Natural Therapies Utilization in Erbil Kurdistan Region, Iraq

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Abstract

Natural products play a crucial role in the treatment of diseases worldwide, with over 70% of the global population reportedly relying on natural resources for healthcare. This study aimed to document and describe the traditional use of natural remedies among the Kurdish population in Erbil (Hawler), Iraq. A field survey was conducted in several local herbal markets, including Qaysare, Kuran Bazar, Nawroz Bazar, 40-Meter Bazar (Langa), and various herbalist shops. Data were collected through structured questionnaires administered to 20 male herbalists. A total of 92 medicinal plant species belonging to 42 botanical families were identified, with *Asteraceae* being the most frequently cited family and *Salicaceae* the least. Descriptive statistics were analyzed using Microsoft Excel 2016 to assess socio-demographic data and usage patterns. The recorded plants were used in the treatment of various ailments such as gastrointestinal disorders, inflammation, hypertension, headache, high cholesterol, and liver and kidney conditions. Leaves were the most commonly used plant part (50%), and oral administration was the predominant route. Boiling was the most common method of preparation (48.91%), while powdered forms were the least used (2.17%). Most remedies (92.39%) involved single-plant usage, with only 7.61% combining multiple plants. The findings indicate that traditional plant-based therapies remain widely practiced in Erbil (Hawler). This study provides valuable ethnobotanical knowledge and serves as a foundation for future development of herbal formulations and the integration of traditional medicine into modern therapeutic practices.

Keywords: Natural Therapies, Utilization, Erbil, Kurdistan Region, Iraq.

Introduction

For millennia, plants have served as vital sources of medicine, providing life-saving treatments for countless people worldwide [22]. Herbal remedies are widely used for treating and preventing various diseases due to their active pharmacological compounds [30]. The effectiveness of a plant's essential oils is influenced by factors such as its components, growing season, age, location, extraction techniques, solvents, and time [19]. In Iraq, medicinal plants

have a long history deeply rooted in the culture and beliefs of its people, particularly in the Kurdistan region. These traditions have been passed down for centuries, serving as the foundation for understanding the medicinal properties of local plants [6,20]. According to the World Health Organization (WHO), over 80% of people in developing nations rely on medicinal plants for their primary healthcare needs [36].

Ethnobotanical studies play a crucial role in documenting and evaluating the various ways in which plants are used by different cultures. These studies help preserve the knowledge passed down through generations, especially in underdeveloped regions where traditional knowledge is rapidly disappearing [5]. The Kurdistan region of Iraq is no exception, where traditional knowledge about medicinal plants is at risk of being lost [16,14]. By studying ethnobotany, we can better understand the relationship between humans and nature, not just in the past but in shaping the future of cultural traditions and ecological conservation. The term "ethnobotany" was first coined in 1896 by American botanist John Harshberger, who used it to describe the study of plants used by indigenous and primitive peoples. Over time, ethnobotany has evolved to encompass the study of how various cultures use native plants for food, medicine, and other essential functions [15].

Interest in the study of medicinal plants has grown significantly over the past few decades, with a particular focus on discovering and understanding the plants already in use by local communities [29]. Throughout history, people have relied on the natural world for remedies to treat a variety of medical conditions [12,31,39]. Wild food plants have been essential to human survival, even with the development of agriculture. Native plant species have long been used by communities for numerous purposes, including food, medicine, clothing, fuel, and even for manufacturing household chemicals and animal feed [14,32]. Despite advancements in agriculture, the gathering of wild foods continues in many parts of the world, primarily due to their nutritional value and potential health benefits [27].

From an economic perspective, traditional markets and rural populations may be able to supplement their incomes by harvesting these wild plants [14, 21]. In Erbil, the use of medicinal plants remains prevalent, particularly for treating long-term ailments. The Iraqi-Kurdistan region is home to a rich diversity of plant species, many of which are used as pasturage for livestock such as goats and sheep. However, many of these plants are also harvested, primarily by women, for their medicinal qualities [33, 17]. For centuries, beliefs, observations, and a rich medical history have shaped the understanding of medicinal plants in the region. Traditional herbal medicine remains the first choice for treating many diseases in Kurdistan, especially among those who cannot afford expensive synthetic medications [33, 7]. This study aims to document the plants traditionally used in Erbil for the treatment and management of various ailments, preserving valuable knowledge for future generations.

This study highlights the enduring role of traditional medicine in Kurdistan and its potential to offer affordable healthcare solutions in a rapidly changing world as well as highlighting the level of use natural remedies in the Region.

Materials and Methods

Study area

The region of Erbil that has been studied of the most well-known cities of the presence famous fortress several ancient Kurdistan is home to homes, museums, and locally manufactured crafts in the citadel on

central Erbil. Northern Iraq's regional administration. Kurdish is the language spoken by Muslims and locals in Erbil, and the city's economy is based on tourism, small factories, the oil industry, and agriculture. Erbil is brimming with wonderful plants. Given the varied climates and ambient living spaces of the locations, such as lakes, hills, valleys, fields, and mountains.

Plant materials

The study was carried out between 2023 and 2024. The plants used by the locals and especially naturally growing plants form our material. The first one included information about the traditional healers including the address, age, sex, duration of practicing herbal medicine and educational level. The second questionnaire included information about using medicinal plants by traditional healers including plant botanical and vernacular names, the part used, form of use and therapeutic use. Anonymity of the participants was ensured. After compilation of all the data, plant materials were collected.

Table1. Some questions employed during the interview

Disease treatr	Mode of administration	Method of preparation	How do you use it single or combine specify?	Part of the plant use	Scientific Name

Data collection

Ethnobotanical studies also involve the collection of cultural data, such as interviews with herbalists, customer's, and peoples who sold medicinal plants. These data were typically collected and used a range of methods to collect and record the data [11].

Data analysis

Using descriptive statistics, the local name, scientific name, family, plant parts used, method of use, method of preparation, and medicinal effects of the plants were explained for all uses in this study [38].

Sampling and Interview Sessions

The methods of non-random probability and the expert sampling were employed in this research. (Table 1).

Questionnaire

- **Gender**
- **Age**
- **Education**
- **Occupation**
- **Practicing traditional herbalism for how long?**
- **Name of any traditional medicinal plants you used for the treatment of Disease.**

Results and Discussion

Demographic profile

According to demographic information from the respondents who were questioned, of the total 20 respondents, 100 % were men (Table 2). Our result disagrees with the findings of [18] who reported that 64.33% of the respondents interviewed were female in their study of ethnomedicinal knowledge. The most participating were 45% from age 26-35

and the least participated were 15% from the age (20-25). Mild value (20% each from ages 36 to 45, 46 to 55) which conforms the findings of [24] demonstrated that traditional herbal medicinal plants were mostly maintained by elderly members. The traditional knowledge of medicinal plants in this ethnic group may be seriously challenged by this, since it may eventually be lost due to the aging of the elder population.

Table 2. Demographic information of the persons interviewed

Gender

100%	**20**	**Male**

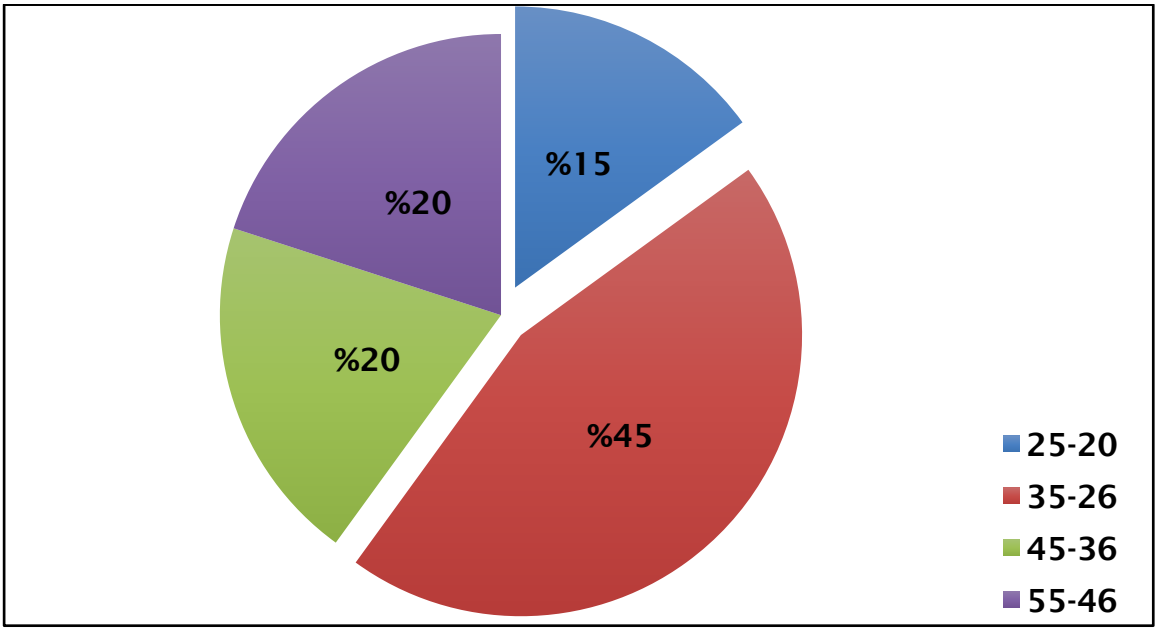

Fig 1. Demographic profile of the informant's age

Educations levels of participations

For the instructive stages, the education level of participated divided into five groups primary school, secondary school, high school, institute and university accounting for 3,8,4,3 and 2 of the customers. The findings from the study showed that a majority of the respondents has attained a secondary school was that 40%, thus is to confirm that they are aware of modern medicine and high school was 20% while at least primary school and institute were 15% and the lowest value was 10% of university (Fig 1). This finding is not in agreement with the study by [18] who reported that a majority of the respondents do not have a basic level of education. However, this data is not agreement with the study by [24] who revealed that a majority of the respondents has attained a basic level of education.

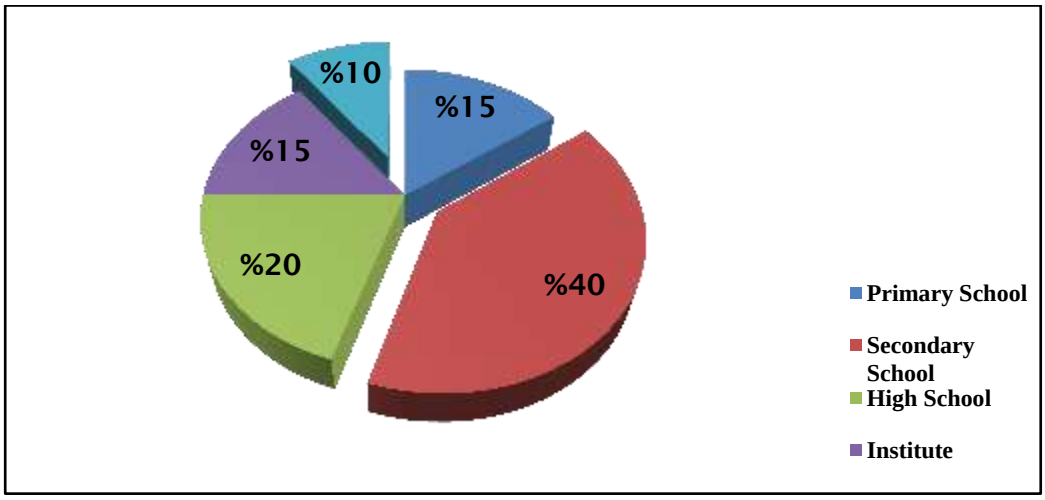

Fig 2. Educations level of the informants

Preparation methods

Figure 3 shows that boiling is the most common method of preparation (48.91%), followed by decoction (23.91%), infusion (11.96%), direct preparation (16.3%), in capsules (5.43%), and in powder form (2.17%). This finding is due to the fact that boiling extracts more compounds from the plant parts, which are responsible for its medicinal value, as well as from the hard parts of some plants. The results also differ from the data in [18], which reported decoction (32%) as the most frequent form of herbal remedy preparation. Furthermore, it has been documented that most traditional herbal remedies are used both in dried and fresh forms, since most medicinal plants are wild, making it necessary to harvest them in excess to avoid risks [25].

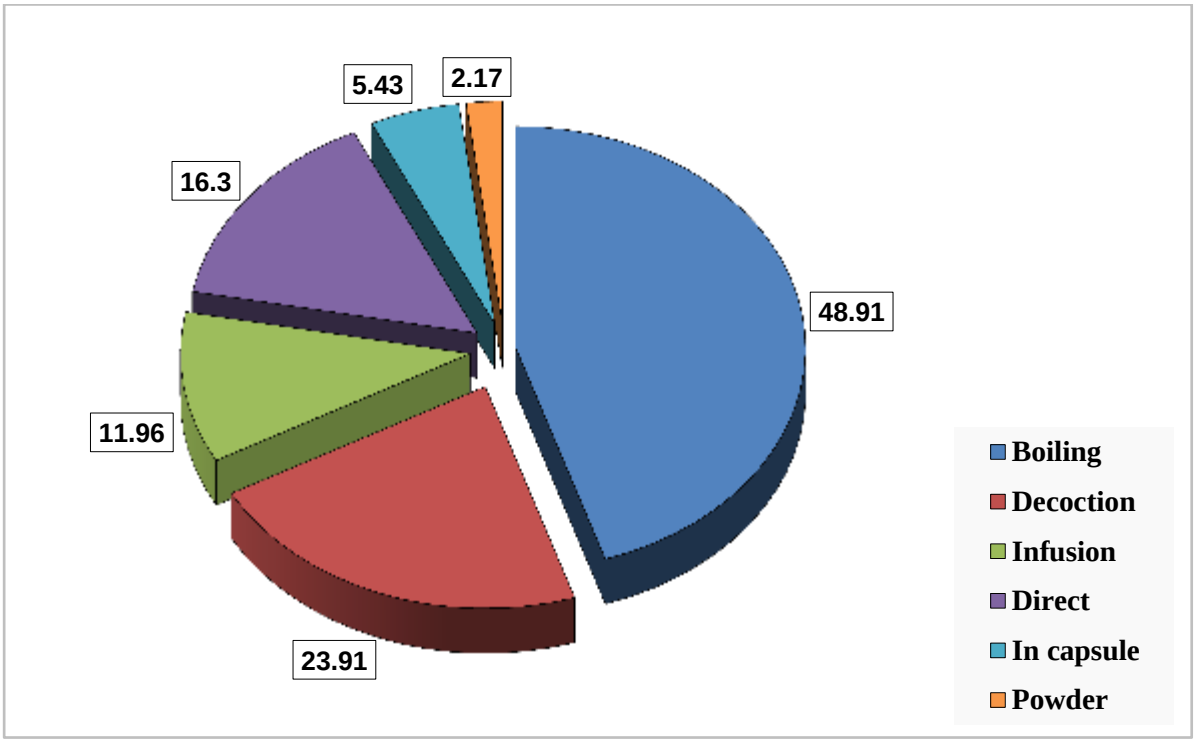

Fig 3. Frequency of different plants preparation methods used in the study area (%)

Plant parts used

The different parts of plants were utilized among different diseases i.e. roots, stems, leaves, flowers, fruit, bulbs, buds and nuts. The whole plant was also as in case of herbs. The most repeatedly used plant parts were leaves (50%) followed by flowers (27%), seed and root (23%), fruit (15%), stem (13%), bark (9 %), bud (2%) and nuts, bulb (1%) (Fig. 4). The frequent usage of the leaves was documented in this study, probably due to the fact that secondary metabolites are primarily produced in the leaves where the photosynthesis takes place and later transported to other parts of the plants, and may also as a result of the easy collection of the leaves when compared to other parts of the plant like root, bark and whole plant [1]. The leaves of plants contain high amount medicinal compounds and for this reason they are highly prized in traditional medicine [24]. Although the frequent use of plant leaves poses a serious threat to biodiversity conservation and could accelerate global warming by reducing the uptake of

This is because one of the respondents' cultural justifications for collecting plant leaves was that it has already resulted in the local disappearance of some therapeutic plants [25]. The favored plant parts which were leaves, roots, fruit, seeds and stem in the traditional medicines, as they restrain the high amount of biologically active substances compared to other plant parts [34]. The use of roots, frequent use of seeds or fruit for preparation of medicines leads to destructive effects on the growth of plants population in nature [35]. The use of aerial parts and leaves is safe and sustainable [13]. The increasing pressure of population and expansion of agricultural patches considered the major risk to

medicinal plants. The results in the studies [23] showed that the two main factors in reduction of medicinal plants population are agricultural expansion, cutting fuel wood at a large scale, pooled with seasonal drought. The most plant parts were leaves and roots, which agrees with most other ethnobotanical studies [12,37]. According to [12], leaves are considered the most vulnerable parts of plants because to contain more bioactive secondary compounds to defend themselves from herbivores. Sometimes the local people also used other ingredients, such as olive oil, honey, or milk, to prepare the remedies. In many cases, more than one organ of the same species is used in the preparation of different remedies.

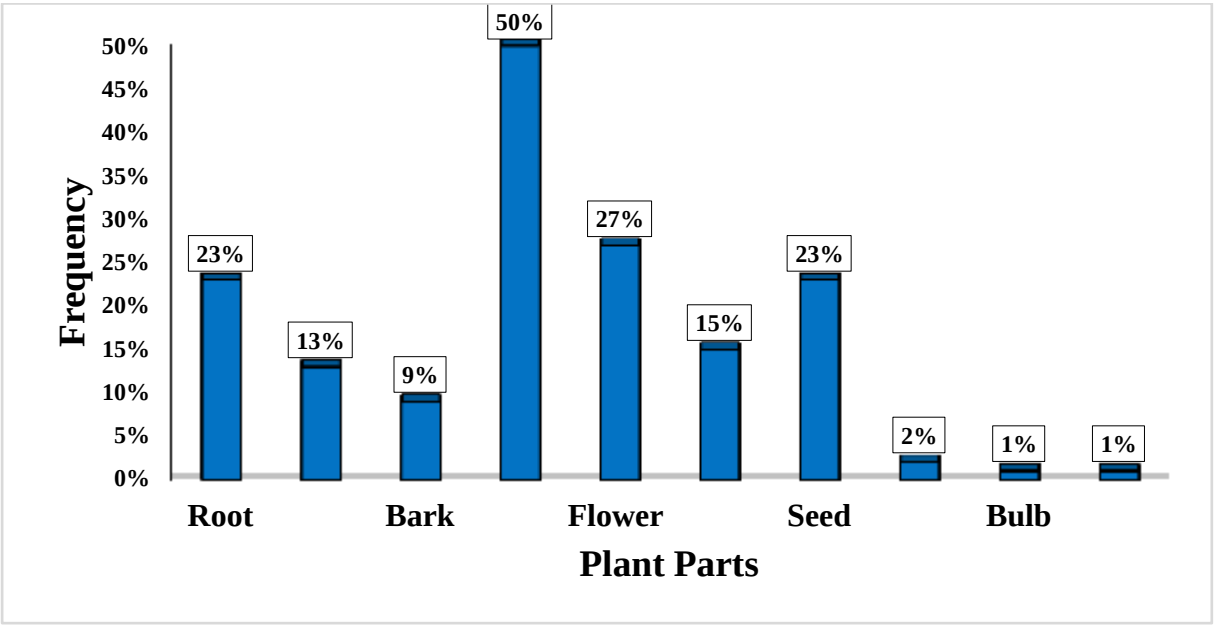

Fig 4. Parts of the plants used for treatment of diseases

Administration methods

The most methods of administration were oral and dermal. Oral has been reported as the most accepted mode of administration (103.26 %), followed by dermal (11.96%), (Figure 4). Moreover, this finding is in line with the studies carried out on medicinal plants by [21,25]. The most popular method of administration of medicinal plants was established from previous researches it was oral application [24, 13]. On the other hand, dermal and oral use of medicinal plant preparations might result in their faster physiological action and greater therapeutic efficiency [3]. These results are consistent with the finding [33] who indicated that oral application (116 preparations, 50.43 %) was the highest and most commonly used route of application followed by dermal application (54 preparations, 23.48 %). This is consistent with a study conducted in Mascara in Algeria [8], which showed that the oral route allows a better absorption of active compounds contained in an herbal remedy.

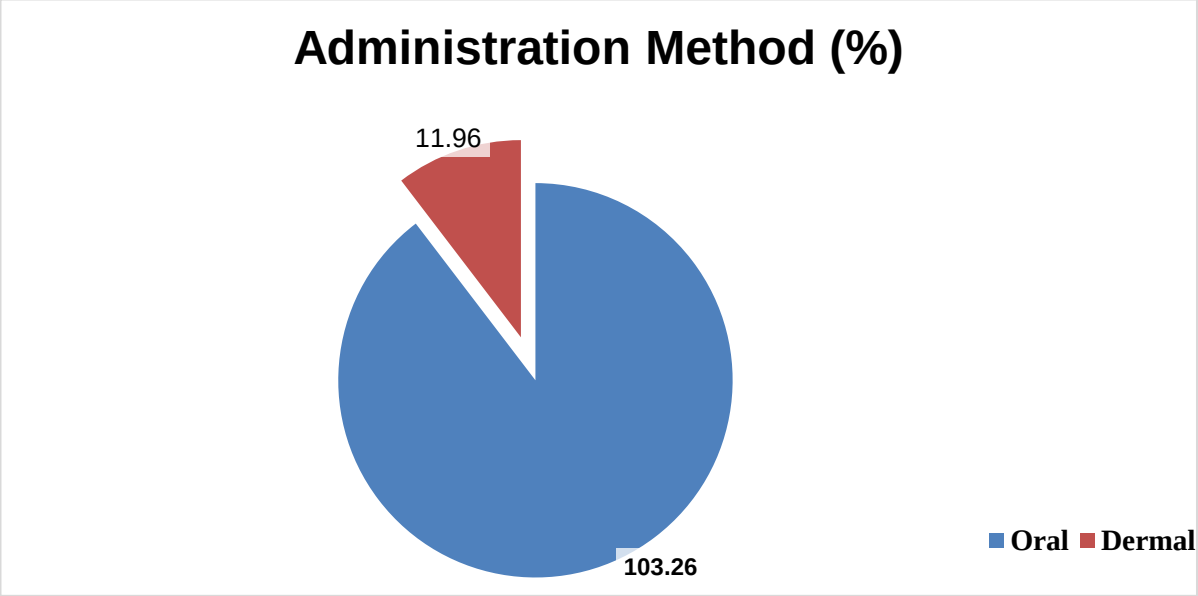

Fig 5. Administration methods (%) of plants

Diversity of plants

The most common medicinal plants used as drug were the members of family Asteraceae (12 species), followed by Fabaceae (9 species); Laminaceae (8 species), Apiaceae (7 species); Rosaceae (3 species); Zingiberaceae, Solanaceae, Rubiaceae, Malvaceae, Anacardiaceae were (2 species); whereas the rest (31 families) have one species each, which were Zygophyllaceae, Urticaceae, Theaceae, Salicaceae, Rutaceae, Ranunculaceae, Rhamnaceae, Passifloraceae, Phyllanthaceae, plantaginaceae, Portulacaceae, Poaceae, Oleaceae, Moringaceae, Myrtaceae, Moraceae, Lauraceae, Linaceae, Juglandaceae, Iridaceae, Ganodermataceae, Geraniaceae, Euphorbiaceae, Clusiaceae, Convolvulaceae, Caryophyllaceae, Cucurbitaceae, Burseraceae , Boraginaceae , Brassicaceae, Araliaceae were represented by 1 species having medicinal importance (Figure 5). Family Asteraceae and Fabaceae have the utmost range of plant species used as herbal remedy. These results agree with [3]. However, our results disagreement with the finding [23] who revealed that the family Fabaceae was represented by the highest number of species (26 species, 11.3%) and this was followed by Asteraceae (19 species, 8.3%). These families are considered the main sources of phytochemicals so the use of their plant species is widespread. This finding disagreement with to the findings of [1], who showed that Myrtaceae has the highest number of repeated plants species in their botanical inventory study. The abundance of Myrtaceae in Asia and Peninsular Malaysia might be due to the reason of the environmental condition of tropical region since members of the family grow very well in this tropical region.

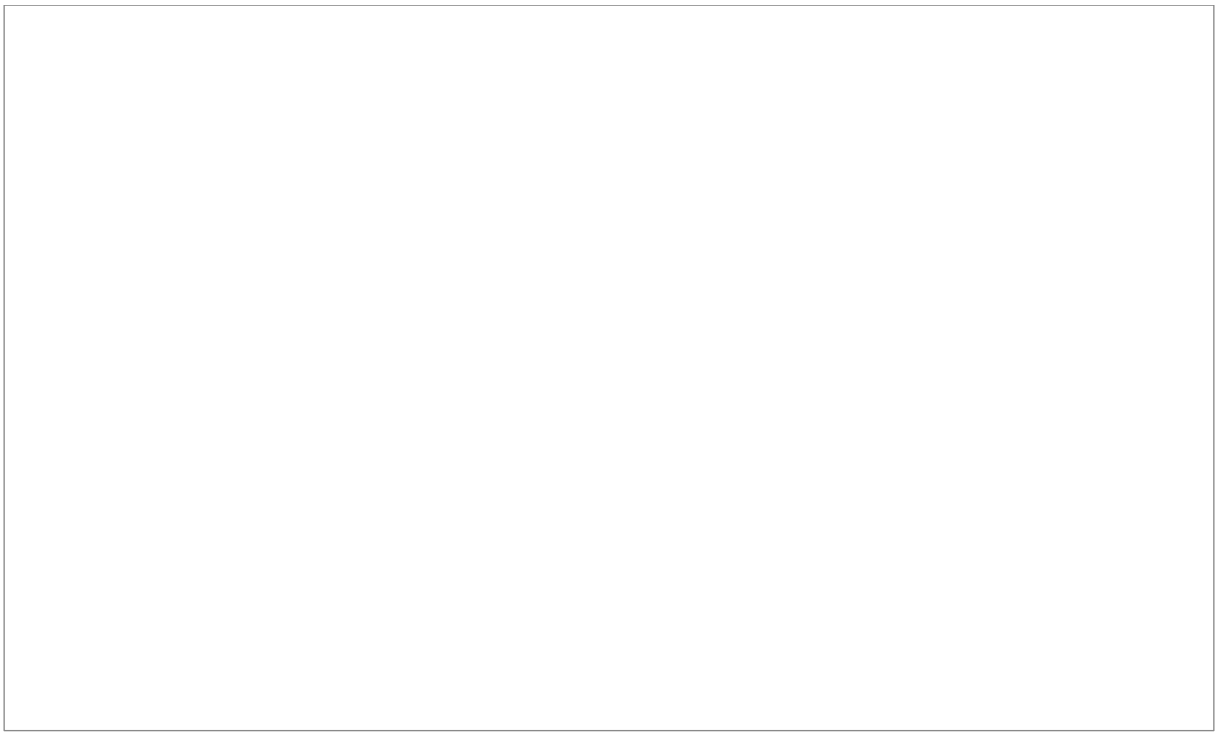

Fig 6. Frequency of the most represented botanical families

Single or combined method for medicinal plant used

The use of medicinal plants is typically divided into two groups: single and combined methods. The single method was the most commonly used, making up 92.39%, while the combined method accounted for just 7.61% (Figure 6). People utilize medicinal plants in different ways, some mixing them with water, honey, or milk, while others use them alone [23, 28, 25, 37].

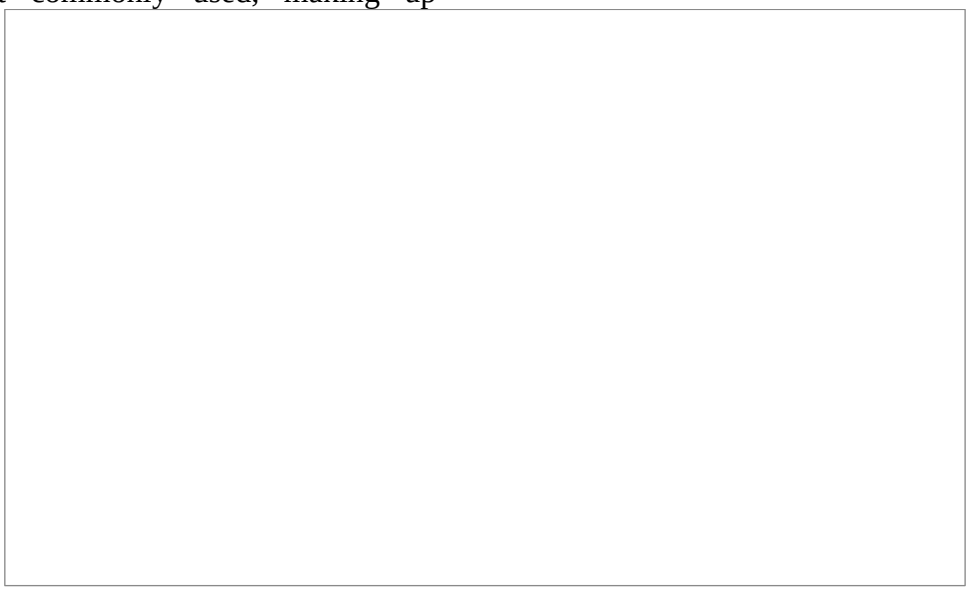

Fig 7. Single or combine use of medicinal plants (%)

The most ailments treated by plants

The percentage of herbal medicine used in Hawler region for various illnesses was shown in (Figure 7) ranged between (2-15%) included mainly those suffering from stomach, headache, inflammation, cholesterol, blood pressure, kidney, hypertension and liver diseases. In our study, several types of plants have been used by people for different diseases. Most diseases have been taken which were stomach, headache, inflammation, cholesterol, blood pressure, and liver diseases by herbalists. The result as shown in Fig 7 indicates that stomach was the most common disease followed by inflammation and blood pressure for which patients commonly visit the traditional medical practitioners. Seventeen species are used as remedies against stomach problems, nine species for inflammation and blood pressure treatments, eight species for kidney treatments, seven species for liver problems, five species for headache and cholesterol treatments and the last hypertension ailment which was taken two species for treatment (Fig 7). This results disagreement with finding [13] demonstrated that the eight species are used as remedies against human gastrointestinal problems, seven species against MICH (febrile illness), four species against skin diseases, and three species each against chest pain. This result disagreement with finding [10] who reported that the high number of the use-reports and medicinal plant species utilization in diabetes (19 plant taxa and 251 use-report) and gastro-intestinal (52 plant taxa and 423 use-report) groups might be due to the traditional taste habits such as consuming high amounts of carbohydrate-based food and salty (particularly milk products, such as cheese), sour and grid meals and as well as warm tea.

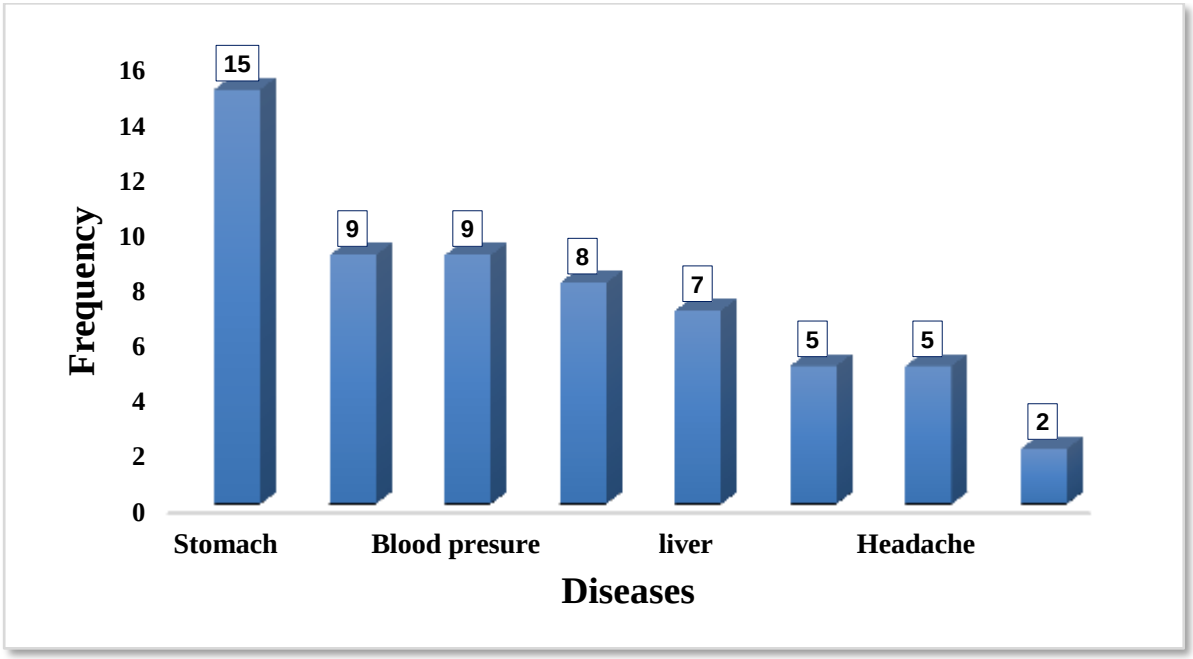

Fig 8. The most treated diseases

The growth habit of plants

The analysis of growth forms in medicinal plants revealed that shrubs and trees made up the largest proportion, accounting for 33.7%, while herbs represented 32.61% (Figure 9). This finding contrasts with the typical pattern observed in many other medicinal plant inventories [13, 37, 28, 25,

26], where herbaceous plants are more commonly used. This difference may be due to the abundance and availability of shrubs throughout the year in the study area. Additionally, our results differ from [4] study, which found that herbs (75%) were the most frequently used plants in traditional healing practices in Sulaymaniyah Province, with trees (13%) and shrubs (12%) following behind.

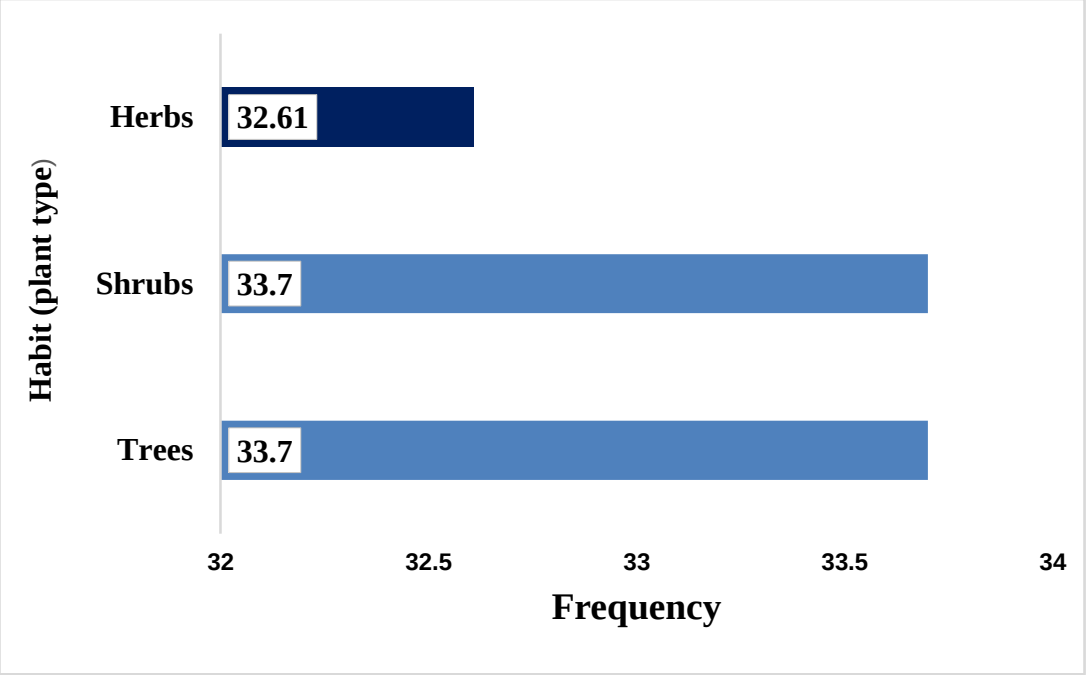

Fig 9. Percentage of the recorded plants according to plant type (Habit)

Conclusion

Herbal medicines are essential pharmaceuticals that have traditionally been utilized in Kurdistan to treat a variety of diseases. Herbal remedies were most commonly used by those who had gastrointestinal problems, inflammations, high blood pressure, high cholesterol, headaches, or hypertension. Herbal treatments from the plant groups Asteraceae, Fabaceae, Laminaceae, and Apiaceae were more commonly utilized in the Kurdistan area. According to the findings of this study, the study region is rich in native medicinal plant species and associated traditional knowledge. This information has been passed down from generation to generation, and there is an urgent need to conserve it because the present generation is not giving. Kurdish patients might acquire medicinal plants from traditional herbalists and doctors who had prior expertise using medicinal plants to cure ailments and improve health. Kurdish patients may benefit from utilizing medicinal plants rather than pharmaceutical medications since pharmaceutical drugs have several adverse effects on human health, whereas medicinal plants grow organically. Furthermore, therapeutic plants are less expensive than particular pharmaceutical treatments for poor and rural Kurdish people who cannot afford medicines.

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