***Original Research Article***

***Assessing the relationship of profile characteristics of the tribal farmers with adoption of Ethno medical practices******in Idukki district of Kerala, India***

***Abstract***

*Ethno-medicine, rooted in indigenous knowledge, has long been vital for tribal communities. This study examines the adoption of ethno-medical practices (EMPs) among tribal farmers in Idukki, Kerala. Data from 452 farmers across nine tribal groups reveal that 77.88% show medium to high EMP adoption. Correlation analysis showed Age, farm size, farming experience, self-reliance, conservatism-liberalism, fatalism-scientism, religious beliefs, strong intra-tribal communication, environmental awareness, belief in EMPs, and favourable attitudes toward them positively influenced the adoption of EMPs. Conversely, characteristics such as educational status, occupational status, family status, material status, farm power status, mass media participation, extension agency contact, value orientation, scientific orientation, innovativeness, economic motivation, progressivism-traditionalism, rational orientation, livestock possession, and social participation negatively impacted the adoption of EMPs. The study concludes that traditional practices remain significant but face challenges from modernization and formal healthcare. Integrating ethno-medicine with modern systems can preserve traditional knowledge while addressing tribal communities' evolving health needs.*

***Key words:*** *Ethno medical practices, Adoption, Relationship*

1. ***Introduction***

*Ethno-medicine, the practice of traditional healing and the use of indigenous knowledge for health care, has been a cornerstone of tribal communities for centuries (Gujar et al., 2017). In India, especially among the tribal populations, these practices are intricately linked with their cultural, social, and environmental contexts (Jannat et al., 2021; Reddy et al., 2023). Idukki district in Kerala, home to a significant tribal population, is a region rich in biodiversity and traditional knowledge systems. The tribal farmers in this district have historically relied on ethno-medical practices, utilizing local flora, rituals, and healing techniques passed down through generations to address their health needs (Government of Kerala 2020).*

*However, in the face of rapid modernization, increased access to formal healthcare, and shifting socio-economic conditions, the adoption of these traditional practices is under pressure (Jayakumar M 2018). Understanding the factors that influence the adoption of ethno-medical practices among tribal farmers in Idukki is critical to preserving this valuable heritage while ensuring the community’s health needs are met (Ministry of Tribal Affairs, Government of India2015). This study aims to explore the relationship between the profile characteristics of tribal farmers and their continued use of ethno-medical practices. By identifying these factors, we can gain insights into how traditional knowledge is maintained or transformed within these communities, providing a foundation for more effective integration of ethno-medicine with modern healthcare approaches.*

1. ***Objectives of the study***
2. ***To assess the level of adoption of ethno-medical practices among tribal farmers***

*2.* ***To examine the relationship between tribal farmers' profile characteristics and their adoption of ethno-medical practices***

1. ***Methodology***

*The main objective of the study, which was carried out in Kerala's Idukki district, was to find out the relationship of profile characteristics of the tribal farmers with adoption of Ethno medical practices. Nine significant tribal groups were present in this district, and their primary means of subsistence were agriculture and related industries. Tribal farmers were expected to be among the most frequent users of ethnomedical practices because of the richness, biodiversity, and remoteness of the forest. In addition, the district leads the nation in the cultivation of medicinal plants and agricultural laborers. Due to the dispersion of the nine distinct tribal populations throughout the eight blocks in this district, each block was chosen with purpose. For the objective of the study, two or more villages from each block with the largest number of tribal farmers were specifically chosen. As a result, forty villages in all were chosen for the investigation. Nine distinct tribal groups- Mala Arayan, Muthuvan, Mannan, Urali, Ulladan, Paliyan, Mala Pulayan, Malavedan, and Mala Pandaram were chosen for the study based on their population and customs surrounding ethnomedical practices.*

*In this study, adoption was operationalized as, whether an individual respondent had practiced ever each of the selected ethno-medical practices. The selected ethno-medical practices were explained to the respondents one by one, each time inquiring whether they had ever adopted the practice in the previous years. If the answer was "Yes", a score of one was assigned and if the answer was "No", zero score was given. The scores obtained for all the practices were summed up for each respondent and the adoption score was arrived at. Then the adoption quotient for each individual was worked out by using the following formula.*

 *Adoption Quotient*$=\frac{Number of ethno medical practices adopted}{Number of ethno medical practices applicable} x 100$

*Simple correlation coefficients were worked out to find the relationships of profile characteristics of the tribal farmers with adoption of Ethno medical practices. In order to test the significance of the observed correlation coefficient, the student t-test at (n-2) degrees of freedom was used. The significance of correlation was tested at 1 percent and 5 percent levels.*

1. ***Results and Discussion***

***4.1. Overall adoption of Ethno- Medical Practices by the farmers***

***The adoption of a practice/technology eventually decides its significance or usefulness. Ethno medical practices are no exception, either. Here the mean score and possible score range of various EMPs by the tribal farmers has been illustrated in Table 1.***

***Table 1. The score range, mean, standard deviation and coefficient of variation of adoption scores of the respondent farmers (n=452)***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Mean Score*** | ***SD*** | ***CV (%)*** | ***Obtained score range*** | ***Possible score range*** |
| ***68.49*** | ***5.06*** | ***25.65*** | ***56.03-81.80*** | ***0-100*** |

***A glance at Table 1 shows that the mean adoption score was 68.49, which means that the farmer's adoption of ethno medical practices was nearly 70 percent. The obtained score range was 56.03 to 81.80, revealing that there were no farmers with less than 56 percent adoption of EMPs, and the same time, there were even farmers having nearly 82 percent adoption level. The categorization of farmer respondents based on their adoption scores is presented in Table 2.***

* 1. ***Overall adoption of EMPs***

***As depicted from the below Table 2, majority (45.13%) of the farmers were in the medium adoption level category, followed by 32.75 percent farmers in the high category. The mean adoption score of farmers was found to be 68.49, which meant that the farmer's adoption of EMPs was nearly 70 percent which might be due to their culture playing a vital role in the health of an individual to the social group; ethno medical practices are age-old and economically friendly with the natural up keeping of health. Again, there is a clear indication of the pervasiveness of the ethno medical practices among the tribal farmers of Idukki district, Kerala, that they were not acquainted with modern health care practices. However, the Government, research system or extension system were motivated to adopt the modern health care system.*** *The findings derive indirect support from kumar et al., (2021)*

***Table 2. Distribution of Respondents according to their overall adoption of EMPs***

|  |  |  |  |
| --- | --- | --- | --- |
| ***Sl.No*** | ***Categories*** | ***Number*** | ***Percentage*** |
| ***1*** | ***Low*** | ***100*** | ***22.12*** |
| ***2*** | ***Medium*** | ***204*** | ***45.13*** |
| ***3*** | ***High*** | ***148*** | ***32.75*** |
|  ***Total*** | ***452*** | ***100.00*** |

***4.2. Relationship of profile characteristics of the tribal farmers with adoption of Ethno medical practices***

 *To study the relationship between the profile characteristics and adoption of EMPs, correlation analysis was carried out. The results of this research are presented in Table 3.*

*From Table 3, it could be seen that eleven out of the twenty-six variables showed a positive relationship while fifteen variables showed a negative association with the adoption of EMPs. Age, Farm size, Years of experience, Self-reliance, Conservatism-Liberalism, Fatalism- Scientism, Religious belief, Intra tribal communication, Environmental orientation, Belief in EMPS and Attitude towards EMPS were found to have a significant and positive relationship with adoption of EMPS at 1% level of probability. In contrast, Educational status, Occupational status, Family status, Material status, Farm power status, Mass media participation, Extension Agency contact, Value orientation, Scientific orientation, Innovativeness, Economic motivation, Progressivism-Traditionalism and Rational orientation were found to have a significant and negative relationship with adoption of EMPs at 1% level of probability. Livestock possession and Social participation had a negative and significant relationship at a 5% level of probability.*

***Table 3. Correlates of profile characteristics with the extent of adoption***

|  |  |  |
| --- | --- | --- |
| ***Sl.No*** | ***Profile Characteristics*** | ***Correlation ‘r” Value*** |
| *1* | *Age* | *0.462\*\** |
| *2* | *Educational status* | *-0.191\*\** |
| *3* | *Occupational Status* | *-0.241\*\** |
| *4* | *Family status* | *-0.172\*\** |
| *5* | *Farm size* | *0.393\*\** |
| *6* | *Livestock possession* | *-0.110\** |
| *7* | *Material status* | *-0.196\*\** |
| *8* | *Farm power status* | *-0.180\*\** |
| *9* | *Year of experience* | *0.497\*\** |
| *10* | *Social participation* | *-0.105\** |
| *11* | *Mass media participation* | *-0.309\*\** |
| *12* | *Extension agency contact* | *-0.148\*\** |
| *13* | *Value orientation*  | *-0.253\*\** |
| *14* | *Scientific orientation* | *-0.150\*\** |
| *15* | *Innovativeness*  | *-0.265\*\** |
| *16* | *Economic motivation* | *-0.146\*\** |
| *17* | *Self-reliance* | *0.420\*\** |
| *18* | *Conservatism- liberalism* | *0.417\*\** |
| *19* | *Fatalism – Scientism* | *0.366\*\** |
| *20* | *Progressivism- Traditionalism* | *-0.373\*\** |
| *21* | *Religious belief* | *0.189\*\** |
| *22* | *Intratribal communication* | *0.479\*\** |
| *23* | *Rational orientation* | *-0.283\*\** |
| *24* | *Environmental orientation* | *0.422\*\** |
| *25* | *Belief in ethno-medical practices* | *0.227\*\** |
| *26* | *Attitude towards EMPs* | *0.496\*\** |

*\*\* - Significant at 1 per cent level, \* - Significant at 5 per cent level, NS - Non- Significant*

*Age had a positive significance with the extent of adoption; since accumulated experience gained by the farmers through their age, they would have preferred to adopt the simple practices, adhere well with socio-cultural values, sustainable, eco-friendly and low-cost EMPs. When the age of the tribal farmers is more, they might be prone to adopt the EMPS and reluctant to adopt modern health care practices disseminated to them. The researcher could review no studies in this line. However, the findings derive indirect support from Sakeer Husainn (2010) and Venkatesan (2012).*

***As age increases the dependency on the occupation as farmer rises so that the farm size also increases. Even if they collected the major factors of production of EMP from the forest, many of the farmers found cultivation of medicinal plants in the field as a major occupation. The findings derive indirect support from Sakeer Husain (2010) and Venkatesan (2012).***

***The tribal farmers of Idukki district were self-reliant with their EMPs without any modern health care practices. This has led to a positive correlation between self-reliance and extent of adoption of EMPs. The findings derive indirect support from Venkatesan (2012).***

***The indigenous knowledge possessed by the tribal farmers of Idukki district would favour conservatism rather than Liberalism. The tribal farmers were far away from each of modern health care practices. So thereby, conservatism- Liberalism was positively significant to the extent of adoption of EMPs. The findings derive indirect support from Venkatesan (2012).***

***Fatalism- Scientism reported a significant positive correlation with the extent of adoption. Tribal farmers who are having traditional orientation would mostly prefer to adopt erstwhile technologies like EMPs. When the Fatalism- Scientism increases the adoption of EMPs would also increase. The findings derive indirect support from Venkatesan (2012).***

***Religious belief was positively significant towards the extent of adoption of EMPs since the ethnomedical practices were based on the belief on God and related to some rituals and taboos. The tribal farmers of Idukki district had intratribal communication among themselves exchanging the EMPs with the available resources and forest utilization, thereby yielding a positive correlation with intratribal communication and extent of adoption of EMPs. The above finding derives indirect research support from that of Venkatesan (2012).***

***Environmental orientation was found to have a significant and positive relationship with the extent of adoption of EMPS. A farmer with high environmental orientation would be comparatively less oriented towards modern health care practices which create an environmental problem. Instead, they are more oriented towards utilization of non-timber forest resources and indigenous health care practices like food-medicine linkage, which are not harmful to the environment and the same is sustainable. Thus as the environmental orientation increases, the adoption of EMPs would also increase. The result is in indirect conformity with that of Jayakumar (2018).***

***As in the case of EMPs, belief in EMP is a very important variable that may determine the adoption of EMP. A tribal farmer with a strong belief in EMP will think and act for it, which in turn leads to the higher adoption. Thus the positive relationship of this variable is quite logical. Therefore the positive association of this variable is quite logical and realistic. The connection with belief and adoption is in indirect consonance with the findings of Sakeer Husain (2010).***

***Majority of the respondents had exhibited a positive attitude towards EMPs, thereby leading to a significant positive correlation towards the extent of adoption. The persistence of favourable attitude might have been due to the low educational status, little extension agency******contact and low mass media participation of the farmers. The findings derive indirect support from the results of Venkatesan (2012).***

***Had the tribal farmers have been well educated, they could have been prone towards modern health care practices, but most of the respondents were from old to middle age group with low educational status. Hence their educational status was with negative correlation with the extent of adoption. These findings are in indirect conformity with that of Venkatesan (2012).***

***As the main occupation of the tribes of the Idukki district is farming, accupational statuses do not play a vital role in their adoption of ethnomedical practices. Moreover ethnomedical are more attached to their social and cultural values, and hence any person who belongs to the tribal group must adopt ethnomedical practices habitually because the knowledge about ethnomedical practices is being transmitted from one generation to other without any restriction of occupational status or other. So the negative relationship of the variable to adoption is rational.***

***The farmers of Idukki district have less farm status, farm power status and their family status was found below. When the family status is high the affinity towards modern medicine would also be high. Hence their family status was negatively correlated with the extent of adoption. A farmer with high family status will have more purchasing power and try modern medicine with less concern about their effectiveness as compared to a poor farmer. However, KIRTADS is organizing tribal healers and acknowledging their knowledge in indigenous medicine.***

***Another negative association was that of livestock possession with ethnomedical practices. Livestock and its components being not an important element of many EMPs, tribal farmers with more livestock component not significantly adopt more EMPS, and farmers with daily wages in the forest found more traditional in nature. So the negative relationship of this variable with the adoption of EMPs is justified.***

***A farmer with high material and farm power status will have more investment capacity and can try a variety of things in their family including the adoption of modern medical practices with less concern about their effectiveness as compared to poor farmers, since EMP may involve less cost. In Idukki district, tribal farmers of Malaaraya are having high family status, material status and farm power status. They have a low adoption rate of EMPs. Due to acculturation and affinity to the modern lifestyle, they have been trying modern medical practices along with EMPs. The variables such as social participation, mass media participation and extension agency contact are interrelated. The farmers of Idukki district have less chance for participation in formal organization and their social participation was found to be low. Rural areas of Idukki district is not yet reached by the modern medical facilities. Though Asha workers were serving in this area, they were not able to change the mindset of the tribal people or farmers from indigenous medical practices. As educational qualification of the tribal farmers was low, they were less inclined towards mass media and their information. Thus social participation, extension agency contact and mass media participation of the tribal farmers of Idukki district had negatively significant correlation with extend of adoption of EMPs. The findings are in indirect agreement with that of Venkatesan (2012).***

***The tribal farmers of Idukki district have less tendency to maintain contacts with another social system, and they limit their contact within their social system. It is found that inter-tribal communication or contact is also less among tribal farmers. Extension agency contact was also negatively correlated. Hence, their value orientation was negatively correlated with the extent of adoption of the EMPs. The study is in indirect agreement with that of Venkatesan (2012).***

***Tribal farmers possess low educational status, low extension agency contact, low social participation and low value orientation. Hence the scientific orientation was negatively correlated with the extent of adoption of EMPs. The result goes in an indirect relationship as derived by Venkatesan (2012). Further, tribal farmers of Idukki district were found to have low extension agency contact, low mass media participation and scientific orientation. Hence the innovativeness and risk-taking capacity of the farmers using modern health care was found to be meagre. Thus this variable was negatively significant. The result acquired indirect support from that of Venkatesan (2012).***

***Tribal farmers were found to have medium to low economic motivation. Since the EMPS are low cost and for the farmers other than well-being profit maximization through EMP is not a concern. They were self-reliant and satisfied with the EMPs practices. Hence they were economically satisfied with the viable EMPs. Therefore their economic motivation was negatively significant with the extent of adoption of EMPs, with the indirect supportive findings acquired from Venkatesan (2012).***

***Modern medical practices might lead to progressiveness in the career of the farming community. But the tribal farmers were found to be more oriented towards ethno medical practices; thus, progressiveness was negatively significant. This finding indirectly correlated with the findings of Venkatesan (2012). Due to low education and fatalism, tribal farmers possessed medium to the low level of rational orientation. They maintain low social participation, extension agency contact and mass media contact. Thus, the negative and significant relationship of this variable with adoption is rational.***

1. ***Conclusion***

*The study highlights that ethno-medical practices (EMPs) continue to play a significant role in the healthcare approaches of tribal farmers in Idukki district, Kerala. With 77.88% of respondents displaying medium to high levels of adoption, it is evident that traditional healing remains deeply rooted in their cultural aspects. Also correlation analysis showed that certain profile characteristics viz. Age, farm size, farming experience, self-reliance, conservatism-liberalism, fatalism-scientism, religious beliefs, strong intra-tribal communication, environmental awareness, belief in EMPs, and favourable attitudes toward them positively influenced the adoption of EMPs. Conversely, characteristics such as educational status, occupational status, family status, material status, farm power status, mass media participation, extension agency contact, value orientation, scientific orientation, innovativeness, economic motivation, progressivism-traditionalism, rational orientation, livestock possession, and social participation negatively impacted the adoption of EMPs. Hence, it could be concluded that the policy makers and change agents can make necessary positive changes in the above profile characteristics of tribal farmers in order to increase the adoption of EMPs by them.*

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1. ***References***

*Government of Kerala. (2020). Healthcare practices among tribal populations in Idukki district. Department of Tribal Affairs, Kerala.*

*Jayakumar, M. (2018). Environmental orientation and traditional healthcare practices in rural India. Indian Journal of Traditional Knowledge, 17(3), 437-444.*

*Ministry of Tribal Affairs, Government of India. (2015). Health and healthcare practices of tribal populations in India. New Delhi: Ministry of Tribal Affairs.*

*Kumar, M, Rawat, S, Nagar, B, Kumar, A, Pala, NA, Bhat, JA, Bussmann, RW, Cabral-Pinto, M., & Kunwar, R. (2021). Implementation of the Use of Ethnomedicinal Plants for Curing Diseases in the Indian Himalayas and Its Role in Sustainability of Livelihoods and Socioeconomic Development. Int J Environ Res Public Health. 5;18 (4),1509.*

*Sakeerhusain. A. (2010). Knowledge, adoption and perceived effectiveness of Indigeneous Horticultural Practices in Kerala. Un pub. Ph.D. thesis, GRI (DU), Gandhigram.*

*Venkatesan, P. (2012). Adoption and perceived effectiveness of indigenous tribal agricultural practices of Kolli Hills, Tamil Nadu. Un pub. Ph.D. thesis, GRI (DU), Gandhigram.*

*Reddy, S., Subedi, B., & Guite, N. (2023). Introduction: ethnomedicine and tribal healing practices in India: challenges and possibilities of recognition and integration. Ethnomedicine and Tribal Healing Practices in India: Challenges and Possibilities of Recognition and Integration, 1-31.*

*Jannat, A., Islam, M. M., Alamgir, M. S., Al Rafi, D. A., & Ahmed, J. U. (2021). Impact assessment of agricultural modernization on sustainable livelihood among tribal and non-tribal farmers in Bangladesh. GeoJournal, 86, 399-415.*

*Gujar, B., Rajput, D. S., Sharma, N. K., Goyal, T. C., & Mishra, P. (2017). Knowledge and adoption level of livestock owners regarding health care practices towards organic animal husbandry management system. Ruminant Science, 353.*