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RESEARCH ARTICLE

Ethnomedicinal plants used for treating dyspareunia in southern Pakistan

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Abstract

The current research is the first conducted to record the native remedial flora utilised by the occupants of southern areas of Pakistan for the curing of dyspareunia (painful sexual intercourse). For the contemporary study, an ethnomedicinal exploration of 3 chief rustic locations of southern regions (Thar Desert, Bahawalpur and Cholistan Desert) of Pakistan was conducted during January 2024 to February 2025. All through the current research, 20 curative flora belonging to 16 families were recognised. Lamiaceae was the chief family with 3 species. Likewise, the major life form was herbs (11 species). Similarly, the technique of formulation was decoction (11 species). The greatest value of informant consensus factor (ICF) was about 0.97 which enabled informants to attain orgasm. The maximum consensus index (CI) value was gained for *Rosa gallica* L. (98.4 %). Correspondingly, the maximum cultural significance index (CSI) was 52.4 for *Nigella sativa* L. Likewise, the uppermost value of relative frequency of citation for *Tribulus terrestris* L. was 0.56. The most used medicinal plants in the study area with 100 % FL were *Cocos nucifera* L., *Cousinia stocksii* C.Winkl., etc which were used to treat muscular pain along with contractions in the pelvic area, and to relieve aching feelings in non-penetrative sexual activity respectively. The current study recorded that 3 chief distant regions of southern areas of Pakistan have significant diversity of curative plants, for curing of dyspareunia (painful sexual intercourse). Therefore, the present research provides a base for further pharmacological and phytochemical investigation for the assessment of their bioactive compounds that might leads to innovative drug discovery.

Keywords: dyspareunia (painful sexual intercourse); ethnobotany; medicinal plants; phytochemistry; rural populations

Introduction

Therapeutic plants contribute a therapeutic role within fundamental health because of their inferior price, fewer complications as well as lesser toxicity as compared to contemporary biomedicines (1). Meant for primary healthcare needs, regarding 80 % of the native populations rely on medicinal plants (2). Studies estimate that above 50000 flowering taxa are employed for medicinal intentions throughout the world. Pakistan contains different plants including approximately 6000 flowering plants as well as regarding 600 plant species that might be recognised with medicinal value (3). The records of ethno-medicinal knowledge contain extensive function within enlightening traditional information, that assists the detection of contemporary biomedicines (4). The plants have been a significant source of traditional medicines employed against diverse diseases. The rural communities which possess folk information from centuries have shifted this traditional knowledge to all their generations because they have been totally reliant on plant sources for a diversity of functions for example foodstuff, silage, as well as drugs (5).

There have been almost 5700 flora amongst that numerous have been employed by the native inhabitants of Pakistan to heal diverse ailments (6). Pakistan has a huge multiplicity of therapeutic flora within diverse environmental regions. The country has more than 600 wild plant species which have been therapeutically precious. Within Pakistan, the majority of the inhabitants have been reliant on plant-based medicines which are distant from a few large urban areas (7). The traditional knowledge of the therapeutic flora as well as their applications by native practitioners have merely been helpful for the protection of wealthy assets along with ecological diversity. However also within the progress of the public health in addition to medicines for the community (8).

Dyspareunia is described as persistent otherwise constant genital discomfort in connection with sexual intimacy and can happen in males as well as in females. This is mainly frequent within females as well as this can influence her health, self-reliance, intimate connections, eminence of existence, as well as struggle efficiency. This can be a sexual disorder otherwise part of a multifaceted throbbing discomfort (9). Sex discomfort is a frequent dilemma. Consistent with the outcomes of research on females age groups 40–80 years chosen from 29 states, the pervalence of sex discomfort is almost 21 % amongst Middle Eastern females (10). External dyspareunia is discomfort limited to the vulva or else vaginal opening, as well as deep dyspareunia is a painful condition observed in the vagina or pelvis, that has been frequently connected

with deep entrance (11). Furthermore, females with endometriosis might experience sex troubles, mostly because of agonising painful intercourse (12). The endometriosis influences approximately 8–10 % of females of sexually active times (176 million females across the global) as well as has been connected with a diversity of indicators for example infertility along with diverse types of discomforts (for example, cramping during menstrual cycle (dysmenorrhea), persistent pelvic cramps, painful urination (dysuria) as well as discomfort during sexual intimacy (dyspareunia) (13). Therefore, this study aims to provide the ethnobotanical knowledge of medicinal plants used against dyspareunia in the southern Pakistan.

Materials and Methods

Research region

The research was conducted in 3 chief remote locations of southern areas (Thar Desert, Bahawalpur and Cholistan Desert) of Pakistan. The Pakistan attributes different range of raised landforms, snowstorm peaks, watery huge plains, shores, glaciers in addition to blazing wastelands (14). The Thar Desert is part of the superior Indian barren region, ranging from the northeast of India as well as inside the western division of additional regions of the Sindh province (15). The Cholistan pasture is established inside the southern division of the topographical region province Punjab of the Pakistan and has a vicinity of 26000 km^2. Physically the research region is situated between 27° 42´ as well as 29° 45´ N latitude (16). Bahawalpur is situated inside the southeastern part of Punjab province. This is the entrance position to the neighbouring Lal Suhanra National Park as well as is located on the border of the Cholistan Desert. The boiling barren region atmosphere, among remarkably elevated warmth along with small rainfall, prevails in South Punjab, Pakistan. The subsequent location, Hasilpur has been located on the northern border of the Cholistan barren region (investigation of the undomesticated medicinal flora employed for essential health concern by means of native inhabitants of Bahawalpur along with adjoining areas, Pakistan (17)). The diagram of the research area is shown in Fig. 1 (18, 19).

Data compilation

Information gathering (Field trips along with therapeutic flora compilation).

The ethnogynecological tours were carried out within the 3 chief remote locations of southern areas (Thar Desert, Bahawalpur

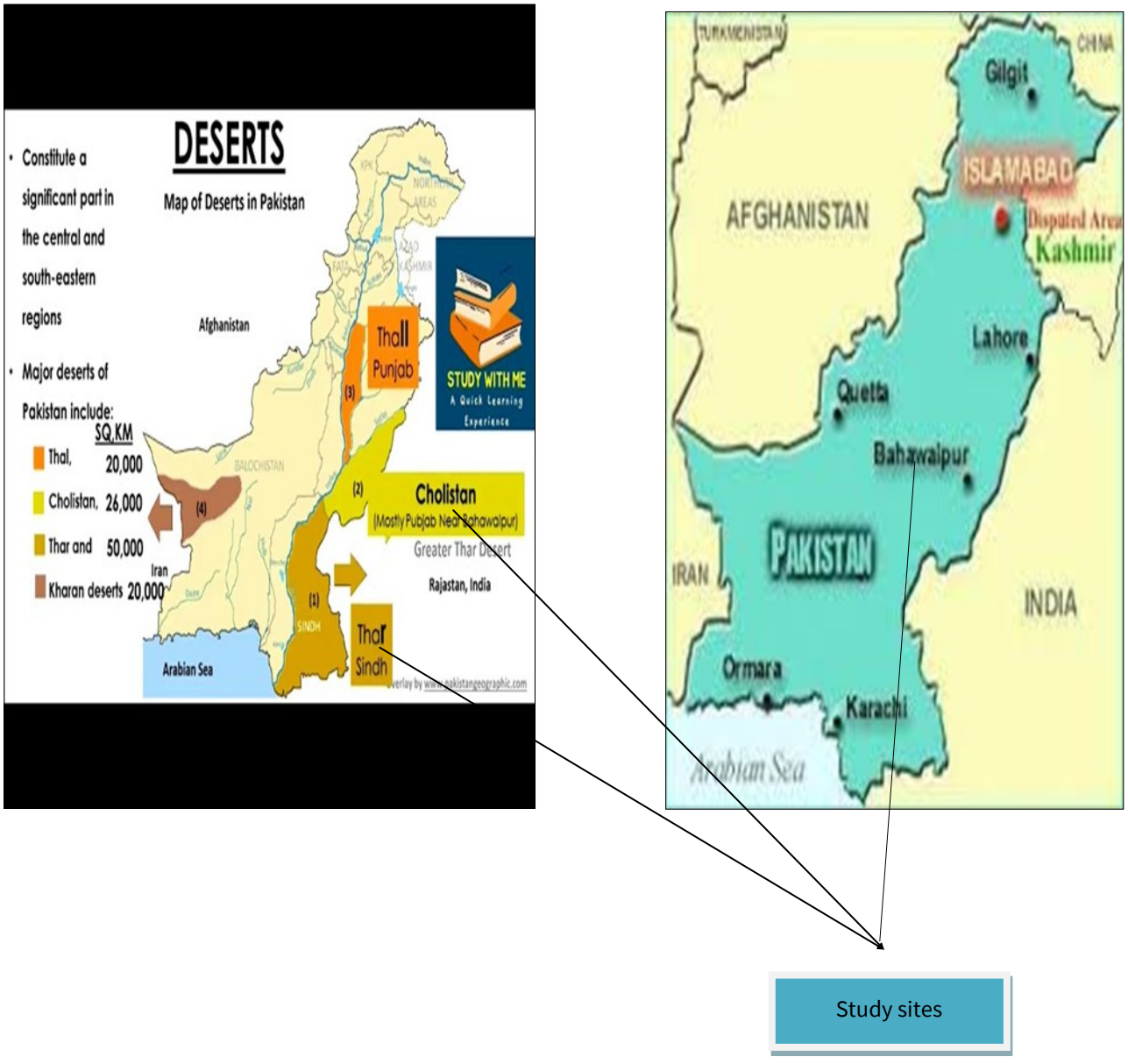

Fig. 1. Map of study area (18, 19).

and Cholistan Desert) of Pakistan from January 2024 to February 2025. These were such regions which were divested of basic health facilities through creating a total of 15 systematic field visits to the examined region all through 3 diverse occasions of the entire year. The curative plants were collected the entire throughout rural areas tours. The plants were labelled and pressed with plant presser. The photographs of gathered plants were captured with the help of a camera (20).

Inquiry along with discussion

The partially structured questionnaire was utilised to assemble data regarding traditional information from the native informants alongside flora specialists of the investigated region (20). The conformity was liable to old-age native together with plant experts. The gathered plant species in addition to photographs were additional employed throughout the discussions to reconsider the knowledge throughout additional informers too. The total of 150 native informers were interviewed and completed conversation, linked with miscellaneous age groups (18 years to 50 years), of those whom 60 were men and 90 were women beside female herbalists that practice flora healings and plant-based treatment specialists. The details of the study, local name, scientific name, traditional applications, employed fractions, process of formulation and procedure of utilisation (for example, oral, pill, decoction, infusion, with powder, etc.) were recorded with aid of proposals of the indigenous inhabitant of the study area (21). The entire of partially structured discussions included knowledge regarding sex type in addition to age variations with region of proficiency, evidence and information regarding plants reliant directions for dyspareunia (painful sexual intercourse) were documented (21).

Plant detection and preservation

The plant taxonomist Prof. Dr. Rahmatullah Qureshi, recognised the plant specimens and authenticated them with the help of accessible literature. Such specimens had been compared with the recognised specimen within the Herbarium of Pakistan, Islamabad (ISL), Quaid-e-Azam University, Islamabad. The photographs of healing plants had been additionally captured with a camera throughout the compilation. The assembled flora specimens had been dried out, hard-pressed as well as widened on herbarium sheets (22). A voucher numeral was selected and the voucher specimens had been submitted to the herbarium of the Department of Chemical and Life Sciences, Qurtuba University of Science and Information Technology, Peshawar, Pakistan, for prospect proposals (23).

Quantitative data analysis

The native information was arithmetically scrutinised by means of diverse quantitative indices, for example informant consensus factor (ICF), consensus index (CI %), relative frequency of citation (RFC), use value (UV), fidelity level (FL %) as well as CSI (23).

Informant consensus factor (ICF)

The ICF was employed to recognised the informers harmony on the identified healing for various ailments gathering or else disorder kind (24). The ICF value varies from 0–1. As a result, the subsequent rule had been utilised as follows (25):

$$\mathbf{ICF=Nur–Nt/Nur-1,}$$

whereas Nur is the number of valuable information within several disease types and *Nt* is the number or else amount of plant species utilised (25).

Cultural significance index (CSI)

The CSI computes the significance of the plant species through the investigator-verified prepossession collection of varied features. The cultural anthropology, explanatory process of the CSI method requires substantial knowledge together with consideration of a civilising congregation for significant outcomes (26). The CSI is calculated as:

$$\mathbf{CSI} = \sum (\mathbf{i} \times \mathbf{e} \times \mathbf{c}) \times \mathbf{CF}$$

[where i = species management, e = use preference, c = use frequency, CF = correction factor [the numeral of informer quotations for a documented species divided by the informer numbers of authentications for the most significantly cited species]. However, such techniques express researcher prejudice because amounts of significance as well as kinds are instituted entirely by researcher evaluation. Furthermore, in this supplementary process, informer's responses are not separately documented, as a result eliminating the prospect for assessment of informers uncertainty (26).

Consensus index (CI %)

The percentage of inhabitant informers regarding their native knowledge of healing plants used to treat dyspareunia (painful sexual intercourse) was calculated via CI %. The CI was calculated using the following formula:

$$\mathbf{CI = n/N \times 100}$$

where "n" is the number of informants who quote the curative plant species alongside "N" is the total number of informers for the species throughout the entire study (27).

Relative frequency citation (RFC)

The RFC is examined to evaluate the occurrence of individual meticulous plant species utilised for the healing of specific illness or else disease groups. It is computed through the subsequent principle as shown beneath:

$$\mathbf{RFC = FC/N}$$

whereas FC is the number of informers representing specific practice of a species together with "N" is the entire number of informers (28).

Use value (UV)

The UV is a statistical method that authenticates basic significance concerning curing utilisation of plant species and is calculated with assist of specific principle:

$$\mathbf{UVi = \Sigma Ui/ni}$$

whereas UV_i states the UV of the species, U_i is the number of purposes documented for each species with n_i being the number of informants who cited that species (29).

Fidelity level (FL %)

The FL is employed to verify the specific utilisation of plant species for a meticulous intention. This is computed by means of the subsequent formula assumed via (30, 31).

$$\mathbf{FL\% = nr/n \times 100}$$

wherever nr = numeral of chief reporters, as well as n = the entire numeral of native residents.

Results

Demography and knowledge variation

The entire 150 informers were interviewed to gather remedial plant information on the basis of their sexual category, age and proficiency. The principal group utilised for categorisation of informers was gender, with 60 men together with 90 women being interviewed. There were merely almost equal numbers of men as well as women for receiving ethnogynecological, particularly dyspareunia (painful sexual intercourse) knowledge of curative plants. The inhabitant's information demonstrated that females had more information regarding plants contrasted to males. The allotment of occupation among sex category within the locality possibly can be a cause for such divergence, as males habitually labour inside pastures and they hold up their family economically whereas females administer the entire jobs of houses as well as look after their kids, that might be chiefly associated with flora-based preparations to persist the family bodily prevailing in addition to vigorous. The age of informers had been utilised as the following category types as well as informants had been classified into 3 major groups, like 46–50, 36–45 as well as 18–35. The old age residents both males and females (about 50) had immense information regarding plants as compared to the younger natives (age below 20). The general view of the study area with field work has been shown in Fig. 1–4. The few flora of the research region has been shown in Fig. 5.

A single cause for lesser information of young informers was inadequate dependability of flora-based medicines because of modifications inside excellence of living because of the beginning of transportation along with modernisation. The illiterate informers had been enormous ethnogynecological information chiefly regarding dyspareunia (painful sexual intercourse) whereas

Fig. 2. (A, B) A glimpse of study site (Thar Desert, Sindh).

Fig. 3. (A, B) A glimpse of study site (Cholistan Desert, Punjab).

Fig. 4. (A, B) A glimpse of study site (Bahawalpur, Punjab).

intellectual informers had been significantly inadequate as well as slight information of healing flora. Similarly, folk health specialists posses extensive folk information regarding curative applications of plants equivalent to little additional occupations. The mostly younger native inhabitants usually depend on biomedicines for their instant therapies in addition to had fewer perceptions regarding plant-based drugs together with their formulation techniques.

Variety of ethno medicinal plants

The entire 20 healing flora belonging to 16 families had been well-known from the research region (Table 1). During the entire 20 plant species, the major principal family was Lamiaceae with 3 species (18.75 %), afterward Apiaceae in addition to Arecaceae with 2 species (12.5 %) (Fig. 6). The pre-eminence of such families may be consequently of their profusion and simple convenience within the research region. Additionally, a higher portion of the documented species of such families hold important pharmaceutical, pharmacological and phytochemical investigation characteristics. The modest therapeutic plants of the research area are revealed inside Fig. 5.

Therapeutic plant inventory

Twenty plants had been identified all through the existing study; herbs (11 species, 55 %) had been leading, with shrubs (5 species, 25 %) after that trees (4 species, 20 %), together with climbers (1 species, 5 %) (Fig. 7).

Plant parts used

The medicinal preparations were categorised based on plant parts used. As shown in Fig. 8, leaves, (7 species), afterward seeds (6 species), subsequently fruits (5 species) and roots (4 species) were principal selected plant parts employed within plant-based preparations. Leaves, seeds and fruits with roots are wealthy inside health significant secondary products which give widely for the healing as well as treatment of varied health dilemmas. Although, native occupants choose to utilise the whole plant and roots though their application has not been suggested, like utilisation of whole plant constituents otherwise their destruction can be a reason for the important consequences on reinstatement together with might be a reason for species devastation.

Technique of preparation with direction

The variety of methods were used from medicinal plant species for the preparation of herbal remedies and type of disease to be cured and kind of disease cured. Decoction was the most common process (11 species, 55 %) for formation of herbal medicine techniques, afterward orally administration (4 species, 20 %), powder together with infusion (3 species, 15 %), pill (2 species, 10 %) and cataplasm

(A) *Aristolochia indica* L. (B) *Borassus flabellifer* L. (C) *Cocos nucifera* L.

(D) *Medicago sativa* L. (E) *Nigella sativa* L. (F) *Cinnamomum verum* J. Presl

(G) *Rosa gallica* L. (H) *Saturea hortensis* L. (I) *Urtica dioica* L.

Fig. 5. Some plants of research region.

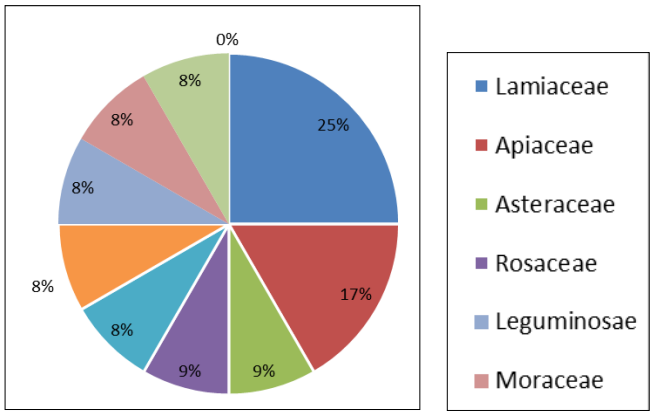

Fig. 6. Percentage of families within the research region.

Table 1. Therapeutic flora employed for painful sexual intercourse (dyspareunia) by the indigenous inhabitants of the research region

Voucher number	Plant species	Families	Local name	Habit	Part used	Medicinal use	Mode of administration or Medicinal Preparation (s)	CI %	CSI	RFC	Uv	FL %
HZ-20241	*Aristolochia indica* L.	Aristolochiaceae	Jangli Beil	Climber	Root	Treat vaginal pain during sex	Orally, decoction	57.8	36.4	0.15	0.71	15.3 %
HZ-20242	*Borassus flabellifer* L.	Arecaceae	NA	Tree	Root	Cure vaginal cramps after sex	Powder, orally	92.3	33.6	0.13	0.73	70 %
HZ-20243	*Bupleurum falcatum* L.	Apiaceae	NA	Herb	Whole plant	Treat bleeding and pain during sexual intercourse	Decoction	87.5	21.6	0.16	0.93	80 %
HZ-20244	*Cinnamomum verum* J.Presl	Lauraceae	NA	*Tree*	Stem, bark	Cure persistent pain in the vulva	Decoction	86.9	32.2	0.20	0.90	90 %
HZ-20245	*Cocos nucifera* L.	Arecaceae	Narial	Tree	Fruit	Treat muscular pain along with contractions in the pelvic area	Decoction	93.1	45.1	0,23	0.81	100 %
HZ-20246	*Cousinia stocksii* C.Winkl.	Asteraceae	NA	Herb	Gum	Relieve aching feelings in non-penetrative sexual activity	Powder and pill	91.1	38.9	0.19	0.84	100 %
HZ-20247	*Eremurus spectabilis* M. Bieb	Xanthorrhoeaceae	NA	*Herb*	Seed	Enable to attain orgasm	Cataplasm	86.8	34.6	0.21	0.87	100 %
HZ-20248	*Heracleum candicans* Wall. ex DC.	Apiaceae	NA	Herb	Roots	Treat vaginal dryness prior to along with throughout sexual activity	Powder	94.8	46.9	0.32	0.89	100 %
HZ-20249	*Medicago sativa* L.	Fabaceae	*Alfalfa*	Herb	Seed	Relax vaginal muscles sufficient to permit for sexual activity	Decoction	93.0	45.3	0.37	0.98	100 %
HZ-202410	*Morus alba* L.	Moraceae	Chita Toot	Shrub	Fruit, leaves	Reduce pain superficially on vulva	Orally	93.1	46.2	0.38	0.78	90 %
HZ-202411	*Nigella sativa* L.	Ranunculaceae	*Kalonji*	Shrubsmall Tree	Seed	Treat sharp pain throughout penetration or at entrance of penis	Mixed with honey, infusion	95.5	52.4	0.42	0.65	90 %
HZ-202412	*Portulaca oleracea* L.	Portulacaceae	Dhod Patar	*Herb*	Seed, leaves	Cure deep pain during intimate *sexual activity*	Infusion	93.8	43.6	0.41	0.67	90 %
HZ-202413	*Rosa gallica* L.	Rosaceae	Gulab	Shrub	Flower	Treat throbbing or ache after intercourse	Decoction	98.4	42.5	0.43	0.68	80 %
HZ-202414	*Ruta graveolens* L.	Rutaceae	NA	*Herb*	Leaf	Reduce pelvic cramping	Decoction	94.3	39.5	0.45	0.65	100 %
HZ-202415	*Salvia officinalis* L.	Lamiaceae	*Common sage*	Perennial Shrub	Arial part	Cure muscle tightness or spasms	Infusion	93.8	45.9	0.47	0.69	100 %
HZ-202416	*Saturea hortensis* L.	Lamiaceae	NA	Herb	leaves, seed	Reduce painful ejaculation	Decoction	97.1	49.8	0.51	0.76	90 %
HZ-202417	*Teucrium polium* L.	Lamiaceae	*Poley, Cat thyme*	Herb	Flowering branches	Treat premature ejaculation	Decoction, pill	95.8	55.7	0.53	0.78	90 %
HZ-202418	*Tribulus terrestris* L.	Zygophyllaceae	NA	*Herb*	Fruit, root, leaf	Cure delayed or inhibited ejaculation	Decoction	97.3	45.9	0.56	0.98	80 %
HZ-202419	*Urtica dioica* L.	Urticaceae	*Kengi*	*Herb*	Fruit, seed, leaves	Treat penile trauma during sexual intercourse	Decoction	97.6	38.5	0.43	0.42	70 %
HZ-202420	*Ziziphus spina-christi* (L.) Desf.	Rhamnaceae	Berry	Shrub	Fruit, leaves	Enhance sexual stimulation	Orally, cataplasm	67.8	34.2	0.43	0.54	70 %

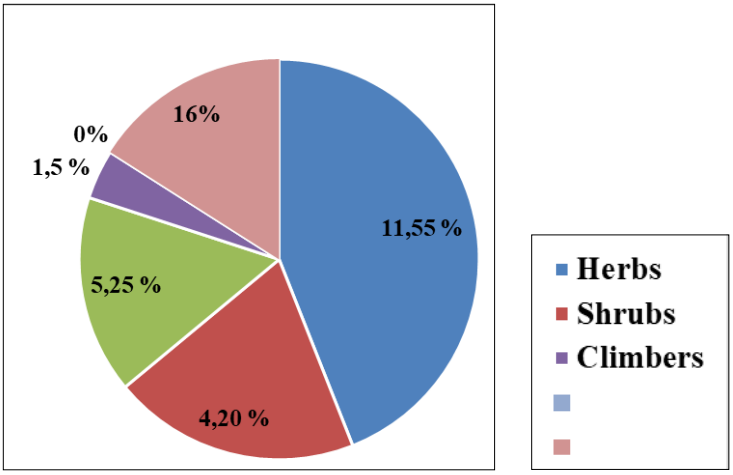

Fig. 7. Percentage of life forms of plants.

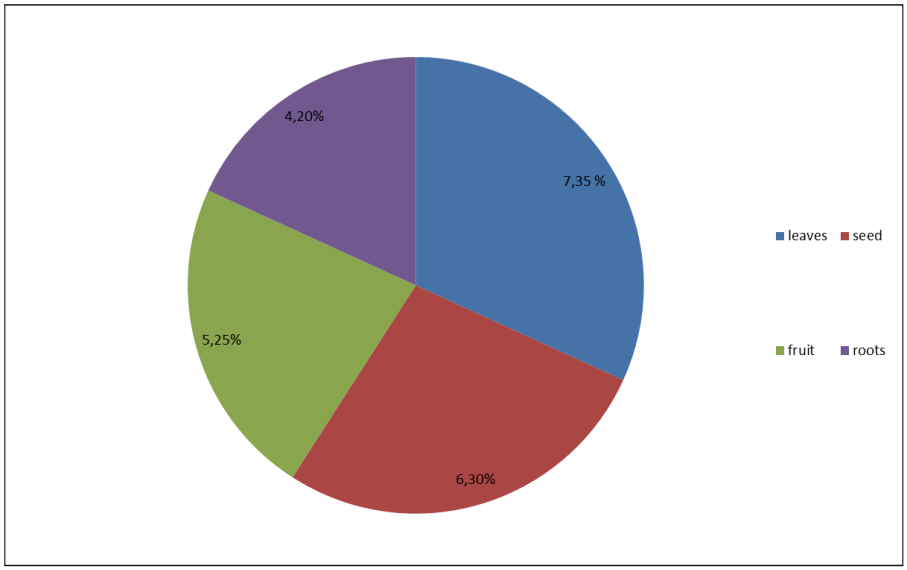

Fig. 8. Percentage of plant parts utilised within research area.

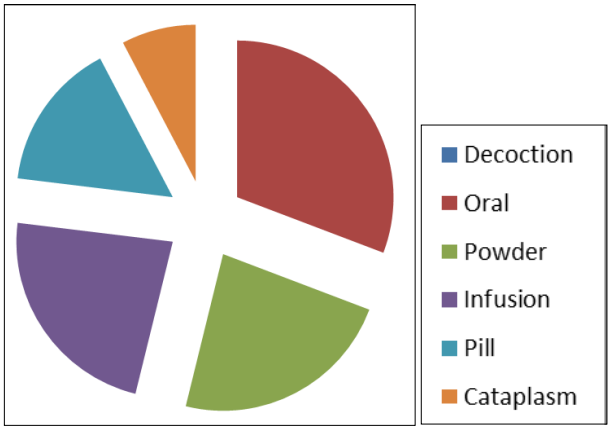

Fig. 9. Percentage of method of direction or therapeutic formulations.

(1 species, 5 %) (Fig. 9). The merely combination could be a cause for the widespread utilisation of decoctions to cure diseases, since that can be equipped by means of integrate fractions of plants with flavour tea, green tea, water, honey and milk along with ghee. The expediency of powerful secondary compounds may progress because of the reason of heat that accelerates the natural responses. Furthermore, leaves were utilised within herbal drugs formulation. Typically, the plant-based formulations were shaped through the utilisation of solitary plant species containing non-toxic, edible besides elevated convenience. The little numeral of formulations, was based on consumption of abundant plants to attain greatest curative consequences. The sum of curative plant as well as incidence of amount is dependent on patient state, physical health, age and disease type.

Informant consensus factor (ICF)

The ICF was observed on the basis of illness types, for example a single plant may be utilised to cure 3–4 multiple related ailments extra disease types (Table 2). The utmost ICF value shows enormous reliance of resident informants on curative flora in comparison to slight ICF values which demonstrate little reliability of informer's information. The diseases were classified into 8 kinds to boost informant consensus. The ICF value ranged from 0.80–0.97. The maximum value of ICF had been approximately (0.97) for permitting

Table 2. Informant consensus factor values of the plant species within research region

Plant used categories	Nt species	Nur use reports	ICF
Treat vaginal pain during sex	20	100	0.80
Cure persistent pain in the vulva	14	200	0.93
Enable to attain orgasm	8	250	0.97
Treat sharp pain throughout penetration or at entrance of penis	12	300	0.96
Cure deep pain during intimate sexual activity	16	340	0.95
Reduce painful ejaculation	13	400	0.96
Treat premature ejaculation	17	320	0.94
Enhance sexual stimulation	15	430	0.96

to achievement of orgasm, after that cure sharp pain all through penetration or at entrance of the penis as well as reduce painful ejaculation as well as enhance sexual stimulation (0.96), cure deep pain during intimate sexual activity (0.95) and treat premature ejaculation (0.94) etc. ICF values are characteristically prejudiced through the number of informers as well as are significantly important whereas computed for applications confirmed through numerous informers. Usually, ICF values were utmost in the present research, indicating that the informers perhaps choose such plants utilised for the treatment of frequent diseases.

Consensus index (CI %)

The percentage of informants reporting traditional knowledge of healing plant species used for disease evasion (within current study, dyspareunia (painful sexual intercourse)) was determined by means of a CI %, that reveals the explanation of therapeutic flora through percentage of informers. The CI value varied from 57.8–98.4 % (Table 1). The utmost CI value had been attained for *Rosa gallica* L. (98.4 %), afterward *Urtica dioica* L. (97.6 %), *Tribulus terrestris* L. (97.3 %), *Saturea hortensis* L. (97.1 %) in addition to *Teucrium polium* L. (95.8 %). The smallest CI value was recorded for *Aristolochia indica* L. (57.8 %). The CI reveals a conformity on the assurance that *R. gallica* together with *U. dioica* had been the main important and identified curative plants utilised for the curing of dyspareunia (painful sexual intercourse) within the 3 chief rustic locations of southern regions (Thar Desert, Bahawalpur and Cholistan Desert) of Pakistan.

Cultural significance index (CSI %)

The CSI evaluates the significance of the plant species through the investigator-resolute biased position of numerous characteristics. That is exposed inside Table 1, the CSI varied from 46.9–21.6. The utmost CSI was 52.4 for *Nigella sativa* L., afterward 49.8 for *S. hortensis* , 40.2 for *S. hortensis*, 46.9 for *Heracleum candicans* Wall. ex DC. and 46.2 for *Morus alba* L.

Relative frequency citation (RFC)

The RFC within the current research ranged from 0.13–0.56 as shown in Table 1.The current research signified the highest value of RFC for *T. terrestris* (0.56) first, afterward *T. polium* (0.53) next, *S. hortensis* (0.51), *Salvia officinalis* L. (0.47), *Ruta graveolens* L. (0.45) and *R. gallica* (0.43) in the same way as shown inside Fig. 10.

Use value (UV)

The UV of plant species determines the basic importance of plants within the study area. The UV values varied from 0.42 to 0.98 as provided in Table 1 and Fig. 11. The highest UV values were recorded for *Medicago sativa* L. as well as *T. terrestris* as 0.98 afterward *Bupleurum falcatum* L.as 0.93, *Cinnamomum verum* J. Preslas 0.90, *H. candicans* as 0.89 together with *Eremurus spectabilis* M. Biebas 0.87 as given inside Fig. 4. The other plant species were recorded

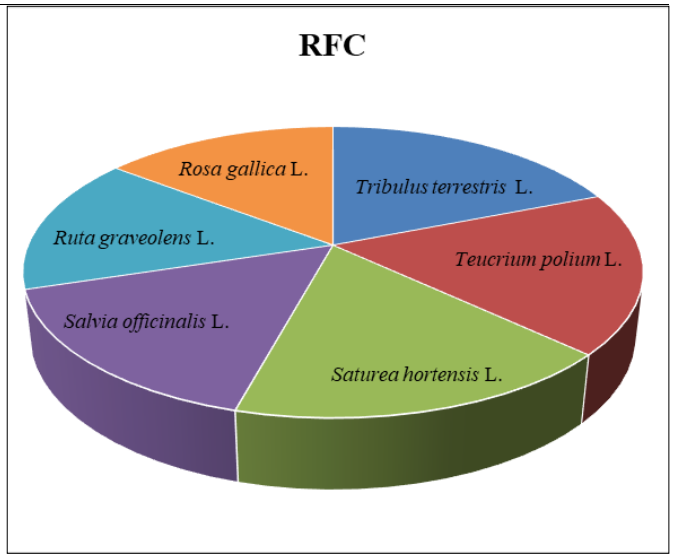

Fig. 10. Plant species with maximum relative frequency citation for ethnomedicinal utilisation.

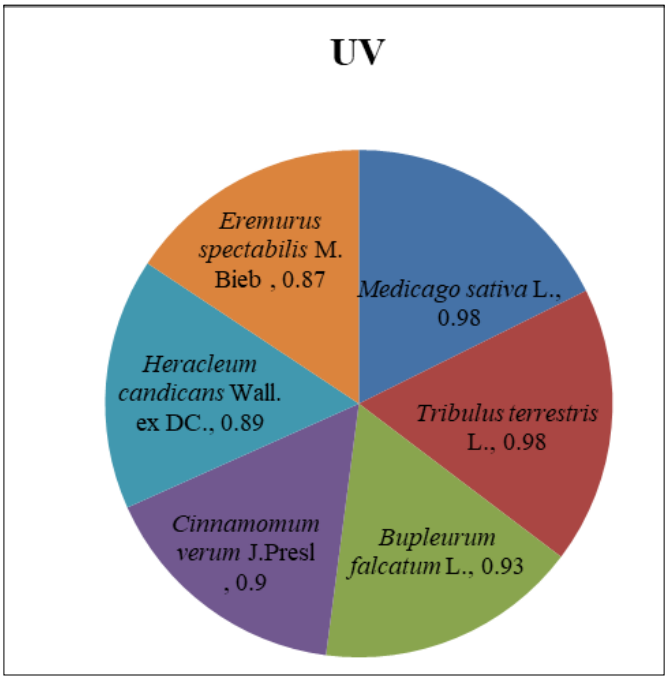

Fig. 11. Plant species with UV for ethnomedicinal uses.

with a UV value of < 0.98, which demonstrate that such flora was less utilised by the native occupants.

Fidelity level

The FL index has been employed to identify plant species which have been mainly preferential via the native community to cure definite ailments. Plant species having maximum therapeutic applications inside a specified region possessed the utmost value of FL, i.e., 100 %. Usually, the elevated FL of a species demonstrates the profusion of a specific ailment inside a particular region as well as the

use of plant species through the native inhabitants to cure this. The mainly frequently employed therapeutic flora inside the research region with 100 % FL had been *Cocos nucifera* L., *Cousinia stocksii* C.Winkl., *E. spectabilis*, *H. candicans*, *M. sativa, R. graveolens* as well as *S. officinalis* that had been employed to cure muscular pain along with contractions in the pelvic area, relieve aching feelings in non-penetrative sexual activity, enable the attainment of orgasm, treat vaginal dryness prior to along with throughout sexual activity, relax vaginal muscles sufficient to permit for sexual activity, reduce pelvic cramping and cure muscle tightness or spasms correspondingly (Table 1). The FL values in this varied from 15.3–100 % which demonstrated extreme utilisation of flora through the indigenous inhabitant within common means since of its curative potential neither merely within the research region except inside more regions of Pakistan too.

Discussion

Concerning demographic knowledge similar consequences had been recorded previously (32–35). Our research corresponds to previous studies regarding demographic features. A single reason for smaller knowledge concerning curative plants through the younger informants' consequences had been equivalent to further research such as (36–38). Qualification had been a 3rd momentous feature. The greatly qualified informers regularly reliant on biomedicines are equivalent to those studies carried out at countrywide like in addition to at worldwide level (39–44). Concerning the plant parts, leaves had been the major prevailing plant parts employed. These studies had been equivalent to recorded preceding research from Pakistan in addition to few additional countries (45– 47). Indigenous choice of leaves inside plant-based formulations for drugs has been because of their congregation in addition to expediency (48–51). Decoction had been the major widespread technique. These consequences have been corresponding with the previous research like (52–54). Whereas the slightest ICF value had been counted for dyspareunia (painful sexual intercourse) that was 0.80. That had been powerfully endorsed by (55, 56), which too documented the utmost ICF for diverse diseases inside their study area. On the basis of UV our results have been equivalent to preceding results at countrywide level such as (57, 58) as well as worldwide level such as (59, 60).

Since RFC our results have been equivalent to preceding results such as (61, 62). Based on our CI results have been equivalent with preceding results such as (63). Since CSI our results have been analogous with preceding results such as (64). While on the base of FL, our results have been analogous with the preceding studies such as (65, 66).

Owing to the results of the current research, the highest CI value had been achieved for *R. gallica* (98.4 %). Likewise, the utmost CSI was 52.4 for *N. sativa.* Similarly, the principal UV values were recorded for *M. sativa* as well as *T. terrestris* as 0.98. Likewise, the maximum value of RFC for *T. terrestris* was 0.56. Similarly, the highest FL value for *C. nucifera*, *Cousinia stocksii* C.Winkl., *Eremurus spectabilis* M. Bieb, *H. candicans*, *M. sativa*, *R. graveolens*, as well as *S. officinalis* was 100 %. Owing to the present research, maximum values of RFC, UV, CI, CSI, FL together with ICF indicates that these plants might be much progressed for their phytochemistry, pharmacology as well as *in vitro* activities.

Conclusion

The current study is the first to document the folk uses of local medicinal plants employed for the treatment of dyspareunia (painful sexual intercourse) from the 3 remote regions (Thar Desert, Bahawalpur and Cholistan Desert) of Pakistan. The recorded information indicates that native occupants are still highly reliant on medicinal plants for treating dyspareunia since major health services are difficult to access and they possess extensive knowledge of useful flora. The folk information is habitually within the hands of senior native occupants together with plant-based treatments experts, but the younger inhabitants have no supplementary information concerning plant-based therapies. The main cause for that is the absence of concentration, accompanied by the concerns for instance extreme practice of forage, piercing of forests as well as soil abrasion are reducing the healing plants from the study region and strategies concerning protection as well as further pharmacological research are extraordinarily needed for the protection of that valuable asset. Throughout the current research, the plants identified with the highest values of CI, CSI, ICF, RFC, FL together with UV should be prioritized for phytochemical investigation, pharmacological evaluation and *in-vitro* activities.

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Authors' contributions

HZ prepared the original draft of the manuscript. FMS and RQ supervised this work and MTG helped in statistical analysis. MTG helped in writing the manuscript. They also did the formal analysis. All the authors read and approved the final manuscript.

Compliance with ethical standards

Conflict of interest: Authors do not have any conflict of interests to declare.

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