An ethnomedicinal inventory of plants used for family planning and sex diseases in Samahni valley, Pakistan

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An ethnomedicinal systematic exploration of medicinal plants of tribal area of Samahni valley was conducted. The data of ethnomedicine used by tribals for birth control and sex diseases were collected by frequent planned visits by applying semi-structured interviews, questionnaires, direct observations and biological inventories. There was a high degree of informant consensus for the species and their medicinal indications between the healers interviewed. Samahni valley is dressed up with a wide range of medicinal flora. The geographical isolation and hilly terrain has permitted the survival of folk herbal medicines still in this area. Indigenous plants are interactly associated to the culture and traditions of local people. About 36 plant species, distributed in 26 families were used to treat sexual diseases and control birth rate in Samahni valley, Pakistan. The most of these plants growing wild (55.55%) are indigenous (61.11%) and herbs (52.77%). The plant parts frequently used are seed (22.72 %), root (20.45%), fruit, leaf and whole plant (9.09%). Medications are mostly prepared as decoctions and infusions. Most of species reported here are found to control family size and treat sexual diseases. People are still dependent on medicinal plants in this rural area of Samahni valley. The study enlightens how data of ethnomedicinal inventory of medicinal plants can be used effectively at local and regional level for phytochemical and pharmacological research. Due to unplanned exploitation and acculturation, the area had resulted in loss of medicinally important plant species. It was concluded that afforestation programme followed by proper protection is need of time.

Key words: Ethnobotany, Ethnomedicine, Family planning, Sexual diseases Samahni valley, Pakistan

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Ethnopharmacology is the branch of knowledge dealing with interaction between local people and indigenous vegetation for curing common ailments. The use of medicinal plants plays an important role in the lives of rural people, especially in the developing countries of the world, which are poorly served with modern health facilities3. Much of world's population depends upon traditional medicine to meet daily health requirements5. In Himalayan ranges, at least 70% of medicinal plants and animal species in the region consists of wild species, 70-80% population depend on these traditional medicine for healthcare1. In early 1950s, up to 84% Pakistani population was dependent on traditional medicine for most of their medicinal uses1. As human behavior has a direct impact on the plant communities with which they interact, these interactions are the focus of ethnobotany5. Researchers have emphasized the need of documentation and application of traditional knowledge in the use of natural resources8. Ethnobotanical conservation status of Margalla Hills, Islamabad, and Makran have also been reported7,8. Ethnobotanical studies of Balochistan province, where a heterogeneous cultural group known as Bloch lives, with information of about 114 plant species used by nomads and village dwellers; Kaghan valley; Samahni valley; Jatlan area district Mirpur; Mai Dhani Hill, Muzaffarabad; National Park Machayara Muzaffarabad; Babusar valley, district Diamer; Northern areas; Dhir Kot, district Bagh are reported6,16. Systematic explorations of traditional herbal medicine are urgently required in Samahni valley, Pakistan; for its geographical, historical reasons and hilly terrain (relatively isolated), where industrial development has not completely lead a complete decline of traditional knowledge. Local people collect medicinal plants for use as home remedies. The present information can serve as the
foundation for further investigation as no detailed ethnobotanical exploration has been carried out in this area so far.

Pakistan located in south Asia, has landlocked soil with plains and mountainous terrains having variable climatic habitats. Samahni valley is one the Tehsil of district Bhimber, Pakistan. Geographically, it is located between 33.05º latitude and 74.82 º longitude. It covers ca.1,270 km and has 12 towns, viz. Jandichontara, Dab, Bandala, Samahni, Chowki, Bindi, Jandala, Poona, Chai, Baroh, Haripoor and Jajooha. It has north facing and south facing high mountains, with variable topography. The valley is inhabited by major ethnic tribes such as Jat, Rajpoot, Gujar, Bokarwals, Malik, Mirza, Arrain, Syed and Butt (Kashmiries). The people are mainly dependent on agriculture and forest products (timber and herbs). For these people, the surrounding plants form an integral part of their culture and the information about the plants is passed orally from generation to generation.

Ethnomedicine is the system of maintaining health and curing diseases based on folk beliefs and traditional knowledge, skills, methods and practices. The local tribes harbour the vast diversified flora, which is mainly coniferous and tropical forest. These herbal medicines are used for population (birth) control and to treat sexual diseases. Traditional sterilization method based on ethnomedicine is used to control population growth rate; including abortion at initial weeks, preventing conception or making the couple sterile. The tribal people also use the local herbal remedies to cure sterility, enhance the chances of conception and to cure sexual diseases like leucorrhoea, gonorrhoea, menorrhagia, galactorrhoea, and regularise menses on daily basis.

As the knowledge is disappearing because of rapid socio-economic, environmental and technological changes, there is need to document and conserve through systematic studies, before it is lost forever. To date, there has been no systematic recording of local knowledge used to control birth rate and sexual diseases in Samahni valley. Systematic studies on the area are justified as they can generate concise information, which can be used to develop birth control practices and methods that are locally suitable in Samahni valley; if developed systematically, it can be a key for birth control and sex-related diseases cure resource; can also add new drugs to modern population control and sex-related pharmacopoeia.

The main aim of the study was to document the plant’s ethnomedicinal uses, used to control birth rate and cure sex diseases.

Methodology

The survey was conducted between June 2001 and June 2003. For collection of data semi-structured interviews, questionnaire and direct observations to collect data were used. The timings for fieldwork were selected according to the growth and collection season of the plants (Figs 1-4). Household respondents were chosen through stratified sampling. In each town, a respondent was randomly chosen from at least one village. In this way, 140 household respondents were interviewed. Population size and its distribution, languages, ethnic affiliation, history of
settlement, major social groups or classes, productive activities, subsistence crops, migration trends, etc. were also explored during the field work. Questionnaire consisting of open- and closed-ended questions in face-to-face interviews were used. Some of the farmers and local hakims (ethnomedicine practitioner) were reluctant to share their treatment methods used for control family size and cure sex diseases. The questionnaire focused on which sex diseases are common in the community and which and how these herbs are used for birth control. The interviews were conducted in local languages, Pahari and Panjabi. The interviews were supplemented by direct observations. Plant voucher specimens (ISL) were collected and deposited at Quaid-e-Azam University herbarium, Islamabad. Data from the field study were reviewed and all uncompleted responses were excluded. This left 110 valid respondents. The data were analyzed qualitatively and quantitatively; responses from open-ended questions were grouped into classes that expressed similar ideas, while percentages based on valid responses only, were calculated from closed-ended questions. So, the results are based on open- and closed-ended questionnaire methodology, ethnomedicinal study of plant specimens after comparison with literature.\textsuperscript{18,19}

**Enumeration**

**Abutilon indicum** (L.) Sweet. (Malvaceae), Kangi
Uses: Root extract is taken orally, while crushed seeds mixed with egg albumin are applied externally to cure syphilis.

**Acacia modesta** Wall. (Mimosaceae), Phulai
Uses: Women are given Punjoori made with gum of the plant, Desi Ghee and Papaver (Papaver somniferum) seeds after child birth to give relief of labour pain and provide potency. The tribal ladies also use mixture of its bark decoction and oil of *Setaria italica* as conception tonic.

**Ajuga bracteosa** ex Benth. (Lamiaceae), Hari booti
Uses: Plant extract is taken in interval to prevent unusual vomiting in initial days of pregnancy.

**Allium sativum** L. (Liliaceae), Lassan
Uses: The bulb extract is applied in uterus to enhance conception and fertility.

**Amaranthus viridis** L. (Amaranthaceae), Chulair
Uses: Its root decoction is used thrice a day to control menstruation problems. Its seeds are effective in backbone ache due to pregnancy.

**Anethum graveolense** L. (Apiaceae), Soya
Uses: Women chew the seeds after delivery for easy digestion of food and it is also useful as lactogogue.

**Azadirachta indica** A. Juss. (Meliaceae), Neem
Uses: Leaf extract is used twice a day to stop excessive bleeding during menstrual period, while seed oil is used as contraceptive.

**Bombax ceiba** L. (Bombacaceae), Simbal
Uses: Its bark extract is given for few days to cure sexual diseases like hydrocoele, leucorrhoea, gonorrhoea; flowers powder is taken by women with milk to cure menstrual disorders.

**Butea monosperma** (Lam.) Taub. (Fabaceae), Chichara
Uses: Halwa (a mixture of wheat flour and plant gum and oil) is given during leucorrhoea. Warm bark extract is given to as haemostatic after childbirth.

**Ceropegia bulbosa** Roxb. (Asclepiadaceae), Glut
Uses: Its raw tubers are cooked and eaten by ladies to enhance fertility and vitality.

**Corchorus trilocularis** L. (Tiliaceae), Kaunti
Uses: To cure syphilis, root decoction is used for several days, while seeds are powdered and used with Clematis sp. root extract for one month.

**Coriandrum sativum** L. (Apiaceae), Dhania
Uses: Seeds soaked in water over night is given to male to induce sterility as an effective and cheaper method of population control.
**Crataeva magna** (Lour.) DC. (Capparaceae), **Maimana**
Uses: The stem twig is put inside uterus for abortion, which occurs within 2-3hrs.

**Daucus carota** L. (Apiaceae), **Gajar**
Uses: Seed decoction is used to regularise menstruation; high dose is abortifacient.

**Echinops echinatus** Roxb. (Asteraceae), **Oont booti**
Uses: Roots are kept in hand for easy delivery and relief of labour pain by tribal ladies.

**Euphorbia caducifolia** Hains. (Euphorbiaceae), **Danda Thor**
Uses: Root decoction is used as effective abortifacient at initial stages.

**Ficus bengalensis** L. (Moraceae), **Bar, Bargad**
Uses: Five or ten drops of latex are taken with sweet (*patasa*) by men up to one or two months to make semen thick and regain sexual potentiality.

**Ficus racemosa** L. (Moraceae), **Pakwari**
Uses: Bark decoction is used to check spermatogenesis and oogenesis for few weeks to control the population growth.

**Hibiscus rosa-sinensis** L. (Malvaceae), **Gul Khaira**
Uses: Root decoction is used to cure urithritis and genital irritation in male.

**Justicia adhatoda** L. (Acanthaceae), **Baiker**
Uses: Root decoction is taken twice daily as abortifacient for seven days.

**Nerium oleander** L. (Apocynaceae), **Gandera**
Uses: Root extract is taken in small quantity for abortion at initial stages; high dose is poisonous.

**Ocimum basilicum** L. (Lamiaceae), **Baburi**
Uses: Seed extract is taken orally by men to increase sexual potency; juice, made from mixing its seed extract and raw sugar is used to cure strangury.

**Onosma bracteatum** Wall. (Boraginaceae), **Gao zaban**
Uses: For relief of syphilis, whole plant decoction is taken orally; eaten by women with gum of *Phulai* (*Acacia modesta*) for one month to gain sexual potency.

**Pinus wallichiana** A.B. Jacks. (Pinaceae), **Chir**
Uses: Leaf decoction is used to cure gonorrhoea, blennorrhoea and as blood purifier. Its seeds called, *chalkgoza* are eaten to get potency and vigour.

**Putrangiva roxburgii** Wall. (Euphorbiaceae), **Jiaputra**
Uses: A garland of fruit is put around neck of pregnant lady to produce healthy baby and then put around neck of neonate for few months to recover weakness.

**Solanum surattense** Burm. f. (Solanaceae), **Mokari**
Uses: Fruit is used as abortifacient at initial stages.

**Setaria italica** (L.) P.Beauv (Poaceae), **Kangni**
Uses: For relief of syphilis, whole plant decoction is taken orally; eaten by women with gum of *Phulai* (*Acacia modesta*) for one month to gain sexual potency.

**Tecomella undulata** Roxb.) Seem. (Bignoniaceae), **Rohira / Palwana**
Uses: Bark powder is taken with hot milk for few days for abortion; seeds crushed with *Pinus* leaf extract are taken to cure haemorrhoids.

**Trachyspermum ammi** (L.) Sprague. ex. Turrill. (Apiaceae), **Ajwain**
Uses: Its mucilaginous infusion boiled with milk is taken to cure sexual impotency and weakness.

**Vitis vitiginea** (L.) Theob. (Vitaceae), **Gangl angoor**
Uses: Tuber extract is used in sexual diseases; for men, it increases potency, in females it is given in leucorrhoea and menorrhagia.

**Withania coagulans** (Stocks.) Dunal. (Solanaceae), **Paneer dodi**
Uses: Fruit infusion is used by women as emmenogogue and galactogogue. Leaf paste is applied on testis to get relief from swellings and pain.

**Withania somnifera** (L.) Dunal (Solanaceae), **Asgand**
Uses: Leaf extract, one cup three times a day is used to stop blood flow from uterus after delivery. Its root powder is used to give power to body and
lumber; over dose may be abortifacient. Some times, whole plant decoction mixed with Aspergus officinalis root, Phaeoleus mungo seeds and silajeet stone is given to treat hydrocele, leucorrhoea, menorrhagia. It also increases sexual potency and fertility.

Zingiber officinalis Roscoe. (Zingiberaceae), Adrak
Uses: Its dried tuber powder is given after delivery as tonic to relief flatulence and delivery pain in first two weeks.

Ziziphus nummularia (Burm.f.) Wight. & Arn. (Rhamnaceae), Koken ber
Uses: Extract of fruit powder kept over night is given to ladies at morning to increase oogenesis.

Results and discussion
Thirty six plant species distributed in 26 families are used as ethnomedicine to control birth rate and sex-related diseases. Most of these families are dicotyledons except Pinaceae (gymnosperm), Liliaceae and Poaceae (monocotyledons). Solanaceae and Apiaceae with four species each, Euphorbiaceae, Lamiaceae, Moraceae, Malvaceae two plants each, remaining families with one plant each are used for birth control. Solanaceae and Apiaceae have the highest diversity of species used as ethnomedicine because they contain relatively more species than other families in the area. Daucus carota, Solanum surrattense, Solanum nigrum, Teocmella undulata and Justicia adhatoda are usually used as abortifacient to control birth rate in initial stages, while Amaranthus viridis, Trachyspermum ammi are used to regularise menstrual cycle. The tribal ladies use bark decoction of Acacia modesta and Setaria italica oil as contraceptive, while Azadirachta indica oil is effective as contraceptive. Ficus racemosa is used to check spermatogenesis and oogenesis, Coriander sativum seeds are used to check spermatogenesis. Some plants such as Setaria italica, Tribulus terrestris, Cerovegia bulboa and Ficus bengalensis are used to increase fertility both in male and female. Ziziphus nummularia is used to increase oogenesis and Cerovegia bulboa is used by women to increase potency. Ficus bengalensis and Tribulus terrestris are used to enhance sexual potency in men.

For treatment tribals use Hibiscus rosa-sinensis to cure genital irritation in men. Withania somnifera, Bombax ceiba and Vitis vitisiginea are used to cure sexual diseases such as hydrocoele, leucorrhoea, and menorrhagia, while Zingiber officinalis is useful to cure of flatulence and delivery pain. Trachyspermum ammi is used for regularising menses after delivery, Setaria italica is good for sexual weakness; Onosma bracteatum, Corchorus trilocularis and Abutilon indicum are effective against syphilis; Ocimum basilicum for sex-potency; Ajuga bracteosa for cure of vomiting at initial days of pregnancy, while Butea monosperma and Bombax ceiba are used for the treatment of leucorrhoea and hydrocele. The main attributes of plants used for birth control and sex diseases treatment are that the plants grow wild (55.55%) , are indigenous to Samahni (61.11%) and are mainly herbs (52.77%). The most frequently employed plant parts are seeds (22.72 %), followed by roots (20.45%) and leaves & fruits (9.090 %), each. The practice of exploiting perennial plant parts, such as roots of slow growing woody species, can result in a decline, both the size and distributions of populations of exploited plants species, and ultimately results in local extinction of the populations.

Conservation of plants can be improved if the species selected has multiple uses.

The majority of the respondents interviewed (68%) employ herbal treatment as first line of treatment. If the patient does not improve, then medical practitioner is consulted; while other (32%) seek proper services of doctor when they fell sick. Thus majority of people mostly rely on ethnomedicine as their first line of defence in the treatment of sex-related (and other) diseases and control of birth rate. Using these plants, the people of valley treat diseases/conditions namely; gonorrhoea, leucorrhoea, menorrhagia, amenorrhoea, blennorrhoea, haematuria, urithritis, syphilis, hydrocele, vomiting due to pregnancy, menstruation disorders, genitile irritation, swelling of testis, weakness of neonate, scarcity of milk and sexual impotency. Ethnomedicine practices are employed as mostly infusions, powdered, decoctions and some times applied topically.

Conclusion
There have been many studies on ethnomedicine. There is much ethnomedicinal knowledge concerning about birth control and sexual diseases treatment within the community of Samahni valley. In the study, it is recorded that 36 ethnomedicinal plants of 26 plant families are used by tribals to cure sex-related diseases. This knowledge
about wild plants can serve as cue to extraction and isolation of active biocandidates from these plants for drug development. Ethnomedicinal knowledge of inhabitants of area on abortifacient, sexual fertility and female contraceptives, which is one of the important informal innovations used by them, is quite relevant to present day situation. The other issues needed to be addressed are efficacy, quality, safety and standardisation of doses. It appears that exploitation of some of wild plants for ethnomedicine is unsustainable and might threaten the local plant population. Afforestation, protection and cultivation of precious wild medicinal flora of an area are necessary for long time use. The ethnomedicinal information require further research, while efficacy of various indigenous practices and folklore uses should be subjected to pharmaceutical and phytochemical investigations in order to identify how these can be of practical advantage in medicine development.

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