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Planting and Using Medicinal Plants for Health Care

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ABSTRACT

A study was undertaken in Ludhiana district of Punjab state to analyze the effect of different extension strategies in motivating families to plant and use medicinal plants for health care. Data were collected through observations and by personally interviewing the female head of the family. Beside recording observations at all stages, data were collected both before and after the interventions. It can be concluded that adoption status of selected medicinal plants changed significantly after intervention in all experimental groups. There was a significant difference in change in adoption status after the intervention between the experimental groups. ICT based media should be developed to enhance the planting and use of medicinal plants for health care.

Key Words: Adoption, Extension, Experimental, Health care, Intervention, Medicinal, Plants, Strategies.

INTRODUCTION

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). 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.

Indigenous knowledge (IK) is accumulated over a period of times in various aspects such as food security, human and animal health, education, natural resources management and other vital activities. Traditional knowledge, folk knowledge, local knowledge and wisdom of elders are some of the other terms being used but all these refer to its local origin and promotion by community. It acts as basis of decision making at the local level by communities and is a key element of the social capital of the poor. It is their asset which helps them to gain control of their own lives (Gorjestani, 2000). (Abhijit *et al*, 2020) studied ITK for control of insects pests in filed crop and diseases in livestock in Bar-ka-Nagla village of Farah block of Mathura district of Uttar Pradesh, India. Mahajan *et al* (2012) provided information on the indigenous therapeutic application and other traditional uses of 40 plant species belonging to 27 families that are used by the natives of Jammu areas.

Sharma (2015) studied the usage pattern of medicinal plants particularly for preventing and treating respiratory health problems. It was found that women older in age were using more of medicinal plants then the younger women. The users were mainly using the plants for medicinal purpose because they were convinced that these do not have side effects and were cost effective. Kaur *et al* (2017) revealed that women with more awareness regarding the use of medicinal plants were the actual users.

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India is rightly called the Botanical garden of the World as it is the largest producer of medicinal plants (Umadevi *et al,* 2013). One hundred fifty-one herbs of one state of India (Punjab) playing an important role in curing different health problems had been documented (Singh *et al,* 2018). Sidhu (2006) attempted to understand the awareness status of rural women regarding medicinal plants. Less than 10 percent of the women were familiar with certain plants, such as Indian seena and Touch me not, whereas all of the women were aware of others including *Chebulic myrobalan,* Turmeric, Black pepper, Indian lilac Dry ginger and Arecanut. It was suggested that extensive plans must be made for the intra-social distribution of the information to ensure continuity of this rich legacy. Sekhri *et al* (2013) conducted a study on perception and knowledge about use of medicinal plants and use of herbal products. It was found that 60.77 percent of respondents had used herbal medication for various ailments. Highest frequency was recorded for the use of Ginger (37.50%) followed by *Neem* (16.66%) Turmeric (15%) and *Tulsi* (13.33%). Sharma and Sidhu (2016) emphasized planned extension strategies for the passage of indigenous knowledge of medicinal plants among the masses.

Varied extension strategies have been used to study and document information about herbs and plants. However, planned strategies for grassroot dissemination need to be formed and used to sensitize younger generation of their properties and use so as to help in passage of this useful information. Higher consumption will help not only in more plantation to earn profits but also preserve highly useful plants beside reducing load on modern medical system of health care.

MATERIALS AND METHODS

Study Area and Selection of Respondents

The study was conducted in Ludhiana district of Punjab. Five blocks namely Pakhowal, Doraha, Sudhar, Samrala and Jagraon were selected out of 13 blocks for convenience of strategy implementation. Keeping in view the nature of the design one village was randomly selected from each of these blocks. Hence a total of five villages namely Mansuran from Pakhowal, Rampur from Doraha, Bopa Rai Kalan from Sudhar, Bhagwanpura from Samrala and Pabian from Jagraon block were selected.

Out of each of the village, a sample of 30 households having space for plantation with or outside the house were selected randomly for implementation of the strategy. Each household represented one unit for data collection and implementation of the selected strategy. Hence, a total of 150 households were selected as sample of the study and the female working head of the selected family was considered as the main target for implementation of the strategy and the sample of the study.

Data collection and intervention schedule

Three approaches were used in four combinations and implanted in four villages to study their effect on adoption status of medicinal plants.

strategy under Experimental group 11: Individual + Mass approach. In third village implemented strategy under Experimental group III: Group+ Mass approach and in Fourth village implemented strategy under Experimental group IV: Individual +Group + Mass approach

Table 1. Distribution of respondents according to growing and using selected medicinal plants for health care (n=150)

Plants	Control group (n^c=30)		Experimental group									
			EG I (n^1=30)		EGII (n^2=30)		EGIII (n^3=30)		EGIV (n^4=30)		EG (n^5=120)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
	Frequency (%)		Frequency (%)		Frequency (%)		Frequency (%)		Frequency (%)		Frequency (%)	
Aloe vera *(Aloe barbadensis miller)*	15 (50.0)	15 (50.0)	15 (50.0)	16 (53.3)	6 (20.0)	19 (63.3)	15 (50.0)	21 (70.0)	3 (10.0)	11 (36.7)	39 (32.5)	67 (55.8)
Brahmi *(Bacopa monnieri)*	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Curry tree *(Murraya koenigii)*	7 (23.3)	9 (30.0)	3 (10.0)	16 (53.3)	6 (20.0)	8 (26.7)	4 (13.3)	10 (33.3)	5 (16.7)	14 (46.7)	18 (15.0)	48 (40.0)
Holy basil *(Ocimum tenuiflorum)*	20 (66.7)	21 (70.0)	23 (76.7)	26 (86.7)	17 (56.7)	21 (70.0)	20 (66.7)	26 (86.7)	15 (50.0)	18 (60.0)	75 (62.5)	91 (75.8)
Heart -leaved moonseed (Giloy) *(Tinospora cordifolia)*	2 (6.7)	4 (13.3)	7 (23.3)	8 (26.7)	3 (10.0)	8 (26.7)	2 (6.7)	7 (23.3)	7 (23.3)	8 (26.7)	19 (15.8)	31 (25.8)
Lemon grass *(Cymbopogon citratus)*	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	11 (36.7)	0 (0.0)	11 (9.2)
Turmeric *(Curuma longa)*	0 (0.0)	1 (3.3)	5 (16.7)	6 (20.0)	1 (3.3)	1 (3.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	6 (5.0)	7 (5.8)

Hence, it can be concluded that few respondents were growing selected medicinal plants except Holy Basil *(Ocimum tenuiflorum)* and Aloe *(Aloe barbadensis miller)* vera before the intervention. Percentage of respondents growing medicinal plants except Brahmi *(Bacopa monnieri)* increased within three months of the intervention.

Maximum increase after intervention was observed in case of Aloe vera followed by Curry Tree *(Murraya koenigii*), Holy Basil *(Ocimum tenuiflorum)*, Heart Leaved Moonseed (*Giloy*) *(Tinospora cordifolia)* and in Lemon Grass *(Cymbopogan citratus)*. Least increase was observed in case of planting Turmeric *(Curuma longa)* (except Brahmi) *(Bacopa monnieri)* after the intervention for health purpose.

Medicinal plant parts procured before and after the intervention

Many of the respondents reported procurement of parts of selected medicinal plants. Comparative data pertaining to procurement before and after the intervention as in Table 2.

Holy basil *(Ocimum tenuiflorum)* was procured by 33.3 per cent before and after the intervention in control group. However, same percentage was found 37.5 per cent before and after the intervention in experimental groups. Most of the respondents were procuring Turmeric *(Curuma longa)* before the intervention for different purpose and some were using it for health benefits. Hence, there was no change in the procurement status. Those who were not procuring were the growers of turmeric. All the respondents in control group, experimental group III and IV were already using it by procurement.

These finding were agreement with Gautam *et al* (2011) reported the use of plants-based remedies to heal about ten different sorts of disorders pertaining to the stomach, mouth, cough, cold, skin, blood, vitality and strength, bones, muscles and other areas like memory and swelling etc. Anand (2016) found use for curing cough and cold in Tamil Nadu and Gupta *et al* (2018*)* in Rajasthan. Even Sharmila *et al* (2018) reported that medicinal plants were being used for skin care.

Heart- leaved moon seed *(Tinospora cordifolia)* plant was not procured by any respondent after the intervention in control group but there was exponential increase in experimental groups from 6.7 per cent to 80.8 per cent. Nearly same percentage increase was

Table 2. Distribution of respondents according to procurement of selected medicinal plants /parts for their use for health. (n=150)

Plants	Control group (n^c=30)		Experimental group									
			EG I (n^1=30)		EGII (n^2=30)		EGIII (n^3=30)		EGIV (n^4=30)		EG (n^5=120)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
	f (%)		f (%)		f (%)		f (%)		f (%)		f (%)	
Aloe vera *(Aloe barbadensis miller)*	0 (0.0)	0 (0.0)	0 (0.0)	14 (46.7)	0 (0.0)	10 (33.3)	0 (0.0)	9 (30.0)	0 (0.0)	19 (63.3)	0 (0.0)	52 (43.3)
Brahmi *(Bacopa monnieri)*	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Curry tree *(Murraya koenigii)*	1 (3.3)	1 (3.3)	1 (3.3)	15 (50.0)	1 (3.3)	23 (76.7)	1 (3.3)	21 (70.0)	1 (3.3)	17 (56.7)	4 (3.3)	76 (63.3)
Holy basil *(Ocimum tenuiflorum)*	10 (33.3)	10 (33.3)	7 (23.3)	7 (23.3)	13 (43.3)	13 (43.3)	10 (33.3)	10 (33.3)	15 (50.0)	15 (50.0)	45 (37.5)	45 (37.5)
Heart -leaved moonseed (Giloy) *(Tinospora cordifolia)*	1 (3.3)	1 (3.3)	3 (10.0)	25 (83.3)	1 (3.3)	23 (76.7)	3 (10.0)	26 (86.7)	1 (3.3)	23 (76.7)	8 (6.7)	97 (80.8)
Lemon grass *(Cymbopogo n citratus)*	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Turmeric *(Curuma longa)*	30 (100.0)	30 (100.0)	25 (83.3)	25 (83.3)	29 (96.7)	29 (96.7)	30 (100.0)	30 (100.0)	30 (100.0)	30 (100.0)	114 (95.0)	114 (95.0)

Table 3. Adoption status of medicinal plants for health care before and after the intervention.

Adoption status (Range 0-8)		Experimental group				
	CG	EGI	EGII	EGIII	EGIV	EG
Pre intervention	1.05	1.18	0.86	0.99	0.83	0.97
Post intervention	1.63	5.30	5.36	5.50	5.54	5.44
Difference	0.58	4.11^{B}	4.50^{AB}	4.51^{AB}	4.70^{A}	4.46
't' value	4.76**	44.20**	31.77**	42.02**	44.53**	75.11**
't' value CG with EG	29.07**					

*Mean values followed with different superscripts are significantly different (p<0.05) using Tukey's test. **significant at the 0.01 level*

found in all experimental groups such as in experimental group III (10.0% to 86.7 %), experimental group I (10.0% to 83.3%) and 3.3 per cent to 76.7 per cent in experimental group II and experimental group IV.

Curry tree *(Murraya koenigii)* leaves saw an increase of nearly 60.0 percent in experimental groups whereas there was no increase in control group. Maximum increase in respondents who started to procure curry tree leaves after the intervention was found in experimental group II (3.3 % to 76.7%) and nearly same in experimental group II (3.3 % to 70.0%). Least increase was observed in experimental group experimental group I (3.3 % to 50.0 %). None of the respondents started procuring and using Brahmi and Lemon grass before and after the intervention.

Hence, it can be concluded that procurement of plants for health purpose increased for all plants except Turmeric *(Curuma Longa)* after the intervention as Turmeric *(Curuma Longa)* was already procured by majority of the respondents. Lemon grass

(Cymbopogon citratus) and Brahmi *(Bacopa monnieri)* was neither procured before nor after the intervention for their use in health care.

Adoption status of medicinal plants for health care before and after the intervention

The mean difference in adoption status before and after the intervention was highest in experimental group IV (4.70) followed by experimental group III (4.51), experimental group II (4.50) and least difference after the intervention was observed in experimental group I (4.11). This change in adoption status after the intervention was found to be statistically significant at 1.0 per cent level of significance using 't' test. Further, the mean change was significantly higher in experimental groups as compared to control group (t test value= 29.07).

Tukey's test was used to compare the effect of different strategies on adoption status. It was found that even though the change in experimental group III (mean difference score=4.51) was higher than that happened in experimental group II (mean difference score 4.50) but comparison within these two groups was not statistically significant. On the other hand change was significantly different between EGI and other EG's and EGII and other EG's.

Findings of the study indicated that adoption status of selected medicinal plants changed significantly after intervention in all experimental groups and change was significantly different between control group and experimental groups. Maximum increase in adoption status was observed in experimental group IV followed by experimental group III, experimental group II and least in experimental group I. Samal and Dehury (2018) also recommended higher level of awareness and governmental patronization to make this system useful for the common population. Sandhu K (1994) and Chand *et al* (2011) also emphasized on the characteristics of innovations for their adoption. Show casing relative advantage of medicinal plants and their easy use trialability can improve perception leading to their adoption. Rogers (2003) found adoption to be dependent on perception as was also found in case of the present study.

CONCLUSION

Taking into account the pre and past intervention adoption status which was reflected in new plantation, decision to plant later and use medicinal plants by procurement, it can be concluded that medicinal plants were being used for different health purposes along with other purposes like adding taste and flavour to food, improving its nutritive value and storage. The present study shows that very few families were growing selected medicinal plants except Holy basil *(Ocimum tenuiflorum)* before the intervention even when they had sufficient space to grow either at home or in the adjoining area to their home. Large percentage were procuring Turmeric *(Curuma longa)* as an important ingredient of Punjabi cooking and were using it for health care too. Lesser plantation can be attributed to the season of plantation as post intervention adoption data was collected within three months of the intervention. Plants like Heart-leaved moonseed (Giloy) *(Tinospora cordifolia),* Aloe vera *(Aloe barbadensis miller)* and Lemon grass *(Cymbopogon citratus)* are readily available at the household level free of cost and planted during rainy season. hence, the decision to plant later was very evident. It was concluded that all approaches used together generated very positive change in adoption status but group and mass approach combined together emerged as the best strategy among those strategies in which only two approaches were used. Hence, use of ICT emerged as the common factor which created more positive impact particularly taking into account the resources both human and non-human. Use of developed material repetitively using ICT can save lot of resources beside creating a diffusion effect through its passage within the social system.

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