Original Research Article

Constraints Faced by the Tribal farmers in the Adoption of Ethno-Medical Practices in Idukki district of Kerala

Abstract

The study was conducted with the aim of identifying constrains faced by the tribal farmers in the adoption of ethno-medical practices. The study was carried out in the Idukki district of Kerala among the nine major tribal groups in all the eight blocks in the district, who were primary engaged in agriculture and allied occupations. The most essential constraints faced by the tribal farmers in adopting EMPs in the decreasing order of importance are it is time-consuming, challenging, and often dangerous to search for herbs in the forest and bushes, depletion of much of the trees and herbs from local medicine sources, the lack of standardization of EMPs and documentation, individualism prevents people from transmitting information to others, prescription variations such as the quantity and periodicity, inadequate recognition of the importance of EMPs on the broader (nonindigenous) community, no external funding to exercise these skills in new and demanding contexts generating public benefit, regressive government regulations, banning such practices as cannabis cultivation, illegal tree cutting, etc., less effective in large scale production, the younger generation has a distorted attitude towards using EMPs due to their education and exposure to modern training, too much or less rainfall and often drought, erratic or unreliable weather conditions, lack of chances of exposure to EMPs, it requires more time to deliver the desired results and the destruction of nutrient-rich staple food from mainstream community food.

Key words: Constraints, Ethno-medical practices, Tribal groups, Agriculture and Allied occupations

1. Introduction

Human beings have been utilizing plant genetic resources for edible, medicinal, and other material purposes for hundreds of thousands of years. It is impossible to consider human health alone as we depend heavily on the nature of the ecosystems in which we live. Ethno

medical practices are the information and awareness about the quality and use of ethno medical formulations by word of mouth from one generation to the next generation within a community. It has been spread throughout the world with significant contribution to different aspects of the healthcare system (Deb Roy *et al.* 2023). It is a compilation of empirical practices integrated into the perception of a social group to address health issues. It provides extensive insight into food, medicine, and health care to millions of people in developing countries (Kumar MM *et al*. 2020, Kumar *et al*. 2021). It constitutes an important therapeutic aid in alleviating ailments. These practices are regarded as safer than medication with synthetic products or drugs (Hurkadale *et al.* 2023). It is considered cheaper, more accessible, and acceptable than any other medical system because it blends readily into people's social-cultural life (Eswarappa K 2022, Barbhuiya *et al.* 2022).

Utilization of ethno medicinal knowledge, its characterization, and identifying bioactive constituents may open a new dimension to fighting diseases in a better way. It is essential to make a comprehensive inventory of the medicinal components of a community for restoration and sustainable use of their knowledge (Siddique *et al*. 2021). This constitutes essential health and economic aspects of biodiversity however the loss of biodiversity, destruction or unscientific use of medicinal plants, and rapid depletion of the forests cause directly or indirectly the ancient knowledge of many medicinal plants and human wellbeing adverse (Souza E *et al*.2018). Ethno-medicinal formulations dispensed in crude drug forms served as the basis of novel drug discovery (Kumar D *et al*.2023). Whereas growing interest in ethno medicine of the modern world increases researchers' responsibility to fulfil everyday healthy life needs. However during the use of EMPs, the tribal farmers are found to encounter the various constrains and hence this study was conducted to document and analyse such constraints faced by the tribal farmers with the following specific objectives.

2. Objectives of the study

1. To identify the constraints in the adoption of ethno medical practices faced by the tribal farmers in the Idukki district of Kerala
2. To analyse the constraints documented in order to overcome them

3. Methodology

The study was conducted in the Idukki district of Kerala with the prime objective of documenting constraints faced in the adoption of indigenous medical practices among the

tribal farmers. This district was selected use nine major tribal groups are found here; they were primarily engaged in agriculture and allied occupations. Due to the forest richness, biodiversity and remoteness, tribal farmers were supposed to be the high users of ethno medical practices. Further, the district occupies the first position in the agricultural labourers and medicinal plants cultivation.

All the eight blocks in this district were selected purposively because all the nine different tribal populations were scattered in all the blocks. Village wise information on area under tribal population was obtained from the officers of Integrated Tribal Development Project, Thodupuzha, and tribal promotor workers of each Village Panchayat Office helped to identify the village panchayaths in which maximum tribal farmer population was available. From each block, two or more villages having the highest population of tribal farmers were purposively selected for the study. Thus, a total of forty villages were identified for the study. Based on the people and routine of ethnomedical practices, nine different tribal groups viz., namely Mala Arayan, Muthuvan, Mannan, Urali, Ulladan, Paliyan, MalaPulayan, Malavedan, and Mala Pandaram were selected for the study. The sample of 452 farmers selected through proportionate random sampling technique were contacted with the open ended questionnaire.

The constraints experienced by the tribal farmers in the adoption of the ethono-medical practices were collected through open-ended questionnaire. The respondents were asked to enumerate their constraints and rate them based on their severity and importance on a three point continuum as follows.

Response	Score
Very important	3
Important	2
Less important	1

The scores obtained for each constraint based on the response of all the respondents were summed up and divided by the total number of respondents to get the severity score of each constraint. Then based on the severity scores, the constrains were ranked.

4. Results and Discussion

In this study, constraint analysis focuses on the bottlenecks within the tribal farmer's community to adopt EMPs. All the tribal farmers face significant challenges to adopt EMPs,

but these challenges do not all equally restrict the adoption of EMPs. Prioritizing constraints is vital since a tribal farmer's capacity, available resources, and attitude to address these challenges are scarce and valuable. Though the overall adoption and practice wise adoption of EMPS was found to be higher among the tribal farmers, they had also faced some constraints in the adoption of EMPs expressed during the course of the investigation, and the same has been presented in the following table.

Table1. Average score and rank position of constraints faced by the farmers in adopting ethno-medical practices (n = 452)

S.No	Constraints	Score	Rank
1	It is time consuming, challenging and often dangerous to search for the herbs in the forest and blushes	**2.52**	**I**
2	Depletion of much of the trees and herbs from local medicine sources	**2.46**	**II**
3	The lack of standardization of EMPs and documentation	**2.35**	**III**
4	Individualism prevents people from transmitting information to others	**2.30**	**IV**
5	Prescription variations, such as the quality and periodicity	**2.27**	**V**
6	Inadequate recognition of the importance of EMPs on the broader (nonindigenous) community	**2.14**	**VI**
7	No external funding to exercise these skills in new and demanding contexts generating public benefit	**2.10**	**VII**
8	Regressive government regulations banning such practices as cannabis cultivation, illegal tree cutting etc	**2.09**	**VIII**
9	Less effective in large scale production	**2.00**	**IX**
10	The younger generation has a distorted attitude towards using EMPs due to their education and exposure to modern training	**1.97**	**X**
11	Too much or less rainfall and often drought erratic or unreliable weather conditions	**1.95**	**XI**
12	Lack of chances of exposure to EMPs	**1.90**	**XII**
13	EMPs require more time to deliver the desired results	**1.86**	**XIII**
14	The destruction of nutrient rich staple food from	**1.67**	**XIV**

	mainstream community food		

The most important limiting factors in the adoption of EMPs are time-consuming, challenging, and often dangerous in the searching for herbs in the forest and bushes. Most of the medicinal plants and other ingredients of EMP's such as honey and other NTFPs are collected from the interior forest area. They have to travel much to collect medicinal plants through the forest. It takes more time to travel. Fetching of collected items overhead through miles makes is more time consuming and tedious. Finding out the way for the travel and identification of the particular medicinal species are great challenges for them. Presence of wild animals like elephant, monkey, and snakes make the travel and collection more dangerous.

The second major constraint is the depletion of much of the trees and herbs from local medicinal sources. The destruction of biodiversity by human activity affects the availability of medicinal plants and the traditional knowledge associated with them. Due to deforestation, many medicinal plants are not available to the local community. As a result, traditional methods of collection and use of medicinal plants are on the verge of extinction. Even though some efforts - including in situ and ex-situ techniques- to conserve plant resources are going on, pesticides and manures affect the value and effectiveness of the medicines. Climate change is likely to affect people's access to medicinal plants. Small taxa such as herbaceous plants will be some of the first to be affected by climate change. Majority of the tribal farmers complained about the unavailability of many of the species of flowers and fruits they regularly use. This affects their traditional plant harvesting. Some species are found at a higher elevation: herbs that were available just a day's walk away from their homes are now more challenging to procure.

The third severe constraint reported by the tribal farmers is the lack of standardization and documentation of EMPs. Herbal healers and aged knowledgeable persons of tribal farmers are the custodians of EMPs. They have information regarding the use of different medicinal plants for curing several ailments. Even though the identity, quality, purity, and safety of EMPs are essential concerns, conventionally used primary natural sources may contain some hazardous contaminants, including heavy metals, toxic substances, and foreign materials. The stepwise standardization process that includes pharmacognostic studies like organoleptic, macroscopic, and micro and ecophysiological features and the evaluation of physicochemical

parameters, etc. are essential to identify a plant as a crude drug source, and they are absent in EMPs. EMPs related knowledge of tribal farmers are fast disappearing because they are transferred orally to the next generations. Because of the rapid loss of such knowledge, its documentation, and a better understanding of its Botanico-historical root have become an essential task. The documentation of EMPs may help to preserve cultural heritage. It may act as a basis for drug research and preserving biological diversity.

Farmers perceived individualism that prevents people from transmitting information to others. This is the fourth major constraint faced by them in the adoption of EMPs. Individualism influences knowledge about EMPs. The main ingredients of the EMPs, dosage, shelf life, and usage are varied according to the individual herbal practitioner or farmer. They are custodians of their knowledge. They hesitate to transfer the knowledge to a person other than any of the particular person in that family. This affects the transfer of knowledge about EMPs, and it is highly skill-based so that all the persons couldn't practice the EMPS in the same way. They keep the knowledge a secret within the individual or family. If they failed to transfer the knowledge to the next generation, the chances of losing are more about that knowledge and lead to the non-adoption of these practices.

A prescription variation, such as the dosage and duration of treatment, was the fifth important constraint expressed by the farmers in adopting EMPs. The prescription of the EMPS may vary according to the gender, physical condition, previous medical background, age, consumption of food, etc., of the individual patient. So only highly skilled and experienced person/ herbalists can recommend an EMP to a patient. Otherwise, it may affect the efficiency of the practice and may lead to any of the side effects.

Another problem concerning the adoption of EMPs was inadequate recognition of the importance of EMPS in the wider community. The highly educated individuals and new generations of the community always search for modern health care measures, and they perceived that EMPs are outdated. The EMPs are not getting enough recognition from the community due to the availability of sophisticated and readymade modern medicine as per the need. Due to lifestyle changes, people look for the convenient, comfortable, and easiest way of the curing process. One of the main problems related to EMPS is following a strict diet according to their physical condition, but the majority of the people couldn't follow this due to the lifestyle changes.

Unavailability of external funding to exercise these skills in a new and demanding context generating public benefit constrained the farmers in their adoption of EMPs. Discovering a new formulation for unexpected pandemics or common illness may take time, and they need much more experiments to fulfil that aim. They face much more difficulty to meet expenses for getting inputs travel for collection of inputs, experiments, etc. The absence of funding agencies for the upbringing EMPs may show that the experiments are time-consuming and difficult. Identification of new medicinal plant species, formulations, and practices may take more time to establish in a community. The funding agency's presence may motivate the tribal farmers to find new EMPs for expected pandemics because money is one of the important factors of production.

Regressive government regulations such as banning cannabis cultivation, illegal tree cutting, etc., are rated as the eighth severe constraint faced by the farmers in the adoption of EMPs. EMPs are generally based on locally available plant species such as herbs, shrubs, and trees. The important parts used for the practices from the majority of the plants are root and heartwood. For these purposes, they want to cut the trees. But due to government regulations, they are only allowed to NTFPs. Also, cutting and collection of trees are banned due to various reasons.

Less effectiveness of EMPs in large scale production may be identified as the ninth important constraint perceived by the tribal farmers. They perceived that fresh preparations of the EMPs are more effective than stored preparations, but it has less shelf life than preparations like oil, powder, etc. Tribal farmers are not using preservatives for their medicinal formulations. Large scale or mass production of ethnomedical formulations may force them to add any of the preservatives. The majority of the tribal farmers who used jaggery as a preservative to the formulation and may get fermented after a while and affect the effectiveness of the formulation due to the increase in acidity. Hence, they prefer fresh formulations according to the need of time without any preservatives.

The tenth major constraint perceived by the tribal farmers was education and exposure of the younger generation to modern training, which lead to forming a distorted attitude of people towards using EMPs. The younger generations from the tribal people have started to get educated nowadays due to the activities of some Christian missionaries and NGOs. They are coming out of their settlements and staying in hostels to achieve their goals, and hence they are getting the opportunity to mingle with modern people, and they get chances of

improving their attitude. The educated tribal young generations are trying to stay away from the settlements, and they only visit their home very rarely. Due to this acculturation among the educated tribal people, they are reluctant to share their knowledge with them, and the younger generation is not interested in EMPs. The present generations are more interested in listening to music and tales from TV and radio broadcast rather than attending the traditional folklore activities. Advancement and linkage with technologies such as TV and radio had replaced the oral culture. In the study area, the majority of the younger generation, tribal people, are using mobile phones also. They are very much interested in getting a government job and exposed to modern culture. They also feel that their culture and knowledge are inferior to modern culture. Hence, they get more attached to modern culture due to their higher education and training.

Farmers perceived too much or less rainfall and often draught, erratic or unreliable weather conditions as the eleventh constraint faced by them in the adoption of EMPs. Tribal farmers generally live in forest areas where they become familiar with various plants and animal species that they sustainably use for their food and medicinal purposes. Deforestation and climate change very much affected their culture and economy, and the loss of medicinal plants and animal species affect their ethno medical practices. Due to climate change, there is a substantial change in various types of vegetation; this leads to a profound impact on both procurement and preparations of EMPs. The drastic change in climate causes the degradation of the ecosystem.

It has been causing the gradual disappearance of certain plant species, thereby creating a situation that will pose formidable challenges to the future EMPs. Currently, species procurement required by medical practitioners and farmers needs long-distance travel, which affects the operational cost of providing ethno medical services and the form of medicine prepared. For instance, various decoctions and tinctures are increasingly replacing freshly prepared herbal medicine for their durability. Destruction of forests through logging, illicit crop production, and deforestation for charcoal making and fuelwood harvesting are also negatively affecting the EMPS.

Lack of chances of exposure to EMP was identified as another constraint in the adoption of EMPs. Knowledge on ethno medicine is disappearing at a rapid pace due to cultural change as well as modernization. This causes dwindling access to natural medicinal sources. Many villages no longer have the surrounding natural habitat, previously serving as

medicinal cabinet. Local ecosystem transformation shaped through modern economic activities and cultivation practices has allegedly imposed severe bottlenecks as the availability as well as the accessibility of specific kinds of species having medicinal value. Due to the acculturation and modernization, many of the tribal farmers are facing the constraint of the disappearance of vernacular language. This is directly affecting the knowledge sharing among the farmers and reducing the chances of exposure to the culture too.

Another constraint faced by the tribal farmers for the adoption of EMPs is more time to deliver the desired result from the EMPs. The age, physique, gender, food habit of the patients, etc., are the factors that may influence the time of desired result delivery of the EMPs. The patients may follow strict and required advice from the practitioner for a speedy recovery. The majority of people feel that it is difficult as compared to modern medicine.

The destruction of nutrient-rich staple food from mainstream community food is one of the serious issues among the tribal farmers in the adoption of EMPs. Biodiversity erosion, modernization, acculturation and interference, and implementation of various government schemes and programs had forced the discontinuance of the adoption of various traditional cultivated varieties and landraces. Food- medicine interaction is one of the important parts of the tribal diet. The sick person and aged people may follow a strict and customized diet with traditional varieties. Due to the large-scale monoculture and interference of non-tribal communities as the market, they lost their traditional cereals, banana varieties, taro varieties, bred fruit, arrowroot, etc., from the mainstream community food. The interference of the government with nutritional supplements through Anganwadi, especially for the girl child, pregnant mother, and infants, also forced them to incorporate those into their diet. They were forced to change the traditional diet, and nowadays, they have also started to follow the non-tribal diet, and it is affecting the adoption and effectiveness of EMPs directly and negatively.

The results are partially in conformity with the findings of Akullo *et al.* (2007).

5. Conclusion

Though the tribal farmers were found to face fourteen constraints with a score rank of 2.52 to 1.67 in the adoption of ethono medical practices, they were still found to adopt a considerable number of EMPs to ameliorate health issues and to maintain the wellbeing of human health. Hence the government and non-governmental agencies and research

institutions may initiate necessary steps to help farmers for overcoming the constraints in order to encourage them for increased adoption of ethono medical practices.

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