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Awareness of rural women regarding medicinal plants for respiratory problems

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Abstract

In the present times, when environmental, socio-economic and behavioral factors are taking a toll on health, it is important to study the present status of the indigenous knowledge among the masses in which it has been prevalent and used since ages. In this context a study was planned to study the awareness and use pattern of women regarding medicinal plants used for respiratory problems which have been documented in form of a technical bulletin developed under AICRP on Home Science. The study was conducted in three socio-cultural regions of Punjab i.e. *Majha, Malwa* and *Doaba*. A total of 240 women were selected for equal representation of rural and urban population. An interview schedule was developed on basis of the technical bulletin, "Respiratory Disorders- Data on respiratory disorders", ICAR, New Delhi (2003) prepared under the Extension Component of All India Coordinated Research Project on Home Science. Hence it can be concluded that although more women knew about the medicinal plants but comparatively lesser percentage were aware of its use for respiratory problems. Women were aware that the plants were used for respiratory problems but they were not aware about many of their properties. This was evident for all the plants and for majority of the women. However, the level of awareness was significantly different for different properties for all the plants. The most cited reason for using medicinal plants was the use by elders, time tested of effectiveness of medicinal plants and conviction of their usefulness. Another reasons were lesser cost, no side effects and easy availability. Awareness and use of medicinal plants was not associated with socio-economic or personal characteristic of the rural women except the size of the family or use of media in case of level of awareness. Planned extension strategies can go a long way in passage of indigenous knowledge and in present times media can play an effective role in this context.

Keywords: Health, indigenous, medicinal, respiratory

Introduction

Pollution is the contaminant into a natural environment, usually by humans. The specific types of pollution are land pollution, air pollution, space ozone layer and many more. In India, the increasing economic development and a rapidly growing population that has taken the country from 300 million people in 1947 to more than a billion people today is putting a strain on the environment, infrastructure and the country's natural resources. Environmental pollution is one of the most serious problems facing humanity and other life forms on our planet today. It affects the health of more than 100 million people worldwide.

Plants have been used in traditional medicine for thousands of years and herbal medicines are much in demand throughout the world (Naik *et al* 2012) [15]. Even after the induction of 200 years of modern system of medicine, people in rural India take the help of local health practitioners for the treatment of various diseases. Chinese, Indian, Arabian and other traditional systems of medicines make extensive use of about 5,000 plants. Large human population in developing countries is dependent on plant resources for healthcare because allopathic medicine can cure a wide range of diseases, but its high prices and occasional side-effects are causing many people to return to herbal medicines which tend to have fewer side effects. In last few decades, traditional knowledge on primary healthcare has been widely acknowledged across the world. It is estimated that 60 per cent of the world population and 80 per cent of the population of developing countries rely on traditional medicine, mostly plant drugs, for their primary health care needs.

In the present times, when environmental, socio-economic and behavioral factors are taking a toll on health, it is important to study the present status of the indigenous knowledge among

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the masses in which it has been prevalent and used since ages. Respiratory problems are most common due to the increasing stress on environment. Despite increased understanding of pathogenesis of the respiratory problems, their incidence is increasing rapidly (Ram *et al* 2009) ^[21]. Sufficient data is available to highlight the importance of medicinal plants. It becomes imperative to have a data base to strategically plan strategies for creating interest among masses for increased utilization of medicinal plants which are known to possess properties for prevention and cure of respiratory problems.

The World Health Organization (WHO) has estimated that 80% of the population of developing countries still relies on traditional medicines, mostly plant drugs, for their primary health care needs (Venkataswamy *et al* 2010) ^[33]. Demand for medicinal plant is increasingly felt, in both developing and developed countries due to growing need of natural products being non-toxic and bereft of side-effects, apart from availability at affordable prices. The medicinal plant sector has traditionally occupied a pivotal position in the socio cultural, spiritual and medicinal areas of rural and tribal families.

Plants have great economic and medicinal importance throughout the world. Almost all daily human basic and luxurious requirements like feeding, clothing, sheltering, nursing and hunting are fulfilled by plants. As source of medicines, plants have formed the basis for innovative and traditional systems and continuously providing mankind with new remedies (Ullah *et al* 2010) ^[31].

Keeping in view that knowledge already available at hand in form of technical bulletin, "Medicinal Plants for Respiratory Disorders, ICAR, New Delhi, the need was felt to disseminate the knowledge for its effective utilization. In order to develop extension strategy for dissemination, this study was planned to collect data on the present status of the awareness and use of medicinal plants documented for respiratory disorders. This was important in view of the fact that traditionally, plant based household remedies were used rather than modern medicines and the identified plants documented in the bulletin have been found to possess properties, which make them effective in prevention and cure of respiratory problems. As the use of these plants has been time tested, the dissemination of information and knowledge regarding their properties and use in prevention and cure problems could go a long way in increasing their use and also in preserving the wealth of indigenous knowledge. The present study will provide direction for planned dissemination of the generated and validated indigenous knowledge. Dissemination of the harnessed indigenous knowledge is necessary because it is socially desirable, economically affordable, sustainable involves minimum risk and procedures. This assumes more importance in view of the greater stress being laid on the use of chemical products, even when equally potent alternatives are available.

Review of Literature

The term 'medicinal' applied to a plant indicates that it contain a substance or substances which modulate beneficially the physiology of sick mammals, and that it has been used by man for that purpose (Farnsworth and Soejarto 2001) ^[4]. Medicinal plants are plants containing inherent active ingredients used to cure disease or relieve pain (Okigbo *et al* 2008) ^[16]. Since the beginning of human civilization, medicinal plants have been used by mankind for its therapeutic value. Nature has been a source of medicinal agents for thousands of years and an impressive number of modern drugs have been isolated from natural sources. Many of these isolated were based on the uses

of the agent in traditional medicine. The plant-base, traditional medicine system continues to play an essential role in health care, with about 80.0 percentages of the world's inhabitants relying mainly on traditional medicine for their primary health care (Owolabi *et al* 2007) ^[18].

India is the largest producer of medicinal plants and is rightly called the "Botanical garden of the World" (Umadevi *et al* 2013) ^[32]. In India, around 1,110 single drugs form ingredients of indigenous medicines (Chan 2003) ^[2]. Since times immemorial plants have been utilized for human, veterinary and plant healers. People use more than one plant either separately or mixed together. They mix several plants as ingredients to cure diseases immediately. Generally, fresh part of the plant is used for the preparation of medicine. Fresh plant parts are not used as simple drugs and some plants are used with some other plant parts. (Jain 2001; Mahapatra and Panda 2002; Ganesan *et al* 2004; Udayan *et al* 2005; Sandhya *et al* 2006) ^[10, 14, 5, 30, 26]. The history of discovery and use of different medicinal plants is as old as the history of discovery and use of plants for food (Ibrar 2002) ^[7]. Plants play a key role in traditional health care system for human and animals. Most of allopathic drugs also comprise extracts taken from medicinal plants (Rashid and Arshad 2002) ^[22].

The people of Tigray region, in general, and Kilde Awulaelo District, in particular, are also expected to have rich knowledge on traditional medicine involving medicinal plants. Such knowledge is, however, currently being threatened, as it happening elsewhere in the country, due to environment degradation and deforestation (Teklay *et al* 2013) ^[28].

Rajendran *et al* (2008) ^[23] found that in villages of Madurai, Dindigul and Theni districts of Tamil Nadu, 59 plant species were traditionally used by the villagers. In Hasanur Hills (Southern Western Ghats), the common diseases such as asthma, digestive problems, paralyzes, skin diseases and diabetes were treated by use of 70 plants (Revathi *et al* 2010) ^[24]. The importance of medicinal plants in traditional healthcare practices was also reported by (Uniyal *et al* 2006). He found the tribal's in western Himalaya using 35 plant species for curing various diseases. Many plants species have identified for treating various disease. Deeb *et al* 2013 ^[1] reported use of 51 species for treating gastrointestinal disorders 32 for kidney and urinary disease, 37 for blood and cardiovascular disease, 19 for disorders of the nervous system, 21 for diabetes, 19 for respiratory illness including, 4 for asthma, 18 for sexual disorders, 17 for hair problems, 6 for tumors and several other plant species for other diseases. (Deeb *et al* 2013) ^[1].

Ignacimuthu *et al* (2006) ^[9] and Tiwari *et al* (2007) ^[29] reported the use of remedies using medicinal plants to alleviate problems of the respiratory system. The uses of medicinal plants also vary from area to area and also with regard to different health problems. But their effectiveness in prevention and cure of diseases and health related uses cannot be denied. The World Health Organization has also estimated that 80 percent of the world's population relies solely or largely on traditional remedies for health care. Lember *et al* (1997) ^[13] speculated that more than two billion people may be heavily reliant on medicinal plants for health care. Medicinal plants contain a wide range of metabolites that can be used to treat chronic as well as infections diseases (Ripunjy 2013) ^[25].

A total of 91 plant species belonging to 82 genera and 48 families were documented and identified as respiratory system herbal remedies in Northern Peru (Rainer and Ashley 2010) ^[20]. The people of Himachal Pradesh use medicinal plants for curing a wide range of health related problems such as

common cold, memory improvement, snakebite and muscular dystrophy (Kanwar *et al* 2006) [11]. Medicinal plants from Ayurveda (Indian traditional medicine system) and from foreign origin have been successfully employed to treat TB because of less toxicity and side effects than allopathic medicines (Gautam *et al* 2012) [6].

Plants are the source of medication for preventive, curative, protective or primitive purposes. Their use for digestive disorders can be commonly observed at household level. Use of medicinal plants such as Mint, Ginger, Sacred basil and Omum can be observed in daily life. Kaur (1999) and Kaur (2003) [12] also highlighted the use of some of these medicinal plants for maternal health. Studies point towards a need to suggest strategies for conservation and continuity of indigenous knowledge (Vidyarthi *et al* 2013) [34]. There is a need to document traditional knowledge, conserve habitat of medicinal plant species by launching special programs for raising awareness among people about sustainable utilization (Orodho *et al* 2014) [17]. It can be concluded that sufficient documentation of indigenous use of medicinal plant have been undertaken. However, there is a need to disseminate this knowledge on basis of the level of awareness and extent of use to enhance the use of medicinal plants for respiratory problems.

Objectives of the Study

- To study the level of awareness of medicinal plants for respiratory problems
- To study the extent of use of medicinal plants for respiratory problems
- To study the difference between level of awareness and extent of use of medicinal plants for respiratory problems

Hypothesis of study

Research Methodology

The study was conducted in three socio-cultural regions of Punjab i.e. *Majha*, *Doaba* and *Malwa*. The sample was drawn from one randomly selected district from each of these regions. The urban sample was drawn from the major city of the selected district represented by four different localities and rural sample from four rural blocks of the selected district, which was represented by one village from each of the blocks. The sample comprised of women heads of the family. A total of 240 women were selected for equal representation of rural and urban population. An interview schedule was developed on basis of the technical bulletin, "Respiratory Disorders- Data on respiratory disorders", ICAR, New Delhi (2003) prepared under the Extension Component of All India Coordinated Research Project on Home Science. The members of advisory committee were consulted for preparation of the same. The bulletin consisted of information on medicinal plants, which were used for respiratory problems in Punjab, India.

The medicinal properties of these plants for prevention and cure of respiratory problems were listed. The interview schedule contained items pertaining to awareness of documented medicinal plants for respiratory problems and their properties. It was pre- tested on 15 urban and 15 rural non-sampled respondents in Ludhiana district. The reliability and validity of the tool was determined. The personal

interview method was used for collecting the data from the selected respondents. Data was analysed using frequencies and percentages. Kruskal-Wallis Test was applied to test statistically the significant differences between awareness levels of different properties of same plant.

Table 1: Medicinal plants selected for the study

Common name	English name	Botanical name
Tulsi	Sacred basil	<i>Ocimum tenuiflorum</i>
Adrak	Ginger	<i>Zingiber officinale</i>
Mulhathi	Liquorice	<i>Glycyrrhiza glabra</i>
Kali mirch	Black pepper	<i>Piper nigrum</i>
Bhang	Indian hemp	<i>Cannabis sativa</i>
Nim	Indian lilac	<i>Azadirachta indica</i>
Amla	Indian gooseberry	<i>Phyllanthus emblica</i>
Aak	Gigantic swallow wort	<i>Calotropis gigantean</i>
Pyaj	Onion	<i>Allium cepa</i>
Lasoon	Garlic	<i>Allium sativum</i>
Safedraal	White dammer	<i>Vateria indica</i>
Bhakhra	Prickly chaff flower plant	<i>Achyranthes aspera</i>
Safeda	Eucalyptus	<i>Eucalyptus globulus</i>
Laung	Cloves	<i>Syzygium aromaticum</i>
Kateli	Yellow-berried night shade	<i>Solanum surattense</i>
Haldi	Turmeric	<i>Curuma longa</i>
Sarna	Indian senna	<i>Cassia senna</i>
Rayi	Mustard	<i>Brassica juncea</i>
Kachnar	Kachnar	<i>Bauhinia variegata</i>
Elachi	Cardamom	<i>Elettaria cardamomum</i>

Data analysis & interpretation

The comparison of level of awareness as shown in table 2 revealed that difference existed between all the three zones. The level of awareness regarding properties among those aware regarding the plants was highest in *Doaba* with a mean score of 0.48 followed by *Malwa* (mean score 0.43). It was highest for each plant in *Doaba* except Gigantic swallow wort, Garlic and Cloves.

Socio cultural zone wise comparison of level of awareness regarding medicinal plants for respiratory problems

This revealed that awareness level was highest in *Doaba* with a Chi square value of 4.48 showing a significant difference in level of awareness of rural women of three zones at 1 per cent level of significance.

The Chi square value also revealed that the zone wise difference between level of awareness regarding each plant was significantly different for all plants. For most of the plants it was significant at 1 per cent level except Black pepper, Indian gooseberry, Eucalyptus, Cloves, Yellow berried night shade, Turmeric, Indian senna and Kachnar in which difference was significant at 5 per cent level.

Plant wise, the level of awareness was highest for Cardamom (mean score 0.76) followed by Black paper (mean score 0.66), Garlic (mean score 0.6) and Indian gooseberry (mean score 0.54). The least score was for Indian senna (0.11%), Kachnar (0.11%), Mustard (0.22%) and Liquorice (0.22%).

Table 2: Zone wise level of awareness of medicinal plants for respiratory problems

Medicinal plants	Level of awareness (0-2)				
	Majha	Malwa	Doaba	Overall	Kruskal Wallis test Chi square value
Sacred basil	0.33	0.60	0.67	0.54	12.12**
Ginger	0.27	0.35	0.56	0.39	14.82**
Liquorice	0.15	0.22	0.28	0.22	14.54**
Black pepper	0.54	0.82	0.64	0.66	3.12*
Indian hemp	0	0	0	0	0
Indian lilac	0.22	0.3	0.37	0.29	6.954**
Indian gooseberry	0.42	0.71	0.48	0.54	5.404*
Gigantic swallow wort	0.25	0.38	0.35	0.32	8.72**
Onion	0.89	1.22	1.13	1.08	1.38*
Garlic	0.423	0.83	0.56	0.60	7.84**
White dammer	0	0	0	0	0
Prickly chaff flower plant	0.375	0.45	0.52	0.38	14.30**
Eucalyptus	0.25	0.25	0.38	0.29	2.79*
Cloves	0.27	0.44	0.31	0.34	0.73*
Yellow berried nightshade	0	0	0.5	0.16	5.4*
Turmeric	1.04	1.00	1.06	1.03	0.46*
Indian senna	0	0	0.33	0.11	5.4*
Mustard	0.1	0.3	0.42	0.27	3.359*
Kachnar	0	0	0.35	0.11	17.35*
Cardamom	0.76	0.74	0.76	0.75	15.97**
Mean	0.31	0.43	0.48	0.40	4.48**

(Range of mean score: Low 0.0-0.66, Medium 0.66-1.33, High 1.33-2.0)

Hence it can be concluded that level of awareness of women varies for each plant in all the three regions with women from Doaba having highest level of overall awareness followed by Malwa and Majha. Plant wise also exceptions only existed in case of Black pepper, Indian gooseberry, Gigantic swallows wort, Onion, Garlic and Clove in case of which Malwa women had highest level of awareness.

The extent of use of medicinal plants in all the zones was low (mean value 0.0-0.66) with highest in Malwa (mean value 0.33) and lowest in Majha (mean value 0.27) but the difference between regions was found to be statistically non significant.

Plant wise also, the extent of use was low except for Cardamom in Malwa (mean value 0.8). Extent of use was highest in Malwa for all plants except Indian gooseberry, Prickly chaff flower plant, Cloves and Turmeric. Extent of use of Indian gooseberry, Cloves and Turmeric was highest in Majha. Plants wise the extent of use varied significantly from region to region which can be attributed to significant variation in level of awareness in three zones regarding the properties of the selected medicinal plants.

Socio cultural zone wise comparison of extent of use of medicinal plants for respiratory problems

Table 3: Socio-cultural zone wise comparison of extent of use of medicinal plants for respiratory problems

Medicinal plant	Extent of use (0-2)				Kruskal Wallis test Chi square value
	Majha	Malwa	Doaba	Overall	
Sacred basil	0.3	0.57	0.52	0.5	8.46*
Ginger	0.3	0.4	0.37	0.4	3.0*
Liquorice	0.2	0.2	0.18	0.2	2.128*
Black pepper	0.4	0.7	0.47	0.5	4.292*
Indian lilac	0.02	0.12	0.2	0.1	6.687**
Indian gooseberry	0.4	0.39	0.31	0.4	3.765*
Gigantic swallow wort	0	0.13	0.05	0.06	0.545*
Onion	0.4	0.47	0.36	0.4	0.248*
Garlic	0.13	0.27	0.21	0.2	0.461*
Prickly chaff flower plant	0.3	0	0.3	0.2	5.344*
Eucalyptus	0.3	0	0.13	0.1	3.386*
Cloves	0.4	0.3	0.2	0.3	5.789*
Turmeric	0.6	0.5	0.4	0.5	2.681*
Mustard	0	0.05	0.2	0.1	8.612**
Cardamom	0.3	0.8	0.41	0.5	12.526**
Mean	0.27	0.33	0.29	0.30	0.211 NS

(Range of mean score: Low 0.0-0.66, Medium 0.66-1.33, High 1.33-2.0)

The difference in extent of use was statistically significant at 5 per cent level of significance for all plants except Indian lilac, Mustard and Cardamom with overall use of medicinal plants low in all regions. The chi square values in case of all the plants revealed that the extent of use of each plant for its different properties differed significantly. The value was significant at 1 per cent level for all plants except Gigantic

swallow wort, Garlic, Prickly chaff flower plant, Eucalyptus and Mustard and Cardamom, in case of which level of significance was 5 per cent.

Low level of extent of use points towards the fact that users were not always using the plant for different properties and some were using it for some purposes while other for other purpose. This can be attributed to significant difference in

level of awareness regarding these properties. Lack of awareness may be leading to lesser extent of use. Use of plants for different purpose have been found and reported by many researchers (Yirga 2010), Idrisil *et al* (2010) and Singh *et al* (2011) [35, 8, 27]. Ignacimuthu *et al* (2006) [9] and Tiwari *et al* 2007 [29] also reported similar findings. Different studies attributed different reasons for variation in use pattern (Teklay *et al* 2013, Yirga 2010, Egharevba *et al* 2008 and Parveen *et al* 2007) [28, 35, 19].

The data as presented in Table 4 revealed significant difference between the level of awareness and extent of use of medicinal plants for respiratory problems. The difference in case of Ginger, Liquorice, and Black pepper was significant at 1 per cent level of significance and for all the remaining plants at 5 per cent level.

Table 4: Difference between level of awareness and extent of use of medicinal plants for respiratory problems

Medicinal plants	Mean score (0-2)		
	Level of awareness	Level of extent	t value
Sacred basil	0.51	0.5	1.51*
Ginger	0.39	0.4	2.3**
Liquorice	0.22	0.2	1.8**
Black pepper	0.66	0.5	2.40**
Indian lilac	0.29	0.1	6.97*
Indian gooseberry	0.54	0.4	3.84*
Gigantic swallow wort	0.32	0.06	0.46*
Onion	1.08	0.4	8.66*
Garlic	0.60	0.2	6.18*
Prickly chaff flower plant	0.38	0.2	1.86*
Eucalyptus	0.29	0.1	6.54*
Cloves	0.34	0.3	3.004*
Yellow berried nightshade	0.16	0	5.0*
Turmeric	1.03	0.5	7.72*
Indian senna	0.11	0	5.2*
Mustard	0.22	0.1	3.38*
Kachnar	0.11	0	10.04*
Cardamom	0.76	0.5	2.81*

(Range of mean score: Low 0.0-0.66, Medium 0.66-1.33, High 1.33-2.0)

It can be seen that the extent of use was significantly lower than the level of awareness pointing towards a need to disseminate information regarding the methods of using of plants for respiratory problems.

Conclusion: The gradual transfer of information about medicinal plants and their properties from generation to generation has been hampered. Results point out that transfer from past to present contemporary generations is necessary for sustainability of use of medicinal plants. Extension strategies should plan to increase awareness which can lead to use. Use of media can be made to create awareness as it has been found to be associated with level of awareness

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