Case Study

Prevalence and Knowledge and Attitudes of Saudi Arabian Adults towards Herbal Self-Remedies: A Cross-Sectional Study

Abdullah A Alshehri[1], Lina Alzahrani[2], Atheer Alharthi[3], Abdulelah Altowairqi[3], Atheer Alzahrani[4], Fatimah Aldalouj[5], Alya Al Ghamdi[2], Reem Ayash[4], Aseel Badr[4], Ibtisam Hassan[6], Esraa Nawawi[7], Khames Alzahrani[8*]

[1]Department of Clinical Pharmacy, College of Pharmacy, Taif University, Ah Huwaya, Saudi Arabia. [2]Collage of Pharmacy, Al Baha University, Al Baha, Saudi Arabia. [3]Collage of Pharmacy, Taif University, Taif, Saudi Arabia. [4]Collage of Pharmacy, Umm Al-Qura University, Makkah, Saudi Arabia. [5]Collage of Pharmacy, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia. [6]Collage of Pharmacy, King Khalid University, Abha, Saudi Arabia. [7]Collage of Pharmacy, Jazan University, Jazan, Saudi Arabia.[8]Saudi Board of Endodontic SR, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.

Abstract

Herbs and plant products have long been utilized for the treatment, prevention, and promotion of health. Despite the awareness of potential risks associated with herbs, such as interactions with medications and inaccurate dosing, many individuals continue to use them without seeking medical consultation. This study aims to determine the prevalence of herbal self-remedies among Saudi Arabian adults and evaluate their knowledge and attitudes toward herbal medicines. A cross-sectional study. The study was include adult participants aged 18 years and above, residing in Saudi Arabia. Individuals below 18 years of age and non-residents were excluded. The minimum required sample size is 377, with a confidence level of 95%. Data analysis was performed using SPSS software. Natural herbs are the most commonly used complementary and alternative treatment at 38.6%. The purpose of using herbal medicine varies among respondents, with 46.5% citing therapeutic purposes, 30.6% citing preventive purposes, and 14.1% citing cosmetic purposes. When it comes to knowledge about herbal medicine, the survey found that 38.7% of respondents rated their knowledge as weak, while 46.6% rated their knowledge as moderate. Only 11.9% of respondents rated their knowledge as very good when it comes to possible interactions between herbs and drugs. While there is a good understanding of the benefits and risks associated with herbal remedies, there are still gaps in knowledge and attitudes that need to be addressed.

Keywords: Knowledge, Awareness, Herbs, Herbal-remedy

Introduction

Herbal medicine is the use of herbs or plant parts and products obtained from different sections of the plant, such as the leaves, roots, flowers, fruit, and berries, for therapeutic purposes [1]. Since time immemorial, our ancestors have relied on herbs and traditional recipes to treat diseases and pain and prevent them [2]. These days, in several countries throughout the world, the consumption of herbal medicines has significantly arisen and increased, with many people recently turning to these products for the treatment of many different kinds of health problems [3]. This is due to the common prevalence of self-treatment with herbs and other drugs among people for the reason that it is safe, economical, has minimal side effects, and is more socially and culturally acceptable [4].

Over the past three decades, there has been a significant increase in the use of these natural products as well as herbal remedies worldwide [5]. According to reports, 23.9% of Saudi Arabian patients who needed the aid of the health care system had a history of using herbal medicines [6]. Also, patients suffering from cancer and other chronic illnesses frequently use alternative therapies, which include herbal remedies. Furthermore, it has been estimated that over seventy percent of individuals in underdeveloped nations use herbs to treat a variety of diseases [7].

Studies show that the use of herbs is greatly influenced by traditions and cultural factors. Our society is not aware enough regarding the use of herbal medicines; this is the

Address for correspondence: Khames Alzahrani, Saudi Board of Endodontic SR, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.
Dr.khames.Alzahrani@gmail.com

How to cite this article: Alshehri AA, Alzahrani L, Alharthi A, Altowai A, Alzahrani A, Aldalouj F, et al. Prevalence and Knowledge and Attitudes of Saudi Arabian Adults towards Herbal Self-Remedies: A Cross-Sectional Study. Arch Pharm Pract. 2023;14(S):A06231512.

finding of a recent study [8]. There are many reasons why people use herbal medicine but mainly it is used to boost health, prevent chronic and acute diseases, and cure them as well [9]. So many people resort to herbal medicine when suffering from a certain pain or health state, in accordance with the advice of family and friends. The Internet and books were also common sources of information that affected the use of herbal medicine [10].

A study has shown that females use herbal medicines more often than males, and people with no health problems showed less tendency to consume herbal medicines, unlike people with chronic health conditions [11]. In addition, some searches found that the use of herbs among women who are expecting a baby is high, which is a matter of concern [12]. use of herbal medicine is common as its use is believed to be harmless; in fact, herbal medicine is the most common part of the traditional treatment used in Saudi Arabia [13].

Therefore, due to the widespread use of herbal medication among the Saudi population accompanied by the lack of awareness of its risks and interaction, and the crucial need to increase the level of awareness regarding the use of herbal medication, studies are being conducted to assess the impact of herbal medicine utilization on health status and its potential consequences. However, the available recent studies were limited only to specific regions within Saudi Arabia.

So, we are conducting this study to investigate and evaluate the level of knowledge, attitude, and prevalence of self-medication by herbal remedies among adults in Saudi Arabia, covering all cities and regions of the country.

Objectives

This study aims to determine the prevalence of herbal self-remedies among Saudi Arabian adults and evaluate their knowledge and attitudes toward herbal medicines.

Materials and Methods

Study Design

A cross-sectional study was conducted over three months from 2023 to 2024, among adults residing in various regions of Saudi Arabia. The study includes adults aged 18 years and above.

Inclusion and Exclusion Criteria

The study was include both males and females aged 18 and above who are living in Saudi Arabia. Individuals younger than 18 and those residing outside Saudi Arabia were excluded from the study.

Sample Size

The minimum sample size was determined using the Raosoft sample size calculator. With a confidence level of 95% and a margin of error of 5%, the minimum required sample size was calculated to be 377 participants.

Data Collection and Instrument

An Electronic self-administrated survey was distributed to the participants via social media. The survey instrument consists of questions collected from previous studies with similar objectives. The questionnaire has been modified to suit the specific objectives of this study. It is divided into four sections: demographic information, knowledge assessment, attitude assessment, and prevalence questions. The questionnaire comprises a total of 30 questions. The study was summarize the descriptive analysis and examine the relationship between demographics and level of knowledge, attitude, beliefs, and prevalence rates.

Scoring System

Part I: Knowledge Level: Nine questions were used to assess knowledge level. Seven of them are yes/no questions, with one point awarded for each correct answer and zero for incorrect or "I don't know" responses.

The maximum score in this section is 7, while the minimum score is zero. The "Bloom's cut-off points" method was used to categorize knowledge level into three categories: high level (6 -7 points), moderate level (4 - 5 points), and low level (0 - 3 points).

Part II: Attitude and Beliefs: Seven questions was assess attitudes and beliefs. Six of them are binary questions, with one point awarded for a positive attitude and zero for a negative attitude. The Likert scale is used for the last question, with two points for "strongly agree," one point for "agree," and zero for "disagree" or "I do not know." The maximum score in this section is 8, while the minimum score is zero. Attitude scores were categorized as follows: positive attitude (8 - 6 points), neutral attitude (5 - 4 points), and negative attitude (0 - 3 points).

Data Analysis

The data collected from the sample was entered into Microsoft Excel (2016) for Windows. Subsequently, the data was transferred to the Statistical Package for the Social Sciences (SPSS) program version 20 for statistical analysis.

Results and Discussion

Data from **Table 1** showed that it is clear that the majority of the respondents fall within the 20-30 age range, making up 37.3% of the total sample. This is followed by the 41-50 age group at 22.7% and the 51-60 age group at 13.8%. It is interesting to note that individuals under the age of 20 make up only 9.5% of the sample, while those over the age of 60 make up just 4.2%. In terms of gender, the majority of the respondents are female, accounting for 74.1% of the total sample. This is in contrast to the 25.9% of male respondents. The location data shows that the largest percentage of respondents come from the West, making up 47.8% of the sample. This is followed by the Middle region at 15.8% and the East at 14.7%. The North and South regions make up

11.5% and 10.2% respectively. Education level is also an important factor to consider, with the majority of respondents holding a Bachelor's degree (60.6%) and a significant portion having a secondary education (19.1%). It is worth noting that a small percentage of respondents are uneducated (0.2%) or have only completed primary education (0.4%). In terms of occupation, the data shows that the largest percentage of respondents are male/female students, making up 30.5% of the sample. This is followed by male/female employees in the non-health sector at 20.7% and those who do not work at 19.2%. The annual income distribution shows that the largest percentage of respondents fall within the 11,000 - 15,000 Saudi Riyals income bracket, making up 26.1% of the sample. This is followed closely by those earning over 15,000 Saudi Riyals at 26.8%. Finally, the marital status data reveals that the majority of respondents are married, accounting for 54.1% of the sample. This is followed by single individuals at 41.3% and divorced or widowed individuals at 2.4% and 2.3% respectively.

Table 1. Sociodemographic characteristics of participants (n=1054)

Parameter		No.	Percent
Age	less than 20	100	9.5
	20-30	393	37.3
	31_40	133	12.6
	41_50	239	22.7
	51_60	145	13.8
	more than 60	44	4.2
Gender	Male	273	25.9
	Female	781	74.1
Location	East	155	14.7
	Middle	167	15.8
	North	121	11.5
	South	107	10.2
	West	504	47.8
Education Level	uneducated	2	.2
	primary	4	.4
	middle	18	1.7
	secondary	201	19.1
	Bachelor's	639	60.6
	diploma	134	12.7
	Postgraduate	56	5.3
Occupation	free business	15	1.4
	An employee in the health sector	57	5.4
	Male/female employees in the non-health sector	218	20.7
	Retired / Retired	160	15.2
	Male/female student	321	30.5
	I do not work	202	19.2
	Other	81	7.7
Monthly Income (in Saudi Riyals)	Less than 5,000	245	23.2
	5,000 - 10,000	252	23.9
	11,000 - 15,000	275	26.1
	Over 15,000	282	26.8
Marital Status	Married	570	54.1
	Single	435	41.3
	Divorced	25	2.4
	Widowed	24	2.3

Based on the data provided, **Table 2** showed that 77.8% reported that they do not suffer from any of the diseases listed. Among those who do suffer from a specific disease, the most common reported condition is sugar, affecting 8.5% of respondents, followed by thyroid diseases at 7.4%. In terms of complementary and alternative medicine treatments, a significant portion of respondents (49.9%) reported that they do not use any of these treatments. However, among those who do, natural herbs are the most commonly used treatment at 38.6%, followed by cupping therapy at 12.3% and massage therapy at 9.4%. When it comes to sources of information for using these treatments, family and friends and the internet and media are the top sources, with 31.4% and 30.5% of respondents respectively citing them as their sources of information. Doctors and folk healers are also significant sources at 20.1%. The purpose of using herbal medicine varies among respondents, with 46.5% citing therapeutic purposes, 30.6% citing preventive purposes, and 14.1% citing cosmetic purposes.

Table 2. Prevalence of herbal self-remedies (n=1054)

Parameter		No.	%
Do you suffer from one of the following diseases?	Sugar	90	8.5
	the pressure	83	7.9
	asthma	47	4.5
	Thyroid diseases	78	7.4
	I do not suffer from any of these diseases	820	77.8
Which of the following complementary and alternative medicine treatments do you use?	Acupuncture	25	2.4
	Energy therapy	19	1.8
	Massage therapy	99	9.4

	natural herbs	407	38.6
	Cupping therapy	130	12.3
	Other	58	5.5
	I do not use any complementary and alternative medicine treatments	526	49.9
	Family and friends	331	31.4
	Internet and media	321	30.5
What are your sources of information for using this type of treatment?	Doctors and folk healers	212	20.1
	Study and learn	162	15.4
	Books and periodicals	72	6.8
	Other	49	4.6
	I do not use any alternative or complementary medicine treatments	406	38.5
	Therapeutic	490	46.5
	Cosmetic	149	14.1
What is the purpose of your use of herbal medicine?	Preventive	322	30.6
	Other	36	3.4
	I do not use herbal medicine	409	38.8

According to **Table 3**, 42.7% of respondents believe that sometimes mixing herbs can be more effective, while 25% of respondents do not believe this to be the case. 81.5% of respondents believe that some instructions or restrictions must be considered when using herbs. In terms of side effects, 66.1% of respondents believe that there are potential side effects to using herbs. When it comes to knowledge about herbal medicine, the survey found that 38.7% of respondents rated their knowledge as weak, while 46.6% rated their knowledge as moderate. Only 11.9% of respondents rated their knowledge as very good when it comes to possible interactions between herbs and drugs. 79.3% of respondents knew that chamomile is used to treat anxiety and insomnia, while 47.9% of respondents did not know that ginger is used to treat motion sickness, nausea, and vomiting associated with pregnancy. Additionally, only 6.6% of respondents knew that ginger is considered safe for pregnant and breastfeeding women and can be consumed in large quantities. When it comes to safety, 90.2% of respondents do not believe that all herbs are suitable for all ages. Additionally, 87.2% of respondents do not believe that using herbs is always safe. 63% of respondents reported that they had achieved the desired result after using herbs, while 10.3% reported that they had not. 49.1% of participants indicated that they believe using herbs is not better than seeking medical advice, while 46% expressed that it's sometimes better. Only a small percentage (4.9%) firmly believe that using herbs is a better option than consulting a doctor. Similarly, when asked whether using herbs is better than using medicines, the majority (70.7%) disagreed, indicating a preference for conventional medicines over herbal remedies. However, a significant minority (29.3%) expressed the view that using herbs is indeed better than using medicines. A large proportion of participants (39.8%) agree that using herbs may result in mild complications such as allergies, while a substantial number (24.3%) strongly agree that herbs can lead to serious complications, even to the extent of being life-threatening. While a small percentage (12.8%) believe that using herbs is always safe, the overwhelming majority (87.2%) disagree.

Table 3. Knowledge of participants towards herbal self-remedies (n=1054)

Parameter		No.	%
Do you think that mixing herbs leads to a more effective result?	Yes	134	12.7
	no	264	25.0
	sometimes	450	42.7
	I don't know	206	19.5
Are there any instructions or restrictions that must be taken into consideration when using herbs?	Yes	859	81.5
	no	38	3.6
	I don't know	157	14.9
Are there any side effects to using herbs?	Yes	697	66.1
	no	97	9.2
	I don't know	260	24.7
How do you rate your level of knowledge in herbal medicine?	very good	155	14.7
	moderate	491	46.6
	weak	408	38.7
How do you rate your level of knowledge about possible interactions between herbs and drugs?	very good	125	11.9
	Moderate	369	35.0
	weak	560	53.1
Ginger is used to treat motion sickness, nausea, and vomiting associated with pregnancy	Yes	353	33.5
	no	196	18.6
	I don't know	505	47.9
Chamomile is used to treat anxiety and insomnia	Yes	836	79.3
	no	22	2.1
	I don't know	196	18.6
Ginger is considered safe for pregnant and breastfeeding women and can be consumed in large quantities	Yes	70	6.6
	no	553	52.5
	I don't know	431	40.9
Cloves are used to relieve toothache	Yes	906	86.0
	no	20	1.9
	I don't know	128	12.1
Do you think all the herbs used are suitable for all ages?	Yes	103	9.8
	no	951	90.2
Did you get the desired result after using herbs?	Yes	664	63.0
	no	109	10.3
	I've never used herbs before	281	26.7
Do you think that using herbs is better than going to the doctor?	Yes	52	4.9
	sometimes	485	46.0
	no	517	49.1
	Yes	309	29.3

Do you think that using herbs is better than using medicines?	no	745	70.7
Do you think that using herbs has bad side effects?	Yes, serious complications that may lead to death (strongly agree)	256	24.3
	Yes, mild complications such as allergies (I agree)	419	39.8
	No, it has no bad side effects (Disagree)	105	10.0
	I don't know	274	26.0
Do you think using herbs is always safe?	Yes	135	12.8
	no	919	87.2

The data presented in **Table 4** indicate that a significant portion of respondents do use herbs, with 63.9% confirming their usage. Of those who use herbs, 32.9% reported using them sometimes, while 13.5% use them scarcely. The specific herbs used vary widely among respondents, with popular choices including ginger (50.9%), mint (52.3%), cinnamon (43.4%), and anise (43.0%). When it comes to discussing herb usage with healthcare providers, the data reveals that 77.3% of respondents do inform their doctors about their herbal use, while 22.7% do not.

Table 4. Attitude of participants towards herbal self-remedies

Parameter		No.	%
Do you tell your doctor when you use herbs	Yes	815	77.3
	no	239	22.7
Do you use herbs?	Yes	673	63.9
	no	381	36.1
How often do you use herbs?	always	48	4.6
	sometimes	347	32.9
	mostly	133	12.6
	Scarcely	142	13.5
	Absolutely	3	0.3
Which of the following herbs do you use?	Cloves (nail) (veinous)	374	35.5
	Ginger	536	50.9
	Marjoram	158	15.0
	Anise	453	43.0
	Mint	551	52.3
	Rosemary	214	20.3
	Black seed	402	38.1
	Fennel (Sinoot	314	29.8
	sage	208	19.7
	Turmeric	331	31.4
	Cinnamon	457	43.4
	Chamomile	388	36.8
	Lavender (lavender)	113	10.7
	Safflower	200	19.0
	The time	291	27.6
	Licorice	71	6.7
	cardamom	346	32.8
	Bay leaf	230	21.8
	Male gum	286	27.1
	Hibiscus	289	27.4
	Cumin	420	39.8
	Senna seeds (senna)	72	6.8
	The ring	202	19.2
	Other	86	8.2

As shown in **Figure 1**, 58% of the respondents have a moderate degree of knowledge, while 29% have a low level, and 13% have high knowledge.

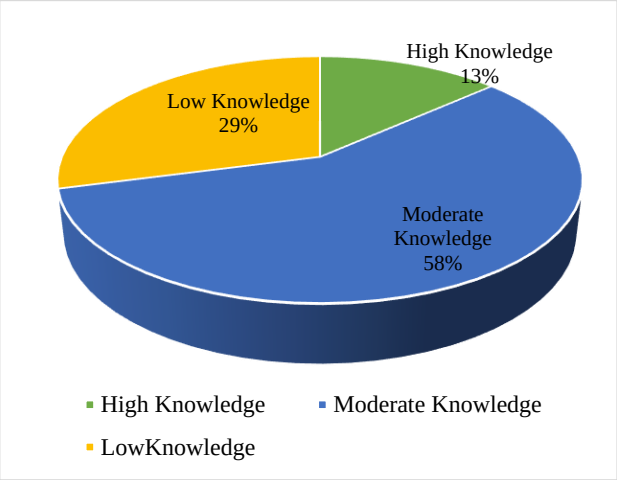

Figure 1. Score of knowledge of participants towards using herbal remedies

As shown in **Figure 2**, 80% of the respondents have a negative attitude, while 18% have a neutral one, and only 2% have a positive attitude.

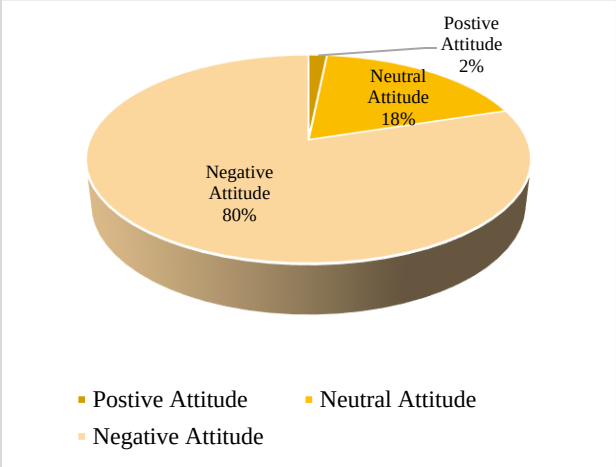

Figure 2. Score of attitude of participants towards using herbal remedies

Table 5 revealed that in terms of age, the data shows that the majority of individuals fall within the 20-30 age range, accounting for 37.3% of the sample. The distribution across age groups is statistically significant, with a p-value of 0.022. Marital status also demonstrates significant variation within the sample. The majority of individuals are married, comprising 54.1% of the sample, followed by single individuals at 41.3%. The differences in marital status distribution are statistically significant, with a p-value of 0.036. Gender distribution is also noteworthy, with females comprising the majority at 74.1% of the sample. This gender disparity is statistically significant, with a p-value of 0.001. When considering location, the data shows a relatively even distribution across different regions, with no statistically significant differences and a p-value of 0.768. Education level and occupation also display significant variation within the sample. The majority of individuals have a bachelor's degree, accounting for 60.6% of the sample, education level demonstrates a statistically significant association, with a p-value of 0.015, and are employed in non-healthcare sectors, comprising 20.7% of the sample. Occupation demonstrates statistically no significant association.

Table 5. Association between sociodemographic characters and knowledge toward using herb remedies (n=1054)

		Knowledge score			Total (N=1054)	P value
		High knowledge	Moderate knowledge	Low knowledge		
Age	less than 20	8	51	41	100	0.022
		0.8%	4.8%	3.9%	9.5%	
	20-30	55	214	124	393	
		5.2%	20.3%	11.8%	37.3%	
	31_40	21	76	36	133	
		2.0%	7.2%	3.4%	12.6%	
	41_50	36	149	54	239	
		3.4%	14.1%	5.1%	22.7%	
	51_60	19	91	35	145	
		1.8%	8.6%	3.3%	13.8%	
	more than 60	2	25	17	44	
		0.2%	2.4%	1.6%	4.2%	
marital status	Single	60	228	147	435	0.036
		5.7%	21.6%	13.9%	41.3%	
	Married	76	345	149	570	
		7.2%	32.7%	14.1%	54.1%	
	Divorced	1	20	4	25	
		0.1%	1.9%	0.4%	2.4%	
	widow	4	13	7	24	
		0.4%	1.2%	0.7%	2.3%	
Gender	Male	24	129	120	273	0.001
		2.3%	12.2%	11.4%	25.9%	
	Female	117	477	187	781	
		11.1%	45.3%	17.7%	74.1%	
Location	East	22	87	46	155	0.768
		2.1%	8.3%	4.4%	14.7%	
	Middle	22	96	49	167	
		2.1%	9.1%	4.6%	15.8%	
	North	19	65	37	121	
		1.8%	6.2%	3.5%	11.5%	
	South	16	54	37	107	
		1.5%	5.1%	3.5%	10.2%	
	West	62	304	138	504	
		5.9%	28.8%	13.1%	47.8%	
Education Level	Not educated	0	2	0	2	0.015
		0.0%	0.2%	0.0%	0.2%	
	Primary	0	2	2	4	
		0.0%	0.2%	0.2%	0.4%	

Occupation	Preparatory	0	10	8	18	0.116
		0.0%	0.9%	0.8%	1.7%	
	Secondary	25	105	71	201	
		2.4%	10.0%	6.7%	19.1%	
	Bachelor	95	385	159	639	
		9.0%	36.5%	15.1%	60.6%	
	Diploma	17	76	41	134	
		1.6%	7.2%	3.9%	12.7%	
	Post-graduate	4	26	26	56	
		0.4%	2.5%	2.5%	5.3%	
	Free Business	3	7	5	15	
		0.3%	0.7%	0.5%	1.4%	
	Employees in the health sector	8	34	15	57	
		0.8%	3.2%	1.4%	5.4%	
	Employees in non-health sector	17	140	61	218	
		1.6%	13.3%	5.8%	20.7%	
	Student	48	166	107	321	
		4.6%	15.7%	10.2%	30.5%	
	Retired	24	99	37	160	
		2.3%	9.4%	3.5%	15.2%	
	Working	28	120	54	202	
		2.7%	11.4%	5.1%	19.2%	
	Other	13	40	28	81	
		1.2%	3.8%	2.7%	7.7%	
Monthly Income (in Saudi Riyals)	Less than 5,000	39	121	85	245	0.163
		3.7%	11.5%	8.1%	23.2%	
	5,000 - 10,000	33	153	66	252	
		3.1%	14.5%	6.3%	23.9%	
	11,000 - 15,000	36	164	75	275	
		3.4%	15.6%	7.1%	26.1%	
	Over 15,000	33	168	81	282	
		3.1%	15.9%	7.7%	26.8%	

The use of herbal self-remedies is a common practice in Saudi Arabia, with many adults relying on traditional herbal treatments for various health issues. This prevalence can be attributed to the rich cultural heritage and long-standing tradition of using herbs and natural remedies for healing purposes in the region. However, the prevalence and knowledge of herbal self-remedies among Saudi Arabian adults can vary widely, and it is important to understand the attitudes and beliefs that drive this practice [3, 7].

According to our study, 74% of the participants in our study were female; it was observed that herbal medications are mostly used by females rather than males. The observed phenomenon may be ascribed to traits often associated with females, such as the state of being pregnant [14]. Kennedy *et al*. conducted a recent research that revealed that a significant proportion of pregnant women engage in the use of herbal medicine. Furthermore, the societal norms and cultural practices of Saudi Arabia actively promote the use of herbal remedies [15]. Additionally, the accessibility and convenience of the use of herbal medications are contributing factors to their growing popularity. Many individuals hold the belief that traditional remedies are devoid of hazardous effects and adverse reactions.

The findings of the research indicate that a significant proportion of individuals who engage in the use of conventional medicinal practices were advised to do so by their friends and family. This observation may be ascribed to the influence of Islamic culture and the conservative tendencies prevalent within the Saudi Arabian population, which engender a reluctance to readily embrace Western concepts. It is observed that individuals in Saudi Arabia continue to have a preference for seeking guidance and advice from their families, neighbors, elders, and religious leaders [16]. The findings about confidence in sources of information, use of traditional treatment, safety of herbal medicine, and accurate prescription of medication, among other studied topics, are likely to have been impacted by the Saudi Arabian context. For example, a survey revealed that 12.8% of participants expressed confidence in the safety of herbal medications, while a majority of 81.5% acknowledged the need to adhere to specific instructions while taking herbal remedies. The individuals within the age range of 20-30 had greater levels of knowledge and attitude. Moreover, almost

one-third of the participants think that using herbs is better than using medications. According to prior research conducted in Saudi Arabia, a substantial proportion of individuals who used herbal medication for therapeutic intentions agreed with its efficacy [17], consistent with the findings of a study held in Jazan, Saudi Arabia. The observed prevalence may be attributed to the perception among individuals that herbal remedies provide superior alternatives to pharmaceutical medications [18]. The use of medicine for the management of chronic illnesses has been well-documented on a global scale. Another research conducted in Oman revealed that almost 50% of patients used CAM treatments for the management of diabetes mellitus. Moreover, these individuals exhibited a profound belief in the efficacy of CAM therapies in the treatment of patients with this condition [19].

Our study revealed that 58% of the participants had moderate knowledge, and 13% had high knowledge. These results are similar to the findings of the previously mentioned studies as the knowledge of the participants was mainly moderate. On the other hand, these studies revealed better attitudes toward the use of herbal remedies, as our study showed that nearly 80% of the participants had negative attitudes.

This study showed participants aged 20 – 30 years, those who were married, and female, and participants holding a bachelor's degree had a statistically significant association and higher knowledge of herbal remedies. Furthermore, a study showed that those between the ages of 36 and 45, those who are married and employed, and jobless individuals, as compared to students and those engaged in private business, had a much greater belief in herbal medicine [18]. These findings also align with those reported in prior research conducted in Saudi Arabia [20]. The findings of this study are also consistent with prior research, which indicated that women were more frequent users of herbal medicine compared to males [21].

However, despite the prevalence and knowledge of herbal self-remedies, there are still gaps in understanding and attitudes towards these traditional treatments. For example, some individuals may not fully comprehend the potential interactions between herbal remedies and conventional medications, leading to potential health risks. Additionally, there may be misconceptions about the safety and effectiveness of certain herbal remedies, which could impact their use and efficacy [2, 15].

It is important to address these gaps in knowledge and attitudes towards herbal self-remedies in Saudi Arabia through education and awareness initiatives. Healthcare professionals can play a crucial role in providing accurate information and guidance on the safe use of herbal remedies, as well as promoting a balanced approach to healthcare that integrates traditional and modern treatments. Furthermore, more research and studies on the safety, efficacy, and potential interactions of herbal remedies are needed to inform evidence-based practices and policies [11].

Conclusion

In conclusion, the prevalence and knowledge of herbal self-remedies among Saudi Arabian adults are not sufficient, however, this study reflects the rich cultural heritage and traditional practices in the region. While there is a good understanding of the benefits and risks associated with herbal remedies, there are still gaps in knowledge and attitudes that need to be addressed. By promoting education, awareness, and evidence-based practices, Saudi Arabia can support the safe and effective use of herbal self-remedies as part of a holistic approach to healthcare.

ACKNOWLEDGMENTS: The researchers would like to acknowledge the Deanship of Scientific Research, Taif University for funding this work. And we thank the participants who all contributed samples to the study.
CONFLICT OF INTEREST: None
FINANCIAL SUPPORT: None
ETHICS STATEMENT: Ethical approval was obtained from the research ethics committee of Taif University with Application number: [45-067]. An informed consent was obtained from each participant after explaining the study in full and clarifying that participation is voluntary. Data collected were securely saved and used for research purposes only.

References

1. Zaidi SF, Khan MA, Saeed SA, Al Zahrani K, Al Ahmadi A, Al Yamy T, et al. Knowledge, Attitude and Practice Regarding Herbal Medicine Among Medical Students in Saudi Arabia. RADS J Pharm Pharm Sci. 2021;9(1):25-39.
2. Carr A, Santanello C. Pharmacists' Knowledge, Perceptions, and Practices Regarding Herbal Medicine. Innov Pharm. 2019;10(3):10.24926/iip.v10i3.2059.
3. El-Dahiyat F, Rashrash M, Abuhamdah S, Abu Farha R, Babar ZU. Herbal medicines: a cross-sectional study to evaluate the prevalence and predictors of use among Jordanian adults. J Pharm Policy Pract. 2020;13(1):2.
4. Abudalo R, Abudalo R, Alqudah A, Abuqamar A, Abdelaziz A, Alshawabkeh M, et al. Pharmacy practitioners' practice, awareness and knowledge about herbal products and their potential interactions with cardiovascular drugs. F1000Res. 2022;11:912.
5. Almaghaslah D, Almanasef M, Vasudevan R, Kandasamy G, Venkatesan K, Batool S, et al. Community pharmacists' knowledge, attitude and practice of oral health care in Asir region, Kingdom of Saudi Arabia. Int J Dent Hyg. 2022;20(4):732-8.
6. Soltanipour S, Keihanian F, Saeidinia A. Knowledge, attitude and practice of physicians towards herbal remedies in Rasht, north of Iran. Medicine (Baltimore). 2022;101(47):e31762.
7. Kıroğlu O, Berktaş F, Khan Z, Dağkıran M, Karatas Y. Self-medication practices with conventional and herbal drugs among ear, nose, and throat patients. Rev Assoc Med Bras. 2022;68(10):1416-22.
8. Faizi N, Kazmi S. Universal health coverage-There is more to it than meets the eye. J Family Med Prim Care. 2017;6(1):169.
9. Welz AN, Emberger-Klein A, Menrad K. Why people use herbal medicine: insights from a focus-group study in Germany. BMC Complement Altern Med. 2018;18(1):92. doi:10.1186/s12906-018-2160-6
10. Al-Yousef HM, Wajid S, Sales I. Knowledge, Beliefs and Attitudes towards Herbal Medicine – A Community-based Survey from a

Central Region of Saudi Arabia. Indian J Pharm Pract. 2019;12(3):188-93.
11. Zaidi SF, Saeed SA, Khan MA, Khan A, Hazazi Y, Otayn M, et al. Public knowledge, attitudes, and practices towards herbal medicines; a cross-sectional study in Western Saudi Arabia. BMC Complement Med Ther. 2022;22(1):326.
12. James PB, Bah AJ, Tommy MS, Wardle J, Steel A. Herbal medicines use during pregnancy in Sierra Leone: An exploratory cross-sectional study. Women Birth. 2018;31(5):e302-9.
13. Khan A, Ahmed ME, Aldarmahi A, Zaidi SF, Subahi AM, Al Shaikh A, et al. Awareness, Self-Use, Perceptions, Beliefs, and Attitudes toward Complementary and Alternative Medicines (CAM) among Health Professional Students in King Saud bin Abdulaziz University for Health Sciences Jeddah, Saudi Arabia. Evid Based Complement Alternat Med. 2020;2020:7872819.
14. Mekuria AB, Erku DA, Gebresillassie BM, Birru EM, Tizazu B, Ahmedin A. Prevalence and associated factors of herbal medicine use among pregnant women on antenatal care follow-up at University of Gondar referral and teaching hospital, Ethiopia: a cross-sectional study. BMC Complement Altern Med. 2017;17(1):86. doi:10.1186/s12906-017-1608-4
15. Kennedy DA, Lupattelli A, Koren G, Nordeng H. Safety classification of herbal medicines used in pregnancy in a multinational study. BMC Complement Altern Med. 2016;16:102. doi:10.1186/s12906-016-1079-z
16. Al-Maamari S. Education for connecting Omani students with other cultures in the world: The role of social studies. Int Rev Educ. 2016;62(4):439-57.
17. Al Akeel MM, Al Ghamdi WM, Al Habib S, Koshm M, Al Otaibi F. Herbal medicines: Saudi population knowledge, attitude, and practice at a glance. J Family Med Prim Care. 2018;7(5):865-75. doi:10.4103/jfmpc.jfmpc_315_17
18. Abdelmola AO, Bahri A, Abuallut I, Refaei BA, Hakami WK, Abutaleb AK, et al. Prevalence, knowledge, and perception about the use of herbal medicines jazan - Saudi Arabia. J Family Med Prim Care. 2021;10(6):2386-93. doi:10.4103/jfmpc.jfmpc_2475_20
19. Al-Kindi RM, Al-Mushrafi M, Al-Rabaani M, Al-Zakwani I. Complementary and Alternative Medicine Use among Adults with Diabetes in Muscat Region, Oman. Sultan Qaboos Univ Med J. 2011;11(1):62-8.
20. Alarbash AA, Morait SA, Demyati EA. Knowledge, attitudes, and practices regarding complementary and alternative medicine among patients attending a family medicine clinic in Saudi Arabia: A cross-sectional study. J Med Sci Clin Res. 2019;7(2):691-9.
21. Aljaloud SO, Ibrahim SA. Use of Dietary Supplements among Professional Athletes in Saudi Arabia. J Nutr Metab. 2013;2013(144):245349. doi:10.1155/2013/245349