

Prevalence, Knowledge, and Attitudes of Bahraini Adults towards Marjoram for the Treatment of Pain and Other Diseases: A Cross-Sectional Study

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Abstract—The global rise in herbal medicine use has prompted increased scrutiny of specific herbs like marjoram (*Origanum majorana*), yet its utilization patterns in Bahrain, middle east, and globally remain underexplored. This study sought to investigate the extent, knowledge, perceptions, and behaviors associated with marjoram use among Bahraini adults. Employing a cross-sectional design, data were gathered from 387 individuals aged 18–65 years through a digitally administered questionnaire, distributed via a random sampling technique. The survey, consisting of 18 questions organized into four thematic sections, captured sociodemographic details, views, attitudes, and practices related to marjoram. Predominantly female (80.62%), 81.91% of participants used marjoram for therapeutic purposes, with 82.69% targeting stomach pain relief. A significant 89.9% perceived marjoram as safer than pharmaceuticals, and 73.4% sought additional knowledge about its benefits. Efficacy was rated as partially successful by 59.17% and fully effective by 37.47%. Tradition drove usage for 51.68%, with 84.24% sourcing marjoram from herbal shops. Information was primarily obtained from friends (41.86%), family (18.35%), and media (17.05%). Age and educational attainment significantly shaped usage patterns, with younger and more educated individuals exhibiting distinct tendencies. The prevalent reliance on marjoram, rooted in cultural practices and perceived safety, highlights the necessity for targeted educational initiatives to promote informed and safe use within Bahrain's population.

Keywords— *Marjoram, Origanum majorana, Herbal Medicine, Health, Bahrain, Traditional Recipe*

I. INTRODUCTION

Marjoram (*Origanum majorana*) is a Lamiaceae herb traditionally used for gastrointestinal and respiratory conditions, pain, and inflammatory disorders, with its therapeutic effects attributed to bioactive constituents and essential oils [1]. The growing global use of herbal remedies reflects a preference for natural therapies perceived as safer than conventional medicines. In Bahrain, traditional practices remain integrated within healthcare behaviors, underscoring the need to examine

public knowledge and perceptions related to herbal self use [2], [3].

Evidence indicates that marjoram possesses anti-inflammatory and analgesic properties and may contribute to additional clinical outcomes, including metabolic, hormonal, and antiproliferative effects, as reported in regional studies [4], [5], [6]. Nevertheless, its overall therapeutic scope and acceptance among Bahraini adults remain insufficiently documented.

Accordingly, this study aims to assess the prevalence of marjoram use among Bahraini adults and to evaluate their knowledge and attitudes regarding its use for pain and other health conditions, in order to inform safer and more rational utilization practices.

II. MATERIALS AND METHODS

A. Study Design and Population

This investigation employed a cross-sectional research design involving 387 participants aged 18-65 years, comprising Bahraini citizens. Data collection occurred during March and April 2025 utilizing a digitally administered survey instrument specifically designed to address all study objectives. The minimum required sample size was determined to be 384 subjects, calculated using Slovin's formula to ensure statistical validity. Participants were selected via stratified random sampling, targeting diverse age, gender, and educational groups to ensure representativeness across Bahrain's population.

B. Survey Tool

The survey instrument was adapted from previous Bahrain-based studies and modified to focus specifically on marjoram. The final questionnaire consisted of 18 questions organized into four sections, following the framework proposed by [7].

The first section included five questions capturing sociodemographic characteristics, such as age, gender,

educational background, employment status, and income level. The second section comprised three questions assessing participants' perceptions of marjoram in comparison to conventional medical treatments. The third section contained three questions examining attitudes toward marjoram, with an emphasis on its perceived safety and the credibility of information sources. The fourth section included seven questions addressing patterns of marjoram use and the sources of information influencing these practices.

To enhance accessibility and cultural relevance, the questionnaire was developed and administered in both Arabic and English. Terminological accuracy and conceptual equivalence across languages were maintained, while wording was simplified to accommodate varying literacy levels.

C. Survey Distribution

The survey was administered online via Microsoft Forms between March 12 and April 10, 2025. A convenience sampling approach was employed, with 387 Bahraini participants recruited through social media platforms and messaging applications. Participants provided electronic informed consent prior to participation and were eligible to proceed only if they met the inclusion criteria (Bahraini nationality and age ≥ 18 years). Participation was voluntary, and no financial incentives were offered.

All responses were self completed without external assistance. While this approach facilitated rapid and broad data collection, potential self selection bias and unequal access to digital resources may limit the generalizability of the findings.

Ethical approval was obtained from the Scientific Research and Publication Committee, College of Health and Sport Sciences, University of Bahrain (Ethical Approval No. 40/2024 25), and the study was conducted in accordance with ethical standards for research involving human participants.

D. Statistical Analysis

Data was entered and analyzed using IBM SPSS Statistics, version 26. Descriptive statistics, including frequencies and percentages, were calculated for categorical variables. To examine associations between pairs of categorical variables, a Chi-Square test was employed. Binary logistic regression analysis was conducted to identify factors influencing the binary dependent variable. Statistical significance was determined using a threshold of $P < 0.05$.

III. RESULTS AND DISCUSSION

TABLE I. BASELINE SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS. (TOTAL N=387)

Characteristic		n	%
Age	18 - 25 year	260	67.18
	26 - 40 year	69	17.83
	>40 year	58	14.99
Gender	Male	75	19.37
	Female	312	80.62
high school or below		89	22.99

Level of education	university or above	298	77
Occupation	Student	208	53.75
	Unemployed	49	12.66
	Employed	109	28.17
	Retired	21	5.43
Monthly income	None	234	60.47
	< 350 BD	39	10.08
	350 - 1000 BD	99	25.58
	> 1000 BD	15	3.88

This study included 387 Bahraini participants, with demographic characteristics summarized in Table I. Most respondents (67.18%) were aged 18–25, followed by those aged 26–40 (17.83%) and over 40 (14.9%). The sample was predominantly female (80.62%), with males constituting 19.37% of the population. Educational attainment varied, with 77% holding university degrees and 22.99% having completed high school or less. Students formed the largest subgroup (53.75%), followed by employed individuals (28.17%), unemployed participants (12.66%), and retirees (5.43%). Financial status stratification indicated that 60.47% reported no personal income, primarily students. Among income-earning participants, 10.08% had a monthly income below 350 Bahraini Dinar (approximately 928 USD), 25.58% earned between 350 and 1000 Bahraini Dinar (approximately 928–2,652 USD), and 3.88% earned above 1000 Bahraini Dinar (approximately 2,652 USD) per month.

TABLE II. MARJORAM-RELATED PERCEPTION ASSESSMENT QUESTIONS. (TOTAL N=387)

Perception		n	%
Why do you use Marjoram?			
	It has fewer side effects than conventional medicine	66	17.05
	It is based on hereditary traditions	200	51.68
	It is easy to access	89	23.00
	It is lower in cost	17	4.39
	It is effective for abdominal pain and has other health benefits	15	3.88
Does using Marjoram help you reduce your intake of conventional medicine?			
	No	56	14.47
	Sometimes	158	40.83
	Yes	173	44.70
What would you do if you experienced side effects from using Marjoram?			
	Consult a doctor	113	29.20
	Stop using Marjoram	239	61.76
	Switch to another herbal remedy	35	9.04

TABLE III. MARJORAM-RELATED ATTITUDE ASSESSMENT QUESTIONS.
(TOTAL N=387)

	Attitude	n	%
Are you interested in traditional Marjoram recipes?			
	Yes	210	54.3
	No	177	45.7
Do you think Marjoram is safer than conventional medicines?			
	Yes	348	89.9
	No	39	10.1
Do you feel the need to have more information on Marjoram?			
	Yes	284	73.4
	No	103	26.6

As shown in Table II, cultural tradition was the most frequently reported motivation for marjoram use (51.68%, $n=200$), whereas accessibility (23%, $n=89$), perceived fewer side effects (17.05%, $n=66$), and lower cost (4.39%, $n=17$) were reported less often. Use for stomach discomfort and other health purposes was reported by 3.88% ($n=15$). These patterns indicate that, in this sample, cultural considerations were commonly cited. Compared with [7], who reported perceived safety as the primary driver of general herbal use in Bahrain, the present findings suggest a relatively greater emphasis on hereditary traditions for marjoram specifically. The limited role of cost is consistent with [3], which may indicate that economic factors were less prominent than cultural beliefs in this context. Potential implications for healthcare integration and herb–drug interaction awareness may warrant consideration.

Regarding views on conventional medicine (Table II), responses varied: 44.70% ($n=173$) reported reduced reliance on pharmaceuticals, 40.83% ($n=158$) indicated occasional benefit, and 14.47% ($n=56$) reported no benefit. Concerning safety related actions, 61.76% ($n=239$) indicated they would discontinue use if side effects occurred; 9.04% ($n=35$) would switch to another herbal remedy; and 29.20% ($n=113$) would consult a healthcare professional.

In Table III, cultural engagement also appeared in culinary interest: 54.3% ($n=210$) reported interest in marjoram recipes, whereas 45.7% ($n=177$) did not. A large proportion perceived marjoram as safer than pharmaceuticals (89.9%, $n=348$), and 73.4% ($n=284$) expressed interest in obtaining more information. Taken together, these observations may indicate sustained cultural familiarity accompanied by informational interest within the sample.

TABLE IV. MARJORAM-RELATED PRACTICE ASSESSMENT QUESTIONS.
(TOTAL N=387)

	Practice	n	%
Do you use Marjoram for medical purpose?			
	Yes	317	81.91
	No	70	18.09
What is your reason for using Marjoram?			
	Cosmetic	8	2.07
	Immunotherapy	56	14.47

	Therapeutic (stomach pain reliever)	320	82.69
	Other health benefits	3	0.78
Where do you purchase Marjoram from?			
	Herbal shop (Attar / Hawaj)	326	84.24
	Supermarket	43	11.11
	Pharmacy	12	3.10
	Online	6	1.55
How effective do you find Marjoram?			
	Not effective	13	3.36
	Partially successful	229	59.17
	Successful	145	37.47
What are your information sources on Marjoram?			
	Traditional medical experts (Attar / Hawaj)	65	16.80
	Doctor / Pharmacist	23	5.94
	Family	71	18.35
	Friends	162	41.86
	Media (Internet, social media or TV)	66	17.05
Do family members of yours use Marjoram for medical purposes?			
	Yes	302	78.04
	No	42	10.85
	I don't know	43	11.11
Do friends and colleagues of yours use Marjoram for medical purposes?			
	Yes	243	62.79
	No	22	5.68
	I don't know	122	31.52

According to Table IV, 81.91% ($n=317$) reported using marjoram for medical purposes, mainly for stomach pain (82.69%, $n=320$), with smaller shares for immunotherapy (14.47%, $n=56$), cosmetic use (2.07%, $n=8$), and other minor benefits (0.78%, $n=3$), broadly consistent with regional reports citing therapeutic motivations [8], [9]. Most respondents obtained marjoram from herbal shops (84.24%, $n=326$), followed by supermarkets (11.11%), pharmacies (3.1%), and online (1.55%), and perceived effectiveness was generally favorable (partial 59.17%, $n=229$; successful 37.47%, $n=145$; none 3.36%, $n=13$).

Regarding information sources, participants most frequently cited friends (41.86%, $n=162$), then family (18.35%, $n=71$), media (17.05%, $n=66$), traditional experts (16.8%, $n=65$), and healthcare professionals (5.94%, $n=23$), which relative to settings with higher reliance on professional sources, may indicate context-specific information pathways (e.g., [10], [11]). Social context was also noted: 78.04% ($n=302$) indicated family use and 62.79% ($n=243$) reported use among friends/colleagues (vs. 10.85% and 5.68% reporting none, respectively), which may suggest that cultural transmission and social networks are relevant to use across demographic groups.

According to Fig.1, most participants rated marjoram as partially effective (59.17%), followed by effective (37.47%), with few reporting no effect (3.36%).

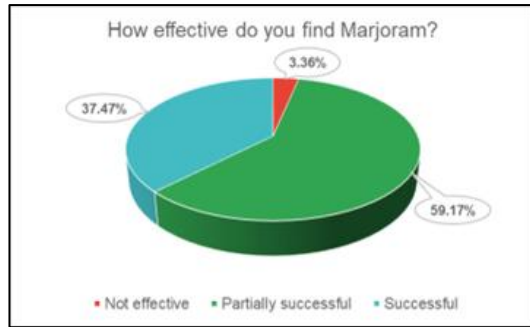


Fig. 1. Effectiveness of Marjoram according to participants.

Fig.2 indicates that marjoram was mainly used therapeutically (82.69%), with fewer participants reporting immunotherapy (14.47%), cosmetic (2.07%), or other uses (0.78%).

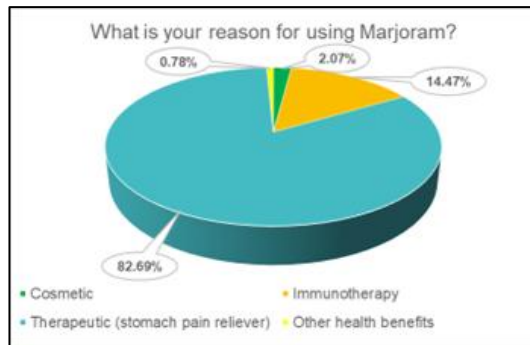


Fig. 2. Reasons for using Marjoram among participants.

According to Fig.3, most participants purchased marjoram from herbal shops (84.24%), followed by supermarkets (11.11%), with fewer sourcing it from pharmacies (3.1%) or online (1.55%).



Fig. 3. Sources for purchasing Marjoram among participants.

According to Fig.4, marjoram was primarily used due to hereditary traditions (51.68%), followed by ease of access (23%) and perceived fewer side effects (17.05%); cost (4.39%)

and efficacy for abdominal pain/other benefits (3.88%) were less frequently cited.

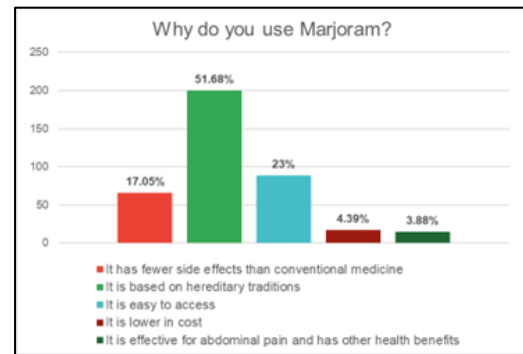


Fig. 4. Reasons for using Marjoram among participants.

According to Fig.5, friends were the primary source of information on marjoram (41.86%), followed by family (18.35%), media (17.05%), traditional experts (Attar/Hawaj; 16.8%), and healthcare professionals (5.94%).

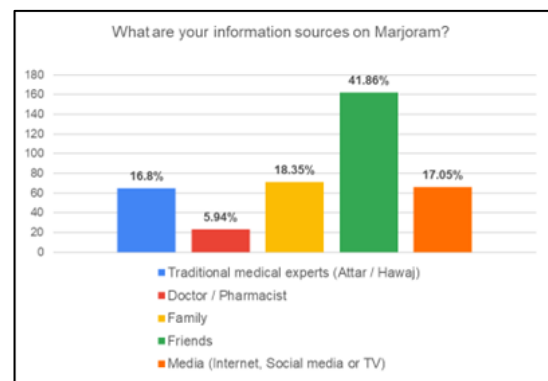


Fig. 5. Sources of information about Marjoram among participants.

TABLE V. THE ASSOCIATION BETWEEN AGE AND THE PARTICIPANTS' PERCEPTION AND ATTITUDE TOWARDS MARJORAM

		Age			p value
		18 - 25 year	26 - 40 year	>40 year	
Why do you use Marjoram?					
	<i>It has fewer side effects than conventional medicine</i>	38 (14.62%))	13 (18.84%))	15 (27.27%))	0.005*
	<i>It is based on hereditary traditions</i>	146 (56.15%))	28 (40.58%))	26 (47.27%))	
	<i>It is easy to access</i>	60 (23.08%))	18 (26.09%))	11 (20.00%))	
	<i>It is lower in cost</i>	11 (4.23%)	2 (2.90%)	4 (7.27%)	
	<i>It is effective for abdominal pain and has other health benefits</i>	5 (1.92%)	8 (11.59%))	2 (3.64%)	
Are you interested in traditional Marjoram recipes?					

	Yes	129 (49.62%)	39 (56.52%)	42 (72.41%)	0.006*
	No	131 (50.38%)	30 (43.48%)	16 (27.59%)	
Do you think Marjoram is safer than conventional medicines?					
	Yes	232 (89.23%)	58 (84.06%)	58 (100.00)	0.010*
	No	28 (10.77%)	11 (15.94%)	0 (0.00%)	
Do you use Marjoram for medical purpose?					
	Yes	214 (82.31%)	50 (72.46%)	53 (91.43%)	0.021*
	No	46 (17.69%)	19 (27.54%)	5 (8.57%)	
Where do you purchase Marjoram from?					
	Herbal shop (Attar / Hawaj)	226 (86.92%)	53 (76.81%)	47 (87.00%)	0.027*
	Supermarket	5 (1.92%)	0 (0.00%)	1 (1.89%)	
	Pharmacy	10 (3.85%)	2 (2.90%)	0 (0.00%)	
	Online	19 (7.31%)	14 (20.29%)	10 (11.11%)	
What are your information sources on Marjoram?					
	Traditional medical experts (Attar / Hawaj)	39 (15.00%)	16 (23.19%)	10 (12.20%)	0.027*
	Doctor / Pharmacist	20 (7.69%)	2 (2.90%)	1 (1.22%)	
	Family	42 (16.15%)	16 (23.19%)	13 (15.85%)	
	Friends	121 (46.54%)	23 (33.33%)	18 (22.00%)	
	Media (Internet, Social media or TV)	38 (14.62%)	12 (17.39%)	16 (19.51%)	
Do family members of yours use Marjoram for medical purposes?					
	Yes	199 (76.54%)	54 (78.26%)	49 (88.64%)	0.632
	No	29 (11.15%)	9 (13.04%)	4 (7.27%)	
	I don't know	32 (12.31%)	6 (8.70%)	5 (9.09%)	
Do friends and colleagues of yours use Marjoram for medical purposes?					
	Yes	153 (58.85%)	44 (63.77%)	46 (85.19%)	0.016*
	No	20 (7.69%)	1 (1.45%)	1 (1.85%)	
	I don't know	87 (33.46%)	24 (34.78%)	11 (20.37%)	

p-value of ≤ 0.05 is considered significant.

P-values are of Chi-squared test.

According to Table V, age was associated with differences in perceptions and attitudes toward marjoram ($p \leq 0.05$).

Among participants aged 18–25 years, hereditary traditions were most frequently cited as a reason for use (56.15%, $n=146$; $p=0.005$). In the >40 year age group, safety-related considerations were more commonly reported; 27.27% ($n=15$) cited fewer side effects, and all participants in this group perceived marjoram as safer than pharmaceuticals (100%, $n=58$; $p=0.010$). These observations are broadly consistent with findings reported by [12], who documented high perceived safety of herbal remedies among UAE citizens, and with estimates cited by [13] indicating widespread reliance on traditional medicine in developing regions. However, they differ from findings by [14], who reported lower levels of unconditional safety perception toward herbal medicines in a Saudi population.

Interest in traditional marjoram recipes also varied by age ($p=0.006$), with higher interest among older participants (72.41%, $n=42$) compared with younger participants (49.62%, $n=129$). This pattern is in line with observations by [15], who noted that traditional botanical knowledge is often maintained and transmitted by older generations.

Age related differences were additionally observed in purchasing practices ($p=0.027$). While herbal shops (Attar/Hawaj) remained the predominant source across all age groups (86.92% for 18–25 years; 76.81% for 26–40 years; and 87.00% for >40 years), participants aged 26–40 years reported a relatively higher proportion of online purchases (20.29%, $n=14$), which may reflect selective adoption of digital purchasing channels alongside continued reliance on traditional vendors.

Information sources differed by age group ($p=0.027$). Younger participants more frequently reported friends as information sources (46.54%, $n=121$), older participants reported media sources (19.51%, $n=16$), and middle aged participants cited traditional experts (23.19%, $n=16$). These distributions may indicate age related variation in information seeking pathways.

Reported use of marjoram by friends and colleagues also varied across age groups ($p=0.016$), with higher reporting among participants >40 years (85.19%, $n=46$) and lower reporting among younger participants (58.85%, $n=153$). Collectively, these age related variations may be relevant when considering targeted educational approaches, although further investigation would be required to clarify underlying factors.

TABLE VI. THE ASSOCIATION BETWEEN LEVEL OF EDUCATION AND THE PARTICIPANTS' PERCEPTION AND ATTITUDE TOWARDS MARJORAM.

		Level of education		<i>p</i> value
		High school or below	University or above	
What would you do if you experienced side effects from using Marjoram?				
	Consult a doctor	29 (34.94%)	84 (39.34%)	0.005*
	Stop using Marjoram	45 (55.56%)	194 (91.09%)	
	Switch to another herbal remedy	15 (18.52%)	20 (9.34%)	
What is your reason for using Marjoram?				
	Cosmetic	5 (6.25%)	3 (1.16%)	0.013*

	Immunotherapy	18 (22.50%)	38 (14.88%)	
	Therapeutic (stomach pain reliever)	65 (81.25%)	255 (99.22%)	
	Other health benefits	1 (1.25%)	2 (0.78%)	
Where do you purchase Marjoram from?				
	Herbal shop (Attar / Hawaj)	68 (32.08%)	258 (83.13%)	0.005*
	Supermarket	1 (0.47%)	5 (1.59%)	
	Pharmacy	8 (3.73%)	4 (1.27%)	
	Online	12 (5.61%)	31 (9.84%)	

p-value of ≤ 0.05 is considered significant.

P-values are of Chi-squared test.

According to Table VI, university-educated participants were more likely to discontinue marjoram after adverse effects (91.09% vs. 55.56%; $p=0.005$), reported very high therapeutic use for stomach pain (99.22%; $p=0.013$), and predominantly sourced from herbal shops (83.13%). Only 39.34% indicated they would consult a physician if adverse effects occurred (no significant difference vs. non-university), while reliance on herbal shops was higher among the educated (83.13% vs. 32.08%). Taken together, these patterns may suggest that higher education does not necessarily reduce cultural reliance on traditional vendors nor consistently increase formal consultation; similar associations between education and herbal use have been noted (e.g., [16]).

TABLE VII. ASSOCIATION BETWEEN SELF-USE OF MARJORAM FOR MEDICAL PURPOSES AND ITS USE BY FAMILY AND FRIENDS.

		Do you use Marjoram for medical purpose?		P-value
		Yes	No	
Do family members of yours use Marjoram for medical purposes?				
	Yes	266 (88.09%)	36 (11.91%)	<0.0001
	No	24 (57.14%)	18 (42.86%)	
	I don't know	27 (62.79%)	16 (37.21%)	
Do friends and colleagues of yours use Marjoram for medical purposes?				
	Yes	209 (86.01%)	34 (13.99%)	0.008
	No	14 (63.64%)	8 (36.36%)	
	I don't know	94 (77.05%)	28 (22.95%)	

p-value of ≤ 0.05 is considered significant.

P-values are of Chi-squared test.

Table VII indicates significant correlations between personal marjoram use and social networks ($p \leq 0.05$). Among medical users, 88.09% reported familial use ($p < 0.0001$), and 86.01% reported use among friends ($p = 0.008$). These patterns may suggest that family and peer contexts are relevant to individual use.

These observations are broadly compatible with [17], who reported family history as a strong predictor of CAM use in Saudi Arabia (univariate $P = 0.0001$, OR = 16.5). Taken together, the present results and prior evidence may indicate that familial endorsement and social ties are associated with herbal use, while causal interpretations would require further study.

Consequently, the significance of these findings lies in revealing a major reliance on marjoram for self-medication in Bahrain without professional oversight. This directly addresses the study's purpose of identifying public attitudes and knowledge gaps, which is essential to guide future pharmaceutical educational programs and ensure safer herbal practices.

IV. LIMITATIONS

These findings should be interpreted in light of certain methodological considerations. First, convenience sampling via social media may have introduced self selection bias, limiting generalizability. Second, the short data collection window may have constrained sample diversity. Finally, reliance on self reported online data precluded formal verification of nationality, a common constraint of electronic cross sectional surveys.

V. CONCLUSION

In this sample, the use of marjoram in Bahrain appeared closely linked to longstanding traditions and perceived safety relative to conventional medicines. Therapeutic use particularly for stomach pain was frequently reported across respondents. Herbal shops remained the predominant source, and social networks (family and friends) were most commonly cited in relation to use. Age and education were associated with significant differences in perceptions, information sources, and purchasing practices. Reliance on non expert channels suggests a need for clearer guidance, while the reported interest in further knowledge offers valuable opportunities for targeted education. Collectively, these observations may support initiatives that provide age appropriate information on potential benefits and risks, engage traditional vendors to share accurate advice, and enhance provider training and product quality standards to promote safe, informed use without undermining Bahraini cultural traditions.

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CONFLICT OF INTEREST STATEMENT

The research team confirms there are no financial, professional, or personal conflicts of interest that might have influenced the outcomes or interpretation of this investigation.

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ETHICAL COMPLIANCE STATEMENT

The research protocol and methodology were reviewed and formally approved by the Scientific Research and Publication Committee at the College of Health and Sports Sciences, University of Bahrain (Ethical Approval No.40/2024-25),

ensuring compliance with established ethical standards for academic research.

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