

Full Length Research Paper

Prevalence, perceived benefits and effectiveness of herbal medicine in the management of symptoms of opportunistic fungal infections in HIV/AIDS patients in the Eastern Cape, South Africa

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It has been reported that about 75% of HIV-infected patients use remedies from complementary or African traditional medicine in South Africa. The multiplicity of these medicines led not only to potentially severe side effects, but also to clinically significant interactions with antiretrovirals (ARVs) and other medicines. The aim of this study was to evaluate the prevalence, perceived benefit and efficacy of herbal medicine in the management of opportunistic fungal infections (OFIs) in HIV/AIDS patients. This study is part of a larger study which includes the evaluation of the antifungal activity and toxicity of medicinal plants in the management of opportunistic fungal infections in HIV/AIDS patients in the Eastern Cape of South Africa. Following Ethics Committee approval, 101 HIV/AIDS patients were recruited through convenience sampling into an anonymous cross-sectional questionnaire study. More than one-third (39.6%, 40/101) was reported to be using herbal medicine for treating signs/symptoms of OFIs. Close to half (21, 52.5%) of the 40 HIV/AIDS patients who used herbal medicine reported that the herbal medicine did not help their condition, while 13 (32.5%) patients disclosed that the herbal medicine had a significant and great contribution towards the management of their signs/symptoms of OFIs. Six themes were identified as regards the rationale behind the use of herbal medicine by the HIV/AIDS patients.

Key words: Herbal medicine, symptoms, opportunistic fungal infections, HIV/AIDS.

INTRODUCTION

AIDS is the leading cause of death in South Africa, and approximately 40% of all deaths in individuals aged 15 to 49 are due to HIV/AIDS. More than 5 million South Africans are living with HIV or AIDS (UNAIDS, 2010). Antiretroviral (ARV) treatment is out of reach for many South Africans living with HIV/AIDS and many patients do not have any

hospice or palliative care service (Demmer, 2007). In the absence of effective treatment for HIV/AIDS, including the unavailability of ARV treatment for most people in Southern Africa, those who are infected face the challenge of managing their symptoms to alleviate discomfort and enhance their quality of life (Sukati et al., 2005).

In a study that involved 1,675 HIV-positive participants (Standish et al., 2001), garlic (*Allium sativum*) was the most common herbal product used. It was reported that about 75% of HIV-infected patients take some remedies from complementary or African traditional medicine in South Africa (Malangu, 2007). The multiplicity of these medicines leads not only to potentially severe side effects, but also to clinically significant interactions with ARVs and other medicines. It is therefore important to establish

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Abbreviations: ART, Antiretroviral therapy; CMP, conventional medical practitioner; HM, herbal medicine; OFI, opportunistic fungal infection.

the extent of use of herbal medicine by HIV/AIDS patients. The aim of this study was to evaluate the prevalence, perceived benefits and effectiveness of herbal medicine in the management of opportunistic fungal infections in HIV/AIDS patients, presenting at an outpatient clinic. Patients' disclosure of herb usage to their conventional medical practitioner (CMP) and the socio-demographic factors associated with the use of herbal medicine were also discussed. This study is part of a larger study which includes the evaluation of the antifungal activity and toxicity of medicinal plants used by HIV/AIDS patients in the management of opportunistic fungal infections in the Eastern Cape, South Africa.

MATERIALS AND METHODS

A cross-sectional survey was conducted to describe the frequency of the signs/symptoms of the opportunistic fungal infections (OFIs) among 101 HIV-positive patients enrolled in an outpatient clinic at Hogsback, Eastern Cape, South Africa. The proposal for this study was approved by the Research Ethics Committee of the Faculty of Science, University of Fort Hare, South Africa. HIV/AIDS patients who fulfilled the following criteria were considered eligible for this study: Age greater than 18 years, willingness to participate in the interview, and physical and psychological ability to participate in the interview (Shawn et al., 2005). Patients' participation in this study was completely voluntary and anonymous, and they were free to withdraw from the study at any time without repercussion, as part of the informed consent process (Langlois-Klassen et al., 2008). The survey was conducted over a 3-month period (June to August, 2010).

Data collection

Face-to-face interviews were completed with a semi-structured questionnaire by two trained research assistants, who were fluent in both English and Xhosa (the local language of the participants). The research assistants were trained by the investigator in the filing of the questionnaire before this study. Each questionnaire consisted of three sections:

(1) Demographic, social and health status characteristics
Information was recorded regarding participants' sex, age, educational level, employment, use of standard antiretroviral therapy (ART), use of herbal medicine (HM), physician's knowledge of patients' use of herbal medicine and perceptions of the efficacy of herbal medicine.

(2) The revised sign and symptom checklist for persons with HIV/AIDS

A checklist of 18 signs/symptoms of opportunistic fungal infections (Table 2) in persons with HIV/AIDS (Holzemer et al., 2001) was listed and against each one, the patients were asked to tick the symptoms which they frequently experienced.

(3) Patients' use of herbs

The third section contained specific questions concerning the patient's use of herbs medically to treat the signs/symptoms of OFIs. The following questions as modified from Kanodia et al. (2010) were asked to the respondents: (a) Did you use herbs to treat a specific sign or symptom of OFI? (b) How much do you think HM helped your condition? Response options included 'a great deal,' 'some,' 'a little,' or 'none.' They were also asked the reasons for HM use: 'Did you choose HM for any of the following reasons? Choices included: 'Conventional medical treatments would not help you,' 'Conventional medical treatments are too expensive,' 'HM combined with conventional medical treatments would help you,' 'A

conventional medical professional suggested you to try HM,' 'You thought it would be interesting to try HM,' and 'HM is part of our cultural identity.'

Statistical analyses

The Chi-square test (for categorical variables) and the Student-t test (for continuous variables) were used to determine the socio-demographic and clinical factors that were significantly ($p < 0.05$) associated with the use of HM among HIV/AIDS patients. The Pearson correlation test was computed between the use of HM and the frequency of the signs/symptoms of the OFIs in the HIV/AIDS patients.

RESULTS

Socio-demographic and clinical characteristics of respondents

The demographic, social and health status information of the HIV/AIDS patients who participated in this study are presented in Table 1. There were 101 HIV/AIDS patients (40 males and 61 females) and the mean age of the patients was 37.4 years. 100 patients were on ART among whom 40 (39.6%) reported the use of herbal medicine. Among the 40 HIV/AIDS patients who used HM, 36 patients reported the use of 'unknown herbal medicine' from a traditional healer, while decoctions from *Artemisia afra*, *Eucalyptus sp*, *Allium sativum*, and *Cassipourea flanaganii* were reported to be used by only 1 patient each (Figure 1). None of the 40 HIV/AIDS patients, who used HM, ever disclosed to their CMP about the use of HM (Table 1).

Prevalence of signs/symptoms of OFIs in HIV/AIDS patients

The frequencies of the reported signs/symptoms of OFIs are presented in Table 2. A total of 18 different signs/symptoms of OFIs were reported with a mean number of 5.43 signs/symptom per patient who used HM and 3.58 for those who did not use HM. The mean number of signs/symptom was significantly higher ($p < 0.05$) for patients who used HM as compared to those who did not. Symptoms of candidiasis were the most frequently reported (vaginal lesions 14.22%, oral lesions 13.35%, white spots in the mouth, 11.16%).

Factors associated with the use of herbal remedy

The results of the Chi square analysis for categorical variables and the Student t test for continuous variables are shown in Table 1. There were no significant differences ($p > 0.05$) in age, gender, and educational level among patients who used herbs in symptom management. On the other hand, marital status and employment were

Table 1. Demographic and clinical characteristics of the HIV/AIDS patients.

Characteristic	Total	Ever used herb	Never used herbal remedy	P-value
All patients	101	40	61	-
Age	37.4 ± 10.0	39.7 ± 9.6	35.8 ± 10.0	0.057
Male	40	16	21	0.57
Female	61	24	40	-
Marital status				0.004
Single	75	30	45	-
Married	20	10	10	-
Divorced	6	0	6	-
Education				0.247
Below high school	37	19	18	-
High school level	43	17	26	-
Above high school	17	4	13	-
Employment				0.005
Unemployed	55	29	26	-
Employed	46	11	35	-
Do you take ARVT?				
Yes	100	-	-	-
No	1	-	-	-
Does your Medical Doctor know that you use herbs				
Yes	0	-	-	-
No	40	-	-	-
Do you experience any sign/symptom of OFIs	101			
Yes	54	-	-	-
No	47	-	-	-
Average number of signs/symptom of OFI		5.43	3.58	0.003

found to be significantly associated to the use of HM, such that the proportion of single patients who used herbs in symptom management (75%, 30/40) was significantly higher than those who were married (25%, 10/40) or divorced (0%, 0/40). Similarly, the proportion of unemployed HIV/AIDS patients (72.5%, 29/40) who used herbs for symptom management was significantly higher than that of the employed (27.5%, 11/40). The result of the Pearson correlation test showed a small positive and significant correlation between the use of herbal remedy and the frequency of the signs/symptoms of the OFIs in the HIV/AIDS patients ($r = 0.356$, $p = 0.00$).

Reasons for patients' use of herbal medicine

Six themes were identified as regards the rationale

behind the use of herbal medicine by the HIV/AIDS patients: 'Herbal medicine is part of our cultural identity, ($n = 37$),' 'You thought it would be interesting to try herbal medicine, ($n = 26$),' 'Herbal medicine combined with conventional medical treatment would help you, ($n = 36$),' 'Conventional medical treatment are too expensive, ($n = 18$),' 'Conventional medical treatment would not help you, ($n = 1$),' and 'A conventional medical practitioner suggested you to try herbal medicine, ($n = 1$).'

Perceived benefits of herbal medicine

Close to half (21, 52.5%) of the 40 HIV/AIDS patients who used herbal medicine reported that herbal medicine did not help their condition, 6 (15%) patients acknowledged that only a small benefit was derived from herbal

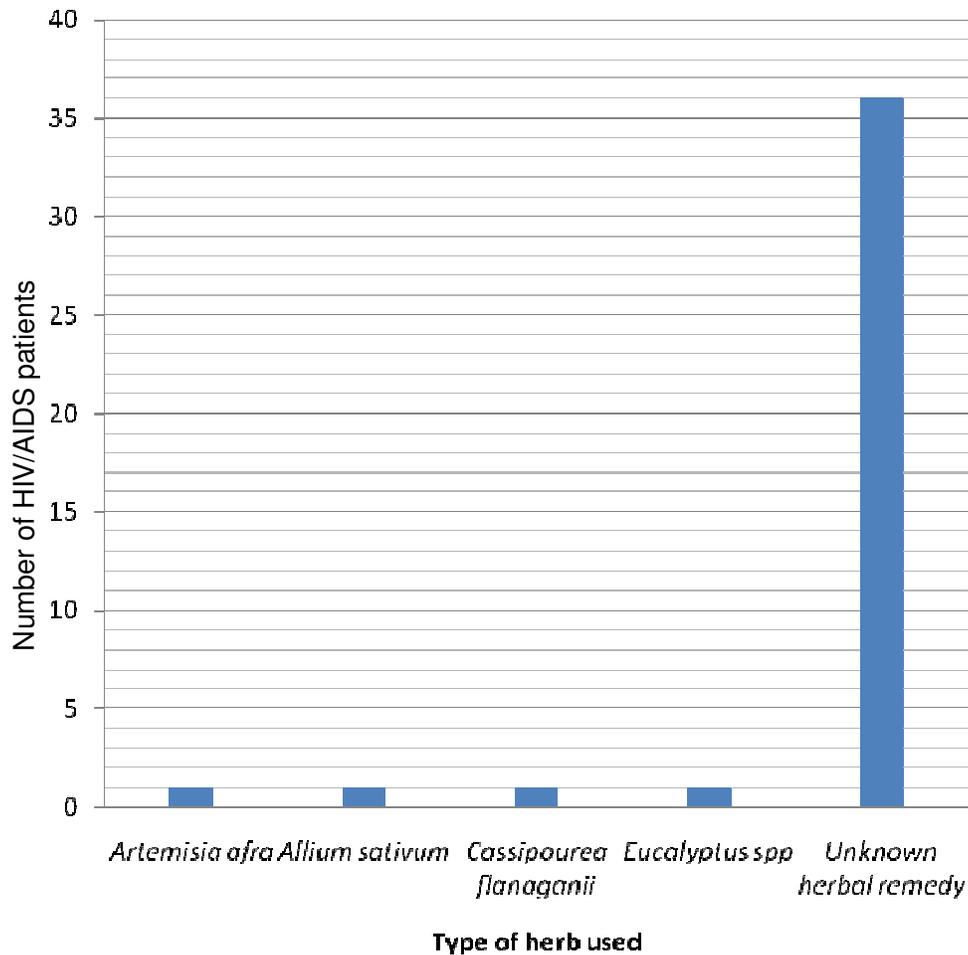


Figure 1. Type of herbal medicine used by HIV/AIDS patients in the management of OFIs.

Table 2. Frequency and rank order of signs/symptoms of OFIs in HIV/AIDS patients.

Sign/symptom	Rank	Frequency	Percentage
Vagina lesions	1	65	14.22
Oral lesions	2	61	13.35
Vaginal discharge	3	51	11.16
White spots in the mouth (oral thrush)	4	51	11.16
Skin rash	5	46	10.06
Skin itch	6	38	8.2
Respiratory problems	7	29	6.79
Ringworm	8	30	6.56
Rectal itch	9	16	3.5
Persistent fever	10	15	3.28
None	11	15	3.28
No appetite	12	10	2.19
Infections of the throat	13	8	1.75
Weight loss	14	8	1.7
Infections of the nail	15	6	1.04
Headache	16	4	0.88
Hair loss	17	2	0.44
Cough	18	2	0.44

medicine, while 13 (32.5%) patients disclosed that herbal medicine had a significant and great contribution towards the management of their signs/symptoms of OFIs.

DISCUSSION

The demographic distribution of the respondents is consistent with the epidemiological data of HIV-positive patients in South Africa (Cornolly et al., 2004), due to the fact that women and patients older than 30 years were the majority. The HIV/AIDS patients in this study were therefore representative of the demographics of HIV infection in South Africa. The medicinal plants identified in this study for the treatment of OFIs in HIV/AIDS patients have previously been cited in literature for the management of other ailments in South Africa. For example, *Artemisia afra* (Asteraceae) is a popular plant with many uses in literature, including coughs, colds, influenza, fever, headache, and inflammation (Thring, 2005; Van Wyk et al., 1997; Watt and Breyer-Brandwijk, 1962).

The high frequency of herbal usage indicates that the HIV/AIDS patients are proactively involved in the management of the symptoms of their OFIs. Conventional medical practitioners need to be aware of HM use among HIV/AIDS patients in their care, especially those receiving ARV (Langlois-Klassen et al., 2000). The initiation of ARV treatment does not necessarily correspond with a termination of herbal medicine use among HIV/AIDS patients, as evidenced by this investigation and previous studies (Langlois-Klassen et al., 2000; Manfredi and Chiodo, 2000). Consideration must be given to the potential negative impact that herb–drug interactions and HM toxicities can have on patients' health (Nelson and Perrone, 2000).

Given the high prevalence in the use of 'unknown HM from a traditional healer' among the HIV/AIDS patients, the safety of such unknown concoctions needs to be assessed especially considering the simultaneous use of the concoctions with ARV.

The high prevalence of reported signs/symptoms of candidiasis among the respondents was expected. According to the World Health Organisation (WHO report, 2009), candidiasis is the most common fungal infection found in HIV/AIDS patients. Extensive oesophageal candidiasis is an AIDS-defining infection. In one prospective study, 84% of HIV-infected patients had oropharyngeal colonization by *Candida* species on at least one occasion, and 55% developed clinical thrush (Sangeorzan et al., 1994); Unlike in this study where only the signs/symptoms of OFIs were considered. Peltzer and Phaswana-Mafuya (2010) recorded a total of 64 different symptoms with a mean of 26 symptoms per person among person living with HIV/AIDS in the Eastern Cape, South Africa.

This study suggests that two social factors: 'Marital status' and 'employment' and one clinical factor: 'Number of signs/symptoms of OFIs' were significant determinants

of HM use by HIV/AIDS patients. An explanation for the significantly higher number of unemployed HIV/AIDS patients who used herbal remedy as compared to the number of employed patients could be attributed to the difference in income levels. Amidst the dearth of funds to purchase self-prescribed drugs, dietary supplements and other costs related to the management of OFIs, such as transportation to the ARV centers, such patients may easily switch to alternative therapies for symptom management, including HM. On the other hand, the fact that a higher proportion of single patients used herbs could be attributed to the fact that the infected patients who are married are more likely to receive wise counsel from one another that culminates in the acquisition of ARV.

Single patients, amidst the loneliness, coupled with the severe shortage of health personnel might have developed coping mechanisms by adopting alternative strategies of symptom management, one of which has been the use of herbal therapies. However, these explanations are speculative, thus necessitating the need for further research to delineate factors associated with differences in income levels among HIV/AIDS patients who use herbs for symptom alleviation. The result of this study have shown that the frequency of OFI symptoms was significantly higher among HIV/AIDS patients who used HM compared to those patients who never used HM.

HIV/AIDS patients who experienced a significantly higher number of signs/symptoms of OFIs could have turned to herbal medicine as an alternative therapy so to curb the increased pressure that resulted from the higher disease load.

In a related study, Laglois-Klassen et al. (2008) found out that communication between AIDS patients and their CMPs about the use of herbal medicine was uncommon despite the frequent use of traditional herbal medicine among the patients. Of all the respondents in the treatment groups, only 14 (10.2%) had on their own initiative informed their CMPs about their use of herbs. The disclosure rate was similar regardless of ARV status ($p = 0.376$) and irrespective of respondent's gender ($p = 1.000$). The belief that CMPs are opposed to or unsupportive of HM is the primary reason why patients are unwilling to disclose information about HM use to CMPs, even if directly asked (Laglois-Klassen et al., 2008). To facilitate improved communication, CMPs should actively initiate the discussion by inquiring about HM use in an understanding, informed and non-judgmental manner (Fugh-Berman, 2000).

The fact that 'HM is part of our cultural identity' was the most frequently cited reason to justify the use of HM by the HIV/AIDS patients as expected. In South Africa, many people still use plants as an alternative or supplement to visiting a western health care practitioner (Van Wyk et al., 1997). This is not surprising due to South Africa's cultural diversity as well as its large floral biodiversity (Thring and Weitz, 2006). Over 3000 plant species have been found to be used in traditional medicine across South Africa

(Van Wyk et al., 1997). There are over 27 million users of indigenous medicine (Thring and Weitz, 2006) and an estimated 200,000 indigenous traditional healers, which up to 60% of the population consult with (Van et al., 1997). The second most cited reason ('you thought it would be interesting to try') by HIV/AIDS patients suggests that many patients would embrace any remedy even on a trial basis. This further highlights the need of improved communication between CMPs and HIV/AIDS patients with respect to the use of alternative strategies in symptom management.

An important limitation of this study is the fact that the HIV/AIDS patients were selected by convenience sampling. We therefore caution against the generalization of these findings to all people living with HIV/AIDS. Notwithstanding the high prevalence of herbal usage among the HIV/AIDS patients sampled, the study provides further evidence that routine laboratory studies are needed to determine the efficacy and safety of the herbal medicines. This is a subject of investigation in our laboratory.

Conclusion

This study suggests that the symptoms of OFIs are common in HIV/AIDS patients in the Eastern Cape, South Africa. The use of herbal remedy to manage these symptoms is prevalent among the HIV/AIDS patients. Two social factors: 'Marital status' and 'employment' and one clinical factor: 'Number of signs/symptoms of OFIs' were significant determinants of HM use by HIV/AIDS patients. Hence, there is an urgent need for more effective health care. 32.5% of the patients who used HM disclosed that HM had a significant and great contribution towards the management of their signs/symptoms of OFIs. 'Herbal medicine is part of our cultural identity' was the main rationale behind the usage of HM by the HIV/AIDS patients. Providers of health care to HIV-infected patients need to communicate with their patients so that they can be aware of the non-prescribed medicines they take. This would foster the appropriate management of OFIs in order to improve patient outcomes.

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REFERENCES

- Cornolly C, Colvin M, Shisana O, Stoker D (2004). Epidemiology of HIV in South Africa: results of a national, community-based survey. *S A Med J.* 94(9):776-781.
- Demmer C (2007). AIDS and palliative care in South Africa. *Am. J. Hospice and Palliative Med.* 24(1): 7-12.
- Fugh-Berman A (2000). Herb-drug interactions. *Lancet.* 355: 134-138.
- Holzemer WL, Hudson A, Kirksey KM, Hamilton MJ, Bakken S (2000). The revised sign and symptom check-list for HIV (SSC-HIVrev). *J. Assoc. Nurses in AIDS Care.* 12: 60-70.
- Langlois-Klassen D, Kipp W, Rubaale T (2008). Who's talking? Communication between health providers and HIV-infected adults related to herbal medicine for AIDS treatment in Western Uganda. *Soc. Sci. Med.* 67:165-176.
- Malangu N (2007). Self-reported use of traditional, complementary and over-the-counter medicines by HIV-infected patients on antiretroviral therapy in Pretoria, South Africa. *Afr. J. Trad. CAM.* 4(3): 273-278.
- Manfredi R, Chiodo F (2000). The effects of alternative treatments for HIV disease on recommended pharmacological regimens. *Int. J. Antimicrob. Agents.* 13: 281-285.
- Nelson L, Perrone J (2000). Pharmacologic advances in emergency medicine. *Emerg. Med. North Ame.* 18(4): 709-722.
- Peltzer K, Phaswana-Mafuya N (2010). The symptom experience of people living with HIV and AIDS in the Eastern Cape, South Africa. doi:10.1186/1472-6963-8-271. *BMC Health Ser. Res.* 8: 271
- Sangeorzan JA, Bradley SF, He X, Zarins LT (1994). Epidemiology of oral candidiasis in HIV-infected patients: colonisation, infection, treatment, and emergence of fluconazole resistance. *Am. J. Med.* 97: 339-46.
- Shawn ER, Cambell L, Mguni MB, Defilipp KM, William RN, William AB (2005). The spectrum of symptoms among rural South Africans with HIV infection. *J. Assoc. Nurses in AIDS Care.* 16(6): 12-23.
- Sukati NA, Mdebele SC, Makoa ET, Ramukumba TS, Makoe LN, Seboni NM, Human S, Holzemer WL (2005). HIV/AIDS symptom management in Southern Africa. *J. Pain and Symp. Manage.* 29(2): 185-192.
- Thring TSA, Weitz FM (2006). Medicinal plant use in the Bredasdorp/Elim region of the Southern Overberg in the Western Cape Province of South Afr. *J. Ethnopharmacol.* 103: 261-275.
- UNAIDS (2010). Joint United Nations Programme on HIV and AIDS (2010) report on the global AIDS epidemic. Available at <http://www.unaidsrsta.org/progress>.
- Van Wyk B, Van Oudtshoorn B, Gerick N (1997). Medicinal plants of South Africa. Briza Publications, Pretoria. p. 30.
- Watt J, Breyer-Brandwijk M (1962). *The Medicinal and Poisonous Plants of Southern and Eastern Africa* (second ed.), Livingstone, London.