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STATUS OF INTEGRATION OF ETHIOPIAN TRADITIONAL MEDICINE WITH MODERN MEDICINE: EXPERIENCES, CHALLENGES AND SUGGESTED SOLUTIONS

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ABSTRACT

Background: Integration of traditional medicine into modern medicine is a process of incorporating traditional medicines, techniques and knowledge into the mainstream healthcare delivery system as well as the exposure of the practitioners of both systems to the philosophies and theories of the systems in order to provide a safe and effective preventive and curative treatment for all with utmost increase in capacity to develop new treatments. Significant numbers of Ethiopians use traditional medicine as a primary or preferred means of healthcare. Assessing the integration status of traditional medicine service, training and research into the Ethiopian primary healthcare system can be a way to assess the country's progress regarding the issue and lay the basis for an action plan.

Objectives: The study aimed to explore the current status of integration of Ethiopian traditional medicine practice, training and research into the mainstream healthcare system and its determinants in Addis Ababa.

Methods: Semi-structured interviews were conducted between October and December 2023with key informants selected using key informant sampling method from institutions including the Ministry of Health, Addis Ababa University (Colleges of Health Sciences and Aklilu Lemma Institute of Pathobiology), Saint Paul's Hospital Millennium Medical College, research institutes, traditional healers' associations and other relevant sectors in Addis Ababa. Qualitative data was categorized using open code software and analyzed thematically.

Results: Key informants responded that there are initiatives to integrate traditional medicine into primary healthcare system in Ethiopia through the development of inclusive policy, registration and periodic supervision of traditional healing practitioners and their services, provision of trainings for traditional healers to improve their service and prevent harm from use of traditional medicine, generating evidence for traditional medicine products and practices through research starting from ethnobotanical to pre-clinical validation studies and drug development from TM through clinical trials. These initiatives, however, are hindered by challenges including secrecy, lack of funding and capacity building, lack of communication

among traditional healing practitioners and modern health practitioners, lack of interest of youth to become healers and lack of continuity of the research activities to reach implementation level.

Conclusion: Findings indicate that there are initiatives to integrate traditional medicine into primary healthcare system in Ethiopia especially through training and research. However, these initiatives are facing numerous challenges. Further research thus needed to identify ways that help tackle such challenges and create a conducive system for integration of traditional medicine into primary healthcare system in order to enhance the benefits of traditional medicine and minimize its shortcomings.

Key words: Integration, Traditional Medicine, Modern Medicine, Addis Ababa, Ethiopia

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LIST OF ACRONYMS/ABBREVIATIONS

AAFMHACA:	Addis Ababa Food, Medicine and Health Care Authority
AAU:	Addis Ababa University
AAHB:	Addis Ababa Health Bureau
AATHA:	Addis Ababa Traditional Healers Association
ADR:	Adverse Drug Reaction
AHRI:	Armauer Hansen Research Institute
AAIT:	Addis Ababa Institute of Technology
CDT-Africa:	Center for Innovative Drug Development and Therapeutic Trials for Africa
CT(s):	Clinical Trial(s)
CPD:	Continuing Professional Development
EARI:	Ethiopian Agriculture Research Institute
EBI:	Ethiopian Biodiversity Institute
EFDA:	Ethiopian Food and Drug Administration
EPHI:	Ethiopian Public Health Institute
ETHA:	Ethiopian Traditional Healers Association
ETM:	Ethiopian Traditional Medicine
FMHACA:	Food Medicine and Health Care Authority
GCP:	Good Clinical Practices
GMP:	Good Manufacturing Practices
MHPs:	Modern Healthcare Practitioner(s)
MM:	Modern medicine
MOH:	Ministry of Health
EMOH:	Ethiopian Ministry of Health

PMC:	Primary Health Care
PHCS:	Primary Health Care System
SOP:	Standard Operating Procedure
SPHMMC:	Saint Paul's Hospital Millennium Medical College
TCAM:	Traditional, Complementary and Alternative Medicine
THP(s):	Traditional Healing Practitioner(s)
TM:	Traditional medicine
TMP(s):	Traditional Medicine Practitioner(s)
WHO:	World Health Organization

INTRODUCTION

1.1. BACKGROUND OF THE STUDY

Traditional medicine (TM), also called ethno-medicine, folk medicine, native healing, or traditional complementary and alternative medicine (TCAM), is the oldest form of health care system. It is an ancient and culture-bound method of healing that humans have used to cope and deal with various diseases that have threatened their survival(Abdullahi, 2011). According to World Health Organization (WHO), traditional medicine includes a diversity of health practices, approaches, knowledge, and beliefs incorporating plant, animal, and/or mineral-based medicines, spiritual therapies, manual techniques, and exercises, applied singly or in combination(WHO, 2001). Pereyra (2013) lists five common features for TM: 1) Being based on a belief that health is a balance between opposing aspects in the human body and that illness occurs when this balance is disrupted by material, magical or supernatural powers and that TM tries to restore this balance; 2) Being based on the needs of individuals such that different people may receive different treatment for the same disease based on the individual's unique constitution and social circumstance.3) Applying a holistic approach looking at an individual's totality within an ecological context, such that, besides giving treatment, traditional healers usually give lifestyle advices and guidance on healthy behavior. 4) Traditional medicine (TM) precedes modern medicine (MM) and thus is not easily understood by MM. Therefore, although not tested by scientific methods, traditional remedies have been field tested by tens of thousands of people for hundreds of years. 5) Traditional Medicine has a very wide scope, and its practices vary from country to country(Pereyra, 2013). The association of TM with nature, culture, tradition and spirituality/ religion is also inevitable. (Ngo, 2021)(Mokgobi, 2012)

Modern medicine (MM)also referred to as conventional, Western, allopathic, or orthodox medicine (Kassaye et al., 2006)has evolved from the Western philosophic way of thinking, and uses natural sciences as the foundation.The development of Western Medicine is based on human structures, or anatomy, and therefore, research of Western Medicine is based on decomposing the whole human body into several parts. Therapeutically, it advocates the part-against-part method by using some physiochemical mechanisms to explain the development, progression and evolution of a disease (Sun et al., 2013).

Ethiopia is a mosaic of nationalities/ethnic groups, varying in size from more than 18 million to fewer than 1,000 with more than 80 different spoken languages(Mehari et al., 2013).Up to 80% of the Ethiopian population uses traditional medicine due to the cultural acceptability, ease of accessibility, the relatively low cost of traditional medicine and difficult access to modern healthcare facilities(Kassaye et al., 2006).Modern medicine is also growing in the country. People tend to depend on both types of medical practices together or one after another(James et al., 2018).Traditional medical practices in Ethiopia incorporate medicinal preparations from plant, animal, and mineral substances, as well as spiritual healing, traditional midwifery, hydrotherapy, massage, cupping, counter-irritation, surgery, and bone-setting (WHO, 2001).Its knowledge is scattered in different literature sources including modern literature (e.g., research reports, surveys, and books) and medico-religious manuscripts inscribed in parchments written in Geez, liturgical language of the Ethiopian church in the fifteenth century and the Book of Remedy (Metsehafe Fews) from the seventeenth century, which contains a wide range of herbal medicine prescriptions(Bultum et al., 2019).

Traditional Medicine (TM) is typically contrasted with modern medicine (MM)(Kassaye et al., 2006).The relationship between TM and MM is complex but there is urgency to the development of frameworks to navigate the tensions between these two systems of knowledge(Jansen et al., 2021). Majority in the world mainly in developing and underdeveloped countries do not have access to modern medicine and depend on the time-tested traditional medicines. Sen and Chakrabotry (2017) argue that factors like pollution, unhealthy lifestyle, and environmental toxins that increase disease risk as well as side effects, overuse/ misuse of allopathic drugs indicate that “Health for All” might not be possible without integration of TM in clinical practice (Sen and Chakraborty, 2017). Abdullahi (2011) also stated that a number of traditional medicines are important and effective therapeutic regimens in the management of a wide spectrum of diseases some of which may not be effectively managed using Western medicines(Abdullahi, 2011).

“Integration” is a process of incorporating TM into the formal healthcare delivery system, which involves the introduction of traditional medicines, techniques and knowledge into the country’s

mainstream healthcare delivery system. Integration also denotes the exposure of the practitioners of both systems to the philosophies and theories of the systems in order to provide an effective preventive and curative treatment for all (Krah et al., 2018). The WHO has been proactive in advocating integration of TM into public health programs starting from the seventies (Pereyra, 2013). The Alma-Ata Conference 1978 on primary healthcare (PHC) recommended governments to give priority to traditional medicine and make policies and regulations embracing proven traditional remedies (Asrat et al., 2020). Since then, African countries have been supporting these initiatives in different ways such as documenting ethno-biomedical information, scientific evidence/research, media promotion, implementing international and national plans and policies (Innocent, 2016). Some of the important principles of integrative medicine are a good physician-patient relationship with physician's role as a healer, preventive maintenance of health by attention to all relative components of lifestyle, diet, exercise, stress management and emotional wellbeing, natural and minimally invasive management methods (Payyappallimana, 2009). There is an ongoing discussion about whether medical curriculum should be discipline based or integrated. The medical curriculum has historically changed with the definition of health and illness, from the definition of disease as an anatomical alteration of the organs to the understanding of its multi-causality and influence on lifestyles and realities of defining health and disease as a biological, social, and cultural (historic) process (Quintero et al., 2016).

Findings from different studies list many possible challenges of integrating traditional medicine with modern medicine. Some of them include a lack of understanding of traditional medicine, discrimination, high turnover of biomedical staff which makes relations between healers and doctors generally superficial and thus obstructing integration, declining interest in healing as a profession, and equipment scarcity (Krah et al., 2018), the fact that there are few TM curricula that are geared to trained human resources to undertake quality services and development of materia-medica used in treatments in this region (Innocent, 2016), lack of acceptance of abstract healing methods by modern medicine practitioners(Mokgobi, 2013) , shortcomings of policies in evaluating safety and quality, promoting rational use, and preservation and development of traditional medicine as well as lack of contextual understanding

(Payyappallimana, 2009),unwillingness of modern practitioners to work with traditional healers (Mokgobi, 2012), and lack of objectivity, empirical verifiability and repeatability of the traditional healing practices (Taye, 2009).Traditional Chinese Medicine, Ayurveda, Kampo, Traditional Korean medicine, and Unani have been practiced in some areas of the world and have blossomed into orderly-regulated systems of medicine (Yuan et al., 2016).

STATEMENT OF THE PROBLEM

The system of TM, although it highly is demanded for development of more effective, less expensive and safer agents (Sisay et al., 2019), is deteriorating due to lack of concern from authorities. Integrating TM and MM in education, training, research and service delivery has not been accorded due attention and support in most countries. The quantity, quality, safety and efficacy data on traditional medicine are far from sufficient to meet the criteria needed to support its use worldwide (Kassaye et al., 2006). The use of medicinal plants for drug development is negatively impacted by adulteration of valuable components, poor cultivation and collection procedures, lack of standardization during preparation, poor storage conditions and incertitude among TM practitioners(Sisay et al., 2019). Healing practices involving traditional medicines in Ethiopia continue to be limited to the non-official sectors which leads to their isolation and subsequent non-utilization of TM in the national healthcare system (Kassaye et al., 2006).

Traditional medicine is approached with frustration and skepticism and often rejected instead of being validated improved and utilized. The advantages and advantages of TM should be studied and then it should be evaluated for a rational, evidence based integration into mainstream medicine (Jansen et al., 2021). Integration can take advantage of both the centuries of experience from TM products and the scientific superiority of modern science which examines the safety, efficacy, mechanism of actions, active principles, bioavailability, drug interactions, drug dosage, delivery and drug schedules of these TM products.(Singh and J.Boaz, 2015).

This study, hopefully, demonstrates the experiences, challenges and opportunities for Ethiopian traditional medicine to blossom into an orderly system of medicine or at least determine ways in which it can contribute to the mainstream healthcare system and not be an obstacle.

RATIONALE OF THE STUDY

Integrating TM and MM in service delivery, research and training can lay a premise for enhanced innovation of better treatments from already existing traditional medicines, promoting the public health role of traditional healing practitioners (THPs), better understanding of modern health practitioners (MHPs) to the community they serve, and increase the adherence of the general population to the healthcare system. A harmonious and communicative environment between MHPs and THPs can minimize non regulated concomitant use of TM with MM which can be the cause of problems like drug and food interactions, overdosing and toxicity (James et al., 2018).

Ethiopian people's reliance on traditional medicine is not limited to rural areas but also evident in cities like Addis Ababa where MM is accessible (Kassaye et al., 2006). As a capital city, there is access in Addis Ababa to policy making and enforcing authorities, national associations as well as research and training institutions and thus Addis Ababa was selected as a study area for this research. Research on the issue of integration of TM and MM in Ethiopia is rather lacking. Studies by Addis et al. (2002), Mequanente(2009), Ranugathan et al. (2010), Birhan et al. (2011), Tolera et al. (2011), and Abyot et al. (2014) with closer theme to this study are more focused on the attitudes of practitioners from both sides and public health relevance of the issue(Addis, 2002, Mequanente, 2009, Ragunathan et al., 2010, Birhan et al., 2011, Tolera et al., 2011, Abyot et al., 2014). These studies mostly did not address the in depth circumstance of policy and regulatory aspects of the issue, as well as current status of integration of TM into MM. There are however more recent studies emerging with closer theme to this study including studies assessing the regulatory policy for herbal medicine/ TM in Ethiopia by Demeke et al. (2022), and Usure et al. (2024) and another study by Degu (2024) on the legal as well as overall condition of integrating TM into PHCS in Ethiopia(Demeke et al., 2002, Usure et al., 2024, Degu, 2024). This study is aimed at filling the research gap regarding integrating TM into MM in Ethiopia and giving more in depth and overall insight about initiatives towards integration as well as related challenges and possible solutions from perspectives of key informants working in authorities from both sides.

LITERATURE REVIEW

4.1. Overview and History of Traditional Medicine

Globally, traditional medicine (TM) represents one of the oldest systems of healthcare, evolving in various cultural contexts over centuries. According to a worldwide review conducted by the WHO, national recognition and regulation of TM vary considerably. This ten years long review listed Ayurveda, traditional Chinese medicine, chiropractic, homeopathy and Unani/Arabic medicine as widespread systems of traditional and complementary/ alternative medicine(WHO, 2001). In industrialized countries, almost half the population now regularly use some form of traditional, complementary and alternative medicine (TCAM) and considerable use exists in many developing countries (Xu and Chen, 2011). Traditional, complementary and alternative medicine use appears widespread across many countries in Sub-Saharan Africa, although most studies emerge from just a few countries including Nigeria, South Africa, Ghana and Uganda (James et al., 2018).

The Ethiopians have been familiar with a wide range of diseases for which they had long-established names, both in their ancient classical language, Ge'ez, and in other indigenous tongues of the country. Scrutiny of Ethiopian ecclesiastical texts, the majority of which are unfortunately still mainly accessible only in foreign collections, indicate that traditional Ethiopian healers also possessed a wide variety of cures (Mehari et al., 2013). Ethiopian traditional medicine (ETM) should have dated back to the period when the history of the country is documented. However, our medical and medico-magical texts cover a period of little more than 300 years. The Ethiopian traditional medical system that is said to be a unique outcome of African, Greek, Arabic and Hebrew traditions, upholds the socio-cultural development of the society, besides being environment friendly and sustainable (Damen, 2013).

Harmful traditional practices including cutting of uvulas of children, the scrapping of the tonsils, female circumcisions and labia suturing have been practiced in various regions of the country. However, a healthy union should be created between the beneficial traditional medicine and

contemporary modern medicine while ridding the counter side of the more harmful practices because not all traditional medicines are harmful(Mehari et al., 2013).

Despite western medicine becoming more widespread in Ethiopia, Ethiopians tend to rely more on TM (Wassie et al., 2015). Even to this day, it is quite common in Ethiopia for patients to present to a modern clinic only after they have exhausted consultations with traditional healers often keeping consultations with traditional healers secret from the modern practitioner (Mehari et al., 2013). Although traditional medicine plays an important role in Ethiopian society, knowledge about the extent and characteristics of traditional healing practices and practitioners is limited and has frequently been ignored in the national health system (Wassie et al., 2015).

4.2. Forms of Traditional Medicine and Traditional Medicine Practitioners

Traditional medicine manifests in various forms across different cultures, often shaped by historical and environmental contexts. In many Asian countries, TM exists in codified systems such as Ayurveda, Chinese medicine, and Unani, which possess structured theoretical frameworks and formal educational pathways. These systems coexist with folk practices transmitted orally across generations, encompassing local remedies, ritual healing, and specialized traditions like bone-setting or obstetrics (Payyappallimana, 2009).

In Ethiopia, TM practices encompass both preventive and curative approaches. Common therapeutic methods include herbal medicine, bone-setting, spiritual healing, midwifery, and minor surgical techniques such as cupping and cautery (Kassaye et al., 2006). Practitioners of TM are generally categorized into herbalists (medhanit awakiwoch), bonesetters (wogesha), traditional birth attendants (yelimd awalajoch), spiritual healers, and ritual specialists (debtera and tenquay). Religious elements are deeply embedded within Ethiopian TM, with holy water (tsebel for Orthodox Christians and zemzem for Muslims) frequently employed as part of healing rituals. The transfer of knowledge within TM systems in Ethiopia is highly guarded and typically occurs through family lineage or spiritual initiation. This secrecy, while preserving cultural heritage, poses challenges for documentation and scientific validation(Kassaye et al., 2006). Traditional medicines can be given at household level or sold in open markets in Ethiopia

mostly by women. Where traditional professionals are consulted, it is often for their specialized traditional knowledge and skills pertaining to a relatively limited range of health (Kloos et al., 2014).

4.3. Role of Traditional Medicine in Public Health

In regions where access to biomedical healthcare is limited, TM continues to serve as an essential component of primary healthcare delivery. Its affordability and reliance on locally available resources make it a practical alternative for underserved populations. TM also offers preventive and promotive health services, with emphasis on holistic well-being and lifestyle guidance. Evidence from large-scale community interventions, such as home-based herbal gardens in India, illustrates TM's potential to reduce healthcare costs and manage common ailments effectively (Payyappallimana, 2009). Stakeholders acknowledge that TM plays a very important complementary role in healthcare delivery in many African countries(Asrat et al., 2020).The ethno-biomedical information originating from African culture could be appropriately coordinated and disseminated through formal training and research to bring about reliability and allow adoption for sustainability of the TM services that benefit the majority of the Sub-Saharan Africa (SSA) population. Notably, only a few apprenticeships and formal training can be traced in SSA (Innocent, 2016). In Ethiopia, traditional healers' clinics have been reported to significantly complement healthcare delivery, particularly in urban settings like Addis Ababa, where patients cite affordability, perceived safety, and cultural familiarity as key reasons for utilizing TM services (Birhan et al., 2011). Traditional medicine plays an important role in Ethiopian society, but knowledge about the extent and characteristics of traditional healing practices and practitioners is limited and has frequently been ignored in the national health system(Wassie et al., 2015). Despite its contributions, TM remains largely excluded from formal health systems. Advocates argue that harnessing TM within an integrated healthcare model could strengthen public health systems by expanding service coverage, promoting culturally sensitive care, and addressing resource constraints. However, achieving this integration requires addressing issues of standardization, safety, and quality assurance (Damen, 2013).

4.4. Conflicts between Traditional and Modern Medicine

Basic Theories of Traditional Systems:

As mentioned earlier majority of the different systems of traditional medicine are based on a holistic approach where various parts or constituents of the body are viewed as an organic whole, with an emphasis on a balanced relationship between them (Payyappallimana, 2009) while treatment is individualized based on stereotypical traits and factors that every person belongs to (Chaudhury and Rafei, 2001). Ethiopian indigenous cosmology regarding the causes and prevention of diseases has been the result of mixed beliefs of Christian, Islamic, and indigenous beliefs and practices. Spirits were held responsible for the mishaps and/ or the well-being of the society. This suggests that the indigenous beliefs together with imported religious and cultural ideas enabled Ethiopia to cultivate its own medical-cultural beliefs (Mehari et al., 2013).

Basic Concepts of Modern Medicine

On the contrary to TM, MM has a reductionist approach and looks upon the removal of the symptoms of disease as the main objective. It views a single remedy or a single approach as being suitable for all people. Symptoms are considered to be caused by physiological factors alone (Chaudhury and Rafei, 2001). Medieval medicine was shrouded in the mists of theology. The reductionist approaches of biomedicine, anatomy, physiology and pathology brought about a medical revolution in the West. In the latter half of the 19th century, the “bacteriological revolution” clarified the true pathogens of many communicable diseases. Clinical medicine also progressed, particularly in respect of diagnostics and surgical operations(Payyappallimana, 2009).

Conflicts and Reconciliation

A review on TM in Asia discusses that, shortage of time, space, funds makes it difficult to incorporate TM, which is individualistic, slow and difficult to monitor and evaluate. Despite all the challenges, consumer demand for improved health outcomes, more choices, less side effects, less resistance patterns, less intake of chemicals and synthetic drugs, and greater reliance on natural and environmentally friendly products have all pointed to the relevance in

the use of TM in mainstream healthcare (Chaudhury and Rafei, 2001). It is also the case that applying the rigors of scientific approach could definitely improve the efficacy, safety, and scope of TM (Lantum, 2007). Studies also show that there is a need to utilize the good aspects of TM in Ethiopia as it is culturally preferred by large sections of the population; and it can also result in the development of useful cures that can be developed through local initiatives and the industry to provide expanded access to medicines by the population (Damen, 2013).

4.5. The Cases of Integration in Different Settings

Integration of TM into formal health systems has been achieved to varying degrees worldwide. Countries such as China, India, and South Korea provide notable examples of institutionalized integration, supported by legislation, research, and education (WHO, 2005). The Chinese experience of integrating TM into the mainstream healthcare system started back in 1950 as the government formulated official policies to protect and develop traditional medicine and implementation measures for these policies including establishment of administrative bodies at the central and local levels for the execution of policy, exploitation of human resources, development of related academic organizations and publications, gathering and summarizing of the knowledge of experienced traditional medical doctors, and setting up of institutions for clinical practice, education and research. The conduct of comparative clinical trials mostly carried out on large samples and their results convinced modern medical circles. Educational system reform and the compilation of standard textbooks are major accomplishments (Chaudhury and Rafei, 2001).

The Government of India on the other hand set up four research councils almost 30 years ago to look at the efficacy of Ayurveda, Unani, Siddha, Yoga and Naturopathy and subsequently that of Homoeopathy. Research conducted over the last 20 years has shown specific areas of strength where traditional medicine is particularly useful, often where Western medicine has little to offer. Areas where it can be used as a stand-alone therapy or as an adjunct therapy have also been identified. However, research methodologies have to be designed keeping in mind the individualistic nature of the traditional diagnosis and the holistic side of traditional drugs(Chaudhury and Rafei, 2001). The Indian experience of experimenting on traditional remedies for the discovery of new drug is generally based on reverse pharmacology, which is

an approach where discovery of leads/formulations is based on the documented clinical experiences and scientific observations through series of studies i. e. the 'clinics-to-laboratories' routine starting from TM clinics to scientific laboratories. Safety is considered as most significant point remains and the effectiveness becomes a matter of validation. This process is highly useful to find better and safer leads. Fig. 1 describes the opportunity of drug discovery from Indian System of Medicine(Sen and Chakraborty, 2017).

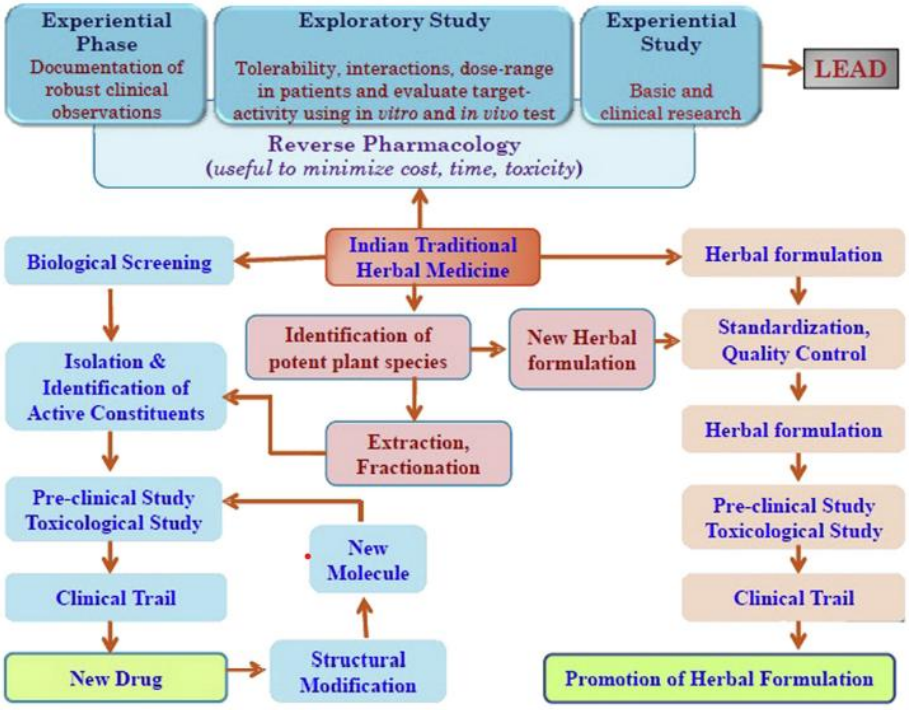


Fig. 1: Opportunity of drug discovery from Indian traditional herbal medicine

When it comes to integration in education curriculum, a study on advantages and disadvantages of integrated medical curriculum in Colombia constructed a theoretical basis of a process that changed the meaning of the health-illness process from a biological to an anthropological approach in which health-illness was defined as a social, cultural, biological, and psychological process embedded and determined socially and culturally by group of human beings. Advantages of this integrated curriculum included a good perception of the learning environment. The study concluded that designing curriculum integration, as a component of

the reform, should begin with an in-depth understanding of the setting in which it would be implemented including the concept of health (Quintero et al., 2016).

Ethiopia has introduced initial steps toward integration through the Ethiopian Traditional and Modern Medicine Research Directorate under the Ministry of Health. This body focuses on research, policy development, and regulation. (Mehari et al., 2013). The Ethiopian TM system is deteriorating primarily due to the lack of concern and, at times, due to apparent ignorance on the part of the authorities in responsible positions. Lack of concern goes far beyond the areas of natural resources conservation (Kassaye et al., 2006).

Findings from a project conducted in Gondar town showed that it is possible to capacitate traditional healers regarding their role and practice and increase their effectiveness in managing clients, with support from conventional medicine (Abyot et al., 2014). Another study that assessed perceptions and practices of modern and traditional practitioners on TM found that improved relevant education on TM is required for both sides as none of the healers has been trained. It is essential that researchers and modern health practitioners (MHPs) are educated in both traditional and western medicines in order to perform research appropriately and treat patients effectively. Similarly, traditional health practitioners (THPs) need to be significantly aware of the nature of practice and strengths of modern medical approaches. The government should also contribute by helping them financially and by arranging training and education, for the improvement of healthcare system given to the public (Ragunathan et al., 2010). Findings of a similar nature are reported by another study on Ethiopian herbal medicine practice and the recognition with MM. According to the study, the official Ethiopian healthcare system is almost exclusively based on the concept of modern medicine and no officially recognized schooling is provided in traditional medicine. However, efforts were recently made by the schools of pharmacy at Addis Ababa University (AAU), and other colleges and institutes in Ethiopian universities to expand their curriculum and encourage research on traditional medicine, particularly, herbal medicine, safety and efficacy (Mequanente, 2009). The integrating and harmonizing of Ethiopian TM with modern biomedicine has not been given emphasis and has not been wholesomely assessed. Progress made so far in this direction in

other countries has allowed for a wide utilization of traditional medicine and better recognition of its practitioners as heritage benefiting the majority of their people (Kassaye et al., 2006). This study hopefully provides basic information on the integration of ETM into MM.

4.6. Challenges in Integrating Traditional Medicine

As discussed above, integrative medical system is highly encouraged by the WHO because of its role in public health. Therefore, many countries are working towards a well-functioning integration of TM and MM. However, many challenges have been identified and reported by studies that were conducted about the issue. Although not much has been studied regarding the national status of integrating TM into MM in Ethiopia, much can be learnt from the experience of other countries.

The study on the integration of Peruvian TM into primary healthcare system reports that most TM which according to the study can cause lack of regulation of TM on its own. The study also adds that the lack of dialogue between the social, medical and legal disciplines in respect to its foundations, principles and opportunities can result in a non-coherent theoretical framework (Pereyra, 2013). According to another study, the slow progress of the implementation for preserving and promoting traditional medicine has been because of policies that fall short of adequately addressing a number of concerns related to TCAM such as safety, efficacy, quality, rational use, availability, preservation and development of such healthcare, sustainable use of natural resources and assuring equity in transactions at various levels. The study also reported that lack of sound scientific evidence relating to safety and efficacy, problems in ensuring quality and rational use, inadequate understanding of socio-cultural context of their practice and usage, protection of intellectual property rights of knowledge holders, assuring sustainable natural resource use, regulation and capacity building of non-formal practitioners, developing appropriate methodologies for evaluation, resolving conflicts with mainstream medicine are some of the key challenges in the sector. The low level of research has also slowed development of national standards and integration efforts. It is said that before randomized clinical trials are taken up, ethnographic, epidemiological, observational, survey and cohort methodologies are important for developing comprehensive research designs (Payyappallimana, 2009).

According to a review of recent developments in innovative research design for TCM and Integrative East-West Medicine, the core philosophical difference between biomedicine and TCM, lack of adequate funding, language barriers to understand TM concepts and lack of publishing opportunities can be obstacles in integrating TM and MM research (Pritzker and Hui, 2011).

Another study on Indian TM states that promotion of herbal medicine in particular faces number of challenges around the globe mainly in developed nations including quality control related issues, lack of awareness regarding the guideline among growers and manufacturers, administrative issues, infrastructure related issue, and research and development issues (Sen, 2017). According to a study on traditional medicine in Thailand, the limitations of integrating Thai TM service in government hospitals include confusion, misunderstanding and conflicts between those belonging to the two sectors and hospital personnel (Fakkham and Jarupoonpol, 2012). Similarly, a study in Zimbabwe states that the country, being a low resource country, faces barriers such as capacity building, financial resources and lack of political will to implement TM/TCAM policies (Mafuva and Marima-Matarira, 2014).

Challenges to Integration according to another study in Ghana include lack of acceptance of TM even by the Ministry of Health and the Ghana Health Service; lack of insurance coverage, lack of operational implementation of policies, the teaching of traditional medicine not being included in the curricula of the nation's medical schools and nurses' training colleges; lack of support for TM by mainstream medical practitioners (Asante and Avornyo, 2013). Data from another study in Ghana indicates five challenges to integration namely, insufficient knowledge of TM by MHP, discriminatory approach towards TM, high turnover of biomedical staff which is temporary staff appointments and internships that results in lack of establishment of consistent relationships between MHP and THP, declining interest of young people to become healers, and lack of resources for TM improvement including natural products and processing equipment or all equipment in general (Krah et al., 2018).

A study in Nigeria lists some challenges of integration of traditional medicine into the healthcare delivery system which include ethical issues regarding the substandard nature of TM

practice, sustainability of TM in terms of access to resources, Documentation of TM practice, ownership issues in terms of intellectual property rights, political stability in the region that results in frequent change of government policies, tribalism and religion including patronizing the traditional healer only from their own ethnic group and religion, attitude of MHP toward TM which is aggravated by how the curriculum is set up, and lastly, poor and fraud packaging and promotion of TM products. The study also mentioned that lack of training of THP in good manufacturing practices, good clinical practices, record keeping, sanitation and hygiene, quality control, and good collection practice and sustainable harvesting can be another challenge for the possibility of integration (Omoregie et al., 2015).

Another study that assessed the possibility of integration Of TM and MM lists possible barriers to integration including economic and prestige competition between the two healthcare systems; reluctance of MHP to collaborate with THP because of their perception that traditional healers practice in a way that might be harmful or illegal; lack of adequate healthcare budget; lack of ability to register traditional healers worldwide; lack of trust and secrecy by traditional healers that stem from fear of being exposed for substandard practices or fear of losing intellectual rights (Mokgobi, 2013). Another study in South Africa reported issues like THP's lack transparent standard operating procedures and the fact that traditional medicines are not tested and certified as issues to be worked on while integrating TM and MM. The issue of secrecy is also mentioned here. THPs were said to be not only secretive about the sources of their knowledge but also about their prescriptions (Mutola et al., 2021).

According to another study in Cameroon, one of the main problems that have caused a slow collaboration between medics and THP(s) is the lack of legal framework and official recognition of TM by conventional medicine. There are no laws guiding the TM practice in Cameroon. Though there is certainly cause for concern, it is unfair to pass judgment on the Cameroon TM healing systems on the basis of their worst outcomes; concerns about romanticizing the traditional practices have to be taken seriously (Fokunang et al., 2011). According to a study on the role of TM in public health in Addis Ababa, it was also reported that interviewed healers did not get help from modern health professionals and did not initiate cooperation with modern

health professionals due to lack of motivation to collaborate and communicate with modern health service workers and vice versa(Birhan et al., 2011).

Therefore, it can be concluded that ETM and its integration into primary healthcare system is not an issue to be taken lightly. However, collaborative effort is far from becoming a reality. Many healers remain resistant to departing from a tradition in which medical knowledge and its transmission have been closeted in secrecy. Moreover, many of those who possess knowledge of indigenous medicine are growing old and there may not be enough time to develop the type of long-term collaborative project (Mehari et al., 2013).

4.7. Policy and Regulation Issues

The World Health Organization has long advocated for the regulation of TM to ensure safety, quality, and accessibility (WHO, 2005). A national policy on TM/TCAM may include some of the following key elements: a definition of TM/TCAM, provision for the creation of laws and regulations, consideration of intellectual property issues. The policy may further describe the main strategies proposed by the government for achieving the objectives of the policy. In the 2005 WHO report, 32% of the responding Member States reported having a policy on TM/TCAM (WHO, 2005). Traditional medicine can play a far more meaningful role in the health system of a country if it receives legitimacy from governments. Governments need to recognize a system or practice, therapies and drugs, which have been studied by professional evaluators for safety and efficacy to give legitimacy to what is considered appropriate for public use. Assimilation into a health system is said to be in place if the pharmacopoeia standards are adhered to, if a licensing mechanism is in place and if there are ways of testing the product for the presence of the main ingredients and the absence of non-permissible substances (Chaudhury and Rafei, 2001).

The Alma Ata declaration in 1978 at the WHO international conference on primary healthcare was a milestone policy perspective in integrating TCAM practices which recommended inclusion of proven remedies into national drug policies and regulatory measures. Though it benefitted traditional medical systems in their self-reliant development, they have not been integrated fully into the public health system due to enduring opposition from conventional medicine

(Payyappallimana, 2009). Owing to the scarcity of data collection and of advanced research practices on the subject of traditional medicine in many African countries, it is not possible to be precise on the progress on policy and practice for some countries. However, thanks to the continued effort of the WHO, general trends for the continent and for some countries have been established (Lantum, 2007). To achieve the integration of traditional medicine into the conventional health systems, the central government needs to show political will by setting up regulatory strategies that provide for the scientific evaluation and certification of traditional medicines. This will build confidence for traditional medicines among biomedical scientists and health practitioners, thereby fostering easy collaboration and integration (Mutola et al., 2021).

Ethiopia has taken steps toward establishing a regulatory framework through the development of the National Health Policy and the formation of the Traditional and Modern Medicine Directorate within the Ministry of Health. These efforts aim to create guidelines for research, product registration, and practitioner licensing (Mehari et al., 2013).According to the WHO review, the Ethiopian Traditional Healers Association was organized to review the qualifications of practitioners where no regulations exist. In 1986, over 6000 practitioners of traditional medicine were registered with the Ethiopian Ministry of Health. Proclamation 100 of 1948, Penal Code 512/1957, and Civil Code 8/1987 all state conditions for the practice of traditional medicine and the importance of the development and use of traditional remedies. The Health Policy and the Drug Policy of 1993 both emphasize the need to develop the beneficial aspects of traditional medicine through research and through its use in the official health delivery services (WHO, 2001). Until recently, Ethiopia did not regulate herbal medicine and no regulatory status existed for TM (WHO, 2005).The issue of TM was neglected until COVID 19 changed the narrative and called for much attention towards the integration of TM into the primary healthcare system in efforts to increase capacity to develop an effective treatment. On July 2019, Ethiopian Food and Drug Administration (EFDA) issued a guideline for trials on traditional remedies for the treatment of COVID 19. The guideline was intended to be a basis for traditional healers to work with their remedies in a more scientific way for the development of scientifically approved treatments for the pandemic. It gives due recognition to the traditional healer as a part of the healthcare system(EFDA, 2019b). Currently, EFDA and

Ethiopian Health Minister (MOEH) are primarily responsible for the regulation of TM and related issues. Proclamation No.1112/2019 provided for food and medicine administration stated that regulatory functions under Articles 3(2) (c), 3(2) (e), 4(2), 4(16), 46 and 47 of Proclamation No. 661/2009 which deals with issues including professional and premise license for traditional medicine and alternative and complementary medicine shall be performed by regional health regulators. The proclamation additionally stated that Articles 45 of Proclamation No. 661/2009 which deals with registration of traditional medicine and alternative and complementary medicine shall be carried out by the executive organ. The Health Professional Ethics Committee established by the Council of Ministers Regulation No. 299/2013 shall remain operational until such time another body is established by law to take over its responsibility, and regulatory functions under Articles 3(2)(d) and 4(16) of Proclamation No. 661/2009 which deals with registration and licensing of alternative and complementary medicine practitioners and other health professionals coming from abroad shall be performed by the Ministry (EFDA, 2019a). Last but not least, another document that could be given a look at is the first edition of EFDA's guideline for Registration of Low-Risk Medicines issued in June 2020.The document, however, does not mention traditional medicine generally or any traditional remedy specifically (EFDA, 2020).

Despite these initiatives, policy implementation remains weak. Ethiopia lacks a comprehensive legal framework for TM practitioners, and enforcement of existing guidelines is limited. Unlike countries such as South Africa and Ghana, which have established councils and formal accreditation processes for TM practitioners, Ethiopia's regulatory measures are largely confined to policy statements with minimal operationalization (James et al., 2018). Therefore, without adequate investment and institutional capacity for TM in Ethiopia, policy intentions may fail to translate into practical outcomes. Strengthening regulation is therefore critical for fostering safe and effective integration of TM within Ethiopia's healthcare system.

CONCEPTUAL FRAMEWORK

The proposed concept of this study is that assessing the integration of TM into MM is an essential step to enhance and promote the benefits of TM as well as prevent the potential dangers from the use of harmful or substandard TM practices. Integration of the two systems shall begin on the reinforcement of policies that are backed up by adequate research and development. Research questions might arise during service delivery or training of professionals in an integrated and harmonized environment. Therefore, the process is never a one-way path; it is rather a two-way street through which processes flow back and forth. After proper training of professionals from both systems, integrated service shall be available in institutions of both systems and reassessed and evaluated for quality purposes (Chaudhury and Rafei, 2001, Quintero et al., 2016, Sen and Chakraborty, 2017).

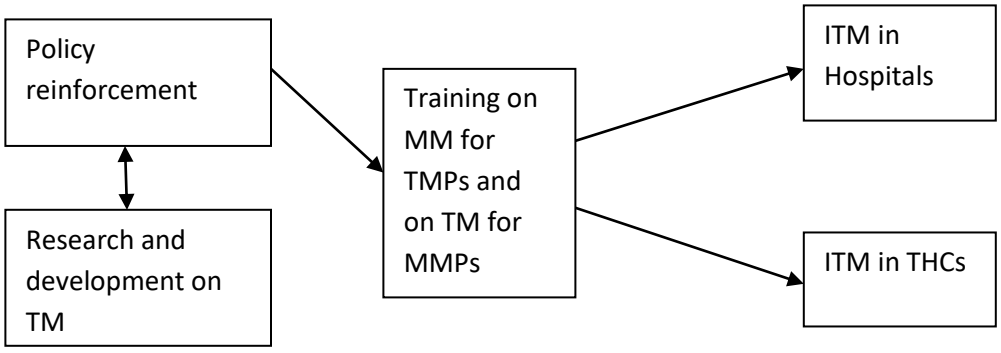


Fig. 2: Conceptual frame work of the study variables

MM= Modern Medicine
TMPs= Traditional Medicine Practitioners
MMPs= Modern Medicine Practitioners
ITM= Integrating Traditional Medicine
THCs= Traditional Healing Centers

RESEARCH QUESTIONS

What does the status of integration of Ethiopian Traditional Medicine (ETM)into the modern healthcare in Ethiopia look like?

How are the forms, ways, and types of Ethiopian Traditional Medicine (ETM) use organized, documented and institutionalized in the realm of the primary healthcare system of the country? What is the current status of training and research practices in Ethiopia regarding TM?

What are the challenges faced and possible opportunities in the process of integrating Ethiopian Traditional Medicine (ETM) services, training, research, and development with the modern health care system of the country?

Operational Definitions

Integration: incorporation of Traditional Medicine (TM) into Modern Medicine (MM) in a way that utilizes the best of both systems, cooperation of professionals of the two systems, recruitment of education and training programs in a way that combines both systems and creating a premise where scientific research are conducted to approve, enhance, and regulate the validity of traditional medicine practices and remedies.

Ethiopian Traditional Medicine (ETM): Healing practices and remedies traditionally used in Ethiopia, including herbal medicine, bone-setting, spiritual healing, and other indigenous practices recognized by communities and described in literature.

Modern Medicine (MM): Scientifically validated healthcare practices based on biomedical principles and provided through formal health institutions regulated by the Ministry of Health in Ethiopia.

Primary Health Care System (PHCS): The network of public and private healthcare facilities and services that constitute the first level of healthcare delivery in Ethiopia as recognized by the national health policy.

Integration in Service Delivery: The provision of healthcare services that combine or coordinate both traditional medicine and modern medicine practices in the same facility or through structured referral mechanisms, as reported by participants.

Training: Formal or informal educational initiatives aimed at enhancing the knowledge and skills of traditional medicine practitioners about modern medicine and vice versa, as implemented by institutions or programs identified in this study.

Research: Scientific investigations conducted on traditional medicine products and practices, including ethnobotanical studies, pharmacological validation, and clinical trials, as reported by key informants working in stakeholder institutions.

Policy and Regulatory Framework: Existing national policies, guidelines, and regulations governing the practice, research, and integration of traditional medicine into the formal healthcare system of Ethiopia.

Challenges: Barriers to integrating traditional medicine intoPrimary Health Care System (PHCS) identified by key informants, including secrecy, lack of funding, weak policies, limited training, and lack of standardization.

Traditional Medicine Practitioner (TMP): An individual recognized by the community as knowledgeable in traditional healing practices and engaged in providing traditional health services.

Modern Health Practitioner (MHP): A healthcare professional trained in biomedical sciences and employed in a recognized health institution regulated by Ethiopian health authorities.

Integration Status: The current level of implementation of initiatives aimed at combining traditional medicine and modern medicine in Ethiopia, assessed through stakeholders' views on policy, service delivery, research, training, and regulation.

OBJECTIVES

7.1. General objective

To explore the experiences, challenges and opportunities of integrating traditional medicine into the primary healthcare system in service delivery, training and research and its determinants in Addis Ababa, Ethiopia.

7.2. Specific objectives

- Explore policy and regulatory initiatives and activities of integrating Traditional Medicine (TM) into the primary healthcare system in service delivery training and research currently taking place in prominent institutions of the primary healthcare system as well as traditional healing system of the country
- Explore the experiences of recognizing, formalizing and improving Ethiopian Traditional Medicine System
- Identify challenges faced in integrating the two systems (Traditional Medicine (TM) and Modern Medicine (MM)) as reported by personnel involved in both modern and traditional medicine from a pre-organized list of possible challenges that were identified in previous studies
- Explore possible solutions for the challenges

METHODS AND MATERIALS

8.1. Study Setting/ Area/Context and Design

The study was carried out in Addis Ababa, the capital city of Ethiopia. Addis Ababa is the largest city in Ethiopia with population of 5,228,000according to 2022 population census with 4.43%annual growth rate (Macrotrends, 2022).

Qualitative data was collected from authorities/experts mandated to work on issues related to primary healthcare in Ethiopia. The collection of the qualitative data was an exploratory process because there has been constant shifting and changing of authorities that are responsible for issues concerning TM as part of the primary healthcare system (PHCS). Qualitative data regarding service provision, research and training aspects of integration was collected from responsible authorities in Addis Ababa including Ministry of Health (MOH), Ethiopian Drug and Food Administration(EFDA),Addis Ababa University (Center for Innovative Drug Development and Therapeutic Trials for Africa (CDT–Africa), Department of Pharmacognosy of the College of Health Sciences, Aklilu Lemma Institute of Pathobiology (ALIPB) and Department of Food Engineering of Addis Ababa Institute of Technology (AAIT)), Saint Paul's Hospital Millennium Medical College (SPHMMC), TM and MM Directorate of the Ethiopian Public Health Institute (EPHI),Addis Ababa Food, Medicine and Healthcare Authority (AAFMHACA), Food, Medicine and Healthcare Office, Kolfe keranyo sub-city, Woreda 6 and Armauer Hanson Research Institute (AHRI), Ethiopian Biodiversity Institute (EBI) and Ethiopian Agricultural Research Institute (EARI). Furthermore, qualitative data on behalf of traditional healers was collected from leaders of traditional healers associations.

8.2. Study Period

Data was collected between October and December 2023.

8.3. Study Population

The study population, from which samples were selected for this study,includedall the authorities/experts working in the primary healthcare system and traditional healing in Addis Ababa, Ethiopia.

8.4. Study Sample Size and Sampling Procedure

Sample Size

Key informants in institutions representing PHCS, TM, research and training sectors were identified, requested for consent and interviewed based on key informant sampling. Therefore, the sample size for the qualitative aspect of the proposed study was dependent upon the data collection.

Sampling Procedure

Purposive sampling was used to identify key informants from their respective organizations or institutions to participate in semi-structured interviews.

8.5. Data Collection

Data was collected through a semi-structured interview (*see Appendix section*) to gather information that deal with issues related to primary healthcare and clinical research and training in Addis Ababa from authorities/experts.

8.6. Data Processing and Management

Interview data was written down by the investigator, and also audio-recorded after obtaining consent from interviewees.

8.7. Data Analysis

All recorded audios were transcribed verbatim and translated to English manually using Microsoft Word 2010. Qualitative data was categorized and analyzed manually. Because the qualitative aspect of the study is exploratory in nature and the issue of integrating traditional and modern medicine is relatively new, an inductive coding method was used. The initial inductive coding was followed by an in depth line by line coding in order to refine the codes and have a better grasp on the data. These steps were then followed by the processes of code categorization and theme identification steps.

8.8. Ethical Considerations

Ethical clearance was obtained from Ethics and Scientific Review Committee of the CDT-Africa, College of Health sciences, Addis Ababa University and the Ethical Clearance Committee of

Addis Ababa City Administration Health Bureau. After providing all the necessary information about the study and data collection tool, verbal consent was taken from each participant.

8.9. Dissemination of Findings

The finding of this work will be shared with Addis Ababa City Administration Health Bureau and CDT-Africa; academic community including AAU, ALIPB, SPHMMC and AHRI; policymakers and regulatory bodies including MOH, EFDA, and AAFMHACA; other stakeholders that are working on TM related issues in Ethiopia as well as the participants of the study. The result of this work will be published in a journal article or conference presentation.

RESULTS

9.1 Introduction

9.1.1. Stakeholders Identified and Key Informant Selected

Seventeen interviews were conducted with key informants from institutions who are considered stakeholders in the issue of integrating TM into MM in Ethiopia. The first organization that was visited to explore the status of integration of TM into the Primary Health Care System (PHCS) was the MOH. We were informed there that EPHI is the technical wing of MOH regarding TM and that there is the TM and MM Research Directorate within EPHI which is playing the main role in conducting research on Ethiopian TM. However, after the investigator was able to get access and interview the key informant from the directorate, she was informed that there was in fact a TM Desk established under MOH for the purpose of coordinating all issues regarding TM including policy making, and working with respective stakeholders for specific areas related to TM. EPHI also provided the investigator with a list of other institutions including research institutions and authorities working on TM related issues and traditional healers' associations. Thus after a process of explorations, 14 more stakeholders were identified from which key informants were selected by contacts in the institution itself based on who is more involved in the topic to give detailed information. The selected stakeholders included institutions consisting of ALIPB, CDT–Africa, Department of Pharmacognosy and Department of Food Engineering (AAIT)of Addis Ababa University (AAU), AHRI, Department of Pharmacology at SPHMMC, sectors within regulatory authorities including Product Safety Directorate in EFDA, AAFMHACA, Food, Medicine and Healthcare Office of Kolfe Keranyo sub-city Woreda 6; traditional healers associations such as Ethiopian Traditional Healers Association(ETHA) and Addis Ababa Traditional Healers Association (AATHA); and two affiliated sectors in Ministry of Culture and Tourism, EARI and EBI. Table 1 summarizes the affiliations of key informants interviewed.

Table1: Participant Description

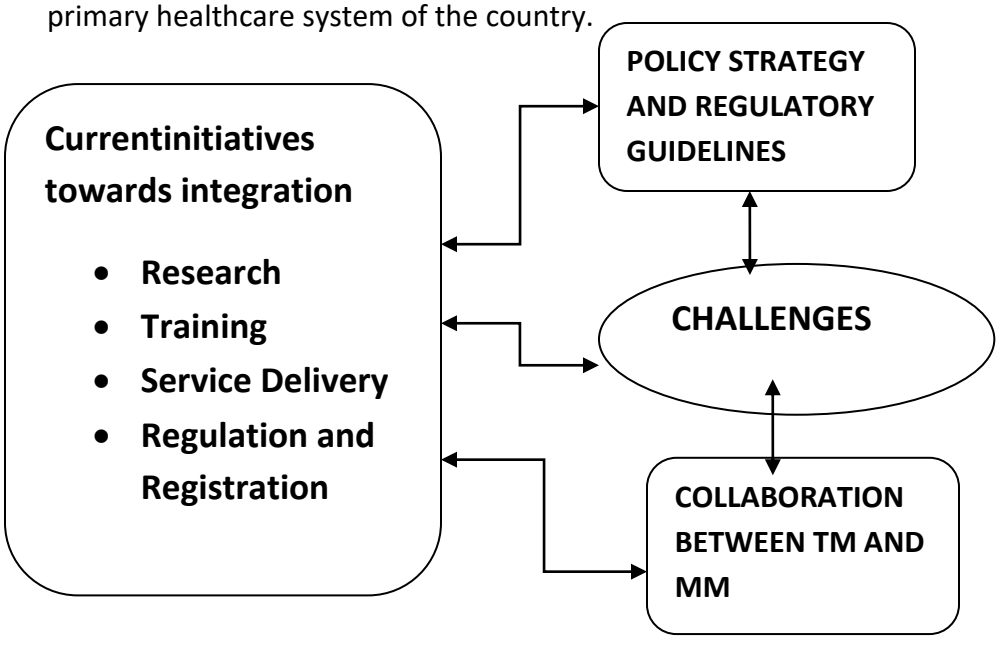
Sector/Affiliation	**Organization/Department/Inclination**	**Number of key informants**

Ministry of Health	Ministry of Health/ TM- Desk	1
Research institutes	AHRI	5
	TM and MM Directorate at EPHI	
	Ethiopian Agricultural Research Institute (EARI), Wondogenet	
Regulatory bodies	AAFMHACA	
	EFDA Product Safety Directorate	
	Food, Medicine and Healthcare Office of Kolfe Keranyo sub-city, Woreda 6	
Units in Higher education institutions	Department of Pharmacognosy, AAU	5
	Department of Pharmacology, SPHMMC	
	Department of Food Engineering, AAIT, AAU	
	Aklilu Lemma Institute of Pathobiology (ALIPB), AAU	
	CDT-Africa/ Natural Products Research, AAU	
Traditional healers' associations	ETHA Main office	2
	AATHA Main office	
Others	Ministry of Culture and Sports	2
	EBI	

Note: TM = Traditional Medicine, AHRI = Armauer Hanson Research Institute, MM = Modern Medicine, AAFMHACA = Addis Ababa Food, Medicine and Healthcare Authority, EFDA= Ethiopian Food and Drug Authority, AAU = Addis Ababa University, SPHMMC = Saint Paul's Hospital Millennium Medical College, AAIT = Addis Ababa Institute of Technology, CDT = Center for Innovative Drug and Therapeutic Development), ETHA =Ethiopian Traditional Healers Association, AATHA = Addis Ababa Traditional Healers' Association, EBI = Ethiopian Biodiversity Institute

9.1.2. Themes

Thematic analysis identified Policy Strategy and Regulatory Guidelines, Collaboration between TM and MM, current initiatives towards integration regarding Research, Training, Service Delivery, Regulation and Registration and challenges as major themes. Fig. 3 displays the relationship between the themes in describing the status of integration of TM and MM in the primary healthcare system of the country.



(TM = traditional medicine and MM = modern medicine)

Fig. 3: Relationship Between Themes

9.2. Policy, Strategy and Regulatory Guidelines

9.2.1. Policy and Strategy

Key informants stated that there is an initiative to include TM in the health sector transformation plan and TM-Desk was established to coordinate the implementation of this policy initiative.

A key informant working on TM research stated: "One of the *14 strategic objectives in the current health sector transformation plan of the MOH* has been dedicated to TM and how it can be facilitated to go hand in hand with conventional medicine. This hasn't been the case in previous such documents which are developed every 5 years. However, now it has been clearly stated in the 14th objective in a way that enables evaluating progress. There has also been, established in the MOH a Traditional Medicine Desk that has been aimed to coordinate issues regarding TM. Its role is to coordinate the activities of research institutes, what health bureaus do regarding TM, and activities around agriculture and biodiversity." (EPHI1)

And key informant from the Traditional Medicine Desk highlighted the historical and policy context:"(TM integration) can be traced back to the time of Emperor Haile Sellasie where integration started being considered by an attempt to incorporate TM into the governance structure. Over the years, attention has fluctuated, but it was recently incorporated in the transitional government's health policy. Today, the health sector transformation plan includes a strategic objective boldly stating 'Improving TM,' showing the level of emphasis given by the MOH. Integration has become a legal mandate, providing a structural basis for policy development and implementation."(MOH)

However, most participants commented that the "policy supporting TM in Ethiopia is weak" and that "there are initiatives for integration but policy is not strong"(ALIPB)..."there is no policy specifically for integration" although "there is no strong policy regarding the practice" itself. The policy and implementation, they claimed, is rather "passive" and "tolerance based".

(ALIPB, EBI, Department of Pharmacognosy, AAU).A participant from academia emphasized the gap in practical policy support “We study medicinal plants used traditionally, but we are not operating on a policy-based level regarding training, research, and service delivery of TM in Ethiopia. The policy support is very weak and almost nonexistent.”(Department of Pharmacognosy, AAU).Another academic echoed this concern, noting that legal permission exists in theory, but practical integration is lacking “But even if the policy allows it, there are many challenges that would make integration difficult. On paper, integration exists, but nothing encourages us to put it into practice." (Department of Pharmacology, SPHMMC)

When it comes to policy implementation, participants identified multiple barriers despite government encouragement aligned with the WHO 2013/14 strategic plan. “There is no encouraging initiative”, there is “Lack of commitment” and there is “Lack of framework for legal and ethical procedures” (CDT-Africa, AHRI, Department of Pharmacology, SPHMMC, EPHI2, and EFDA). A researcher highlighted that the policy itself is clear, but implementation remains problematic “there is no challenge on the policy. The policy is stated clearly in our favor. The problem is on the implementation.”(Department of Food Engineering, AAIT)

Finally, a participant from a research institution noted the need for operational guidelines “We don’t have a guideline on how to incorporate TM into healthcare services. There is a guideline under development for transferring TM knowledge through clinical trials, and I have participated in its review process.” (AHRI)

9.2.2. Procedures and Guidelines for Regulation

Participants noted that alongside policy development, a roadmap was developed to guide the improvement of TM in Ethiopia. The roadmap is recognized as a major milestone in integration of TM into modern medicine.

A researcher involved in TM noted the following on the development of roadmap: “Regarding integration, a roadmap has been developed and approved to enhance research based works in the medical institutions which has now started to be implemented.”(EPHI 1)

A participant representing a traditional healers association commented “Roadmap development can be seen as a major initiative in integrating TM into PHCS of the country.” (ETHA)

An academic participant recalled the challenges on implementing roadmap:“I remember a roadmap being developed under Prof Yifru as Minister of EMOH. That roadmap is, however, not being implemented—mainly due to lack of strong policy backing. Currently, we operate based on the proclamation mandating educational institutions to conduct research and provide community service.” (Department of Pharmacognosy, AAU)

Another participant emphasized the role of stakeholder engagement:“A document is being prepared for a stakeholders meeting in which we participated. The roadmap itself was developed through four distinct meetings and enriched by countless ideas from participants. This fosters a sense of belonging and improves the chances of implementation.” (MOH)

Participants discussed procedures and guidelines that are for regulation of TM products and services including Category I-IV TM and differentiation between low risk and evidence based TM.

A key informant from regulatory authority highlighted how these guidelines are executed by regulatory bodies:“TM is categorized according to WHO guidelines into Categories I-IV. Regional authorities control mainly Categories I and II. Category III is treated like registered drugs, regulated at the federal level by EFDA. Category IV includes traditional remedies imported from other countries. Woreda-level personnel supervise Category I products, which are remedies formulated from plant, animal, or mineral sources. Personnel have been trained to monitor these practices, and the guidelines are accessible at local offices.”(AAFMHACA)

An academic with regulatory experience also explained about TM categories and added perspective on registration:“Registration involves two levels: practitioner (service) and product.”

“Registration system is divided into two levels: Practitioner (service) registration and Product registration. EFDA prepares guidelines, approves low-risk medicines, and supervises clinical

trials. Category I TM includes remedies used traditionally for at least 30 years with minimal adverse effects. Category II remedies are slightly processed versions used by part of the community. Category III medicines undergo full preclinical and clinical studies before market authorization. Category IV includes imported remedies, which are not currently widely implemented due to concern for protecting indigenous medicine." (Department of Pharmacognosy, AAU)

Key informant from regulatory authority elaborated regarding FDA guidelines for low-risk and research-based TM: “The FDA guideline classifies TM into research-based and low-risk directives. Low-risk TM in Ethiopia refers to natural products used for 20 years without harm. These can be registered in Category I. Research-based TM must undergo preclinical and clinical studies. For example,.” FDA guideline classifies TM into Research based TM directive and Low-risk TM directive. Low risk TM in Ethiopia refers to natural products that have been used for 20 years and have not been associated with any harm. These products shall be registered in category I TM list. Research-based TM on the other hand should pass through both preclinical and clinical studies. For example, aromatic oils might be considered low-risk in the future once they meet the requirements. The 20-year threshold in Ethiopia simplifies registration compared to other countries.” (AAFMHACA)

However, the EFDA representative clarified a differing practice regarding low-risk categorization: “There is no such categorization with us. If the research is a clinical trial, we monitor it regardless of the product’s risk level.” (EFDA)

An academic participant described their technical role:"We provide technical support through consultation on TM product categorization. Products in category I and category II are mainly considered as low risk products." (Department of Pharmacognosy, AAU)

However, key informant from EFDA clarified a differing practice regarding low-risk categorization: “There is no such categorization with us. If the research is a clinical trial we monitor it regardless of the risk that the product has.” (EFDA)

9.3. Collaboration between Traditional Medicine and Modern Medicine: A Journey towards Integration

9.3.1. Who are the Stakeholders involved and what is Their Role?

Although integration is not yet being practiced in the PHCS of the country, institutions concerned with healthcare, culture and biodiversity of the country are incorporating TM in their activities. Participants also listed the numerous institutions and authorities that could play a role or have the potential to play a role in the issue of integration of TM into MM in Ethiopia.

A participant from MOH emphasized the central role of the TM Desk: “The TM Desk of the MOH has a direct mandate to coordinate integration of TM and MM with all concerned stakeholders. This includes research, regulatory work, capacity building, and service delivery.” (MOH)

“The TM- desk of the MOH has a direct mandate to coordinate integration of TM and MM with the participation of all the concerned stakeholders. What that means is, there will be research, there will be regulatory work, there will be capacity building activities, and mainly, MOH is directly concerned with the service delivery. Education and training are also key—people need to be educated about Ethiopian TM to integrate it effectively into the mainstream healthcare system."(MOH)

A participant working on researching medicinal plants highlighted gaps in coordination and education:“Many stakeholders are, including the Ministry of Industry, Ministry of Agriculture, and research institutes.” (EARI, Wondogenet)

“There are many stakeholders involved including, the Ministry of Industry, Ministry of Agriculture, and research institutes. However, there is no strong forum linking these actors for processing, research, development, production, and marketing. TM is not included in formal education or agricultural extension programs, reflecting the lack of attention to medicinal plants. ” (EARI, Wondogenet)

Key informant from the Traditional Medicine and Modern medicine Research Directorate described the broader collaboration framework: “Collaborating organizations are numerous: EBI, AAU, IPO (International Property Organization), Ministry of Culture &Sports. Traditional

Medicine (TM) is currently a department. But in the future, it will be established as an institute. For example, conservation of endangered medicinal plants like 'kebercho' requires collaboration with EBI, while AAU supports documentation. IPO works with healers to protect intellectual property rights. As TM is part of our cultural heritage, the Ministry of Culture and Sports must also be involved—it cannot be done in isolation." (EPHI 2)

Based on the data, a pattern of structural flow among stakeholders and their roles was recognized as presented in the following table:

Table 2: Stakeholders involved in integrating Ethiopian Traditional Medicine into Modern Medicine and their roles

Stakeholder Institution(s)	Specific Role	Category of Integrative initiative
MOH Traditional Medicine-Desk	Coordination of collaborative activities	Recognition of TM practices and practitioners
AAFMHACA	Register and supervise the service and practitioner	
Food, Medicine and Healthcare Office of Kolfe Keranyo sub-city, Woreda 6		
AATHA	Identification and preservation of indigenous knowledge	
ETHA		
Ministry of Culture and Sport		
MOH	Training of traditional healers on documentation of practice, medicinal plant collection and processing, hygienic preparation and storage of products etc.	Training
Department of Pharmacology AAU		
TM and MM Directorate, EPHI		
EARI, Wondogenet	Preservation and conservation of medicinal plants	Conservation and Documentation of TM knowledge and natural resources
EBI		
Department of Pharmacognosy, AAU	Data generation on medicinal value of medicinal plants and TM practices in Ethiopia	
Department of Pharmacology, SPHMMC		

TM and MM Directorate, EPHI	Preclinical studies (Ethnobotanical surveys, validation studies)	Preclinical Studies
ALIPB		
Department of Food Engineering, AAIT, AAU	Validation, Innovation, Clinical trials (CTs)	
CDT-Africa		
AHRI	CTs for the products that qualified the preclinical and other requirements	Drug Development
CDT-Africa		
EFDA	Supervise CTs and register approved product	Drug Approval, QC and post market surveillance

Note: MOH = Ministry Of Health, AAFMHACA = Addis Ababa Food, Medicine and Healthcare Authority, AATHA = Addis Ababa Traditional Healers' Association, ETHA =Ethiopian Traditional Healers Association, AAU = Addis Ababa University, TM = Traditional Medicine, MM = Modern Medicine, EPHI = Ethiopian Public Health Institute, EARI = Ethiopian Agricultural Research Institute, EBI = Ethiopian Biodiversity Institute,SPHMMC = Saint Paul's Hospital Millennium Medical College, ALIPB = Aklilu Lemma Institute of Pathobiology, AAIT = Addis Ababa Institute of Technology, CDT = Center for Innovative Drug and Therapeutic Development, AHRI= Armauer Hanson Research Institute, EFDA= Ethiopian Food and Drug Authority, CTs = Clinical Trials

9.3.2. Benefits of Integration

Participants from the aforementioned institutions listed reasons why they consider integration beneficial. Most of them gave positive comments that integration was beneficial if it was done with the right procedures and after necessary preconditions had been fulfilled.

A key informant emphasized improvements in service and patient safety:"Integration can improve healers' service. Research and development can be facilitated through collaboration, and healers can use the knowledge they get from trainings to improve their knowledge, service and practice. It also facilitates a referral system—supporting healers to refer cases beyond their scope helps prevent harm."(ALIPB)

Other benefits mentioned by participants included:

- Use of TM as an alternative treatment (Department of Pharmacology, SPHMMC; Department of Food Engineering, AAIT; ETHA; EFDA)
- Cost reduction and generation of scientific evidence (Department of Pharmacology, SPHMMC; Department of Pharmacognosy, AAU; Ministry of Culture and Sports; Department of Food Engineering, AAIT)
- Reduction of burden on modern healthcare providers, promotion of economic growth, and medical tourism (AAU)
- Innovation and drug discovery, including for diseases currently without cure, and increased visits to healthcare facilities (EFDA; Department of Pharmacology, SPHMMC; Ministry of Culture and Sports)
- Potential solutions for antibiotic resistance, improved safety of TM use, and prevention or treatment of adverse drug reactions (Department of Pharmacology, SPHMMC)
- Possibility to export TM-based products (Department of Food Engineering, AAIT)

However, some participants cautioned that integration without formal education and training could be harmful. A participant from regulatory authority commented that integration before development of a formal education on TM as a distinct field of study is harmful. A regulatory authority participant stated: “I don’t see the benefits of integrating as it is right now. TM should first be taught as a course, whether at degree or diploma level. Only then should integration into hospitals and health centers be pursued.” (AAFMHACA)

9.3.3. Strategies Proposed for Integration

Participants proposed strategies to facilitate the integration of TM into modern medicine (MM)..

Participants proposed variousstrategies to facilitate integration of TM into modern medicine (MM). While each participant emphasized approaches aligned with their expertise, common themes emerged: policy support, evidence generation through research, and collaboration among stakeholders. Strategies generally fell into three categories: system-oriented, product-oriented, and education-oriented approaches, or combinations thereof.

- System-oriented strategies focused on establishing structures to coordinate stakeholders and standardize practices:

"TM should be established as an institution to help stakeholders in conservation, documentation, intellectual property, research, and higher education collaborates effectively." (EPHI2)

"We need leadership that fosters a collaborative working environment, avoiding duplication of efforts and producing credible outputs. Leadership, finance, collaboration, and technological enhancements are key." (MOH)

"Across regions and ethnic groups, there should be a system promoting standardization and experience sharing. A responsible body should coordinate practices and regulatory engagement through our associations, improving the system for everyone." (AATHA)

- Product-oriented strategies emphasized research, development, and regulation of specific TM products, with clinical trials playing a central role:

"We mostly generate preclinical data, but clinical trials are essential. Collaboration is required—botanists, agriculturists, chemists, clinicians, epidemiologists, and trial experts must work together. One person alone cannot develop a drug." (Department of Pharmacognosy, AAU)

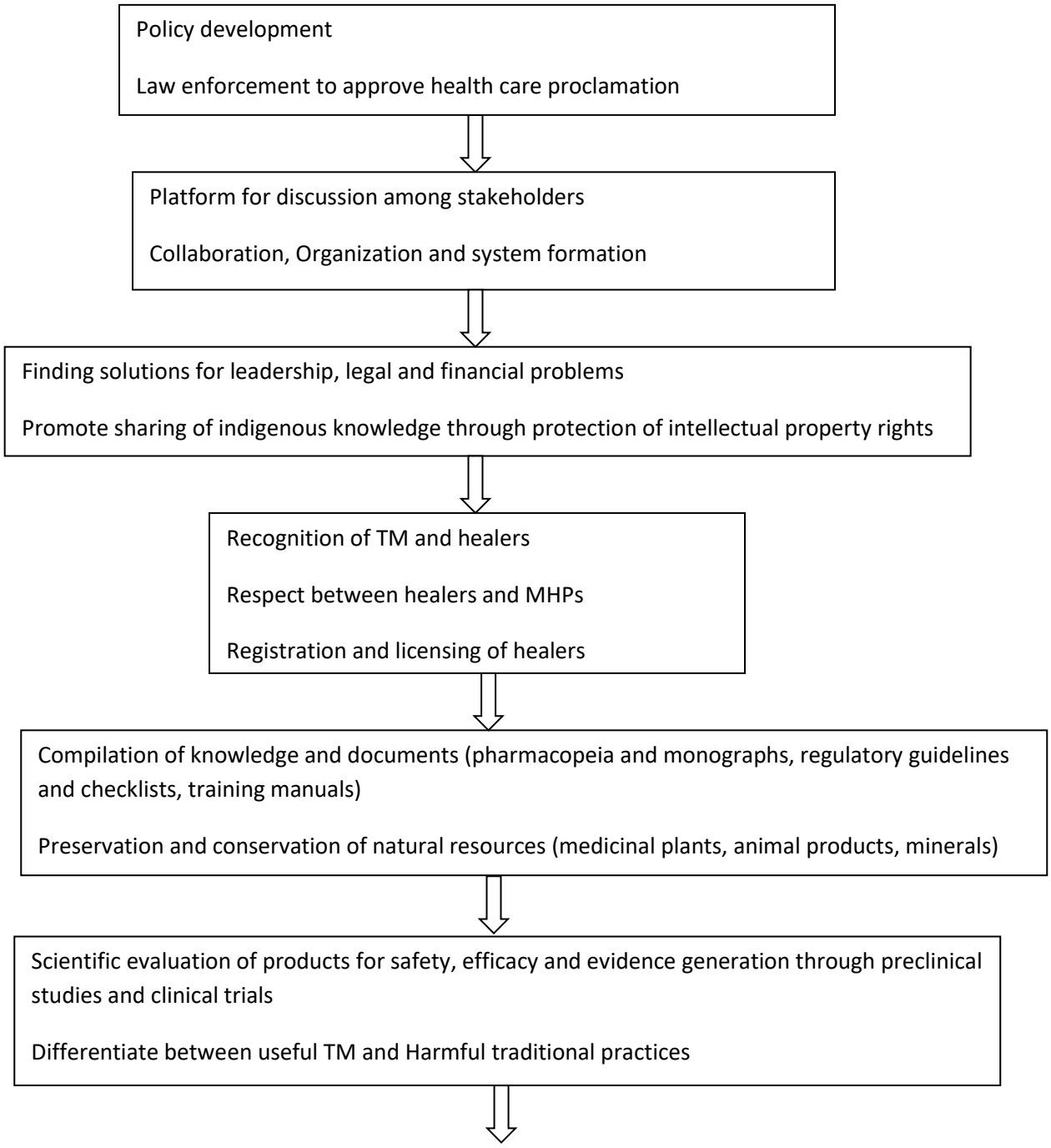
"It is crucial to know exactly which remedies healers use for specific illnesses. When integrating these practices with MM, responsibility for any possible harm lies with us. Each product's safety profile must be studied thoroughly." (EFDA)

- Education-oriented strategies focused on establishing formal TM education and training programs:

"Integration should not be implemented immediately. Curriculum should be developed, and TM should be taught as a discipline with degree or diploma certification, not just a single course in a pharmacy program. This ensures smoother integration." (AAFMHACA)

"In South Korea, more than ten universities provide TM training. In Ethiopia, universities currently do not offer TM courses. TM should be incorporated into medical and nursing curricula, and traditional healers should also receive training in MM. Clinicians trained in both systems can then provide integrated services." (AHRI)

A summary of the proposed strategies could be arranged into a flow chart as follows.



Inclusion in education curriculum as an independent field of study
Training and capacity building on both sides

Fig. 4. Summary of strategies proposed by participants for integrating TM into MM in Ethiopia

9.4. Current Initiatives and Activities toward Integration: Collaborative Initiatives

This section highlights the activities that are taking place in the practical realm including service delivery, conservation and documentation of TM knowledge and natural resources, research, training and regulation.

9.4.1. Collaboration in service delivery

Most participants stated that integration in service delivery is not available. As one participant from research institute stated:"In service delivery, as far as I know in healthcare units, be it health posts, health centers or hospitals, so far we provide only MM .TM is given at centers (separate centers) and the traditional healers have private facilities & they provide their service in them. So in Ethiopian setup, unlike the other countries, it is not integrated at healthcare facility level." (AHRI)

However, there are initiatives to make integration of TM into MM in service delivery a possibility. A Participant from regulatory authority commented the following:“The AAFMHACA is the main institution that has supported TM in AA to reach where it is now. Three years ago, there was no initiative by MOH on TM. At that time, AAFMHACA is the one that developed a guideline, invited traditional healers, scheduled meetings every three months and established AATHA. It was only after the establishment of the association that the TM - Desk in MOH was established. So a system has been created where healers communicate with the team in MOH for service-related issues and with us for regulatory issues." (AAFMHACA)

Another participant from research sector also commented:“Ethiopian MOH encourages integration of TM with MM because the community already uses TM and so incorporating it into PHCs somehow would benefit the society by improving the safety of TM use. That is why this department was established, so the issue has been given attention. But the attention,

when I think of it as a professional, is not enough. " ... "It is a good start and plausible effort that the MOH established TM-desk." (EPHI2)

There was however a debate around the idea of what integration in service delivery actually looks like. One participant from regulatory body stated his stand against healers expressing MM advancements in their service and explained what integration in service delivery should actually be:“Integration is not about modernizing traditional healing. True integration means providing both TM and MM services in one institution with a unified reporting system reaching MOH. Otherwise, it is mere inclusion. For example, India advances TM without integrating it, while China has integrated systems. Precondition for integration is incorporating TM into the curriculum”(AAFMHACA)

Conversely, another regulatory participant noted benefits of healers using MM knowledge:“Some healers have conventional medicine knowledge but are restricted to traditional practice only. This limits their growth. For instance, a healer who is also a public health officer wanted to use diagnostic tools but was prohibited, including using a stethoscope or conventional facility structures”(Medicine and Healthcare Office of KolfeKeranyo sub-city Woreda 6)

Most key informants stated that herbal medicine is the most common form of TM in Ethiopia.

“Herbal medicine is most common. A herbalist might practice other TM forms, but herbs are the major focus.” (EPHI2)

“Most healers are herbalists. However in our country the forms of healing are not categorized formally so they are referred to as healers collectively.” (Department of Pharmacology SPHMMC)

“The service that they give is product oriented. These products are mainly from plants, minerals and animal origins. The other is bone-setting practice by "wogesha" but the most are herbalists.” (AAFMHACA)

Participants described obstacles in working with healers, including power struggles, conflicts of interest, and lack of trust:

“When medicinal plants were first collected, healers guided the process and worked with us. Later, they established their own clinics. Relationships weakened because they were not formally recognized or organized from the top.”(EBI)

“Healers insist that the leader of TM initiatives should be a traditional knowledge holder, not doctors or politicians. Power and personal benefit issues hinder collaboration.” (EPHI1)

Training was suggested as a way to bridge gaps:

“Training is not about replacing their system with conventional medicine but creating awareness of each other’s practices and perspectives.” (MOH)

Legal and intellectual property concerns also affect collaboration:

“Healers fear losing income or intellectual property. Proclamations exist, but guidelines for implementation are lacking. Some agreements have worked, allowing documented collaboration and royalty sharing, but issues persist when products do not meet expectations.” (EPHI1)

A healer association participant reflected on their organizational experiences:

“Approval for associations was initially from the Ministry of Justice, with MOH providing oversight. Later, AAFMHACA formulated strategies. Now, the Ethiopian Civil Associations Federation Bureau grants legal registration, while MOH, EFDA, and AAFMHACA handle professional support, follow-up, and registration at regional and federal levels.” (AATHA)

9.4.2. Conservation and Documentation of Traditional Medicine Knowledge and Natural Resources

Key informants noted that TM knowledge is still kept in secret by healers and has a long way to go to be documented and preserved.

Participant working at Traditional and Modern Medicine Research Directorate, EPHI, reflected on this issue: “Our TM knowledge has not been fully studied yet. There are, however, initiatives although not sufficient enough. Some studies including this one, some observations on the healing methods and some compilations of classic TM books are there but more work needs to be done.” (EPHI 2)

A participant from healers association also stated that ETM knowledge is currently stored in documents including books and scriptures that are kept secretly by knowledgeable elders and practicing healers.

“Currently, the knowledge of TM is kept with traditional healers who almost always keep it as secret. But there are studies on TM and medicinal plants that are documented in EPHI and stored in databases in other institutions.”(ETHA)

Another participant from a healers association explained how healers store indigenous knowledge: “We document our knowledge and skills as much as we can in our working environment as well as our homes. Professionals, almost all of them have a library with at least 50/60 books on shelves. I personally have 50 books. We have requested the Culture and Sports Minister to give us a museum to preserve or keep our books so that students can visit and even learn/study.” (AATHA)

There were also comments from key informants regarding initiatives to standardize, preserve and document TM knowledge in Ethiopia including the preparation of documents, pharmacopeia, monograph and databases.

Participant working at Traditional and Modern Medicine Research Directorate, EPHI, highlighted these efforts being made for the conservation of TM knowledge and medicinal plants: “Currently, there is an initiative in developing a monograph. We also have in our department a work in progress of developing a database. We are working on it in collaboration with MOH. And MOH is working on developing a pharmacopeia aided by fund from the Ethiopian Diaspora community. We prepare documents through books, workshop proceedings and publications for research output dissemination.And there is a plan for the future to furnish

a building in this compound for a display center, library and herbarium. The display center will include a display of the products that have been formulated from medical plants including extracted essential oils. The library will include books written on traditional medicine, research findings on TM that can be accessed, and database to search information on TM and pharmacopeia when it is ready." (EPHI 2)

A participant from academia and research also mentioned obstacles on TM knowledge documentation and suggested possible solutions:"There are also other initiatives being attempted here and there including the preparation of a monograph which is a compilation of medicinal profiles of over 40 medicinal plants. . This work might evolve into pharmacopeia after adding additional evidence based details based on available researches done on these plants. Until then, we can compile studies conducted by our researchers from pharmacognosy, ethnomedicine, ethnopharmacognosy and other departments. The life struggles keep these researchers from being fully able to use their potentials. But in an urge to share what they know, they write books especially around the ends of their careers. Thus, there should be opportunities to compile these researches into accessible databases. There was an initiative in EPHI to develop a database but I don't know how the implementation went for them. The database, if developed, can prevent repetitive works and promote incremental works and scientific evidence pools. It is based on these that you start to develop theories and make tangible progress." (Department of Pharmacognosy, AAU)

A participant from Ministry of Culture and Sports stated the following:"There are gaps regarding organizing the documents. But there are old scriptures of indigenous knowledge stored in libraries including "Metsehafe Medhanit Wefews". They are kept for exhibition and not so much for use as references. But you can find it and read it if you want to. For now, a manual is being developed on indigenous knowledge documentation and we are on a process of getting the strategies approved. TM is one of these indigenous knowledge sections. In the manual, we have classified indigenous knowledge in ten classes including "sine-tefetro" about nature, "sine-feleg" which is astronomy, "sine-liket" which is about measurement and ETM. For example, at the time of COVID, you tell people to keep a distance of 2meters, indigenous

document about measurements of distance could help clarify to the community by giving reference of the distance from their own culture." (Ministry of Culture and Sports)

The other issue discussed was conservation of natural resources for TM including medicinal plants, animal products and minerals. A participant from healers association commented on the issue as follows:

"We work with the plant, animal and mineral products. We bring our materials from far places like Metema, Metekel, Tolay and Dedessa. But now, we are even having difficulties to access plants even from these remote places. The natural resources are being depleted. We are requesting that we can cultivate plants and conduct research on them, and that we share our knowledge with students of all ages and levels of education on the cultivation, the plants' preferred weather condition to grow, the preferred season of the plant to grow, the flowering and seeding season, plant chemical constitution (if it is acidic or not), on its formulation and preparation, and many more and that we be provided with a land for us to grow a botanical garden. But for the time being, we are searching and collecting plants from far distances and using our resources to prepare in a way that is suitable for the plants and we are helping people and benefiting for ourselves." (AATHA)

Ethiopian Biodiversity Institute is one of the main organizations working on the conservation of biodiversity including those with healing benefits. The participant from EBI affirmed the issue as follows:

"The main objective of the Ethiopian Biodiversity Institute is to protect and preserve Ethiopia's biodiversity for sustainable use. Conservation work and creating awareness means that it works mainly with attention. From the point of view of awareness, many times, regarding medicinal plants and other forest and agricultural plants, awareness creation activities are given to the community, the farmer and the stakeholders. This is a work in progress. Another is protection. So, one of the biodiversity resources protected by this institute is medicinal plants." (EBI)

A participant from EARI, Wondogenet explained the development of botanical gardens to better access and study medicinal plants:

“As I told you before, the knowledge and information about these plants is small as a country. We have prepared botanical garden not only for our junior employees but also for teachers and students who come from other universities and also for investors who come from the country or foreign countries. In This way, we explain the types and importance of each and every one of the plants by demonstrating them physically. And then we publish all the works that we have accomplished together with the technological achievement. We also share the knowledge and experience we get to junior employees, agricultural institutes and university teachers and students. As far as information access is concerned, we always try our best to publish works in journals on the activities we perform. In addition to this, our botanical garden and laboratory play big role in demonstrating the whole process from field to laboratory.” (EARI, Wondogenet)

A participant from Ministry of Culture and Sports explained the initiative of conservation of TM knowledge as part of capacity building for healers:

“In the capacity building, it was also assessed what should be done to improve conservation of medicinal plants in Ethiopia including their cultivation. There is also an initiative to strengthen traditional healers’ associations which included the facilitation of TM exhibition events where healers showcase their knowledge, skills and products. This can benefit them in two ways: advertising their products and creating sales opportunities and market access. The Ministry of Culture and Sports has also started an initiative to establish botanical gardens. Among these initiatives is a village called Yem around Welkite city of the Gurage zone that is rich in medicinal plants. In that area, people have a culture of collecting medicinal plants on October 27 (Tikimt 17) every year. This collection is a celebratory activity in which every one of all age groups participates. After this festival, people also individually collect and work on medicinal plants all year. So the ministry has worked on identifying the support that these people need.” (Ministry of Culture and Sports)

9.4.3. Traditional Medicine Research Process and the Emergence of Clinical Trials

Traditional Medicine Research Process

Traditional medicine (TM) research in Ethiopia involves multiple institutions and structured processes to ensure the development of safe and effective products. Key informants highlighted the organized flow of research teams, their roles, and the challenges encountered along the way. As explained by key informants, the research process generally follows a series of consecutive research endeavors one leading to the other in the process of documenting TM knowledge, processing the natural products needed for the remedy for example through crude extraction or phytochemical screening of a medicinal plant, assessing the safety and efficacy of that remedy through in vivo or in vitro preclinical studies also referred to as validating studies to form a scientific background or evidence, formulating a product and assessing the safety and efficacy of the product through clinical trials until approval into the mainstream healthcare system.

“Starting with ethnobotanical studies, then assessing the safety, efficacy, and quality profiles of these TM products through preclinical studies and then there will be simulation done regarding their formulation. Then simulate these formulations using modern ways and come up with a presentable formulation i.e. traditionally as syrups or topical or oral administrations. Then proceed to clinical trials followed by registration and presenting the product to the public domain. So far two clinical trial protocols presented to EFDA and comments have been going back and forthand also there are upcoming studies reaching towards planning clinical trial protocol development.” (EPHI 1)

“The process involves identifying the knowledge that the community uses, assessing and designing it with ethnobotanical or ethnopharmacological base. If going to in vitro studies if the product passes that stage, and then going to in vivo study if the in vitro study is successful. After that, if our findings are promising, we develop clinical trial protocols and get into the clinical trial stage.”(CDT-Africa)

“Our job is to identify and preserve these medicinal plants prioritizing and identifying the most important ones working together with the different disciplines including chemists working on the amount and composition of chemicals to be used and people in the medical science research on the traditional and modern medicinal plants.” (EARI, Wondogenet)

Coming to the structural flow among teams, there are different teams working within each stage of the research process under the different institutions working on TM improvement.

A key informant from the Traditional and Modern Medicine Research Directorate explained the research process at EPHI and AHRI:

“When we see the department in general, it is called 'Traditional and Modern Medicine Directorate’. But more focus is given to traditional medicine. The department has three teams: 1. Natural Products Team; 2. Biomedical Team; and 3. Formulation Team.” … “The Natural Products Team handles plant collection, authentication, and processing. Processing involves separating the part of the plant with medicinal value, drying it, and/or grinding it for extraction. Extraction may be crude, extracting all compounds at once, or fractionated, isolating specific compounds. Phytochemical screening is then conducted to identify the compounds present. The Biomedical Team assesses safety and efficacy, using in vitro (cell or parasite culture) or in vivo (animal) models. The Formulation Team develops the extract into forms suitable for clinical trials, such as ointments or tablets. The teams follow standard operating procedures, although names and internal structures may change during institutional transitions.”(EPHI 2)

“Several research initiatives have been implemented. Asfaw Debella and his team formulated moringa into tea sachets to assess anti-hypertensive, anti-diabetic, and nutritional properties. A separate study evaluated the water-clearing activity of moringa seeds using Aqua-tab. Additionally, a dermatological ointment has reached the clinical trial stage at AHRI.” (EPHI 2)

AHRI key informant detailed their role in clinical trials:

“We had a good collaboration with EPHI’s TM unit, which began four years ago. EPHI conducts preclinical studies to assess safety and efficacy in animals. Once confirmed, EPHI and AHRI develop study protocols for clinical trials. One product, an ointment, was formulated in

collaboration with E-pharm and is currently targeted at skin lesions. Ethical clearances were obtained from AHRI, EFDA, and Debrebrhan University. Preclinical challenges included adhering to Good Laboratory Practice (GLP) and Good Manufacturing Practices (GMP), causing delays. Soon, patient recruitment will begin, marking the first TM product entering clinical trials. Future plans include testing systemic treatments for chronic diseases such as hypertension, diabetes, cancer, and other cardiovascular or metabolic illnesses. Indigenous knowledge and collaboration with traditional healers are essential to this development."(AHRI)

A research institute key informant emphasized the importance of validation studies:"Validation proves whether a claimed remedy works for its intended illness. We document plant species, plant parts used, and preparation methods, then conduct in vitro, ex vivo, and in vivo studies. For instance, an anti-cancer plant is tested against cancerous cells, and antibacterial plants are tested against relevant bacterial species. Once validated, these products may advance toward approved drugs, and this process is where integration into conventional medicine occurs." (ALIPB)

Another issue discussed regarding the research process was about the sources of TM (indigenous knowledge) used for basing research on. Key informants described multiple sources for traditional knowledge, including books, ethnobotanical surveys, old manuscripts, and collaborations with healers under benefit-sharing agreements. Challenges include secrecy among healers, reluctance to share detailed formulations, and the limited documentation of indigenous knowledge. Notable references include:

- "Metsehafe Medhahit" and other historical documents.
- Dr. Dawit Abebe's compiled works.
- Dr. Asfaw Debella's Illustrated Checklist of Medicinal Plants, which includes scientific names, uses, and images.

Key informant from EPHI explained how they access TM knowledge for basing research:

"Our initial (source) to do that is 1st there are books even if they are few. Most of these books are written by people in our department. Dr.Asfaw Debella and Dr. Dawit Abebe

(Ethnobotanist) have written some books. There are also numerous ethnobotanical surveys that you can access online. We also take information from there. And we also have tried to work with healers based on a signed agreement to share the benefit."…"We also access and use surveys conducted by other universities. There are also old books like the classic "Metsehafe Medhahit" and other old documents prepared by healers with healthcare professionals and researchers. There was also a book prepared by healers and universities, and compiled by Dr. Dawit Abebe. Another book written by Dr. Asfaw Debella titled "Illustrated Checklist of Medicinal Plants" which has a list of medical plants with their scientific names, use and picture for each plant." (EPHI 2)

Another participant from EPHI explained the sources where TM knowledge is accessed for basing research:

"TM indigenous knowledge doesn't have many documents and written scripts. Some written in Geez and also in Arabic, prepared by the fore fathers who were very smart, can be found only in very few places. In addition, a work is being done to support this scattered knowledge with evidence and this study is called Ethno-medicine. So we, in collaboration with other universities, work together with traditional medicine knowledge holders, practitioners who are elderly mothers, fathers or even families." (EPHI 1)

Regarding initiatives and outputs of TM research, participants shared their experiences. A summary of the main activities reported by key informants is presented in the following table.

Table 3: Research activities in stakeholder institutions

Institution	**Research activity(ies)**	**Process and outputs so far (if any)**
EPHI	Around 13 projects being done on TM in EPHI PHD And MSc Graduates from different campuses	Main projects are ethnobotanical survey on TM, and studies on antidiabetic, antimalarial, anthelmintic, moringa water clarifying, , antihypertensive activities, dermatology and Database development There has been broad study on moringa in collaboration with many research institutes including

	Numerous collaborative studies	universities. There are also other medicinal plants
EBI	Research activities concerning medicinal plants	Taking part in research on medicinal plants as a stakeholder
Ministry of Culture and Sports	Research activities regarding traditional medicine	Studies on issues like the social and economic contributions of TM to the community and the challenges and opportunities that are there regarding the development of TM
ALIPB	Developing and improving curative and preventive treatment through education advising and providing facilities for research	Working on and facilitating and undertaking many researches on TM These students from ALIPB itself, School of Medicine and the Science Campus (Arat Kilo Campus) work on numerous natural products. They do screening tests in vitro and in animal model
Department of Food Engineering, AATI	Food Engineering Department	Extracting the essential oil from medicinal and aromatic plants and formulating medicinal and pharmaceutical products, main involvement being the essential oil extraction
EARI,Wondo genet	One of the 23 centers of the Ethiopian Agricultural Research Institute	Working on aromatic plants, plants that have essential oil used as medicine or as an ingredient in food production, preservation, coloring and flavoring Working on different disciplines like horticulture, agronomy, chemistry, economy and extension works including biotechnology.
CDT-Africa	Drug discovery based on traditional knowledge Education advising and providing facilities for research	Creating a path to convert the products used in TM into modern medicine. Currently working on development of skin products including wound healing agents and treatment for scabies and treatment for some chronic illnesses like diabetes.

Departments in AAU and SPHMMC	Generating data	Taking natural products and medicinal plants into laboratories, investigating their safety and efficacy using scientific methods and publishing findings
AHRI	Clinical Trials on TM	Efforts to take traditional remedies towards production through clinical trials

Note: EPHI = Ethiopian Public Health Institute, TM = Traditional Medicine,EBI = Ethiopian Biodiversity Institute,ALIPB = Aklilu Lemma Institute of Pathobiology, AAIT = Addis Ababa Institute of Technology, EARI = Ethiopian Agricultural Research Institute, CDT = Center for Innovative Drug and Therapeutic Development, AAU = Addis Ababa University, SPHMMC = Saint Paul's Hospital Millennium Medical College, AHRI= Armauer Hanson Research Institute

Key informants also listed the institutions currently conducting researches on TM and medicinal plants indigenous to Ethiopia. These includeEthiopian Agricultural Research Institute(EARI)Wondogenet, Department of Food Engineering (AATI), Debrebrhan University, as well as TikurAnbesa. Other institutions mentioned include Ethiopian Agriculture Research Organization (AERO), International Livestock Research Institute (ILRI), Ethiopian Public Health Institute (EPHI), Armauer Hansen Research Institute (AHRI); Sebeta National Animal Health Institute (they work on some natural products of acaricidal value).

"There are also research initiatives within universities on TM. CDT-Africa is also working on natural products and how to develop drugs from them." (ALIPB)

Clinical Trials in Traditional Medicine

Clinical trials are considered a critical step for advancing Ethiopian traditional medicine (ETM) toward integration with modern medicine (MM). Key informants highlighted the structure, challenges, and regulatory processes involved:

AHRI is currently the main institution conducting research-based TM, with preclinical and clinical phases before FDA registration.

"When it comes to research, AHRI is the only institution working on research based TM because EPHI TM and MM Research Directorate has been merged with AHRI now. There might be another institution to be established in the future. Based on the current practice, research

based TM is developed through research including pre-clinical and clinical phases and after completion of these studies inAHRI, the product that qualifies goes to FDA for registration. And I think, based on what I learned during our meeting with AHRI recently, they are preparing to get one product registered after going through phase III CT." (AAFMHACA)

EFDA (regulatory authority) mandates IRB approval, National Ethics Committee (NERB) clearance, and authorization from EFDA prior to participant enrollment. As working at the authority with the mandate to supervise all CTs conducted on TM, key informant from EFDA shared information about submitted proposal to conduct CTs on TM:

"CTs are accepted no matter where you are from Ethiopia. As a federal authority, EFDA has the mandate to authorize these CTs no matter where in the country they are being conducted in. the step for these researchers is to first get approval from IRB in their institution. Then another approval is needed for them to have from the National Ethics Committee which is now referred to as NERB (National research Ethical Review Board). Then they come to our organization to take authorization. It is only after they get authorization from us that they can begin to enroll participants." (EFDA)

Several challenges in conducting CTs were identified:

1. Healers' reluctance to share ingredients can affect standardization and assessment of herb-to-herb interactions.

"The healers are not working in controlled environments and they are also not willing to share the plants and ingredients that they are using which can raise issues of herb to herb interaction etc." (Department of Pharmacognosy, AAU)

2. Financial burden of preclinical and clinical studies, including protocol development, sponsorship, and regulatory compliance.

"Clinical trials for TM are not as intensive as other studies, but following WHO protocols incurs expenses, including insurance and regulatory compliance. Research costs must be recovered to

sustain ongoing projects. Patent management ensures ownership and potential revenue sharing with researchers and institutions." (EPHI)

"While simplifying clinical trials may seem practical, proper control is essential to avoid exposing participants to unnecessary risk. Preclinical studies remain a requirement before phase I trials, even for traditional remedies. Historical use alone cannot guarantee safety due to unknown short- and long-term effects." (EFDA)

3. Controlled environments are often not available in traditional settings, complicating outcome measurement.

"Models for preclinical studies include in vitro and in vivo testing, but clinical trials are resource-intensive. Developing protocols, securing funding, and regulatory approval are significant hurdles, and the country hesitates to prioritize TM clinical trials due to these demands." (AAU)

Proposed solutions and reflections include:

- Anonymous testing of formulations to protect healer confidentiality while assessing safety and efficacy. Participants from academia and research reflected on the idea that clinical trials should be conducted by measuring outcomes in their natural settings which are traditional healing centers:

"A possible solution would be to create a mechanism of maintaining confidentiality for the healers. This can be done for example by instead of asking the healers to share all the details of their product ingredients, to test the formulated product for safety and efficacy anonymously. To make them accountable for any product related issues, they can be asked to label their product with its name, manufacturer, address and batch number so that it can be traced for inquiries in case of any adverse event related to the product. Asking the healers for the formulation, ingredients, time and place of plant collection etc. would entice suspicion among the healers and aggravate the secrecy and hiding that is already there. Soit is better if they provide their end product so that it can be undergo modern testing mechanisms for side effects, dosage limits, etc. to have better outcome without negatively impacting their market benefit." (Department of Food Engineering, AAIT)

- Conducting preclinical studies to establish baseline safety, even if traditional use suggests low risk.

“The level and intensity of each step might not be the same as that of synthetic drugs. MM drugs are expected to be investigated through high skill lab tests and the preclinical animal studies are given longer time and much investment. But traditional remedies might not need to go through the same level of investigation. This is because they are conducted by local researchers and there is shortage of financial fund. They might be conducted in mini laboratories. But they will still need to follow good laboratory practices.” (EFDA)

- Using observational studies as interim measures when resources are limited. Key informant from AHRI explained that observational studies can provide initial efficacy data when preclinical studies are not feasible, though they are less rigorous.

“We don't have good safety and efficacy data to perform clinical trials for the efficacy; we can do some observational studies and based on that we can assess efficacy.”(AHRI)

9.4.4. Training and Education Initiatives

Participants shared the contents of the trainings that they have encountered both as trainers and trainees which basically consist of trainings on documentation of their practice including patient history chart, trainings on handling medicinal plants starting from growing, harvesting, collecting, processing, formulating, packaging, labeling, hygienic preparation, proper storage and even other details like drug interactions. Key informant from MOH shared the following:

“What we are trying to do is train them on conventional ways of, for example, documentation and registration. It is difficult to train them how to take care of their patients because they might in fact be taking care of their patients better which might be the reason why many still prefer to go to traditional healers although further study is needed to conclude in this manner. But there is an actual gap regarding documentationfor example, not recording patient information. They should have standard formats to document all the information and service that they provide. And when we come to production process, they should know the emphasis that should be given for safety. They should at least know that the area and utensils that they

use to prepare their products should be clean. To facilitate that, we can introduce them to the equipment that we use for compounding so that they use mortar and pestle and wear gowns and clean themselves and their environments. The other is about using standard packaging and labeling after they prepare their products. Some traditional healing institutions have actually surpassed our expectations with the level of advancement that their service and facility has reached as a result of their hard work and interest. They should also know about and be accustomed to referral system. They should be able to identify and refer critical patients and they should be able to register the information of patients they referred to conventional healthcare facilities or at least they advised to go to them. The other issue is that they don't know about who does what in the healthcare system. They assume that MOH deals with everything. So we train them about the specific roles of each stakeholder. For example if they want to do research about the validity of their products; they have to know where they should go to for registration; what requirements they should fulfill for each step etc. we have seen very good results from this type of informing. They have stopped coming here for every question they have. For example, if it is a research endeavor, they work with universities, AHRI or EPHI. The training we gave them was about the roles of each stakeholder." (MOH)

Another key informant from research center for medicinal and aromatic plants similarly explained:"First of all we give our training session starting from definition. For example we may start by answering the questions like what are these plants. They are internationally known as medicinal and aromatic plants, but in our case they terms like "herb"," spicy ", "fragrant" and "medicinal" are used. This has its own problem. So we start by giving the correct terminology of that specific plant. Our main focus is introducing the people with the plants. And then we explain how the plants are cultivated in detail to the farmers or to whom the training may concern. The training is given in two ways. First according to the budget given by government, and under our own plan, we train the farmers and agricultural officials. The other is when we are invited by other institutions according their interest. It might be health related or agronomy." (EARI, Wondogenet)

Key informant from the Ministry of Culture and Sports explained activities in their organization regarding training:

“There is a yearly training program provided to traditional healers regarding ethics and many more topics. There is also an initiative to give recognition to healers so that they can bring forward the challenges they are facing as professionals. The recognition will give special consideration to healers who are helping the community with their profession and healers with great ethical values.” (Ministry of Culture and sports)

A key informant from traditional healers association reflected on the trainings they have been given:“We participate a lot in trainings. The lists of things they teach include patient reception, drug storage, hygiene, and other details of the practice of healing. We have continuously taken the trainings coordinated by MOH and have found them to be very interesting. Our request is that they continue in the future. The other issue is that the healer should be given opportunity to share his knowledge and experience.” (AATHA)

However the healer commented that healers should also be given platforms to share their knowledge rather than to be expected to passively take what they are given.

“Sometimes, we have professionals from universities sitting us down and lecturing us about TM all day. But if we participate for instance in the selection of plants to include in the trainings, better emphasis would be given to the indigenous plants that we actually can access and use in our practice. We can give valuable information on the local names of the plant, the place it grows, when it flowers, and when it produces seeds, whether it grows in summer or winter, or whether it grows in hot or cold weather. We know these things through experience and practice, thus if we are given the chance, we can provide the information. We would like to also be given the chance to share experience and knowledge with traditional healers from other countries. But unfortunately, we mostly experience situation where we get invited for trainings in which we are expected to sit and stare the whole time with no participation.” (AATHA)

The types of trainings are mostly hands on one timetrainings and sometimes periodic trainings that are given periodically. Participant from Department of Pharmacognosy, AAU

commented:“Although not intensive enough for me to speak of it, we have attempted to provide hands on trainings. As far as I know, the trainings were given in UOG and AAU. It was on hygienic environment and practice, how to extract aromatic and medicinal components from these plants, how to prepare the crude product, and so on.” (Department of Pharmacognosy, AAU)

Participants also shared the details of programs in which these trainings take place and who gives the trainings and who is trained.

“The trainings we offer are not continuous/regular. They are hands-on one-time trainings. Healers are selected by following a posting that states the arrangement of trainings by AAU with MOH and then interested healers apply to participate. We have prepared documents for trainers and offered trainings in collaboration with MOH both in Amharic and English. We give the trainings to regional health bureau officers as well as traditional healers. In the past 2 years, three or four trainings have been provided.”… “The training we are providing with MOH has one document for regional health bureau officers which is training for trainers and another one document for trainees that is for traditional healers. The training module for trainees comprises a vast area of issues including ethics, medicine preparation from plant collection to crude drug extraction, possible interactions of TM products with other medicines and food, insight on the regulatory system, communication skills and so on. So this hands-on training was given to around 12 healers. The problem is that it is not easy to access the healers. If they were accessed through their associations or federations, it would have been possible to provide short-term trainings with Continuing Professional Development (CPD) system. But we continue offering the trainings with or without CPD. And a team has been established and is already working on preparing at least one module for institutions for awareness creation and capacity building purposes.” (Department of Pharmacognosy, AAU)

Key informant from MOH shared the following: “The MOH has prepared a training manual on general knowledge and information not really on skill. The challenge that we faced in this was that CPD must give approval for MOH to give any training. And for CPD to approve, the document was first prepared in English and then translated to Amharic to make it easier for the

healers to understand. So, we have given 4 rounds of trainings in the previous 2 years. Last year, 2 rounds, and this year for the professionals 2 rounds of trainings were given."… "For the training of trainers on the other hand, trainings are being provided by regional health bureaus for personnel working in the area." (MOH)

A key informant from the TM and MM Research Directorate of EPHI also highlighted the trainings they took part in:

"We have been using that opportunity to provide trainings of which 4 rounds of training campaigns have already taken place."…"The strategy is good but turning it into practice has its own challenges. The acceptance on the healers' side has limitations due to lack of trust. There is also financial limitation. Once there was resource available so it was possible to provide adequate trainings which should have been sustainable but wasn't due to resource limitation. Our plan was to train at least 400 people annually. A five days duration intensive training would require going out of town to capture trainees' attention and time which would mean transport cost, hotel cost, and training allowance costs. But through time after this gets normalized and facilitated, there is hope to create a system where the trainees pay for the trainings themselves just like how the professional associations use the system of continued education development i.e. physicians or pharmacists or other MHCPs have to cover the expense of their education through credit license input. So when the system is formed, they will be asked to pay and trainings will be mandatory requirements to get and renew a license. Ultimately, the community will get better service and that's the major goal of it all. License can also be retracted upon complaints. For example if there is claim of harm after treatment in MM clinic, the regulatory authority would investigate and take actions which can go as far as retracting license and registration. It will be the same for TM too. However, the carrot and stick method approach should start with giving the carrots until the system gradually evolves and there is better motivation to join the system." (EPHI 1)

Key training areas recommended by informants include safety and adverse drug reaction (ADR) management, dose management, safe routes of administration, sterilization, hygienic preparation, and wound care. However, lack of standardization, evidence, and knowledge

complicates development of these trainings. Key informant from academia and research elaborated on training related controversies regarding dose management, side effects, cleanliness, hygiene, and route of administration:

“Dose determination is not arbitrary. The human dose must be evaluated, considering plant extract identity, immediate and long-term side effects, comorbidities, and pharmacokinetics and pharmacodynamics. Awareness should be raised on optimal dosing, dose modification, and side effects, which can vary individually. Scientific background is necessary to solidify this information.” (Department of Pharmacology, SPHMMC)

Regarding routes of administration, participants emphasized oral and topical use while discouraging intravenous (IV) administration due to sterility and toxicity concerns: “Traditional medicines are usually oral or topical. IV administration without proper skill and purification is dangerous. Health bureaus should provide preliminary training on dose, side effects, sterility, and safe administration routes as a precondition for licensing. Most healers make mistakes unknowingly, and training is essential.” (CDT–Africa)

“What I know is that TMs are usually administered as topical and oral preparations. I did not expect intra-venous (IV) administration as the skill, training and sterility procedures are not expected to be there and because of the issue of toxicity. If there is also another administration through IV without these preconditions and purifications of the drug, I think it was good that it is noticed. So it might be good to train them on what the safe routes are based on this.” (AHRI)

Other areas discussed were issues regarding follow up care, referral system in traditional healing, handling of complications. A key informant from regulatory authority commented the following regarding follow up care in traditional healing: “Traditional healers rarely provide follow-up unless additional doses are needed. Awareness must be created regarding follow-up care.” (EFDA)

Some of the comments on referral system in traditional healing include: “It is necessary to create the link (for referral) and make sure they don't assume they can treat every case that comes to them by themselves.” (EFDA)

Participant from academia and research reflected on the issues of follow up and referral system in relation to each other: “They should know their scope and immediately refer critical or complicated cases like MDR-TB to conventional facilities. Chronic cases should also be linked for routine management. This can save countless lives.” (Department of Pharmacology, SPHMMC)

The other issue mentioned regarding training was aiding healers to specialize in areas they are most skilled or experienced. Our key informant from academia and research mentioned the issue as follows: “The MOH are encouraging the healers to select 3 or 4 of their most efficient skills or remedies so that they could be registered for them and they would be certified for these special qualifications. Other than that, you would be shocked of what they claim to do these days. They advertise to have “Green license offered by the National Authority of Food and Drug Control” which when you think about it is a huge claim.” (Department of Pharmacognosy, AAU)

Participants recommended including TM in curricula at all levels, starting from elementary school: “We should now tell young people from early age that they are what this country has and that this indigenous knowledge can be improved and evolved by them. That would be the real way to improve ETM rather than randomly sending individuals for education abroad.” (Department of Pharmacognosy, AAU)

Some key informants also shared initiatives, they know about, that are taken to include TM in curriculum in institutions like SPHMMC, Gondar, Jimma, and Wollo Universities. Ministry of Education was also reported to be working to make indigenous knowledge a pillar in higher education. And EPHI collaborates with universities to provide practical exposure to TM research and clinical practice.

Key informant from EPHI shared: “As I told you earlier in the curriculum, the level of emphasis given to TM differs from college to college. For example I know that SPHMMC has courses for medical students regarding TM. Gondar and Jimma also have courses. Wollo University has courses and I even was invited to give lectures there on a chapter titled phytochemistry. I gave them my teaching materials so they continue using them in teaching. We do not have the mandate to enforce the curriculum but it has been stated on the roadmap that Ministry of

Education has to work on incorporating TM into the curricula of high school up to university level education. Some of the universities departments have introductory courses on TM including anthropology, chemistry, pharmacy, biology, and medicine. But the ultimate emphasis depends on the interest of the leaders of that college or department. For example SPHMMC dean used to participate in our seminars and he became very interested and requested us to give courses for both undergraduate and specialty students." (EPHI1)

Key informant from MOH also shared "About curriculum, as I said earlier, Ministry of Education has been given the mandate as stated on the roadmap. They have started an initiative to make indigenous knowledge one pillar in the universities and this directive has almost reached a final stage. There are universities that are bringing forth works that align with our goal to integrate TM and MM including conventional medicine professionals working with healers both as researchers for drug development in a way that is beneficial for all and reached clinical trial level. But the issue doesn't have a sufficient level of legal documents and foundation so it should proceed by filling the gaps through trainings as we go along."… "I told you earlier that there are many issues that we are requesting Ministry of Education to address. They have a department called Indigenous Knowledge. They are currently working on a directive to make indigenous knowledge one pillar in every higher education institution and they are almost finishing. If we are not producing manpower with skill and knowledge, to do the actual work of improving and integrating TM into PHCS, then all these will be empty talks. So this must be one of the top priority issues." (MOH)

"I give courses at SPHMMC about TM including traditional Chinese and Indian medicines. It has been six years since I have been giving 12 hours course. I also give seminars to stimulate specialty students including surgery residents. I start by reminding that MM is based on TM. And I encourage them to engage in research. I also have contributed a chapter for a book. I think it was for high school biology lessons and translations to Amharic, Afaan Oromo and Tigrinya were being planned to be presented in a simple way so that children can understand it. We even get invited as guests sometimes by high school science clubs."… "The other activity is that students come to visit our department. Now, we will be giving a training next week. There

is a program organized by AAFMHACA on ethnomedicine and clinical practice for regulatory bodies. Healthcare professionals including nurses, physicians, health officers, pharmacists and researchers will participate." (EPHI1)

Key informant from Department of Pharmacology SPHMMC also shared how they work with EPHI to give an insight to students regarding TM. "When it comes to courses, we provide a two hours lesson on TM as a topic for undergraduate students of medicine. We give classes based on content objectives including what is TM, what do TM practices include, what are the advanced TM practices in the rest of the world, and what are the drawbacks. And sometimes we make the students visit EPHI as it is a nearby institution. The visits are usually about what TM is, how TM researches are conducted in EPHI, how extraction is done, how development takes place, how chemical identification is done, where they get the information on medicinal plants, what is being planned to be done in the future, what the impact of this practice could be in the future of our country (both positive and negative) etc. But these activities are very little comparing to the vastness of the topic, the importance of the issue, the lack of understanding and stigma related to the subject. TM is still considered as backward, culture limited and undeveloped and much more should be done to change that." (Department of Pharmacology SPHMMC)

However, comment from AAU was more on the negative side. "This is another sad story; there is one course in pharmacy curriculum on Traditional complementary and alternative medicine (TCAM) and in that course, there is one chapter for ETM that they learn for not longer than eight hours. This is all I know of unless the curriculum has been revised very recently. There is another degree titled "New Innovative Medical Education" that is provided by collaboration of MOH with ministry of education through a hybrid curriculum to students with healthcare education backgrounds. The course is different from the conventional medicine education and it has an introductory module on Ethiopian TM. These are the courses that we have on ETM so far." (Department of Pharmacognosy, AAU)

9.4.5. Regulation of Traditional Medicine Products and Services

Participants shared their concerns regarding the lack of/lenience on regulation of TM in Ethiopia. Key informants from research and other areas also raised their concerns regarding regulation. These concerns include the rising of advertisements of TM services claiming regulatory approval, limited and inconsistent registration and supervision activities, and the optional nature of practitioner-based registration rather than product-based registration. Additionally, product safety assessments are not routinely conducted, leaving risks largely unmonitored. Some key informants had the following to say about this:

"I keep hearing advertisements for traditional healing centers claiming that they had earned a license from EFDA. License might indicate some form of quality assurance and regulatory oversight. Institutions like EPHI, MOH, and universities are pushing support for proper use of TM and its regulation." (ALIPB)

"There is no question that TM products and practitioners should be registered and regulated. Benefits such as economic value exist, but there are also risks like ethical issues. Campaign-like workshops are conducted, but there are no sustainable systems. Healthcare professionals should have opportunities to work on the quality of traditional medicines, which could lead to approved drug products." (CDT-Africa)

TM is often handled through tolerance in Ethiopia, reflecting cultural and religious acceptance. A participant from academia explained: "TM is close to households because it has been used for a long time. If you deny it, the community continues to use it; if you fully accept it, academic and primary healthcare communities demand scientific evidence. We were hoping to work with EPHI to harmonize systems over time." (Department of Pharmacognosy, AAU)

Regulatory key informant added: “How countries deal with TM is more like a spectrum, some countries are neutral about the issue and they neither encourage nor prohibit the use of TM. Some countries, like South Africa, have forbid the use of TM in the past (I don't know about now). Some countries integrate TM into their PHCs, for example, China and Indonesia. Counties, like Ethiopia, include TM in their healthcare system and policy. The team that is established in the EMOH and the section that has been dedicated to TM in the healthcare policy

are indicative of the fact that TM has been included as part of the PHCs. Maybe in the future, there will be a process of integrating. For example there is an initiative to incorporate the "wogesha" who are bone setters in Ethiopia into hospitals.” (AAFMHACA)

The other issue discussed regarding regulation was about the roles of different regulatory sectors in regulating TM. A key informant working on TM research points out a gap between guideline development and implementation among different levels of regulatory authorities:

Among the key informants working in regulatory authorities explained roles played by specific bureaus in the regulatory system:"AAFMHACA develops guidelines, but woredas supervise traditional healers and provide licenses. There is no central-level activity for TM registration or supervision. The control team works with a 2009 guideline revised in 2015, which still awaits legislative approval for implementation." (AAFMHACA)

EFDA clarified its role in clinical trials and product registration:"We supervise clinical trials for TM-derived products, not traditional “prepare and use immediately” remedies. Once approved, products are registered like any modern medicine." (EFDA)Product safety assessment, selling of herbal medicine and medicinal plants, post market surveillance and the status of TM products in essential medicines list were also reflected on by key informants.

A key informant working in research sector commented the following on the safety assessment of TM products:"The system only registers practitioners, not products. Only a few visible healing centers are registered. Products are not standardized, and there is risk of adulteration with conventional drugs. Registration should be compulsory to minimize ill practices." (CDT-Africa)

Ethiopian Food and Drug Association (EFDA) and AAFMHACA described ongoing efforts:"There are no registered TM products in Ethiopia except for research-based trials. Adverse events reporting systems are integrated with modern medicine pharmacovigilance, but dedicated monitoring for TM is limited." (EFDA)

"Without knowing the product composition, effects, and preparation, we cannot conduct quality control or pharmacovigilance." (AAFMHACA)

In a way to tackle this issue, the product safety directorate of EFDA is currently given the mandate to approve, monitor and supervise CTs regarding TM, to monitor ADR of TM and to conduct pharmacovigilance on TM products after approval. The key informant describes their authority as follows: "There are many directorates in the Ethiopian food and drug regulatory authority. One of them is product safety directorate which the one I am currently working in. in this directorate, there are three teams: pharmacovigilance and clinical trial team, tobacco team, and, drug information team. So the team I am currently in is pharmacovigilance and clinical trial team. What is done in this team regarding TM is: 1. Receiving, interpreting and analyzing adverse events reports on TM, 2. If there is a researcher that wants to do research on TM, he/she should come to this team. He/she first submits the protocol and other essential documents. Then the document is reviewed. If it is qualified for authorization, it will be authorized. Otherwise, it will be rejected. If it is authorized, out team will do GCP inspection on how he/she is implementing the protocol. Additionally, when he/she submits final results, the team is the one that reviews, approves and has the mandate to give permission to go ahead for publication or for next step of implementation." (EFDA)

The same key informant further elaborated on the QC of products and services "If any product is approved, registered and out in the market for use, it is completely on EFDA for the QC. But before that, the problem with the TM practice that we have now is the absence of a standard treatment specific to a certain specific diagnosis. For example, Paracetamol is of 500mg strength and only the frequency, duration or indication would differ. But the healers' service or products don't have standard measurements like that. Healers would prepare customized treatments for each particular patient. So if they don't have a specific product with standard preparation and consistent uses, what will you be monitoring? The plant is grown naturally from which they collect parts and do the extraction from them. You cannot do QC for a natural product as it is in its natural state. And they wouldn't even give you information about the remedy they formulated like the names of the ingredients, the amounts of each and other details. The information that you have is not scientific and thus you cannot make a scientific assessment based on it. You cannot monitor the quality without a standard." (EFDA)

Key informants also stated that there was no TM product registered in the essential drug list so far. “There is no product registered by EFDA so far. And that means, there cannot be any product in essential medicine list while there is no product registered. Therefore, we are working with EFDA to tackle the challenges and they will explain the situation better for you.” (MOH)“There is no drug from TM that made it to the essential medicine list so far nor completed CT phases and reached approval. However, there are drugs on the pipeline that are under trial. They are very few in number but they are there and on the way.” (EFDA)

The other issue that was discussed was the issue of selling, regulation and safety assessments of medicinal plants and their extracts. Key informants from institutions working with medicinal plants and natural products reflected about the issue as follows:

“As I told you, the work being done regarding medicinal plants is limited and the regulation on the activities that are there is weak. Some companies that originate from out of the country work on extraction of essential oils, etc. However, the lack of regulation might make it possible to illegally export some medicinal plant products. As far as I know, the government is not giving attention to the issue to investigate what these companies do, how they do it, what they invest and the benefits that they share with the country. Especially now a days, the number of foreign companies and investors that come here are increasing. For example, there is a company named KFC in the city of Bishoftu. There are also companies that extract and sell *Eucalyptus* oil in the Amhara region around Debrebrhan city. These companies are mostly not willing to work with us when we request to do research. This is mainly because they don’t want us to see and learn their technological tools and skills. No one is making them to take responsibility to support the country’s economy and call them out on their lack of support. As I see it, they are not being urged to give back to the country by sharing their knowledge, skill and other resources that they have.” (EARI, Wondogenet)

Key informant from regulatory body commented as follows about the herbal cosmetic products sold with appealing packages and presentations: “The issue is, if these shops are owned by a specific healer that produces them and are sold in distinct places of their own, there is no problem as long as harm is not reported on these products by users. But if these products are

distributed into pharmacies or other cosmetic markets, that would be problematic. If the healer contacts the client and sells directly, the process can fall in category I TM and can be regulated by food medicine and healthcare office of woreda health bureaus. However, if the product is distributed to pharmacy or cosmetic shops, the product should be registered as a research based category III TM or low risk TM to be accepted as such." (AAFMHACA) The participant however stated that these products have not been registered under low-risk TM so far.

A participant from TM and MM directorate also commented on selling of herbal medicines and restrictions as follows: "I have information that the herbs that they export are around 7 or 8 that are registered and being sold. And there is access and benefit sharing agreement with regards to them. Which means that permission is given based on a calculated estimate of how much the community could benefit from their sales. I will share with you a survey that we did on this issue. There is an open market around Merkato in which vendors sell traditional medicines. They have kebercho, gizawa, dengetegna, tena Adam, tibsketel and many more. The prices are quite high. For example, if you know the "emergency herb" or dengetegna in Amharic, it is an anti-pain for abdominal cramps, the effect of which is scientifically proven. It is the root that you chew against cramps and even headaches. A small bunch of it is sold for Birr 40 or50. Tapeworm medicines are also sold. About a gram of it or maybe even smaller is sold for Birr 300 to 400." (EPHI1)

From a stakeholder perspective more concerned on biodiversity and hence medicinal plants, Key informant from EBI commented the following on the issue: "No one prohibits the selling of natural products in traditional markets in places like Merkato. But if one wants to build company that manufactures and sells medicinal plant products, there is a benefit sharing condition in the legislation that urges them to share benefits to the country from biodiversity related businesses. There is no one that requested to work on medicinal plants so far but there are some investors working on extraction and selling of essential oils and other natural products. These companies do actually fulfil their benefit sharing requirements. The payment includes initial payment during the search of the plant species that they work on as well as from their profit at the end of the process from the sale of the products. There is a department here

in EBI named “Genetic Resource Provision and Benefit Sharing” that facilitates the provision of plants and sharing the benefits. This is for the investors; the traditional markets are not accountable to the law so far. There is also no regulation or quality control on the products sold in these traditional markets. The law might promote sustainable harvesting as much as possible but benefit sharing cannot be practical because the farmers are working at very small scale level. These are products collected from small backyard gardens in very small amounts. Bulky production that can supply products to pharmacies at an industrial level like that of other countries makes it possible to practice benefit sharing. Additionally, the case of export of medicinal products has not yet been started. Even the plants that have medicinal values are exported in the name of their aromatic value like “frankincense”. And these products might be used for their medicinal values after being exported as such. There are also such plant and animal products that are exported for their dietary use but also having medicinal value like honey and teff. And these dietary products escape the requirement of benefit sharing which would have been necessary if they get enhanced and exported for their medicinal values." (EBI)

Registration and Licensing of Traditional Medicine Practitioners

Attempting to register, license and supervise healing institutions is the first measure that is being taken as a regulatory action for TM.

As key informant from MOH reported: “It will be difficult to handle service delivery but we are trying to start with registration of healers that are currently providing traditional healing services. We are encouraging and facilitating their registration so that we lay a foundation for the regulatory system and regular training programs. The issue of public health is a major concern for MOH so we are working to create awareness on the impact that they can have on public health. They also need to know the legal aspects of the possibility of causing harm during healing. They should know that they are taking a risk on other peoples’ safety and that they will be accountable. But before all these, all traditional healing practitioners should be registered. And that needs everyone to work together. This is not the exclusive responsibility of MOH. Everyone should be involved including legislative bodies. The main actors here are the communities. They should make sure they are getting service from a registered healer. Just like someone will not be able to give conventional medicine service from a practitioner or

institution that doesn't have a license, they should be inquisitive about the healer that they are getting service from. The community should strive to bring forth the healers with acceptable knowledge and skill to the legal system." (MOH)

"The regulation process starts with having a regulatory body with a mandate of giving license to traditional healers (it is difficult to call them professionals). That is because having a party that gives license to traditional healing practitioners creates a system whereby that former can hold the later accountable when they malpractice so as to take preventive or corrective actions. But if they practice randomly in villages with informal systems, it makes the regulation system difficult. When you see it from the perspective of high number of users, the regulation is crucial. And it is possible to create a regulatory governmental regulatory system. But regulating needs a collective platform that they thrust and encourage to make communication possible. It can be a collective association, it can be an accountability chain but the path should be paved. But to claim regulation without creating these basic preconditions might just be theoretical and not practical. It can be giving them license, regularly supervising them, encouraging them, or making them aware of their scope (for example, can they really treat MDR TB?), training them to refer to hospitals cases that are beyond their scope, and to help them become honest about the cases that they can actually treat." (Department of Pharmacology SPHMMC)

So the next question is how does the actual registration process take place? Registration licensing and supervision of THPs is executed by the food, medicine and healthcare office in every woreda. The Office controls and regulates TM processes and THPs based on a standard checklist every two years and conducts pre licensing evaluation based on the four "P"s. Our key informant from the area described it as follows:"As the Food, Medicine and Healthcare Office, we do control and regulate TM, TM processes and THPs. There is a checklist that we use for the evaluation and we visit the healing centers four times a year but now the standard has changed to twice a year. We also perform qualification assessment. We check for the requirements before we give license to a healing professional. A traditional healer must fulfill some requirement in order to start practicing. We call them the four "P"s: Premise, Product, Proportion and Profession. So based on these major issues, we assess if the healer can read and

write or has someone who can read and write for him and he should get people from the food, medicine and healthcare office of woreda who wants to testify for him about his length of residence in the area and about his healing abilities. He should prepare a three-room facility, one for medication preparation, one for patient examination and one for reception. So if the healer has prepared these things we can give him license to practice in our Food, Medicine and Healthcare Office of Woreda."(Medicine and Healthcare Office of Kolfe Keranyo sub-city Woreda 6)

Key informant from EPHI also shared information on the content of supervision of the practice in the traditional healing institutions.“The supervisors also assess the service when they come for supervision. A template has been prepared for documentation. Name, sex, age, diagnosis (name of ailment), type of plant, how it is prepared, how much is given, for how long it is given, and then the outcome (which is the prognosis: improved, not improved, referred), and the like are documented.” (EPHI 1)

Key informants also shared the list of requirements that healers are required to meet in order to get registered.

“The criteria is there on the guideline: a traditional healer can provide service if he is above 21 years of age, knows how to read and write the local language of the community or if he can’t read and write, we should be able to assign someone who is above 18 years of age who can write and read.” (AAFMHACA)

"First there is pre-license assessment which gives more focus on the premise than details of the products used. The rooms should be clean; there should be a reception setting and guest welcoming room. Rooms should also be there for medication preparation and patient examination. We don’t assess the details of every product they use. We are not expected to do that because we don’t know enough. We only check the cleanness of the medicines. We see that they use natural products which they either make based on patient requirement or they prepare, label, package and keep on the shelf prior to patient visit. Their storage quality can be quite impressively clean and organized. And for now, what we check is the hygiene of the product and premise." (Medicine and Healthcare Office of Kolfe Keranyo sub-city Woreda 6)

A key informant from research sector explains how healers undertake their registration and licensing journey:“First, the healer comes with only testimonials from 5 or 6 residents in the community to the food, medicine and healthcare office of woreda that demonstrate that the this person has lived here and served the community for long period with his knowledge. These testimonials can be true or could be false claims of bribed persons. Either ways, they get registered. Then through trainings or supervisions the Health Bureau that does the registration can follow and penalize them or even retract their license upon detection of harmful or substandard practices. And that is also a significant input on our behalf. The Bureau also encourages them to involve in research endeavors. It asks them if they have worked with research institutions as that has a great impact for the system to grow because working with a research institution would make their work sustainable and credible. They are made aware during orientation sessions that credibility is the main thing.” (EPHI1)

A Key informant from a healers association also gave similar description of the licensing journey but added a proposal that their association is trying to include the pre licensing evaluation to make it more credible: “But now and onwards, after our association has got legal recognition and opened a bureau, when one professional comes to be registered, he will be evaluated by experts group, that is recognized by the Food and Drug Authority, where it captures his knowledge, what type of conditions he can treat or manage, how much knowledgeable he is. If he passes, the group of experts will give him a letter addressed to food, medicine and healthcare office of woreda, and then the same office will register and give him certificate if he fulfills the criteria. However in some areas, certificate is given without this process. This has to have a proper legislation and continuous follow up. The profession is discredited by such people. Eye witnesses from the local community may be biased sometimes and give false witness. If he gets the letter and goes to Food Medicine and healthcare office of woreda and the same office gives him the license, it will have dire consequences; it may also result in peoples harm. So, we have discussed with Food and Drug Authority that, if there is a legal association, the letter should be given by the association and the authority gives the license. We are giving a letter after authenticating their knowledge. To perform these, there is a board who examines that. So the board has expert professionals. They observe, and examine his

performance, where he learned, his capacity to work if he opens a center and send it to us. Based on that, we write a letter saying he is a candidate member, and he takes that letter to Food and Drug Authority and they register him and give license and send him back to us. Then we register him as a full member and we train him and do continuous follow up. This is how we are operating now. If it continues like this and illegal procedures minimized, customers may not be harmed." (AATHA)

The issue of patent right can also affect the registration process. A key informant mentioned the issue and how it could affect the transparency of service or product registration licensing:

"The license that is given to them by Food Medicine and healthcare office of woreda is just like any work permission license and not patent right. For patent right, there is an institution called IPO that works on a federal level. And institutions like EPHI, MOH and EFDA are involved in the process because the product has to reach a certain level of safety, efficacy and quality profile before it passes for registration by IPO. Therefore, the Ministry of Culture and Sports helps them by giving support letters and facilitating events to make their products improve and get their products and services recognized. And they also have associations and they sometimes present their needs through these associations to get approval of both the cultural and scientific basis of the remedies that they prepare. So when they ask us about a certain treatment that they practice, we investigate its cultural credibility or community acceptance and write them support letter accordingly." (Ministry of Culture and Sports)

Similar issue was mentioned by another key informant from academia and research as follows:"On the other hand, the mandate of Ethiopian IPO is to protect intellectual property. There is collaboration between University of Gondar and World Intellectual Property Organization which is an institution within UN to register brands. But the issue here is that they register the product with the name given to it by the inventor. The components, essential identity, safety, efficacy, quality and other information about the product which could help detect if anyone else comes again with the same product are not documented. These things need technical knowledge and skills. The awareness creation directorate in MOH has established TM case team under The Pharmaceutical and Medical Equipment office. The case

team has 4 or 5 members and they prepare manual documents and offer trainings for traditional healers and regional officers and so in the future after creating awareness, we might be able to make the regulatory system restrictive. For example, if someone decides to use garlic for treatment of common cold, you cannot restrict that because you don't have the ground to prevent someone from consuming any natural edible product. You also can't tell the intention of the person weather he is consuming as food or for the healing property." (Department of Pharmacognosy, AAU)

9.5. Challenges and Suggested Solutions

As we have discussed in previous sections, there are initiatives to integrate TM into PHCS of the country by creating a premise through policy enforcement and implementation; by development of regulatory guidelines specific to the practice of traditional medicine; by development and provision of continuous training programs for traditional healers and through ongoing research endeavors on TM and medicinal plants and by attempts to create a system through which all of these activities flow smoothly. However, these initiatives have not resulted in much success as there are obstacles in every step of the way. During the discussions, key informants have emphasized the obstacles while discussing about what they or their organization is doing regarding the issue. Additionally, possible challenges were discussed based on a pre-organized list of challenges in which key informants reflected on each potential challenge and commented on whether or not they think it is an actual challenge that hinders integration in our country's context. This theme is dedicated to present a list of these challenges and relevant comments from key informants on them. The discussed challenges are interconnected with each other. The relevant comments from key informants on each one of the proposed challenges is presented in a chorological order of the challenges based one resulting in the other.

9.5.1. Secrecy, the Biggest Obstacle in Moving Ethiopian Traditional Medicine a Step Forward

All of the participants agreed that secrecy among healers who hold Ethiopian indigenous knowledge of traditional medicine has made it significantly difficult for future integration of TM

into PHCS in practice, training as well as research. All other obstacles are caused by or related to secrecy in one way or another.

“The secrecy regarding the knowledge and practice of Ethiopian TM is one major challenge.” (MOH)… “The issue of secrecy of healers about their knowledge is also another huge challenge.” (Ministry of Culture and Sports)

Most key informants have suggested lack of legal protection for intellectual rights of healers as the major reason behind this secrecy on TM. One key informant from healers association stated:

“Many incidents have occurred where it was promised to healers that their benefit will be assured and that they will be accredited and even they would sign an agreement but at the end of the research they were told that the product failed or that the information was invalid while the researchers go and publish the paper. There is no abiding law or a concerned legislative body that will question these researchers or make them accountable. It doesn’t have a legal framework. It is only a paper that is signed in a certain institution and not a legally abiding document with the approval of the Ministry of Justice and a link to a specific article in the law. But now, there is a start of CTs being conducted in AHRI in a way that has never been tried before. And that might help the traditional healer but only if the framework is adjusted as I told you earlier. If not, the ‘war’ will continue.” (ETHA)

“Secrecy is a huge problem and both motives (concealing substandard practice or product/ Intellectual property) are equally important. The healer fears to give the educated person information about his practice because he thinks that you would improve and use that information in a way that will take away his carrier. When you ask information for research, they imagine that you will generate millions immediately.”…”They don’t know the practice protocol, research methods and processes and how long it takes. Even politicians don’t know how much time and resource it takes. The intellectual property right is not only based on need to gain benefit but also due to lack of knowledge the about the legal premises.” (CDT-Africa)

In addition to lack of legal protection, a motive from healers to conceal substandard product or practice was mentioned as a reason for the secrecy among healers.

“The other is regulatory aspect and fear of punishment. Our regulatory system should create awareness to build an environment where they would share their knowledge without fear of punishment or losing their intellectual property.” (CDT-Africa)

“The reason for secrecy might be both things (IP right & substandard practice). First there is the fear that "If everyone knows the details of my practice, I will eventually lose my income". The second might also be “what I do might not be right,” so when I tell somebody, they might question me or even get me punished" But when we think of how can we handle the issue, we can work on ways we can document the knowledge and practice and promote documentation by healers.” (EFDA)

Participants also proposed a way forward to deal with secrecy. A key informant from academia and research area elaborated on the possible solution to secrecy as follows

“The first thing we can do is create awareness among healers that traditional healing knowledge should not be limited to a specific family only. Otherwise, how will it be possible to assess the strength and weaknesses of their practice? The understanding should include an agreement on the benefit and privilege that the healers will get for sharing their knowledge. After the agreement and understanding, we can proceed into identifying which healing practices should be worked on and which ones should be stopped through negotiation with the healers. It doesn’t necessarily mean that all healing practices are appropriate. We have seen really troubling cases of what happens after harmful traditional practices. For example, patients come with some foreign material inserted into their anus for what it seems treatment of hemorrhoid and deep gangrene on the area as a result. So it should be studied which healing practices are effective and which ones are not. So that we can improve those that are effective and help stop those that are ineffective or harmful. This would also improve our regulatory system for TM.” (Department of Pharmacology SPHMMC)

9.5. 2. Lack of Scientific Evidence

It is very difficult to generate scientific evidence given the prominent secrecy resulting in lack of basic knowledge what exactly ETM is and how it actually works. Key informants on the PHCS side complained about the lack of scientific evidence on TM enough to integrate TM into MM.

“Lack of scientific evidence this is especially one of the main reasons the more educated side of the community has a hard the accepting TM. Mostly in our country we don't have issues with documentation. The knowledge, concepts and remedies are written in text books mainly religious ones. And there are also publications from graduating papers of students. However, there is undeniable issue with validation. Validation is mainly about generating evidence on whether or not the medicinal plant or remedy actually works for the claimed disease.”…“What we check for is not only efficacy but also the safety and what phytochemical constitute is responsible for the quality i.e. which one is the active principal ingredient.” (ALIPB)

“The lack of evidence has undeniable effect on not being able to integrate. There is a notion that it is assumed that these practices and treatments are well known just because they have been used in the community traditionally possibly for a long time. This is not only a stand from traditional healers but Community itself. The community might not accept when you say the dose should be studied, the safety profile should be checked because it is something they used in the Past and your idea is new and less reliable in their eyes. So it is first step to create basic understanding among everyone involved especially community. We have had an experience in real life where someone who claimed to heal hypertension being banned and the Community was the first to protest against us. "Why did you ban someone who was healing us?" was their question. But we had some credible evidence on whether he used only TM or there was adulteration. However, you can't ignore the users.” (EFDA)

A key informant from healers association on the contrary explained the willingness on healers side to conserve, document and participate in research:

“We are willing and ready to make our products open for investigation through scientific research. But so far, our evidence is the testimony from our customers on the healing ability of our practice. And government has not prohibited us so far but rather the initiatives are

supportive and encouraging."… "And if the healthcare system allows us we are willing and ready to get our profession invested for scientific value. But we wish that the discouragement from MHPs gets replaced with teaching us, guiding us, advising us, working with us, sharing experience with us and giving us an opportunity to share our knowledge and experience so that we bring beneficial change to our country; because what option do we have? We need to study and research on the indigenous medicinal plants to bring about a possibility of developing our own medicines and provide for our community. So we would like these researches to be facilitated." (AATHA)

9.5. 3. Lack of Standardization

How can the knowledge and practice of ETM be standardized if we have not generated enough scientific evidence of how or at least if it works? This is the issue mentioned by most participants.

"The concepts of documentation, GMP, Hygiene (standardization) are very important. GMP, hygiene, our working environment, our sampling equipment and everything should be standardized. And training is one of the ways we can achieve this. We have to track them how to keep their working environment clean, pointing out for them the key things that need to be fulfilled for that."… "The preparation of standard operating procedure (SOP) needs a coordinating body for the use. THPs could develop SOP's on the treatment modalities with aid from specialists of related disease conditions on the MHP side. But the platform, the system on which these Individuals can do that has to be created first. It needs support from the government. At the end of the day it all depends on the safety and benefit of the community (clients). And SOPs can, and should be developed separately for bone setters, traditional birth attendants, herbalists, hydro therapists etc. But it has not been worked on so far. And SOP is something that needs to be regularly evaluated and updated once it has been developed." (ALIPB)

"Standardization, (Good Clinical Practice (GCP), GMP, record keeping, sanitation, hygiene, QC, good collection practice and sustainable harvesting): The absence of these things has greatly affected the improvement of TM in Ethiopia. However, what I think is the origin of all these

issues is whether or not THPs know the importance of these issues. We as part of modern medicine practice, know the presence and importance of these concepts. But those practicing TM are far away from this information. It is not logical to simply tell someone that they are being harmed by the absence of something they don't even know exists to begin with. First they should understand what these concepts mean. Then they should know the benefit of these things and believe in it. The question is, are we capable of simplifying these concepts in a way that they reach their understanding?" (EFDA)

"The lack of standards for TM in Ethiopia is undeniable. The institution of Ethiopian standards says that orders are needed for them to prepare standards. That means, someone has to order for standards to be prepared for a specific item for them to start preparing the standards. And they said that no one has so far ordered for standards for herbal medicine. And I don't think the lack of standards for herbal medicine is due to shortage of knowledge and skill."…"The Institution of Ethiopian Standards have prepared standard for the preparation of 'shiro'. So the institution not having prepared a standard for herbal medicine shows the lack of attention on the issue. However, they have assured us that they will prepare a standard for any TM product that gets approved into the market. So the problem is also lack of an accountable authority on the issue. If one product would make it into the market, even if it doesn't fulfill all the legal preconditions, guidelines would emerge and push the system into a more legal route and eventually standards would emerge from there. Also, the development of the pharmacopeia and monographs that we mentioned earlier would guide the standardization too. So, if it succeeds, it would be one input." (Department of Pharmacognosy, AAU)

9.5. 4. Conflict between Theories

A possible reason for inability to generate scientific evidence or work on standardizing it is the conflict and contradiction among the theories that the two systems are based on. Some of the key informants also reflected this notion. However, some key informants do not consider this as an obstacle and have the opinion that if all the other problems are out of the way, the conflict between theories could be reconciled.

Some key informants stated that the conflict between theories is in fact an obstacle on the integration of TM into MM.

"There is also a problem with conflict between the principles and theories of the two systems. Working together needs understanding there needs to be a bridge between the two systems."… "As we mentioned earlier, the philosophy is different. And there is a gap that is an obstacle for knowledge transfer. Therefore, we need to work on building technological enhancements and technical aids. For example we are helping them improving their documentation system. Otherwise, we cannot judge their knowledge without providing evidence for our judgment." (MOH)

"It will not be that easy to make the two systems (concepts) go hand in hand. The discussion is necessary. You are trying to bring two completely different things to the same line. The difference in understanding of and perception of the human body (anatomy), bringing TM into PHCS without leaving the essence of scientific approach are some of the things you have to get across when you bring the two systems together."…"I don't think it will be easy because the challenges outweigh the similarities. I think it will be easier to create a system to make these two go parallel to each rather than to integrate them. That means to monitor TM as it is on its own and make sure it is safe for the community to use and also to just go with MM in its own built system. Otherwise, integration would take too much work." (EFDA)

"I think that can be a challenge because TM is more spiritual based, involving prayers and rituals. Most healing practices are based on personal views, imaginations and decisions of the healer rather than fixed procedures and standard treatments. It is only now a days that they started listing the illnesses that they treat that they started trying to determine what they actually do. But during previous times, they used to follow the spiritual ways which in my opinion created a huge gap between TM and MM in Ethiopia." (Medicine and Healthcare Office of Kolfe Keranyo sub-city Woreda 6)

Some key informants suggested that conflicts are reconcilable and not a big issue to be concerned about or even nonexistent.

“These things are not part of the necessary precondition for the practice. No matter what the theory of this one or that one says, it is all about healing people at the end of the day. It is a matter of understanding that the main point is the health outcome. Conventional medicine has well established rational theories and principles. TM is not confirmed although there are some TM practices that have theories and principles close to conventional medicine. But we are talking about healing practices in Ethiopia that are found in the hands of few individuals; principles that are not known even to us as Ethiopians; but are used by the majority of the population. What we can do is convince the healers to resolve the conflicts and harmonize the systems.”...“So I think there can be a common ground through discussing about the merits, working on minimizing the disadvantages and focusing only on the outcome and benefit. So it is all about negotiating the benefits for the healers because that is what the healers focus on at the end of the day.” (Department of Pharmacology SPHMMC)

“I don’t think that would be an obstacle on integration. The issue is lack of attention given to TM. TM has many qualities over MM and not to forget, it is the source of MM itself. I have practically seen many examples that make this claim evident.” (Department of Food Engineering, AATI)

“There is an obvious difference in theories and principles. But also, the TM is not uniform within itself and there are differences among TM practices of different areas and religions. So there needs to be a common ground to function in an integrated manner. And that can be made possible through discussions and mutual interest to understand each other.” (Ministry of Culture and Sports)

“I don't think there is that much difference between the philosophies. Meaning, only the manner of practice is different. But the aim of both systems is to improve the health and well-being of the community.”…“Both originated from trial and error. The difference is only that conventional medicine has theorized these trials and the theories have gone through prove and disprove processes to end up with refined and rationalized practices. On the other hand, you cannot provide evidence for the healing capacity of traditional medicine because especially in Sub Saharan Africa, TM relies on oral traditions that have been passed down from generation to

generation and hasn't undergone any scientific investigation for its safety and efficacy. The problem with this situation is that you cannot think of going any further to attempt to integrate it into PHCS. For example if you think of the issue of dosing, the amount provided for each person should not be random. It should be based on documented data on the effect of the medicine on the participants that have used it. This includes the indication, duration, outcome measurements to be laid out. But we haven't worked on that but rather chose blame each other for things that don't work out. A single medicinal plant has lots of chemical ingredients in it. Among these ingredients, some of them work on synergy with the medicine, some might be harmless with no significant useful value also, and some might have antagonistic action. These things have to be studied." (Department of Pharmacognosy, AAU)

9.5. 5. Mixing of Medico-Magical Practices

Within the issue of conflict between theories, the mixing of the spiritual and material aspects of traditional healing has been mentioned as one of the obstacles that hinder ETM from being integrated into PHCS of the country. Both key informants from healing associations commented that the medical and magical aspects of TM should be separated.

"We believe this profession should be isolated from superstitious culture and beliefs and to make it beneficial. The society should understand that Traditional medicine is composed of plants, animals or minerals only and will treat different disease conditions and it is not associated with superstition; benefits the country and the knowledge can be transmitted to generations. It is better if this profession be written and documented than secretly hidden. Even the professionals go to other profession and no to teach to their children. We are working to implement this. As much as possible, our association try to counsel, teach, control and follow their work progress of legally recognized traditional healers." (AATHA)

"There is also one problem in ETM. It is the mixing of spiritual treatment with physical treatment. That should not be the case because healing should be separated from religion. A remedy should be visible and tangible, one that you actually give and receive. Otherwise, if someone writes spells on a paper and tells you to keep the paper under your armpits, it would be spiritual treatment and not part of the TM that should be included in the PHCS of the

country. But things are a little mixed up. Traditional medicine, in my view, should only be natural products. The other spiritual practices from Islamic, Christian or superstitious origins should only be limited to the respective places of worship of these faiths. Trying to announce such practices as official representation of national TM system would only be an attempt to use the cover of TM for spreading one's faith or personal gain. The spiritual healing aspects should not be inculcated, not even in the name of treating psychiatric cases." (ETHA)

"The most problematic part us that there are some who mix up between medical and magical practices or try to create a connection between them. In my opinion, we must differentiate and create a clear line between these two. I don't have the opinion that magical treatments should be banned. But mixing would make the process of ascertaining safety and efficacy difficult. You cannot evaluate magical treatment in a scientific way. You cannot quantify or measure it. It is a matter of faith."…"You can let both work separately but it is better not to mix them up. You can give spiritual treatment on one side while giving earthly treatment simultaneously but the mixing is mainly because these healers are self-claimed. You cannot test them or inquire them for the validity of their knowledge. What we are working with now is that they get evidence that they lived in a certain Kebele for the required period and get some people to give testimony for him and that will allow him to practice. I am not condemning it. It is just that we didn't create the ground for them to learn and work for the validity of their practice. We cannot ban them from practicing but we should tolerate their shortcomings and create a system that they can improve what they can improve through time and benefit themselves and their country." (Department of Pharmacognosy, AAU)

9.5. 6. Lack of Funding

When it comes to making all the possibilities a reality, the lack of funding was mentioned as one of the biggest obstacles.

"Coming to funding issues, there is funding from government and another one we get from competitions. There is donor interest on priority diseases like malaria. This is because these diseases are included in health security. So if you start to study on one of these issues you will most likely get funding support. However, issues that can build the actual capacity of the

country towards self-sufficiency wouldn't spark interest from many that would want you to depend on them for medication. It is mostly challenging to do research on TM because government capacity is limited and focus should be on emergency crises. Research might even sometimes be considered as luxury. Issues like vaccination are given much priority."… "What Prof. Abebaw Fekadu and his team was able to achieve through his proposal for CDT-Africa was exceptional and highly esteemed by the research community. It was selected among proposals from other African countries and was definitely an amazing job. Its main goal is using natural products and indigenous knowledge for drug development." (EPHI 1)

"I have told you earlier that that is an issue with a huge gap. The first thing is sufficient fund is not budgeted by MOH for TM related issues. And on university level, when funding is provided for thematic researches, traditional medicine related issues are generally considered as least priority and that information has saturated as there are numerous researches published on the issue. And funding is one of the main obstacles in the attempt to approve traditional remedies into conventional healthcare system by the preparing crude day for the formulation into phytomedicine." (ALIPB)

The key informants from healers associations also complained on the lack of funding and financial capacity.

"The challenge on our part is mainly financial. The other issue is lack of space to grow plants. The concerned bodies don't give the issue full attention and lack of focus and responsibility is common. AAFMHACA is a very crucial institution that has been supporting us with material provision, supervision, printing and office materials etc. MOH and Ministry of Culture and Sports are also helping us. And we are doing our part and working hand in hand with all stakeholders. So the efforts should continue and improve to work towards results." (AATHA)

"First of all, traditional healers do not have the financial capacity to establish their own production factory. That makes them unable to formulate their products in more standard dosage forms like capsules, syrups and oils. This needs government support. Which traditional healer would be able to bring capsule filler, oiling machines, tablet pressers, and other manufacturing equipment to produce their remedies in modern and more standardized ways?

So they just use whatever is in their hands to serve their customers. It would have been very easy to enter the market if production was more standard." (ETHA)

9.5. 7. Lack of Capacity Building

Due to the lack of funding, any capacity building would also be difficult. Participants have reflected on how the lack of capacity building has made integration only an idea in the minds of those concerned and a draft on some policy or regulatory documents.

"Regarding capacity building, there are initiatives although not satisfactory. Training is one aspect of capacity building. Some regions in the country including Amhara and Oromiya are said to also give financial support for healers with the intention of motivating them. If we be honest, financial support is not the answer. Giving technical support would be a much better option although the healers themselves would prefer the former to alleviate their economic struggles." (EPHI 1)

"It isn't there. This is a huge problem. If we had built their capacity, they would have developed trust for us. They don't get trainings. They just claim their healing based on the knowledge they inherited from family or community. We have not been able to evolve their practice through modern technologies or build their capacity." (CDT-Africa)

"Lack of responsibility taking, discontinuing started projects, lack of focus, fear and lack of communication among professionals are also things that should be prevented. Our main goal is to see ETM become great and the knowledge reach international community. We want to get trainings from local and international institutions and have schools that we can both learn and teach in. The association, having legal partner, can work to protect the intellectual property right of the healer in the process of evidence generation." (AATHA)

Key informant from MOH however had a different perspective to this:

"The issue of capacity building is relative. The healers, lack experience on the modern health care system due to the back ground that they came from. There are, however, also healers that have some form of conventional health education. We can't measure their knowledge based on ours because they have their own way of measuring their knowledge. They are right in their

own ways. By the way, if they measure us with their criteria, they might find us inadequate. So, we have to know what we are measuring. First, before we talk about capacity building, we need to define what capacity building means in this case. We need to have preliminary standards that are measurable. We can't just assume that they don't have capacity. We also shouldn't consider ourselves as their preference. They have their knowledge on plant, mineral or animal based treatments. What they have is wisdom that is tried with time." (MOH)

9.5. 8. Loss of Resources

Through time, the resources that we have on ETM in terms of knowledgeable elders, medicinal plants, animal products and minerals with medicinal value or the knowledge of these resources is inevitable unless some serious work of conservation and preservation is not done.

"Although this issue needs to be discussed with EBI, I cannot say that there isn't an issue regarding lack of herbs and natural resources. The herbs that we are using are mainly small scale or community level and the activities regarding farming them or large scale production is necessary to prevent their extinction. There is also loss due to urbanization and deforestation. We might even be destroying the naturally growing medicinal plants considering them as weeds. What you consider it a sweed, a farmer may come and tell you it is a medicine for abdominal cramps. When you taste it, you might find that it has the typical metallic taste like anthelmintics. We are rich in medicinal plants but there is little knowledge of what we have in hand and little access to the knowledge that we already have." (MOH)

"There is deforestation happening everywhere and access to herbs and natural resources is declining severely. Government should work on it. There are conservation acts here and there but should be stronger. There are people who destroy natural resources regularly. For example "koso tree", and there is "*Prunus*sp." which is known as 'tikurenchet' in Amharic. Its barkis highly demanded and exported. They use it against cancers but when you take the bark, you have to take only from one side and leave it until it heals and take from the other side and repeat the same process as you use the plant. Otherwise it will go dry and die. But many don't care to preserve it. And the main problem is replacing the plants from seeds after they go extinct. Green legacy is a great project and has done a great job in reviving indigenous fruits.

Now it is good that they planted indigenous 'zigba, tiku' enchet, etc. So far, I know farms that grow medicinal plants like 'endod' and 'imbedia'. We also have seen 'enkoko' around Bonga within Bonga University. Shaikh Al Amudi's company exports endod which is mostly used for eradicating snails from ships and also for its spermicidal effect on condoms. They are patented for this but most of us don't know about it. Ethiopia is the main exporter of endod. " (EPHI 1)

"There is an obvious lack of equipment needed to process the plants. But the availability of herbs is dependent on the place and time. Ethiopia has diverse agro-ecology. The herbs, some of them can be domesticated and produced (cultivated) abundantly while some cannot be cultivated other than their natural habitat. Seasonality is another factor. Some herbs are only available in some specific seasons. The lack of equipment on the other hand is very prevalent. Healers go out of their way to cover-up this issue. Some of them even use their bare hands to extract the plant and use whatever thing they can find closely. Biodiversity is also severely declining Biodiversity loss and seasonal un-availability are critical threats. Deforestation is taking place due to urbanization, Agro-industrialization, and the likes. It should be known that even in the process of urbanization, there should be forests in between cities. But in our case our cities are growing and meeting each other end to end. This is making us lose a lot of plants with medicinal value." (ALIPB)

"We are finding it more and more difficult to find the plants. They are going extinct. What we are asking is to be given a space to grow these plants and save them from going extinct. We can sum up our knowledge with healers from different regions to give information about each plant so that we can grow them and use for our practice as well as research and development."…"Our professional are serving and growing their financial capacity at the same time. So we want to be given discounts on our activities to grow, collect, process, formulate and study to improve these natural products to improve our profession. Our question should be considered and given due response by the concerned body." (AATHA)

9.5. 9. Linguistic Differences among Healers and Healing Practices

Key informants noted that language barrier can be a challenge on working to improve TM in Ethiopia.

“Language is also another barrier because most TM knowledge is written in Ge’ez language. So we need to have the knowledge of the language in order to study ETM. And Ge’ez as a language in which much of Ethiopian indigenous knowledge is stored, is not taught outside of the church. Also, much of the Islamic traditional medicine knowledge is stored in Arabic and it is questionable how many people in Ethiopia know Arabic so I agree that language can be a challenge.” (Ministry Of Culture and Sports)

“There are language barriers between for example traditional versus modern diagnostic terminologies. When the healer says that he uses a certain remedy for a certain illness what would you understand the diagnosis to be? If they use the remedy for leishmaniasis, what do they refer to leishmaniasis as in Afaan Oromo or Amharic? You might have got the indigenous knowledge from that farmer but you will have to figure out the name he gives for that disease. Our TM system is not conceptually developed. If the healer says “I am treating cancer with this remedy”, you have to understand what cancer means to this community. We have to have a deep understanding of the linguistic and anthropological meaning behind diseases and their symptoms. The causes of the disease believed by the society are also important to understand because the treatment is usually justified by the cause. I see a big research gap in this area.”(CDT-Africa)

“Language is only for commutation. For example, if I want to know the name of a certain plant, it is good if I know it in all languages. But if there is love and understanding, I can ask the local people what its name is. There are plants that are known with their name in Geez. A healer who knows Geez is different from others in his knowledge of this ancient language in which much of ETM knowledge is stored. Plants may be commonly known with their Amharic, English, Geez or other local language names. Education curriculum should be there to teach about these plants starting from their names to their medicinal activities. Universities should create educational systems to break language barriers. With proper communication and understanding, healer from another region can tell me the names of the medial plants that are endemic to his be region and I can tell him those endemic to mine. So like this, we can make the profession grow. Language barriers can be solved though learning without conflicts.” (AATHA)

"As I told you earlier, language plays a huge role for documentation and preservation of the knowledge. There are many things lost in translation; let alone between different languages, things can get lost in translation even within one language. For example, the words and phrases that our generation uses for TM are very different from those used by older generations. Cultural differences also affect the ability to document TM knowledge as some cultures are naturally open while others are closed and conservative. Closed cultures make it hard to transfer knowledge." (Department of Pharmacognosy, AAU)

9.5. 10. Lack of Interest among Youth to Become Healers

Another issue that was discussed was if we have an uprising generation to take on this task in the future. Participants had more negative outlook and most of them stated a perceived lack of interest among youth to become healers.

"The interest of young people to become healers is declining especially in rural areas." (EPHI 1)

"There is a decline of interest among youth to become healers."(MOH)

Key informants mentioned different reasons for this decline of interest among youth on TM. These reasons include "lack of financial payoff from healing as a profession" (EPHI 1);"lack of awareness and education on the true worth of TM" (MOH, AHRI); "they don't want to take this knowledge from elders because there is modernism" (ALIP, AHRI, ETHA); "because MM scientist is ignorant to the fact that most MM came from TM. He is also demonizing the healer as a witch or a primitive illiterate person" (CDT-Africa); "the younger generations can't know if you don't teach them. And there is a gap on that. People used to teach about herbs but now I don't know" (EPHI2); "not only interest for TM but also interest for religion, culture, and spirituality is also decreasing. It is not the same what people had when it comes to faith and what we have now. Same goes on for the next generations too because we are being more inclined to modern ways. The generations are becoming more and more inquisitive." (EFDA)

9.5. 11. Lack of Interest among Modern Healthcare Practitioners to Work on Improving Traditional Medicine

Key informants also reflected on the interest of MHPs to work in improving ETM for possible integration into PHCS.

Some key informants claim that there is lack of interest among MHPs to work on TM.

“MHPS usually have aversion towards TM due to reasons like the dose of TM being unknown, the identity of ingredients of TM being unknown, etc. This is what you'll most likely hear from many MHPS. But in my opinion, I don't think that is true. These remedies have been used for centuries. TM might have gaps related to standardization or processing but our fore fathers have been dealing with "koso" every 3 months and they were blessed to live up to 100 years of age. But an MHP of current time might claim that "koso" is hepatotoxic but cannot explain why people who used it every 3 months lived that long. Why didn't they die of hepatotoxicity? So it’s controversial. MHPS should also be educated on the good sides of TM so that they become more accepting.” (EPHI 2)

“Lack of motivation is a huge challenge. Healers are more likely to be motivated if we train them. I hope and expect that because they are eager to know new things. However, MHPs are more likely to look down on TM and be unaware of how to start working on it as well as think they don't have responsibility on the issue. There is lack of motivation on their side. So in my opinion, motivation is lacking on the MHP side and not on the healers side.” (CDT-Africa)

Key informant from EPHI on the other hand commented that interest of MHPs to work on TM is improving.

“The attitude of MHPs is better now. It used to be very negative back in the days.” (EPHI 1)

Key informant from regulatory body commented that the attitudes of MHPs are variable and more of personal.

“Attitude MHPS, it differs among individuals. I don't think we can generally state that MHPs attitude is positive or negative. Some think of TM as a good Source of MM development some discourage TM because they think it is causing people harm and unknown things are being exposed to people. For me, all opinions are personal and I might have my own reasons to support or disagree with these opinions but I that it is better to work on the underlined issues that these opinions are based on rather than to say one is wrong or one is right.” (EFDA)

9.5. 12. Lack of Communication between Traditional Healers and Modern Healthcare Practitioners

“There is a huge problem when it comes to communication between healers and MHPs. There is lack of respect and by the way traditional healers also look down on MHPs saying they don’t know their culture, and say the senior professionals are lacking with regards to honor and respect worthiness. And the MHPs consider the healers as illiterate people who know nothing about the modern world.” (EPHI1)

“Interest comes from knowing the benefits. And to know the benefits, there should be a platform to bring all the stake holders together and discuss on what TM is, how it can benefit our PHCS, how can TM and MM work together, what knowledge source do they use etc. and they should agree on each of these issues. There is fear between the two because of lack of knowledge of each other as well as lack of recognition. I hope this study brings about attention on the issue and creates an opportunity to bring something tangible on improving TM. I am participating very enthusiastically because I believe it is beneficial, otherwise, I wouldn't have participated. Success comes only after coming closer to each other to work on things i. e. recognition, followed by understanding each other and finally identifying ways to benefit from one another.” (ALIPB)

“They are going in two opposite directions independently from each other. It is difficult due to factors that we mentioned earlier to even think about making them go together. There might be initiatives for communication and collaboration but are not satisfactory. It needs a lot of work. It is everyone's responsibility. Both parties must take responsibility and take initiatives to discuss on how to come to the same terms and correct the problems.” (EFDA)

“The interest to work together is very weak. Let alone working together, communication with each other is very weak. There are MHPs who don’t even want to hear about TM and THPs who don’t want to hear about MM. It is extreme on both sides. One looks down on the job of the other. Even while they use it in some occasions, they will not appreciate the goodness in it. Federations and associations should be strong enough to expose wrongdoings from both sides. Because you see ethical breaches everywhere. There should be someone including and

especially the media to create awareness in both the THPs community as well as the MHPs community." (Department of Pharmacognosy, AAU)

9.5. 13. Economic and Prestige Competition among Traditional Healers and Modern Healthcare Practitioners

A possible barrier between THPs and MHPs to work together which is economic and prestige competition among THPs and MHPs was also proposed for key informants to reflect on. And they gave a variety of responses in which some of them agreed that it might be the case while others denied the existence of such phenomenon.

Comments from key informants that suggested that competitions exist include:

"Economic and Prestige competitions are there. As industries, it is hard to say that TM and MM wouldn't compete with one another." (MOH)

"The economic and prestige competition is there especially among healers. What is there between MHPs and THPs is more on the prestige side. Healers have more acceptances in the community because of the time they give for patients during service and their knowledge as well as compliance to societal norms. They respect the culture, and respect the likes and dislikes of the community and do not dare to commit cultural taboo. Whereas MHPs give little time to patients, you also see many of them with characters, lifestyles and choices that are shunned by our society." (EPHI 1)

"As I said earlier, there are trends of not accepting referral papers from THIs by MM clinics and hospitals. Blaming the patient for going to traditional healing center in the first place, telling the community that traditional healing is some harmful practice based on superstitious beliefs, telling patients not to use TM as a whole by MHPs, etc. These are some of the reasons that prevent TM from growing and being improved. We have to understand each other, support each other and work together in order to improve our TM like countries who give both TM & MM services the same hospital setting and let patients choose the treatment that they want with proper referral systems to be used as needed." (AATHA)

Other key informants on the other hand suggested that the recognition between the two is not significant enough for a premise of competition to exist.

"Traditional healers are highly respected by society in country side, they are respected for their economic status, for their influence and for their service. But actually the competition between TM and MM is not that significant because first you would have to recognize the other in order to compete with them. The dilemma is in the fact that community recognizes both of them; that is why we are here discussing on the issue. Other than that competition is an indication that you see quality on the other side. So I wouldn't say there is competition between the two." (ALIPB)

"MHPs are less likely to feel taken over by THPs especially those in government Institutions. TM doesn't have the capacity to compete with MM on that level in my opinion. But when it comes to prestige, there is lack of respect a THP's by MHPs as a friend of mine says "just go to the witch level." So this might be an obstacle to work together." (CDT-Africa)

9.5.14. Scattered Research Initiatives

The last issue discussed was research related challenges. And the major shortcoming mentioned regarding researches conducted on TM was the lack of output oriented approach. Most participants mentioned that researches conducted on TM are individual and mostly done for education fulfillment and not for practical application in the integration of TM into MM.

"The approach on research is fragmented and piece in meals type. It is much lacking in terms of collaboration, focus and being goal or output oriented. Most researches are done as part of educational fulfillment or to have a ride out of some funded budget." (CDT-Africa)

"Mostly, studies have purposes like being part of educational fulfillment (as a graduating thesis) or for publication purposes. So as soon as they achieve that, they don't consider working on dissemination. If it is for graduation, you do your research, get graduated and get back to your work and if it is for promotion, you do your research and publish papers, and that is it. The person who reads that publication is most likely someone who is already informed on the issue. Therefore, the work that you've done, the place where the output of that work is made

available and the person who can turn that information into action and actually be informed with or use the output of the work are far apart. We have to work on bringing these two closer. First is to know your audience, i. e the person who will actually use the information that you generated. That would also require consideration on the languages of disseminations, and using your words and phrasings accordingly. And that is not only for traditional healers but for all. We are not doing things other than filling shelves and databases. Disseminating documents and information to all concerned bodies is a responsibility of all of us. Those who use the information only use it based on their need. So it would be better if the author would also work on identifying the concerned bodies and dissimilate the output of his work accordingly." (EFDA)

9.5. 15. Suggested Solutions

The following solutions were suggested by participants to tackle the challenges faced in different steps of integrative attempts:

- Development of laws and regulatory mechanisms

"There is no abiding law or a concerned legislative body that will question these researchers or make them accountable. It doesn't have a legal framework. It is only a paper that is signed in a certain institution and not a legally abiding document with the approval of the Ministry of Justice…" (ETHA)

- Strengthening institutional frameworks and assigning dedicated TM units

"The awareness creation directorate in MOH has established TM case team under The Pharmaceutical and Medical Equipment office. The case team has 4 or 5 members and they prepare manual documents and offer trainings for traditional healers and regional officers and so in the future after creating awareness, we might be able to make the regulatory system restrictive." (Department of Pharmacognosy, AAU)

- Establishing specialized research centers and systematic documentation

“We want to get trainings from local and international institutions and have schools that we can both learn and teach in. The association, having legal partner, can work to protect the intellectual property right of the healer in the process of evidence generation.” (AATHA)

- Clear guidelines for preparation, dosage, and storage

“Healthcare professionals who are interested should have opportunities to work on the quality of traditional medicines. That would create opportunities to develop approved drug products from these sources.” (CDT-Africa)

- Regular joint meetings, collaborative training, and referral systems

“Interest comes from knowing the benefits. And to know the benefits, there should be a platform to bring all the stakeholders together and discuss on what TM is, how it can benefit our PHCS, how can TM and MM work together, what knowledge source do they use etc.” (ALIPB)

- Awareness campaigns and inclusion of TM in medical curricula

“Universities should create educational systems to break language barriers… Education curriculum should be there to teach about these plants starting from their names to their medicinal activities.” (AATHA)

- Incentives and benefit-sharing mechanisms for healers

“If we had built their capacity, they would have developed trust for us… We have not been able to evolve their practice through modern technologies or build their capacity.” (CDT-Africa)

- Medicinal plant gardens and conservation programs

“We are finding it more and more difficult to find the plants. They are going extinct. What we are asking is to be given a space to grow these plants and save them from going extinct.” (AATHA)

- Regular training programs on safety, hygiene, and medical basics

“Regarding capacity building, there are initiatives although not satisfactory. Training is one aspect of capacity building.” (EPHI 1)

- Assigning clear responsibilities and follow-up mechanisms

“Lack of responsibility taking, discontinuing started projects, lack of focus, fear and lack of communication among professionals are also things that should be prevented.” (AATHA)

- Allocating dedicated budgets and seeking external funding

“Therefore, budget should be assigned for a focused research project that aims to bring practical output from a certain plant.” (Department of Pharmacognosy, AAU)

- Public education campaigns on safe TM use

“We have to work on bringing these two closer. First is to know your audience, i.e., the person who will actually use the information that you generated.” (EFDA)

- Encouraging proper record-keeping and TM knowledge databases

“If we can work on ways we can document the knowledge and practice and promote documentation by healers.” (EFDA)

- Developing monitoring frameworks and integrating TM data into national reporting

“We might be able to make the regulatory system restrictive. For example, if someone decides to use garlic for treatment of common cold, you cannot restrict that because you don't have the ground to prevent someone from consuming any natural edible product.” (Department of Pharmacognosy, AAU)

- Making research continuous and output oriented to yield practical improvement of TM products and practices

“My comment is that researches should be focused; nothing else. What I mean by that is researches should be done in continuality. One person or institution cannot do the whole thing. Every involved institution should identify their niche and work in teams handing over one stage

to the next one. That way, more valuable data can be generated. Otherwise, if I study today on moringa, next day on *Aloe vera* and then another one on 'gesho' without bringing forth any valuable new finding on each of them, that wouldn't make a difference. Therefore, budget should be assigned for a focused research project that aims to bring practical output from a certain plant. That will gather up the small budgets that were assigned for scattered on studies scattered aimlessly into a possibility of monetary return from a focused output oriented study." (Department of Pharmacognosy, AAU)

DISCUSSION

This study hopes to fill in the research gap by highlighting the status of integration of TM into the primary healthcare system of Ethiopia in service delivery, research and training. Although there is not much achieved regarding the issue, findings from this study indicate that there are initiatives of integrating TM into MM. This chapter explores the experiences, challenges, and status of integrating Ethiopian Traditional Medicine (ETM) into the modern healthcare system, specifically within Addis Ababa. Using thematic insights from key informant interviews, this discussion draws parallels with findings from related national and international studies, reflecting critically on similarities and differences in experiences, priorities, and limitations of integration.

10.1. Policy Roadmap and Other Guidelines

Findings from this study suggest that there is an initiative to include TM in the Ethiopian healthcare policy and eventually integrate TM into MM. However, currently there are issues with policy approval and implementation and, therefore, the impact of policy couldn't reach the stakeholders who are in position to work on integrating TM into the primary healthcare system of the country. The latest English translated health policy that was revised on June 2021 has emphasized on the importance of developing traditional medicine as one of the major policy directions with a goal of promoting it through research and development so that it can contribute positively to the health sector and the community (FDRE, 2021).Prior to that, a separate policy framework was drafted by Ethiopian MOH with broader scope to include all the sectors with potential contribution to Ethiopian TMs, which is an indication of commitment of the Government and that could serve as a menu for all stakeholders to pick up their mandates, mission and vision on the set policy direction hoping to motivate researchers to produce further evidences on the safety, efficacy and quality of herbal medicines and supplements. The policy framework encourages investors to explore this rich resource sector, and also provides legal bases for the rights of the communities and individuals and education and knowledge base in the sector (FMHACA, 2018). Similar findings were also reported by Demeke et al (2022) that Ethiopia has not developed specific policies and laws on herbal medicine so far but that new

policy governing traditional medicine (TM) encompassing HM has been drafted as part of Health Sector Transformation Plan (HSTP) with powerful strategic plans(Demeke et al., 2002).

The findings in our study thus indicate the existence of initiatives supporting TM integration such as the establishment of the TM-Desk at the Ministry of Health and its inclusion in the Health Sector Transformation Plan. However, most participants in our study expressed that these measures were symbolic rather than impactful. The perceived weakness, passivity, or non-operational nature of existing frameworks is similar to findings from other low-resource settings. For instance, Pereyra (2013) noted a similar lack of implementation in Peru, where TM remained rhetorically acknowledged but practically marginalized(Pereyra, 2013).

This discrepancy between policy and practice is not unique to Ethiopia. Asante and Avornyo (2013) in Ghana, and Fokunang et al. (2011) in Cameroon, similarly observed a failure to enforce or implement TM policy despite longstanding recognition. Such comparisons suggest that while political acknowledgment is a common first step, policy effectiveness depends on stable leadership, legal infrastructure, and inter-sectoral accountability, which remain underdeveloped in many contexts, including Ethiopia(Asante and Avornyo, 2013, Fokunang et al., 2011).

When it comes to guidelines, findings in this study indicated that a roadmap was developed to guide the improvement of TM in Ethiopia. Participants stated that the development of roadmap was one of the major accomplishments in recognition of TM. It was also clearly stated in the "The roadmap for research and development and improving the system of TM in Ethiopia" that the manual was developed to promote the public health by ensuring safety, efficacy and quality of locally produced traditional medicines as well as to standardize and regulate traditional healers practices. This roadmap envisioned to set strategies and directions to strengthen the research and development efforts through building institutional capacities, coordination of interdisciplinary and multi-sectoral partnerships, policy and legal framework harmonization to address the challenges and bottlenecks. It is mainly focused on six strategic objectives, 20 strategic initiatives and 40 milestone activities to be implemented in integrated manner through collaborative partnerships. The roadmap also includes the SWOT analysis of TM

pertaining to research governance, human resources, infrastructure and technology which shows that there are many strong points and opportunities to make the Ethiopian TM more productive in improving the livelihood of the people, contribute to the healthcare as well as national economy development. The SWOT analysis in the roadmap also shows that there are weaknesses and threats in the promotion of TM that need to be given due consideration to make the necessary corrective measures (EMOH, 2019). This study can be used as a highlight for the practical initiatives that were seen in different sectors of the primary healthcare system after the development of the roadmap. Findings of this study show that the roadmap is recognized as a guide for improving TM by personnel working in the area.

Findings of this study also show that other procedures and guidelines are also being followed for regulation of TM products and services including Category I-IV TM and low risk vs evidence based TM were also discussed. These regulatory procedures are taken from the Guidelines for Registration of Traditional Medicines in the WHO African Region which was developed to facilitate the registration, marketing and distribution of traditional medicines of consistent quality in the WHO African Region. In the guideline, traditional medicines are categorized into four based on their mode of preparation, the indication, and extent of the development of the traditional medicine relative to the traditional remedy used. Category 1 traditional medicines are medicines that have been prepared by traditional health practitioners for treatment of individual patients; they have the following characteristics: Prepared in an extemporaneous manner and according to traditional methods; Safety and efficacy are justified by a long period of use; Category 1 medicines are not directly controlled by national drug regulatory agencies but traditional health practitioners who supply them should be certified by the registration of their practice; If, however, a category 1 medicine is introduced into the market, it must meet the minimum regulatory requirements for the registration of traditional medicines. A category 2 traditional medicine is one that is widely used in the community but has a commercial possibility. It is characterized as follows: Traditionally used in a given locality and very well known by the local population, both in terms of composition and treatment; The formulation is well known and its preparation is according to traditional methods; Safety and efficacy are justified by a long period of use; It is available to local people free of charge; However, if a

category 2 medicine were to go on the market, it would have to meet the general minimum requirements for the registration of traditional medicines. A category 3 traditional medicine is one that has been developed through scientific research. It has the following characteristics: It has been developed by research based on ethno-medical use; The formulation, dosage, dosage form and therapeutic use are based on research data; It is produced on a semi-industrial or industrial scale; Safety and efficacy are based on research data derived from standard scientific and clinical investigations; Category 3 traditional medicines may be used within a research establishment; If, however, a category 3 medicine goes on to the market, it must meet the general minimum requirements for the registration of traditional medicines. Category 4 traditional medicines are imported traditional medicines, and as such are distinguished by the following: It originates from a foreign country, either within or outside the WHO African Region; It should meet the definition of traditional medicines; It should be registered in the originating country; It should meet the requirements for the regulation of traditional medicines of the country into which it is being imported(WHO, 2010). Findings from this study indicate that TM practice in Ethiopia is generally considered as part of category I or II TM or low risk TM and so deemed harmless.

10.2. Collaboration, Stakeholder Roles, Strategies to Collaborate

Inclusion of TM into education curriculum along with having enough scientific evidence and standardization of the practice is deemed necessary to form a valid system of integration. Findings of this study on the formation of a system to integrate TM into PHCS indicate that there are trends that are being followed for their translation into action. These trends include initiatives of collaboration among stakeholders coordinated by the Ministry of Health. According to what was found on this study, the collaboration involves a series of individual and collaborative efforts from regulatory bodies, healers, research institutions, higher educational institutions and some inclined sectors under concerned ministries. The study findings also suggest that some of the steps to be followed to integrate TM into MM include the following: Policy and law enforcement; creating platform and system of collaboration; conservation,

standardization and evidence formation for TM knowledge and practice through research and development; as well as capacity building of healers through training and education.

Degu, (2024)similarly lists a number of specific strategies to integrate TM into MM, including establishing research institutes, undertaking clinical trials, arrange training and capacity building programs for traditional healers, healthcare professionals and researchers, facilitating knowledge sharing and collaboration among traditional healers, researchers and healthcare professionals(Degu, 2024).

A recurring theme in this study is the fragmentation among stakeholders: traditional healers, academic institutions, regulatory authorities, and biomedical professionals often operate in parallel rather than collaboratively. The hesitance, lack of mutual understanding, and perceived professional superiority of biomedical practitioners reinforce barriers to integration.

Mokgobi (2012, 2013) and Omoregie et al. (2015) offer important comparative insights. In both South Africa and Nigeria, similar attitudes of mistrust and professional hierarchy have hindered collaboration between TM and MM practitioners. Ethiopian participants' concerns about biomedical professionals' disinterest or resistance mirror this broader trend, reinforcing that professional training and mutual respect are critical elements for functional integration(Mokgobi, 2012, Mokgobi, 2013, Omoregie et al., 2015).

10.3. Collaboration in Service Delivery

Most participants stated that integration in service delivery is not available. However, there are attempts towards collaboration of TM and MM through working with healers to create a bridge. These attempts include:

- The registration of traditional healing practitioners by food, medicine and healthcare offices of woredas under the authority of AAFMHACA, and continuous supervision of these registered healers

- Conducting scientific researches including ethnomedicinal, preclinical and clinical studies on TM products and practices with a goal of approving them into the health care services and
- Capacity building initiatives for healers through providing trainings for them mainly by MOH, AAU, and TM and MM Research Directorate of EPHI.

The above initiatives can be considered as possible ways to go towards integrated TM and MM service delivery. But when it comes to actual collaboration in service delivery, this study found only few structured collaborative practices. Some traditional healers claimed to refer patients to biomedical facilities when needed, but this was not institutionalized or reciprocal. The majority of modern practitioners showed limited openness to collaboration.

This fragmented referral system is consistent with findings from South Africa and Addis Ababa (Birhan et al., 2011, Mokgobi, 2013), where informal networks exist but lack institutional support. The Ethiopian context, however, reflects a particularly low level of systemic coordination in clinical practice—a gap that widens the mistrust between practitioners of the two systems.

10.4. Conservation and Documentation of Traditional Medicine Knowledge and Natural Resources

Findings also indicate initiatives of documentation and conservation of TM knowledge and natural resources including the manual being developed on indigenous knowledge documentation by the Ministry of Culture and Sports (TM being one of these indigenous knowledge sections), development of TM database, monograph and the possibility of writing-up of an Ethiopian TM pharmacopeia as well as the development of botanical gardens and herbaria.

Participants in this study emphasized the critical role of conserving traditional medical knowledge and the natural resources upon which such knowledge depends. The concern that TM knowledge is being lost due to aging healers, lack of documentation, and disinterest from the younger generation was strongly voiced. Similarly, unsustainable harvesting practices,

environmental degradation, and absence of coordinated biodiversity protection efforts were viewed as major threats to the future of Ethiopian Traditional Medicine (ETM).

This aligns with findings from Payyappallimana (2009) and Sen & Chakraborty (2017), who stress that the foundation of traditional medicine systems rests not only on human knowledge but on access to and stewardship of biological diversity. The authors highlight that conservation efforts must go hand-in-hand with integration strategies especially in countries where plant-based treatments dominate TM practice (Payyappallimana, 2009, Sen and Chakraborty, 2017).

This study also found that institutions like the Ethiopian Biodiversity Institute (EBI) and Ethiopian Agricultural Research Institute (EARI) are involved in documentation and conservation, but their activities remain fragmented and insufficiently aligned with the health sector. This fragmentation resonates with challenges identified by Omoregie et al. (2015) in Nigeria, where poor coordination between environmental and health authorities limits the sustainable use of medicinal resources (Omoregie et al., 2015).

Notably, Ethiopia's situation also reflects the observations of Innocent (2016), who noted a lack of formal apprenticeships and structured transmission of traditional medical knowledge across Sub-Saharan Africa. This study confirms this pattern, especially through concerns about the lack of interest among youth to inherit or preserve this knowledge. This generational discontinuity threatens the sustainability of TM practices, even more than external policy or scientific validation barriers (Innocent, 2016).

Participants in this study also pointed to the loss of medicinal plant habitats in both urban and rural areas, highlighting the urgent need for environmental conservation linked with health system planning. This was also observed in Fokunang et al. (2011), who reported that despite Cameroon's rich TM traditions, deforestation and lack of legal protection for medicinal plants were undermining long-term prospects for TM (Fokunang et al., 2011).

In summary, the findings of this study reinforce a growing consensus: without targeted efforts to preserve both the ecological and cultural capital on which TM is based, integration efforts will remain short-lived. Conservation must be seen not only as an environmental issue but also

as a public health investment, ensuring the longevity, accessibility, and relevance of traditional medicine in Ethiopia and beyond.

10.5. Research Process and Outputs

The findings from this study indicate that there are initiatives to facilitate research endeavors on TM including ethnobotanical or ethnomedical studies conducted at TM and modern medicine research directorate in EPHI (currently a part of AHRI) and ALIPB, validation studies or preclinical studies on natural products conducted at ALIPB, CDT-Africa, AAU and SPHMMC and clinical trials conducted at AHRI through the supervision of EFDA. However, these research initiatives lack final goal and practical implication especially in previous times.

The "disconnection between research and application" resembles patterns reported in India, where reverse pharmacology has been proposed as a means to bridge the lab-to-clinic divide using traditional knowledge as a starting point (Sen and Chakraborty, 2017). Similarly, Payyappallimana (2009) emphasized the need for adaptive research methodologies that respect TM's cultural logic while meeting modern scientific rigor (Payyappallimana, 2009).

What differentiates Ethiopia, however, is the lack of a research-to-service translation mechanism—even in institutions with a mandate to innovate. This suggests that while research activity exists, it is not yet meaningfully embedded in the country’s broader healthcare development strategy. But after the initiative from MOH to improve TM and the development of roadmap, there has been an improvement on the output based research and development from TM and natural products.

10.6. Training and Education

The findings of this study suggest that there are trainings being provided to healers based on available scientific advancements to improve the practice of healers. Participants pointed out that while some traditional healers had received biomedical training (e.g., on hygiene or dosage), there was no reciprocal formal exposure of biomedical professionals to TM theories or

practices. This one-directional exchange was viewed as inequitable and symbolic, rather than transformative.

This concern is echoed by Ragunathan et al. (2010), who stressed the need for dual-exposure educational programs to enhance mutual understanding(Ragunathan et al., 2010). Comparative experiences in Ghana and Zimbabwe (Krah et al., 2018, Mafuva and Marima-Matarira, 2014) further affirm that sustainable integration requires not only joint workshops but systematic cross-training incorporated into formal curricula.

The limited involvement of youth in TM, as noted by participants, also aligns with global trends of generational detachment from traditional practices which is partly driven by lack of formal recognition and societal prestige (Mokgobi, 2012, Krah et al., 2018).

Findings of this study also suggest that the necessity to include TM in Ethiopian education curriculum has been recognized and that there are efforts by MOH in collaboration with Ministry of Education to include TM, as part of the indigenous knowledge of the country, in the education curriculum.

10.7. Regulation and Registration

Despite the widespread use of TM, the lack of scientific evidence, standard operating guidelines and formal education premise makes it almost impossible to regulate TM in Ethiopia on the level that is recommended in the WHO guideline for regulation of TM. The findings of this study indicate that there are initiatives to register and license traditional healing practitioners based on general hygiene and premise requirements. This is done with the consideration of the products as category I or II or low risk TM products. And according to the WHO guideline, these categories don't need to be directly controlled by regulatory authority as their safety is justified over prolonged use (WHO, 2010). However, there is no detailed proof that this is always the case. Furthermore, it was suggested that there is no established or facilitated way was to report harm from TM use. Findings of this study also suggested that there are no approved TM products that made it to the essential medicines list of the country. There are also no restrictions for selling medicinal herbs and products being sold in traditional markets as well

shops. Usure et al. (2024) also reported the absence of a regulatory system that was enforced based on the claims of TMs products in Ethiopia (Usure et al., 2024).

One of the most consistent themes across the key informant interviews of our study was the gap between regulatory recognition and functional implementation. While Ethiopia has made some progress such as establishing the TM-Desk at the Ministry of Health and issuing guidelines for TM trials during the COVID-19 period, participants widely expressed frustration at the weakness, passivity, and inconsistency of regulatory enforcement. Many noted that regulatory bodies like EFDA and regional health offices remain under-resourced, reactive rather than proactive, and unclear in their jurisdiction over TM products and practitioners.

This perception aligns with similar challenges reported in Ghana, where the lack of operational policies, weak enforcement, and minimal integration of TM into the formal regulatory system were cited as persistent barriers. Although Ghana has legally recognized TM since the early 2000s, Asante and Avornyo emphasize that legal acknowledgment alone does not ensure safety, standardization, or effective integration (Asante and Avornyo, 2013).

The findings of this study also mirror the situation in Nigeria, as reported by Omoregie et al. (2015). That study identified a range of regulatory concerns, including unlicensed TM practitioners, substandard product quality, lack of clinical documentation, and widespread absence of training in Good Manufacturing Practices (GMP), hygiene, and quality control. Similarly, in our study, participants raised concern over non-standardized preparation and the informal nature of TM service delivery, reflecting the Ethiopian system's vulnerability to the same quality and safety risks (Omoregie et al., 2015).

A notable point from our participants is that regulatory attention often spikes temporarily, especially during health emergencies (e.g., COVID-19), and fades soon after. This reactive regulatory rhythm suggests a lack of strategic continuity, also noted by Payyappallimana (2009) in his cross-regional analysis, where he argues that effective TM regulation requires long-term vision, consistent stakeholder engagement, and infrastructure for monitoring and evaluation all of which are currently limited in Ethiopia (Payyappallimana, 2009).

The issue of licensing and practitioner recognition also surfaced as a regulatory gray area. While thousands of traditional healers are said to be "registered," there is no consistent verification system, nor are there formal competency assessments or licensing renewals. This echoes concerns raised by Fokunang et al. (2011)in Cameroon and Mutola et al. (2021) in South Africa , who observed that traditional healers are often tolerated rather than institutionally integrated, leading to ambiguous legal standing and minimal oversight (Fokunang et al., 2011, Mutola et al., 2021).

Moreover, our study highlighted that TM regulation is not well communicated to practitioners or the public, resulting in widespread confusion about what is permitted, supported, or forbidden. This lack of transparency contributes to mistrust and limits the willingness of traditional healers to engage with regulatory bodies. Comparable findings from Mokgobi (2013) point to a similar disconnect in South Africa, where traditional healers view regulatory processes as alien, punitive, or irrelevant to their cultural logic of healing (Mokgobi, 2013).

In summary, our findings reinforce the broader pattern that regulation without enforcement and cultural sensitivity equates to symbolic recognition. For regulation to become a meaningful tool for integration, it must be inclusive, informed by both systems' knowledge, and consistently applied. Ethiopia’s current regulatory status reflects important foundational steps but remains far from achieving the systemic clarity, legitimacy, and trust required for full integration of TM into its healthcare system.

10.8. Challenges

This study also attempted to address through discussion many potential challenges on integration, and the challenges that were considered major by the key informants were secrecy, lack of scientific evidence, lack of standardization, lack of funding and capacity building, loss of resources, lack of communication among THPs and MHPs, lack of interest of youth to become healers and lack of goal-oriented continuation of research activities. These challenges were interconnected in that secrecy can impede efforts to collect scientific evidence and that, in turn affects capacity to standardize products/services. Lack of funding and capacity building, loss of resources, lack of communication among THPs and MHPs, lack of interest of

youth to become healers and lack of goal-oriented conduct of research activities make it more difficult to address secrecy and move forward. These barriers were not only recurrent but also deeply interwoven.

Many of these findings are widely reported in literature across Africa and Asia. Secrecy, for example, is frequently cited (Omoregie et al., 2015, Mutola et al., 2021) as a defensive strategy by traditional healers to protect intellectual property, often exacerbated by fears of exploitation or loss of authority. Likewise, lack of standardization in dosage, preparation, and patient documentation is reported across contexts (Payyappallimana, 2009, Fakkham and Jarupoonpol, 2012).

Interestingly, our study's participants placed unique emphasis on the fragmentation of research initiatives and discontinuity across projects. This concern, less frequently mentioned in other studies, reflects a specifically Ethiopian problem where institutional memory and long-term program continuity are compromised by shifting leadership, lack of strategic planning, and underfunding.

CONCLUSION

The study aims to fill in the gap of absence of information regarding the status of integration of TM into PHCS and hopefully shades a positive light onto the current situation of status of the integration of TM into PHCS in Ethiopia. Findings from the study indicate that there are departments in big institutions and authorities of the Ethiopian PHCS that are actively working on improving TM in Ethiopia through evidence generation and research activities, promotion of regulation through registration of THPs and periodic supervision of their services, provision of trainings to THPs and inclusion of TM in education curriculum. Findings from this study indicate that, although not strong enough to enable integration of TM into the PHCS, there are initiatives here and there to incorporate TM into the PHCS in a way that enhances benefits and eliminates shortcomings. Drug development from TM is also a possibility through validation studies and clinical trials on TM. The way can be paved through intensive research activities.

Key informants responded that these initiatives are in the form of efforts in different areas including:

a) Preparation of policy drafts that aim to incorporate TM into the Health Sector Transformation Plan, and a more detailed separate policy draft aimed to include all the sectors with potential contribution to Ethiopian TMs as that serves as an expression of commitment of the government and a menu for all stakeholders to pick up their mandates, mission and vision on the set policy direction.
b) Formal documentation of TM knowledge including the preparation of indigenous knowledge manual by the Ministry of Culture and sports, TM database, monograph withits possible growth into Ethiopian pharmacopeia.
c) Preservation of natural resources used in TM as aromatic and medicinal plants by Ethiopian biodiversity Institute, Wondogenet Research Center and other institutions through the development of herbaria and botanical gardens
d) Generation of scientific evidence on valid TM products and practices through research endeavors ranging from ethnobotanical studies, validation studies, preclinical studies to drug development through clinical trials

e) Trainings prepared and provided to healers by MOH, AAU and EPHI on plant collection, processing, hygienic preparation, documentation of patient information and services provided, and drug interactions.
f) Registration of traditional healing practitioners and periodic supervision of their services by food, medicine and healthcare offices of woredas Health Bureaus under the authority of AAFMHACA
g) Initiatives to include TM in the educational curriculum of the country through collaboration among MOH, Ministry of Education and higher education institutions including AAU.

Thus, findings suggest that these initiatives are constantly impaired by challenges that hinder the process mainly including secrecy, lack of scientific evidence, lack of standardization, lack of funding and capacity building, loss of resources, lack of communication among THPs and MHPs, lack of interest of youth to become healers and lack of goal oriented research activities as voiced by most key informants. Participants of the study also suggested that integrating TM into MM in a way that enhances its benefits and eliminates its drawbacks can be achieved through governmental attention towards the issue, collaboration among all the stakeholders, awareness creation among practitioners and the general public and facilitating research and development regarding TM practices and products.

RECOMMENDATIONS

The findings from this study suggest that the following practical tasks can be undertaken to increase the possibility of integration of TM in Ethiopia:

1. Create a system to facilitate working on improving TM and incorporating it into mainstream health care system

2. Research should be continuous and output oriented in a way that yields improvement of TM products and / or practices

3. Conservation of knowledge through compilation of manuscripts, changing oral heritage into written documents

4. Conservation of natural resources through identifying, avoiding wastage and re-cultivating medicinal plants

5. Standardization of TM knowledge and practice by generating evidence through research and development, including TM as a field of study in education curriculum, and preparing trainings to improve and advance TM practices

Further research is needed on creating a system to integrate TM and standardize the practice and generate evidence for the validity of TM products and practices as well as find ways to tackle the challenges and obstacles that hinder the process of integration. Recommendations for research areas that can help facilitate integration include

1. Undertake document review for policy, proclamations and regulatory guidelines and assess the gap between guideline and practice
2. Investigate how traditional medical knowledge is passed down between generations, why youth participation is declining, and what cultural, economic, or educational interventions could help preserve this knowledge.
3. Conduct regional biodiversity assessments and mapping of endangered medicinal plant species to inform sustainable harvesting, cultivation efforts, and conservation strategies

4. Examine overlaps and divergences in disease conceptualization and treatment approaches between TM and MM practitioners to build mutual understanding and inform cross-training curricula.
5. Design and evaluate integrated clinics or referral networks in selected regions to explore how TM and MM can work side-by-side in practice, including patient outcomes and provider perspectives.
6. Explore how patients experience and navigate between TM and MM, what influences their choices, and how integration could better reflect community preferences and trust.
7. Assess the feasibility and impact of standardizing TM practice through formal licensing, documentation protocols, and quality control—especially in collaboration with traditional healers' associations.
8. Develop and test TM content for medical, pharmacy, and public health programs to evaluate its impact on students’ attitudes, knowledge, and openness to collaboration.

APPENDICES

Appendix I: Information Sheet

Study Title: Assessment of Integration of Traditional Medicine and Modern Medicine in Service Delivery, Training and Research and Its Determinants in Government Hospitals and Traditional Healing Institutions in Addis Ababa.

I would like to invite you to take part in a research study. Before you decide you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully. Ask questions if anything you read is not clear or if you would like more information. Take time to decide whether or not to take part.My name is Mediha Ahmedin. I am working with a research team from Addis Ababa Universityin partial fulfillment for the requirement of Master of Science degree in clinical trial on a study on integration of traditional medicine into the primary health care system of Ethiopia and I would like to ask you some questions related to the topic. You have been selected as a representative of your office. Your participation will not harm or benefit you in any particular way, but will serve to help us assess the status of the integration of traditional medicine and modern medicine and challenges and opportunities. We will be discussing on the current status of the integration of traditional medicine with modern medicine as part of the primary health care system of the country and the possible challenges and opportunities thereof. We would like to record the discussion to help us retain every information we gain from it.

Your participation in this study is completely voluntary and you have the right to refuse answering any of the questions that we will ask you as well as to refuse participating in the study altogether.

All the information that we collect will be treated with the highest confidentiality and no identifiable information will be shared with anybody outside the project. In case you have any questions or concerns about this study or your rights as a study participant, you may contact Prof Mirutse Giday, advisor (+251911171321), Dr. Solomon M. Abay, Co- advisor(+251 941 22 2169), Mediha Ahmedin(+251994616651).

Thank you for your time and effort to participate in this study.

Appendix II: Consent Form

Dear Sir/ Madam

My name is Mediha Ahmedin. I am working with a research team from Addis Ababa University on a study on integration of traditional medicine into the primary health care system of Ethiopia and I would like to ask you some questions related to the topic. You have been selected by chance from your institution. Your participation will not harm or benefit you in any particular way, but will serve to help us assess the status of the integration of traditional medicine and modern medicine and challenges and opportunities.

Your participation in this study is completely voluntary and you have the right to refuse answering any of the questions as well as to refuse participating in the study altogether. All the information that we collect will be treated with the highest confidentiality and no identifiable information will be shared with anybody outside the project.

Are you willing to participate in this study?"

Yes ☐ No ☐

Appendix III: Interview Format

I. What are the current policy details related to Integrating TM service, training and research in Ethiopia
II. What initiatives are being enforced to integrate TM service, training and research into the Ethiopian Primary Health Care System (PHCS) i.e. policy implementation plan
III. Does Ethiopia regulate Traditional medicine?
IV. What are the regulatory requirements for manufacturing or for safety assessment of traditional remedies?
V. How does the registration system work? Are any traditional remedies included on an essential medicines list? Is there a post marketing surveillance system. Are there restrictions on the sale of herbal medicines in Ethiopia?
VI. Registries of Traditional Medicine Practitioners of Ethiopia?
VII. Who practices TM in Ethiopia? Who is an Ethiopian TM Practitioner?

VIII. How to learn Ethiopian TM? How long is this training or learning process?

IX. What is your opinion about THPS working in Addis Ababa?

X. Is TM somehow linked to Healthcare System? Are there specific policies about?

XI. Have the international agreements on TM already been incorporated into the national legislation? How has Ethiopia been responding to this?

XII. Are there specific norms or proposals for regulating the practice of TM? (e.g. training and formation, accreditation, quality control of products & services, etc.)

XIII. Are there in Ethiopia any successful and/or sustained experiences regarding the incorporation of THPS into healthcare system? Which ones?

XIV. What are the difficulties encountered towards the recognition of TM?

XV. Which would be the impact or benefit of this incorporation?

XVI. Strategies proposed by you for linking these medical systems

XVII. What are the main activities in the area with regards to traditional medicine service delivery?

XVIII. What are the main research and development activities with regards to traditional medicine?

XIX. What are the main training and educational activities with regards to traditional medicine?

XX. How is the Ethiopian TM system institutionally organized

XXI. What are the types and forms of TM in Ethiopia?

XXII. Available documents, (textbooks, guidelines, registries, national pharmacopoeia or national monographs?

XXIII. How is the current situation of research on TM? Which institutions perform them?

XXIV. Are there surveys on population's use of TM and other TCAM systems?

XXV. Are there studies addressing the inclusion of TM in health system?

XXVI. Do educational and research institutions offer courses, workshops or training programs on TM for health professionals?

XXVII. Do you think there should be included at the universities topics related to TM in the curricula?

XXVIII. What areas of training traditional health practitioners do you suggest?

Dose management ☐ Sterilization of equipment ☐

Side effects of herbal medicine ☐ Proper hygienic preparation ☐

Correct and safe route administration ☐ Clean and proper wound care ☐

Fracture healing ☐ Careful follow-up and care ☐

Area of specialization in particular practice ☐ Proper male circumcision ☐

Means of referring to MM for extreme cases ☐

XXIX. How does the association (responsible body) work to enforce Integration among healers?

XXX. Which challenge(s) do you think hinder the process of integrating ETM into the PHCS

- Issues with legal regulation of TM and policy that support integration ☐
- Conflicts between principles, theories and philosophies ☐
- Lack of sound scientific evidence on safety and efficacy and related ethical Issues ☐
- Lack of capacity building of TMPs ☐
- Lack of adequate research on TM and publishing opportunities ☐
- Lack of adequate funding, financial support and insurance systems ☐
- Language barriers to understand TM concepts ☐
- High Turnover of Biomedical Health Staff ☐
- Declining Interest of Young People to become Healers ☐
- Lack of Herbs and Equipment ☐
- Sustainability of TM in terms of access to natural resources, ☐
- Tribalism and religion: patronizing the traditional healer only from one's own ethnicity and religion ☐
- Attitude of Modern Practitioners and curriculum setup ☐
- Lack of training in GMP, GCP, Record keeping, sanitation and hygiene, quality control, Good collection practice and sustainable harvesting ☐

- Economic and prestige competition between the two health care systems; ☐
- Registration and Documentation issues ☐
- Resistance and secrecy by traditional healers about the sources of their knowledge and their prescriptions to protect intellectual property and to prevent inspection about substandard practices ☐
- Lack of transparent standard operating procedures ☐
- Lack of motivation to collaborate and communicate with modern health service workers and vice versa ☐
- Research gaps including
    - non-representative sampling ☐
    - small sample size ☐
    - risk of recall bias ☐
    - failing to provide a definition of TCAM ☐
    - need for more qualitative studies that gives a deep insight ☐
    - only studies published in English being included in research ☐

If there are others, please mention

REFERENCES

ABDULLAHI, A. A. 2011. Trends and challenges of Traditional Medicine in Africa. *African Journal of Traditional, Complementary and Alternative Medicine,* 8**,** 115-123.

ABYOT, E., ZEWDU, B., TEFERA, A., MOHAMMEDBERHAN, A., W.; & MULUGETA, F. 2014. Capacity Building of Traditional Medicine Practiotioners' as a Primary Health Care Workers in Gondar Town, Northwest Ethiopia. *Journal of Homeopathy and Ayurvedic Medicine,* 3**,** 1000151.

ADDIS, G. A., DEREJE; GENEBO, T 2002. Perceptions and practices of modern and traditional health practitioners about TM in Shirka District, Arsi Zone, Ethiopia. *Ethiopian Journal of Health Development,* 16**,** 19-29.

ASANTE, E. & AVORNYO, R. 2013. Enhancing healthcare system in Ghana through integration of traditional medicine. *Journal of Science and Research,* 4**,** 256.

ASRAT, D., ALLE, A., KASSAYA, B. & DESSIE, B. 2020. Factors associated with parental traditional medicine use for children in FagitaLekoma, Northwest Ethiopia: A cross-sectional study. *SAGE Open Medicine,* 8**,** 205031212097800.

BIRHAN, W., GIDAY, M. & TEKLEHAYMANOT, T. 2011. The contribution of traditional healers' clinics to the public healthcare system in Addis Ababa, Ethiopia: A cross-sectional study. *Journal of Ethnobiology and Ethnomedicine,* 7.

BULTUM, L. E., WOYESSA, A. M. & LEE, D. 2019. ETM-DB: Integrated Ethiopian traditional herbal medicine and phytochemicals database. *BMC Complementary and Alternative Medicine,* 19.

CHAUDHURY, R. & RAFEI, U. 2001. Traditional medicine in Asia.

DAMEN, H. M. 2013. Traditional medicine: Reawakening a “pending agendum”. *Ethiopian Journal of Health Development,* 27.

DEGU, T. A. 2024. Integrating traditional medicine into the healthcare system in Ethiopia: Promoting research and avoiding misappropriation. *Indonesian Comparative Law Review,* 6**,** 109–127.

DEMEKE, H., HASEN, G., SOSENGO, T., SIRAJ, J., TATIPARTHI, R. & SULEMAN, S. 2002. Evaluation of policy governing herbal medicines regulation and its implementation in Ethiopia. *Journal of Multidisciplinary Healthcare,* 15**,** 1383–1394.

EFDA 2019a. Food and drug administration proclamation (No. 1112/2019).

EFDA 2019b. የኮሮናቫይረስንለመከላከልእናለማከምየሚረዱየባህላዊመድኃኒቶችየህክምናሙከራጊዜያዊፓይዳንስሰነድ.

EFDA 2020. Guideline for registration of low-risk medicines.

EMOH 2019. Road map for research and development and improving the health system of traditional medicine in Ethiopia.

FAKKHAM, S. & JARUPOONPOL, S. E. A. 2012. The integration of the applied Thai traditional medicine into hospitals of the current health delivery system: The development of an administrative/management model. *Journal of the Medical Association of Thailand,* 95.

FDRE 2021. Health policy draft document.

FMHACA 2018. Traditional medicines policy for Ethiopia.

FOKUNANG, C. N., NDIKUM, V. & TABI, O. Y. E. A. 2011. Traditional medicine: Past, present, and future research and development prospects and integration in the national health system of Cameroon. *African Journal of Traditional, Complementary and Alternative Medicine,* 8**,** 284–295.

INNOCENT, E. 2016. Trends and challenges towards integration of traditional medicine into formal healthcare system: Historical perspectives and an appraisal of education curricula in Sub-Sahara Africa. *Journal of Intercultural Ethnopharmacology,* 5**,** 312.

JAMES, P. B., WARDLE, J., STEEL, A. & ADAMS, J. 2018. Traditional, complementary, and alternative medicine use in Sub-Saharan Africa: A systematic review. *BMJ Global Health,* 3.

JANSEN, C., BAKER, J., KODAIRA, E., ANG, L., BACANI, A. & ALDAN, J. E. A. 2021. Medicine in motion: Opportunities, challenges, and data analytics-based solutions for traditional medicine integration into western medical practice. *Journal of Ethnopharmacology,* 267**,** 113477.

KASSAYE, K. D., AMBERBIR, A., ADDIS, B. & MUSSEMA, Y. 2006. A historical overview of traditional medicine practices and policy in Ethiopia. *Ethiopian Journal of Health Development,* 20**,** 127–134.

KLOOS, H., TEKLE, A., YOHANNES, L., YOSEF, A. & LEMMA, A. 2014. Preliminary study on traditional medicine in Ethiopia. *Ethiopian Journal of Health Development,* 28**,** 136-152.

KRAH, E., DE KRUIJF, J. & RAGNO, L. 2018. Integrating traditional healers into the health care system: Challenges and opportunities in rural northern Ghana. *Journal of Community Health,* 43**,** 157–163.

LANTUM, N. 2007. The place of policy in applied healthcare and technology with special reference to African traditional medicine. *African Technology Policy Studies Network.*

MACROTRENDS. 2022. *Metro area population: Addis Ababa, Ethiopia* [Online]. Available: https://www.macrotrends.net/cities/20921/addis-ababa/population.

MAFUVA, C. & MARIMA-MATARIRA, H. 2014. Towards professionalization of traditional medicine in Zimbabwe: A comparative analysis to the South African policy on traditional medicine and the Indian Ayurvedic system. *International Journal of Herbal Medicine,* 2**,** 154-161.

MEHARI, E., GEBEYEHU, K. & ASFAW, Z. 2013. *The manual of Ethiopian medical history*.

MEQUANENTE, A. S. 2009. Ethiopian herbal medicine practice and the recognition with modern medicine. *Pharmcognosy Reviews,* 3**,** 44-47.

MOKGOBI, M. G. 2012. *Views on traditional healing: Implications for integration of traditional healing and western medicine in South Africa.* University of South Africa.

MOKGOBI, M. G. 2013. Towards integration of traditional healing and western healing: Is this a remote possibility? *African Journal for Physical, Health Education, Recreation and Dance***,** 47-57.

MUTOLA, S., PEMUNTA, N. V. & NGO, N. V. 2021. Utilization of traditional medicine and its integration into the healthcare system in Qokolweni, South Africa: Prospects for enhanced universal health coverage. 43**,** 101386.

NGO, J. 2021. Determinants of use for traditional medicinal practices within the Vietnamese American community. *Asian American Research Journal,* 11.

OMOREGIE, E., ALIYU, I. & DANJUMA, K. 2015. Integrating traditional medicine practice into the formal health care delivery system in the new millennium—The Nigerian approach: A review. *International Journal of Life Sciences,* 4**,** 120–128.

PAYYAPPALLIMANA, U. 2009. The role of traditional medicine in primary health care: An overview of perspectives and challenges. *Yokohama Journal of Social Sciences,* 14.

PEREYRA, R. 2013. The long way home: The integration of traditional medicine into the Peruvian healthcare system.

PRITZKER, D. & HUI, K. 2011. Building an evidence-base for TCM and integrative East-West medicine: A review of recent developments in innovative research. *Journal of Traditional and Complementary Medicine,* 2**,** 158–163.

QUINTERO, G. A., VERGE;, J., AMEDONADA;, M. & ARIZA, M. C. 2016. Integrated medical curriculum: Advantages and disadvantages. *Journal of Medical Education and Curricular Development*.

RAGUNATHAN, M., TADESSE, H. & TUJUBA, R. 2010. A cross-sectional study on the perceptions and practices of modern and traditional health practitioners about traditional medicine in Dembia district, northwestern Ethiopia. *Pharmacognosy Magazine,* 6**,** 19.

SEN, S. & CHAKRABORTY, R. 2017. Revival, modernization, and integration of Indian traditional herbal medicine in clinical practice: Importance, challenges, and future. *Journal of Traditional and Complementary Medicine,* 7**,** 234–244.

SEN, S. C., RAJ 2017. Revival, modernization, and integration of Indian traditional herbal medicine in clinical practice: Importance, challenges, and future. *Journal of Traditional and Complementary Medicine,* 7**,** 234–244.

SINGH, S. & J.BOAZ, R. 2015. Phytomedicine and the Nobel Prize: Benefits of integrating traditional remedies into modern medicine. *Indian Journal of Pharmacology,* 47**,** 698–699.

SISAY, M., BUSSA, N., GASHAW, T. & MENGISTU, G. 2019. Investigating in vitro antibacterial activities of medicinal plants having folkloric repute in Ethiopian traditional medicine. *Journal of Evidence-Based Complementary & Alternative Medicine,* 24.

SUN, D. Z., LI, S. D., LIU, Y., ZHANG, Y., MEI, R. & YANG, M. H. 2013. Differences in the origin of philosophy between Chinese medicine and Western medicine: Exploration of the holistic advantages of Chinese medicine. *Chinese Journal of Integrative Medicine*.

TAYE, O. 2009. Yoruba traditional medicine and the challenge of integration. *The Journal of Pan African Studies,* 3.

TOLERA, G., WABE, N. & ANGAMO, M. E. A. 2011. Attitude of modern medical practitioners towards the integration of modern and traditional medical practices in Ethiopia. *Spatula DD,* 1**,** 199-205.

USURE, R. E., KEBEBE, D., MEKASHA, Y. T., HASEN, G., WARITU, N. C. & DUBALES; SULEMAN, S. 2024. Traditional herbal medicine regulatory implementation in Ethiopia: A qualitative study. *Frontiers in Pharmacology,* 15.

WASSIE, S. M., ARAGIE, L. L., TAYE, B. W. & MEKONNEN, L. B. 2015. Knowledge, attitude, and utilization of traditional medicine among the communities of Merawi Town, Northwest Ethiopia: A cross-sectional study. *Evidence-Based Complementary and Alternative Medicine***,** 1-7.

WHO 2001. Legal status of traditional medicine and complementary/alternative medicine: A worldwide review.

WHO 2005. National policy on traditional medicine and regulation of herbal medicines: Report of a WHO global survey.

WHO 2010. Guidelines for registration of traditional medicines in the WHO African region.

XU, H. & CHEN, K. J. 2011. Integrating traditional medicine with biomedicine towards a patient-centered healthcare system. *Chinese Journal of Integrative Medicine,* 17**,** 83–84.

YUAN, H., MA, Q., YE, L. & PIAO, G. 2016. The traditional medicine and modern medicine from natural products. *Molecules,* 21.