



**THE AWARENESS OF PEOPLES TO USE MEDICINAL PLANTS IN  
MEKELLE AND ADIGRAT IN TIGRAY NORTHERN ETHIOPIA:  
MODE OF SERVICE DELIVERY AND TRADITIONAL  
PHARMACEUTICAL PRACTICE**

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### **ABSTRACT**

**Objective:** To assess medicinal plants mode of service delivery and describe their traditional pharmaceutical practices. **Methods:** In-depth interviews of herbalists were conducted in Adigrat and Mekelle using a semi-structured questionnaire. **Results:** The mean age of the healers was 53.7 and most of the people's practised traditional medicine on part time basis the average number of patients seen per

week by the healers was 7. Most of the healers do not have fixed payment rate for their services. The analysis of traditional prescriptions revealed that the predominant dosage forms were liquid preparations and the average number of plants per prescription was 1.16. **Conclusions:** Healers treat a wide range of health problems using medicinal plants in various dosage forms. In the process of evaluation and standardisation of these dosage forms, formulations tested should be made in accordance with the method used traditionally.

**KEYWORDS:** Adigrat and Mekelle using, Healers treat, people's practised.

### **INTRODUCTION**

The World Health Organisation estimates that at least 80% of the population in most developing countries rely for their primary health care on traditional

forms of health care.<sup>[1]</sup> Recognising this fact and the fact that modern health care system alone could not meet the health needs of the *entire* population of the world, the policy of urging its member states to promote and integrate traditional medicine into their national health care systems was launched by WHO in 1978.<sup>[2]</sup> According to WHO, the promotion of traditional- medicine in health care services particularly at PHC level should be intensified by the application of appropriate traditional technology to health care, improvement based on simplicity, safety, efficacy and availability at low cost; selection of essential traditional remedies particularly herbs in PHC, evaluation of traditional claims through scientific research, policy support for integration and inclusion of traditional medicine in training programmes at various levels.<sup>[3]</sup>

In Tigray, northern Ethiopia medicinal plants have been used as traditional medicine to treat different human ailments by the local people from time immemorial. Even though there is high expectation of enormous traditional knowledge and use of medicinal plant species, it is not widely used as it could be because the skills are fragile and easily forgettable as most of the medicinal plants are in the hands of a handful and kept as a secret.

Comparing the Tigray traditional medical practices with other systems such as Amara and SNNP, enormous effort has still to be put into research to understand the basic concept of healing and evaluation of the traditional treatment strategies and final utilisation of the beneficial aspects of the system. Gathering ethno medical information is an important step in such endeavour.' The fact That the use of plants constitute the largest' segment of Tigray traditional medicine suggests that emphasis be given to the herbal aspect of the system. This study was, therefore, conducted between July 2013 - March 2014 in Adigrat and Mekelle to assess herbalist's mode of service delivery and various traditional pharmaceutical techniques (i.e. and storing plant materials, and preparation of dosage forms) employed to prepare their remedies.

## **METHODS**

Description of Study areas: Adigrat. This is a district located 130 km south of Mekelle The population size extrapolated from 1094 census is estimated to be 125,000. The dominant ethnic group is Agame. During the study time, the district had one hospital and health centre, 2 health stations, 11 private clinics, 11 health

posts and 8 drug retail outlets.<sup>[8]</sup> Communicable diseases including malaria, ARE, diarrhoeal diseases and tuberculosis are the major public health problems of the city. This was carried out in villages that are under a continuously the researcher Mekelle *this* is the largest and capital city of Tigray. Its estimated population size is nearly 257,000.<sup>[9]</sup> As in other metropolitan cities, the pull factors of urbanisation bring many people from other parts of the weredas to Mekelle, resulting ethnic diversity. There are 18 hospitals, 251 clinics and 22 health centres in the city. The major leaching and central referral hospitals of the region are also located in Mekelle.<sup>[10]</sup> As in other parts of the country communicable diseases are a public health threat in Mekelle. The prevalence of non-communicable disease such: as malnutrition, cardio-vascular diseases, mental disorder are also on the increase.



**Figure 1.** Map of Tigray regional state of Ethiopia. The site is located in Mekelle and Adigrat Tigray (Source:<http://www.tigraionline.com/tigrayGIF.gif>).

**Sampling and data collection:** Forty four traditional healers were identified from Mekelle and Adigrat using convenient sampling method. The name and addresses of healers were obtained from local elder peoples Traditional Medical Practitioners and in the case of Mekelle and Adigrat respectively. Originally it was planned to include 22 healers each from the two study localities. But most of the approached healers in Mekelle were unwilling to take part in the study. Hence it was only possible to interview 7 healers from Mekelle and as many as 37 from adigrat. In-depth interviews of traditional healers using a pre-tested semi structured were done by the principal investigator and The questionnaire addressed issues related to demographic characteristics, sources of the healing wisdom, common illnesses handled by the healers and patient load; and traditional prescriptions for treating diarrhoea! Diseases, malaria, helminthiasis, respiratory and skin problems. Before the initiation of each interview, consent was obtained from individuals who participated in the study. Quantitative data were analysed using EPI-info6.0 statistical software, while the qualitative data was categorised and analysed manually.

## RESULTS

**Demographic profile:** From the group interviewed males (81.8%) accounted the majority. The proportion of healers aged above 45 was approximately three times that of healers aged 45 or less. Most of the healers were Muslims 26 (59.1%) followed by the Ethiopian Orthodox Church 17(38.6%). Concerning the level of education, half of the healers had no any education, 17 had church/adult education and only 5 attended formal education.

**Sources of healing knowledge:** The most frequently cited sources of knowledge was family 30 (68.2%), followed by religious institutions 5(11.4%). Preceding sickness and corresponding use 3 (6.8%), apprenticeship 3 (6.8%), gift from god, and both family and preceding sickness accounted the rest of the responses (Table 1).

**Table 1: Sources of knowledge for traditional healers (N=44), Mekelle and Adigrat.**

Sources	Number	Percent
Family	30	68.2
Religious Institutions	5	11.4
<i>Preceding</i> sickness & corresponding use	3	6.8
Apprenticeship	3	6.8
Gift of god	2	4.5
Family & <i>Preceding</i> sickness	1	2.3

**Health problems mostly treated by the healers:** When healers were asked about the health problems they commonly handle, skin diseases, malaria, diarrhoea, amebiasis (amebiasis according to heal ersisdiarrhoea with blood and mucus) and cough/cold were the most frequent responses followed by TB (nekersa) and helminthiasis.

**Preparation, application and dosage forms of remedies:** By interviewing healers from two areas, we obtained information on the use, preparation and application of plants to treat different illnesses such as diarrhoea, taeniasis, respiratory problems, skin problems, amebiasis and malaria. A total of 277 different treatment modalities were listed by traditional healers in treating the above health problems. As indicated in table 2, in the majority of the prescriptions the dosage forms were liquids 152 (54.9%) followed by unprocessed herbs 36 (12.9%, ointments 29 (10.5%) and pellets 28 (10.1%). Powders and inhalation's accounted (6.5%) and (5.1%) respectively. In preparing ointments, butter, honey and sometimes animal fat have *been used as* bases. Local alcoholic drinks (tela and teji), water and defatted milk were reported to be used as solvents in liquid preparations.

**Table 2: Dosage forms used in traditional prescriptions (N=277), Mekelle and Adigrat,**

Dosage forms	Number of	Percent	Prescriptions
Liquid	152		10.5
Ointments	29		10.5
Pellets	28		10.1
Powders	18		6.5
Inhalation (smoke/steam)	14		5.1
Unprocessed herbs	36		12.9

From a total of 277 traditional prescriptions collected, 30 (10.8%) of them contained composite remedies and 10 (3.6%) of the prescriptions consisted of three or more plants. The average number of plants per traditional prescriptions was 1.16 (Table 3). The routes of administration of herbal drugs varies according to the dosage forms and their intended purpose. In our study it was reported that powders, ointments and solutions that are used against skin diseases would be applied topically. Liquid preparations for the treatment of malaria, diarrhoea, intestinal parasites and respiratory problems were being administered orally. Administration via respiratory system was meant for dosage forms such as inhalations, smokes, and steams which are mainly used in asthma and cough/cold remedies. The major routes of administrations of herbal drugs are presented in Table 4.

**Table 3. Number of plant ingredients in traditional prescriptions (N=277), Mekelle and Adigrat,**

<b>Composition of Prescriptions</b>	<b>Number of prescriptions (and Number of species involved)</b>	<b>Percent</b>
Single species	247 (247)	89.2
Double species	20 (40)	7.2
Triple species	7 (21)	2.5
Quadruple species	<b>3 (12)</b>	1.1
Total	<b>277 (320)</b>	100.0

**Collection and storage of plant materials:** Healers were asked regarding the sources of plants for their practices. Forty (90.9%) of the healers responded that they mainly depend on wild plants and 49.1%) grow most of medicinal plants in their garden. Lack of land, agro ecological factors and maintaining the secrecy of the knowledge were the most frequently cited reasons for not growing plants in their garden.

**Table 4: Routes of administration of herbal drugs in Mekelle and Adigrat.**

<b>Routes of Administration</b>	<b>Number of prescriptions</b>	<b>Percent</b>
Oral	188	67.9
Tropical	64	23.1
Inhalation	16	5.8
Bathing	9	3.2
Total	277	100.0

Regarding collection time, 29 (65.9%) of the healers believed that the collection time of different plants should vary. Some of them said that medicinal plants are effective when collected early in the morning. According to some healers, medicinal plants should be collected with certain ritual procedures such as cutting the plant using knife with handle made of horn, abstaining from sexual contact in the preceding day of collection, etc. Concerning storage of herbal drugs, half of the interviewed healers believed that there should not be differences in storage conditions of different herbal drugs. Containers' such as plastic bottles, pots (made of clay), horn, and tins have been used to store drugs by most of the traditional healers. Most of the healers, particularly in rural areas, do not write labels on the containers. Some used to write labels on the containers and observation of their labelling pattern revealed that the labels most of the time stated names of the diseases to which that particular medicament was meant to cure but not names of the plant(s).

Mode of service delivery and relation with modern health practitioners: The majority 38 (86.4%) of the healers practised traditional medicine on part-time basis. All of the 6 full-time were found Mekelle. 26 (59.1%) of the interviewed healers said that they don't have fixed payment rate for their services; out of which 21 (80.8%) claimed that the rate and type of payment largely depends on the ability of the patients and 5 (19.2%) of healers were rendering service free of charge. All interviewed healers have been conducting only out services and the average number of patients seen per week was reported to be seven. Only six of the healers reported that they had assistants in their work More than 90% of the healers said that they had no any interaction with modern practitioners. The reason being absence of forum to create links 12 (27.3%), feeling of healers they

are undermined and ignored by modern counterparts 11(25%) and other reason such as mistrust, lack of interest, distance, etc. accounted the rest of the responses.

**Healer's needs and aspirations:** Summary of the qualitative data concerning healers' future wishes and needs revealed that there was a deep desire of legitimisation and general willingness to work in close collaboration with modern medicine practitioners. They also expressed their interest to participate in any health related training courses. Most mentioned that they would like if the government would provide them some facilities for grinding and boiling medicinal plants. The desire of having strong practitioners association, which would have the power to strengthen the position of healers in Tigray health care system was expressed by healers particularly from Mekelle.

## DISCUSSION

The older age predominance in our study group signalled that herbalist knowledge which handed down to them throughout generations is at risk of getting lost. The young generation is not willing to acquire the knowledge may be because of the assumption that the practice is generally assumed and perceived to be traditional. Therefore, efforts should be made to document this cultural heritage. The low number of women in the interviewed healers might be due to the fact that herbalist knowledge is mostly acquired from family and religious institutions. Parents prefer to pass the knowledge more to sons than daughters. In addition, in Tigray culture, it is not common to send females to religious education and hence the opportunity of *earning* this traditional wisdom from religious institutions is remote for females.

This study indicated that family and religious institutions were reported to be the major sources of healing wisdom. The role of religious institutions in expanding herbalist knowledge in Ethiopian traditional medicine has been described by Vecchiato.<sup>[11]</sup> The importance of family in the context of acquiring traditional healing practice was also reported in other African studies.<sup>[12]</sup> The pattern of diseases that healers reported to handle in our study is in agreement with what was previously reported.<sup>[13]</sup> But in the present study the frequency of

psychosocial problems was less. This might be due to the of informants. In our study in formants were herbalists unlike previous studies which included spiritual healers. Concurrent to a report in southern Ethiopia<sup>[14]</sup>, in this study liquid preparations were reported to be the predominant dosage forms. It was evident also that, depending on dosage forms, herbalists use different additives and solvents in preparing their formulations. In this *connection*, it is important to note that some of the additives in 'traditional formulations may exert therapeutic activity in addition being used as adjuncts. For example, the antibacterial and antifungal properties of honey is well documented, with the inhibition of growth of organisms such as *Staphylococcus aureus* and *Candida albicans*.<sup>[15,16]</sup> Honey has also been shown to have a great value in treating infected surgical wounds.<sup>[17,18]</sup> Hence the use of honey in traditional formulations might have a direct therapeutic effect to many diseases.

Analysis of the pattern of traditional prescriptions revealed that about a tenth of the prescriptions contained composite remedies. As has been well documented<sup>[19]</sup>, traditional healers claimed that the use of multiple plants has a synergetic effect. It has been also indicated that there is a possibility that the properties of the constituents of composite Remedies could be different from those of the mixtures considered as a whole.<sup>[20]</sup>

The present study also demonstrated that most, of the herbalists do not grow medicinal plants in their garden. In view of the excessive harvesting of wild plants, the biological diversity of medicinal plants is being reduced from time to time. It is believed that the cultivation of widely used wild medicinal plants in home garden will substantially reduce the pressure that such plants are facing in the wild environment there by ensuring conservation of these flora.<sup>[21]</sup> In addition, medicinal plant gardens improve the health care delivery system by promoting indigenous innovations and the medicinal plants industry. In this regard, healers' awareness on the importance of growing medicinal plants in their gardens should be appraised.

It was interesting to note that most of the healers believed that there exist differences in the collection time of different plants. Some of them said that medicinal plants are effective when collected early in the morning. Similar

finding was documented in a study done in Tanzania in which traditional healers claimed that traditional remedies are only effective if plants are collected in a certain time of the day or moon cycle.<sup>[21]</sup> Abebe reported a similar finding in southern Ethiopia.<sup>[19]</sup> In this study it was further learnt that the effect of different storage conditions and shelf life on the active principles of the plant materials seems to be less understood by half of the healers interviewed, and appropriate labelling of their preparations was not also practised. This may lead to dispensing of inappropriate *herbs*. Giving education to the healers on the possibilities of this hazard is of paramount importance

The majority of the studied healers were found practising traditional medicine on part-time basis and full-time practice was more prevalent in Mekelle. This pattern has *been* observed in Tanzania<sup>[13]</sup> where it was found out that full-time practice was more usual in Darussalam than other rural villages. This might be due to the fact that most of the traditional practitioners in rural areas do not have fixed payments rate for their services. In most cases, the payment depends on the ability of the patient. It would be, therefore, difficult for the traditional healers in rural areas to sustain their lives with the income generated only from their healing practices. The fact that traditional healers consider the economic and social background of patients in asking and fixing treatment costs could be one of the. Reasons for the continued acceptance of the system in many developing countries.

This study also documented that although majority of the studied healers expressed their general willingness to work in close collaboration with modern medicine practitioners, most healers were found to have no interaction with modern practitioners. It is evident here that more has to be done to create discussion forum for both modern and medicine practitioners and bring together in co-operative relationship. It is only with the spirit of mutual trust and collaboration between the two groups that successful evaluation of traditional remedies and medical practices be made which may gradually leads to the integration of the two medical systems.

Generally healers treat a wide range of health problems using remedies prepared by employing various traditional pharmaceutical techniques. In the process of

scientific validation of the traditional remedies, it is vital that the formulations tested are made in accordance with the method used traditionally.

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