.9)	97 (78.2)	51 (41.1)	50 (40.3)	71 (57.3)	3 (2.4)
Employed	221 (96.1)	9 (3.9)	149 (67.4)	191 (86.4)	122 (55.2)	83 (37.6)	80 (36.2)	134 (60.6)	7 (3.2)
Retired	37 (86)	6 (14)	28 (75.7)	35 (94.6)	25 (67.6)	9 (24.3)	15 (40.5)	21 (56.8)	1 (2.7)
P-value	0.002		0.069	0.059	<0.001	0.011	0.778		
Salary									
None	357 (90.6)	37 (9.4)	238 (66.7)	309 (86.6)	265 (74.2)	110 (30.8)	122 (34.2)	228 (63.9)	7 (2)
<350 BD	86 (100)	0 (0)	65 (75.6)	74 (86)	69 (80.2)	37 (43)	36 (41.9)	45 (52.3)	5 (5.8)
350 – 1000 BD	154 (93.9)	10 (6.1)	105 (68.2)	132 (85.7)	81 (52.6)	49 (31.8)	61 (39.6)	90 (58.4)	3 (1.9)
>1000 BD	44 (88)	6 (12)	27 (61.4)	41 (93.2)	19 (43.2)	17 (38.6)	10 (22.7)	32 (72.7)	2 (4.5)
P-value	0.013		0.328	0.620	<0.001	0.146	0.080		
Hypertension									
Yes	64 (92.8)	5 (7.2)	46 (71.9)	62 (96.9)	30 (46.9)	29 (45.3)	25 (39.1)	37 (57.8)	2 (3.1)
No	577 (92.3)	48 (7.7)	389 (67.4)	494 (85.6)	404 (70)	184 (31.9)	204 (35.4)	358 (62)	15 (2.6)
P-value	0.898		0.469	0.012	<0.001	0.031	0.799		
Diabetes									
Yes	41 (93.2)	3 (6.8)	29 (70.7)	39 (95.1)	27 (65.9)	16 (39)	15 (36.6)	24 (58.5)	2 (4.9)
No	600 (92.3)	50 (7.7)	406 (67.7)	517 (86.2)	407 (67.8)	197 (32.8)	214 (35.7)	371 (61.8)	15 (2.5)
P-value	0.833		0.684	0.102	0.793	0.416	0.639		
Obesity									
Yes	132 (93.6)	9 (6.4)	87 (65.9)	120 (90.9)	88 (66.7)	49 (37.1)	37 (28)	89 (67.4)	6 (4.5)
No	509 (92)	44 (8)	348 (68.4)	436 (85.7)	346 (68)	164 (32.2)	192 (37.7)	306 (60.1)	11 (2.2)
P-value	0.530		0.590	0.113	0.774	0.287	0.052		
Anaemia									
Yes	84 (88.4)	11 (11.6)	53 (63.1)	71 (84.5)	56 (66.7)	31 (36.9)	28 (33.3)	52 (61.9)	4 (4.8)
No	557 (93)	42 (7)	382 (68.6)	485 (87.1)	378 (67.9)	182 (32.7)	201 (36.1)	343 (61.6)	13 (2.3)
P-value	0.119		0.316	0.521	0.827	0.443	0.411		
Other									
Yes	107 (93)	8 (7)	72 (67.3)	101 (94.4)	73 (68.2)	50 (46.7)	38 (35.5)	64 (59.8)	5 (4.7)
No	534 (92.2)	45 (7.8)	363 (68)	455 (85.2)	361 (67.6)	163 (30.5)	191 (35.8)	331 (62)	12 (2.2)
P-value	0.764		0.889	0.011	0.900	0.001	0.359		

Moreover, the study showed that the most common reason for using herbs was because people thought that herbs had fewer side effects compared to conventional medicines. The high demand for herbal medicine by Bahrain's population encourages physicians to pay more attention to herbal medicines (Hilal and Hilal, 2017). On the contrary, a study conducted in Jordan showed that approximately 22% of their participants experienced side effects from using HMs, the most common being nausea and vomiting (El-Dahiyat *et al*, 2020).

More than two thirds of the sample in the current study were interested in HMs (73.6%) and almost 61.8% thought that HMs were safer than conventional medicines. The main reason for this perspective could be, that people think that herbs are safe because they are seen as being more natural than OTC or prescribed conventional medicines, which was also reported in other studies (Lynch & Berry, 2007).

Furthermore, 92.4% of the participants had used herbs before, the usage was highest for therapeutic reasons with reports of partially successful therapeutic effects of about 6 in 10 participants (Table VI). However, this finding should not be interpreted as recommending traditional recipes for medical or therapeutic potential as more studies need to be conducted in Bahrain to evaluate the effectiveness of HMs compared to conventional medicines.

The study showed that the majority of participants who used herbs obtained their information from the internet (Table IV). Although it is considered the most accessible source of information, it could be the most dangerous, as

some people do not like to talk to anyone about their problems or suffering and resort to the internet to obtain information before purchasing HMs. One drawback of this practice is the high chance of misinformation about herbs and their uses. This is especially true given that the effect. Overall, more than half of the participants claimed that herbs would keep them away from taking conventional medicines sometimes. Herbs would not deter approximately half of the participants earning more than 1,000 BD from using conventional medicines (Table V). According to Al Akeel *et al*. (2018), participants with a high school diploma use HMs three times more than participants with a university degree. On the other hand, employed participants and people who have better salaries prefer using conventional medicines than traditional recipes (Al Akeel *et al*, 2018). So, it was clear that educated people could be more willing to accept new ideas than those with lower educational qualifications, who are more conservative in their traditions regarding therapeutic practices. In addition to that, people with high salaries and well-paid occupations may be more interested in conventional medicines and may consider them to be more trustworthy than herbs.

Hypertensive patients use herbs for therapeutic purposes, as many people use HMs to adjust their blood pressure and blood sugar level (Hughes *et al*, 2013). However, in the current study there was no statistically significant association between diabetes and the therapeutic reasons for using HMs. This might be due to the small number of diabetic users who contributed to the study (Table VI).

When asked about their opinion on HMs safety compared to conventional medicines, 61.8% of participants who used herbs thought that herbs were safer than medicines (Table III). Furthermore, a low percentage of participants earning more than 1,000 BD reported this attitude. This could be due to the ability of people with high salaries to go to physicians without worrying about consultation and treatment expenses. An experimental study conducted in the UK on participants with different education levels and occupations revealed that participants believed that herbs were safer than prescribed medicines because they are perceived to be more natural than conventional medicines, not because of their availability (Lynch & Berry, 2007).

According to logistic regression results, it was established that the higher the salary, the lower the interest in traditional recipes (Tables V, VI). This could be attributed to their ability to afford the costs of follow-up with a specialist physician as well as the price of medicines. While the lowest-paid groups cannot afford the high cost of medicines, they resort to herbs, which are cheaper.

In 90.5% of the total sample claimed they need to know more information about HMs (Table III). It is recommended that the health authorities raise awareness on HMs through websites or social media platforms, such as Instagram, which is the second-most-used social media application in Bahrain (Similarweb, 2023). Furthermore, pharmacists and doctors should educate their patients on HMs and how they may interact with their drug therapy or medical conditions.

CONCLUSION

Herbal medicine usage is widespread among the Bahraini population, mostly for therapeutic purposes. Most Bahrainis believe that herbs are safer and have fewer side effects than conventional medicines. The main sources of information for the participants were the internet, social media, and friends. Local markets and herbal shops were the most common places where people acquired herbs. Furthermore, factors that could affect the perception, attitude, and practice of herbal medicine in Bahrain were age, gender, and occupation. As age increased, interest in using HMs also increased; while interest declined as salaries rose. It is recommended that the health authorities raise awareness on HMs through peer reviewed websites or social media platforms.

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CONFLICT OF INTEREST

The authors declare no conflict of interest".

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ETHICAL APPROVAL

Study was approval by the Scientific Research and Publication Committee, College of Health and Sports Sciences, University of Bahrain (ethical recommendation number 33/2022-23).

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