Ethnobotanical study of aromatic and medicinal plants used by women of reproductive age in Taza (Morocco) and modeling of their satisfaction through a machine learning approach

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Research

Abstract

Background: The use of aromatic and medicinal plants (AMPs) remains widespread in Morocco, despite advances in modern healthcare and a lack of data on their safety. In Taza province, which is distinctive nationally for its floristic diversity, no studies had previously been conducted on the use of AMPs among women of reproductive age, to the best of our knowledge. The objective of this study was therefore to identify and document the use of such plants among this population.

Methods: An ethnobotanical survey was conducted in both urban and rural settings, involving 430 women aged 15 to 49. The collected data were analyzed through descriptive statistics, ethnobotanical indices, linear regression, and by mobilizing association rules (AI approach), for the first time, to reveal usage profiles that link consumed plants to the participant's satisfaction, thus offering predictions of perceived efficacy and tolerance.

Results: All the participants (100%) used medicinal plants. 70 plant taxa belonging to 32 families were recognized, with the most represented families being Verbenaceae (FIV = 30.2%), Lauraceae (FIV = 13%), and Lamiaceae (FIV = 10.68%); and the most frequently used species: *Origanum compactum* Benth. (RFC = 0.595) and *Salvia rosmarinus* Spenn. (RFC = 0.588). Leaves were the most frequently used component (77.5%), decoction was the most commonly used preparation (76.9%), and administration was mainly oral (97.2%). Perceived effectiveness was closely associated with the level of satisfaction (χ^2 = 66.5; $p < 0.001$) and the lack of side effects (χ^2 = 34.1; $p < 0.001$).

Conclusion: Thereafter, the studied women have an ancestral knowledge and use a diversity of plants for their health and well-being in Taza. Their satisfaction is linked to plant's effectiveness and safety. Hence, future pharmacological investigations are required for safe use of local AMPs.

Keywords: Aromatic and medicinal plants; women; reproductive age; satisfaction; Taza; Morocco.

Background

Phytotherapy has been one of the fundamental therapeutic approaches since the origins of humanity (Karaköse 2022, Şen *et al.* 2022). Indeed, aromatic and medicinal plants (AMPs) are used worldwide in traditional health practices as a valuable therapeutic resource, able to prevent and treat numerous diseases (Afrokh *et al*. 2023). They hold a significant position especially in developing countries, where access to modern healthcare services is sometimes difficult. Approximately 80% of the world's population continues to rely on traditional medicine, based on the use of such plants, to meet their primary healthcare needs (World Health Organization 2022).

These plants have occupied a prominent place in the Moroccan traditional pharmacopeia for centuries, especially in rural areas, where they are widely used due to their accessibility, low cost, and confirmed therapeutic properties (Abouri *et al*. 2012, Benamar *et al.* 2024). Morocco is distinguished by remarkably rich and diverse flora among the Mediterranean basin' countries, thanks to its strategic geographical location between Europe, Africa, and the Sahara, combined with the diversity of its climates (Mediterranean, Atlantic, Saharan, and mountainous) and the variety of its ecosystems (forests, mountains, steppes, wetlands, and deserts) (High Commission for Water Forests and the Fight Against Desertification of Morocco 2023).

The remarkable biodiversity, along with a deep ethnobotanical heritage developed over centuries, reflects the strong connection between Moroccan communities and their natural surroundings (Draiaia *et al*. 2024). This relationship has enhanced traditional knowledge about the medicinal properties and applications of local plants, which have been passed down through generations and serve as foundational elements of traditional medicine in the country. A significant number of women opt for alternative and complementary medicine to address their health concerns (Wu *et al*. 2014, Mahboubi & Mahboubi 2021). In this context, AMPs are essential in addressing a range of health concerns, including general ailments and pain relief, the treatment of specific genitourinary infections and menstrual challenges, as well as offering support during fertility stimulation, pregnancy, childbirth, and the postpartum phase.

According to a prior study done in Marrakech (Morocco), 60% of pregnant and postpartum women use medicinal plants for therapeutic purposes (Elkhoudri *et al*. 2016). Even though there are many advantages to this practice, there are risks that cannot be disregarded, particularly when it comes to improper or abusive administration, which can be detrimental to health by causing menstruation, uterine contractions, or even abortion (Belhouala & Benarba 2021). Nonetheless, traditional knowledge and earlier research identifying the pharmacological characteristics and active compounds of medicinal plants have a significant impact on their use. Therefore, it is clearly shown that AMPs may contribute to the creation of novel natural medicines (Benamar *et al*. 2023a, Benamar *et al*. 2025).

Nonetheless, in spite of Morocco's abundant rich biocultural heritage, some regions remain scientifically unexplored. The province of Taza, a veritable crossroads between the Rif mountains, the Middle Atlas, and the Oriental regions, represents a unique reservoir of biodiversity and cultural richness, including both Amazigh and Arabic influences. Yet there is a knowledge gap regarding the use of AMPs by women of childbearing age in this region, as to our knowledge, no comprehensive ethnobotanical study has been conducted in this pivotal area for this specific target population.

Therefore, this outstanding work aims to fill this major gap by conducting the first study on the use of AMPs by this target population in this special geographical area (Taza province). Beyond a simple survey, this research sheds new light on the relationships between sociodemographic profiles and therapeutic uses of diverse botanical species. It also analyzing the various associations between studied variables, through to a machine learning approach, resulting in an original database that is essential for the future promotion of the local pharmacopoeia.

Materials and Methods

Study area

Taza Province is part of the Fez-Meknes region and accounts for approximately 12% of the region's population, with152,678 inhabitants, at a density of 4,126 inhabitants per km² (General Census of Population and Housing 2024). This province is

situated in northern Morocco, between the Rif and Middle Atlas Mountains, about 117 km east of Fez and 114 km south of Al Hoceima (Fig. 1), at approximate geographical coordinates 34° 12′ 52″ North, 4° 0′ 32″ West, and an average altitude of 500 meters.

The Taza region is characterized by a Mediterranean climate with semi-arid influences, featuring significant seasonal variations in temperature and precipitation. The annual average temperature is approximately 16.5 °C, with average values ranging from about 10.8 °C in winter to nearly 29.3 °C in summer. Annual precipitation is relatively low, averaging about 400 to 450 mm, and is mainly concentrated between autumn and early spring, while summers are usually dry (Climate Data & General Directorate of Meteorology 2020).

Furthermore, Taza Province is characterized by remarkable floristic diversity, particularly in the Tazekka Massif, which hosts a rich flora comprising 727 taxa distributed across 78 families and 348 genera. This flora includes numerous endemic species, cedar and evergreen oak forests, and a variety of aromatic plants (Fougrach *et al*. 2007).

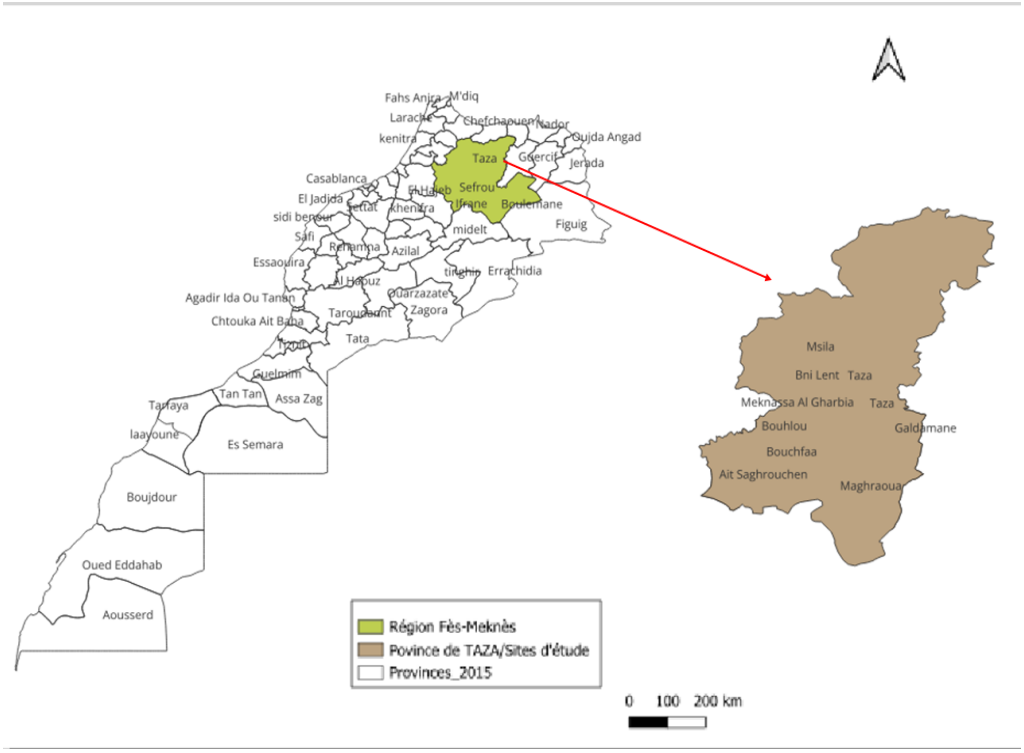

Figure 1. Geographical location of the studied area in Taza/Morocco, adapted by QGIS 3.40.10.

Data collection

The current survey was carried out in the province of Taza from November 2024 to May 2025. Survey sites were defined based on population density and the urban-rural distribution (Table 1).

The sample was represented by 430 women aged 15-49 years, identified from a global population of 136,892 women in the same age group (65,348 in urban areas and 71,544 in rural areas) (Health in Numbers 2022), according to the sampling formula:

$$\textbf{Sample size} = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1+\left(\frac{Z^2 \times (1-p)}{e^2 \; N}\right)}$$

N = population size: 136892

e = margin of error (percentage in decimal form): 5%

z = z-score: 1.96

Table 1. Survey sites in the studied area, and corresponding women distribution, adapted by Health in Numbers 2022.

Type of establishment	Territorial commune of the province of Taza	Study sitting	Geodetic coordinates	Area (km^2)	No. of woman of reproductive age
Hospital (urban)= 1	Territorial commune	Ibn Baja Pprovincial Hospital	34.218° North, 4.015° West	37	
Urban health centers = 9		Jiarine	34°13'00" North, 4°01'00" west		5974
		Bab Zitouna	34° 13′ 15″ North,4° 00′ 36″ West		4736
		Bab Tété	34°13'08" North, 4°00'34" West		3213
		Trik Elouahda	34° 13′00″ North, 4° 01′ 00″ West		6069
		Bitghlam	34° 13′ North, 4° 00′ West		5470
		Bin Jradi	34° 13′ North, 4° 01′ West		4341
		Elmassira	34°13'03" North, 4°01'45" West		4170
	Territorial commune	Tahla	34°03′00″, North 4°26′00″ West	9	8268
	Territorial commune	Oued Amlil	34° 12′ North, 4° 17′ West	8,61	4927
Rural health centers =9	Territorial commune	Gueldamane	34° 13′ North, 4° 00′ West	370,9	3931
	Territorial commune	Maghraoua	34° 05′ North, 4° 05′ West	716	1673
	Territorial commune	Had Msila	34° 33′ North, 4 18° West	123	1635
	Territorial commune	Meknassa Gharbia	34°14'15" North, 4°15'36" West	46,50	781
	Territorial commune	Bouhlou	34° 7′ 60″ North, 4° 24′ 0″ West	73,42	1775
	Territorial commune	Bouchfaa	34° 6′ 5″ North, 4° 17′ 38″ West.	139,7	2176
	Territorial commune	Bab Marzouka	12′ 38″ North, 4° 8′ 46″ West	181,6	4876
	Territorial commune	Bouzmlane	34°6'0" North, 4°28'48" West	237	3583
	Territorial commune	Bni Lent	34°19′ 38″ North, 4° 12′ 14″ West	87,84	4229

Semi-structured interviews were conducted, for 20-30 minutes, with women aged 15-49 years old attending the selected healthcare facilities, with the aim of collecting their knowledge and experiences regarding the use of AMPs. The objectives of the study were explained to participants prior to each interview, and consent from informants was obtained.
The interviews focused on sociodemographic characteristics, health-related determinants and ethnobotanical information and practices (Table 2).

Once the socio-demographic status of the studied population was described, plant species reported to be used were identified based on their vernacular names, which were cross-checked and validated through significant literature and the established and most useful taxonomic databases, including: International Plant Names Index, Integrated Taxonomic Information System (ITIS) (.gov), WFO Plant list and USDA plants database.

Machine learning approach (the analysis of association rules)

The association rules' analysis is a method based on a transactional database, where transactions are represented in rows and items in columns. In the present study, we constructed a sparse binary matrix describing the use of medicinal and aromatic plants to relieve different symptoms: each row corresponds to one observation (respondent, recipe, or reported use), and each column corresponds to a studied factor (species, plant part used, preparation method, route of administration, targeted symptom, etc.). This structure then enables the extraction of association rules highlighting the most frequent co-occurrences among items, assessed using indicators such as support, confidence, and lift.

Data Analysis

The collected data were analyzed using descriptive statistics for information related to respondents' sociodemographic characteristics and health determinants. Regarding botanical data, various quantitative indices were calculated, namely Frequency of Citation (FC), Relative Frequency of Citation (RFC), Family Importance Value (FIV), Plant Part Value (PPV), and Fidelity Level (FL). In addition, a regression analysis was carried out to determine the relationships between respondents'

sociodemographic characteristics and their satisfaction with the use of plants as natural remedies. For these statistical analyses, Excel 2016, IBM SPSS Statistics 23, Jamovi 2.6.44.0, and Python software were used.

Table 2. Distribution of women using AMPs by sociodemographic characteristics, health-related determinants, ethnobotanical information.

Sociodemographic characteristics				
Age	**Residence**	**Marital status**	**Educational level**	**Occupation**
15-20	Urban	Single	Not educated	Public sector
21-30	Rural	Married	Primary education	Private sector
31-40		Widowed	Secondary education	Unemployed
41-49		Divorced	University education	
Health-related determinants				
Personal history	**Health coverage**	**Access to primary healthcare services**	**Type of healthcare used**	**Sources of information about AMPs**
Medical history	CNOPS	Less than 3 Km	Traditional Medicine	Healthcare professionals
Surgical history	CNSS	Between 3 and 6 Km	Modern Medicine	Other people's experiences
Gynecological and obstetric history	AMO	Between 6 and 10 Km	Both	Television programs
	TADAMON	More than 10 Km		Personnel experience
				Family and friends
				Herbalists
				Traditional healers
				Phytotherapy specialists
				Internet sources
				Social media (tiktok, Facebook, Instagram)
				Books on traditional medicine
Ethnobotanical information				
Efficacy of AMPs	**Side Effects After using AMPs**	**Satisfaction after using AMPs**	**Recommendation for Use of AMPs**	
None	Nausea/vomitin	Yes	Yes	
Insufficient	Diarrhea	No	No	
Moderate	Hyperthermia			
Good	Intestinal ulcer			
Excellent	Allergy			
	Sedation			

Relative Frequency of Citation (RFC)

RFC evaluates the local significance of a species by calculating the proportion of informants who mentioned it:

$$RFC=FC/ N (0 < RFC < 1)$$

With FC: the number of informants citing the species, N: the total number of informants. Higher values indicate greater consensus regarding the use of a species (Karaköse 2026, Mushtaq *et al.* 2014, Tardío& Pardo-de-Santayana 2008).

Family Importance Value (FIV)

FIV measures the relative contribution of a botanical family to the medicinal flora:

$$FIV= \sum RFC \text{ of species in family / Number of species in family}$$

It reflects the ethnobotanical significance of each family (Phillips & Gentry 1993, Sreekeesoon & Mahomoodally 2014).

Plant Part Value (PPV)

PPV quantifies the relative importance of different plant parts used for medicinal purposes:

$$PPV = \text{Use-reports for a specific part} / \text{Total use-reports for all parts} \times 100$$

This index identifies the most frequently utilized plant parts in traditional medicine (Gomez-Beloz 2002, Tardio & Pardo-de-Santayana 2008).

Fidelity Level (FL)

FL assesses the proportion of informants who use a plant species for treating a specific ailment:

$$FL = Np/N \times 100$$

where Np is the number of informants reporting the species for a particular disease, and N is the total number of informants citing the species for any medicinal use. High FL values indicate strong consensus for a specific use (Friedman *et al*. 1986, Giday *et al*. 2009, Sreekeesoon & Mahomoodally 2014).

Results and Discussion

Use of AMPs by women as traditional medicine

In our study, all participants (100%) reported using AMPs as a form of traditional medicine to treat or alleviate various ailments. These findings highlight the deep-rooted nature of this practice within the respondents' cultural heritage. Furthermore, our results corroborate previous studies that have documented the predominant use of AMPs by populations as natural remedies (Benamar *et al*. 2023b).

Age and Educational level

Fig. 2 and Table 3 illustrate the age and the educational level distribution of users of AMPs among women of reproductive age in the study area. The 21-30 age group accounted for the highest proportion (34.65%), while the other age groups showed relatively similar percentages: 15-20 years (21.63%), 31-40 years (20.93%), and 41-49 years (22.79%). This pattern may be explained, on one hand, by the presence of symptoms or health conditions prompting early use of AMPs, and on the other hand, by access to alternative sources of information on their use, beyond experiential or intergenerational knowledge. These findings contrast with several studies reporting that AMPs usage generally increases with age (El Hachlafi *et al.* 2020, Benamar *et al*. 2023b, Benkhaira *et al.* 2021, Lee *et al.* 2019, Jeddi *et al*. 2024, Kachmar *et al*. 2021, Karaköse 2022).

In the study area, nearly half of the women with a university-level education (44.19%) showed interest in the use of AMPs, followed by illiterate women (20.47%) and those with primary or secondary education levels (18.60% and 16.74%, respectively).This trend may be explained by access to various modern information channels that promote AMPs use while raising awareness of their benefits and associated risks, as well as by traditional oral transmission, passed down from generation to generation, which values cultural heritage and respects folk medicine. These findings are partially consistent with other studies reporting that individuals with little or no formal education tend to use AMPs more frequently. Similar observations have been reported in Morocco (Abboud & Chikhaoui 2024, El Hachlafi *et al*. 2020, El Yahyaoui *et al*. 2015, Jeddi *et al*. 2024), in Algeria (Boulemtafes *et al*. 2018, Zatout *et al*. 2021), in Tunisia (Jdaidi & Hasnaoui 2016), in Turkey (Karaköse 2022). As well as by Aljofan and Alkhamaiseh (2020), Kamel *et al*. (2022).

Table 3. Distribution of women using AMPs by age and Educational level.

	Variable	Effectif	Percentage
Age	15-20	93	21,63 %
	21-30	149	34,65 %
	31-40	90	20,93 %
	41-49	98	22,79 %
Educational level	Not educated	88	20,47 %
	Primary education	80	18,60 %
	Secondary education	72	16,74 %
	University education	190	44,19 %

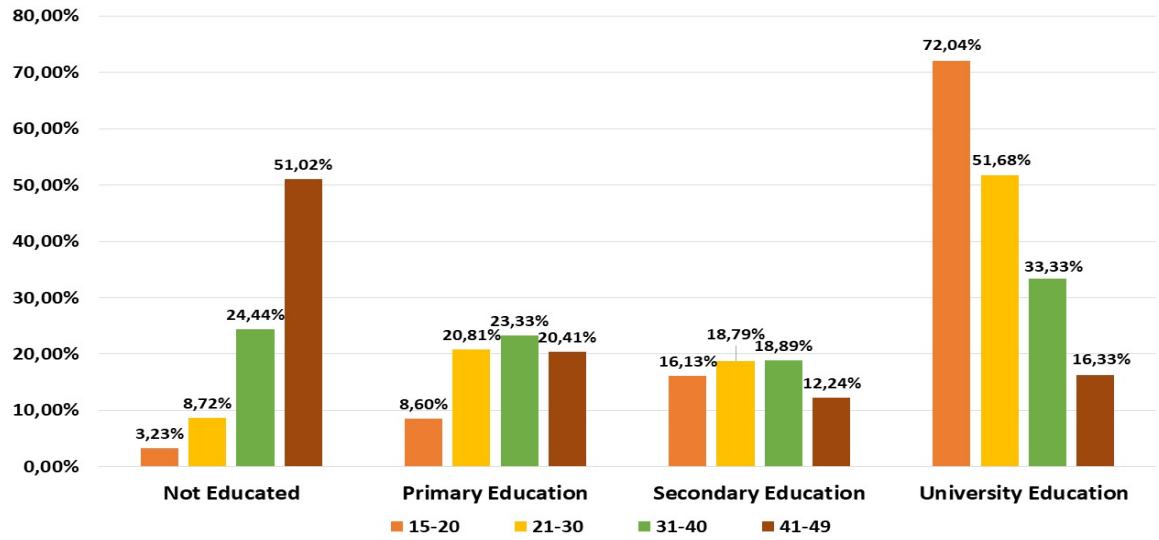

Figure 2. Distribution of women using AMPs by age and educational level.

Residence and accessibility to primary healthcare services:

A comparable use of AMPs among women of reproductive age, whether living in urban or rural areas (51.40% and 48.60%, respectively). This pattern may be explained by urbanization as well as the tendency of this age group to use AMPs regardless of their place of residence, particularly due to easier access to supplies. These findings differ from several previous studies, which reported a higher prevalence of AMPs use among rural populations (Abboud & Chikhaoui 2024, Aljofan & Alkhamaiseh 2020, Kachmar *et al*. 2021, Kamel *et al*. 2022).

Fig. 3 shows that 59.77% of women using AMPs live within 3 km of primary healthcare facilities, compared to 18.84% residing between 3 and 6 km, 14.19% between 6 and 10 km, and only 7.21% beyond 10 km. This distribution suggests that, despite the proximity of modern healthcare structures, women of reproductive age place considerable trust in AMPs, with geographic distance apparently not being a major determinant in the choice between traditional medicine and modern healthcare.

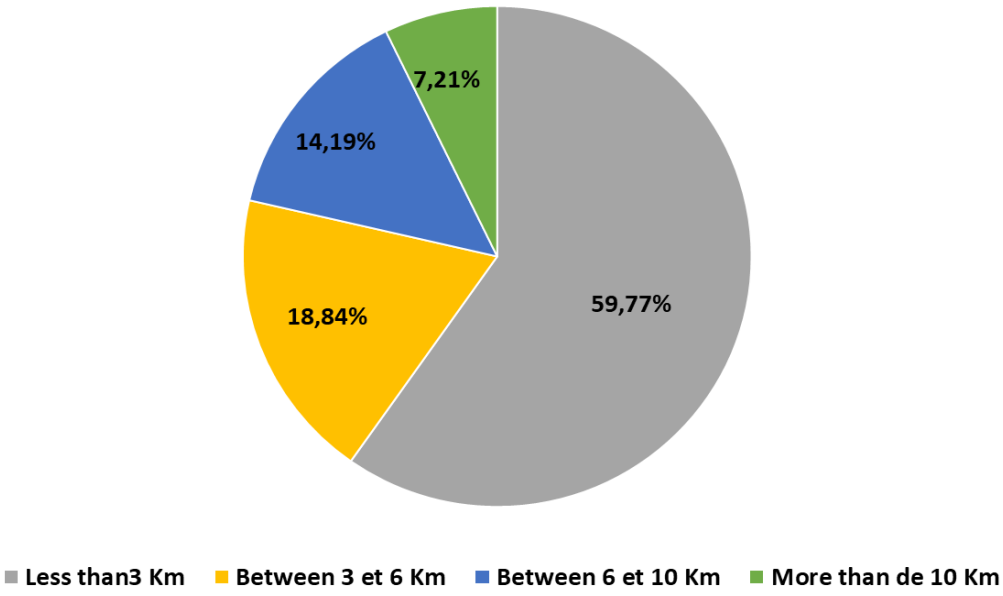

Figure 3. Distribution of women using AMPs according to their accessibility to primary healthcare services.

Marital status

According to Fig. 4, the present survey reveals that users of AMPs are predominantly married women (57.67%), while approximately one third are single women (35.81%). This situation may be explained, on the one hand, by the presence of pathologies affecting unmarried women as well and, on the other hand, by the tendency of married women to resort to AMPs for reducing the medical treatment's costs, as well as the expenses associated with costly examinations and symptomatic therapies, as presumed by several studies (Benamar *et al*. 2023b, Benamar *et al*. 2024, Benkhaira *et al*. 2021, Chraibi *et al*. 2018, Hafsé *et al.*2015, Jeddi *et al*. 2021). Furthermore, the transmission of traditional practices within the family unit, particularly from older generations to married individuals, constitutes a factor that promotes this use. These findings are consistent with most previous studies conducted in different regions of Morocco (El Alami *et al.* 2016, Benkhaira *et al*. 2021, El-Assri *et al.* 2021, Jeddi *et al.* 2021).

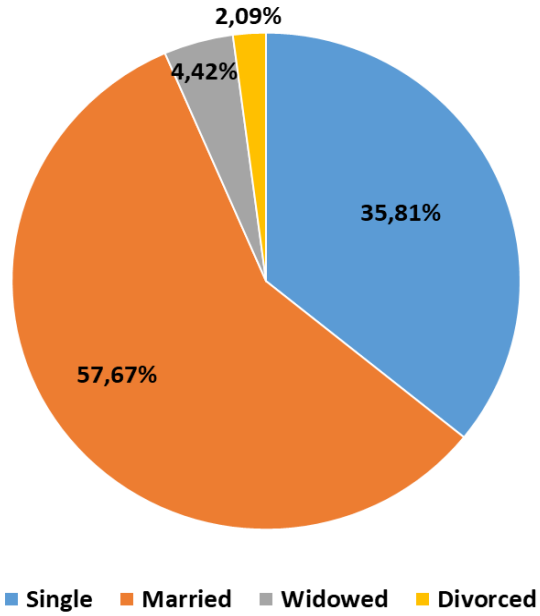

Figure 4. Distribution of women using AMPs according to their marital status.

Professional activity

In the province of Taza, the vast majority of users of AMPs are unemployed (82.09%), while only 17.91% are engaged in paid employment, distributed between the public (12.56%) and private (5.35%) sectors (Fig. 5). Even with nearly full health coverage among users (99.77%), the 430 women still resort to AMPs. This situation may explain the increased reliance of the local population on herbal medicine as a means of disease treatment, perceived as more economical, accessible, and effective. Our findings are consistent with those reported in other ethnobotanical surveys (Benamar *et al.* 2025, Benkhaira *et al.* 2021, Jeddi *et al.* 2021).

Reasons for using AMPs and health antecedents

Several factors motivate women to use AMPs as traditional medicine (Fig. 6): 60.3% for their effectiveness, 39.7% for their availability, 31.4% due to their lower cost compared to conventional medicine, and 22.6% for the absence of side effects. These choices can be explained by the trust women place in AMPs, their accessibility, and their affordability. These findings are supported by the studies of Kharchoufa *et al*. (2021), El Hachlafi *et al*. (2022), Jeddi *et al.* (2023), and Jeddi *et al.* (2024). Furthermore, in this study population, the use of AMPs remains widespread despite the presence of health-related antecedents in 56.51% of the women surveyed, distributed among medical history (51.6%), gyneco-obstetric history (34%), and surgical history (14.4%).

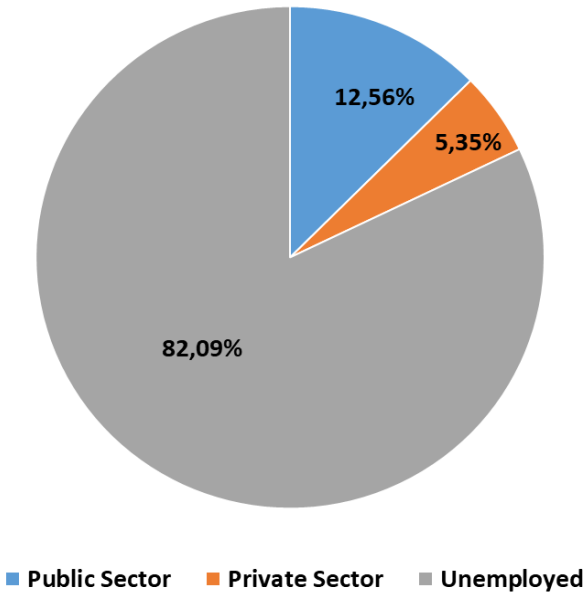

Figure 5. Distribution of women using AMPs according to their professional activity.

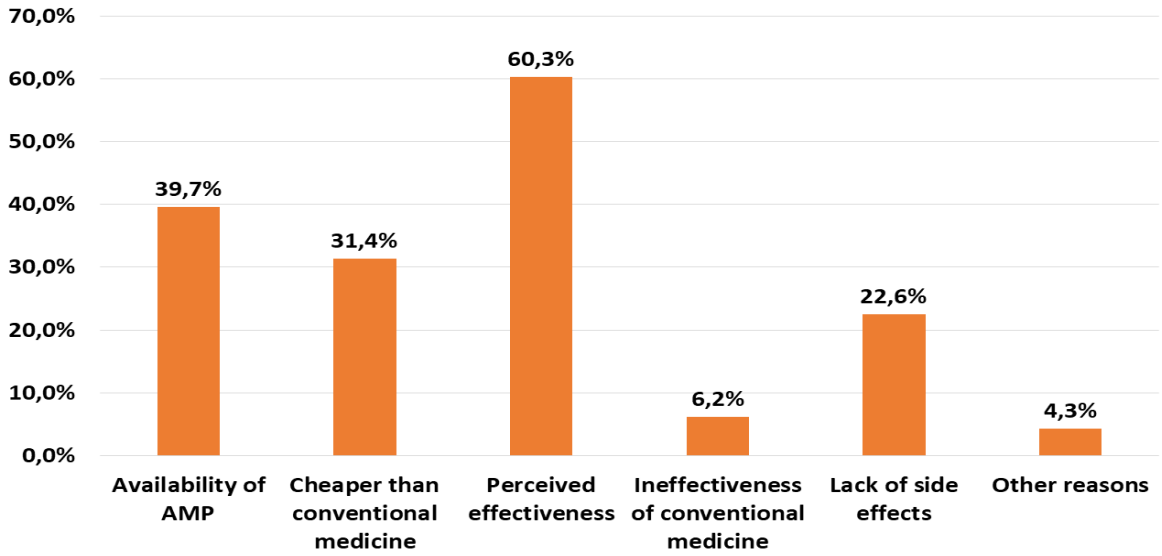

Figure 6. Distribution of women according to their reasons for using (AMPs).

Sought information before using AMPs

In this survey, 85.12% of women sought information about AMPs before using them. This information was mainly obtained from family and friends (62.2%) and from the experience of other people (55.9%). Additionally, 27.3% of responses were based on personal experience, and 73.6% on media sources, distributed as follows: The internet (32.2%), social networks (27.3%), and television programs (14.1%). Herbalists accounted for 18.1% of sources, while only 6.5% of respondents consulted phytotherapy specialists (Fig. 7). These findings may be explained by the careful search for information regarding the plants and their uses. They are consistent with the study by Kachmar *et al.* (2021), which reported that AMP users primarily obtain knowledge from herbalists, family, and other individuals.

Quantitative ethnobotanical analysis

The ethnobotanical survey carried out in the Taza province identified 70 plant taxa belonging to 32 botanical families, used to treat various ailments and symptoms among women of reproductive age. The recorded species are presented in Table 4, including their scientific and vernacular names, botanical family, plant type, intended use, parts used, methods of

preparation and administration, and treated ailments, as well as ethnobotanical indices such as Fidelity Level (FL), Relative Frequency of Citation (RFC), Family Importance Value (FIV), and Value of Plant Part (VPP).

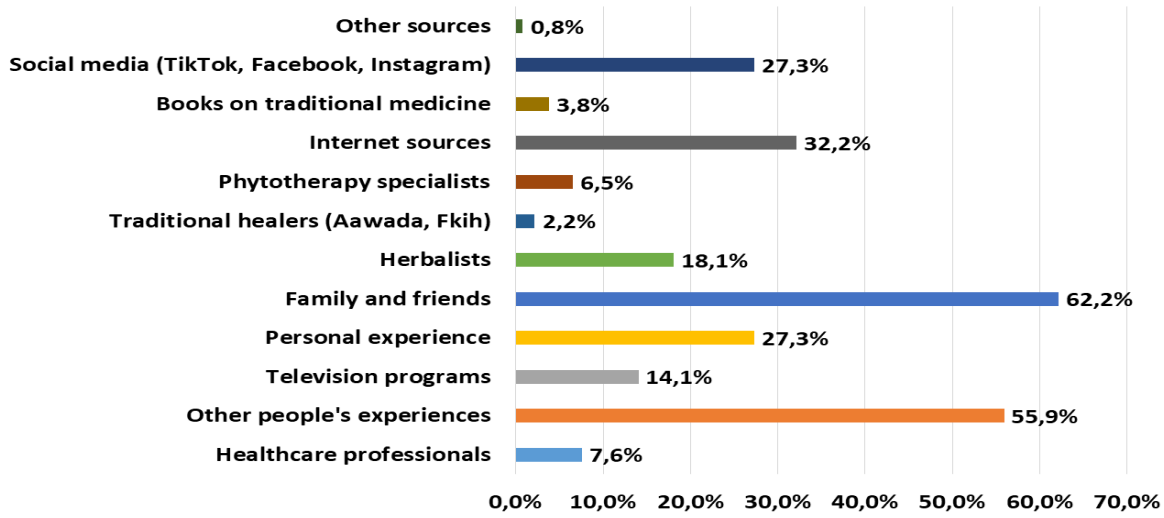

Figure 7. Distribution of women using AMPs according to their information source.

Among the recorded families, the most represented are Lamiaceae (16 species; FIV = 10.68 %), followed by Asteraceae (5 species; FIV = 5.06 %), Fabaceae (4 species; FIV = 4.12 %), Myrtaceae (3 species; FIV = 4.26 %), and Apiaceae (8 species; FIV = 1.86 %). Other families with fewer species also show notable importance, including Verbenaceae (1 species; FIV = 30.2 %), Lauraceae (1 species; FIV = 13 %), and Amaranthaceae (2 species; FIV = 5.45 %) (Table 4; Fig. 8). These results confirm the predominance of certain botanical families in the traditional pharmacopoeia of the region, in agreement with previous studies conducted in Morocco and in the Taza province (Benamar *et al.* 2023b, Benamar *et al.*2025, Chaachouay *et al.* 2020, Elachouri *et al.* 2021, El Brahimi *et al.* 2022, El Hachlafi *et al.* 2020, Fakchich & Elachouri 2021, Mechchate *et al*. 2020, Kachmar *et al.* 2021, Jeddi *et al.* 2024).

Regarding the Relative Frequency of Citation (RFC) of plants by the surveyed women, values ranged from 0.002 to 0.595. Certain species were particularly predominant in traditional use, including *Origanum compactum* Benth. (RFC = 0.595), *Salvia rosmarinus* Spenn. (RFC = 0.588), *Aloysia citrodora* Paláu. (RFC = 0.302), *Mentha pulegium* L. (RFC = 0.158), *Lavandula angustifolia* Mill. (RFC = 0.156), *Trigonella foenum-graecum* L. (RFC = 0.147), *Cinnamomum verum* J. Presl (RFC = 0.130), *Chamaemelum nobile* L. (RFC = 0.116), *Chenopodium ambrosioides* L. (RFC = 0.102), and *Artemisia herba-alba* Asso (RFC = 0.102). These findings are consistent with those reported in other ethnobotanical studies at both regional and national levels (Benamar *et al*. 2025, El-Assri *et al.* 2021, Jeddi *et al.* 2024).

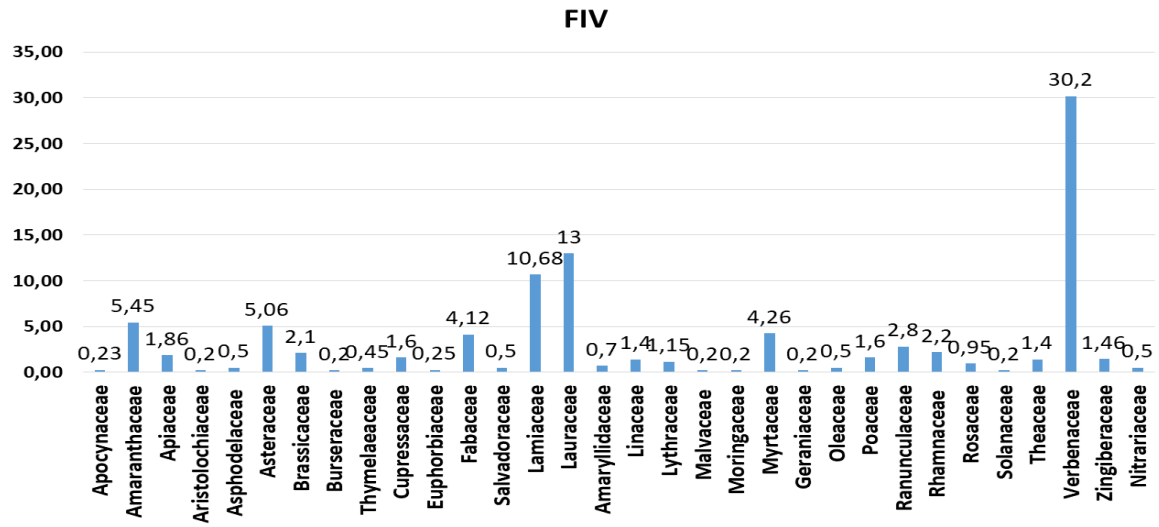

Figure 8. Distribution of cited plant's families according to their Family Importance Value (FIV).

Table 4. AMPs used by women in Taza and their Scientific and vernacular names, types of plant, aims of use, parts used, forms of use, mode of preparation and use, dosage, treatment duration, treated diseases and citation indexes (RFC, FIV, FL and PPV).

Families / Species	**Vernacular name**	**Indices**				**Types of plant**	**Aims of use**	**Parts used**	**Forms of use**	**Mode of**		**Dosage**	**Treatment duration**	**Treated diseases**
		RFC	**FIV**	**FL**	**PPV**					**Preparation**	**Use**			
Amaranthaceae			5,45											
Atriplex halimus L.	**Gtef**	0,007		100	0,40	W; Cu; Ad	Th ;F ;Co	Fl; Fr; S ; L	P ;EO; I; E; FO	I; D; Coo ; R; Pou	O/D; Inh; G; Sw	P; H; S;TG; WG	Ow; Ur	Cv; Hbp; Di; Asth; B; J; Ga; Ul ; N/V; End; Pos ; Mt; Mn; E/F; Dys; VV inf; UT inf; Stss
Chenopodium ambrosioides L.	**M'khinza**	0,102		47,2	0,66	W; Cu; Ad	Th; F; Co	Wh.Pl; Fl; Fr; S ; L; S	P; EO; I; E; FO	I; D; Coo; R ; Pou; Ma	O/D; Inh; G; Sw; Ta; Ma; Ri; Fu; Ih; Ca	P; H ; S; TG; WG	Od; Ow; Ur	Cv; Ca; Hbp; Asth; B; J ; Ga; Ul; N/V; End ; Pi; Postp inf; Postp hg; Pos; Cn; Be; M; Mt; Mn; Dpreg; Dpos;Vd; Dysp ; Vag; PS/Hf; PS/Is; PS/Inf; PS/ Vd; SCU; W/S; E/F ; Dys; Pos p; VV inf; UT inf; Stss
Amaryllidaceae			0,7											
Allium cepa L.	**Besla/ Bsel**	0,005		100	1	Cu	Th; F	Bu	E	Coo; R	O/D; Inh; Ta	P; WG	Od	B; N/V; S lact
Allium sativum L.	**Toum**	0,009		50	0,5	Cu	Th; F; Co	Wh.Pl; S; Bu	P; I; E; FO	D; Coo; R; Ma	O/D ; Inh; Ta; Ma; Fu	H; S ; WG	Od; Ow; Ur	Cv; Ca; Hbp; B; N/V; End; Ot; Cn; Mn; Dl; Dysp; SCU; Dys ; VV inf ; Stss
Apiaceae			1,86											
Ammodaucus leucotrichus Coss	**Kamoun essoufi**	0,026		55,6	0,55	W; Cu	Th; Co	Wh.Pl; Fl; S; L	P; EO; I	I; D; Ma	O/D;	P; H; S; TG	Od; Ow; Ur	Ga; N/V; Postp inf; Mt; Cf ; PS/Hf; PS/Inf; E/F; Dys; Pos p; S lact; Stss
Carum carvi L.	**Karwiya**	0,033		100	0,57	W; Cu	Th; F	Wh.Pl; S; L	P; I	I; D; R; Ma	O/D; Inh	S; TG	Od; Ur	B; Ga ; Ul; N/V; Dpos; E/F; Dys; Pos p; S lact; Stss
Cuminum cyminum L.	**Kamoun**	0,030		78,6	0,66	W; Cu	Th; F	Wh.Pl; Fl; S; L	P; I	I; D; Coo ; R; Ma	O/D	P; H; S; TG ; WG	Od; Ow; Om; Ur	Ga; Ul; N/V; Pos; Ot; Cn; Dpreg; Dpos; Dys; Lp; Pos p; Stss
Foeniculum vulgare Mill.	**Nafaâ**	0,040		60	0,81	W; Cu	Th; F	Wh.Pl; S; Ba	P; I	I; D; Coo ; R; Ma	O/D	P; H ; S ; TG	Ow; Ur	Hbp; Di ; B; Ga; N/V; End; Pos; Dpreg; Dpos; E/F; Dys; Pos p; S lact; Stss
Petroselinum crispum Mill.	**Maâdnous**	0,005		50	0,67	Cu	Th; F	Wh; Pl; L	P; I	D; Coo	O/D	P; WG	Od	Cv; Asth; Pi; Pos ; Dpos; Dl; Dys ; UT inf ; Stss
Pimpinella anisum L.	**Habba hlawa**	0,012		100	0,33	W; Cu	Th; F	Wh; Pl; S; L	P; I	I; D	O/D	S; TG; WG	Ur	Ga; N/V; S lact ; Stss
Apocynacées			0,23											
Nerium oleander L.	**Ed-dafla**	0,002		100	0,25	W; Cu; Ad	Th; Co; F	Fl; Fr; S; L	P; EO; I; E; FO	I; D; Coo ; R; Pou	O/D; Inh; G; Sw; Ta; Fu; Ih; Ca	S; TG ; WG	Ow	Cv; Hbp ; Asth; B; J; Ga; Ul; N/V; End; Pos; Mt; Mn; Dys; VV inf; UT inf; Stss

Aristolochiaceae			0,2											
Aristolochia fontanesii Boiss. & Reut.	**Berez'tem**	0,002		100	1	W	Th; Co	S	P; EO	D	O/D; Ta	S; WG	Ow	Ul; Dys; VV inf; UT inf
Asphodelaceae			0,5											
Aloe vera (L.) Burm.f.	**Aloe vera**	0,005		50	0,5	W; Cu	Co	L; Rh	E	R; Pou	Ta; Ma	S	Ur	W/S
Asteraceae			5,06											
Artemisia absinthium L.	**Chiba**	0,023		62,5	0,70	Cu	Th; F	Wh.Pl ; Fl; L	I; FO	I; D; Coo; R; Ma	O/D; Sw	TG; WG	Od; Ur	B; Ga; N/V; End; Dpreg; Cf ; PS/Inf; E/F; Dys; Posp; VV inf; Stss
Artemisia herba-alba Asso	**Chih**	0,102		76,3	0,38	W; Cu; Ad	Th; Co	Wh.Pl; Fl; Fr; S; L; Rh; St	P; EO; I; E; FO	I; D; Coo; R ;Pou; Ma	O/D; Inh; Sw; Ta; Ma; Ri; Fu ; Ih; Ca	P; H; S; TG; WG; CC	Od; Ow; Om; Ur	Cv; Ca; Hbp; Di; Asth; B ;J ;Ga ; Ul ;N/V ;End ; Pi; Postp inf; Postp hg ; Pos; Cn; Be; M; Ba; Mt ; Mn; Dpos; Vd; Cf; PS/Hf ; PS/Is; PS/Inf ; PS/Vd; W/S; E/F; Dys; Lp ; Dp ; Pos p; VV inf; UT inf; S lact; Stss
Chamaemelum nobile L.ALL	**Bābunaj**	0,116		72,7	0,61	W; Cu; Ad	Th; F; Co	Wh.Pl; Fl; S; L	P; EO; I; E; FO	I; D; Coo; R ; Pou; Ma	O/D; Inh; G; Sw ; Ta ; Ma; Ri; Fu; Ih; Ca	H; S; TG ; WG; CC	Od; Ow ; Om; Ur	Cv; Hbp; Di; Asth; B; J; Ga; Ul; N/V; End; Pi; Postp inf; Postp hg; Pos; Ot; Cn; Be; M; Mt; Mn; Dpreg; Dpos; Dl; Vd; Vag; Cf; PS/Hf; PS/Is; PS/Inf; PS/Vd; SCU; W/S; Cpre; E/F; Dys; Lp ; Dp ; Pos p; VV inf; UT inf; S lact; Stss
Echinops spinosissimus Turra	**Wram**	0,002		100	1	W	Th	Wh.Pl	I	I	Inh; Fu	H	Ur	Cf
Dittrichia viscosa (L.) Greuter	**Amagrama n/terhal**	0,005		66,7	0,75	W; Cu; Ad	Th	Wh.Pl; L	P; I	I; Pou ; Ma	O/D; Inh; Ca	H; S; TG	Od; Ur	Ca; Di; Ga; Dys; VV inf;
Brassicaceae			2,1											
Lepidium sativum L.	**Habb er-châd**	0,021		88,9	0,50	W; Cu	Th; F; Co	Wh; Pl; S; L;	P; EO ; I	I; D; Coo ; R; Ma	O/D; Ta; Ma; Ri	P; HS ; TG; WG	Od; Ow; Ur	Ca; Di; B; J; Ga; Postp inf; Pos; Ot; Be; Mt; Mn; Dpos; Dysp; Vag; PS/Inf ; SCU; W/S; S lact
Burseraceae			0,2											
Boswellia sacra Flueck.	**Lubān ad-dhakar**	0,002		100	1	Cu	Th; Co	S	E	D	O/D; Ta	WG	Ow	Cv; Dpos
Cupressaceae			1,6											
Tetraclinis articulata (Vahl) Mast.	**El ar'ar**	0,016		100	0,4	W; Cu	Th; Co	Wh; Pl; Fl; L	P; EO; I; E; FO	I; D; Coo; Ma	O/D; Inh; Ta; Fu; Ih; Ca	H; S; TG; WG;	Od; Ur	N/V; End; Postp inf ; Dysp; PS/Is; PS/Inf; PS/ Vd; E/F; Dys; VV inf; UT inf; Stss
Euphorbiaceae			0,25											
Euphorbia officinarum L.	**Daghmous**	0,007		100	0,50	Cu	Th	S; L	I	D; R; Ma	O/D; Inh; Ca	S	Ur	Di; B;J ; Ga; End; Pi; Pos; Ba; Bt; Mn; Dpos; Dl; Vd; Cf; Cpre; E/F; Dys; VV inf; UT inf; S lact
Ricinus communis L.	**Alkhirwaa**	0,002		100	1	W	Th; Co	S	FO	Ma	O/D; Ta; Ma	S	Ur	Pos; Cn; Dpos

Fabaceae			4,12											
Ceratonia siliqua L.	**Al-kharroub**	0,007		100	0,75	W; Cu	Th; F	Fr; L	P; I; E	I; R	O/D	H; TG; S	Ur	Hbp; Di; Ga; Ul; N/V; Mn; Dpos; PS/Is; PS/Inf; S lact; Stss
Glycyrrhiza glabra L.	**Arq sûs**	0,007		50	0,5	W	Th; F; Co	Rh; St	P; I; FO	I; D; R	O/D; Sw	S; TG	Od; Ur	B; Ga; Ul
Senna alexandrina Mill.	**Sana makkī/ sana hram**	0,005		100	0,5	W	Th	S; Ls	P; I	I	O/D	S; TG	Od	B; Dys
Trigonella foenum-graecum L.	**El halba**	0,147		79,3	0,95	W; Cu; Ad	Th; F; Co	Wh.Pl; S; L	P; EO; I; E; FO	I; D; Coo; R ; Pou; Ma	O/D ; Inh; G; Ta; Ma; Fu; Ca	P; H; S; TG; WG	Od; Ow; Om; Ur	Cv; Ca; Hbp; Di; Asth; B; J; Ga; Ul; N/V; End ; Pi ; Postp inf; Postp hg; Pos; Cn; Be; M; Ba; Mt; Mn; Dpreg; Dpos; Dl; Vd; Dysp; Vag; Cf; PS/Hf ; PS/Is; PS/Inf; W/S; E/F ; Dys; Lp; Pos p; VV inf; UT inf; S lact; Stss
Geraniaceae			0,2											
Pelargonium graveolens L'Hér.	**Atacha**	0,002		100	1	Cu	Th	L	P; I	Ma	O/D	H	Ur	Hbp; Stss
Lamiaceae			10,68											
Clinopodium nepeta (L.) Kuntze	**Manta**	0,067		70,4	0,50	W; Cu; Ad	Th; F; Co	Wh.Pl; Fl; S; L	P; EO; I; E; FO	I; D; Coo; R; Pou; Ma	O/D; Inh; G; Sw; Ta ; Fu; Ih; Ca	H; S; TG; WG	Od; Ow; Om; Ur	Cv; Hbp; Di; Asth; B; J; Ga; Ul; N/V; End; Pi; Postp inf; Pos; Ot; Cn; Be; Mt; Mn; Dpreg; Dpos; Dl; Vd; Vag; Cf; PS/Hf; PS/Is; PS/Inf; SCU; W/S; E/F; Dys; Lp; Pos p ; VV inf; Urinary Tract Infections; Stss
Lavandula angustifolia Mill.	**Khzama**	0,156		76,6	0,49	W; Cu; Ad	Th; F; Co	Wh.Pl; Fl; S; L; Rh; St	P; EO; I; E; FO	I; D; Coo ;Pou ;Ma	O/D; Inh; Sw; Ta; Ma; Ri; Fu; Ih; Ca	H; S; TG ; WG	Od; Ow ; Om; Ur	Asth; B; J; Ga; Ul; N/V ; End; Pi; Postp inf; Postp hg; Pos; Ot; Cn; Be; M; Mt; Mn; Dpos; Vag; Cf; PS/Hf; PS/Is; PS/Inf; PS/ Vd; SCU; W/S; E/F; Dys ; Pos p; VV inf; UT in; Stss
Lavandula stoechas L.	**Halhal**	0,005		100	0,29	Cu	Th; F	Wh.Pl; Fl; Fr; S; Rh; St	P; I	D; Coo	O/D	TG; WG	Od; Ow	Hbp; Di; Asth ; B; Ga ; Pi; Postp inf; Mn; Dpos; Dysp; Vag ; PS/Is; PS/Inf; E/F; Stss
Marrubium vulgare L.	**Mariwa/ Marriwta**	0,016		83,3	0,83	W; Cu; Ad	Th; F	Wh.Pl; L	P; I; FO	I; D; Coo; Ma	O/D; Ta; Fu	S; TG	Od; Om ; Ur	Di; B; Ga; Pi ; Postp inf ; Be; Dpos; Cf ; PS/Hf ; PS/Is; Dys; VV inf ; Stss
Mentha pulegium L.	**Fliou**	0,158		82,4	0,59	W; Cu; Ad	Th; F; Co	Wh.Pl; Fl; S ; L	P; EO; I; E; FO	I; D; Coo; R; Pou; Ma	O/D; Inh; G ; Sw; Ta; Ma; Ri ; Fu ; Ih; Ca	P; H; S; TG; WG; CC	Od; Ow ; Ur	Hbp; Di; Asth; B; J; Ga; Ul ; N/V; End; Pi; Postp inf; Pos; Ot; Cn; Be; M; Mt; Mn ; Dpreg; Dpos; Vag; Cf; PS/Hf; PS/Is; PS/Inf; PS/ Vd; SCU;

														W/S; E/F ;Dys ; Pos p; VV inf; UT inf ; Stss
Mentha spicata subsp. *spicata*	**Naânaâ**	0,037		75	0,62	W; Cu	Th ; F	Wh.Pl; L;	P; I	I; D; Coo ;Pou ;Ma	O/D	S; TG; WG	Od; Ow; Ur	Ga; N/V; Pi; Pos ; Be; Dpreg; PS/Hf; E/F ; Dys Stss
Mentha suaveolens L.	**Mchachtro/ marsita**	0,012		50	0,80	W; Cu; Ad	Th; F	Wh.Pl; L	P; I; E	I; Coo ; Raw	O/D; Ta	P; H; S ; TG	Od; Ur	Ga; N/V; E/F; Dys; Pos p; UT inf; Stss
Origanum compactum Benth.	**Za'atar**	0,595		76,9	0,63	W; Cu; Ad	Th; F ; Co	Wh.Pl; Fl; S; L; Rh; St	P; EO; I; E; FO	I; D; Coo ; R; Pou ; Ma	O/D; Inh; G ; Sw ; Ta ; Ma ; Ri ; Fu; Ih; Ca	P; H; S ; TG ; WG; CC	Od; Ow ; Om; Ur	Cv; Ca; Hbp ; Di; Asth ; B; J; Ga ; Ul; N/V; End; Pi; Postp inf ; Postp hg ; Pos; Ot; Cn; Be; M; Ba; Bt; Mt; Mn; Dpreg; Dpos; Dl; Vd; Dysp; Vag ; Cf; PS/Hf; PS/Is; PS/Inf; PS/ Vd; SCU; W/S; Cpre; E/F; Dys; Lp ; Dp ; Pos p; VV inf ;UT inf ; S lact ; Stss
Origanum majorana L.	**Mardedouch/mardaddouch**	0,005		100	1	W; Cu	Th; F	Wh.Pl	P ; I; FO	I; D	O/D	S; TG	Ow; Ur	Ga; Pos ; Dys ; Stss
Salvia rosmarinus Spenn.	**Azir/Iklil aljabal**	0,588		72,8	0,54	W; Cu; Ad	Th; F; Co	Wh.Pl; Fl; Fr; S; L; Rh; St; Bu	P; EO; I; E; FO	I; D; Coo ; R ; Pou; Ma	O/D; Inh; G ; Sw ; Ta ; Ma; Ri; Fu ; Ih; Ca	P; H; S; TG; W G; CC	Od; Ow ; Om; Ur	Cv; Ca ; Hbp; Di; Asth ; B; J; Ga; Ul; N/V; End ; Pi; Postp inf; Postp hg; Pos; Ot; Cn; Be; M; Ba; Bt; Mt; Mn; Dpreg; Dpos; Dl; Vd; Dysp; Vag; Cf ; PS/Hf; PS/Is; PS/Inf ;PS/ Vd; SCU; W/S; Cpre; E/F ; Dys; Lp; Dp; Pos p ;VV inf ; UT inf; S lact ; Stss
Salvia hispanica L.	**Boudourech-chia**	0,005		100	1	Cu	Th; F	S	I	Coo; Ma	O/D	S; TG	Od; Ow	Asth; Ga ; Ul ; Mn ; Dpos; Cf; PS/Is ; S lact ; Stss
Salvia officinalis L.	**Salmiya**	0,063		69,2	0,63	W; Cu; Ad	Th; F; Co	Wh.Pl; Fl; S; L; Rh; St	P; EO; I; E; FO	I; D; Coo; Ma	O/D; Inh; G; Sw ; Ta ; Ma; Ih; Ca	P; H; S; TG ; WG	Od ; Ow ; Ur	Cv; Hbp; Di ; Asth ; B; Ga; N/V; End; Pi; Pos ; Cn; M; Ba; Mt ; Mn; Dpos; Dl; Cf ;PS/Hf ;PS/Is ; PS/Inf ; Dys; Pos p; VV inf; UT inf ; Stss
Thymus vulgaris subsp. *vulgaris*	**Zãitra**	0,005		100	0,67	W; Ad	Th	Wh.Pl ; L	I	I; D	O/D ; Inh	H ;TG ; WG	Od; Ur	B; Ga; Ul; N/V; Dpos; PS/Is ; Dys; Pos p; Stss
Lauraceae			13											
Cinnamomum verum J.Presl	**El qarfa**	0,130		94,2	1	W; Cu; Ad	Th; F; Co	Ba	P; EO; I; E; FO	I; D; Coo ; R; Pou ; Ma	O/D; G; Sw; Ta; Ma	P; H; S ; TG ; W G; CC	Od; Ow ; Ur	Asth; B; Ga; Ul; N/V; End ; Pi; Postp inf ; Postp hg ; Pos ; Ot ; Cn; Be; M ; Ba; Mt ; Mn ; Dpos; Dl; Vd; Vag ; Cf ; PS/Hf; PS/Is ; PS/ Vd; SCU; W/S ; Cpre; E/F ; Dys ; Lp ; Dp; Pos p ; VV inf; UT inf ; S lact; Stss
Linaceae			1,4											

Linum usitatissimum L.	**Zeri'at el-kettan**	0,014		42,9	0,86	W; Cu	Th; F; Co	S; Le	P; I; E; FO	I; D; Coo ; R	O /D	S; TG; WG	Ur	Asth ; B ; Pos ; Mn ; Dpos; PS/Hf ; E/F; S lact ; Stss ;
Lythraceae			1,15											
Lawsonia inermis L.	**Hinnā**	0,019		100	1	W; Cu	Th; Co	L	P; E	D; R ; Pou ; Ma	Ta; Ma	H	Od; Ur	PS/Hf
Punica granatum L.	**Rmmān**	0,005		50	0,5	Cu	Th; F; Co	S	P; E	D; Coo ; R	O/D; Ta	H; S	Ur	Ga; Ul
Malvaceae			0,2											
Hibiscus sabdariffa L.	**Karkadé**	0,002		100	1	Ad	Th; Co	Fl	P	D	O/D ; Ta	H	Od	Hbp ; PS/Is ; UT inf ;
Moringaceae			0,2											
Moringa oleifera Lam.	**Moringa**	0,002		100	1	Cu	Th	L	I ;	I; R; D	O/D	TG; WG	Ur	Di; Stss
Myrtaceae			4,26											
Eucalyptus globulus Labill.	**Eucalyptus**	0,047		86,7	0,72	W; Cu	Th; Co	Wh.PL; Rh; St	P; EO; I; E	I; D; Coo; Ma	O/D; Inh; G ; Sw; Ma; Fu	H; S;TG	Od; Ur	Asth ; B; End ; Postp inf ; Cn; PS/Hf; PS/Is ; E/F; Dys ; Pos p
Myrtus communis L.	**Rihan**	0,009		75	0,29	W; Cu; Ad	Th; F; Co	Wh.Pl; Fl; Fr; S; L	P; EO; I; E; FO	I; D; Coo ;R ;Pou ;Ma	O/D; Inh; G; Sw ; Ta ; Ma ; Ri ; Fu; Ih ; Ca	P; H; S ; TG ; WG	Od ; Ow	End; Pi ; Pos ; Mt ; Mn ; Dys ; VV inf ; Stss
Syzygium aromaticum L.	**Qronfol**	0,072		75	0,5	W; Cu; Ad	Th; F ; Co	Wh.Pl; Fl; Fr; S; Ba	P; EO ; I; E; FO	I; D; Coo ; R ; Pou ; Ma	O/D; Inh ; G ; Sw; Ta ; Ma ; Ri ; Fu;	P; H; S ; TG; WG	Od; Ow ; Om; Ur	Hbp; Di ; Asth ; B; Ga; Ul ; N/V; End ; Pi ; Postp inf; Pos ; Ot ; Cn; M ; Mt ; Mn ; Dpos; PS/Hf ; PS/Is ; PS/Inf ; SCU; W/S ; E/F; Dys ;Pos p ; VV inf ; UT inf ; S lact; Stss
Nitrariaceae			0,5											
Peganum harmala L.	**Al-ḥarmal**	0,005		50	1	W	Th; Co	S	P; EO	D; R	Inh; Fu; Ih	H	Ur	Dys; VV inf
Oleaceae			0,5											
Olea europaea subsp.	**Wark zitoun**	0,005		20	1	W; Cu	Th	L	I	D; Coo ; R	O/D; G; Sw	WG	Ur	Hbp; Di
Poaceae			1,6											
Cenchrus americanus (L.) Morrone	**Ilan**	0,016		100	0,86	W; Cu	Th; F	Wh.Pl ; S	P; I	I; D; Coo; R; Ma	O/D	S; TG	Od; Ur	Hbp; Di; Ga ; Postp inf; Cf ; PS/Hf ; PS/Is; PS/Inf ; PS/ Vd; SCU; Cpre; E/F ; VV inf; UT inf; S lact; Stss
Ranunculaceae			2,8											
Nigella sativa L.	**Habbat al-baraka/ Al-ḥabba assawdā/ Sānūj**	0,028		66,7	0,9	W; Cu; Ad	Th; F; Co	Fr; S	P; EO ; I; E; FO	I; D; Coo; R ; Pou ; Ma	O/D; Inh; G; Sw; Ta ; F	P; H; S ; TG; WG	Od; Ur	Hbp; Di ; Asth ; B ; Ga ; Ul ; N/V ; End ; Pi ; Postp inf ; Postp hg ; Pos Mn ; Dpos; Cf ; PS/Hf ; PS/Inf ; Cpre; Dys; UT inf ; S lact ; Stss
Rhamnaceae			2,2											
Ziziphus lotus (L.) Lam.	**Nbeg**	0,002		100	0,67	W; Ad	Th; F	Wh; Fr	P; E	D; R	O/D	H	Od ; Ur	Ga ; Ul ; UT inf ; S lact

Ziziphus spina-christi L.	**Sedr**	0,042		55,6	0,70	W; Cu; Ad	Th; Co	Fl; Fr; S; L	P; EO; I; E; FO	I; D; Coo ; R ; Pou ; Ma	O/D ; Inh; G; Sw ; Ta ; Ma ; Ri ; Fu; Ih ; Ca	H ; S ;T G ; WG	Od; Ow ; Om ; Ur	Hbp ; Di ; Asth ; B ;Ga ; Ul ;N/V ;End ;Pi ; Pos ; Ot; Mt ; Mn ; Dpos; Dl; PS/Inf ; PS/Vd; W/S; Dys ; VV inf ; UT inf ; Stss
Rosaceae			0,95											
Prunus dulcis (Mill.) D.A.Webb	**Louz lhar**	0,002		11,1	1	W	Co	Fr	EO	Pou	Ta	S	Ur	Cn
Rosa centifolia L.	**Ward**	0,016		75	0,80	Cu	Th ;F ;Co	Fl; L	P ; EO ; E; FO	I; Ma	O/D ; G ; Ta; Ma; Fu ; Ca	H ; S; TG	Om; Ur	Ga ; Ul ; N/V ; Dpreg; Dpos
Salvadoraceae			0,5											
Salvadora persica L.	**Souak**	0,005		100	0,5	W	Th ;Co	Ba; Rh	E	D; R	G; Sw	WG	Od	B ; UT inf;
Solanaceae			0,2											
Hyoscyamus niger L.	**Bank**	0,002		100	1	Cu	Th	L	I	I; Coo	O/D	TG ; WG	Ur	Asth; B; Mn; PS/Hf
Theaceae			1,4											
Camellia sinensis L.	**Atây**	0,014		100	1	Cu	Th; F; Co	L	P; I	D; R ; Ma	O/D; G ;Ta	H; TG	Od; Ow; Ur	N/V ; Pos; Mn ; SCU; Dys; Stss
Thymelaeaceae			0,45											
Daphne gnidium L.	**Alzaz**	0,007		25	1	W; Cu	Th; Co	L	P ; I; E	I ;R ; Pou	Ta ; Ma ; Ca	H; S	Od; Om; Ur	Mt; Mn ; PS/Hf
Verbenaceae			30,2											
Aloysia citrodora Paláu	**Louiza**	0,302		92,9	0,78	W; Cu; Ad	Th; F; Co	Wh; Pl ; Fl; Fr; S; L	P; EO; I	I; D; Coo ; Ma	O/D; Inh; Fu	P ;H ; S ; TG ; W G ; CC	Od ; Ow ; Om ; Ur	Cv; Hbp ; Di ; Asth ; B ;J ; Ga ; Ul ; N/V ; End ; Pi ; Postp inf ; Pos ; Be; Mt ; Mn ; Dpreg; Dpos; Dl; Vag ; Cf ; PS/Hf ; PS/Is ; PS/ Vd ; E/F ; Dys ; Pos p ;VV inf ; UT inf ; S lact ; Stss
Zingiberaceae			1,46											
Curcuma longa L.	**Kharkoum**	0,009		100	0,50	Cu	Th; F; Co	Wh.Pl ; Rh ; Ba	P ; EO ; I; E; FO	D; Coo ; R; Ma	O/D; Ta	P ; H; S ; TG	Od; Ow ; Om ; Ur	B ; End ; Cn; Mt ; Dpos; Vd; W/S ; Dys ; Lp ; Dp ; Pos p ; VV inf ; UT inf ; S lact; Stss
Elettaria cardamomum (L.) Maton	**Al-hîl**	0,002		100	1	Cu	Th	S	P ; I	I; D	O/D	WG	Ow	Dys
Zingiber officinale Roscoe	**Skenjbir**	0,033		85,7	0,77	W; Cu	Th; F; Co	Wh. Pl; Rh	P ; EO ; I; FO	I; D; Coo; R; Ma	O/D ; Inh; G; Sw; Ta ; Ma	P; H; S; TG; WG	Od; Ow ; Ur	Cv; Asth ; B; Ga; Ul; N/V ; Pi;Postp inf ; Be; M ; Mt ; Mn ;Dpos; Dl; Vd; Vag ; PS/Hf ; PS/Is; PS/Inf ; SCU; E/F ; Dys ; Pos p; VV inf ; UT inf; S lact; Stss

Legend

Indices: RFC**:** Relative Frequency of Citation; FIV: Family Importance Value; PPV: Plant Part Value; FL: Fidelity Level
Type of plant: W: Wild; Cu: Cultivated; Ad: Adventitious
Aim of use: Th: Therapeutic; F: Food; Co: Cosmetic
Part used: Wh. Pl: Whole Plant; Fl: Flowers; Fr: Fruits; S: Seeds; L: Leaves; Rh: Rhizome; Ba: Bark; St: Stem; Bu: Bulb
Form of use: P: Powder; EO: Essential Oils; I: Infusion; E: Extract; FO: Fatty Oils
Mode of preparation: I: Infusion; D: Decoction; Coo: Cooked; R: Raw; Pou: Poultice; Ma: Maceration
Mode of use: O/D: Oral / Drink; Inh: Inhalation; G: Gargle; Sw: Swabbing (Topical Brushing); Ta: Topical Application; Ma: Massage. Ri: Rinse; Fu: Fumigation; Ih: Intimate Hygiene; Ca: Compress Application
Dosage: P: Pinch; H: Handful; S: Spoonful; TG: Tea Glass; WG: Water Glass; CC: Coffee Cup
Treatment duration: Od: One Day; Ow: One Week; Om: One Month; Ur: Until recovery
Treated diseases: Cv: Cardiovascular Diseases; Ca: Cancers; Hbp: High Blood Pressure; Di: Diabetes; Asth: Asthma; B: Branchitis; J: Jaundice; Ga: Gastralgia; Ul: Ulcer; N/V: Nausea / Vomiting; End: Endometritis; Pi: Pelvic Inflammatory Diseases; Postp inf: Postpartum Infections; Postp hg: Postpartum Hemorrhage; Pos: Polycystic Ovary Syndrome; Ot: Ovarian tumors; Cn: Cracked Nipples; Be: Breast Engorgement; M: Mastitis; Ba: Breast Abscess; Bt: Breast Tumors; Mt: Metrorrhagia; Mn: Menorrhagia; Dpreg: Digestive Disorders During Pregnancy; Dpos:Digestive Disorders in Postpartum; Dl: Decreased Libido; Vd: Vaginal Dryness; Dysp: Dyspareunia; Vag: Vaginismus; Cf: Couple Fertility Issues; PS/Hf: Perimenopausal Syndrome: Hot Flashes; PS/Is: Perimenopausal Syndrome:Insomnia; PS/Inf: Perimenopausal Syndrome: Inflammation; PS/ Vd: Perimenopausal Syndrome: Vaginal Dryness; SCU: Stimulation of Uterine Contractions During Labor; W/S: Wound and Suture Healing After Childbirth; Cpre: Cervical Preparation Before Delivery; E/F:Energy Boost and Fat Reduction During Labor / Delivery; Dys: Dysmenorrhea; Lp: Labor Pain; Dp: Delivery Pain; Pos p: Postpartum Pain; VV inf: Vulvovaginal Infections; UT inf: Urinary Tract Infections; S lact: Stimulation of Lactation and Improvement of Breast Milk Quality; Stss: Stress and Anxiety.

Fidelity Level (FL)

The fidelity level (FL) reflects the strength of the association between a plant species and a given ailment, based on its particular therapeutic potential. In the present study, data analysis showed that FL values ranged from 20% to 100%, which is closely comparable to the findings of Ghabbour *et al.* (2023) in the Taza province (28.48%-100%). Twenty-eight species exhibited an FL of 100%, indicating a highly consensual use. These species, including *Nerium oleander* L., *Atriplex halimus* L., *Carum carvi* L., *Pimpinella anisum* L., *Aristolochia fontanesii* Boiss. & Reut, *Euphorbia officinarum* L., *Boswellia sacra* Flueck., *Tetraclinis articulata (Vahl)* Mast., *Ricinus communis* L., *Echinops spinosissimus* Turra, *Ceratonia siliqua* L., *Senna alexandrina* Mill., *Salvadora persica L.*, *Thymus vulgaris* subsp. *vulgaris*, *Salvia hispanica* L., *Origanum majorana* L., *Lavandula stoechas* L., *Allium cepa* L., *Lawsonia inermis* L., *Hibiscus sabdariffa*, *Moringa oleifera* Lam., *Pelargonium graveolens* L'Hér., *Cenchrus americanus* (L.) Morrone, *Ziziphus lotus* (L.) Lam., *Hyoscyamus niger* L., *Camellia sinensis* L., *Curcuma longa* L., and *Elettaria cardamomum* (L.) Maton, are used to treat various health conditions affecting women of reproductive age.

This number (28 species) is higher than that reported by Ghabbour *et al.* (2023) in the same province (17 species) and by Srinivasan *et al.* (2022) (18 species), but lower than that reported by Idm'hand *et al.* (2020) (38 species), El Brahimi *et al.* (2022) (37 species).

Because our study focuses on women of reproductive age (15-49 years) a group characterized by specific health needs and experiences only species reported as being directly used to treat symptoms and disorders of the uterus, ovaries, breasts, menstrual cycle disturbances, perimenopausal and fertility problems, as well as pregnancy, labor, delivery, postpartum, and genitourinary inflammations or infections were included in the FL calculation (Appendix).

Uterine diseases: (33 plant taxa): *Nerium oleander* L., *Chenopodium ambrosioides* L., *Atriplex halimus* L., *Foeniculum vulgare* Mill., *Ammodaucus leucotrichus Coss, Petroselinum crispum* Mill., *Chamaemelum nobile* L.ALL, *Artemisia herba-alba* Asso…

Ovarian diseases: (28 plant taxa): *Nerium oleander* L., *Chenopodium ambrosioides* L., *Atriplex halimus* L., *Foeniculum vulgare* Mill., *Cuminum cyminum* L., *Petroselinum crispum* Mill., *Chamaemelum nobile* L.ALL, *Artemisia herba-alba* Asso ….

Breast diseases: (24 plant taxa): *Chenopodium ambrosioides* L., *Cuminum cyminum* L., *Chamaemelum nobile* L.ALL, *Artemisia herba-alba* Asso, *Euphorbia resinifera, Lepidium sativum* L., *Ricinus communis* L., *Trigonella foenum-graecum* L…

Menstrual cycle disorders: (48 plant taxa): *Nerium oleander* L., *Chenopodium ambrosioides* L., *Atriplex halimus* L., *Foeniculum vulgare* Mill., *Carum carvi* L., *Cuminum cyminum* L., *Ammodaucus leucotrichus Coss, Petroselinum crispum* Mill…

Perimenopausal disorders: (35 plant taxa): *Chenopodium ambrosioides* L., *Ammodaucus leucotrichus Coss, Chamaemelum nobile* L.ALL, *Artemisia herba-alba* Asso, *Artemisia absinthium* L., *Lepidium sativum* L., *Daphne gnidium* L., *Tetraclinis articulata* (Vahl) Mast., *Trigonella foenum-graecum* L….

Fertility disorders: (35 plant taxa): *Chenopodium ambrosioides* L., *Ammodaucus leucotrichus* Coss, *Petroselinum crispum* Mill., *Chamaemelum nobile* L.ALL, *Artemisia herba-alba* Asso, *Artemisia absinthium* L., *Euphorbia resinifera…*

Pregnancy, labor, delivery, and postpartum: (44 plant taxa): *Chenopodium ambrosioides* L., *Atriplex halimus* L., *Foeniculum vulgare* Mill., *Carum carvi* L., *Cuminum cyminum* L, *Ammodaucus leucotrichus* Coss, *Pimpinella anisum* L…

Genito-urinary inflammation and infections: (35 plant taxa): *Nerium oleander* L., *Chenopodium ambrosioides* L., *Atriplex halimus* L., *Petroselinum crispum* Mill., *Aristolochia longa* L, *Chamaemelum nobile* L.ALL…

These results highlight the remarkable diversity of aromatic and medicinal plants used by the surveyed women, reflecting the effectiveness attributed to each species for specific ailments in the study area.

The lowest FL value observed for *Prunus dulcis* (Mill.) D.A. Webb (FL = 11.11%) may bedue to the diverse uses of this species by the studied population to treat numerous other ailments. Moreover, several studies have highlighted the multiple pharmacological properties of *Prunus dulcis* (Mill.) D.A. Webb, such as its antioxidant, antidiabetic, and anti-inflammatory activities (Barreca *et al*. 2020).

Plant parts used

The study conducted across various sites in the Taza province revealed that the surveyed women use a wide variety of plant parts, classified into ten categories. The most frequently used plant's parts were leaves (77.5%), followed by the entire plant (41.3%), seeds (33.6%), flowers (23.9%), bark (11.7%), and rhizomes (8.5%), while bulbs, fruits, or stems ware less commonly used, at percentages from 1% to 5% (Fig. 9).This predominance of leaf use has also been reported in other studies, including Kachmar *et al.* (2021) in Taza, Benamar *et al.* (2023b) in the same region, particularly in Ain Chkef, as well as in studies conducted in Taounate by Jeddi *et al.* (2021), Jeddi *et al.* (2024), and other research reported similar results by Belhaj and Zidane (2021), Jaadan *et al.* (2020). This pattern may be explained by the ease of leaf collection and their richness in bioactive compounds with proven pharmacological properties (El Hachlafi *et al.* 2022).

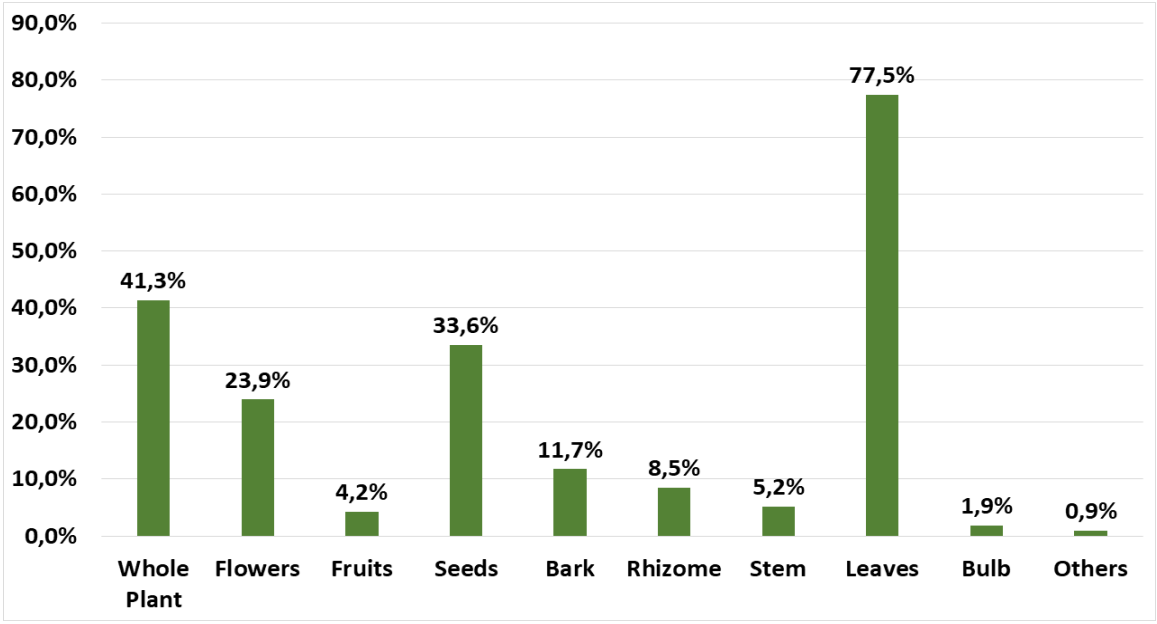

Figure 9. Plant parts used by women in the treatment of various ailments.

Methods of preparation

The women surveyed in the Taza province use AMPs through various preparation methods. Decoction is the most commonly employed method, with a rate of 76.9 %, followed by infusion (60.8 %), maceration (40.3 %), raw use (37.5 %), cooking (35.2 %), and poultice (18.2 %). Other preparation methods, representing 1.6 %, include seed drying, use as suppositories, or application of burned leaves (Fig. 10).

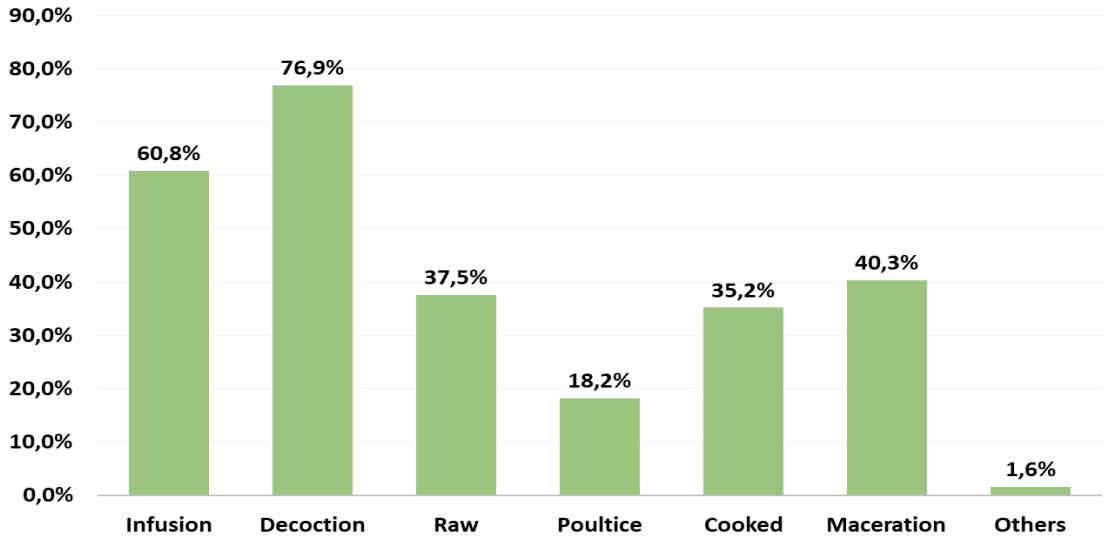

Figure 10. Frequency of preparation methods of the used AMPs by women.

These observations are consistent with those of El Brahimi *et al.* (2022) in Taza and other researchers (El-Assri *et al.* 2021, El Hachlafi *et al*. 2020, Belhaj & Zidane 2021). The predominance of decoction in our study is also in line with national research (Chaachouay *et al*.2019, El Hachlafi *et al.* 2020, Benkhaira *et al*. 2021, Jeddi *et al.* 2024). This preference may be explained by the aim of efficiently extracting the most potent compounds while reducing or eliminating the potential toxicity of the remedies used (El Hachlafi *et al*. 2020, Benkhaira *et al*. 2021). Furthermore, the frequent use of infusion has been confirmed by numerous authors (Akbulut *et al.* 2019, Beniaich *et al*. 2022, El Khomsi *et al*. 2022, Chaachouay *et al*. 2019, Ghabbour *et al*. 2024, Mikou *et al*. 2016, Salgueiro *et al.* 2018).

Mode of the administrations

This study highlights the diversity of AMP administration modes among the surveyed women. Oral administration is the predominant mode (97.2% of responses). This predominance has also been reported by the study of Jeddi *et al*. (2024) conducted in Taounate (75%) and by that of El Brahimi *et al.* (2022) in Taza (47.16%). It is followed by local application and inhalation (approximately 32%), and then by intimate hygiene (27.3%), reflecting a use consistent with the specific characteristics of the studied population. Other practices, such as the application of compresses, fumigation, massage, rinsing, or gargling, also remain preferred methods in the use of natural remedies (Fig. 11).

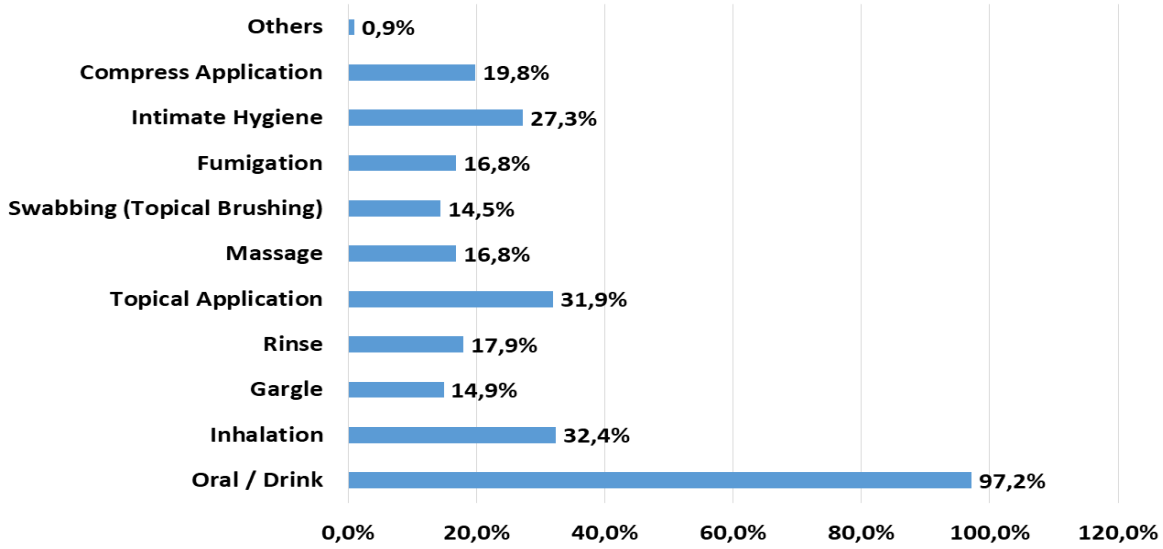

Figure 11. Distribution of the administration methods.

Dose and duration of use

Regarding the dosages preferred by the women participating in our study, a wide variety of measures were observed: tea glass (70%), spoon (51.4%), water glass (47.9%), handful (38.7%), and pinch (9.9%), as well as other forms (2.6%) such as pods, spraying, or mixing with other products like honey or milk (Fig. 12).

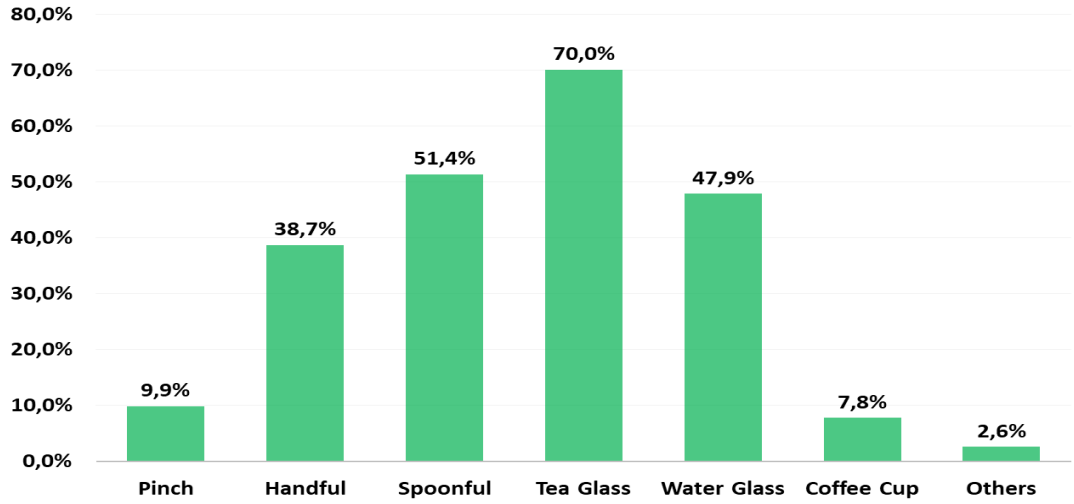

Figure 12. Doses of AMPs used by women for the preparation of traditional remedies.

With respect to the duration of use, half of the responses (50.93%) reported using plants until recovery, 34.88% for one day, 9.07% for one week, and 3.49% irregularly (Fig. 13).

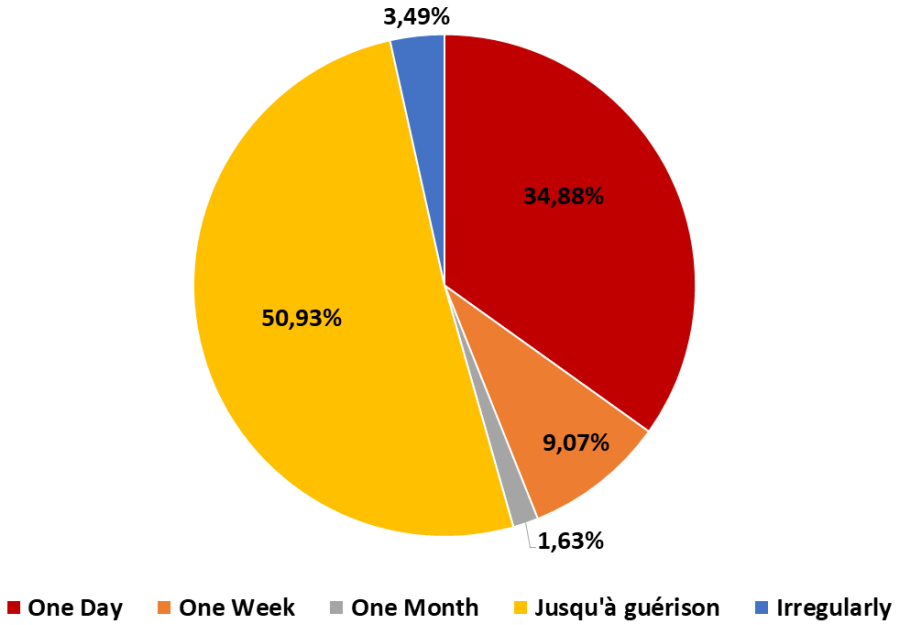

Figure 13. Duration of treatment using AMPs by women.

Furthermore, the timing recommended for plant intake by women was irregular in 30.23% of responses, followed by 31.86% favoring intake according to opportunity, 18.37% after meals, and 9.77% on an empty stomach. Other modalities were reported, including before bathing, before bedtime, throughout the year, or at the onset of pain or symptoms (4.88%) (Fig.14).

These observations, whether concerning dosage, timing, or duration of use, reflect a random practice without consideration of the potentially harmful effects and health risks, despite the well-established link between dose, duration, and toxicity (Benamar *et al*. 2023b, Benamar *et al*. 2025, Sreekeesoon & Mahomoodally 2014).

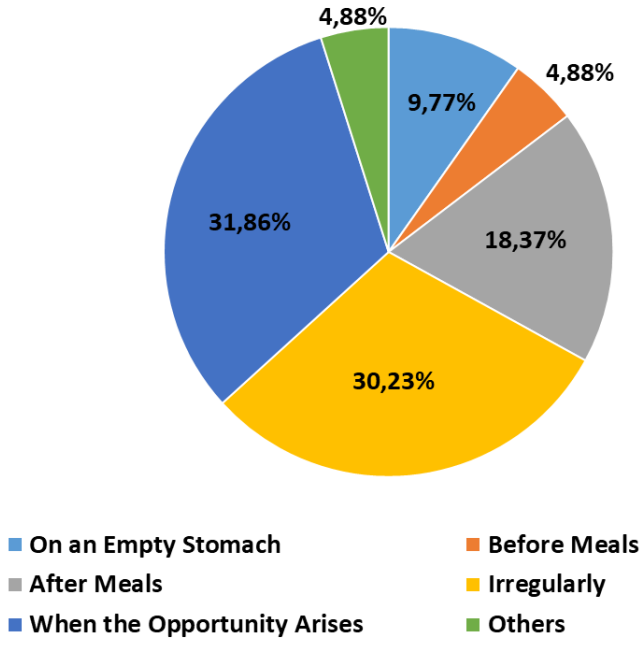

Figure 14. The moment of treatment using AMPs by women.

Efficacy, results, and side effects

In the studied province, nearly half of the surveyed women (48.6%) rated the plants used as "good," 33.02% considered them of moderate efficacy, 11.63% found them "excellent," and approximately 7% deemed their effectiveness insufficient or even null (Fig. 15). More than half of the respondents (59.9%) reported an improvement in their health status, while 47.5% observed the healing of the treated illnesses. In contrast, 22.6% reported the occurrence of toxic effects, 19.5% noted side effects, and 4.5% considered that the disease had worsened (Fig. 16). Regarding the occurrence of adverse effects after plant consumption, 56.98% of the studied population reported no side effects. Among the remaining 43%, the reported adverse effects were distributed as follows: allergies (65.1%), nausea and vomiting (50%), gastric ulcers (43.2%), diarrhea (40.6%), hyperthermia (18.8%), sedation (8.3%), and other miscellaneous effects (4.7%) such as cramps, anemia, fatigue, hemorrhages, decreased coagulation, uterine cervical contractions, and renal impairment (Fig. 17).

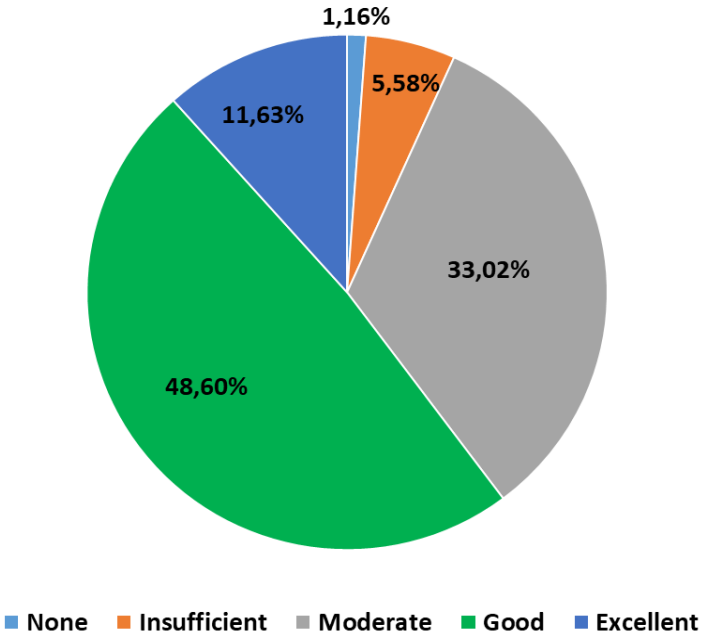

Figure 15. Efficacy of aromatic and medicinal plants used by women.

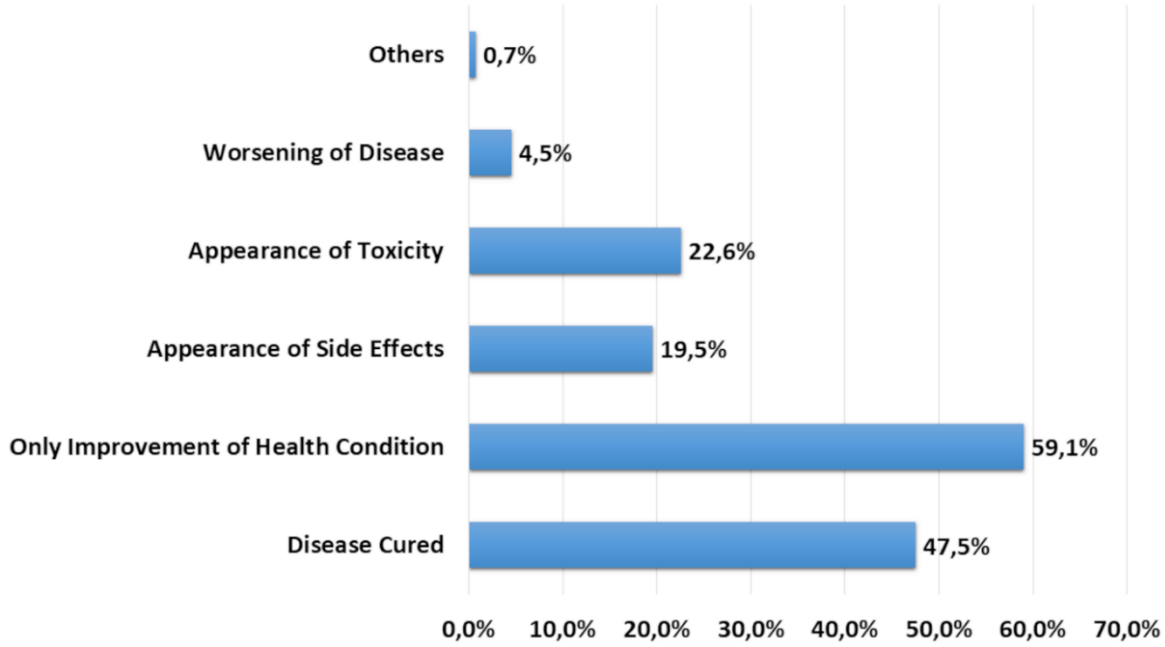

Figure 16. Percentages of results after the use of aromatic and medicinal plants by women.

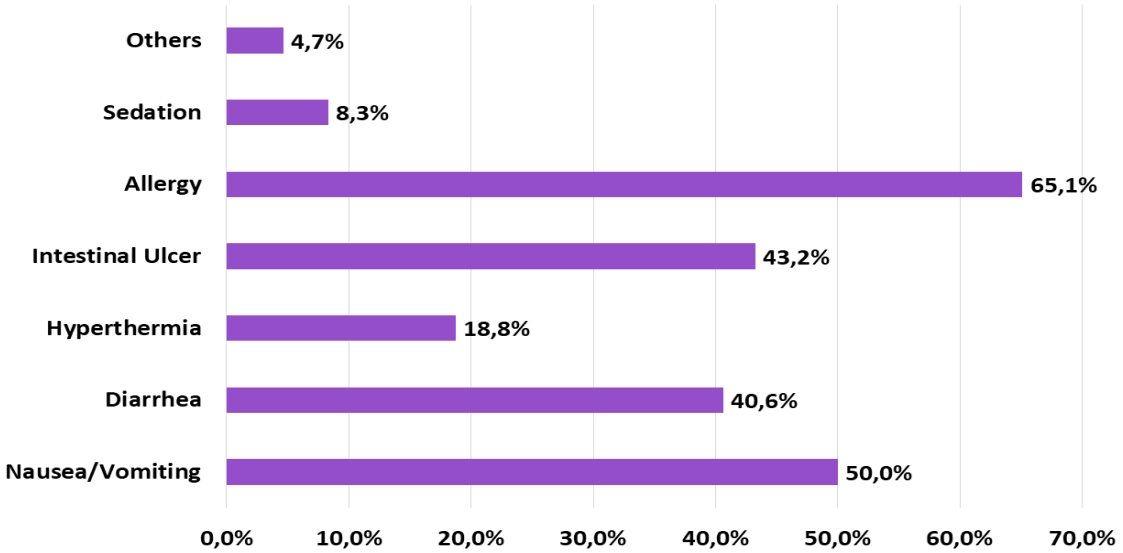

Figure 17. Percentages of types of side effects after the use of aromatic and medicinal plants by women.

These findings corroborate the observations of El-Assri *et al*. (2021), who reported that 63% of distributors recommend taking precautions when using aromatic and medicinal plants, while 37% consider them toxic. Moreover, the study conducted by El Brahimi *et al*. (2022) in Bouchfaa, within the same province, indicated that only a small minority (5%) of the population reported minor side effects.

Sources of supply of aromatic and medicinal plants and their storage methods

This study highlights the main sources of supply of AMPs for the surveyed population. Accordingly, 72.8% of respondents obtain their plants from herbalists, followed by wild plants (48.4%) and home gardens (47.7%). Traditional healers represent a minor source (6%), while other origins, such as grocery stores and weekly markets, account for 7% (Fig. 18).

Furthermore, to preserve the therapeutic and pharmacological efficacy of the plants, the same population employs various conservation methods: in the shade (69.5%), exposed to light or sunlight (53.7%), and in darkness (21.2%). Other storage and preservation practices are also reported (4.9%), including refrigeration, plastic containers, and glass bottles (Fig. 19).

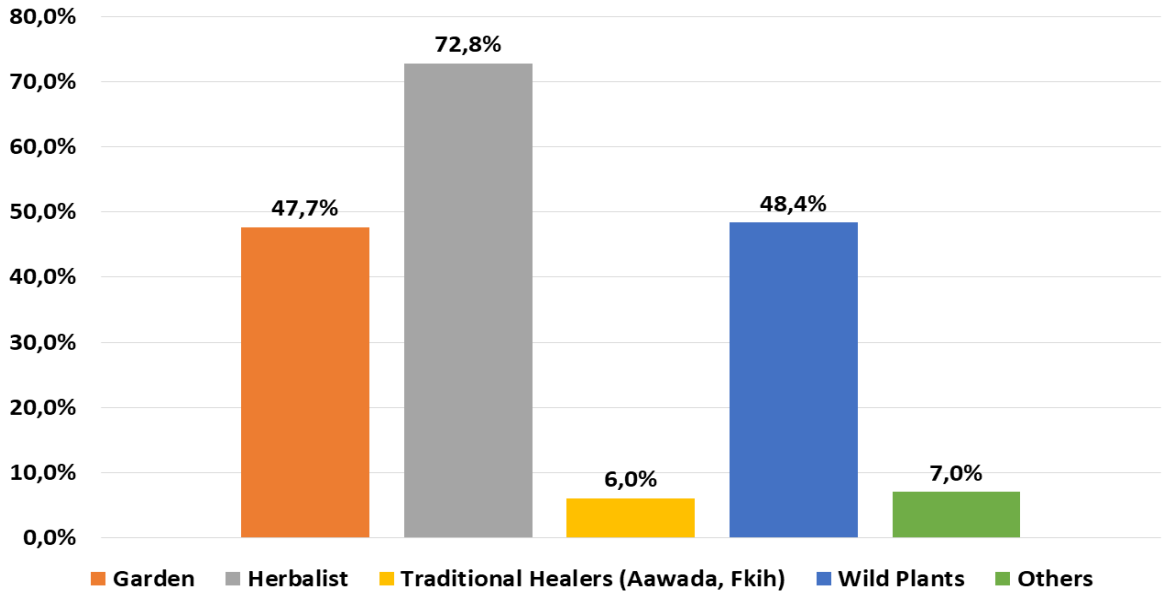

Figure 18. Sources of supply of aromatic and medicinal plants used by women.

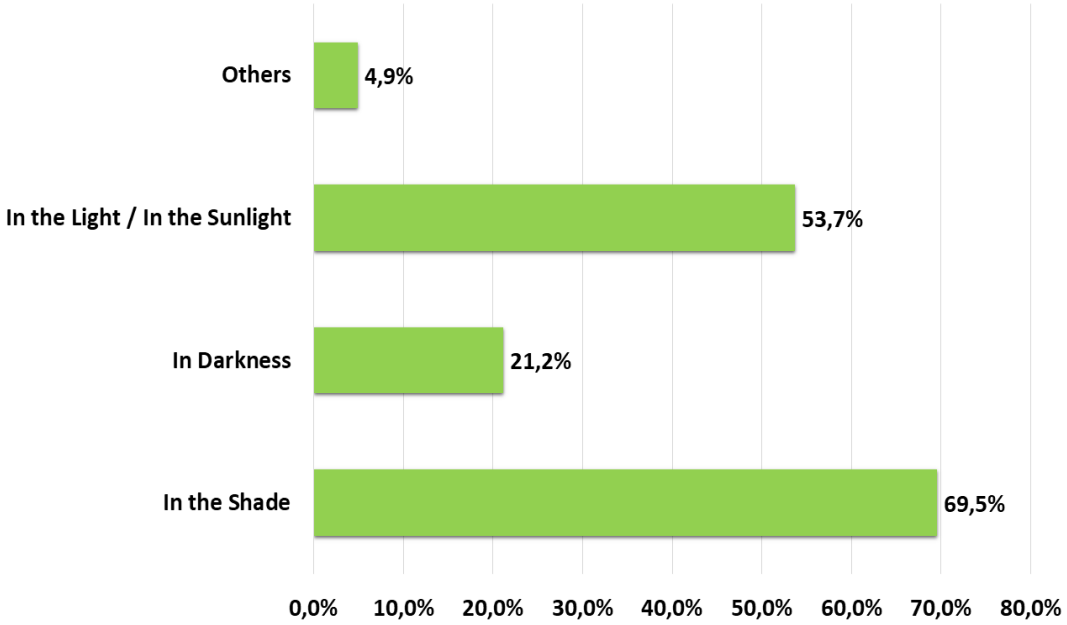

Figure 19. Storage methods of aromatic and medicinal plants used by women.

These findings are consistent with those of a similar study conducted in Taza by El Brahimi *et al*. (2022), which reported exposure to light as the primary mode of conservation (68%), followed by storage away from light (28%).

Objectives of Use of Aromatic and Medicinal Plants and Associated Treated Ailments

The study population, composed of women of reproductive age, reported diverse uses of aromatic and medicinal plants. The majority of responses (97.7%) indicated therapeutic use, while 49.5% and 39.5% reported cosmetic and dietary uses, respectively (Fig. 20). Regarding therapeutic use, most of the medicinal species identified in the Taza province are employed to treat or alleviate a wide range of diseases and symptoms, including general female health issues as well as conditions specific to the reproductive period (Fig. 21). Dysmenorrhea was the most frequently treated symptom (79.8%).

The cumulative percentages of responses for the different categories of treated conditions are as follows:
Uterine disorders: 62.4% (endometritis, pelvic inflammatory disease, postpartum infections, postpartum hemorrhage).
Ovarian disorders: 20.2% (polycystic ovary syndrome, ovarian tumors).
Breast conditions: 28.1% (cracks, engorgement, mastitis, abscesses, tumors).
Menstrual cycle disorders: 118.2% (dysmenorrhea, metrorrhagia, menorrhagia).
Fertility problems: 32.4% (reduced libido, vaginal dryness, dyspareunia, vaginismus, couple infertility*).*
Premenopausal disorders: 44.4% (hot flashes, insomnia, inflammation, vaginal dryness*).*
Pregnancy, labor, and postpartum-related conditions: 195% (digestive disorders associated with pregnancy and postpartum, stimulation of uterine contractions, perineal tears, cervical preparation for labor, energy reinforcement and reduction of labor-related effort, labor and postpartum pain, stimulation and enhancement of breastfeeding).
Genitourinary infections and inflammations: 79.3% (vulvovaginal and urinary tract infections).
General pathologies: 277.6% (cardiovascular diseases, cancers, hypertension, diabetes, asthma, bronchitis, jaundice, gastritis, ulcers, nausea, and vomiting).
Other: 61.4% (hair and facial care, fever, headaches, flu, loss of appetite, Chronic irritable bowel syndrome, diarrhea, constipation, obesity, insomnia, Enterobiasis, rheumatism, oral care, foot fissures and wounds, immune system strengthening, fatigue, hemorrhoids, anemia);

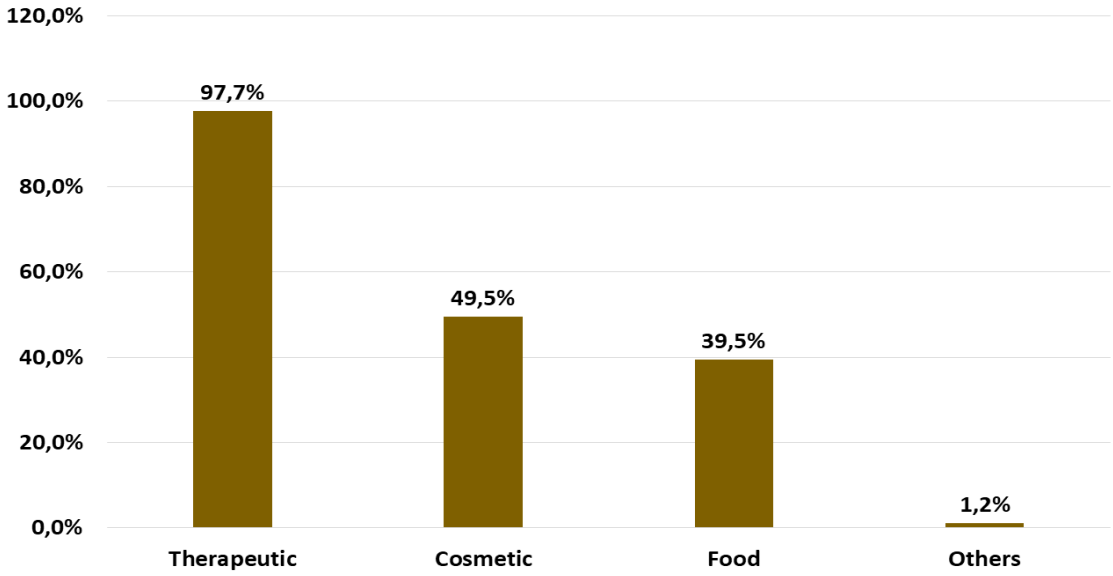

Figure 20. Objectives of the use of Aromatic and Medicinal Plants by women.

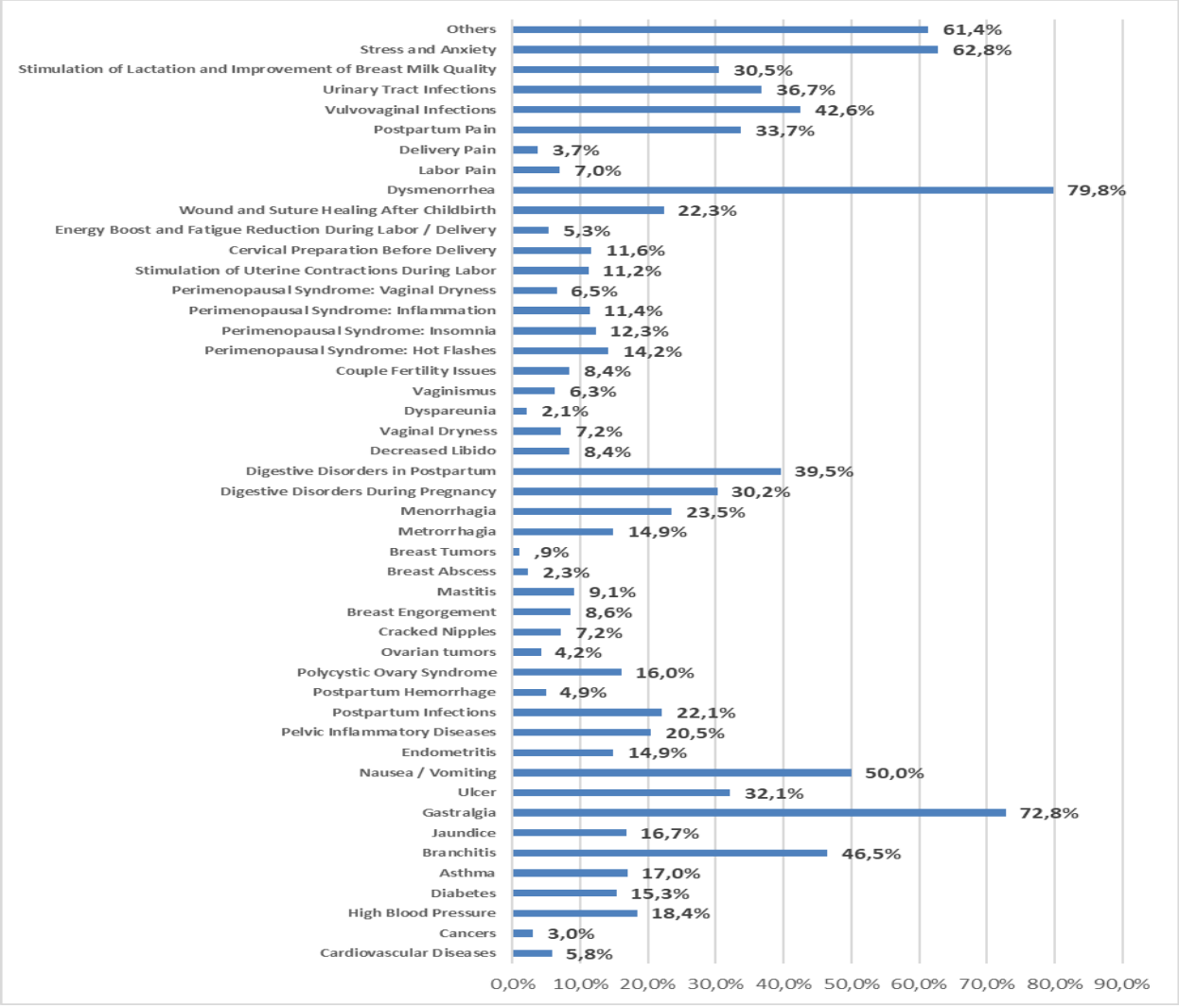

Figure 21. Ailments treated by Women with Aromatic and Medicinal Plants.

These findings are consistent with other studies demonstrating the use of plants during pregnancy as food-medicine (Towns & Van Andel 2016). Other studies also report contraceptive effects, tonic properties during pregnancy, labor induction,

miscarriage prevention, premenstrual syndrome management, and various gynecological treatments (Bafor 2017). In southern Morocco Kamel *et al*. (2022) reported the use of AMPs during pregnancy (67.45%), labor (26.82%), and postpartum (5.73%). Similarly, Abboud and Chikhaoui (2024) found that 63.75% of women in the Beni Mellal-Khénifra region used AMPs during pregnancy, labor, and postpartum.

Finally, the surveyed women also used plants to treat general health conditions, with digestive disorders such as gastralgia, nausea, and vomiting being the predominant ones.These results corroborate those of several studies conducted in various regions of Morocco, including the province of Taounate (Chaachouay *et al*. 2019, Jeddi *et al*. 2024), the Gharb region (El Hachlafi *et al*. 2020), the province of Laâyoune (El Yahyaoui *et al*. 2015), and the Mediterranean region (El Khomsi *et al*. 2022), where digestive tract disorders represent the primary indication for the use of medicinal plants.

Contingency table model

The sociodemographic variables have little influence on satisfaction with using AMPs. Despite the weak association, age shows a near-significant trend ($Chi^2 = 7.44$; $p = 0.059$). Satisfaction rates do not differ significantly ($Chi^2 = 0.679$; $p = 0.410$) between urban (84.7%) and rural residents (83.3%). Similarly, marital status ($Chi^2 = 5.51$; $p = 0.138$) and educational level ($Chi^2 = 6.15$; $p = 0.104$) didn't show a major effect, eventhough a high satisfaction rate (90.3%) was recorded for the university graduates. Professional activity also shows no significant difference ($Chi^2 = 5.23$; $p = 0.073$). Thereafter, neither the AMP's use nor the satisfaction of their use is dependant on social or educational categories, because they seem to be shared by the whole studied population.

There is a clear trend concerning access to healthcare ($Chi^2 = 6.72$; $p = 0.081$). Indeed, a satisfaction rate of 86% is observed for people living less than 3 km away from of health centers compared with 79.0% for those living 3–6 km away, and 96.8% for those living more than 10 km away. This suggests that the distance from healthcare facilities may reinforce reliance on, and appreciation for, medicinal plants. A significant association is observed between the type of healthcare used and the satisfaction level ($Chi^2 = 12.8$; $p = 0.002$): users of conventional medicine alone report 75.7% satisfaction, compared with 89.2% among those combining modern and traditional medicine. Thus, a mixed therapeutic approach appears to optimize satisfaction.

The satisfaction rate was 90.2% within participants who declared AMPs as effective, while 76.6% were satisfied even though they reported that AMPs were ineffective. A more graded assessment of perceived effectiveness ($Chi^2 = 66.5$; $p < 0.001$) indicated a satisfaction rate of 96% among participants who rated effectiveness as "excellent" and of 73.9% among those who reported effectiveness as "moderate", compared to only 41.7% among those who rated perceived effectiveness as "insufficient". This indicates that perceived therapeutic efficacy is key to overall satisfaction.

Adverse effects appear as a major factor associated with dissatisfaction ($Chi^2 = 34.1$; $p < 0.001$). Users who experienced side effects reported a lower satisfaction rate (73.0%), compared to those without any side effects (93.5%). The analysis of specific adverse effects confirms this trend: indeed, the satisfaction rate in the presence or absence of nausea/vomiting was 88.9% and 69.8% respectively ($\chi^2 = 21.0$; $p < 0.001$) and in the case of allergies, 91.5% and 68.0% ($\chi^2 = 37.6$; $p < 0.001$). Other manifestations, such as hyperthermia ($\chi^2 = 20.9$; $p < 0.001$) and intestinal ulcers ($\chi^2 = 12.1$; $p < 0.001$), confirm this pattern. These results highlight that safety is a determining factor in maintaining a high level of satisfaction.

These conclusions emphasize that safety of use is an important driver of high satisfaction rates. Satisfaction is also strongly correlated with self-reported clinical outcomes. Patients achieving full recovery reported a satisfaction rate of 91.1%, against 78.9% in patients who didn't ($Chi^2 = 12.2$; $p < 0.001$). On the other hand, partial improvement of health status does not affect satisfaction significantly ($Chi^2 = 0.0203$; $p = 0.887$), with very similar rates (84.9% against 84.4%). The occurrence of toxicity ($Chi^2 = 15.5$; $p < 0.001$) or ill-health worsening ($Chi^2 = 11.0$; $p < 0.001$) was significantly associated with lower satisfaction (71.9% and 57.9%, respectively). These findings confirm positive predictive power regarding user satisfaction, recovery and lack of adverse effects.

Finally, the recommendation of medicinal plants is almost all based on satisfaction ($Chi^2 = 195$; $p < 0.001$). Of those who were satisfied respondents, 97.1% recommended AMPs. while only 37.1% of dissatisfied respondents did. Such an extremely robust association indicates that positive personal experiences promote the social spread of phytotherapy by enhancing its grounding in the therapeutic culture of the local society.

In summary, the results show that user satisfaction regarding medicinal and aromatic plants is determined by two primary factors: perceived therapeutic benefit ($Chi^2 = 66.5$; $p < 0.001$) and lack of major side effects ($Chi^2 = 34.1$; $p < 0.001$). Sociodemographic factors (age, living area, education, marital status) are of limited importance, with therapeutic effects (recovery vs. worsening) and safety significantly affecting positive evaluations. Finally, the almost robust connection between satisfaction and recommendation (97.1% of satisfied users) suggests that the use of AMPs resides within a virtuous cycle in which efficacy, tolerance, and social transmission are reinforcing each other (Table 5).

Table 5. Contingency model with respect to respondents' satisfaction.

Variable	Satisfaction			Chi-2	*P – value*
	Yes	No	Total		
Age	**364 (84.7%)**	**66 (15.3%)**	**430 (100%)**	7.44	0.059
15-20	72 (77.4%)	21 (22.6%)	93 (100%)		
21-30	129 (86.6%)	20 (13.4%)	149 (100.0%)		
31-40	74 (82.2%)	16 (17.8%)	90 (100%)		
41-49	89 (90.8%)	9 (9.2%)	98 (100%)		
Residence	**364 (84.7%)**	**66 (15.3%)**	**430 (100%)**	0.679	0.410
Urban	184 (83.3%)	37 (16.7%)	221 (100.0%)		
Rural	180 (86.1%)	29 (13.9%)	209 (100.0%)		
Marital status	**364 (84.7%)**	**66 (15.3%)**	**430 (100.0%)**	5.51	0.138
Single	122 (79.2%)	32 (20.8%)	154 (100.0%)		
Married	217 (87.5%)	31 (12.5%)	248 (100.0%)		
Widowed	17 (89.5%)	2 (10.5%)	19 (100.0%)		
Divorced	8 (88.9%)	1 (11.1%)	9 (100.0%)		
Level of education	**364 (84.7%)**	**66 (15.3%)**	**430 (100.0%)**	6.15	0.104
Not Educated	78 (88.6%)	10 (11.4%)	88 (100.0%)		
Primary Education	69 (86.3%)	11(13.8%)	80 (100.0%)		
Secondary Education	65(90.3%)	7 (9.7%)	72 (100.0%)		
University Education	152 (80.0%)	38 (20.0%)	190 (100.0%)		
Professional activity	**364 (84.7%)**	**66 (15.3%)**	**430 (100.0%)**	5.23	0.073
Public Sector	43 (79.6%)	11 (20.4%)	54 (100%)		
Private Sector	23 (100%)	0 (100%)	23 (100%)		
Unemployed	298 (84.4%)	55 (15.6%)	353 (100%)		
Access to primary healthcare services	**364 (84.7%)**	**66 (15.3%)**	**430 (100%)**	6.72	0.081
Less than 3 Km	221 (86.0%)	36 (14.0%)	257 (100%)		
Between 3 and 6 Km	64 (79.0%)	17 (21.0%)	81 (100%)		
Between 6 and 10 Km	49 (80.3%)	12 (19.7%)	61 (100%)		
More than 10 Km	30 (96.8%)	1 (3.2%)	31 (100%)		
Type of healthcare used	**364 (84.7%)**	**66 (15.3%)**	**430 (100%)**	12.8	**0.002**
Traditional Medicine	44 (88.0%)	6 (12.0%)	50 (100%)		
Modern Medicine	106 (75.7%)	34 (24.3%)	140 (100%)		
Both	214 (89.2%)	26 (10.8%)	240 (100%)		
Perceived effectiveness	**364 (84.7%)**	**66 (15.3%)**	**430 (100%)**	14.8	**<.001**
Yes	230 (90.2%)	25 (9.8%)	255 (100%)		
No	134 (76.6%)	41 (23.4%)	175 (100%)		
Efficacy of AMPs	**364 (84.7%)**	**66 (15.3%)**	**430 (100%)**	66.5	**<.001**
None	4 (80.0%)	1 (20.0%)	5 (100.0%)		
Insufficient	10 (41.7%)	14 (58.3%)	24 (100.0%)		
Moderate	105 (73.9%)	37 (26.1%)	142 (100.0%)		
Good	197 (94.3%)	12 (5.7%)	209 (100.0%)		
Excellent	48 (96.0%)	2 (4.0%)	50 (100.0%)		
Presence of Side Effects After Use of Aromatic and Medicinal Plants	**364 (84.7%)**	**66 (15.3%)**	**430 (100.0%)**	34.1	**<.001**
Yes	135 (73.0%)	50 (27.0%)	185 (100.0%)		
No	229 (93.5%)	16 (6.5%)	245 (100.0%)		

Nausea/Vomiting	**364 (84.7%)**	**66 (15.3%)**	**430 (100.0%)**	21.0	**<.001**
Yes	67 (69.8%)	29 (30.2%)	96 (100.0%)		
No	297 (88.9%)	37 (11.1%)	334 (100.0%)		
Diarrhea	**364 (84.7%)**	**66 (15.3%)**	**430 (100.0%)**	34.9	**<.001**
Yes	49 (62.8%)	29 (37.2%)	78 (100.0%)		
No	315 (89.5%)	37 (10.5%)	352 (100.0%)		
Hyperthermia	**364 (84.7%)**	**66 (15.3%)**	**430 (100.0%)**	20.9	**<.001**
Yes	21 (58.3%)	15 (41.7%)	36 (100.0%)		
No	343 (87.1%)	51 (12.9%)	394 (100%)		
Intestinal Ulcer	**364 (84.7%)**	**66 (15.3%)**	**430 (100.0%)**	12.1	**<.001**
Yes	60 (72.3%)	23 (27.7%)	83 (100.0%)		
No	304 (87.6%)	43 (12.4%)	347 (100.0%)		
Allergy	**364 (84.7%)**	**66 (15.3%)**	**430 (100.0%)**	37.6	**<.001**
Yes	85 (68.0%)	40 (32.0%)	125 (100.0%)		
No	279 (91.5%)	26 (8.5%)	305 (100.0%)		
Disease Cured	**364 (84.7%)**	**66 (15. 3%)**	**430 (100.0%)**	12.2	**<.001**
Yes	184 (91.1%)	18 (8.9%)	202 (100.0%)		
No	180 (78.9%)	48 (21.1%)	228 (100.0%)		
Only Improvement of Health Condition	**364 (84.7%)**	**66 (15.3%)**	**430 (100.0%)**	0.0203	0.887
Yes	213 (84.9%)	38 (15.1%)	251 (100 .0%)		
No	151 (84.4%)	28 (15.6%)	179 (100.0%)		
Appearance of Side Effects	**364 (84.7%)**	**66 (15.3%)**	**430 (100.0%)**	23.4	**<.001**
Yes	56 (67.5%)	27 (32.5%)	83 (100.0%)		
No	308 (88.8%)	39 (11.2%)	347 (100.0%)		
Appearance of Toxicity	**364 (84.7%)**	**66 (15.3%)**	**430 (100.0%)**	15.5	**<.001**
Yes	69 (71.9%)	27 (28.1%)	96 (100.0%)		
No	295 (88.3%)	39 (11.7%)	334 (100.0%)		
Worsening of Disease	**364 (84.7%)**	**66 (15.3%)**	**430 (100%)**	11.0	**<.001**
Yes	11 (57.9%)	8 (42.1%)	19 (100.0%)		
No	353 (85.9%)	58 (14.1%)	411 (100.0%)		
Recommendation for Use of Aromatic and Medicinal Plants	**364 (84.7%)**	**66 (15.3%)**	**430 (100.0%)**	195	**<.001**
Yes	331 (97.1%)	10 (2.9%)	341 (100.0%)		
No	33 (37.1%)	56 (62.9%)	89 (100.0%)		

Linear regression

This linear regression model used for a sample of 430 respondents explains 57% of the variance related to satisfaction with the use of aromatic and medicinal plants (AMPs) (R^2 = 0.571). This degree of variance explained is high for self-reported health domain data, suggesting the robustness of the results. None of the sociodemographic variables were found to have significant predictors. Neither age (β = -0.006; p = 0.684), residence (β = -0.040; p = 0.188), marital status (β = -0.032; p = 0.182), education level (β = 0.005; p = 0.737), nor professional activity (β = 0.004; p = 0.843) was found to have a significant impact on satisfaction. This indicates that the assessment of AMPs goes beyond social and demographic categories. In contrast, other determinants related to health context and usage modalities were essential. Health insurance coverage was negatively linked with satisfaction (β = -0.575; p = 0.029).

This fact may be taken as a comparative effect: people with access to a conventional medicine source may have found AMPs less acceptable in comparison. Personal role in obtaining information before the AMPs application had a positive and significant effect (β = +0.103; p = 0.025). Users who actively pursue information tend to have a better grasp of knowledge; hence they will report more satisfaction. Conversely, dependence on personal experience alone usually reduces users´ satisfaction (β = -0.066; p = 0.047). Likewise, consulting phytotherapy specialists was linked to lower satisfaction (β = -0.122; p = 0.038), possibly reflecting more complex clinical circumstances during which expectations are not always fulfilled.

Perceived efficacy of AMPs was a key predictor: low perceived efficacy significantly diminished satisfaction (β = -0.073; p < 0.001). This result highlights the fact that the subjective perception of therapeutic outcomes is at the center of users'

experience. In addition, adverse effects also made a significant contribution: allergies (β = −0.095; p = 0.022) and (most notably, worsening of an existing illness (β = -0.155; p = 0.021) had a significantly detrimental effect on satisfaction.

These insights make the medical monitoring of patient outcomes important to reduce the risks of plant-based treatments. Last but not least, the strongest predictor in our model was the tendency to recommend AMPs and had a strong positive effect (β = +0.546; p < 0.001). This finding highlights a virtuous cycle: satisfied users are becoming avid advocates of medicinal plants, thereby amplifying their social diffusion (Table 6).

Table 6. Linear regression model explaining respondents' satisfaction.

Model coefficients - Satisfaction with Treatment Using Aromatic and Medicinal Plants						
Predictor	**Estimation**	**Standar derror**	**Lower bound**	**Upper**	**t**	**P**
Intercept	1.75644	0.6937	0.3924	3.12048	2.5318	0.012
Age	-0.00614	0.0151	-0.0358	0.02352	-0.4072	0.684
Residence	-0.03966	0.0300	-0.0987	0.01940	-1.3204	0.188
Marital status	-0.03235	0.0242	-0.0799	0.01519	-1.3378	0.182
Level of education	0.00487	0.0145	-0.0236	0.03331	0.3363	0.737
Professional activity	0.00411	0.0208	-0.0367	0.04496	0.1980	0.843
Health coverage	-0.57473	0.2623	-1.0904	-0.05907	-2.1915	**0.029**
Sought information before using AMP	0.10301	0.0457	0.0132	0.19283	2.2548	**0.025**
Healthcare professionals	0.02250	0.0556	-0.0868	0.13180	0.4047	0.686
Other people's experiences	-0.01126	0.0292	-0.0687	0.04617	-0.3856	0.700
Television programs	-0.02101	0.0413	-0.1022	0.06015	-0.5091	0.611
Personal experience	-0.06579	0.0331	-0.1308	-7.69e−4	-1.9895	**0.047**
Family and friends	-0.00439	0.0285	-0.0605	0.05168	-0.1540	0.878
Herbalists	-0.01584	0.0386	-0.0917	0.05997	-0.4109	0.681
Traditional healers (Aawada, Fkih)	0.01271	0.0969	-0.1777	0.20317	0.1313	0.896
Phytotherapy specialists	-0.12220	0.0588	-0.2379	-0.00652	-2.0771	**0.038**
Internet sources	-0.00534	0.0338	-0.0718	0.06108	-0.1580	0.875
Books on traditional medicine	0.07847	0.0743	-0.0676	0.22454	1.0563	0.292
Social media (TikTok, Facebook, Instagram)	0.02910	0.0337	-0.0372	0.09540	0.8629	0.389
Other sources	0.01001	0.1506	-0.2862	0.30621	0.0664	0.947
Efficacy of MAPs	-0.07307	0.0175	-0.1075	-0.03867	-4.1770	**<.001**
Presence of Side Effects After Use of Medicinal Plants	0.02305	0.0428	-0.0610	0.10713	0.5392	0.590
Nausea/Vomiting	0.01187	0.0399	-0.0667	0.09042	0.2971	0.767
Diarrhea	-0.04963	0.0408	-0.1298	0.03057	-1.2167	0.224
Hyperthermia	-0.03250	0.0531	-0.1369	0.07189	-0.6122	0.541
Intestinal Ulcer	0.01071	0.0395	-0.0669	0.08833	0.2713	0.786
Allergy	-0.09539	0.0414	-0.1768	-0.01394	-2.3028	**0.022**
Sedation	0.07853	0.0707	-0.0604	0.21745	1.1114	0.267
Others	0.05971	0.0940	-0.1250	0.24445	0.6355	0.525
Worsening of Disease	-0.15549	0.0671	-0.2874	-0.02358	-2.3177	**0.021**
Recommendation for Use of Aromatic and Medicinal Plants	0.54646	0.0347	0.4783	0.61462	15.7626	**<.001**

Verification of hypotheses

The QQ-plot (quantile-quantile plot) of standardized residuals demonstrates the validation of statistical assumptions regarding the model utilized to assess variables that influence women's satisfaction with aromatic and medicinal plants.
The analysis of data shows that generally the model used (probably a logistic regression) meets the normality assumption on residuals, since points plotted against the QQ plot are close to the reference line. This indicates that the model errors are approximately normally distributed, confirming the statistical validity of the relationships observed between satisfaction and the explanatory variables.

Furthermore, the QQ plot confirms that the model residuals do not show any major deviation, which supports the reliability of the statistical analyses and ethnobotanical interpretations. In other words, the conclusions that women in the Taza region mainly use medicinal plants for their perceived effectiveness and availability, regardless of their social category, are based on a robust model consistent with the assumptions of normality.

In summary, the Q-Q plot is used here to validate the quality of the statistical model, which shows that satisfaction with aromatic and medicinal plants depends mainly on their therapeutic efficacy and the rarity of adverse effects, and not on the socioeconomic characteristics of users (Fig. 22).

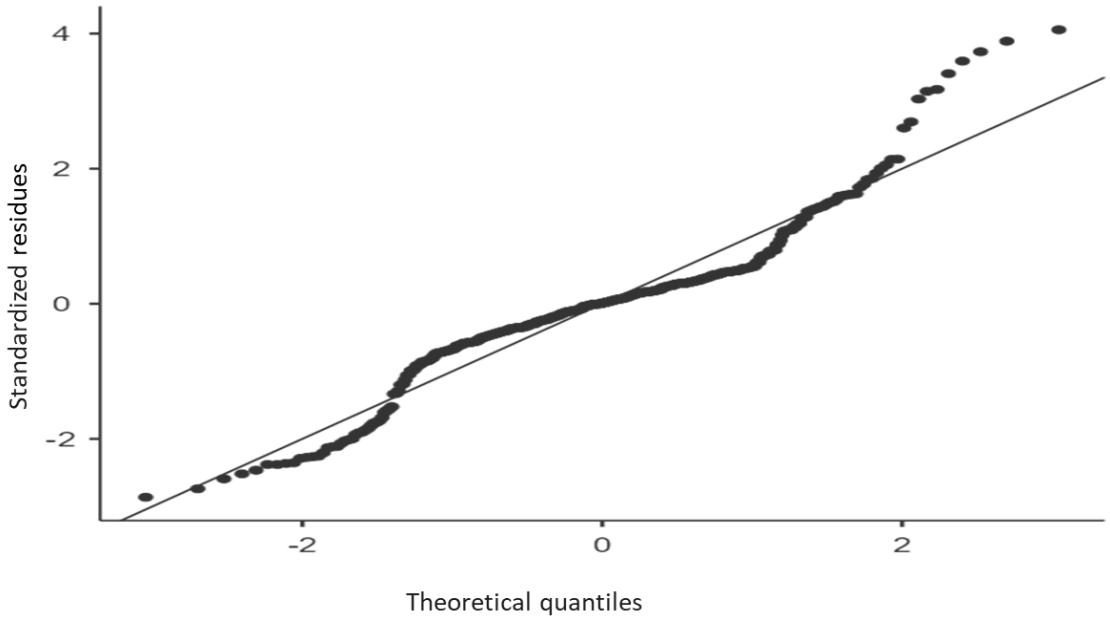

Figure 22. Graphe Q-Q (quantile-quantile plot).

Association rule between peoples' satisfaction and different variables

The analysis based on the association rule revealed a confidence level higher than 0.8, as well as lift and conviction values greater than 1, indicating a positive and robust relationship between the use of aromatic and medicinal plants and the level of satisfaction among the surveyed women (Table 7).

This association, which is rarely contradicted, does not appear to be due to chance. These findings are consistent with those of Flouchi *et al.* (2023), who also reported a high level of satisfaction among users of aromatic and medicinal plants.

The use of these plants thus appears to be particularly effective in alleviating symptoms and treating certain ailments, especially when combined with the practices of traditional healers or phytotherapy specialists, despite the availability of modern healthcare facilities and the occasional occurrence of side effects such as sedation or symptom aggravation.

Table 7. Model for identifying the association rules between the satisfaction of the studied population and the various variables of the study.

Antecedents	Consequents	Support	Confidence	Lift	Leverage	Conviction
({'Use AMPs', 'Inef C/M', 'Hea Co'})	({'Satisfaction'})	0.8	0.8535980148	1.008371281	0.00664142779	1.0484036263
({'Use AMPs','Trad heal'})	({'Satisfaction'})	0.8	0.8514851485	1.005875312	0.00467279610	1.0334883720
({'Use AMPs', 'Sed', 'Trad heal'})	({'Satisfaction'})	0.8	0.8472906403	1.0009202620	0.00073553272	1.0051012753
({'Use AMPs', 'Phy Spe', 'Hea Co'})	({'Satisfaction'})	0.8046511627	0.854320987	1.009225342	0.00735532720	1.0536066219
({'Use AMPs', 'Phy Spe'})	({'Satisfaction'})	0.8	0.8535980148	1.008371281	0.00664142779	1.0484036263
({'Use AMPs', 'Sed', 'Hea Co'})	({'Satisfaction'})	0.8139534883	0.8474576271	1.0011175265	0.00090859924	1.0062015503

({'Use AMPs', 'Trad heal' , 'Hea Co', 'Wor Dis'})	({'Satisfaction'})	0.8	0.85785536	1.013400564	0.01057869118	1.079804161
({'Use AMPs', 'Hea Co', 'Wor Dis'})	({'Satisfaction'})	0.8023255813	0.8582089552	1.0138182712	0.01093564088	1.082496940

Legend:

Use AMPs: Use of AMPs as traditional medicine; **Inef C/M**: Ineffectiveness of conventional medicine; **Hea Co:** Health coverage; **Trad heal:** Traditional healers (Aawada, Fkih); **Phy Spe**: Phytotherapy specialists; **Sed:** Sedation; **Wor Dis:** Worsening of Disease.

Conclusion

The present study is, to the best of our knowledge, the first in the Taza province (Morocco) to focus on ethnopharmacological knowledge on the use of aromatic and medicinal plants among women in the reproductive stage, a stage of life where specific health needs are encountered. A survey comprised 430 people, roughly evenly distributed among urban and rural settings; socioeconomic, cultural, and demographic dimensions were included.

The findings revealed aromatic and medicinal plants were used extensively during this period of life. A total of 70 species belonging to 32 botanical families were recorded. The Verbenaceae family was the most represented, and the most frequently used species included *Origanum compactum* Benth. and *Salvia rosmarinus* Spenn. Leaves were the most commonly used plant part, while decoction was the predominant method of preparation. Values for Fidelity Level (FL) were 20-100%, and 28 species had FL equal to 100%, which shows higher agreement among respondents in terms of use. The main sources of knowledge were family and friends (62.2%), in addition to shared experiences (55.9%). The most frequently treated ailments included dysmenorrhea, genitourinary infections and inflammations, pregnancy, childbirth, and postpartum related disorders, and uterine disorders. The women users were mostly married (57.67%), aged 21 to 30 (34.65%), with no professional activity (82.09%), but they had a high level of education (university: 44.19%).

This profile is indicative of a cultural change involving the acquisition of a range of new information and means of knowledge transmission no longer purely intergenerational. Using the association model between participants' satisfaction and the examined variables yielded a high level of satisfaction about using medicinal plants to alleviate feelings of discomfort, sickness, and problems from puberty onwards to perimenopause. Indeed, it should be emphasized that this is the first study in which an an artificial intelligence based analytical approach has been applied to data of an ethnobotanical /ethnopharmacological survey information conducted among women (15-49 years old), to predict the relationship between their satisfaction and the AMPs using. Furthermore, the results show lift values greater than 1 and confidence values exceeding 0.8, indicating the existence of strong and statistically relevant associations between the characteristics of the respondents, some plant species, their various uses, certain side effects, and resource persons.

Overall, this research provides a valuable database for the development of further ethnobotanical and experimental studies (pharmacological, phytochemical, and toxicological), with the aim of limiting the excessive reliance on conventional medicines and exploiting the natural wealth of the local environment through rational management of plant resources and effective sustainable development.

Declarations

List of abbreviations: AMPs: Aromatic and Medicinal Plants**. Indices:** RFC**:** Relative Frequency of Citation; FIV: Family Importance Value; PPV: Plant Part Value; FL: Fidelity Level. **Type of plant:** W: Wild; Cu: Cultivated; Ad: Adventitious**. Aim of use:** Th: Therapeutic; F: Food; Co: Cosmetic**. Part used:** Wh. Pl: Whole Plant; Fl: Flowers; Fr: Fruits; S: Seeds; L: Leaves; Rh: Rhizome; Ba: Bark; St: Stem; Bu: Bulb**. Form of use**: P: Powder; EO: Essential Oils; I: Infusion; E: Extract; FO: Fatty Oils**. Mode of preparation:** I: Infusion; D: Decoction; Coo: Cooked; R: Raw; Pou: Poultice; Ma: Maceration**. Mode of use:** O/D: Oral / Drink; Inh: Inhalation; G: Gargle; Sw: Swabbing (Topical Brushing); Ta: Topical Application; Ma: Massage. Ri: Rinse; Fu: Fumigation; Ih: Intimate Hygiene; Ca: CompressApplication. **Dosage:** P: Pinch; H: Handful; S: Spoonful; TG: Tea Glass; WG: Water Glass; CC: Coffee Cup**. Treatment duration:** Od: One Day;Ow: One Week;Om: One Month;Ur: Until recovery.**Treated diseases:** Cv: Cardiovascular Diseases; Ca: Cancers; Hbp: High Blood Pressure; Di: Diabetes; Asth: Asthma; B: Branchitis; J: Jaundice; Ga: Gastralgia; Ul: Ulcer; N/V: Nausea / Vomiting; End: Endometritis; Pi: Pelvic Inflammatory Diseases; Postp inf: Postpartum Infections; Postp hg: Postpartum Hemorrhage; Pos: Polycystic Ovary Syndrome; Ot: Ovarian tumors; Cn: Cracked Nipples; Be: Breast Engorgement; M: Mastitis; Ba: Breast Abscess; Bt: Breast Tumors; Mt: Metrorrhagia; Mn: Menorrhagia; Dpreg: Digestive Disorders During Pregnancy; Dpos:Digestive Disorders in Postpartum; Dl: Decreased Libido; Vd: Vaginal Dryness; Dysp: Dyspareunia; Vag: Vaginismus; Cf: Couple Fertility Issues; PS/Hf: Perimenopausal Syndrome: Hot Flashes;

PS/Is: Perimenopausal Syndrome:Insomnia; PS/Inf: Perimenopausal Syndrome: Inflammation; PS/ Vd: Perimenopausal Syndrome: Vaginal Dryness; SCU: Stimulation of Uterine Contractions During Labor; W/S: Wound and Suture Healing After Childbirth; Cpre: Cervical Preparation Before Delivery; E/F:Energy Boost and Fat Reduction During Labor / Delivery; Dys: Dysmenorrhea; Lp: Labor Pain; Dp: Delivery Pain; Pos p: Postpartum Pain; VV inf: Vulvovaginal Infections; UT inf: Urinary Tract Infections; S lact: Stimulation of Lactation and Improvement of Breast Milk Quality; Stss: Stress and Anxiety.

Use AMPs: Use of AMPs as traditional medicine; **Inef C/M**: Ineffectiveness of conventional medicine; **Hea Co:** Health coverage; **Trad heal:** Traditional healers (Aawada, Fkih); **Phy Spe**: Phytotherapy specialists; **Sed:** Sedation; **Wor Dis:** Worsening of Disease.

Ethics approval and consent to participate: Data collection was conducted in accordance with established research ethics principles, including confidentiality, anonymity, and informed consent. Participants were informed of the study objectives prior to each interview, and official authorization was obtained to access healthcare facilities.

Consent for publication: All women who participated in the survey gave their informed consent for their publication.

Availability of data and materials: Not applicable.

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Authors' contributions: Ibtissam Rhbibou: Study conception, ethnobotanical surveys, methodology development, manuscript writing, data collection, analysis and interpretation. Rachid Flouchi: Data analysis, interpretation, and investigation. Siham ElKhomsi: Ethnobotanical surveys. Mohamed El Far: Data analysis. Ibrahim Touzani: Ethnobotanical surveys. Kawtar Fikri-Benbrahim: Study conception and supervision, methodology contribution, manuscript revision. All authors read and approved the final manuscript.

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Appendix

Plant species reported for direct use on the reproductive system with the highest fidelity level (FL) values.

Plants species	Disease category	Treated diseases	FL%
***Nerium oleander* L.**	Uterine diseases	End	100%
	Ovarian diseases	Pos	100%
	Menstrual cycle disorders	Dys, Mt, Mn	100%
	Genito-urinary inflammation and infections	VV inf , UT inf	100%
***Chenopodium ambrosioides* L.**	Menstrual cycle disorders	Dys	44,4%
***Atriplex halimus* L.**	Genito-urinary inflammation and infections	VV inf , UT inf	100%
***Foeniculum vulgare* Mill.**	Pregnancy, labor, delivery, and postpartum	S lact	60%
***Carum carvi* L.**	Menstrual cycle disorders	Dys	100%
Cuminum cyminum L.	Menstrual cycle disorders	Dys	28,6%
***Ammodaucus leucotrichus* Coss**	Uterine diseases	Postp inf	44,4%
***Pimpinella anisum* L.**	Pregnancy, labor, delivery, and postpartum	S lact	50%
***Petroselinum crispum* Mill.**	Uterine diseases	Pi	50%
	Ovarian diseases	Pos	50%
	Menstrual cycle disorders	Dys	50%
	Fertility disorders	Dl	50%
	Pregnancy, labor, delivery, and postpartum	Dpos	50%
	Genito-urinary inflammation and infections	UT inf	50%
***Aristolochia fontanesii* Boiss. & Reut.**	Menstrual cycle disorders	Dys	100%
	Genito-urinary inflammation and infections	VV inf , UT inf	100%
***Aloe vera* (L.) Burm.f.**	Pregnancy, labor, delivery, and postpartum	W/S	50%
***Chamaemelum nobile* L.ALL**	Menstrual cycle disorders	Dys	72,7%
***Artemisia herba-alba* Asso**	Menstrual cycle disorders	Dys	76,3%
***Artemisia absinthium* L.**	Menstrual cycle disorders	Dys	62,5%
***Euphorbia officinarum* L.**	Menstrual cycle disorders	Dys	100%
	Genito-urinary inflammation and infections	VV inf, UT inf	100%
	Pregnancy, labor, delivery, and postpartum	S lact	100%
***Dittrichia viscosa* (L.) Greuter**	Menstrual cycle disorders	Dys	66,7%
***Lepidium sativum* L.**	Pregnancy, labor, delivery, and postpartum	S lact	66,7%
***Boswellia sacra* Flueck.**	Pregnancy, labor, delivery, and postpartum	Dpos	100%
***Daphne gnidium* L.**	Perimenopausal disorders	PS/Hf	25%
	Menstrual cycle disorders	Mt, Mn	25%
***Tetraclinis articulata* (Vahl) Mast.**	Genito-urinary inflammation and infections	UT inf	100%
***Ricinus communis* L.**	Ovarian diseases	Pos	100%
	Breast diseases	Cn	100%
***Echinops spinosissimus* Turra**	Fertility disorders	Cf	100%
***Trigonella foenum-graecum* L.**	Pregnancy, labor, delivery, and postpartum	S lact	79,3%
***Ceratonia siliqua* L.**	Menstrual cycle disorders	Mt, Mn	33,3%
	Perimenopausal disorders	PS/Hf , PS/Is , PS/Inf	33,3%
	Pregnancy, labor, delivery, and postpartum	Dpos, S lact	33,3%
***Senna alexandrina* Mill.**	Menstrual cycle disorders	Dys	100%
***Salvadora persica* L.**	Genito-urinary inflammation and infections	UT inf	100%
***Origanum compactum* Benth.**	Menstrual cycle disorders	Dys	74,4%
***Salvia rosmarinus* Spenn.**	Menstrual cycle disorders	Dys	72,8%
***Mentha pulegium* L.**	Menstrual cycle disorders	Dys	69,1%
***Lavandula angustifolia* Mill.**	Menstrual cycle disorders	Dys	76,6%
	Genito-urinary inflammation and infections	VV inf	76,6%
***Clinopodium nepeta* (L.) Kuntze**	Genito-urinary inflammation and infections	UT inf	70,4%
***Salvia officinalis* L.**	Menstrual cycle disorders	Dys	69,2%

***Marrubium vulgare* L.**	Menstrual cycle disorders	Dys	83,3%
***Mentha suaveolens* L.**	Pregnancy, labor, delivery, and postpartum	E/F	50%
Thymus vulgaris* subsp. *vulgaris	Menstrual cycle disorders	Dys	100%
***Peganum harmala* L.**	Menstrual cycle disorders	Dys	50%
	Genito-urinary inflammation and infections	VV inf	50%
***Salvia hispanica* L.**	Pregnancy, labor, delivery, and postpartum	Dpos, S lact	100%
***Origanum majorana* L.**	Ovarian diseases	Pos	66,7%
***Lavandula stoechas* L.**	Perimenopausal disorders	PS/Is	66,7%
***Cinnamomum verum* J.Presl**	Menstrual cycle disorders	Dys	94,2%
***Allium sativum* L.**	Genito-urinary inflammation and infections	VV inf	25%
	Pregnancy, labor, delivery, and postpartum	SCU	25%
	Fertility disorders	Dysp, Dl	25%
	Menstrual cycle disorders	Dys, Mn	25%
	Breast diseases	Cn	25%
	Ovarian diseases	Ot	25%
	Uterine diseases	End	25%
***Allium cepa* L.**	Pregnancy, labor, delivery, and postpartum	Dpos, S lact	100%
***Linum usitatissimum* L.**	Pregnancy, labor, delivery, and postpartum	Dpos, S lact	42,9%
***Lawsonia inermis* L.**	Perimenopausal disorders	PS/Hf	16,7%
***Hibiscus sabdariffa* L.**	Perimenopausal disorders	PS/Is	100%
	Genito-urinary inflammation and infections	VV inf	100%
***Syzygium aromaticum* L.**	Menstrual cycle disorders	Dys	75%
***Eucalyptus globulus* Labill.**	Perimenopausal disorders	PS/Hf	20%
Myrtus communis	Menstrual cycle disorders	Dys	75%
***Cenchrus americanus* (L.) Morrone**	Pregnancy, labor, delivery, and postpartum	Dpos, S lact	100%
***Nigella sativa* L.**	Fertility disorders	Cf	66,7%
***Ziziphus lotus* (L.) Lam.**	Pregnancy, labor, delivery, and postpartum	Dpos, S lact, Pos p	50%
***Rosa centifolia* L.**	Pregnancy, labor, delivery, and postpartum	Dpreg, Dpos	25%
***Prunus dulcis* (Mill.) D.A.Webb**	Breast diseases	Cn	11,11%
***Hyoscyamus niger* L.**	Menstrual cycle disorders	Mn	100%
	Perimenopausal disorders	PS/Hf	100%
***Camellia sinensis* L.**	Perimenopausal disorders	PS/Is	100%
	Genito-urinary inflammation and infections	UT inf	100%
***Aloysia citrodora* Paláu**	Menstrual cycle disorders	Dys	56,6%
***Curcuma longa* L.**	Menstrual cycle disorders	Dys	100%
***Elettaria cardamomum* (L.) Maton**	Menstrual cycle disorders	Dys	100%
***Zingiber officinale* Roscoe**	Menstrual cycle disorders	Dys	85,7%

Legend

Treated diseases: End: Endometritis; Pi: Pelvic Inflammatory Diseases; Postp inf: Postpartum Infections; Postp hg: Postpartum Hemorrhage; Pos: Polycystic Ovary Syndrome; Ot: Ovarian tumors; Cn: Cracked Nipples; Be: Breast Engorgement; M: Mastitis; Ba: Breast Abscess; Bt: Breast Tumors; Mt: Metrorrhagia; Mn: Menorrhagia; Dpreg: Digestive Disorders During Pregnancy; Dpos:Digestive Disorders in Postpartum; Dl: Decreased Libido; Vd: Vaginal Dryness; Dysp: Dyspareunia; Vag: Vaginismus; Cf: Couple Fertility Issues; PS/Hf: Perimenopausal Syndrome: Hot Flashes; PS/Is: Perimenopausal Syndrome:Insomnia; PS/Inf: Perimenopausal Syndrome: Inflammation; PS/ Vd: Perimenopausal Syndrome: Vaginal Dryness; SCU: Stimulation of Uterine Contractions During Labor; W/S: Wound and Suture Healing After Childbirth; Cpre: Cervical Preparation Before Delivery; E/F:Energy Boost and Fat Reduction During Labor / Delivery; Dys: Dysmenorrhea; Lp: Labor Pain; Dp: Delivery Pain; Pos p: Postpartum Pain; VV inf: Vulvovaginal Infections; UT inf: Urinary Tract Infections; S lact: Stimulation of Lactation and Improvement of Breast Milk Quality; Stss: Stress and Anxiety.