



Medicinal plants use for the management of polycystic ovary syndrome (PCOS) among Algerian women: An ethnobotanical study

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Research

Abstract

Background: Polycystic ovary syndrome (PCOS) is a common endocrine disorder affecting women of reproductive age and is associated with reproductive and metabolic complications. Although conventional management is available for PCOS, many women also use medicinal plants to manage PCOS-related symptoms and associated complications.

Methods: A cross-sectional ethnobotanical survey was conducted among 217 women with physician-confirmed PCOS from 11 Algerian provinces using structured questionnaires administered online and face-to-face. Relative Frequency of Citation (RFC), Use Value (UV), Fidelity Level (FL), and Informant Consensus Factor (ICF) were calculated.

Results: Medicinal plant use was reported by 210 participants (96.8%). Nine species belonging to six families were recorded. *Atriplex halimus* (RFC = 0.31; UV = 1.10), *Origanum majorana* (RFC = 0.23; UV = 0.38), *Salvia officinalis* (RFC = 0.14; UV = 0.37), and *Dolomiaea costus* (RFC = 0.12; UV = 0.32) showed the greatest ethnobotanical prominence. ICF values ranged from 0.931 to 1.000 across therapeutic categories. Family members were the main source of traditional knowledge, followed by traditional herbalists and friends. Participants primarily used medicinal plants for menstrual regulation, pelvic pain relief, and fertility-related purposes. Symptom improvement was reported by 73%, while 89% reported no adverse effects.

Conclusion: Medicinal plant use remains prominent among Algerian women with PCOS and reflects continued intergenerational knowledge transmission. The identified species represent priorities for further investigation; however, self-reported benefits and adverse effects were not clinically verified. Pharmacological and clinical studies are required to establish efficacy, safety, and potential herb-drug interactions.

Keywords: Polycystic ovary syndrome (PCOS); ethnobotany; medicinal plants; Algeria; traditional medicine; RFC; UV; ICF

Background

Polycystic ovary syndrome (PCOS) is one of the most common endocrine and metabolic disorders affecting women of reproductive age (15-49 years), with an estimated global prevalence of 10-13%, depending on the diagnostic criteria and population studied (Teede *et al.* 2023). PCOS is characterized by hyperandrogenism, ovulatory dysfunction, and polycystic ovarian morphology and is frequently associated with insulin resistance, obesity, dyslipidaemia, impaired glucose tolerance, and chronic low-grade inflammation (Escobar-Morreale 2018). Its pathophysiology involves complex interactions among genetic susceptibility, insulin resistance, excessive ovarian androgen production, and dysregulation of the hypothalamic-pituitary-ovarian axis, particularly an increased luteinizing hormone (LH)-to-follicle-stimulating hormone (FSH) ratio. These endocrine and metabolic disturbances contribute to infertility and substantially increase the risk of type 2 diabetes mellitus, cardiovascular disease, and adverse psychological outcomes (Escobar-Morreale 2018; Teede *et al.* 2023).

Current management of PCOS primarily relies on lifestyle modification and pharmacological interventions, including combined oral contraceptives, insulin sensitizers, anti-androgenic agents, and ovulation-inducing therapies (Teede *et al.* 2023). Although these treatments effectively alleviate several clinical manifestations, they are symptom-oriented and may be associated with adverse effects, contraindications, or variable therapeutic responses. Consequently, there is growing interest in complementary and alternative medicine, particularly medicinal plants, as potential adjuncts for improving reproductive and metabolic outcomes in women with PCOS (Ekor 2014; Manouchehri *et al.* 2023).

Medicinal plants have been used for centuries in traditional healthcare systems to manage reproductive, endocrine, and metabolic disorders. Ethnobotanical investigations play a fundamental role in documenting indigenous knowledge, preserving traditional therapeutic practices, and identifying plant species with potential pharmacological interest in future drug discovery (Heinrich *et al.* 2009). In North Africa, ethnobotanical studies have documented the traditional use of medicinal plants for women's reproductive health, including menstrual disorders, infertility, pregnancy-related conditions, and other gynaecological ailments. In Algeria, previous ethnobotanical surveys have reported medicinal plants traditionally used for diabetes, gastrointestinal disorders, dermatological diseases, and general gynaecological complaints (Belhouala & Benarba 2021; Bouasla & Bouasla 2017; Kemal *et al.* 2023, Bensizerara *et al.* 2025; Messaoud *et al.* 2026). However, information specifically addressing medicinal plants used for the management of PCOS remains extremely limited because most ethnobotanical surveys have investigated women's reproductive health within broader ethnomedicinal contexts rather than focusing specifically on PCOS or quantitatively evaluating the medicinal plants traditionally used for its management. This knowledge gap limits the understanding of traditional practices for PCOS management and provides the rationale for the present study.

Among the medicinal plants traditionally used in Algeria, *Atriplex halimus*, *Origanum majorana*, *Salvia officinalis* and *Dolomiaea costus* are of particular interest because of their reported pharmacological activities associated with metabolic disorders. Experimental studies have demonstrated antioxidant, anti-inflammatory, antihyperglycaemic, and insulin sensitizing effects for these species, suggesting that they may contribute to improved glucose homeostasis and reduced oxidative stress, two important mechanisms involved in PCOS pathophysiology (Rouibi *et al.* 2025; Belhouala & Benarba 2021; Abouelwafa *et al.* 2023; Boughrara *et al.* 2021; Ghorbani & Esmailizadeh 2017; Hamidpour *et al.* 2014). In addition, a clinical study suggested that *Origanum majorana* herbal tea may improve insulin sensitivity and hormonal parameters in women with PCOS, while *Salvia officinalis* exhibits phytoestrogenic and metabolic regulatory activities that may be relevant to endocrine dysfunction (Haj-Husein *et al.* 2016; Maggini *et al.* 2024). Although direct clinical evidence remains limited, these pharmacological findings provide a biological rationale for their traditional use and justify further ethnobotanical and pharmacological investigations.

Algeria, located in North Africa, possesses remarkable floristic diversity, comprising approximately 4,500 vascular plant species distributed across Mediterranean, steppe, mountainous, and Saharan ecosystems, making it one of the richest reservoirs of medicinal plant diversity in North Africa (Quézel & Santa 1962, 1963). Recently, a cross-sectional study conducted in western Algeria reported that 57.9% of women with PCOS also presented with metabolic syndrome, highlighting the substantial metabolic and reproductive burden of this disorder in the Algerian population (Messaoud *et al.* 2026). Despite increasing clinical research on PCOS in Algeria, ethnobotanical investigations specifically documenting medicinal plants traditionally used for its management remain lacking. To the best of our knowledge, this is the first quantitative ethnobotanical study to document medicinal plants traditionally used for the management of PCOS among Algerian women.

Therefore, the present study aimed to investigate the traditional use of medicinal plants for the management of PCOS among Algerian women using a quantitative ethnobotanical approach. By documenting the plant species used, plant parts, preparation methods, therapeutic indications, and quantitative ethnobotanical indices, this study provides baseline data for preserving traditional knowledge, provides a scientific basis for the future validation of medicinal plants used in PCOS management, and identifies promising species for subsequent phytochemical, pharmacological, and clinical investigations.

Materials and Methods

Study design and population

An ethnobotanical study was conducted among 217 women with a physician-confirmed diagnosis of polycystic ovary syndrome (PCOS). Participants were recruited using a non-probability convenience sampling strategy from different regions of Algeria, without restriction to a specific geographic area, to capture a broad diversity of traditional knowledge and practices related to PCOS management.

Questionnaire Design

A structured questionnaire was specifically developed for this ethnobotanical survey to document the traditional use of medicinal plants for the management of polycystic ovary syndrome (PCOS). The questionnaire consisted primarily of open ended (freelisting) questions, allowing participants to spontaneously report the medicinal plant species they had personally used for PCOS management without being provided with a predefined list of plant names. This approach minimized interviewer-induced bias and enabled the documentation of plants based on the participants' own knowledge and experience. The complete questionnaire used in this study is provided as Supplementary Material S1.

Data collection

Data were collected from October 2022 to May 2023 using the questionnaire described above. The questionnaire was disseminated online through social media platforms and PCOS-related community networks, and additional participants were recruited through face-to-face interviews conducted in gynaecology clinics and community settings. This mixed recruitment approach was adopted to maximize participation from women with physician-confirmed PCOS across different regions of Algeria.

Collected variables

Data collection focused on both socio-demographic and ethnobotanical variables. Socio-demographic information included participants' age, place of residence, educational level, and occupational status, allowing characterization of the study population.

Ethnobotanical data were recorded for each medicinal plant reported by the participants. These included the vernacular names of the plants and, whenever possible, their scientific identification. Information was also collected on the plant parts used (leaves, seeds, roots, bark, flowers, fruits, or aerial parts), the condition of the plant material (fresh, dried, powdered, or oil), and the mode of preparation (infusion, decoction, powder, maceration, direct consumption, or other traditional methods).

Traditional treatment practices were further characterized by documenting the route of administration, dosage, duration of treatment, and, where applicable, the stage of the menstrual cycle during which the medicinal plants were used. These data provided a comprehensive description of the traditional use of medicinal plants for the management of PCOS-related symptoms. In addition, participants' perceptions and experiences were assessed. Respondents reported the sources of their knowledge regarding medicinal plant use (e.g., family members, traditional healers, healthcare professionals, social media, or PCOS support groups), the therapeutic purposes for using medicinal plants, their perceived effectiveness in alleviating PCOS-related symptoms, any observed side effects, and whether they would recommend these remedies to other women with PCOS. The overall perception and acceptance of herbal medicine were also evaluated.

Botanical Identification and Taxonomic Distribution of Recorded Species

All plant species were taxonomically identified, and their scientific names were verified and updated according to the Plants of the World Online (POWO) database. Voucher specimens were prepared, authenticated by Prof. Dr. Wafa Nouioua, assigned voucher numbers, and deposited in the UFAS-1 Herbarium for future reference (Table 5).

Data Analysis

The collected data were coded, entered, and analyzed using Microsoft Excel. Descriptive statistics, including frequencies, percentages, and means, were used to summarize participants' socio-demographic characteristics and the ethnobotanical data. Because the primary objective of the study was to document the traditional use of medicinal plants for PCOS management, the analyses were limited to descriptive statistics.

Ethnobotanical Indices

Four complementary quantitative ethnobotanical indices (RFC, UV, FL, and ICF) were selected because each provides distinct information on the ethnobotanical importance of medicinal plants. RFC evaluates the popularity of each species among respondents, UV reflects its relative importance based on the diversity of reported uses, FL measures the degree of preference for a species in treating specific PCOS-related symptoms, and ICF assesses the level of agreement among respondents regarding medicinal plant use for different therapeutic categories. Together, these indices provide a comprehensive quantitative assessment of the cultural importance, therapeutic specificity, and consensus associated with medicinal plant use.

The Relative Frequency of Citation (RFC) was calculated using the formula:

$$RFC = FC/N$$

Where:

- FC = number of informants mentioning a given species
- N = total number of informants

The Use Value (UV) was calculated using the formula:

$$UV = U/N$$

Where:

- U represents the total number of use-reports per species
- N is the total number of informants.

Fidelity Level (FL) was calculated according to Friedman *et al.* (1986) using the following equation:

$$FL (\%) = (N_p/N) \times 100$$

Where:

- N_p is the number of informants citing a species specifically for the management of PCOS-related conditions
- N is the total number of informants citing that species for any therapeutic purpose.

Although all participants had a physician-confirmed diagnosis of PCOS and medicinal plant use was investigated primarily in relation to PCOS management, some respondents reported using the same plant species for additional therapeutic purposes, including metabolic, digestive, and other associated conditions. For the FL calculation, only citations specifically related to PCOS-related indications were included in N_p , whereas N represented the total number of informants citing the corresponding species for any reported therapeutic purpose.

When respondents reported herbal mixtures, each constituent plant species was recorded as an individual citation for the calculation of RFC, UV, and FL. For ICF calculation, the therapeutic use of the mixture was assigned to the corresponding therapeutic category.

The Informant Consensus Factor (ICF) was calculated separately for each therapeutic category according to the method of Heinrich *et al.* (1998) using the following equation:

$$ICF = (N_{ur} - N_t) / (N_{ur} - 1)$$

Where N_{ur} is the total number of use reports recorded for a given therapeutic category and N_t is the number of medicinal plant species used for that category. A use report was defined as one citation of one medicinal plant species by one informant for one therapeutic purpose. Consequently, a single informant could contribute multiple use reports when reporting the use of two or more medicinal plant species for the same or different PCOS-related symptoms. Higher ICF values indicate greater agreement among informants regarding the selection of medicinal plants for a particular therapeutic category (Heinrich *et al.* 1998).

Results

Geographic distribution of study participants

A total of 217 women with physician-confirmed polycystic ovary syndrome (PCOS) participated in this ethnobotanical survey. Participants were recruited through both online questionnaires and face-to-face interviews. The findings revealed a substantial reliance on medicinal plants for the management of PCOS-related symptoms among Algerian women from 11 provinces across Algeria. The geographic distribution of respondents, together with the number of participants from each province, is presented in Figure 1.

The distribution showed a marked predominance of participants from Setif (38.25%, $n = 83$), followed by Algiers (14.75%, $n = 32$), Annaba (11.52%, $n = 25$), and Bordj Bou Arréridj (10.60%, $n = 23$). Moderate representation was observed in Batna (8.29%, $n = 18$), M'sila (5.07%, $n = 11$), and Tipaza (3.69%, $n = 8$). Lower participation rates were recorded in Oran and Skikda (3.23%, $n = 7$), whereas minimal contributions were observed in Ghardaïa (0.92%, $n = 2$) and Ouargla (0.46%, $n = 1$). Overall, the results indicate a large number of respondents in the northern and eastern regions of Algeria, particularly in Setif. In contrast, southern provinces were underrepresented in the study sample. Given the non-probability convenience sampling strategy, this geographic distribution should not be interpreted as representative of regional differences in medicinal plant use or ethnobotanical knowledge across Algeria. The sample size ($n = 217$) was considered sufficient for the descriptive analysis of ethnobotanical practices.

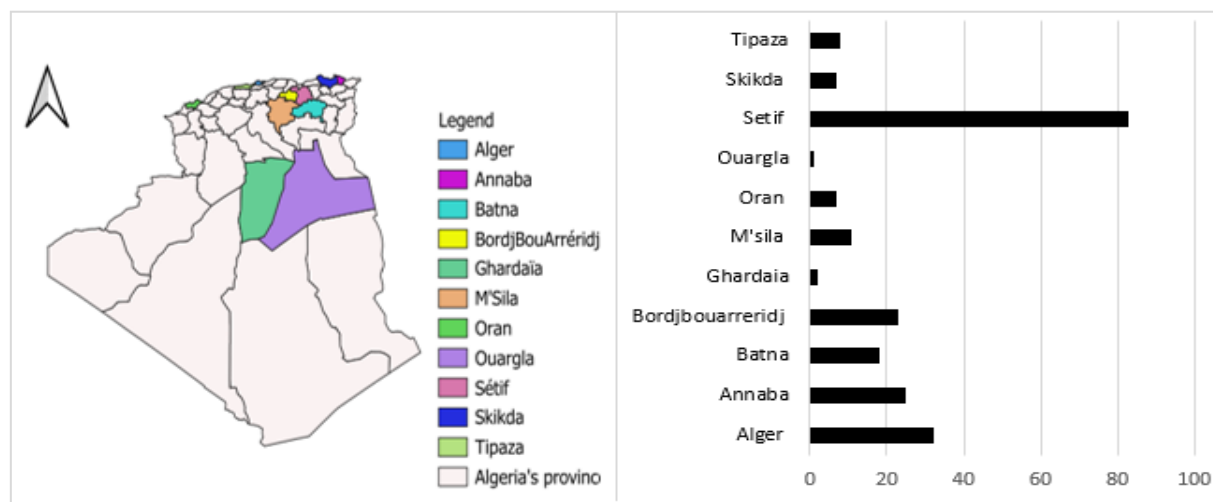


Figure 1. Geographic distribution of study participants across selected provinces in Algeria. Distribution of respondents by province and corresponding number of participants. The map highlights the geographic origin of participants, while the bar chart represents the sample size per province.

Age

All participants were women diagnosed with PCOS. The age distribution showed that the majority of respondents were between 20-29 years (45%), followed by those aged 30-39 years (40%). Smaller proportions of participants were younger than 20 years (4%) and 40 years or older (11%), indicating that PCOS was most frequently reported among young adult women.

Education level

The educational level of participants varied across the study population. Most respondents had a university-level education (86%), followed by those with secondary education (10%) and primary education (3%). A smaller proportion of participants reported having no formal education (1%). This distribution indicates that most respondents had at least a basic level of education, which may influence their knowledge and use of medicinal plants.

Occupational status

The occupational status of participants showed a diverse distribution. Most respondents were students (41%), followed by housewives (35%) and employed (17%). A smaller proportion of participants were engaged in personal projects (7%). This variation reflects the socio-economic diversity of the study population and may influence healthcare choices and reliance on traditional medicine.

To further characterize the study population, descriptive cross-tabulations were performed to summarize medicinal plant use according to educational level, age group, and occupational status (Tables 1-3). These analyses showed consistently high medicinal plant use across all socio-demographic categories. Because only seven participants (3.2%) reported not using medicinal plants, inferential statistical analyses were not performed.

Table 1. Distribution of medicinal plant use according to educational level

Educational level	Used medicinal plants, n (%)	Did not use medicinal plants, n (%)	Total (n)
No formal education	2 (100.0)	0 (0.0)	2
Primary	6 (85.7)	1 (14.3)	7
Secondary	21 (95.5)	1 (4.5)	22
University	181 (97.3)	5 (2.7)	186
Total	210 (96.8)	7 (3.2)	217

Table 2. Distribution of medicinal plant use according to age group

Age group (years)	Used medicinal plants, n (%)	Did not use medicinal plants, n (%)	Total (n)
<20	8 (88.9)	1 (11.1)	9
20-29	92 (96.8)	3 (3.2)	95
30-39	82 (97.6)	2 (2.4)	84
≥40	28 (96.6)	1 (3.4)	29
Total	210 (96.8)	7 (3.2)	217

Table 3. Distribution of medicinal plant use according to occupational status

Occupational status	Used medicinal plants, n (%)	Did not use medicinal plants, n (%)	Total (n)
Student	86 (96.6)	3 (3.4)	89
Housewife	73 (97.3)	2 (2.7)	75
Employed	36 (97.3)	1 (2.7)	37
Self-employed / Personal project	15 (93.8)	1 (6.2)	16
Total	210 (96.8)	7 (3.2)	217

Use of Traditional Herbal Remedies

A high prevalence of medicinal plant use was observed, with 96.8% of respondents reporting that they personally used medicinal plants for the management of PCOS, whereas only 3% reported not using traditional herbal remedies. These findings highlight the widespread acceptance and continued practice of herbal medicine among women with PCOS in the study population. The observed use of medicinal plants should not be interpreted as indicating a lack of access to conventional medical care, as this aspect was not specifically investigated in the present study.

Traditional Knowledge and Sources of Information

Among the 210 respondents who reported using medicinal plants for PCOS management, family members were the primary source of traditional knowledge (31.9%), followed by traditional herbalists (24.3%) and friends (20.0%). Modern information sources also contributed to knowledge acquisition, including internet websites (10.0%) and social media (9.0%). Physicians (1.9%), pharmacists (1.4%), PCOS support groups (1.0%), and books (0.5%) were less frequently reported as sources of information (Table 4). These findings indicate that traditional knowledge remains predominantly transmitted through family and community networks while increasingly being complemented by digital information sources.

Table 4. Sources of traditional knowledge regarding medicinal plant use among respondents who reported using medicinal plants for PCOS management (n = 210).

Source of traditional knowledge	Respondents (n)	Percentage (%)
Family members	67	31.9
Traditional herbalists	51	24.3
Friends	42	20.0
Internet websites	21	10.0
Social media	19	9.0
Physicians	4	1.9
Pharmacists	3	1.4
PCOS support groups	2	1.0
Books	1	0.5
Total	210	100.0

Ethnobotanical Results of Medicinal Plants Used for PCOS Management

Botanical Identification and Taxonomic Distribution of Recorded Species

A total of nine medicinal plant species, belonging to six botanical families, were identified. The most represented family was Lamiaceae (three species), followed by Asteraceae (two species), while Fabaceae, Lauraceae, Amaranthaceae, and Ranunculaceae were each represented by one species. The recorded species included *Atriplex halimus* L. (gtaf), *Origanum majorana* L. (bardakouche), *Salvia officinalis* L. (merimeya), *Dolomiaea costus* (Falc.) Kasana & A.K.Pandey (kist el hindi), *Artemisia herba-alba* Asso (chih), *Trigonella foenum-graecum* L. (helba), *Nigella sativa* L. (habbat sawda), *Cinnamomum verum* J.Presl (karfa), and *Thymus vulgaris* L. (zaâtar) (Table 5).

Plant Parts Used

Leaves were the most frequently used plant parts, representing most reported uses among participants. Seeds were the second most used parts, followed by aerial parts and bark. The preference for leaves may be attributed to their availability and ease of preparation compared to other plant parts (Table 5).

Plant Material Condition and Procurement

Plant material was predominantly used in dried form. Participants reported collecting plant parts and drying them at room temperature under shade prior to storage or purchasing them from herbalists. The dried materials were then stored for later use. In some cases, fresh plant material was used, particularly when readily available, mainly for the preparation of infusions and decoctions (Table 5).

Preparation Methods

The most reported methods of preparation were infusion and decoction. Infusion was mainly used for leaves and bark, involving soaking plant material in hot water for a short period, whereas decoction was used for more resistant plant parts, such as aerial parts, requiring prolonged boiling. In addition, some plants were used in powdered form or as oil, depending on the species and traditional practices (Table 5).

Table 5. Ethnobotanical characteristics of medicinal plants used for PCOS management in Algeria

Plant species (scientific name)	Family	Voucher ID	Vernacular name	Part used	Mode of preparation	Traditional use for PCOS reported by respondents
<i>Atriplex halimus</i> L.	Amaranthaceae	UFS- 2024-03	gtaf	Leaves	Infusion	Regulation of menstrual cycle, relief of pelvic pain
<i>Origanum majorana</i> L.	Lamiaceae	UFS- 2024-20	bardakouche	Leaves	Infusion	Menstrual cycle regulation, hormonal balance
<i>Salvia officinalis</i> L.	Lamiaceae	UFS- 2024-17	merimeya	Leaves	Infusion	Menstrual regulation, relief of pelvic pain
<i>Dolomiaea costus</i> (Falc.) Kasana & A.K.Pandey	Asteraceae	UFS- 2024-02	kist el hindi	Roots	Powder	Hormonal regulation, menstrual disorders
<i>Artemisia herba- alba</i> Asso	Asteraceae	UFS- 2024-21	chih	Aerial parts	Decoction	Relief of menstrual pain, hormonal regulation
<i>Trigonella foenum- graecum</i> L.	Fabaceae	UFS- 2024-22	helba	Seeds	Infusion	Improvement of ovulation, fertility support
<i>Nigella sativa</i> L.	Ranunculaceae	UFS- 2024-23	habbat sawda	Seeds	Oil/direct use	Hormonal balance, menstrual regulation
<i>Cinnamomum verum</i> J.Presl	Lauraceae	UFS- 2024-24	karfa	Bark	Infusion	Menstrual regulation, improvement of metabolic symptoms associated with PCOS
<i>Thymus vulgaris</i> L.	Lamiaceae	UFS- 2024-25	zaâtar	Leaves	Infusion	Relief of menstrual pain, general well-being during PCOS

Ethnobotanical Indices

The ethnobotanical analysis revealed notable variations in the importance of the recorded medicinal plant species. The Relative Frequency of Citation (RFC) was calculated to assess the importance of each medicinal plant species based on informant responses

The results showed that *Atriplex halimus* L. was the most frequently cited species (RFC = 0.31; FC = 67), followed by *Origanum majorana* L. (RFC = 0.23; FC = 50), *Salvia officinalis* L. (RFC = 0.14; FC = 30), and *Dolomiaea costus* (Falc.) Kasana & A.K.Pandey (RFC = 0.12; FC = 27). The remaining species, including *Artemisia herba-alba* Asso, *Trigonella foenum-graecum* L., *Nigella sativa* L., *Cinnamomum verum* J.Presl, and *Thymus vulgaris* L., showed lower citation frequencies, reflecting more limited use among participants. The results indicate that *Atriplex halimus* L. and *Origanum majorana* L. are the most culturally important species in the traditional management of polycystic ovary syndrome (PCOS), as reflected by their high frequency of citation. Their widespread use suggests a strong reliance on traditional knowledge and highlights their potential for further pharmacological investigation (Table 6).

The highest UV was recorded for *Atriplex halimus* (UV = 1.10), followed by *Origanum majorana* (UV = 0.38) and *Salvia officinalis* (UV = 0.37), *Dolomiaea costus* (Falc.) Kasana & A.K.Pandey (UV= 0.32), indicating a higher diversity of reported uses for these species. (Table 6).

The Fidelity Level (FL) analysis showed that *Atriplex halimus* and *Origanum majorana* exhibited the highest specificity for the management of PCOS-related conditions (FL = 100%). High FL values were also observed for *Salvia officinalis* (96.7%), *Dolomiaea costus* (88.9%), *Artemisia herba-alba* (82.4%), and *Trigonella foenum-graecum* (81.8%). In contrast, *Nigella sativa*, *Cinnamomum verum*, and *Thymus vulgaris* displayed lower FL values, indicating their broader use for multiple traditional therapeutic purposes.

To further evaluate the degree of agreement among informants regarding the therapeutic use of medicinal plants, the Informant Consensus Factor (ICF) was calculated separately for each therapeutic category following the method of Heinrich *et al.* (1998). The corresponding Nur, Nt, and ICF values are presented in Table 7.

As shown in Table 7, the Informant Consensus Factor (ICF) ranged from 0.931 to 1.000 across the therapeutic categories. The highest consensus was observed for fertility improvement and Reduction of ovarian cyst symptoms (ICF = 1.000), followed by pelvic pain (0.988), digestive disorders (0.972), diabetes/metabolic disorders (0.968), menstrual regulation (0.955), other uses (0.953), and Ovulation improvement (0.931). These high ICF values indicate a strong level of agreement among participants regarding the selection of medicinal plants used to manage specific PCOS-related symptoms

Table 6. Ethnobotanical indices of medicinal plants used for PCOS management

Plant species	FC	RFC	U	UV	FL (%)
<i>Atriplex halimus</i> L.	67	0.31	238	1.10	100.0
<i>Origanum majorana</i> L.	50	0.23	83	0.38	100.0
<i>Salvia officinalis</i> L.	30	0.14	81	0.37	96.7
<i>Dolomiaea costus</i> (Falc.) Kasana & A.K.Pandey	27	0.12	69	0.32	88.9
<i>Artemisia herba-alba</i> Asso	17	0.08	50	0.23	82.4
<i>Trigonella foenum-graecum</i> L.	11	0.05	44	0.20	81.8
<i>Nigella sativa</i> L.	4	0.02	34	0.16	75.0
<i>Cinnamomum verum</i> J.Presl	2	0.01	10	0.05	50.0
<i>Thymus vulgaris</i> L.	2	0.01	6	0.03	50.0

Table 7. Informant Consensus Factor (ICF) according to therapeutic category

Therapeutic category	Nur	Nt	ICF
Menstrual regulation	180	9	0.955
Pelvic pain	86	2	0.988
Fertility improvement	18	1	1.000
Diabetes / Metabolic disorders	96	4	0.968
Digestive disorders	107	4	0.972
Ovulation improvement	30	3	0.931
Reduction of ovarian cyst symptoms	12	1	1.000
Other uses	86	5	0.953

Nur = number of use reports; Nt = number of medicinal plant species used for each therapeutic category; ICF = Informant Consensus Factor.

Dosage and Duration of Herbal Treatment

The most frequently reported primary treatment regimen (38.1%) involved the use of *Origanum majorana* L. and *Salvia officinalis* L., both prepared as infusions and administered according to a similar regimen in terms of dosage and duration. The second most reported regimen (31.9%) involved the use of *Atriplex halimus* L. as the primary treatment. It was mainly prepared as an infusion and consumed on an empty stomach in the morning and again before bedtime. The duration of treatment typically ranged from 2 to 3 months, starting from the third day of the menstrual cycle and continuing until ovulation.

Among respondents using medicinal plants for PCOS management, 12.9% reported using *Dolomiaea costus* (Falc.) Kasana & A.K. Pandey, primarily in powdered form mixed with honey. It was administered either as small tablets taken twice daily or as an infusion combined with honey (Table 8). The remaining 17.1% of respondents reported using other medicinal plant species, employing various preparation methods, including decoction, maceration, oil, or direct oral consumption, depending on the species and individual practices.

Table 8. Distribution of reported primary herbal treatment regimens for PCOS management among medicinal plant users (n = 210).

Plant species	Respondents using the regimen (%)	Preparation method	Routes of Administration	Treatment Duration
<i>Atriplex halimus</i> L.	31.9	Infusion	Oral (morning on empty stomach and before bedtime)	2-3 months (from day 3 of cycle until ovulation)
<i>Origanum majorana</i> L. + <i>Salvia officinalis</i> L.	38.1	Infusion	Oral (morning on empty stomach and before bedtime)	2-3 months
<i>Dolomiaea costus</i> (Falc.) Kasana & A.K. Pandey	12.9	Powder with honey / infusion	Oral (tablets twice daily or infusion)	Variable
Other plants	17.1	Decoction, maceration, oil, direct use	Oral	Variable

Purpose of Treatment

The primary purpose of using medicinal plants among participants was the management of polycystic ovary syndrome (PCOS). The majority reported using herbal remedies to regulate the menstrual cycle and restore hormonal balance. A substantial proportion of respondents indicated that these plants were employed to alleviate key PCOS-related symptoms, particularly menstrual irregularities and pelvic pain (70%). Additionally, more than one-quarter of respondents (26%) reported using medicinal plants for fertility improvement. Beyond the direct management of PCOS, a considerable number of respondents reported using medicinal plants to address associated metabolic and systemic conditions, including diabetes, digestive disorders, and general fatigue (3%). Some species were also used for broader therapeutic purposes, such as strengthening the immune system and treating respiratory conditions (1%) (Table 9). These findings highlight the multifunctional role of medicinal plants in managing both the primary symptoms of PCOS and its related comorbidities.

Table 9. Therapeutic purposes for medicinal plant use reported by respondents with PCOS (n = 210)

Therapeutic purpose reported by respondents	Respondents reporting the outcome (%)
Regulation of menstrual cycle / pain relief	70
Fertility improvement	26
Metabolic & systemic conditions (diabetes, digestion, fatigue)	3
Other uses (immune, respiratory)	1

Symptom Relief

Respondents reported noticeable improvements in several symptoms associated with PCOS following the use of medicinal plants. Among the 210 respondents who reported using medicinal plants, the most frequently reported improvements included regulation of menstrual cycles, reduction of pelvic pain and discomfort, and improved general well-being (73%). In addition, 22% of respondents reported perceived improvements in fertility-related outcomes, whereas 5% reported no significant improvement in their symptoms (Table 10). These findings describe participants' perceived improvements following medicinal plant use but should not be interpreted as evidence of clinical efficacy.

Table 10. Symptom improvement reported by respondents following medicinal plant use (n = 210)

Outcome reported by respondents	Respondents (%)
Improvement in symptoms (cycle regulation, pain relief, well-being)	73
Improvement in fertility	22
No significant improvement	5

Side Effects

Among the 210 respondents who reported using medicinal plants for PCOS management, 89% reported no adverse effects. The remaining respondents reported mild, self-reported adverse effects experienced during the use of medicinal plants, including hypertension (3%), allergic reactions (4%), gastrointestinal discomfort and hypoglycemia (3%), and bleeding risk (1%) (Table 11). These findings are based exclusively on participants' self-reported experiences during the survey and should not be interpreted as clinically confirmed adverse events.

Table 11. Participant-reported adverse effects following medicinal plant use (n = 210)

Side effect	Participant-reported adverse events (%)
No side effects	89
Self-reported hypertension during use of <i>Atriplex halimus</i> L.	3
Self-reported allergic reactions during use of <i>Dolomiaea costus</i>	4
Self-reported gastrointestinal discomfort/hypoglycemia during use of <i>Trigonella foenum-graecum</i>	3
Self-reported bleeding-related concerns during use of <i>Cinnamomum verum</i>	1

Recommendation of Traditional Therapy

A large proportion of participants reported recommending the use of medicinal plants to others, particularly within family and community networks (82%). Participants emphasized the importance of respecting traditional dosage, duration, and preparation methods to minimize potential adverse effects.

Discussion

The present study highlights the widespread use of medicinal plants in the management of polycystic ovary syndrome (PCOS) among Algerian women, with an exceptionally high prevalence (96.8%) of herbal remedy use. This finding reflects the strong reliance on traditional medicine systems in developing countries, where medicinal plants remain an important healthcare resource (World Health Organization 2013). Similar ethnobotanical patterns have been reported in other regions, where cultural traditions and accessibility strongly influence healthcare choices (Heinrich *et al.* 2009).

Although the study population consisted predominantly of young, university-educated women, this profile likely reflects the non-probability convenience sampling strategy and the combined use of online recruitment and face-to-face interviews. Younger women are generally more likely to participate in online health surveys, while face-to-face recruitment in gynecology clinics and community settings helped broaden participant inclusion. Despite this sampling profile, the high prevalence of medicinal plant use indicates that ethnobotanical practices remain relevant among younger generations. Consistent with our findings, family members were the principal source of medicinal plant knowledge, followed by traditional herbalists and friends, highlighting the importance of intergenerational and community-based knowledge transmission. The contribution of internet websites and social media further suggests that traditional knowledge is increasingly complemented by contemporary digital sources of information.

The predominance of participants from northern and eastern Algeria should be interpreted primarily in relation to the recruitment strategy and geographic distribution of the sample rather than as evidence of regional differences in medicinal plant use or ethnobotanical knowledge. Nevertheless, the predominance of family members and traditional herbalists as sources of medicinal plant knowledge supports the continued transmission of ethnobotanical practices within the communities represented in this study.

Among the recorded species, *Atriplex halimus*, *Origanum majorana*, *Salvia officinalis*, and *Dolomiaea costus* showed the highest RFC and UV values, indicating their ethnobotanical prominence within the study population. The reported pharmacological activities of these species may be related to their phytochemical composition. *Atriplex halimus* contains abundant flavonoids and phenolic acids with antioxidant and anti-inflammatory properties that may reduce oxidative

stress and improve insulin sensitivity, two key mechanisms implicated in PCOS pathophysiology. *Origanum majorana* is rich in rosmarinic acid, luteolin, and other phenolic compounds that exhibit antioxidant activity and may contribute to improved glucose homeostasis and the modulation of metabolic disturbances associated with PCOS. *Salvia officinalis* contains rosmarinic acid together with diterpenes such as carnosic acid and carnosol, which possess antioxidant and anti-inflammatory properties and have been associated with improved glucose metabolism and protection against oxidative stress (Rouibi *et al.* 2025; Boughrara *et al.* 2021; Ghorbani & Esmailizadeh 2017). Although these pharmacological properties provide a biological rationale for their traditional use, well-designed clinical studies are still required to confirm their efficacy and safety in women with PCOS.

The predominance of *Atriplex halimus*, *Origanum majorana*, *Salvia officinalis* and *Dolomiaea costus* differs from ethnobotanical surveys conducted in other regions, where species such as *Trigonella foenum-graecum*, *Mentha spicata*, and *Vitex agnus-castus* are more frequently reported for women's reproductive disorders and PCOS management. Although *Mentha spicata* and *Vitex agnus-castus* have shown promising effects in clinical studies of PCOS, they were rarely or not reported by participants in the present survey. This discrepancy likely reflects regional ethnomedical traditions, local availability of medicinal plants, cultural preferences, and the transmission of indigenous knowledge rather than the current level of clinical evidence. Because the questionnaire relied primarily on open-ended (free-listing) questions, the recorded species represent participants' own traditional practices rather than responses influenced by a predefined list of medicinal plants.

An important conservation consideration concerns *Dolomiaea costus*, a medicinal species protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES 2025). In the present study, the species was reported by participants as commercially available herbal market material, and no collection from wild populations was undertaken. Its continued traditional use highlights the importance of sustainable sourcing, compliance with applicable trade regulations, and conservation measures for threatened medicinal plant species.

The Fidelity Level (FL) complemented the Relative Frequency of Citation (RFC) and Use Value (UV) by identifying medicinal plants with high therapeutic specificity for PCOS-related conditions. While RFC reflects the popularity of a species and UV indicates its versatility, FL measures the degree to which a species is specifically associated with PCOS management. Species with the highest FL values, such as *Atriplex halimus* and *Origanum majorana*, demonstrated strong cultural specificity, whereas lower FL values indicated broader ethnomedicinal applications beyond PCOS. The combined use of RFC, UV, and FL provides a more comprehensive assessment of both the cultural importance and therapeutic specificity of the recorded medicinal plants.

The high Informant Consensus Factor (ICF) values observed across the different therapeutic categories (0.931-1.000) indicate a strong agreement among informants regarding the selection of medicinal plants used for the management of PCOS-related conditions. According to Heinrich *et al.* (1998), high ICF values indicate a high degree of agreement among informants regarding plant selection within a therapeutic category and indicate that relatively few plant species are consistently selected for the treatment of specific ailments. Such consensus may help identify culturally important medicinal plants with promising pharmacological potential, supporting their prioritization for future phytochemical and pharmacological investigations.

Participants reported improvements in menstrual cycle regulation, reduction of pelvic pain, and enhanced well-being following the use of medicinal plants. Although some of the reported species contain bioactive compounds with antioxidant and anti-inflammatory properties, the present ethnobotanical study cannot establish whether these compounds account for the perceived benefits reported by participants. Nevertheless, these findings are based on participants' self-reported experiences and should be interpreted with caution, as they have not been clinically validated.

In the present study, 89% of medicinal plant users reported no adverse effects, whereas small proportions reported adverse experiences, including hypertension (3%), allergic reactions (4%), gastrointestinal discomfort or hypoglycemia (3%), and bleeding-related concerns (1%). These events were self-reported by participants and were not clinically verified; therefore, causal relationships with the medicinal plants used cannot be established. Previous studies have nevertheless described potential safety concerns associated with some of the reported species, including possible effects of *Atriplex halimus* related to its mineral content (Rouibi *et al.* 2025), hypoglycemic effects of *Trigonella foenum-graecum* (Ekor 2014), allergic reactions associated with *Dolomiaea costus* (Abouelwafa *et al.* 2023), and potential bleeding-related effects of *Cinnamomum verum* (Ekor 2014). These literature-based observations should be considered general safety considerations rather than adverse effects demonstrated by the present study. Overall, the low frequency of self-reported adverse events

should not be interpreted as evidence of safety, particularly given the lack of standardized dosages and clinical supervision (Ekor 2014). Further pharmacological and clinical investigations are needed to establish the safety profiles of these medicinal plants.

Because many women with PCOS use conventional medications, including metformin, combined oral contraceptives, and anti-androgenic agents, the concomitant use of medicinal plants warrants careful consideration. In particular, *Trigonella foenum-graecum* may potentiate the glucose-lowering effects of antidiabetic medications, potentially increasing the risk of hypoglycaemia, whereas *Cinnamomum verum* has been reported to possess antiplatelet activity that could theoretically increase bleeding risk when combined with anticoagulant or antiplatelet drugs. Although clinically significant herb-drug interactions remain insufficiently documented for the medicinal plants reported in this study, healthcare professionals should encourage patients to disclose herbal medicine use, and further clinical studies are needed to evaluate potential interactions and safety when these plants are used alongside conventional PCOS therapies.

This study has several limitations. The non-probability convenience sampling strategy and combined online and face-to-face recruitment may have introduced selection bias and limited the representativeness of the sample. Ethnobotanical data were self-reported and may therefore be subject to recall and social-desirability biases. The cross-sectional design does not allow conclusions regarding the clinical efficacy or safety of the reported plants, and perceived benefits and adverse effects were not clinically verified. Potential herb-drug interactions were not specifically investigated and therefore cannot be assessed from the present data. Finally, the limited number of recorded species may reflect local traditional practices and characteristics of the study population; importantly, species were elicited primarily through open-ended free-listing rather than a predefined list. Future studies should include more representative samples and clinically evaluate the efficacy, safety, and potential herb-drug interactions of the most frequently reported medicinal plants.

Conclusions

This study highlights the importance of medicinal plants in PCOS management among Algerian women and the continued transmission of traditional ethnobotanical knowledge. Based on their ethnobotanical indices, *Atriplex halimus*, *Origanum majorana*, *Dolomiaea costus*, and *Salvia officinalis* showed the greatest cultural relevance and were frequently reported for managing PCOS-related symptoms. The high level of informant consensus supports their ethnobotanical importance and identifies them as priority species for further investigation. However, the reported benefits and adverse effects were based on participants' self-reported experiences and should not be interpreted as evidence of clinical efficacy or safety. Further phytochemical, pharmacological, and clinical studies are therefore required to validate these traditional uses and assess potential safety concerns. Overall, the findings contribute to documenting and preserving Algerian ethnobotanical knowledge while identifying medicinal plants of potential interest for future PCOS-related research.

Declarations

List of abbreviations: PCOS - Polycystic ovary syndrome; RFC - Relative Frequency of Citation; UV - Use Value; FL - Fidelity Level; ICF - Informant Consensus Factor.

Ethics approval and consent to participate: The ethnomedicinal survey was conducted in accordance with internationally accepted ethical standards for research involving human participants, including the International Society of Ethnobiology (ISE) Code of Ethics (2008).

Prior to participation, all informants were fully informed about the objectives of the study. Informed consent was obtained from all participants, including those interviewed online. Participation was voluntary, and the anonymity and confidentiality of all participants were strictly maintained throughout the study.

Consent for publication: Not applicable. This manuscript does not contain any individual person's data in any form, including individual details, images, or videos.

Availability of data and materials: The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Competing Interests: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Literature cited

- Abouelwafa E, Zaki A, Sabry OM, Caprioli G, Abdel-Sattar E. 2023. *Dolomiaea costus*: An untapped mine of sesquiterpene lactones with wide magnificent biological activities. *Natural Product Research* 37(23):4069-4079. doi: 10.1080/14786419.2022.2164577
- Belhouala K, Benarba B. 2021. Medicinal plants used by traditional healers in Algeria: A multiregional ethnobotanical study. *Frontiers in Pharmacology* 12:760492. doi: 10.3389/fphar.2021.760492
- Bensizerara D, Khemili A, Hassad R, Aroua K, Mellal H, Chenchouni H. 2025. Ethnobotanical survey and ecological approach of medicinal and aromatic plants in Algeria. *Ethnobotany Research and Applications* 32:1-31. doi: 10.32859/era.32.5.1-31
- Bouasla A, Bouasla I. 2017. Ethnobotanical survey of medicinal plants in northeastern Algeria. *Phytomedicine* 36:68-81. doi: 10.1016/j.phymed.2017.09.007
- Boughrara A, Chamkhi I, Bengli T, Gucouguou FE, Balahbib A, El Omari N, Taha D, Belmehdi O, Ghokhan Z, El Menyiy N. 2021. Traditional use, phytochemistry, toxicology, and pharmacology of *Origanum majorana* L. *Journal of Ethnopharmacology* 265:113318. doi: 10.1016/j.jep.2020.113318
- CITES. 2025. Convention on International Trade in Endangered Species of Wild Fauna and Flora. Appendices I, II and III. Available at: <https://cites.org/eng/app/appendices.php> (Accessed 9 August 2026).
- Ekor M. 2014. The growing use of herbal medicines: Issues relating to adverse reactions and challenges in monitoring safety. *Frontiers in Pharmacology* 4:177. doi: 10.3389/fphar.2013.00177
- Escobar-Morreale HF. 2018. Polycystic ovary syndrome: definition, aetiology, diagnosis and treatment. *Nature Reviews Endocrinology* 14(5):270-284. doi: 10.1038/nrendo.2018.24
- Friedman J, Yaniv Z, Dafni A, Palewitch D. 1986. A preliminary classification of the healing potential of medicinal plants, based on a rational analysis of an ethnopharmacological field survey among Bedouins in the Negev Desert, Israel. *Journal of Ethnopharmacology* 16(2-3):275-287. doi: 10.1016/0378-8741(86)90094-2
- Ghorbani A, Esmailzadeh M. 2017. Pharmacological properties of *Salvia officinalis* and its components. *Journal of Traditional and Complementary Medicine* 7(4):433-440. doi: 10.1016/j.jtcme.2016.12.014
- Haj-Husein I, Tukan S, Alkazaleh F. 2016. The effect of marjoram (*Origanum majorana*) tea on the hormonal profile of women with polycystic ovary syndrome: A randomised controlled pilot study. *Journal of Human Nutrition and Dietetics* 29(1):105-111. doi: 10.1111/jhn.12290
- Hamidpour M, Hamidpour R, Hamidpour S, Shahlari M. 2014. Chemistry, pharmacology, and medicinal property of sage (*Salvia officinalis* L.) to prevent and cure illnesses such as obesity, diabetes, depression, dementia, lupus, autism, heart disease, and cancer. *Journal of Traditional and Complementary Medicine* 4(2):82-88. doi: 10.4103/2225-4110.130373
- Heinrich M, Ankli A, Frei B, Weimann C, Sticher O. 1998. Medicinal plants in Mexico: Healers' consensus and cultural importance. *Social Science & Medicine* 47(11):1859-1871. doi: 10.1016/S0277-9536(98)00181-6
- Heinrich M, Edwards SE, Moerman DE, Leonti M. 2009. Ethnopharmacological field studies: A critical assessment of their conceptual basis and methods. *Journal of Ethnopharmacology* 124(1):1-17. doi: 10.1016/j.jep.2009.03.043
- International Society of Ethnobiology (ISE). 2008. International Society of Ethnobiology Code of Ethics (with 2008 additions). International Society of Ethnobiology.
- Kemal M, Bakchiche B, Kemal M, Cherif K, Kara Y, Bardaweel SK, Miguel MG, Yildiz O, Ghareeb MA. 2023. Six Algerian plants: Phenolic profile, antioxidant, antimicrobial activities associated with different simulated gastrointestinal digestion phases and antiproliferative properties. *Journal of Herbal Medicine* 38:100636. doi: 10.1016/j.hermed.2023.100636
- Maggini V, Bertazza G, Gallo E, Mascherini V, Calvi L, Marra C, Michelucci F, Liberati C, Trassi A, Baraldi R, Firenzuoli F. 2024. The different phytochemical profiles of *Salvia officinalis* dietary supplements labelled for menopause symptoms. *Molecules* 29(1):94. doi: 10.3390/molecules29010094
- Manouchehri A, Abbaszadeh S, Ahmadi M, Khajoei Nejad F, Bahmani M, Dastyar N. 2023. Polycystic ovaries and herbal remedies: A systematic review. *JBRA Assisted Reproduction* 27(1):85-91. doi: 10.5935/1518-0557.20220024

- Messaoud A, Zeggai S, Zemri K, Belkacem A, Ouali S, Harir N, Zahzeh MR, Drici AE, Hadj Slimene C, Senoussaoui F, Benmessaoud A, Elmezouar WN. 2026. Prevalence and clinical correlates of metabolic syndrome among women with polycystic ovary syndrome in Western Algeria: A cross-sectional study. *BMJ Open* 16(6):e115090. doi: 10.1136/bmjopen-2025-115090
- Plants of the World Online (POWO). 2026. Facilitated by the Royal Botanic Gardens, Kew. Available at: <https://powo.science.kew.org> (Accessed 9 August 2026).
- Quézel P, Santa S. 1962. Nouvelle flore de l'Algérie et des régions désertiques méridionales. Vol. 1. Paris, France: Centre National de la Recherche Scientifique (CNRS).
- Quézel P, Santa S. 1963. Nouvelle flore de l'Algérie et des régions désertiques méridionales. Vol. 2. Paris, France: Centre National de la Recherche Scientifique (CNRS).
- Rouibi M, Dalli M, Azizi SE, Gseyra N. 2025. *Atriplex halimus*: Phytochemical insights, traditional applications, and pharmacological promises. *Chemical Biodiversity* 22(4):e202402171. doi: 10.1002/cbdv.202402171
- Teede HJ, Tay CT, Laven J, Dokras A, Moran LJ, Piltonen TT, Costello MF, Boivin J, Redman LM, Boyle JA, Norman RJ, Mousa A, Joham AE, International PCOS Network. 2023. Recommendations from the 2023 International Evidence-based Guideline for the Assessment and Management of Polycystic Ovary Syndrome. *Fertility and Sterility* 120(4):767-793. doi: 10.1016/j.fertnstert.2023.07.025
- World Health Organization (WHO). 2013. WHO Traditional Medicine Strategy 2014-2023. Geneva: World Health Organization.

Supplementary Material S1**Questionnaire Used for the Ethnobotanical Survey of Medicinal Plants Used for the Management of Polycystic Ovary Syndrome (PCOS) Among Algerian Women****Eligibility Screening**

This questionnaire is intended only for women who have been diagnosed with polycystic ovary syndrome (PCOS) by a physician.

Eligibility criterion

- ☐ I confirm that I have been diagnosed with PCOS by a physician and agree to participate in this study.

Section A. Participant Information

Age (years): _____

Province of residence: _____

Educational level: No formal education / Primary / Secondary / University

Occupational status: Student / Employed / Housewife / Self-employed / Other

Section B. Use of Medicinal Plants

Have you ever personally used medicinal plants for the management of PCOS? Yes / No

Section C. medicinal plants used

Please list all medicinal plants that you have personally used to manage PCOS symptoms. For each plant, provide:

- Local (vernacular) name
- Scientific name (if known)
- Plant part used (leaves, seeds, roots, bark, flowers, fruits, or aerial parts)
- Condition of plant material (fresh, dried, oil or powdered)
- Mode of preparation (infusion, decoction, powder, maceration, direct consumption, or other traditional methods).
- Route of administration
- Dosage
- Duration of treatment
- Stage of menstrual cycle during use (if applicable)

Section D. Therapeutic Purpose

Menstrual cycle regulation

Pelvic pain relief

Ovulation improvement

Fertility improvement

Reduction of ovarian cyst symptoms

Diabetes/metabolic disorders

Digestive disorders

Other

Section E. Perceived Effectiveness and Safety

Did you notice any improvement after using the medicinal plant? Yes / No

What improvements did you observe?

Did you experience any side effects? Yes / No (if yes, specify).

Would you recommend this medicinal plant to another woman with PCOS? Why?

Section F. Source of Knowledge

Please indicate your primary source of knowledge regarding medicinal plant use.

Family members

Friends

Traditional herbalist

Physician

Pharmacist
Social media
Internet websites
Books
PCOS support groups
Other

Section G. Additional Comments

Please provide any additional comments regarding the use of medicinal plants for PCOS.