

Traditional medicine and HIV/AIDS in Ethiopia: Herbal medicine and faith healing: A review

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Abstract

Background: Traditional, complimentary and alternative medicines (TCAMS) are increasingly being promoted by various Sub-Saharan African governments as a promising health resource in the control and amelioration of HIV/AIDS. The accessibility and cultural acceptability of both herbal medicines and faith healing and the scarcity of antiretroviral treatment (ART) in many communities have made them a favorite treatment option for people living with HIV (PLHIV).

Objectives: This paper reviews the literature on the utilization and potential contribution of plant medicines and faith healing for treatment of HIV and opportunistic infections in Ethiopia.

Methods: The published and unpublished literature on TCAM, faith healing and HIV/AIDS was reviewed from online sources and several bibliographies.

Results and Discussion: Several studies indicate that both plant medicines and faith healing are widely used in Ethiopia for the treatment of HIV-related illness due to the long history, prevailing illness perceptions and religious beliefs. Primary phytochemical tests have identified several plant species with anti-HIV, anti-mycobacterial and anti-protozoal properties but their development as safe and effective medicines will require extensive toxicological and pharmacological drug interaction studies. Increasing evidence of positive outcomes of faith healing involving holy water and prayer reported by PLHIV, particularly spiritual and mental benefits, has potential application for chronic patient care but needs further study.

Conclusion and Recommendations: Prevailing and evolving indigenous practices indicate the need for the implementation of appropriate policies and guidelines for the development of safe and effective herbal medicines and the integration of traditional medicine into the health services. Several areas requiring further study are identified. [*Ethiop. J. Health Dev.* 2013;27(2):141-155]

Introduction

Traditional medicine is increasingly considered as a promising health care resource although it has not been adequately promoted in many countries. The implementation and outcome of HIV/AIDS prevention and control programs in countries with strong traditions of indigenous healing have been affected by the persistent use of traditional medicines that largely remain outside the sphere of national health services. The urgency to examine potentials and challenges of traditional medicine further is also indicated by the fact that around 80% of all HIV-infected persons worldwide in 2011 were in Sub-Saharan Africa (1), where up to 80% of the population in some countries depend to various degrees on traditional medicine (2). According to WHO (3), most people living with HIV/AIDS in Africa use plant medicines to treat opportunistic infections and obtain symptomatic relief. Since the early 1990s, WHO (2, 3) recommended that Sub-Saharan countries include traditional medicine, particularly herbal medicines and faith healing, in their national responses to HIV/AIDS and facilitate its development within legal and safety frameworks and its use through advocacy and institutionalization of traditional medicine and partnerships. Although fewer than half of all African countries had finalized policies pertaining to indigenous healing systems and lacked viable organizations

representing professional traditional healers by 2006, most of them were in the process of formulating policies addressing their development and utilization. Regulation of traditional medicines is a prerequisite for the registration and training of traditional practitioners and to prevent unsubstantiated claims of traditional cures for AIDS, suspicion, distrust and concerns over the safety and compatibility of herbal medicines with ART (4-7). Increasing world-wide interest in traditional, complimentary and alternative medicine (TCAM) is reported not only from Sub-Saharan Africa but also from industrialized countries, including the USA, Japan, UK, Germany, France, Australia and China, where they are being used mostly to complement ART (3, 4, 8, 9). WHO (10) defined TCAM as “traditional medicine that has been adapted by other populations (outside its indigenous culture)”, a situation prevailing in industrial countries but the term has also been used widely in countries with strong traditions of traditional medicine (11). In recognition of the widespread use of many anti-AIDS self-treatments besides ART provided by the official health services, the terms traditional, alternative and complementary medicines (TCAM or TM/CAM) and alterative and complementary medicine (CAM) are increasingly used in the international literature to distinguish between different uses of non-conventional, unregulated medicines. Both terms are usually defined as

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any treatment used in conjunction with (complementary) or in place of (alternative) standard ART (11, 12). In this paper we use both terms traditional medicine and TCAM to denote herbal treatments and faith healing.

Progresses and Challenges in the Development and Use of Traditional, Complementary and Alternative Medicines (TCAM) in Sub-Saharan Africa

In Sub-Saharan Africa, the points of reference in the discussion of the role of traditional practitioners in HIV/AIDS programs changed in the 1980s from a focus on eliminating harmful indigenous practices and educating or retraining traditional healers (13) to seeking their participation in surveillance, treatment and care activities. This trend resulted in changes and the broadening of many of the traditional herbal and faith healing practices worldwide, starting prior to the commencement of antiretroviral mass treatment with the objective of providing comprehensive treatment, care and support for AIDS patients. This situation also encouraged the commercialization of many untested, ineffective and outright dangerous TCAMs in both industrialized and developing countries. They include a number of herbal treatments, toxic disinfectants and other chemicals, oxygen therapy, electric shock therapy and immune boosters (8, 14, 15). The procurement, marketing and use of plant medicines involving practitioners and entrepreneurs interested in immediate returns from plant medicine sales and corporations searching for promising chemicals compounds for pharmaceutical drug development have created a multibillion dollar market place in China, Western Europe and the Americas (10, 15).

The use of herbal medicine, certain foods, faith healing and other indigenous health resources for HIV/AIDS treatment is widespread in Sub-Saharan African countries (11, 16-22). Traditional healers, religious leaders, herbalists, households and some drug retailers are using a wide range of herbal treatments and supplementary and palliative measures, often in combination with faith healing, to meet the physical, mental and spiritual needs of AIDS patients (7, 23).

The scaling up of free and low-cost antiretroviral treatment (ART) in Sub-Saharan Africa and the increase in the use of traditional medicines and newly evolving TCAM in HIV/AIDS prevention, treatment and care provide many opportunities and challenges for people searching for effective, acceptable and comprehensive ant-HIV/AIDS options (11, 20). From the perspective of HIV-infected persons, traditional medicines are a familiar and readily available, trusted and culturally appropriate health resource in Sub-Saharan Africa. Numerous studies have attributed the common use of traditional medicine by PLHIV to a combination of traditional beliefs in supernatural causes of HIV infection and the perceived need to treat both physical and mental manifestations of HIV/AIDS to restore social and

spiritual health, scarcity and high cost of ART and health services and side effects of ART (20, 24).

A number of Sub-Saharan countries, particularly Tanzania, Uganda, Kenya and South Africa, all with a strong commitment to integrate traditional medicine into biomedicine, have developed collaborative projects involving traditional and biomedical practitioners with the objective of providing more comprehensive HIV/AIDS services (25). Differences in the approaches and methods used by physicians and traditional healers, which in the past represented an almost insurmountable barrier to collaboration in HIV prevention and AIDS control, are increasingly seen as an opportunity and even a prerequisite for treating the whole patient, particularly emotional and spiritual aspects that have largely eluded Western medicine and to enlist traditional healers in health promotion and patient referral (1, 26, 27). Different investigators report that traditional healers and physicians have been willing since the late 1980s to work together in HIV/AIDS prevention, treatment and patient care (28-30). Traditional healers were trained and are now actively involved in several countries in HIV/AIDS education, counseling and condom distribution, ART adherence, patient referral and scaling up of comprehensive care programs (26, 31-33).

A few medicinal plants have been screened in several Sub-Saharan countries for possible development as antiretroviral drugs and for the treatment of opportunistic infections. The review by Chinsebu and Hedimbi (34) identified 95 plant species and other natural products containing anti-HIV compounds, including diterpenes, triterpenes, biflavonoids, coumarins, hypericin, gallotannins, curcumins and limonoids. In South Africa, the plants *Sutherlandia frutescens* and *Hypoxis hemerocallidea*, widely used for the treatment of primary symptoms of AIDS patients, were recommended by the Ministry of Health, some member states of the South African Development Community (SADC) and groups of health professionals, scientists and traditional healers for improving appetite, weight gain and sleep, reducing anxiety and improving overall well being of AIDS patients. Nevertheless, the preliminary in vivo studies in vervet monkeys need to be supplemented with clinical trials in PLHIV to evaluate the pharmacokinetics, pharmacology and toxicity of these plants. This is necessary since in vitro studies of these two plant species indicate that human consumption could affect antiretroviral drug metabolism, resulting in drug interactions and loss of therapeutic efficacy (6, 35-39). Van den Bout-van den Beukel et al. (40). There is increasing evidence that religion and spiritual therapy may facilitate psychological coping and stress reduction for a wide range of diseases, including HIV/AIDS (16). Mental disorders among PLHIV are significantly higher than in the general population (41), with many of them feeling guilty and even contemplating suicide (42, 43). Mental, neurological and substance use disorders may even be more common than physical co-morbidities in

HIV infection in many communities (44) and depression has been reported to be twice as common in HIV-infected than uninfected persons, with similarly higher rates of alcohol use and dependence. Kaaya et al. (45) and Freeman et al. (40) recommended that community and home-based care and support services, including spiritual and traditional healing systems, be integrated into HIV programs and play a central role in comprehensive HIV/AIDS support, care and treatment programs.

Faith healing, defined as the treatment of illness through religious belief and prayer (46), is a well established global practice that has considerable potential as a care and support approach, even though its effect on HIV/AIDS interventions is underreported in the public health literature and remains inadequately understood (17, 47). Faith healing of AIDS through prayer and various other spiritual practices proliferated with the increase in morbidity and mortality from HIV/AIDS prior to the availability of free ART and has been associated with the widespread belief in both natural and supernatural causation of illness and the holistic approach used by healers in Sub-Saharan Africa to treating diseases. Burchardt et al. (17) associated the increasing interest in faith healing in Sub-Saharan African countries with the realization that AIDS is incurable with ART and the hope for treatment that ensures not only the physical wellbeing but also meets the spiritual and psychological needs of patients. Many claims have been made by church-based healers in Africa that they cured HIV/AIDS patients. Some faith healers in Malawi, Tanzania, Nigeria and Zambia, for example, claim to have cured patients through spiritual practices alone (16, 48); others used a combination of faith healing and herbal treatment (49). However, none of these claims have been clinically confirmed. Although several forms of faith healing have been considered by some investigators to be misleading and exploitive (13) research in both developing and industrial countries indicates that faith healing and spirituality can have positive effects on both HIV prevention and treatment outcome (17, 50-52). According to Olver (53), "prayer can promote health through psychological and physical mechanisms through relaxation or impact on the immune system, or through healthy life styles".

The Need for Research on TCAM

A WHO survey of 129 member countries world-wide found that nearly all (110) countries cited lack of research data as one of the main difficulties they faced in regulating herbal medicines and that only 18 countries in continental Sub-Saharan Africa had developed national programs (12). The challenges of regulating and issuing policies on TCAM and practitioners include different definitions and categorizations of therapies being used, lack of scientific information on their safety, effectiveness and quality and lack of standardization of source materials and production processes (12, 15). Ensuring the safe and effective use and the potential

development of new plant-based antiretrovirals has been difficult largely because of the lack of information on their effectiveness in treating HIV infection, potential toxicity and interactions with existing antiretroviral drugs (38, 54). Biochemical interactions caused by concurrent use of herbal medicines and manufactured antiretroviral drugs may either increase or decrease the effectiveness of ART (10, 38) or result in treatment failure and potential toxicity of untested medicinal plants (35, 38, 55). Both herbal treatment and faith healing can also interfere with both the initiation of antiretroviral treatment (ART), patient retention, treatment interruption or termination of treatment (19, 22, 32, 48, 49, 56, 57). Interestingly, the introduction of ARV mass treatment in Sub-Saharan Africa did not eliminate the use of traditional medicines and even contributed to what Andersson (58) described as an increase in 'neo-traditional' management of AIDS. It must also be noted that the use of alcohol and illegal substances such as marijuana, heroin and cocaine as well as chat (*Catha edulis*) have also been associated with defaulting from ART in some Sub-Saharan African countries (59-61). These various findings emphasize the need for further studies of the impact of multiple healthcare resources and treatments, as well as illicit drugs, on clinical outcome, chronic care and patient retention.

Objectives

This paper reviews the literature on the utilization and potential contribution of traditional medicine, particularly herbal medicines and faith healing, to HIV/AIDS treatment and patient care in Ethiopia and the potential for their integration as complementary medicine into the public healthcare system. After providing background information, we examine issues related to the use and challenges of these two traditional healing systems in Ethiopia with the goal of inviting discussion and research to promote an objective assessment of their contribution to HIV/AIDS prevention, control and mitigation.

Methods

We reviewed the published and unpublished literature on TCAMS, faith healing and HIV/AIDS on the Pubmed website using the search terms "Sub-Saharan Africa, HIV/AIDS and traditional medicine", "Sub-Saharan Africa, HIV/AIDS and faith healing", and "TCAMS and HIV/AIDS", the annual bibliographic Updates of HIV/AIDS in Ethiopia published in the Ethiopian Journal of Health Development, and the bibliography by Kloos and Zein (62).

Results and Discussion

In Ethiopia, a country with a long history of traditional medicine, relatively little is known about the role of TCAM in HIV/AIDS prevention, treatment and patient care. The Ethiopian healing traditions prevailing today, which encompass a wide range of both magical/religious and empirical practices, have been described in a considerable number of case studies and literature reviews (63-71). Strong adherence to traditional medicine

is also reported from Ethiopian immigrant populations in Europe, North America and other places in the Diaspora (72).

Traditional Medicine in Ethiopia: Persistence and Recent Changes

Any discussion of the health beliefs and practices pertaining to HIV/AIDS prevention and treatment among different ethnic groups must consider the Ethiopian cultural construction of health and illness. The concept of equilibrium among the social, spiritual, behavioral and physical forces surrounding man is basic to understanding Ethiopian traditional medicine. This requires, in brief, that humans must maintain peaceful relations with the supernatural world (spirits, magical agents, Sky God) for their wellbeing and perform appropriate rituals and prayers to ensure good health and prevent illness. Moreover, the empirical and magico-religious etiological and treatment categories of Ethiopian traditional medicine often overlap (64, 66, 69, 71, 73), requiring that researchers and health care professional understand and base their interventions on the perception, experiences and management of HIV by PLHIV in the religious, cultural and social context of individual communities (74).

Although the availability and use of the official health services increased sharply in the 1980s and 1990s, based on the national Rural Health Surveys of 1982/3 and 1998, most Ethiopians, especially lower socioeconomic groups and rural residents, adhered to traditional illness perceptions and continued to use traditional medicine (67). According to the national 1998 Welfare Monitoring Survey, 48.8% of persons with health problems two months prior to that survey had visited traditional healers because of their accessibility and another 24.4% because of the quality of their services (75), reflecting the well known acceptability of healers by the population. A recent survey of the utilization of traditional healers' clinics in Addis Ababa found that 52% of 306 attending patients were using these clinics first rather than modern health facilities, 34.6% had 12 or more years of education, 29.4% were government employees and 36.0% were dissatisfied with the modern health services. None of the patients were reported to be HIV-positive (76). The relatively large number of high school graduates and government employees in this study indicates that traditional healers are highly esteemed not only by poorly educated people but also by higher socioeconomic groups. According to Teshome-Bahiru (77) and Desissa (78), the demand for and trade of herbal medicines has increased in Ethiopian towns in recent years, largely due to their commercialization. However, determining the prevalence and trend in the use of traditional medicines by PLHIV through survey research in health care settings may be difficult. Several studies in Nigeria, South Africa and other African reported that changes in the use of traditional medicines may be influenced by the social desirability factor because patients were reluctant to acknowledge their use as a

result of instructions they had received from health workers not to use them (20, 22, 79). Thus there is a need to examine the effect of decreasing mortality from AIDS due to the mass ART campaign and of the information/communication program of health extension workers in the kebeles on the health-seeking behavior of PLHIV to determine current trends in TCAM utilization.

Policy Framework and Integration of Traditional Medicine into the Modern Health Services

Kassaye et al. (66) and Addis (80) summarized the history of the national health policies that were formulated between 1942 and 1999 with the objective of promoting and developing traditional medicine in Ethiopia and integrating it with the national health services. Traditional medical practice was first recognized as an alternative health care option in 1942 and latter reaffirmed in 'operational guides' where persons recognized in local communities to have the knowledge and skill to treat people should not be prevented to do so. This was reconfirmed in 1977 in Proclamation No. 127, which mentioned the need to 'promote and encourage the use of traditional drug along with modern medicine'. Furthermore, the need for research in traditional medicine was acknowledged for the first time after the development of the Primary Health Care Strategy in Alma Ata in 1978 (81), which has since then been elaborated in the health, national science and technology, and national drug policies of 1993. The Ethiopian Health and Nutrition Institute was mandated to carry out research on traditional medicine, study production of traditional medicine and prepare a preliminary pharmacopoeia (80). Food, Medicine and Health Care Administration Proclamation No. 661/2009 defined traditional medicine as an alternative medicine that is locally produced or imported but amenable to be evaluated and registered. Currently a directorate of traditional and modern drug research is established within the Ethiopian National Health Research Institute. The directorate prepared its five-year strategic plan in 2010 with a research focus on traditional drugs, indigenous medical practices and integration of those found useful within the health system (66, 80).

A number of issues related to the integration of traditional and modern medicine remain to be addressed. For example, none of the 6,000 traditional healers who had been registered during the primary health care initiative of the Derg administration are currently registered; there is no training program for healers and no guidelines for training healers; regulatory requirements still need to be specified for the evaluation and manufacturing of herbal medicines, and guidelines need to be issued for clinical trials using traditional medicines (82, 66). Secrecy surrounding the healing methods of traditional healers stemming from the fear that their treatments lose their efficacy and of losing their source of income constitutes a major barrier to integration, even though healers have expressed an interest in collaborating with the modern health services Bishaw (83). Similarly,

while many modern health practitioners recognize the value of traditional medicine for the treatment of a number of health conditions and maintaining health in general, most of them prefer their patients to exclusively use the official health services. Addis et al. (82), for example, reported from a rural area in Arsi Region that although 98.0% of 80 healers favored collaboration with the official health services and 84% preferred integration, only 7.5% of them collaborated with other traditional healers. All but 2 of the 20 modern practitioners considered government-based training of healers essential to upgrade their services and render their treatment safe. Similar results were reported from modern practitioners in Ambo Town (84). This situation indicates that in spite of some progress made in recent years, the integration of traditional and the modern medicine is still a long way from being realized in Ethiopia, largely as a result of the failure to overcome the conceptual and operational differences between the two healing systems and the vested interests of their practitioners.

Herbal Medicine

Users and current and potential uses of plant medicines Ethiopia's highly diverse flora, consisting of more than 7,000 species-about 12% of them endemics (85) includes nearly 1,000 species used for medicinal purposes (86- 88) The widespread medicinal use of plants in Ethiopia is being maintained mostly by religious but also some secular healers passing on healing traditions through medical texts and manuscripts over the years and by local populations adhering to time-tested remedies for endemic diseases (66, 89). A considerable number of ethnobotanical studies have been carried out in Ethiopia that document and verify the use of medicinal plants for many illnesses in all parts of the country (see for example Awas and Demissew (90), Bekalo et al. (91), Fassil (63), Giday (91), Kloos and Kaba (67) and Teklehaymanot and Giday (92). Households obtain these plants from fields and forests in rural areas, cultivate them in gardens (92-94) or purchase them in local markets (65, 97-99).

The non-professional domain of herbal medicine in Ethiopia is the household, which accounts for the major use of medicinal plants in the country, an area which has been neglected by researchers until recently in spite of widespread home-based self-care (100). In many households, *medhanid awaki herbalists*, including both men and women, prepare medicine and maintain the traditional plant knowledge. The extent of herbal medicine use by households through self-care is indicated by several studies in rural areas. Fassil (63) found 81 plant species that were used for medicinal purposes by 162 households in five rural communities around Bahir Dar. Giday (93) recorded the use of 124 plant species in three different ethnic communities in rural southwestern Ethiopia. One of the plants, *Bersema abyssinica*, reportedly is active against HIV in vitro (101, see below). Home gardens, which tend to contain cultivated plants that are used both as medicines and food, are assuming

greater importance in Ethiopia as a result of deforestation and land degradation (94). No quantitative information is available on the utilization of herbal medicine among urban households, although household and market surveys in Addis Ababa indicate their common use by poorer households (102).

Some potentially useful plants for HIV and opportunistic infections: preliminary test results and the way forward In the search for antiretroviral compounds that may be considered for the development of new antiretroviral drugs, Asres et al. (101) found four medicinal plant species (*Combretum paniculatum*, *Dodonaea angustifolia*, *Bersema abyssinica* and *Ximenia americana*) among 21 species tested in vitro to have antiretroviral activity. The high selective inhibition of *C. paniculatum* against both HIV-1 and HIV-2 and of *D. angustifolia* against HIV-1 may warrant further studies of their potential as new lead antiretroviral compounds. *D. angustifolia* showed both antiretroviral and antimalarial activity (101, 103). In addition, Gebre Mariam et al. (104) found the extracts of *Acokanthera schimperi* and *Euclea schimperi* to have antiviral activity against coxsackievirus (CVB3), influenza a virus and herpes simplex virus type 1 (hsv-1). Whereas *A. schimperi* exhibited the strongest activity against CVB3, *E. schimperi* inhibited influenza virus a replication with higher efficacy. Similarly, the leaves of neem (*Azadirachta indica*), traditionally used by the population in Somali Region to treat malaria, were found to have antiplasmodial properties in vivo against *Plasmodium berghei* (103) and antiretroviral and immunomodulatory potential in vitro against HIV-1 (106). The highest parasitaemia suppression rate (73.4%) among the 27 medicinal plant species tested by Mesfin et al. (105) against *P. berghei* was obtained from a species of *Aloe*. Moreover, a tannin compound, obtained from an acetone extract of the stem bark of the medicinal plant *Combretum molle*, was highly effective against *M. tuberculosis* (107) and showed intermediate activity against both *Trypanosoma brucei rhodesiense* and *Leishmania donovani* (108). These various results indicate the potential for multi-disease applications of some species that could make their development more cost-effective.

Although these test results and those presented elsewhere in this paper bode well for the identification of additional promising antiretroviral, antimycobacterial and antiprotozoal and bactericidal plants and compounds towards the prevention, amelioration and treatment of HIV/AIDS, further research towards understanding pharmacological interactions between herbal medicines and pharmaceutical drugs and their safety for human use needs to be multidisciplinary involving the biological, chemical, toxicological and pharmacological disciplines. These programs will also require strong leadership, adequate funding and technical support from national and international organizations. Ethiopian scientists, under the leadership of the late Dr. Akililu Lemma, played a

central role in the development of endod (*Phytolacca dodecandra*) as an effective plant molluscicide for the control of schistosomiasis, and we hope that some young scientists in this country will undertake similarly pioneering research towards developing an effective medicine for HIV/AIDS.

While the development of new antiretroviral drugs is would be a very challenging undertaking in Ethiopia and throughout Sub-Saharan Africa, the production of affordable and easily accessible medicines for some opportunistic infections may be feasible. Several studies indicate that around 80% of PLHIV in Sub-Saharan Africa required palliative care most affected people do not receive it, partly due to the high prices and shortage of pain relief or antiretroviral drugs (109). In Ethiopia, the common use of medicinal plants to treat symptoms of AIDS suggests that many HIV-infected persons use them, as indicated by their use as alternative medicines discussed above. A study of the use of traditional medicine for the treatment of HIV and opportunistic infections in Dessie Town, for example, documented that a quarter of 574 people who were on ART had used traditional medicine along with ART. Slightly more than 1 out of 10 patients on ART reported to have used herbal formulations and 1 in 20 reverted to holy water (110). The use of herbs in palliative care needs further attention by researchers to evaluate their potential as cost-effective and locally available treatments of opportunistic infections. This includes biochemical research of plants effective against toxicity induced by treatment regimes.

Use of TCAM and discontinuation of ART

Similar to the findings in other African countries, concurrent use of traditional medicine by people on ART has been associated with defaulting from treatment in Ethiopia. Wubshet et al. (110) reported that preference for traditional medicine and/or holy water was the most common reason given (55.6%) by 135 patients at Gondar Hospital for discontinuing ART within a 12-month period. Several studies reported that chewing khat (*Catha edulis*) and consumption of alcohol interfered with retention on ART in different Ethiopian communities (112-114). Although khat is mostly a recreational drug rather than a TCAM, its widespread and increasing use in Ethiopia (115) warrants further studies of its impact on ART adherence. Further studies are also required to examine the relationship between the use of TCAM and uptake and adherence to ART in different religious, social and residential groups.

Economic benefits of the cultivation and trade of medicinal plants:

There is increasing interest in Ethiopia and other African countries in understanding the benefits and challenges of herbal plant cultivation beyond their medical use, which must be considered by decision makers in the development of anti-HIV and supplementary plants in the treatment of AIDS patients. A study of the fringe areas of Bale National Forest in southern Ethiopia recommended

that the diversification of the local grain-based agricultural system by growing medicinal herbs on a commercial scale may reduce the rapid degradation of the park's forest resources and ensure a sustainable livelihood for local farmers (116). Economic benefits of expanding herbal plant cultivation were also reported from South Africa (117) and Uganda (16). Similarly, the combined biological and economic value of cultivating medicinal plants in rehabilitating degraded sub-humid pastoral and agricultural lands in much of Sub-Saharan Africa was noted by Lambert et al. (118). The value of medicinal plants domestically grown in Ethiopia was estimated at 423 million Birr, some 346,000 persons were gainfully employed with the production and sale of plant products in 2005, and an estimated 1.6 billion Birr were paid to healers administering these medicines (99). The cabbage tree (*Moringa oleifera*), whose leaves are a staple crop of the Konso people in southwestern Ethiopia, is a good example of a multi-purpose plant resource with potential applications in HIV/AIDS control. This tree is widely cultivated for food, water purifying, and medicinal purposes in the tropics and subtropics, and is a popular TCAM among AIDS patients in Zimbabwe (119, 120). The leaves are currently being tested for antiretroviral pharmacokinetic interaction with the drugs nevirapine and efavirenz (121).

While these and other ecological and economic benefits argue for systematic and accelerated development of medicinal plants, their potential as reliable anti-HIV/AIDS source materials must also consider their sustainable production with minimum damage to ecosystems. The challenge of preventing overharvesting of wild plants and possible extinction of medicinal plant species around rapidly growing urban areas and in agricultural and deforested areas is becoming an increasing concern of biologists, pointing out the need for plant conservation measures and the cultivation of candidate antiretroviral and other antimicrobial plants in gardens and commercial farms (91, 122-125).

Faith Healing

The use of holy water in the Ethiopian Orthodox Tewahedo Church:

Faith healing in Ethiopia has a longer recorded history than in other Sub-Saharan countries because of the transmission of this knowledge mostly through religious manuscripts that continues to be applied in the Ethiopian Orthodox Tewahedo Church (EOTC), the oldest indigenous Christian church in Sub-Saharan Africa. The belief that supernatural forces cause all diseases and that holy water in combination with prayer is curative has traditionally brought people afflicted with a wide range of diseases to holy springs, known as *tsebel* among Orthodox Christians and *zemzem* among Moslems (66, 69, 126), although little is known about the use of the latter, named after the ancient holy well in Mecca in Saudi Arabia (127). This belief continues to generate a strong interest in the use of water from holy springs in conjunction with the use of the cross, holy oil, ash of

incense (*emnet*), and prayers by a priest to treat symptoms of AIDS. In addition to the use of holy water for the treatment of AIDS, holy water is preferred over modern medicine for the treatment of mental illness, epilepsy, and several other diseases because they are thought to be more appropriately and effectively treated in the church (128-130). According to Bekele (131), the estimated number of *tsebel* sites in Ethiopia exceeds 10,000 and more than 20 million people are being served holy water annually.

It is generally agreed that the number of *tsebel* users has greatly increased in recent years, although no reliable statistics are available in the absence of systematic registration of PLHIV at *tsebel* sites (129). The strong secular tradition of using thermal springs (*filuweha*) for back pain, rheumatism, skin diseases, leprosy and other health problems (132) further indicates the effectiveness and long cultural tradition of hydrotherapy in Ethiopia.

Healing practices in the EOTC have been broadened since the spread of the HIV epidemic in the 1980s to include HIV/AIDS treatment. In the 1980s, the EOTC responded to the rapidly spreading HIV epidemic by promoting the abstinence-be faithful approach to HIV prevention. In the 1990s, Church members began to pursue holy water treatment hoping to be miraculously cured from HIV/AIDS. This approach appears to have been more popular than the abstinence-be faithful programs which were implemented with USAID support starting in 2004, partly because traditionally, the emphasis in the EOTC is on forgiveness and redemption, not prevention of disease (133). Following the introduction of free ART in Ethiopia in 2005, patient retention in treatment became challenging in spite of rapidly increasing utilization rates. Major reasons for failure to adhere to ART and loss-to-follow up were lack of economic support, nutritional problems and transportation difficulties. A third of the patients who started ART were documented to discontinue treatment in favor of holy water (134). In a study of community perceptions in Addis Ababa most of 52 HIV-infected and non-infected adults, believed that holy water can cure HIV infection (135).

Although the Orthodox Church has not finalized a policy on HIV/AIDS, its contribution to health promotion and patient care (133, 136), the call of the late Patriarch Abune Paulos in 2007 for the concurrent use of faith healing and ART on the basis that religion and science complement each other (136) indicate its commitment to HIV prevention, control and mitigation. The decision by the Holy Synod of the Ethiopian Orthodox Tewahedo Church (EOTC) to endorse the combined use of ART and holy water as compatible was a major step forward to encouraging the use of both types of treatment and to increase adherence to ART (131). This positive response by the leadership of the OETC was followed by, training of the clergy on the need and means to complement holy

water and ART, which contributed to an increase in ART adherence in Ethiopia (137, 138).

Many patients currently use both holy water and ART (139), apparently due to the Patriarch's encouragement of these two approaches as complementary healing methods, persistence of traditional disease concepts, and the search for holistic treatment of an incurable disease. In several faith communities it was possible to obtain the support and participation of local faith leaders in providing HIV testing and ART to their members, including one in the North-Gondar Diocese, where the Abuna had himself tested (140).

Nevertheless, mixed messages and pressure continue to be applied by some clergy and the wider community to abandon ART for exclusive use of *tsebel* (135, 141). For example, marginalization and exclusion of PLHIV from pastoral care and by their faith communities has recently been reported. In one study, 23% of PLHIV and 9% of those affected reportedly experienced discrimination from their faith communities (139). Endeshaw (142) found that 78% of 55 patients on ART experienced stigma, most of them reporting depressive symptoms. Another study, comparing experiences of PLHIV in towns in Ethiopia (Adigrat), Kenya (Mombasa) and Zambia (Ibenga), found one-third of the 2,863 HIV-infected respondents studied to be allegedly discriminated against, more than twice as many of them females as males (143). Although a 12-month plan of action to reduce stigma was initiated in each of these communities, the prevailing high levels of stigma among faith leaders, which impeded some surveys in Zambia (144), points out the need for researchers to develop appropriate approaches to study the important but sensitive issue of stigma in faith-based communities. Some governments and NGOs have developed programs and guidelines aimed at reducing stigma and increasing discussion within partnerships and HIV prevention and control. Two programs in South Africa and Uganda resulted in significant reduction of stigma and increasing VCT uptake in faith-based organizations and churches (145). This discussion and the contentious issues of PLHIV show that further studies are required to clarify the position and practices of local priests of the EOTC and the leaders of other faith-based organizations.

Information on faith healing for HIV/AIDS has been published only during the last few years (all by graduate students in anthropology or theology), even though this healing approach had already been widely practiced in the pre-HIV era (146, 147). Hermann-Mesfen (133) studied 12 holy water sites in the central and northern Ethiopian Highlands focusing on the way the EOTC has been involved in anti-AIDS activities; Berhanu (129, 148) studied faith healing practices at four *tsebel* sites in and around Addis Ababa; Bezabih (149) examined attitudes behavior of two PLHIV associations in Addis Ababa in relation to the use of *tsebel* and ART; Anderson (128) explored the relationship between traditional and

modern modes of medical treatment, including faith healing, at several *tsebel* sites around Debre Libanos; and Boylson (150) addressed theological issues that have practical implications for the efficacy of holy water treatment and ART. According to the most recent available data for the heavily used *tsebel* at Entoto near Addis Ababa, published in the annual magazine of the church, 3,680 PLHIV were treated and 820 were “cured” in 2003/2004 (148). The cure data are unreliable because of self-reporting by the allegedly cured persons and the scarcity of HIV test data in the records, largely due to stigma which interferes with the recording of infection status and other patient data. Similar situations prevailed at another three study churches in Addis Ababa (148). Data from another holy water site that was served by outreach VCT and AIDS treatment services at a rehabilitation center near a monastery indicate that HIV infection rates for visitors to this holy water site were 42% overall and 48% among women (140). Hermann-Mesfen (133), who studied numerous *tsebel*, noted that patients have formed their own communities to escape HIV stigma and to be close to the expected cure site. But many patients undergo holy water treatment also to be cleansed and blessed, adding to the attractiveness and outcome of this healing approach (133, 150). Faith healing thus offers also spiritual and mental health, objectives which remain elusive in biomedicine.

Use of faith healing by other religions:

In addition to the EOTC, several other faith-based institutions in Ethiopia engage in faith healing. Berhanu (148) found that not only Orthodox Christians but also smaller numbers of Moslems and followers of other religions visited the four *tsebel* sites in Addis Ababa. At these and other sites in Ethiopia, faithful people visit holy springs to be healed; others seek relief from stigmatization and discrimination among members of PLHIV associations living around these sites (133, 149). The limited information that is available on faith healing among Moslems in Ethiopia indicates that it is prevalent among the country’s various Islamic religious groups, some of which are characterized by practices similar to those of the EOTC, although little is known specifically about treatment of HIV/AIDS. Zeleke (151) described the weekly healing sessions for HIV/AIDS, spirit possession, various other health conditions and infertility at a Sufi shrine in northern Ethiopia. The treatments used, including holy water, ashes, soil and incense burning, have been adopted from Orthodox Christianity (151). The presence of Moslems, Orthodox Christians, adherents of other indigenous religions and Protestants at this shrine and of pilgrims from the major ethnic groups both at this shrine and the above-mentioned four *tsebel* sites in and around Addis Ababa attests to the inclusiveness of faith healing in Ethiopia. Moreover, the weekly practice of exorcism at that Moslem shrine and in Addis Ababa has been traced to pre-Christian and pre-Moslem indigenous cultures (149, 151). These and other elements of syncretism between the Moslem and Christian traditional belief systems reflect the long

history of these two religions as well as Judaism in Ethiopia and their close relationships with indigenous beliefs and healing practices (152, 153).

The Pentecostal churches, including the Post-Pentecostal and Charismatic churches, are the most rapidly growing churches in Ethiopia, whose membership increased from 5.5 % of the population in 1984 to 18.6% in 2007. They have attracted many new members through their “born again” theology and claims of efficacious exorcism practices. Although various mental and infectious diseases, including tuberculosis, have been attributed to spirit possession and demon possession and exorcism is a major focus of Ethiopian and other African Pentecostal churches (154, 155), only cursory reference has been made in the literature to proclamations of HIV/AIDS healings in these religious communities in Ethiopia (156). The rapid expansion of Ethiopian Pentecostalism would warrant studies on faith healing in the Evangelical churches. Faith healing is highly prevalent in Pentecostal and Charismatic churches throughout much of Sub-Saharan Africa, many of which are opposed to the use of biomedicine (156). Most of these rapidly growing churches are African independent or Africa-initiated churches which originated from Pentecostal mission churches. They have incorporated elements of traditional African religions and now represent the largest faith-based organizations in many African countries. The ministry of healing has become a major focus of African Pentecostalism (17, 157, 158). Diversity and amalgam of healing practices is most complex in Addis Ababa, where numerous healers with different ethnic and religious backgrounds, training and healing methods are practicing (159). Moreover, traditional medicine is increasingly becoming commercialized in the capital city, the status of healers is changing and even “false healers” have reportedly emerged (77). The implications of these dynamic changes have not been studied in regard to faith healing and herbal medicines within the context of HIV/AIDS among Orthodox Christians, Moslems, adherents of other indigenous religions and among Protestants.

Fasting and ART

Fasting during the religious calendar of Orthodox Christians is a ritual and not normally described in the academic literature as a form of faith healing but some of the clergy consider fasting to have curative power for different diseases. This perception may cause some patients to discontinue ART treatment during fasting days (150). Mekonnen and Sanders (114) reported that both Ethiopian Orthodox Christians and Moslems discontinued ART during fasting seasons to fulfill their religious obligation and out of fear of stigma. Habib et al. (160), on the other hand, reported no changes in adherence and frequency of drug taking among Moslem during Ramadan in Kano, Nigeria, and Yakasai and Muhammad (161) found no changes in adherence, CD4 counts, viral load and other markers among Moslems fasting and under ART treatment in Nigeria. Kagimu et

al. (162) associated fasting and religiosity with higher HIV risk and higher HIV rates among Moslem youth in Uganda. These discrepancies indicate that further studies are necessary to evaluate the effect of fasting among Moslem and Christian AIDS patients on adherence and efficacy of ART.

The Fate of AIDS Patients Seeking Faith Healing

Little is known about the fate of thousands of persons seeking faith healing in the absence of systematic record keeping, especially those people who did not experience health benefits. There is some evidence that many of them eventually return home after having received treatment at a *tsebel* or declare themselves cured in the hope of averting stigma and discrimination by their families and neighbors as religiously treated patients (148). Other *tsebel* users recognize that holy water does not cure their AIDS condition and undergo the water treatment as a religious duty that gives them psychological strength (114). However, no information is available on the treatment behavior of returnees (129). In a Zimbabwean community, some of the PLHIV who allegedly were cured by healers and still tested positive restarted their medication and stopped attending the church that claimed to have cured them. Others questioned the accuracy of the tests or refused to be retested (163). Berhanu (129) recommended that counseling programs carried out by priests and other church officials trained by social workers and other professionals be developed in Ethiopia to improve the livelihood of PLHIV receiving holy water treatment and help them to become reintegrated into society.

Conclusion and Recommendations

This review reveals the widespread use of traditional herbal medicines and faith healing for HIV/AIDS in Ethiopia and a number of opportunities and challenges in optimizing their benefits, preventing harmful effects and developing these health resources. Major factors in the demand for traditional medicine include a combination of the perception that both physical and mental manifestations of illnesses must be treated appropriately and consistently with the cultural construction of health and disease, the ready accessibility and culturally appropriate indigenous treatments and the side effects of ART. The expansion of ART in Ethiopia has resulted in increased use of both herbal medicines and faith healing by patients searching for acceptable and holistic treatments that are consistent with cultural and religious traditions. The still scarce literature indicates that their utilization has contributed to delays in ART uptake, reduced patient retention and treatment adherence, exposed users to potentially toxic herbal medicines and probably resulted in drug interactions that are still poorly understood. Evolving treatment practices suggest that treatment outcomes may be improved and health risks reduced by developing and implementing policies and guidelines of traditional, complimentary and alternative medicine that 1) regulate herbal medicines based on biochemical, clinical, and botanical research and 2) meet

the religious, social, cultural and mental needs of PLHIV for acceptable and safe treatment based on social science and epidemiological research.

In addition to plants with antiretroviral properties, plants effective against TB, malaria and other opportunistic infections in HIV/AIDS warrant further attention in the search for molecules and compounds which have the potential for the treatment of multiple diseases with minimum toxicity and adverse drug interactions. In addition to these health benefits herbal medicines may provide, their economic and ecological impacts and cost-effective production methods require further attention by researchers and policy makers to ensure their affordability, safe use and sustainability. Issuance of regulatory requirements for the evaluation and manufacturing of herbal medicines and of guidelines for clinical trials of candidate plant species are necessary for standardized field collections, laboratory testing and clinical trials of plant products. The development of candidate plants into manufactured drugs also requires that the government gives high priority to research and development programs that are adequately supported financially and technically by international partners.

This review also reveals the need for further studies to examine the clinical, mental and social outcomes of faith healing, including the concurrent use of traditional medicine (both herbal medicine and faith healing) and ART, particularly its impact on ART initiation, retention and adherence to chronic treatment, as well as opportunities for interventions. Moreover, the impacts of HIV/AIDS related stigma and of fasting by Christians and Moslems on ART adherence and outcomes need further attention by researchers. We recommend, in view of the continuously growing number of PLHIV in Ethiopia and apparent differences in treatment practices among different religious, social, cultural and high-risk HIV risk groups, that studies of indigenous healing practices, experiences and attitudes towards ART be carried out among these groups towards a better understanding of specific health risks, needs and potential benefits of traditional medicine that can inform researchers, health practitioners and policy makers. Interdisciplinary research may provide information needed to strengthen current efforts to implement government guidelines and policies facilitating the development, safety and utilization of herbal medicines and faith healing.

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