Centurion women and diverse knowledge systems

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The present study based on anthropological participant observations has been conducted on selected centurion women of Gujarat. Forty old women (80 yrs or more) were selected to study diverse indigenous knowledge systems used to cure various human and animals ailments. Personal interview schedule with the set of open-ended questions and focus group discussion with the relatives and family members of these women were adopted as tools to record the data. The study indicates that with passage of age, indigenous knowledge systems get more strengthened and refined. They have developed specific ethnomedicinal practices based on years of experience, which are ecofriendly, with no side effects, cost effective, locally available and provide first hand remedies. In curing the diseases of human and animals, various locally available plant parts are utilized. In spite of availability of modern veterinary services, these women still follow ethnoveterinary medicines to cure their animals; similar cases exist for the healthcare of human being. Even they have developed food packages to cope up the food and nutritional security of their family especially during drought. With regards to conservation of indigenous biodiversity, domestication of local medicinal plants were found to be the mean for sustainable management of natural resources by these women.

Keywords: Centurion women, Ethnomedicine, Ethnoveterinary practices, Healthcare practices, Indigenous biodiversity conservation, Natural resource conservation, Traditional knowledge

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Life, nature and the planet, earth have been generally portrayed with female features throughout different civilization and times. The notion of fertility, nativity, and renewal has always been associated with them because of their natural function of conceiving, and ensuring the continuity of species. Their role as caretakers in the growth of children and in ensuring the daily provision of family’s subsistence has also made women the primary users of natural resources for non-commercial purposes in the preparation of foods¹, cloths, shelter, utensils and medicines. Nature and its wonders have also inspired art and creativity, making women the talented, but unknown authors of thousands of craftworks². The strong link between women and nature has helped in cultivating, breeding, diversifying and conserving the crops, biological and cultural diversity, which have been transmitted from generation to generation helping to enhance the livelihood security³,⁴.

The centurion women (>80 yrs of age in Indian culture) are the traveling library of indigenous knowledge and heritage, and often have not been given due recognition in the past for their creativity and natural resources conservation. Despite widespread recognition at the international level that women have an essential role to play as users and managers of biological diversity and natural resources, women participation in biodiversity related decision making process still remains limited²,⁵,⁶. Now, development projects have made strides in recognizing this disparity and have attempted to address these shortcomings. An understanding of the role of gender and the way it impacts the intrinsic value of local knowledge systems, is critical to the understanding, interpretation and dissemination of indigenous knowledge. As a result, gender differentiation and specialization, the indigenous knowledge and skill held by women often differ from those held by men, affecting patterns of access, use and control, while resulting in different perceptions and priorities for the innovation and use of indigenous knowledge⁷,⁹. It also impacts the way in which indigenous knowledge is disseminated, documented and passed on to future generations¹⁰. In this context, the present study is based on anthropological approach and complemented by participant

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observation to explore and document the diverse knowledge systems of centurion women of Gujarat. The study highlights several old indigenous practices used in human as well as in animal healthcare.

Methodology

The study was undertaken in selected villages of Kheda, Surendranagar, Bhavnagar and Ahmedabad districts. Forty women of more than 80 yrs of age, recognized as centurion women in our society, were firstly catalogued. The age was verified from the community people, etc. An anthropological approach was adopted for exploring the dynamics of diverse traditional knowledge systems of centurion women. In first step, a proper rapport building was carried out with the family members and neighbours of the centurion women to ascertain their expertise in different areas. To explore the social, cultural and natural dimensions of women’s diverse knowledge systems, qualitative approach based on explanatory research design was used to record the data. Focus group discussions were organized with their relatives, neighbours and family members. The data pertaining to diverse traditional practices of human and animals were recorded using the personal interview with open-ended questions. To minimize the distortion of information, audio recording of the information was also done.

Results and discussion

The centurion women were found to have vast ethnomedicinal knowledge. The knowledge based on the close observation of human and animals’ diseases and their symptoms, is passed orally from generation to generation. About 75% livestock owners were found to use traditional veterinary methods to cure various ailments of cattle. Of these, 70% administer the treatment based on the prescription, taken from the centurion women, as ethnoveterinary medicines are cheap, locally available, with no side effects, and satisfactory remedy. The common diseases are foot-and-mouth disease, mastitis, fever, bloat, diarrhoea and helminthiasis. In modern medicine, fever is not regarded as a disease; it is a clinical sign of a disease. Any modern drug used in veterinary medicine might have side effects, most of which are minor and usually go unnoticed. So, validating the rationality of ethnoveterinary practices will lead to its further diffusion and narrow down some of complications. In villages, particularly women farmers often consult these women for curing their livestock ailments.

About 68% of the centurion women are regarded as traditional healers in their society and enjoy an excellent reputation.

Since, the medical and veterinary services in Gujarat were irregular, use of locally available and cost effective remedial measures got embedded in the tradition and culture, based on the local wisdom. The centurion women were found to have diverse knowledge system and practices related to human and animals’ healthcare for sustainable survival. For example, Afras is a very common disease in cattle during rainy season causing swelling of stomach and uneasiness during urination and defecation. To control the disease, Kothmara (wood apple, Feronia limonia Swingle) bark extract, considered antiscorbutic and alexipharmic is administered. This practice is continued thrice a day for three days till complete recovery. Plants like Hazardana (Phyllanthus niruri Hook. f.) and Kerada (Capparis decidua Edgew.) are recommended in dysentery and diarrhoea, respectively.

Treatment of prolapsed ovary (Phool Ana) in cows and buffalo needs very cautious prescriptions, as it sometimes may cause death of the animal due to over bleeding. To overcome the problem, paste of radish, Lajwanti (Mimosa pudica Linn.) leaves and Thor flowers (Euphorbia neriifolia, Fig.1) is given with the help of green grass or chapati. Use of M. pudica root decoction in gravel and other urinary complaints has been reported. In case of retained placenta of cow or buffalo, sap drawn from Thor plant mixed with goat milk is given for quick dropping of placenta. About 250 ml cow ghee is administered twice at the interval of 2 hrs just after calving of cow/buffalo for quick dropping of placenta. Mixture prepared from sorghum grains and cow dung ash was found to be effective. Use of mixture of boiled wheat grains (500 gm), butter (250 gm) and sesame oil (200 ml) is also popular for inducing heat and dropping of the retained placenta in cow/buffalo. Thor latex is reported to be acrid, rubefacient, purgative and expectorant and is used to remove warts and cutaneous eruptions.

To treat gynecological problems, these centurion women act as physical as well as moral healers. In curing these gynecological diseases, many local plants, fruits, shrubs and herbs, e.g. turmeric, Sonth (dry ginger), til, Mahua flowers (Madhuca indica J. F. Gmel.), Harrai (Terminalia chebula Retz.), Ajwain, Jharberi (Ziziphus nummularia Wight), sweet potato, Bathua (Chenopodium album Linn.) and spinach are
used. While caring during the delivery period, fire is kept around the pregnant lady. Few of these centurion women acts as Dai (informal nurse) and their survival is dependent on the healing practices.

Healthcare management during drought

Periodic drought is common phenomena in Gujarat. Since women are the integral part of agriculture and livestock management, they have acquired and accumulated more experience of using plant based natural resources as medicines and food during times of scarcity. To cope up the situation, the women have developed their strategies for maintaining human and animals' health. The experiences of these women indicate that some plants are very effective and complement the balanced diet to provide the means for survival. Fruits of *Deshi babool* (*Acacia nilotica* Delile) and *Vilayti babool* (*Prosopis juliflora* DC.), green leaves of *Mithi Imli*, *Khakhra* and *Bakhda* plants were found to be suitable for maintaining animal health during the drought conditions. *Pilu* (*Salvadora persica* Linn., Fig. 2) and fruits of *Kahdo* and *Umro* (*Ficus hirta* Vahl, Fig. 3) found in plain ecosystem are nutritious for animal health. Tender shoots and leaves of *S. persica* Linn. and *S. oleoides* Decne are used as camel fodder. Oil cake of *Pilu* is used as animal feed. Leaves are used against cough in humans and as purgative for camel and sheep. Women to wash the hairs and utensils utilize fruit pulp and leaves. *Pilu* and *Piludi* (*Salvadora oleoides*, Fig. 4) are used as wind breaks and living fence. Leaves are used for making organic manure in raising vegetables and paddy nursery, and are applied as manure in light textured soil having low moisture holding capacity. Some women use grasses like *Doob* (*Cynodon dactylon* Pers.), *Kajaro*, *Char* and *Ghjnathiyo* for the better health of animals year round. During drought period leaves of *Gundi* (*Cordia myxa* Roxb.) and flowers of *Keshuda* (*Butea monosperma* Kuntze, Fig. 5), *Rayand* (*Manilkara hexandra* Dubard), cake of *Madhuca indica* J. F. Gmel. and fruits of *Gundi* are used as animal feed. Leaves of *Ber* (*Ziziphus jujuba* Mill.), *Piludi*, *Boliyo* and *Gado* are given to animals during drought for fulfilling the nutritional requirement. For making balanced feed for animals, one of the pulses is added as one of the ingredient in the daily diet.

Fruits of *Ficus religiosa* Linn. and *Ficus benghalensis*, tuber of *Thor*, *Motha* grass (*Cyperus rotundus* Linn.) and *Khejri* (*Prosopis cineraria* Druce, Fig. 6) fruits were found to be helpful in keeping people healthy during drought period. Fruits of *F. religiosa* Linn., *F. benghalensis* Linn. and *P. cineraria* Druce are eaten in times of scarcity. A special ethnic food, *Sattu* prepared from many diversified grains of pulses and cereals (pea, red gram, barley, bajra) and millets [*Mandua* (*Eleusine coracana* Gaertn.), *Kodra* (*Paspalum scrobiculatum* Linn.), *Kangni* (*Setaria italica* Beauv.)] is used by humans for avoiding sunstroke. During sunstroke, solution prepared from sugar, salt and unripe mango pulp is administered to boost up the immune system. Though traditional women are a substantial component of livestock healthcare system in the developing societies, their role have been largely ignored. These old age women and their practices represent a valuable, but as yet untapped resource for extending many aspects of basic animal and human healthcare.

Wounds, worms and pain

Different types of wounds, worms and pain are treated by old age women. To control wound infection *Sitaphal* (*Annona squamosa* Linn.) leaf paste is tied with the cotton cloth over the wound. To control muscle swelling, *Piludi* seed paste is smeared over the affected body part and is continued till complete recovery. Fruits of the plant are also used for making hairs soft and killing the head lice, while the leaf extract is used in curing wounds and boils. For wound healing, *Keshuda* bark extract mixed with *Kadathi* grains is tied on the affected body part for quick recovery and avoiding infection. In human being, tablet made from the fruit pulp of *Tamarindus indica* L. and powder of elephant foot yam is given twice a day to recover from piles. Use of elephant foot yam corm in dysentery and piles has also been reported. Leaf paste is applied as a poultice to reduce pain and swelling of joints of human and cattle. Tender leaf decoction of yam is used to treat muscle swelling, pain and dislocation of bones. *Datura* (*Datura metel* L.) seed paste mixed with lukewarm mustard oil is applied to the patella (knee cap) for getting quick recovery from small pimple and ringworm developed around neck and on the cattle hump. *Datura* leaf paste is used to treat eczema and other skin problems in human beings.

To control worms in calves, a solution made from 25-30 gm black cumin seed (*Kalijiri*, *Centratherum anthelaminticum* Kuntze), 250 ml buttermilk and 20-25 ml sesamum oil is given daily for one week. Black cumin seed is reported to be effective against
threadworms\(^{18}\). A centurion woman namely, Kunwarben of Bhavnagar district, demonstrated excellent deworming activity of a local plant, *Manijjava* (*Eunostemma litorale* Blume, Fig. 7) in calf. Another woman, Nathiben (108 yrs old) demonstrated efficacy of tender *Neem* leaf extract in deworming the child. The mixture made from bitter gourd leaves and sugar is given about 50-60 ml once a day in empty stomach and is continued for 10 days for complete deworming.

**Puberty and conception**

In few parts of Gujarat, camel rearing is common. After the death of camel, its bone powder solution is given continuously twice a day for one week to the animals lacking puberty. The animal comes into heat within one week and heat period continues up to 12-15 hrs. This practice is quite popular in South Gujarat. In Bhavanagar region, to induce the puberty in she animals, insect paste of *Bhanwra* added with grass is given. This ethnoveterinary practice induces heat within 48 hrs. In case of infertility, woman is given garlic bulb in the morning and onion in the food regularly for 2 months. Paste made from old garlic and *Arvi* corn (*Colocasia esculenta* Schoff) is used for curing the conception related disorders of women. *Halwa* made from pulp of old *Thor* roots and sugar is used to increase the vigour and fertility in men.

**Dysentery and urinary problem**

To treat dysentery, a solution made from buttermilk and salt is given orally to the animals; to cure blood dysentery, about 300 gm *Kothi* (*Feronia limonia* Swingle) fruit paste mixed with about 200 ml of buttermilk is given twice a day. Fruit is also used as a substitute for *bael* (*Aegle marmelos* Correa ex Koen) in the treatment of diarrhoea and dysentery\(^{22}\). When an animal suffers from yellowing of urine, *Gengadi* fruit extract mixed with 250 ml buttermilk is given orally to the suffering animal, and is continued for one week for getting complete relief. If a person is suffering from blood dysentery, a mixture of banana pulp and camphor is prescribed. In severe cases, about 10-15 ml extract of *Bhangaraiya* (*Eclipta alba* Linn.) is given. In some parts of Gujarat, boiled unripe *Goolar* (*Ficus glomerata* Roxb.) fruits mixed with boiled potato are given to the patient suffering from dysentery.

Paste of trifoliate leaves of *Erythrina suberosa* Roxb., is given orally to cattle against severe cough and bronchitis. Similarly, leaves of lab lab bean (*Dolichos lablab* Linn. var. *typicus* Prain) are used to draw out the pus from boils and sores in animals and human. Paste prepared from *Leucas aspera* Spreng. leaves is applied to cure wounds and promote healing in human and animals. There are some reports of external application of leaf juice in psoriasis, chronic skin eruptions and painful swellings\(^{18}\). Oral administration of paste prepared from 10 betel vine leaves and 20 gm dry black pepper relieves animals from digestive disorders and flatulence. To overcome the problem of chronic cough in animals, leaf paste of *Solanum surattense* Burm. f. and *Solanum trilobatum* made with hot water and *Neem* oil is given orally. Seed paste of *Tribulus terrestris* L. is administered orally to facilitate the removal of retained placenta in cow and buffalo. Use of mango fruits in painful micturition and calculous affections has been reported\(^{18}\).

**Ethnic foods and indigenous biodiversity conservation**

During the famine, dishes prepared from leaves of *kanjara*, *tandarda*, *khankhori* (*Leptadenia pyrotechnica* Decne), *vaseti* and *ekad* and buds of *phag* (*Pueraria tuberosa* DC.) are consumed. Similarly, ripe fruits of *ringni* (*Solanum xanthocarpum* Schrad Swendl,) mixed with flour of *bajra* and *jowar* are eaten. Some women have reported use of *chil* (*Chenopodium album* Linn.), yellow leaves of a variety of cactus, fáfda *thor* (*Euphorbia nivulia* Buch.-Ham.), pods of *khijado* (*Prosopis cineraria* Bhand.), pods of *kharkhori* (*Solanum trilobatum* L. is administered orally to facilitate the removal of retained placenta in cow and buffalo. Use of mango fruits in painful micturition and calculous affections has been reported\(^{18}\). *Mahu* (*Madhuca indica* J. F. Gmel) are boiled to make sweet dishes like *shiro* or *dhokla*. *Lasoda* or *Gundi* fruits are used for making vegetable and pickle. Ripe fruits are eaten fresh and the wood is used as fuel. In another preparation, ethnic food made from small pieces of *Prosopis* pods frying with buttermilk is used.

These women were found to be experts in conserving most of these plants in their agricultural land and kitchen garden. Seed banks were maintained by women and exchanged with their local credible network to maintain the genetic purity and improvise the crop productivity. For some crops like local pulses and oil seeds, an informal group is made to sow and harvest the crops to reduce time and labour cost. These indigenous genetic resources are domesticated and conserved in kitchen gardens and farms by women folk for their sustainable use. Since they play...
a significant role in flow of genetic materials and crop diversity, they are also called the custodian of indigenous agrobiodiversity. The knowledge and communication systems of these old age women is a logical starting point and these rich resources can be used for implementing agricultural research, development and extension work.

**Culture and ethics**

In case of complex problems of animals’ health, sometimes women take the advice of traditional healers. Ingredients used in local medicines are collected locally, but some of these are also purchased from local shops (Majhethi). Majorities (80%) of these local women do not buy the plants from the market; instead they collect from the fields. The majority of centurion women as healers have high level of ethical values, while treating the diseases do not take any remuneration or fee. The knowledge and practices possessed by rural women need to be learned by the younger generation for healthcare management. This will not only save the cultural resources and knowledge systems but also conserve the natural resources and their inventory for sustaining the environment.

**Conclusion**

In spite of a wide network of modern drugs and veterinary services, the women of Gujarat are still using local practices to cope up with the human and animals’ problems. Documentation of such traditional knowledge towards human and animals’ health may ultimately promote the emancipation of the local livestock owners and improve the human health. The women’s knowledge is a social capital of the community, to produce food, to provide shelter or to achieve control of their own lives. Indigenous knowledge about natural resources possessed by women is a critical factor for sustainable development. Empowerment of women is a prerequisite for the integration of their knowledge in the development (Fig. 8). The integration and blending of appropriate indigenous knowledge systems of women into the development programmes have already contributed to efficacy, effectiveness and sustainable development.

The knowledge about natural resources and traditional healing practices possessed by the centurion women are the heritage of our society and should not be allowed to be lost with them. Similar kind of studies may be undertaken in various parts of the country and the knowledge explored may be documented. Such knowledge may be incorporated while formulating various development programmes. Besides, rewarding and acknowledging, aged women’s wisdom would go a long way in the direction of sustainable future.

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