

Pattern of traditional medicine usage in East Khasi Hills of Meghalaya

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The present paper reports the usage trend of traditional medicine among the indigenous *Khasi* population of East Khasi Hills district, Meghalaya. The study recorded a high percentage of usage of herbal home remedies for common and minor ailments. Between the C & RD blocks, there is some difference with respect to usage. Further, for all three blocks studied distance and literacy did not influence usage of herbal medicine. A highly significant difference ($p < 0.01$) was observed on the frequencies of herbal medicine consultation per year, by the respondents. A large majority of the respondent shows duality vis-à-vis allopathic versus local health practices. Allopathy comes into play when home remedies fails. The difference in the preferences of respondents between these two systems of medicine is significant at $p < 0.01$. Amongst the different population categories consulting the LHPs, adults record the maximum number, in all the three C & RD blocks. The difference between the three population categories is significantly high ($p < 0.01$) in Myllem block whereas the difference are insignificant ($p > 0.01$) in Mawkynrew and Shella-Bholaganj blocks.

Keywords: Usage trend, Herbal medicine, *Khasi* tribe, East Khasi Hills district, Meghalaya

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As in any tribal populations, plants play a significant role in providing necessary healthcare to the indigenous population of the Meghalaya. East Khasi Hills district of Meghalaya is one of the botanically rich areas of India. The richness and diversity of the medicinal plants of this region are largely due to the varied altitude, topography, status of soil and climatic conditions which support different types of forests. People of this district have rich local health traditions and traditional healers have been practicing indigenous medicine for hundreds of years. The *Khasi* traditional medicine is distinguished and well known amongst the indigenous traditional medicines of the North eastern states as well as the country. Some of the traditional healers of the district called as *Nong-ai Dawai Kynbat* are well recognized and provide the local population with primary healthcare. Thus, they play an important role in uplifting the overall health scenario of the state. In Meghalaya, of the total 3,331 plant species as reported by¹, 834 are medicinal². The latter have also reported the endemic ethnomedicinal plants, their distribution, threat status in the state and the estimated annual raw drug consumption through folk-healers. In addition, several research publications

on medicinal plants found in the State of Meghalaya have also been reported by different authors^{3,4,5}. Such reports are: 42 plant species used by herbal practitioners of the State³, 42 medicinal plant species found in the sacred groves of Meghalaya⁴, 54 plant species used by the local medicine men and the village folks of three districts of Meghalaya, i.e. the East Khasi Hills, West Khasi Hills and the Ri-Bhoi district⁵. Lack of proper transportation and medical facilities are factors that has been attributed to be the reasons that the rural folks of the state still hold onto their faith in the local health practitioners or medicine men. This rich traditional knowledge and the information about their uses are passed on from generation to generation through oral means and remain exclusive. However, with time and with the encroachment and influence of modern civilization, there is a persistent weaning of indigenous people from their dependence upon traditional medicine which has resulted in erosion of knowledge of plants and their properties⁶. The encroachment of modern civilization has also led the indigenous people in other regions of the country to depend and shift their preferences from traditional medicine to allopathy. In general, rural people begin to treat themselves before going to a traditional

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practitioner or to a modern doctor. For this reason, the usage trend of traditional medicine as home remedies has been studied among the local population of the district. In Kathmandu, Nepal, although people have access to the modern facilities, the inhabitants of Kathmandu valley still rely on traditional medicines for their primary healthcare⁷. In the present study, factors such as literacy rate and distances were correlated to the usage of traditional medicine to identify if they enhance or impede their uses. The preferences of medical treatment, the frequency of obtaining traditional treatment and the number of persons availing traditional treatment were also studied so that inferences can be drawn on the trend of usage of traditional medicine in the district.

Methodology

East Khasi Hills district occupies an area of 2748 sq km and lies between 25°07" and 25°41" N (L) and 91°21" and 92°09" E (L). The District's population, according to the 2001 Census Report, was 6, 60,994. The district is divided into 7 Community and Rural Development blocks (C&RD), viz. Mawphlang, Myllem, Mawryngkneng, Pynursla, Mawkynrew, Mawsynram and Shella- Bholaganj. The district has a total number of 962 villages⁸. The information on the number of villages in each C&RD blocks was obtained from the Directorate of Economics and Statistics, Government of Meghalaya (2006). The district is located in the North eastern part of Meghalaya. The northern portion of the district is bounded by the plains of Ri-Bhoi district, on the East by Jaintia Hills district, on the South by Bangladesh and on the West by the district of West Khasi Hills. The climate of this district ranges from temperate in the plateau region to warm tropical and sub-tropical parts on the Northern and Southern regions. South west monsoon influences the entire district. This monsoon commences usually from the month of May and continues till September. A major part of the year has humid weather but between December and March, the weather remains dry. It does not have very dense forests, but only moderately dense forests covering an area of 1,235 km² and open forest of 844 sq km⁹.

As the study involves village folks, it is therefore necessary that the ethical aspects be fulfilled during the survey. As such, Prior Informed Consent (PIC) was taken from the Knowledge Providers which is as per the CBD guidelines.

PIC (verbally, as not many of them were literate) was taken from the headmen and informants of the villages surveyed in all the three C& RD blocks. The study objectives and possible outcomes were described to the informants before the survey. The informants were further explained that the information they divulged would go into public domains. Only those informants who gave their consent were interviewed through the questionnaires. Signature or thumb impressions were obtained from the informants on their questionnaire.

For the study, three C & RD blocks of the district as Myllem, Mawkynrew and Shella-Bholaganj blocks were selected. The three blocks were selected as they are geographically well spread and fairly representative of the district. Out of each block, 9- 10% villages were taken for sampling. The villages taken for sampling are based on the number of households. Villages were divided into three strata: a) villages with more than 500 household; b) villages with 101-500 households, and c) villages with 10-100 household. Based on these criteria, they were randomly selected for sampling. Villages with less than 10 household were neglected. The number of respondents taken was 10% each of the three household strata stated above, with a total of 890 respondents.

Data were collected during the year 2008-2010. The data were collected through interview using semi-structured questionnaires, which were distributed among respondents who were literate while for those respondents who were illiterate, the questionnaires were filled by door-to-door visits. A pilot test was initially carried out to test the questionnaires that were prepared for both the targeted groups. The villages were visited on a pre-arranged day after permission was availed from the local headmen. The headmen of all the villagers surveyed were consulted to get prior permission and information on the layout of the village and the inhabitants and to explain to them that their cooperation is a valuable contribution to the documentation of the traditional plant used by them. Since many villagers were illiterate, the questionnaires were filled by conducting interviews and prompting them in the right track. The survey was completed either within a day or sometimes in 3-4 days, depending on the size of the village. Thirty five villages were surveyed and 782 informants were the part of this study.

The data obtained from the villagers include (i) use of herbal medicine as home remedies, (ii) preferences of medical treatment, (iii) frequency of traditional medicine consultation and (iv) the number of persons availing this treatment. The data obtained were analyzed by statistical tools such as Pearson's correlation, Regression analysis through statistical softwares- SPSS and ANOVA. Analyses were done for all the three C & RD blocks. Correlations and Regression coefficients calculated were tested for their statistical significance using 'Student's t-test'. Scatter diagrams were drawn to further understand the relationships between usage, literacy and distance from urban centre. Two-way Analysis of Variance (ANOVA) without replication was used to determine the level of significance that each of the above mentioned factors has on the usage of traditional medicine. The observed variance ratio (F) is tested against 'Table of F-Distribution' at 1% level of significance ($p < 0.01$).

Results

Usage of herbal medicines as home remedies

The percentage of usage of herbal medicines as home remedies is greater than non-usage in all the three C & RD blocks. However, there are variations in the degree of usage within the blocks. Myllem block shows the highest non-usage (47.63%) compared to the other two C & RD Blocks (6.83% in Shella-bholaganj and 8.21 in Mawkynrew). The observed difference in the usage trend may be attributed to the presence of Community Health centres or Sub-centres in the four villages surveyed in Myllem block. The percentage of people, who are not using herbal remedies, though not significantly high, may possibly be due to other factors such as education, easy access to health centres, or even economic status which translates into preference for urban hospitals.

Correlation between usage of herbal medicine and distance from urban centre

Pearson's Correlation coefficients (r) between usage and distance in km from urban centre for villages surveyed in all the three C & RD blocks are positive although very weak. The t -test values obtained were all insignificant when compared with the standard ' t ' value (Student's t -test), which indicates that they are independent, i.e. there exist no relation between distance and usage of local herbal medicine (Table 1).

Regression analysis between usage of herbal medicine and distance from urban centre

The regression equation for these two parameters is given below in the form of linear equation, $Y = a + bx$. $Y = \text{Usage}$, a dependent variable; $x = \text{Distance}$, an independent variable; $a = \text{Constant}$ and $b = \text{regression coefficient}$ (Table 2).

R^2 , the coefficient of determination, is the portion of the total variation in the dependent variable that is explained by variation in the independent variable. R^2 varies between 0 and 1 (i.e. 0% to 100%)

For Myllem Block, the regression analysis shows that the usage is dependent on distance at 12% as shown in the scatter diagram (Fig. 1). Nevertheless, the analysis for this C & RD block, indicates that usage of traditional medicine depends on distance to some extent. Regression analysis for Shella-Bholaganj block shows that usage is dependent on distance at only 0.6% (Fig. 2). For Mawkynrew block, the regression analysis shows that usage depends only 4.6% on distance (Fig. 3).

Correlation between usage of herbal medicine and literacy rates

The correlation coefficient ' r ', between usage of herbal medicine and literacy rate, is positive but very weak, which is insignificant for 7 °C of freedom, for Myllem block. For the other two C & RD blocks, the correlation coefficient is negative and also very weak, which implies that as literacy increases, the dependency on herbal medicine decreases. The t -test values obtained were insignificant when compared with Student's t -distribution table. Therefore, it can conclude that the literate people are more aware about Allopathic medicine and dependency on Local Traditional medicine decreases (Table 3).

Table 1—Values of Correlation coefficient ' r ' between usage of herbal medicine and distance from urban centre with the t -test values

C & RD Blocks	r	t -test value
Myllem Block	0.346	0.977
Mawkynrew Block	0.215	0.497
Shella-Bholaganj Block	0.077	0.33

Table 2—Values of the regression coefficient R^2 between usage of herbal medicine and distance from urban centre

C & RD Blocks	$Y = a + bX$	R^2
Myllem	Usage = 45.213 + 0.685 Distance	0.120
Shella-Bholaganj	Usage = 91.542 + 0.076 Distance	0.006
Mawkynrew	Usage = 82.556 + 0.282 Distance	0.046

Table 3—Values of Correlation coefficient 'r' between usage of herbal medicine and distance from urban centre with the t-test values

C& RD Blocks	r	t-test
Mylliem Block	0.046	0.122
Mawkynrew Block	-0.087	0.20
Shella-Bholaganj Block	-0.190	0.798

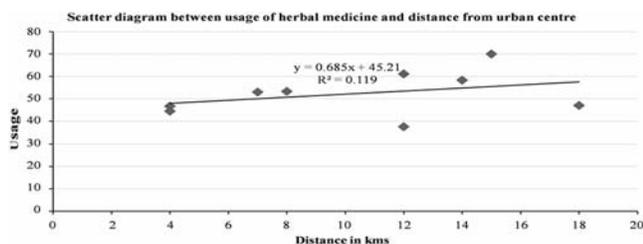


Fig. 1—Scatter diagram showing the relationship between usage and distance in Mylliem Block

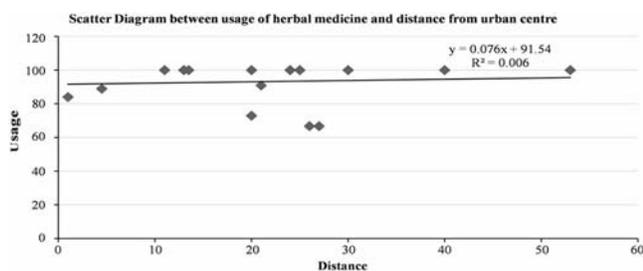


Fig. 2—Scatter diagram showing the relationship between usage of herbal medicine and distance from urban centre in Shella-Bholaganj Block

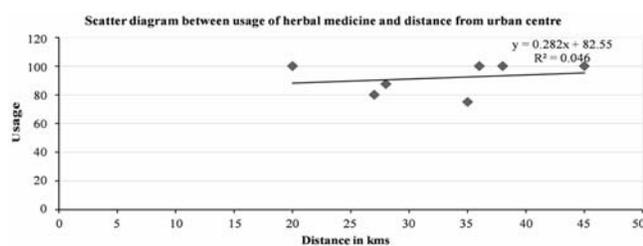


Fig. 3—Relationship between usage of herbal medicine and distance from urban centre in Mawkynrew Block

Regression analysis between the usage of herbal medicine and literacy rate

The regression analysis between Usage and Literacy rate gave following results. The regression equation for these two parameters is given below in the form of $Y=a+bx$.

For Mylliem Block, the regression analysis indicates that usage is dependent on literacy at 0.2%, which is negligible. Therefore, usage has no relation with literacy as can be seen in the scatter

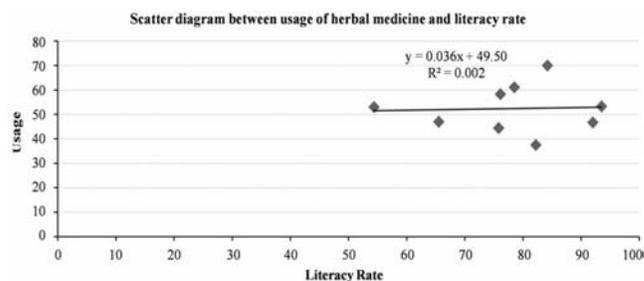


Fig. 4—Relationship between usage of herbal medicine and literacy rates in Mylliem Block

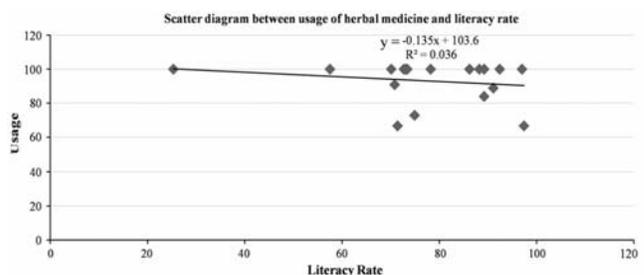


Fig. 5—Relationship between usage of herbal medicine and literacy rates in Shella- Bholaganj Block

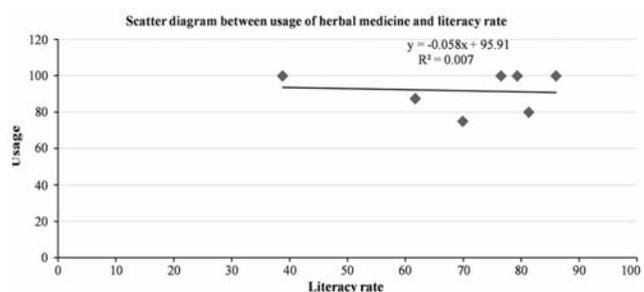


Fig. 6—Relationship between usage of herbal medicine and literacy rates in Mawkynrew Block

diagram (Fig. 4) which is almost a straight line. For Shella-Bholaganj block, regression analysis between usage of herbal medicine and literacy rate indicates that literacy contributes only 3.6 % to the usage of herbal medicine as illustrated in Fig. 5. Regression analysis between usage of herbal medicine and literacy for Mawkynrew Block shows that literacy contributes only 0.8% to the total usage and is negligible. Therefore, it can conclude that in this C & RD block, that usage of herbal medicine is not determined or affected by literacy rate (Fig. 6 & Table 4).

Preferences of village folks for medical treatment

Majority of the respondents in the three C & RD blocks indicated their preference towards allopathic treatment than the herbal treatment. This preference is

Table 4—Values of 'R²' between usage of herbal medicine and literacy rate

C & RD Blocks	Y=a+bX	R ² (coefficient of determination)
Myllichem	Usage=49.504+0.037 Literacy	0.002
Shella-Bholaganj	Usage=103.63+0.135 Literacy	0.036
Mawkynrew	Usage= 95.917+0.059 Literacy	0.008

when the HHR does provide relieve. In Myllichem block, the percentage of respondents who prefers only allopathic treatment is higher (23.02%) than in the other two blocks (5.7% for Mawkynrew and 7.42 in Shella-Bholaganj). The percentage of respondents who avail only herbal medical treatment is very low in all the three blocks surveyed. There was a significant difference on the preferences of allopathy to herbal treatment at $p < 0.01$ level for all the three blocks. For Myllichem block, $F_{1,8} = 76.61$, $p < 0.01$, for Mawkynrew block, $F_{1,6} = 128.17$, $p < 0.01$ and for Shella-Bholaganj block, $F_{1,18} = 49.35$, $p < 0.01$.

Annual frequency of Traditional medicine consultation

To further understand the usage trend of traditional medicine, the study also surveyed the frequency of times the respondents avail herbal medical treatment in a year, which is grouped into two categories '1-5 times' and '5-10' times.

In all the three C & RD blocks, majority of the respondents avail herbal treatment from the local health practitioners, only sometimes, i.e. '1-5 times' a year. However, the percentage of respondents consulting the LHPs '5-10 times' a year is quite less in Myllichem block, as compared to the other two blocks. Significant differences were observed between these two categories, in all the three blocks.

For Myllichem block, ($F_{2,16} = 22.58$, $p < 0.01$), Mawkynrew block ($F_{2,12} = 20.85$, $p < 0.01$) and for Shella-Bholaganj ($F_{2,36} = 40.43$, $p < 0.01$).

Different population categories availing herbal treatment

This information was gathered with the objective of getting a more holistic picture or trends of people of different age groups availing herbal remedies within the local population. The groups include 'Children', 'Adult' and 'Pregnant women'.

In all the three blocks, the number of persons from the three population category availing herbal treatment varies from village to village with adults recording the maximum number of visits to LHPs. There was significant difference in Myllichem block ($F_{2, 16} = 11.09$, $p < 0.01$). In Mawkynrew ($F_{2, 12} = 6.19$, $p > 0.01$) and Shella-Bholaganj ($F_{2,36} = 4.07$, $P > 0.01$) blocks no significant difference was observed.

Perceptions on Traditional medicine

The feedbacks of the respondents on the effectiveness of traditional medicine or *Dawai kynbat* as it is commonly called in *Khasi*, have been calculated in percentage. In Myllichem block, out of the total number of 327 respondents, 75.8% are of the opinion that traditional medicine is effective, 5% voiced against its effectiveness and 19.2% gave no response. In Shella-Bholaganj block, out of 336 respondents, 93.9% affirmed its effectiveness, 0.6% are of the opinion that it is not effective, while 5.6% gave no response. In Mawkynrew block, out of 119 respondents, 95.7% were for traditional medicine; none mentioned that it is not effective and 4.3% gave no response.

Discussion

The significantly high percentage of usage of herbal medicines as home remedies, among the villagers of the three C & RD blocks shows that traditional medicine plays a vital role in providing primary healthcare to people. The high percentages of usage of home remedies are corroborated by the high percentage of respondents availing herbal treatment from LHPs even though it is only for a few times in a year. The Correlation coefficient between usage and literacy for all the three blocks shows that there is no significant correlation indicating that literacy has no influence on usage of TM and similarly no significant correlation between usage and distance implying that distance is not a factor that influences people using herbal medicine. The Regression analysis has further corroborated that literacy and distance are not factors that determine the usage of herbal medicine. Therefore, it can be concluded that there are possibly other factors such as faith and belief in this time immemorial oral tradition of health-care, which contribute to the usage of herbal home remedies or herbal medicines among the *Khasi* tribal population of the district.

In this study, it was also observed that the respondents resort to allopathy treatment, if relieve

is not obtained from home remedies. This changing trend and perception towards allopathic treatment among rural population is not unique only in these C & RD blocks but it has also been reported in other states of this country and other developing nations. An important factor in the increasing dependency on allopathic medicine is the instant symptomatic relief achieved by allopathic medication and the lack of knowledge on the adverse or side effects may be another factor. Residents close to functional PHCs or CHCs seek the LHPs only for specific ailments like fracture, sprains, cuts and wounds, gripe water for infants and children. The LHPs involved in the treatment of fracture and bone-setting are well known and renowned and they have established their own niche area of expertise that is widely recognized within and outside the state. Thus, in many cases a resident in the urban area always seeks a LHP in such conditions. The LHPs are also renowned in treating gripe or *Niangsohpet*, an age old belief among the *Khasis*, that certain germs infect infants and newborns¹⁰. Poor infrastructure of formal healthcare, road communication, education, and low economic status especially in rural areas contribute to the continuing utilization of local health practices. While, there is a changing trend towards their preferences, the peoples perception on traditional medicine strongly indicate that faith of the local people in the traditional healing is still upheld. Thus, the scope of indigenous medicine becomes important. Peoples' belief in indigenous medicine can play a vital role in implementing Government programmes on improving and promoting this system of medicine in rural areas and at the same time recognizing the local tribal medicine¹¹.

Ethnomedicinal plants are one of the most successful leads used by the pharmaceutical industry in finding new therapeutic agents for the various fields of biomedicine^{12,13,14}. It is estimated that at least 25% of all modern medicines are derived, either directly or indirectly, from medicinal plants, primarily through the application of modern technology to traditional knowledge. In the case of certain classes of pharmaceuticals, such as antitumoral and antimicrobial medicines, this percentage may be as high as 60%^{15,16,17}. According to data released by the WHO, ethnomedicine has maintained its popularity in all

regions of the developing world and its use is rapidly expanding in the industrialized countries¹⁸. Thus, the usage of *Khasi* TM should be encouraged and closing the gap between the social and medical sciences, in order to reach a better understanding of the health needs of the population, is much needed. Also, given the absence or non-functionality of formal healthcare delivery systems in interior rural areas of the district, the importance of traditional health system assume significance as it can be the only form of health services available and in most cases constitute the first line of treatment.

Significance of the study

From the results that emerged from the study it is clear that indigenous medicine is preferred to allopathic medicine and is the first priority in the line of seeking medical treatment of the rural *Khasi* community. This study is therefore significant as it indicates that indigenous system of medicine is still practiced and by a large percentage of the rural community in the study area. It is close to people's heart and is still a strong component of the local cultural milieu. It is an indigenous knowledge that is intimately linked to their custom and tradition. However, the impact of modern scientific medicine is gaining ground. The weaning of people from traditional medicine is surfacing as observed in this study. Another observation made during the study is that traditional medicine has the potential for wider application at low cost. It uses local resources, local technology, and local labour. The services of the local health practitioners could be utilised with advantage at various levels of preventive and curative techniques in healthcare programmes. It has the potential to contribute to scientific and universal medicine. Scientific validation of the medicinal plants/ herbal formulations used by the practitioners in addressing primary health care, by R & D institutions of the state would provide inputs and generate information that could be used in future drug development programmes. Institutional and capacity building is the need of the hour to sustain and further promote this indigenous system of medicine. Therefore, State government, concerned institutions and other stakeholders need to come up with policies and regulations to promote and strengthen this indigenous system medicine.

Conclusion

From this study, it is quite clear that the *Khasi* people in East Khasi Hills district of Meghalaya are still deeply connected to their rich heritage of traditional medicine knowledge. This calls for more initiatives to conserve this knowledge alongside the rich repository of medicinal plants found in the study area. Also, in the light of the observations made in this study, similar studies if conducted in other districts too, will provide an overall picture of the usage trend of traditional medicine in the whole State which will subsequently serve as a useful tool in the preparation of development and action plan for up scaling this traditional knowledge.

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