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## EXPLORING THE UNTAPPED POTENTIAL OF WILD EDIBLE PLANTS AND SUSTAINABLE UTILIZATION IN SUKKUR DIVISION, SINDH, PAKISTAN

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### ABSTRACT

Human populations depend on natural resources and the biodiversity they contain, which significantly impacts local vegetation and vice versa. Indigenous communities worldwide hold an extensive repository of knowledge regarding local wild plants. This knowledge is intricately integrated into daily practices and is primarily conveyed through oral traditions. The purpose of this study was to find out how the people of the Sukkur region use wild edible plants (WEPs) for food and medicinal purposes. A semi-structured questionnaire was used to interview 140 informants (98 males and 42 females), and the ethnobotanical information was gathered through group discussions, interviews, and questionnaires. A total of 38 species, belonging to 32 genera and 19 families, were identified, with Amaranthaceae and Fabaceae being the most represented families. Herbs constituted the majority of life forms (61%), followed by trees (26%) and shrubs (13%). Fruits were the most commonly consumed plant part (35%), with species such as *Cucumis melo*, *Morus alba*, and *Salvadora persica* demonstrating significant cultural and nutritional importance based on use values (UV) and citation indices (CI). Leafy vegetables, including *Chenopodium album* and *Portulaca oleracea*, were the second most utilized taxa, primarily prepared by boiling. Flowers, seeds, and pods also contributed to dietary diversity, with *Capparis decidua* and *Nelumbo nucifera* exhibiting high relative importance due to their multifunctional uses. In addition to their nutritional roles, wild edible plants (WEPs) were extensively employed in traditional medicine to address a variety of health conditions. Respiratory disorders (16.55%) and skin infections (13.68%) were the most frequently treated ailments, followed by arthritis and gastrointestinal issues. Noteworthy multipurpose species such as *Salvadora persica*, *Calotropis procera*, and *Withania somnifera* were utilized for various ailments, including wound healing, typhoid, and stress-related disorders. Leaves were the most commonly used plant part in medicinal practices (45%), followed by fruits (26%), seeds (10%), flowers (9%), and roots (5%). Species with the highest use reports (URs) included *Calotropis procera*, *Chenopodium album*, *Capparis decidua*, and *Calligonum polygonoides*, reflecting their central role in local healthcare systems. These findings underscore the importance of WEPs in sustaining food security, promoting health, and preserving traditional knowledge, and they emphasize the need for conservation and further phytochemical validation of these valuable plant resources.

**Keywords:** Ethnobotanical survey; wild edible plants; Amaranthaceae and Fabaceae, Ghotki, relative frequency.

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### INTRODUCTION

Ethnobotanical knowledge encompasses the traditional understanding and application of plants by communities, particularly for medicinal and nutritional purposes. It is essential to document this knowledge to preserve cultural heritage, promote the sustainable use of biologically diverse

resources, and facilitate the discovery of new therapeutic compounds. The documentation of ethnobotanical practices mitigates the risk of knowledge extinction due to globalization and urbanization, which often disconnect younger generations from their ancestral traditions (Qureshi et al., 2016). Additionally, it contributes to biodiversity

conservation by emphasizing the importance of native plants in local healthcare and ecosystem management. Therefore, the recording of ethnobotanical knowledge not only enriches modern medicine but also fosters cultural identity and supports ecological sustainability (Prance, 2000). Over the past few decades, numerous studies have investigated the ethnobotany of various regions with the objective of documenting indigenous knowledge and perceptions regarding the use of wild plants in both culinary and medicinal contexts (Jarić et al., 2007; Jarić et al., 2015; Hajdari et al., 2018). In contemporary society, where diet-related chronic diseases are prevalent, Hippocrates' renowned adage, "*Let food be thy medicine and medicine be thy food*," remains particularly relevant. It is important to note that, similar to other traditional medical systems such as Ayurveda and Traditional Chinese Medicine, the Greeks were not the first to recognize the medicinal value of food (Chatterjee, 1985).

Human diet has historically been a crucial factor in the development of western biomedicines and continues to play a significant role in the prevention of certain diseases (Etkin, 2006). An optimal dietary regimen is essential for maintaining good health (Shrivastava et al., 2016). Unfortunately, the prevalence of poor dietary habits has resulted in serious chronic diseases among individuals in the modern world (Willett et al., 2006). The close integration of nutritional therapies and food is believed to provide a solid foundation for the initiative to incorporate medically designed foods and nutritional strategies into healthcare systems, often referred to as "food as medicine" (Downer et al., 2020). There are about two billion people experience hunger or lack access to a nutritious diet (FAO, 2024). An increasing number of nations are confronting a dual challenge of malnutrition, characterized by the coexistence of undernutrition alongside overweight, obesity, and other diet-related disorders (Initiatives, 2020). Recent research indicates that food systems are failing to deliver nutritious diets, exhibiting inequities, and lacking environmental sustainability (Béné et al., 2019; Willett et al., 2019). An increasing number of individuals are recognizing the critical role that wild edible plants (WEPs) play in enhancing global food security, particularly in rural areas where traditional food sources may be limited or insufficient (Sharma & Wagh, 2025). Throughout human history, wild edible plants (WEPs) have been integral to diets and traditional dietary systems, providing essential nutrients and bioactive compounds. Both ancestral and contemporary traditional diets are acknowledged for their significant health benefits (Crittenden and Schnorr, 2017). Humans have utilized

plants for various purposes and have developed numerous methods for harnessing plant resources to combat diseases (Gerique, 2006; Lulekal et al., 2008). WEPs are traditional foods that often contain higher micronutrient levels than cultivated crops (Ogle et al., 2001). This provides an opportunity to alleviate micronutrient deficiencies, particularly in rural and indigenous populations (Flyman and Afolayan, 2006; Powell et al., 2015).

Despite their significance, there remains a notable lack of comprehensive data regarding the nutritional and ethnomedicinal benefits of WEPs in certain regions, especially in developing countries (Sharma & Wagh, 2025). WEPs contribute significantly to food security by mitigating seasonal food shortages and environmental stress. They enhance nutrition and dietary variety by providing essential vitamins, minerals, and bioactive compounds (Tadesse et al., 2024). Their constant use holds considerable potential for reducing malnutrition and increasing resilience to food insecurity. There are over 6,000 species of higher plants in Pakistan (Ali & Qaiser, 1986; Ali, 2008), with at least 12% reported to have medicinal uses (Shinwari & Qaiser, 2011). However, a significant number of wild plants that are utilized for medicinal and nutritional purposes by local communities remain unrecorded. Therefore, this study was conducted in the Sukkur Division of Sindh, Pakistan, an area relatively underexplored in terms of local plant knowledge within indigenous communities.

## MATERIALS AND METHODS

### Study area

The study was conducted in the Sukkur Division, located in the northeast of Sindh Province, encompassing three districts: Sukkur, Khairpur, and Ghotki (Figure 1). This region falls within a subtropical zone where summer temperatures frequently exceed 50 °C. Historical climate data indicates that this area is particularly susceptible to heat waves and droughts.

### Plant collection, identifications and preservation

Comprehensive surveys were conducted throughout the year for plant collection at the locations indicated in Figure 1. The collection process focused on gathering specimens during their flowering, fruiting, and seed phases. Specimens were prepared in accordance with the standard herbarium procedures (Jain and Rao, 1977). The plant specimens were subsequently deposited in the Herbarium at the Centre for Biodiversity and Conservation, Shah Abdul Latif University, Khairpur. Plant identification was accomplished using the Flora of Pakistan and other regional floras (Missouri Botanical Garden, 2025).

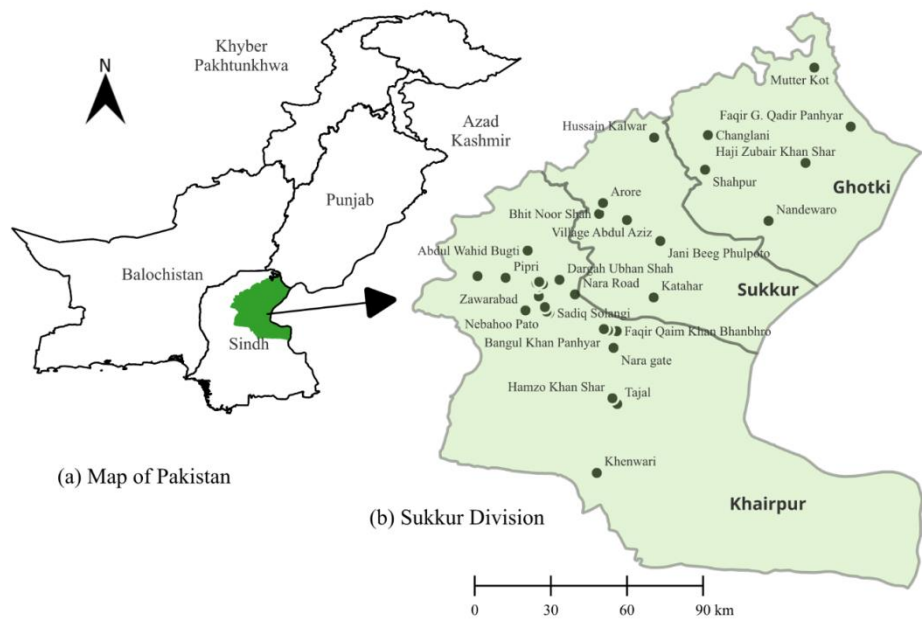


Figure 1: Map of the study area: (a) Map of Pakistan highlighting the Sukkur Division in green within Sindh Province; (b) Map of the Sukkur Division displaying the administrative boundaries of three districts: Khairpur, Sukkur, and Ghotki, with study locations clearly marked.

**Ethnobotanical study of wild edible plants**

Ethnobotanical data were collected between September 2022 and January 2023 through interviews with randomly selected informants, followed by field interviews with key informants selected after free listing (Ghorbani, 2005). A total of 142 local informants (98 male and 42 female), including traditional herbal practitioners, provided ethnobotanical data (Table 1). Quantitative ethnobotanical

analysis was conducted using R statistical software with the EthnobotanyR package (Whitney, 2022). Various indices were employed, including use reports (URs), cultural importance (CI), frequency of citations (FCs), number of uses (NUs), relative frequency of citations (RFCs), relative importance (RIs), use value (UV), and cultural value (CVe). Various graphical representations were created using OriginPro 2025.

Table 1: Demographic characteristics of the study participants.

| Parameters             | Classes          | Frequency of Respondents in Each Class | Percentage |
|------------------------|------------------|----------------------------------------|------------|
| Gender                 | Male             | 98                                     | 70 %       |
|                        | Female           | 42                                     | 30 %       |
| Age                    | 30 or less       | 13                                     | 09.28%     |
|                        | 31 – 40          | 18                                     | 12.85 %    |
|                        | 41 –50           | 19                                     | 13.57 %    |
|                        | 51 – 60          | 40                                     | 28.57 %    |
|                        | 61– 70           | 25                                     | 17.85 %    |
|                        | 71 and above     | 25                                     | 17.85 %    |
| Educational background | Illiterate       | 44                                     | 31.42 %    |
|                        | Primary          | 37                                     | 26.42 %    |
|                        | Middle           | 22                                     | 15.71 %    |
|                        | Higher secondary | 20                                     | 14.28 %    |
|                        | University       | 17                                     | 12.14 %    |

## RESULTS

### Taxonomic diversity of WEPs

A total of 38 plant species, classified into 32 genera and 19 families, were identified and documented. The analysis of these documented species indicates that the families Amaranthaceae and Fabaceae were the most represented,

with six and five species, respectively. Additionally, other prominent families included Solanaceae, Apocynaceae, and Cucurbitaceae, each comprising three species, as well as Salvadoraceae, which included two species (Figure 2). Herbs accounted for 22 species (61%), followed by trees with 10 species (26%) and shrubs with 5 species (13%).

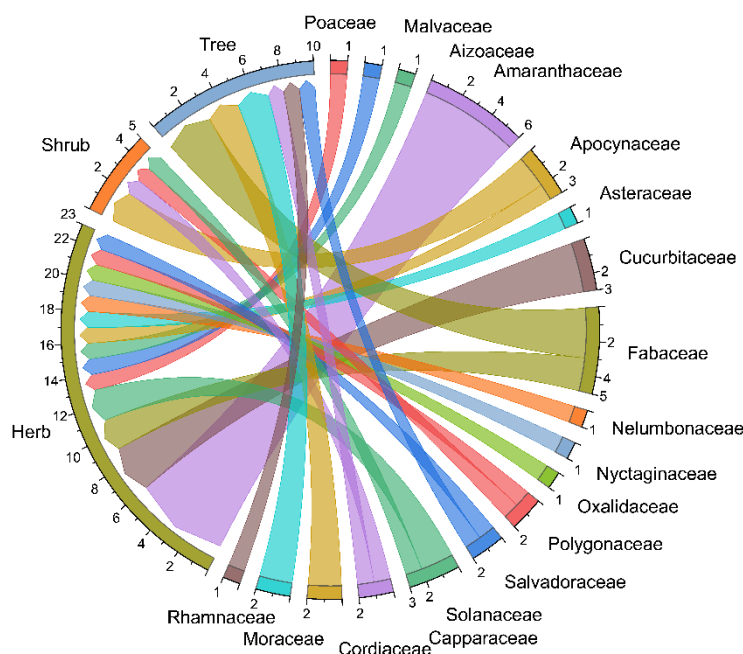


Figure 2: Taxonomic and structural diversity (growth habits) of WEPs within the study area.

### WEPs Consumed Daily Diets

Fruits were the predominant edible component, comprising 35% of all edible plant parts, utilized in various forms such as raw consumption, pickles, jams, and traditional preparations (Tab. 2). Notable fruit-bearing species with high citation indices (CI) included *Cucumis melo* (CI = 0.821), *Morus alba* (CI = 0.829), *Cordia dichotoma* (CI = 0.636), and *Salvadora persica* (CI = 0.757). These species also exhibited high use values (UV), reflecting their cultural and dietary significance. Leaves, representing ten species, were the second most consumed, accounting for 23% of usage (Figure 3). Leafy vegetables such as *Chenopodium album* (UV = 0.85; RFC = 0.85), *Portulaca oleracea* (UV = 0.836), *Celosia argentea* (UV = 0.786), and *Digera muricata* (UV = 0.671) were widely utilized, typically prepared by boiling as staple greens. Flowers from six species contributed 16% to the total, while seeds and pods from two species each were also used as vegetables. Flowers from several species, including *Bauhinia variegata*, *Calligonum polygonoides*, and *Capparis decidua*, were consumed as vegetables or incorporated into pickles. Notably, *Capparis decidua* ranked highest in relative

importance (RI = 0.807) among flower- and fruit-bearing species due to its versatile applications. Less commonly, pods and seeds were consumed, either cooked or raw. *Nelumbo nucifera* was particularly noteworthy for its dual use of seeds and roots, exhibiting a high RI (0.899) and UV (0.793), which underscores its nutritional and cultural significance.

Notably, the raw consumption of flowers from two species and leaves from one species was recorded, which may offer potential health benefits (Figure 3). Several species were consumed in raw form, including the fruits of *Morus nigra*, *Ziziphus nummularia*, and *Withania somnifera*, as well as the flowers and leaves of *Oxystelma esculentum* and *Oxalis corniculata*, potentially offering health benefits. Certain plants, such as *Amaranthus graecizans* and *Celosia argentea*, possess multiple edible parts, enhancing their versatility in plant-based diets. Additionally, many individuals incorporate fruits whether ripe or raw into their diets, while seeds are often consumed uncooked.

### WEPs used in herbal medicine

Species encompassing a variety of life forms, including herbs, shrubs, and trees, have been traditionally utilized to

address a broad spectrum of human ailments. Among the documented diseases, respiratory disorders are the most frequently treated condition, accounting for 16.55% of total usage reports. Following this, skin infections represent the

second most treated category at 13.68%, highlighting the prevalent incidence of dermatological issues. Arthritis is another significant condition addressed by ethnomedicinal plants, constituting 6.66% of the treatments (Figure 3).

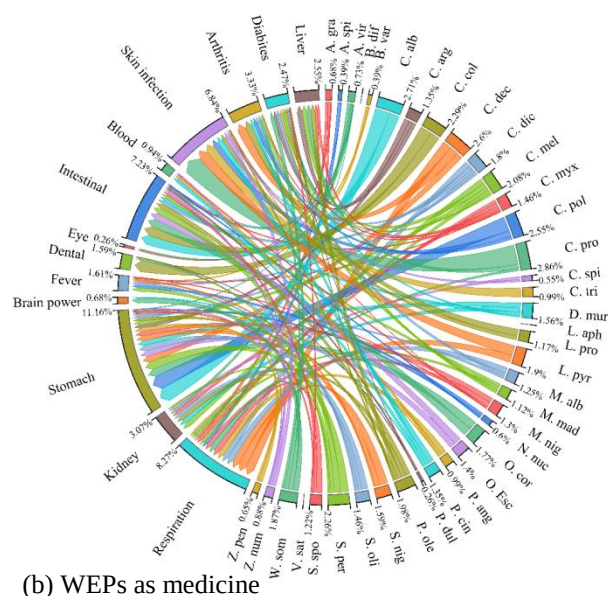
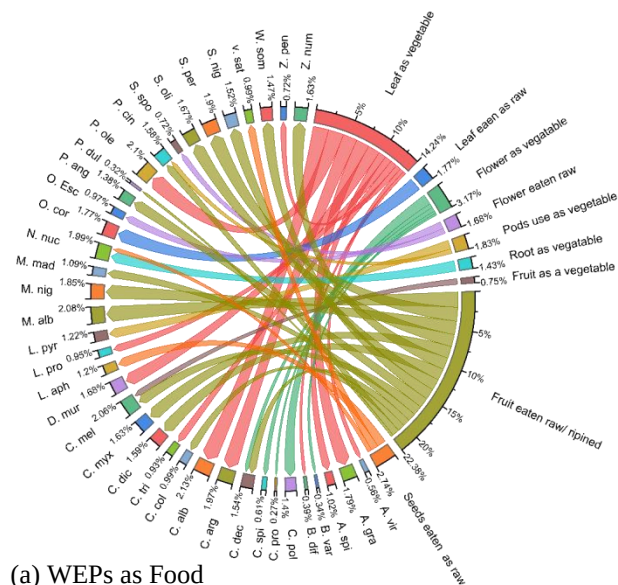


Figure 3: Use of WEPs, (a) Utilization of plant parts from various Wild Edible Plant (WEP) species in the study area. (b) Ethnomedicinal uses of Wild Edible Plants (WEPs) of the study area for the treatment of multiple ailments, visualized through a chord diagram. A. gra = *Amaranthus graecizans*, A. spi = *Amaranthus spinosus*, A. vir = *Amaranthus viridis*, B. dif = *Boerhavia diffusa*, B. var = *Bauhinia variegata*, C. alb = *Chenopodium album*, C. arg = *Celosia argentea*, C. col = *Citrullus colocynthis*, C. dec = *Capparis decidua*, C. dic = *Cordia dichotoma*, C. mel = *Cucumis melo*, C. myx = *Cordia myxa*, C. pol = *Calligonum polygonoides*, C. pro = *Calotropis procera*, C. spi = *Capparis spinosa*, C. tri = *Corchorus tridens*, D. mur = *Digera muricata*, L. aph = *Lathyrus aphaca*, L. pro = *Launaea procumbens*, L. pyr = *Leptadenia pyrotechnica*, M. alb = *Morus alba*, M. mad = *Mukia maderaspatana*, M. nig = *Morus nigra*, N. nuc = *Nelumbo nucifera*, O. cor = *Oxalis corniculata*, O. esc = *Oxystelma esculentum*, P. ang = *Physalis angulata*, P. cin = *Prosopis cineraria*, P. dul = *Pithecellobium dulce*, P. ole = *Portulaca oleracea*, S. nig = *Solanum nigrum*, S. ole = *Salvadora oleoides*, S. per = *Salvadora persica*, S. spo = *Saccharum spontaneum*, V. sat = *Vicia sativa*, W. som = *Withania somnifera*, Z. num = *Ziziphus nummularia*, Z. pen = *Zaleya pentandra*.

The diversity of plant species utilized for each condition, as illustrated by the interconnected chords, demonstrates broad-spectrum therapeutic applications. *Salvadora persica* was particularly notable for its applications in typhoid, dental care, and influenza, demonstrating considerable cultural significance (UR = 87; UV = 0.62). Anti-inflammatory and wound-healing properties were also prevalent, particularly among species such as *Launaea procumbens*, *Leptadenia pyrotechnica*, and *Ziziphus nummularia* (Table 3).

Some species are associated with multiple health issues, indicating their multipurpose medicinal value. For example *Calotropis procera* was utilized for wound healing and respiratory ailments, while *Chenopodium album*, *Digera*

*muricata*, and *Portulaca oleracea* were frequently employed for gastrointestinal disorders and diabetes. *Withania somnifera*, recognized for its versatility, was used to address asthma, hypertension, stress, arthritis, and cancer, with a UV of 0.51 and a Relative Importance (RI) of 0.63 (Table 3). Several species, including *Cordia dichotoma*, *Cordia myxa*, and *Cucumis melo*, were applied for both respiratory and gastrointestinal complaints. Leaves emerged as the most frequently utilized plant part in local herbal medicine, comprising 45% of total consumption, followed by fruits, roots, flowers, seeds, and latex, thereby underscoring the significance of herbal medicinal practices.

Table 2: Quantitative indices of documented wild edible plants (WEPs) as food: including taxonomy, life form, parts used and preparation modes in the study area. URs = Use Reports, CI= Cultural Importance, FCs = Frequency of citation, NUs = Number of Uses, RFCs = Relative Frequency Citation, RIs =Relative Importance, UV = Use Value, CVe Cultural Value.

| Plant name                                            | Family name   | common name     | life form | Part Used      | Mode of preparation                                                                                                  | URs | CI    | FCs | NUs | RFCs  | RIs   | UV    | CVe   |
|-------------------------------------------------------|---------------|-----------------|-----------|----------------|----------------------------------------------------------------------------------------------------------------------|-----|-------|-----|-----|-------|-------|-------|-------|
| <i>Amaranthus graecizans</i> L.                       | Amaranthaceae | Mareero         | Herb      | Leaves         | Laves are boiled and used as vegetable                                                                               | 100 | 0.714 | 100 | 1   | 0.714 | 0.67  | 0.714 | 0.057 |
| <i>Amaranthus spinosus</i> L.                         | Amaranthaceae |                 | Herb      | Leaves         | Leaves are boiled and used as vegetable                                                                              | 57  | 0.407 | 57  | 1   | 0.407 | 0.489 | 0.407 | 0.018 |
| <i>Amaranthus viridis</i> L.                          | Amaranthaceae | Malero          | Herb      | Leaves         | Leaves are boiled and used as vegetable                                                                              | 31  | 0.221 | 31  | 1   | 0.221 | 0.38  | 0.221 | 0.005 |
| <i>Bauhinia variegata</i> L.                          | Fabaceae      | Kachnar         | Tree      | Flower         | Flowers are used as vegetable                                                                                        | 19  | 0.136 | 19  | 1   | 0.136 | 0.33  | 0.136 | 0.002 |
| <i>Boerhaavia diffusa</i>                             | Nyctaginaceae |                 | Herb      | Leaves         |                                                                                                                      | 22  | 0.157 | 22  | 1   | 0.157 | 0.342 | 0.157 | 0.003 |
| <i>Calligonum polygonoides</i> L.                     | Polygonaceae  | Phoog           | shrub     | Flower         | Flowers are used as vegetable, and used in making pickle                                                             | 78  | 0.557 | 78  | 1   | 0.557 | 0.578 | 0.557 | 0.034 |
| <i>citrullus colocynthis</i> (L.) schrad              | Cucurbitaceae | Tooh            | vine      | Fruit          | Fruit used as jam and murba                                                                                          | 55  | 0.393 | 55  | 1   | 0.393 | 0.481 | 0.393 | 0.017 |
| <i>Corchorus tridens</i> L.                           | Malvaceae     | Daatero         | Herb      | Leaves         | Leaves are boiled and used as vegetable                                                                              | 52  | 0.371 | 51  | 1   | 0.371 | 0.468 | 0.371 | 0.015 |
| <i>Calotropis procera</i> (Aiton) R. Br.              | Apocynaceae   | Akk             | Shrub     | Flower         | Flowers are boiled three to four times in hot water, drained the water and used as vegetable                         | 15  | 0.107 | 15  | 1   | 0.107 | 0.313 | 0.107 | 0.001 |
| <i>Capparis decidua</i> (Forssk.) Edgew.              | Capparaceae   | Kirar           | Tree      | Flower , Fruit | Ripened fresh fruits are eaten raw. Unripe fruits are used to make pickle. local people flowers are use as vegetable | 86  | 0.614 | 73  | 2   | 0.521 | 0.807 | 0.614 | 0.071 |
| <i>Capparis spinosa</i> L.                            | Capparaceae   | Kalvari/ Golaro | Shrub     | Fruit          | Fruit are eaten, also used in pickles                                                                                | 34  | 0.243 | 34  | 1   | 0.243 | 0.393 | 0.243 | 0.007 |
| <i>Chenopodium album</i> L.                           | Amaranthaceae | Chill           | Herb      | Leaves         | Leaves are boiled and used as vegetable                                                                              | 119 | 0.85  | 119 | 1   | 0.85  | 0.75  | 0.85  | 0.08  |
| <i>Celosia argentea</i> L.                            | Amaranthaceae | Boobak          | Herb      | Leaves         | Leaves are boiled and used as vegetable                                                                              | 110 | 0.786 | 110 | 1   | 0.786 | 0.712 | 0.786 | 0.069 |
| <i>Cordia dichotoma</i> G. Forst.                     | Boraginaceae  | Gadori          | Tree      | Fruit          | Ripened fruits are eaten                                                                                             | 89  | 0.636 | 89  | 1   | 0.636 | 0.624 | 0.636 | 0.045 |
| <i>Cordia myxa</i> L.                                 | Boraginaceae  | Gadoro          | Tree      | Fruit          | Ripened fruits are eaten                                                                                             | 89  | 0.63  | 89  | 1   | 0.63  | 0.624 | 0.636 | 0.045 |
| <i>Cucumis melo</i> L.                                | Cucurbitaceae | Matero          | Herb      | Fruit          | Ripened fruits are eaten, as well as used as vegetables, pickle are also made from fruits                            | 115 | 0.821 | 106 | 2   | 0.757 | 0.945 | 0.821 | 0.138 |
| <i>Digera muricata</i> (L.) Mart.                     | Amaranthaceae | Lular           | Herb      | Leaves         | Leaves are boiled and used as vegetable                                                                              | 94  | 0.671 | 94  | 1   | 0.671 | 0.645 | 0.671 | 0.05  |
| <i>Lathyrus aphaca</i> L.                             | Fabaceae      | Acho matar      | Herb      | Fruit          | Pods are eaten raw and also used as vegetables                                                                       | 67  | 0.479 | 67  | 1   | 0.479 | 0.532 | 0.479 | 0.025 |
| <i>Launaea procumbens</i> (Roxb.) Ramayya & Rajagopal | Asteraceae    | Bhatar          | Herb      | Leaves         | Leaves are boiled and used as vegetable                                                                              | 53  | 0.379 | 53  | 1   | 0.379 | 0.473 | 0.379 | 0.016 |
| <i>Leptadenia</i>                                     | Apocynaceae   | Khipp           | Shrub     | Pods           | Pods are used as vegetables                                                                                          | 68  | 0.486 | 68  | 1   | 0.486 | 0.536 | 0.486 | 0.026 |

|                                                   |               |             |       |                 |                                                                                     |     |       |     |   |       |       |       |       |
|---------------------------------------------------|---------------|-------------|-------|-----------------|-------------------------------------------------------------------------------------|-----|-------|-----|---|-------|-------|-------|-------|
| <i>pyrotechnica</i> (Forssk.)<br>Decne.           |               |             |       |                 |                                                                                     |     |       |     |   |       |       |       |       |
| <i>Morus alba</i> L.                              | Moraceae      | Acho toot   | Tree  | Fruit           | Ripened fruits are eaten                                                            | 116 | 0.829 | 116 | 1 | 0.829 | 0.737 | 0.829 | 0.076 |
| <i>Morus nigra</i> L.                             | Moraceae      | Jangli toot | Tree  | Fruit           | Ripened fruits are eaten                                                            | 103 | 0.736 | 103 | 1 | 0.736 | 0.683 | 0.736 | 0.06  |
| <i>Mukia maderaspatana</i> (L.) M. Roem.          | Cucurbitaceae | Pat tirr    | Herb  | Fruit           | Ripened fruits are eaten                                                            | 61  | 0.436 | 61  | 1 | 0.436 | 0.506 | 0.436 | 0.021 |
| <i>Nelumbo nucifera</i> Gaertn.                   | Nelumbonaceae | Baeh        | Herb  | seeds and roots | Seeds are eaten raw, and roots are used as a vegetable                              | 111 | 0.793 | 111 | 2 | 0.679 | 0.899 | 0.793 | 0.12  |
| <i>Oxystelma esculentum</i> (L. f.) Sm.           | Apocynaceae   | Wan werhi   | Herb  | Flower          | Flowers are eaten raw.                                                              | 54  | 0.386 | 54  | 1 | 0.386 | 0.477 | 0.386 | 0.017 |
| <i>Oxalis corniculata</i> L.                      | Oxalidaceae   | Khatri      | Herb  | Leaves          | Leaves are eaten raw, leaves also used in vegetable                                 | 99  | 0.707 | 99  | 1 | 0.707 | 0.666 | 0.707 | 0.056 |
| <i>Pithecellobium dulce</i> (Roxb.) Benth.        | Fabaceae      | Jalabi      | Tree  | Fruit           | Ripened fruits are eaten                                                            | 18  | 0.129 | 18  | 1 | 0.129 | 0.326 | 0.129 | 0.002 |
| <i>Physalis angulata</i> L.                       | Solanaceae    | Pat perun   | Herb  | Pods            | Ripened fruits are eaten                                                            | 77  | 0.55  | 77  | 1 | 0.55  | 0.574 | 0.55  | 0.034 |
| <i>Portulaca oleracea</i> L.                      | Portulacaceae | Lonk        | Herb  | Leaves          | Leaves are used as a vegetable                                                      | 117 | 0.836 | 117 | 1 | 0.836 | 0.742 | 0.836 | 0.078 |
| <i>Prosopis cineraria</i> (L.) Druce              | Fabaceae      | Kandi       | Tree  | Fruit           | Unripen pods used as a vegetable, and ripened pods are eaten raw.                   | 88  | 0.629 | 88  | 2 | 0.557 | 0.828 | 0.629 | 0.078 |
| <i>Saccharum spontaneum</i> L.                    | Poaceae       | Sacho boro  | Herb  | Flower          | Unripen flowers are eaten raw                                                       | 40  | 0.286 | 40  | 1 | 0.286 | 0.418 | 0.286 | 0.009 |
| <i>Salvadora persica</i> L.                       | Salvadoraceae | Khabar kara | Tree  | Fruit           | Fresh fruits and seed are eaten raw. Seeds and fruits have antibacterial properties | 106 | 0.757 | 106 | 1 | 0.757 | 0.695 | 0.757 | 0.064 |
| <i>Salvadora oleoides</i> Decne.                  | Salvadoraceae | Khabar      | Tree  | Fruit           | Ripened fruits are eaten                                                            | 93  | 0.664 | 93  | 1 | 0.664 | 0.641 | 0.664 | 0.049 |
| <i>Solanum nigrum</i> L.                          | Solanaceae    | Kanwal peru | Herb  | Fruit           | Black colored fresh fruits are eaten raw by children and adults.                    | 85  | 0.607 | 85  | 1 | 0.607 | 0.607 | 0.607 | 0.041 |
| <i>Vicia sativa</i> L.                            | Fabaceae      | Mattri      | Herb  | Pods            | Pods are used as vegetable, and also eaten raw                                      | 55  | 0.393 | 55  | 1 | 0.393 | 0.481 | 0.393 | 0.017 |
| <i>Withania somnifera</i> (L.) Dunal              | Solanaceae    | Perun lal   | shrub | Fruit           | Ripened fruits are eaten by kids as well as adults and older peoples                | 82  | 0.586 | 82  | 1 | 0.586 | 0.595 | 0.586 | 0.038 |
| <i>Zaleya pentandra</i> (L.) C. Jeffrey           | Aizoaceae     | Waho        | Herb  | Leaves          | Leaves are used as a vegetable                                                      | 40  | 0.286 | 40  | 1 | 0.286 | 0.418 | 0.286 | 0.009 |
| <i>Ziziphus nummularia</i> (Burm. f.) Wight & Arn | Rhamnaceae    | Jangori ber | Tree  | Fruit           | Ripened fruits are eaten by kids as well as adults and older peoples                | 91  | 0.65  | 91  | 1 | 0.65  | 0.632 | 0.65  | 0.047 |

Table 3: Quantitative indices of documented wild edible plants (WEPs) as medicine: including taxonomy, life form, parts used and preparation modes in the study area. URs= Use Reports, CI= Cultural Importance, FCs = Frequency of citation, NUs = Number of Uses, RFCs = Relative Frequency Citation, RIs =Relative Importance, UV = Use Value, CVe Cultural Value.

| Plant name                               | Family name   | common name     | life form       | part used     | Diseases treated/ Medicinal value                                                        | URs   | CI   | FCs    | NUs  | RF Cs | RIs  | UV   | CVe  |
|------------------------------------------|---------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------|-------|------|--------|------|-------|------|------|------|
| <i>Amaranthus graecizans</i> L.          | Amaranthaceae | Mareero         | Herb            | Leaves        | Respiratory problem improve eyesight, liver tonic                                        | 26.00 | 0.19 | 26.00  | 3.00 | 0.19  | 0.34 | 0.19 | 0.01 |
| <i>Amaranthus spinosus</i> L.            | Amaranthaceae |                 | Herb            | Leaves        | Leaves are used for respiratory problems                                                 | 15.00 | 0.11 | 15.00  | 2.00 | 0.11  | 0.21 | 0.11 | 0.00 |
| <i>Amaranthus viridis</i> L.             | Amaranthaceae | Malero          | Herb            | Leaves        | Constipation, eyesight, kidney pain, and ear pain                                        | 28.00 | 0.20 | 28.00  | 6.00 | 0.20  | 0.56 | 0.20 | 0.02 |
| <i>Bauhinia variegata</i> L.             | Fabaceae      | Kachnar         | Tree            | Flower        | Diabetes, malaria                                                                        | 15.00 | 0.11 | 15.00  | 2.00 | 0.11  | 0.21 | 0.11 | 0.00 |
| <i>Boerhaavia diffusa</i>                | Nyctaginaceae |                 | Herb            |               |                                                                                          | 0.00  | 0.00 | 0.00   | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 |
| <i>Calligonum polygonoides</i> L.        | Polygonaceae  | Phoog           | shrub           | Whole plant   | Used as cooling agent from heat, stomach                                                 | 98.00 | 0.70 | 92.00  | 3.00 | 0.66  | 0.65 | 0.70 | 0.11 |
| <i>Citrullus colocynthis</i> (L.) schrad | Cucurbitaceae | Tooh            | Herbaceous vine | Roots, Seeds  | Tooth pain, seeds are used for intestinal worms                                          | 88.00 | 0.63 | 88.00  | 2.00 | 0.63  | 0.56 | 0.63 | 0.06 |
| <i>Corchorus tridens</i> L.              | Malvaceae     | Daatero         | Herb            | Leaves        | Leaves use as protector on open wound, and wound cure speedy                             | 38.00 | 0.27 | 38.00  | 1.00 | 0.27  | 0.25 | 0.27 | 0.01 |
| <i>Calotropis procera</i> (Aiton) R. Br. | Apocynaceae   | Akk             | Shrub           | Leaves        | Leaves used for stop the cut bleeding , latex used for wound healing, cough              | 110.0 | 0.79 | 105.0  | 3.00 | 0.75  | 0.71 | 0.79 | 0.14 |
| <i>Capparis decidua</i> (Forssk.) Edgew. | Capparaceae   | Kirar           | Tree            | Whole plant   | Coal of plant use for broken bones, cough, asthma, and stomach ache                      | 100.0 | 0.71 | 93.00  | 3.00 | 0.66  | 0.66 | 0.71 | 0.11 |
| <i>Capparis spinosa</i> L.               | Capparaceae   | Kalvari/ Golaro | Shrub           | Roots, Leaves | Roots are used as diuretic, leaves used for kidney pain, also paste used for joint pain. | 21.00 | 0.15 | 21.00  | 2.00 | 0.15  | 0.24 | 0.15 | 0.00 |
| <i>Chenopodium album</i> L.              | Amaranthaceae | Chill           | Herb            | Leaves        | Stomachache, constipation,                                                               | 104.0 | 0.74 | 102.00 | 2.00 | 0.73  | 0.63 | 0.74 | 0.08 |
| <i>Celosia argentea</i> L.               | Amaranthaceae | Boobak          | Herb            | Leaves, Seeds | Leaves are used for treating jaundice and ulcers, seeds are                              | 52.00 | 0.37 | 52.00  | 3.00 | 0.37  | 0.46 | 0.37 | 0.03 |

|                                                             |               |               |       |                  |                                                                                                                                                                                                   |       |      |       |      |      |      |      |      |
|-------------------------------------------------------------|---------------|---------------|-------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|-------|------|------|------|------|------|
|                                                             |               |               |       |                  | grind and used with water for diabetes mellitus                                                                                                                                                   |       |      |       |      |      |      |      |      |
| <i>Cordia dichotoma</i><br>G. Forst.                        | Boraginaceae  | Gadori        | Tree  | Fruit,<br>Leaves | Cough and chest inflammation, leaves are used to treat joint pain, fever, and headache , fruit is used for treating asthma, intestinal worms                                                      | 69.00 | 0.49 | 63.00 | 5.00 | 0.45 | 0.66 | 0.49 | 0.09 |
| <i>Cordia myxa</i> L.                                       | Boraginaceae  | Gadoro        | Tree  | Fruit            | Used for stomach cleansing, and also used for constipation, pulp of fruit used for treating cough and chest congestion, intestinal worms                                                          | 56.00 | 0.40 | 56.00 | 7.00 | 0.40 | 0.77 | 0.40 | 0.09 |
| <i>Cucumis melo</i> L.                                      | Cucurbitaceae | Matero        | Herb  | Fruit            | Kidney pain ripen fruit is used for jaundice, diabetes, cough, digestive disorder and bronchitis, fruit is used for heavy menstrual, fruit regulate bowl movement and stimulate digestive system. | 89.00 | 0.57 | 80.00 | 5.00 | 0.57 | 0.74 | 0.57 | 0.13 |
| <i>Digera muricata</i><br>(L.) Mart.                        | Amaranthaceae | Lular         | Herb  | Leaves,<br>Seeds | Stomachache, constipation, its leaves and seeds are used for urination, or urine disorders, grinded leaves are used with water to remove kidney stone. Leaves are also used for diabetes          | 60.00 | 0.43 | 59.00 | 4.00 | 0.42 | 0.57 | 0.43 | 0.06 |
| <i>Lathyrus aphaca</i> L.                                   | Fabaceae      | Acho<br>matar | Herb  |                  |                                                                                                                                                                                                   | 0.00  | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| <i>Launaea procumbens</i><br>(Roxb.) Ramayya<br>& Rajagopal | Asteraceae    | Bhatar        | Herb  | Leaves           | Leaves are grind and make paste apply on joint pain, and paste of grinded leaves use to cure wounds                                                                                               | 45.00 | 0.32 | 45.00 | 2.00 | 0.32 | 0.36 | 0.32 | 0.02 |
| <i>Leptadenia pyrotechnica</i><br>(Forssk.) Decne.          | Apocynaceae   | Khipp         | Shrub | Leaves<br>latex  | Latex is used for treating old wounds, also for flu and cough, also treating ringworm                                                                                                             | 73.00 | 0.52 | 72.00 | 2.00 | 0.51 | 0.49 | 0.52 | 0.04 |
| <i>Morus alba</i> L.                                        | Moraceae      | Acho<br>toot  | Tree  | Fruit            | Ripened fruit use for sore throat, and chest congestion,                                                                                                                                          | 48.00 | 0.34 | 47.00 | 3.00 | 0.34 | 0.44 | 0.34 | 0.03 |

|                                            |               |             |      |                     |                                                                                                                                                                                                                                                                                  |       |      |       |      |      |      |      |      |
|--------------------------------------------|---------------|-------------|------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|-------|------|------|------|------|------|
| <i>Morus nigra</i> L.                      | Moraceae      | Jangli toot | Tree | Fruit, Leaves, root | leaves are used stomach upset, latex is used against bug bite and snake bites, fruit used ant aging and diabetes<br>Leaves are used stomach upset latex is used against bug bite and snake bites fruit is used for hypertension and anemia, root bark used for cough and asthma. | 59.00 | 0.36 | 50.00 | 5.00 | 0.36 | 0.60 | 0.36 | 0.05 |
| <i>Mukia maderaspatana</i> (L.) M. Roem.   | Cucurbitaceae | Pat tirr    | Herb | Fruit, Leaves       | Anti-inflammatory, anti-arthritic, antihypertensive, and anti-diabetic fruit is used for cough, dental pain                                                                                                                                                                      | 43.00 | 0.31 | 42.00 | 4.00 | 0.30 | 0.49 | 0.31 | 0.03 |
| <i>Nelumbo nucifera</i> Gaertn.            | Nelumbonaceae | Baeh        | Herb | Leaves              | Anti-inflammatory, antipyretic, hemostatic, and sedative agent leaves are used in diarrhea and high grade fever                                                                                                                                                                  | 23.00 | 0.16 | 23.00 | 3.00 | 0.16 | 0.32 | 0.16 | 0.01 |
| <i>Oxystelma esculentum</i> (L. f.) Sm.    | Apocynaceae   | Wan werhi   | Herb | Whole plant latex   | Treating ulcer and worms in kids                                                                                                                                                                                                                                                 |       | 0.39 | 53.00 | 2.00 | 0.38 | 0.40 | 0.39 | 0.02 |
| <i>Oxalis corniculata</i> L.               | Oxalidaceae   | Khatri      | Herb | Leaves              | leaves use to improve digestion, piles, gastritis                                                                                                                                                                                                                                | 68.00 | 0.49 | 68.00 | 2.00 | 0.49 | 0.47 | 0.49 | 0.04 |
| <i>Pithecellobium dulce</i> (Roxb.) Benth. | Fabaceae      | Jalabi      | Tree | 54.00               | Intestinal disorders, tooth and ear ache,                                                                                                                                                                                                                                        | 10.00 | 0.07 | 10.00 | 3.00 | 0.07 | 0.26 | 0.07 | 0.00 |
| <i>Physalis angulata</i> L.                | Solanaceae    | Pat perun   | Herb | Shoots, fruit       | Use for bloating, fruits are used for asthma, blood purifier                                                                                                                                                                                                                     | 38.00 | 0.27 | 38.00 | 3.00 | 0.27 | 0.40 | 0.27 | 0.02 |
| <i>Portulaca oleracea</i> L.               | Portulacaceae | Lonk        | Herb | Leaves              | Hypertension, constipation, Diabetes kidney diseases, muscle relaxant, and anti-inflammatory , liver disorder                                                                                                                                                                    | 76.00 | 0.54 | 76.00 | 6.00 | 0.54 | 0.79 | 0.54 | 0.14 |
| <i>Prosopis cineraria</i> (L.) Druce       | Fabaceae      | Kandi       | Tree | Leaves flower, bark | paste of grinded leaves used for skin disease, as a blood purifier , bark is used as anti-inflammatory, ant rheumatic,                                                                                                                                                           | 52.00 | 0.37 | 52.00 | 4.00 | 0.37 | 0.53 | 0.37 | 0.04 |

|                                                   |               |                          |                 |               |                                                                                                                                                                                                                                                                                               |       |      |       |      |      |      |      |      |
|---------------------------------------------------|---------------|--------------------------|-----------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|-------|------|------|------|------|------|
| <i>Saccharum spontaneum</i> L.                    | Poaceae       | Sachoboro                | Herb            | Roots         | tonic<br>Treat respiratory problems, constipation and piles. Ash of plant root used for vomiting<br>Leave are used for typhoid fever, dental care and bleeding gums, seeds grind and used for constipation fruit digestive problem also stop the flu, seeds are also used against snake bite. | 47.00 | 0.34 | 47.00 | 4.00 | 0.34 | 0.51 | 0.34 | 0.04 |
| <i>Salvadora persica</i> L.                       | Salvadoraceae | Khabar kara              | Tree            | Leaves        | Digestive problem and also use to stop the flu. Seeds are grind and taken with water for kidney pain, also treating pneumonia                                                                                                                                                                 | 87.00 | 0.62 | 83.00 | 5.00 | 0.59 | 0.75 | 0.62 | 0.14 |
| <i>Salvadora oleoides</i> Decne.                  | Salvadoraceae | Khabar acha              | Tree            | Fruit         | Treating Asthma, dispel phlegm, cough and indigestion, appetite stimulant                                                                                                                                                                                                                     | 56.00 | 0.40 | 55.00 | 4.00 | 0.39 | 0.55 | 0.40 | 0.05 |
| <i>Solanum nigrum</i> L.                          | Solanaceae    | Kanwal peru              | Herb            | Fruit         |                                                                                                                                                                                                                                                                                               | 61.00 | 0.44 | 59.00 | 3.00 | 0.42 | 0.50 | 0.44 | 0.04 |
| <i>Vicia sativa</i> L.                            | Fabaceae      | Mattri                   | Herb            |               |                                                                                                                                                                                                                                                                                               | 0.00  | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| <i>Withania somnifera</i> (L.) Dunal              | Solanaceae    | Perunlal/<br>Ashwagandha | evergreen shrub | Fruit, roots  | Asthma, diabetes, hypertension, stress, arthritic diseases, and cancer. Roots are used for brain power.                                                                                                                                                                                       | 72.00 | 0.51 | 72.00 | 4.00 | 0.51 | 0.63 | 0.51 | 0.08 |
| <i>Zaleya pentandra</i> (L.) C. Jeffrey           | Aizoaceae     | Waho                     | Herb            | Leaves        | Treatment of stomach diseases, respiratory tract infection and cough.                                                                                                                                                                                                                         | 25.00 | 0.18 | 25.00 | 2.00 | 0.18 | 0.26 | 0.18 | 0.01 |
| <i>Ziziphus nummularia</i> (Burm. f.) Wight & Arn | Rhamnaceae    | Jangoriber               | Tree            | Leaves, Seeds | Leaves used for wound healing, Seeds are grind and powder is used for constipation                                                                                                                                                                                                            | 34.00 | 0.24 | 34.00 | 4.00 | 0.24 | 0.45 | 0.24 | 0.02 |

Fruits ranked as the second most popular component, representing 26% of overall use. Seeds accounted for 10% of plant utilization, while flowers, the entire plant, and roots were used at rates of 9%, 5%, and 5%, respectively. The highest Use Reports (URs) were associated with *Calotropis procera* (UR = 110), *Chenopodium album* (UR = 104), *Capparis decidua* (UR = 100), and *Calligonum polygonoides* (UR = 98), highlighting their significant role in traditional healthcare practices (Table 2). These species also exhibited high Citation Index (CI) values, ranging from 0.70 to 0.79, and Use Values (UV), indicating their medicinal importance and widespread recognition.

## DISCUSSION

The study of wild edible plants (WEPs) in the identified regions demonstrates substantial taxonomic diversity, with 38 species documented, predominantly herbs. This finding is crucial for enhancing food security and sustaining cultural practices, as WEPs offer nutritional benefits, economic support, and medicinal resources (Thakur et al., 2020; Nakhuru et al., 2021). Notably, herbs accounted for 58% of the documented species, aligning with existing studies that emphasize the prevalence of herbaceous edible plants and the widespread consumption of fruits and leafy vegetables across various cultures (Nakhuru et al., 2021).

The families Amaranthaceae and Fabaceae were notably well-represented, mirroring findings from studies in other regions that illustrate trends in plant diversity (Thakur et al., 2020). Hefferon et al. (2015) documented significant diversity among WEPs, highlighting their nutritional profiles, which include proteins and carbohydrates. This nutritional value accentuates the role of WEPs in dietary practices (Thakur et al., 2020; Liao et al., 2018). Moreover, WEPs serve various purposes beyond nourishment, including traditional medicines that are integral to many indigenous practices (Teklehaymanot & Giday, 2010; Thakur et al., 2020). However, the sustainability of WEPs is threatened by habitat destruction, land-use changes, and over-harvesting (Liao et al., 2018). The erosion of traditional knowledge, exacerbated by urban migration and cultural shifts, poses a risk to the utilization of WEPs (Jhamta et al., 2019). Therefore, it is imperative to integrate WEPs into sustainable development strategies that promote conservation while acknowledging their cultural significance (Nakhuru et al., 2021).

### WEPs as food

The incorporation of Wild Edible Plants (WEPs) into daily diets highlights the essential role that various plant species play in both nutritional and cultural contexts. This study has

identified fruits as the most consumed plant part, representing a significant proportion of all reported edible parts. Noteworthy species such as *Cucumis melo* and *Morus alba* demonstrate high utilization in traditional diets, underscoring their importance across diverse cultures in terms of nutritional value and cultural significance (Duguma, 2020; Çelik, 2023). Fruits from species like *Morus alba* and *Cucumis melo* are valued not only for their immediate nutritional benefits but also for their integration into local culinary practices, which range from fresh consumption to preserved forms such as jams and pickles. This trend is supported by ethnobotanical studies that recognize fruit-bearing plants for their dietary versatility and adaptability to regional climates and consumption habits (Duguma, 2020; Çelik, 2023). Additionally, the significant importance of species such as *Capparis decidua* and *Nelumbo nucifera* underscores their multifunctional benefits, which encompass both culinary and potential medicinal applications, consistent with findings from other regions (Nakhuru et al., 2021; Debnath et al., 2021).

Leaves, accounting for a notable percentage of utilization, represent the second most commonly consumed component, particularly in the form of leafy vegetables such as *Chenopodium album* and *Portulaca oleracea*. The prominence of leafy greens as dietary nutrients, often prepared through cooking, is well documented in the literature (Hahn et al., 2018; Tharmabalan, 2023). The high utilization value of these species suggests significant incorporation of leafy vegetables into global diets, affirming their importance as staples in both economic and nutritional contexts (Cheng et al., 2022). Traditional preparation methods, primarily boiling, reflect practices designed to enhance digestibility and nutrient availability (Xia et al., 2021).

The incorporation of flowers and seeds into diets further illustrates the diverse roles that plants play beyond their primary functions as fruits and leaves. The use of flowers from species such as *Bauhinia variegata* and *Capparis decidua* as vegetables highlights the significance of culinary creativity and dietary diversity (Ceccanti et al., 2018; Kohila & Kensa, 2019). This relevance is amplified as global dietary trends increasingly shift towards more plant-based sources, emphasizing the nutritional value and potential health benefits of edible plants (Zhang et al., 2020; Fongnzossie et al., 2020).

Contemporary research has made substantial advancements in the nutritional evaluation of wild edible plants (WEPs), particularly regarding their vitamin C content and antioxidant properties, which underscore their health

benefits and potential roles in chronic disease prevention (Nakhuru et al., 2021; Pereira et al., 2020). The high antioxidant capacities observed in certain WEPs align with findings related to compounds present in raw edible plant parts that may provide protective effects against various diseases (Pereira et al., 2020; Debnath & Manna, 2019). It is essential to recognize that integrating various plant parts into daily diets not only meets nutritional requirements but also supports cultural practices that sustain biodiversity and enhance food security. This interdependence between cultural heritage, nutritional health, and sustainable practices is emphasized in the literature, which advocates for the conservation and documentation of traditional knowledge to ensure future access to these valuable plant resources (Duguma, 2020; Cheng et al., 2022).

#### **WEPs as medicine**

Wild edible plants (WEPs) play a vital role in food security and traditional medicinal practices, particularly in regions such as Pakistan. Over 70% of these species are consumed in cooked form, underscoring their significance in nutrition and medicine (Hussain et al., 2023). Research indicates that a diverse array of plant species fulfills nutritional requirements and supports traditional healthcare practices. Many wild edible plants are valued for their medicinal properties, demonstrating a profound understanding of local flora, where dietary and medicinal applications are often interconnected (Haq et al., 2021; Doni & Gajurel, 2020). This dual functionality of WEPs emphasizes their importance in sustaining rural diets and economies while also providing healthcare solutions (Hussain et al., 2023; Rahim et al., 2023).

The utilization of diverse plant species for treating various health issues aligns with a long-standing tradition of ethnomedicine, where cultural and social factors significantly influence the selection and application of these plants. The results indicate that respiratory disorders are the most commonly cited health concern, followed by skin infections and arthritis. This prevalence of respiratory ailments correlates with findings from other regions, reflecting a universal reliance on plant-based remedies for respiratory issues across different cultures, as observed in ethnobotanical studies in Southern Ethiopia and Sudan (Tefera & Kim, 2019). The wide-ranging therapeutic applications of plant species are exemplified by the prominent use of *Salvadora persica* for various ailments, highlighting the cultural significance and versatility of this plant. The anti-inflammatory and wound-healing properties associated with species such as *Launaea procumbens* and *Leptadenia pyrotechnica* support similar findings in

ethnobotanical research, which emphasize the prevalent use of comparable plant parts for remedial purposes across different geographical regions (Loganathan & Selvam, 2018; Rathi & Rathi, 2020). Furthermore, the multifunctional medicinal value attributed to species like *Calotropis procera*, used for both wound healing and respiratory ailments, reinforces the observation that many plants are favored for their broad-spectrum applications in traditional medicine (Utaminingrum et al., 2022).

Some plant species are cosmopolitan, exhibiting a broad distribution across the globe, and have been utilized for various ailments in different communities. For instance, *Calotropis procera*, identified in our results for its applications in wound healing and respiratory ailments, is documented in the literature as being widely employed for similar medicinal purposes in various regions, thereby affirming its significance in ethnomedicine (Assen et al., 2021; Osman et al., 2020). Similarly, *Chenopodium album*, recognized for its efficacy in gastrointestinal disorders, aligns with findings from other studies, confirming its role in addressing analogous health issues (Megersa et al., 2013; Lulekal et al., 2008). Furthermore, the considerable number of species reported to treat respiratory and dermatological conditions in the present study, such as *Ziziphus nummularia* and *Salvadora persica*, is supported by ethnobotanical research in Ethiopia and Morocco, suggesting that these plants possess universal applications for ailments related to these systems (Abebe & Teferi, 2021; Appiah et al., 2018). These findings reflect a broader trend in traditional medicine, where common ailments such as respiratory infections and skin disorders are frequently addressed with a limited yet diverse array of plant species. Such consistency indicates a shared understanding and knowledge base among different cultures regarding the efficacy of specific plants in treating particular ailments.

The predominance of leaves in herbal treatments, as indicated by the data, aligns with global studies where leaves are similarly regarded as the primary plant parts used for medicinal purposes (Tesfaye et al., 2020). This preference for leaves suggests a widespread understanding of their phytochemical constituents, which exhibit various therapeutic effects, a notion supported by ethnobotanical surveys conducted in regions such as India and Tunisia (Gobana & Jilo, 2022). Fruits, roots, and other plant parts also play essential roles, with fruits alone accounting for 26% of documented applications, highlighting a comprehensive approach to utilizing plant parts in traditional healing practices.

Moreover, the high Use Reports (URs) attributed to species

such as *Calotropis procera* and *Chenopodium album* exemplify their significant roles in local healthcare systems. These findings are corroborated by extensive data indicating that certain plants not only have high citation values but also represent critical components of traditional knowledge systems, where they are actively employed by communities to address prevalent health issues (Hardiana et al., 2019). The identification of these key species aids in the preservation of indigenous knowledge and underscores the imperative to protect traditional practices amid the encroachment of modern medicine (Eruaga et al., 2024).

## CONCLUSION

Wild Edible Plants (WEPs) play at the intersection of nutrition, traditional medicine, and cultural heritage. The documented taxonomic diversity, predominantly consisting of herbaceous species, reinforces their ecological and functional importance in rural livelihoods. Fruits and leaves are identified as the most frequently consumed parts, reflecting their nutritional richness and integration into local diets. Additionally, considerable number of species also serve medicinal roles, particularly in the treatment of respiratory, skin, and gastrointestinal ailments. The extensive usage reports and cross-cultural validation of specific species such as *Calotropis procera*, *Chenopodium album*, and *Salvadora persica* further emphasize their importance in both food systems and healthcare practices. However, this biocultural resource faces increasing threats from environmental degradation and the loss of indigenous knowledge. Therefore, the preservation of WEPs through sustainable harvesting practices, conservation policies, and the documentation of traditional knowledge is essential. Integrating WEPs into broader strategies for food security, public health, and biodiversity conservation will not only safeguard these plant species but also enhance the resilience and self-sufficiency of local communities in addressing contemporary challenges.

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