

Other health-seeking behaviour of HIV and AIDS patients visiting private sector doctors in the eThekweni Metropolitan Municipality of KwaZulu-Natal

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Objectives: Although allopathic medicines are used in the treatment of human immunodeficiency virus (HIV), many HIV-infected patients visit alternate medical and health practitioners, and take alternative therapies for their HIV condition. This study was conducted to confirm whether or not a sample of patients who visited private sector doctors used alternative medications, and whether or not they visited other healthcare professionals and/or healers for their condition.

Design, setting and subjects: A descriptive, cross-sectional study was conducted on 256 HIV patients who visited private sector doctors in the eThekweni Metropolitan Municipality of KwaZulu-Natal. An anonymous, close-ended questionnaire was administered to the patients after obtaining their consent.

Outcome measures: Variables included socio-demographic characteristics, other health-seeking behaviour, medicine and substance use.

Results: Private sector HIV patients engaged in other health-seeking behaviour. The study found that a varying proportion of respondents visited alternate practitioners, such as traditional healers, herbalists, homeopaths and Ayurvedic practitioners, and obtained complementary medicines from pharmacies, while some visited psychologists, psychiatrists, dietitians and religious leaders. The respondents also drank alcohol and took illicit drugs. A significant clinical finding was obtained with alcohol consumption and psychologist intervention. It was found that those respondents who visited a psychologist did not consume alcohol, while those who took alcohol did not visit a psychologist (p -value < 0.05). The latter indicates that HIV patients adopted different mechanisms to help them to cope with their condition.

Conclusion: This study concluded that patients with HIV/acquired immune deficiency syndrome in the private healthcare sector visited traditional healers and utilised other medicines, health professionals and/or therapies for their condition.

Keywords: alcohol, Ayurveda, complementary medicines, HIV, private healthcare sector, psychologist, traditional, traditional healers

Introduction

South Africa is experiencing the largest human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) epidemic in the world.¹ Almost 25% of South African children under the age of 15 have lost at least one parent to AIDS. The infection rate is growing at approximately 2 000 people/day.¹ The province of KwaZulu-Natal carries the heaviest burden wherein a devastating number of children and adults are affected by HIV/AIDS.²

The history of AIDS in South Africa is complex and controversial. The disease has grown to epidemic proportions in the country, and people from all cultures and backgrounds have become exposed. A major concern is the expected costs that the epidemic will inflict on the economy in the future.³

After adopting The Operational Plan for Comprehensive HIV/AIDS Care, Management and Treatment Plan for South Africa, the South African government encouraged residents living with HIV to utilise various possible treatment options.⁴ These included antiretroviral therapy (ART), nutritional supplements, as well as traditional, complementary and alternative medicines,⁴ thus providing a range of treatment choices for infected South Africans. The accessibility of traditional, complementary and alternative medicines and the cultural beliefs of various groups are possible reasons why a large proportion of the HIV population use antiretroviral drug (ARV) treatment in conjunction with traditional and complementary or alternative therapies.⁴

Traditional medicine is a comprehensive term used to describe various forms of indigenous health systems, such as Indian Ayurveda, Arabic Unani, traditional Chinese, Japanese Kampo, as well as African traditional medicine. Traditional medicines, herbal medicines and homeopathy are founded on the holistic management of a patient, as opposed to orthodox medicine which is disease centred and hence uses medication therapies.⁵ "Alternative" and "complementary therapies" are terms used to group medical practices, beliefs and products that are not considered to be a part of accepted Western medicine.⁶

AIDS has emerged as a critical public health problem in the developing world.⁷ Its threat to economic development and international security has been recognised by the international community and has caused considerable concern.⁸ The use of ARVs has not helped matters as most people who need ARVs have to either access the drugs or cannot afford them when they are available. Recent surveys have shown that up to 79% of HIV-infected people make use of traditional, complementary and alternative medicines and alternate practitioners, in conjunction with or as alternatives to allopathic medication. Such patients either complement their ARVs or only use alternate medications to curb the spread of HIV/AIDS.⁴

Researchers have reported that the use of traditional, complementary and alternative medicines by patients infected with HIV is markedly higher than that of any other disease.^{9–12} A recent sample of 100 HIV patients at the National Institution of Health's AIDS clinic reported that 91% of test subjects had

resorted to using at least one alternative treatment in their lifetime, 64% of whom used such treatment pre-diagnosis and 84% post-diagnosis.⁴ Another study reported that 40% of males on ART used alternate therapies. Women had a higher likelihood of resorting to alternative therapies than men.⁴ During the late 1990s, the estimated number of traditional healers in South Africa was close to 350 000.⁴ Evidence suggests that a large number of ARV users seek traditional healing methods, particularly when side-effects to prescribed medicines are encountered.⁴ They are largely utilised by African communities because of the perceived closeness in proximity to qualified practitioners, because there is no waiting list and no screening for eligibility.⁶ Cultural teachings and beliefs largely contribute to the distrust of Western treatments by certain populations.

It was reported in a randomised clinical trial¹³ that HIV patients with World Health Organization (WHO) stage 3 (AIDS) and persistent generalised lymphadenopathy (WHO clinical stage 1) who were given individualised, single-remedy homeopathic treatment experienced a statistically significant change in their CD4 T lymphocyte count (p-value 0.008). There was also a statistically significant elevation of CD8 T lymphocytes (p-value 0.04). Patients in WHO stage 3 (AIDS) who were given a placebo showed no such results.¹³

A study that was carried out on 137 AIDS patients reported that overall, 63.5% had used herbal medicine after HIV diagnosis to treat ailments. Although traditional, complementary and alternative medicine is still criticised on the basis of scientific methodology, there is available evidence to prove the efficacy and efficiency of traditional, complementary and alternative medicines in the management of HIV/AIDS and opportunistic infections.¹⁴

An ideal healthcare system should include collaboration between traditional healers and conventional practitioners in the efficient education and implementation of safe and effective practices, AIDS treatment and prevention practices.⁶ The training of traditional healers on modern medicine may be essential since these healers are revered, and know how to pass on knowledge in a culturally acceptable way.⁶

Other types of drug-taking behaviour by HIV/AIDS patients relate to alcohol and illicit drugs.¹⁵ Illicit drugs are prohibited drugs, such as cannabis, mandrax, ecstasy and opiates, commonly used for recreational purposes. The main concerns regarding alcohol abuse in relation to HIV is that alcohol is known to suppress the immune system and to encourage high-risk sexual behaviour.^{16,17} It should also be noted that injectable drug use is high in alcoholics, and thus increases exposure to the virus.¹⁵ Susceptibility to opportunistic infections, like *Streptococcus pneumoniae*, hepatitis C and tuberculosis is enhanced by alcohol abusers.¹⁶ The use of illicit drugs has also been observed to be highly prevalent in infected individuals.¹⁵ According to a study that was conducted to evaluate the impact of substance abuse on HIV treatment, it was reported that patients using illicit drugs suffered a decrease in ARV adherence.¹⁸ Therefore, it is important to address the issue of substance abuse before an HIV treatment programme is attempted.

With this as the background, a study was undertaken to investigate whether or not patients with HIV/AIDS visiting private sector doctors in the eThekweni Metropolitan Municipality of KwaZulu-Natal visited other medicine, health practitioners and healers, or used any other medicine, drug or substance to manage their HIV condition.

Method

Study design, study site and sample population

A descriptive, cross-sectional study was conducted on 256 patients who visited private sector doctors in the eThekweni Metropolitan Municipality of KwaZulu-Natal. A total of 1 255 doctors, comprising general practitioners and specialists working in the private sector of the eThekweni Metropolitan Municipality of KwaZulu-Natal, was obtained from the MEDpages Directory, KwaZulu-Natal Managed Care Coalition (a private doctor group), doctors' guilds, the Lancet Clinic Courier database and the Southern African HIV Clinicians Society.⁷

Two hundred specialist doctors who indicated that their contact with HIV and AIDS patients was minimal, and that their participation would be inappropriate were excluded, resulting in a sample size of 1 055 doctors. Of the 1 055 administered questionnaires, 74 were returned and marked as deceased, emigrated, retired, no longer at that address, semi-retired or sick, resulting in a valid sample size of 931 doctors. Of the 931 administered questionnaires, 331 doctors responded. Of those who responded, 235 (71%) doctors managed HIV-infected people. However, only 190 doctors indicated a willingness to participate in this phase of the study.

Patients whose doctors consented to be part of the study were selected. The study was undertaken in the province of KwaZulu-Natal which is the second most populous province in South Africa, with over 10 million people.¹⁹ It is the province with the highest prevalence of HIV, as indicated by antenatal clinic attendee data (39.5% in 2010. The national figure was 30.2%).²⁰ The study was first explained to patients in a language that they could understand. If they gave consent, then a questionnaire was administered to them. The questionnaire was closed ended and anonymous, and piloted on a few public sector patients to determine the time that it would take for the questionnaire to be completed, and to check for ambiguity and clarity. The questionnaire was amended accordingly, and thereafter administered. Variables included demographics, socio-economic status, other health-seeking behaviour, medicine and substance use. The patients were given the opportunity to withdraw from the research at any point. Even though 190 doctors participated in this phase of the study, only 256 completed patient questionnaires were obtained. The number of completed questionnaires submitted by the doctors varied, but at least one questionnaire was submitted by each participating doctor. The data were analysed using SPSS® version 18. A p-value < 0.05 was considered to be statistically significant. Ethical approval for the study was obtained from the Ethics Committee of the University of KwaZulu-Natal (Ethics No H138/03).

Results

Demographics

Over half (146, 57.1%) of the respondents were female. The majority were aged 20-39 years. 47.2% (121) were married, and 46.9% (120) had achieved a high school level of education. Over 90% (90.6%, n = 232) of the participants were employed.

The majority who visited African traditional healers were in the age group 30-39 years. Fifty-one of the 55 respondents who visited African traditional healers were employed. Thirty-nine patients (70.9%) were funded by private medical insurance which provided patients with medical and pharmaceutical services, including laboratory testing and hospitalisation.

Practices of the respondents

The patients in this study visited alternate healers and practitioners of their own accord (Table 1).

From Table 1, it can be seen that traditional healers, pharmacists and psychiatrists were significantly more likely to be visited by patients of African origin, than those of other races. There was no significant difference between the race groups visiting other practitioners. In addition, there was no significant difference in the gender of people visiting alternate practitioners.

The following complementary medicines were bought from the pharmacies, as indicated by the respondents:

- African potato.
- African herbs.
- *Usifozonke*.
- Immune boosters (the names were not mentioned).
- Multivitamins.

- Spirulina.
- Procydin.

Of these medicines, multivitamins were purchased the most by respondents.

Substance use

As depicted in Table 2, some of the patients also engaged in alcohol and illicit drug taking.

None of the respondents took mandrax, sugars (the street name for heroin mixed with rat poison and talc) or heroin.

It can be seen that 37.8% drank alcohol, the majority of whom were male, while marijuana and glue sniffing were prevalent in the male respondents only.

In Figure 1, a significant correlation was found between alcohol consumption and an intervention by a psychologist.

Table 1: Practices of the respondents

Do you visit of your own accord?		Patients' race				Fisher's exact <i>p</i> -value
		South African (of African origin)		Other races		
		Count	Column (%)	Count	Column (%)	
Traditional healers	Yes	55	23.7	0	0	0.016*
	No	177	76.3	17	100	
Ayurvedic doctors	Yes	5	2.2	0	0	1.000
	No	226	97.8	17	100	
Herbalists	Yes	11	4.8	0	0	1.000
	No	219	95.2	17	100	
Reflexologists	Yes	1	0.4	0	0	1.000
	No	227	99.6	17	100	
Dietitians	Yes	5	2.2	1	5.9	0.325
	No	224	97.8	16	94.1	
Psychologists	Yes	7	3.0	1	5.9	0.440
	No	223	97.0	16	94.1	
Pharmacists	Yes	194	83.3	10	52.6	0.003*
	No	39	16.7	9	47.4	
Religious leaders or priests	Yes	16	7.0	2	11.8	0.359
	No	213	93.0	15	88.2	
Homeopaths	Yes	2	0.9	1	5.9	0.195
	No	226	99.1	16	94.1	
Psychiatrists	Yes	3	1.3	2	11.8	0.040*
	No	226	98.7	15	88.2	
Hospice	Yes	1	0.4	1	5.9	0.135
	No	226	99.6	16	94.1	

*: statistically significant

Table 2: The drug-taking habits of patients with human immunodeficiency virus/acquired immune deficiency syndrome

Patients	Alcohol	Marijuana	Glue	Cocaine	Ecstasy
Male	67	8	3	1	1
Female	29	0	0	0	0
Total	96 (37.8%)	8 (3.3%)	3 (1.3%)	1 (0.4%)	1 (0.4%)
<i>n</i>	254	240	240	241	241

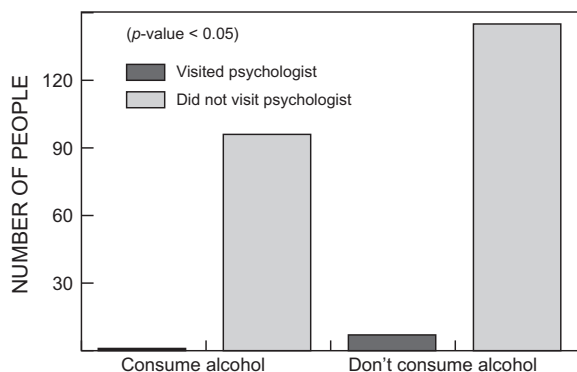


Figure 1: The relationship between the consumption of alcohol and visiting a psychologist

Ninety-six of the respondents who drank alcohol did not consult a psychologist, while eight of the 147 participants who did not consume alcohol visited one (p -value < 0.05).

Discussion

HIV/AIDS patients in the eThekweni Metropolitan Municipality of KwaZulu-Natal, who visited private sector doctors, also visited alternate medicine practitioners and other health practitioners of their own accord, and utilised traditional, complementary and alternative medicines, with or without their allopathic ARVs. They also engaged in undesirable drug taking, such as alcohol, marijuana, cocaine and glue sniffing.

African traditional healers

Twenty-two per cent of the participants visited African traditional healers, of whom 43.6% were males and 56.4% females. A study found that traditional, complementary and alternative medicine was used by approximately half of the population in many industrialised countries. The WHO estimates that up to 80% of the population in Africa makes use of traditional medicine.²¹

As traditional medicine is more accessible and affordable, the WHO believes that traditional medicine and its practitioners are significant components of healthcare delivery. In addition, traditional healers "tend to take a 'holistic' approach to illness, in treating both the patient's spiritual and physical well-being. With a terminal disease like AIDS, spirituality becomes very important".²² It has also been stated that traditional medicine also plays a part in the psychological well-being of patients.²¹ The majority of the respondents who visited the traditional healers were in the age group 30-39 years, which is similar to the findings of a study conducted in South Africa where the age group of patients who frequently visited traditional healers was 35 years.²³ Of the respondents who visited traditional healers, 7% (92) were employed and 70.9% were funded by medical aids.

Herbalists

According to Yardley, "There is a legitimate role for the use of herbal medicines and allopathic drugs in the health maintenance and treatment of individuals with HIV/AIDS, cancer and chronic illness".²⁴ Plant medicine has a benefit on the general immune system, which, in turn, can assist the HIV condition suffered by patients.²⁴ A small minority of the respondents visited herbalists.

Ayurveda practitioners

Ayurveda has also demonstrated a beneficial effect in the management of HIV/AIDS patients.²⁵ It was found in a pilot project that significant weight gain was reported in patients on Ayurvedic

medicines.²⁵ In this study, a small number of respondents engaged the services of an Ayurvedic practitioner. More males than females visited one. It was noteworthy that even though Ayurveda originated in India, none of the respondents who visited an Ayurvedic practitioner were of Indian origin.

Traditional, complementary and alternative medicines

This study also found that patients, although not in abundance, made use of traditional, complementary and alternative medicine products, such as African potato, African herbs, *usifozonke*, immune boosters, multivitamins, spirulina and procyclin. This finding is consistent with other studies that have been carried out in South Africa, whereby some of the items mentioned in this study were also bought.^{26,27}

Pharmacists

Eighty-one per cent of the HIV patients in the study sample visited pharmacists. Their visits could be twofold, one to obtain medicines prescribed by their doctors, and secondly to buy over-the-counter (OTC) products, including complementary and alternate medicines. In this study, it was found that multivitamin tablets were bought the most from the pharmacy. The use of multivitamins by HIV patients is a known factor as a study reported that daily multivitamins slow down the progression of HIV.²⁸ Multivitamins are also usually supplied by public health facilities.²⁹ A study that was conducted in Boston found that HIV patients used complementary and alternative medicines at high rates, and made frequent visits to the pharmacy to buy complementary and alternative medicine products.³⁰ One study found that patients reported self-medicating with at least one OTC product, while over half the patients used three or more OTC products concurrently.³¹ These findings are consistent with the finding of this study, in which the majority of respondents visited a pharmacy.

Dietitians

In many cases, patients with HIV/AIDS experience weight loss, loss of lean body mass, fat accumulation and metabolic changes.³² Therefore, they consult with dietitians to obtain advice on dietary changes, to assess if their current diet meets their nutritional requirements, to check their body weight and to obtain information on food safety. Research shows that patients' conditions improve if their dietary and nutritional needs are being met.³² From our results, it can be seen that a small percentage (2.4%) of these patients visited a dietitian. A possible reason for the low percentage could relate to cost. Even though patients had medical insurance, many medical insurers do not pay for the services of dietitians so the patients would have had to self-fund these services.

Psychologists

HIV/AIDS is often associated with a range of psychosocial sequelae that must be addressed throughout the stages of the infection. Psychological support is critical in helping individuals, couples and families who are affected by HIV to cope with their emotions and psycho-social needs.³³ Yet, this study found that only 3.2% of the sample population visited a psychologist. This is a low percentage, even though many of the patients were funded by medical insurance. A possible reason could be that psychologists comprise specialist care so many criteria need to be met to obtain medical insurance benefits for the treatment before a general practitioner will refer a patient for specialist care. Hence, cost may have been a determining factor as to whether or not a doctor would refer a patient, or whether the patient would consult a psychologist on the doctor's referral. Cost has been cited as a barrier to many HIV/AIDS patients accessing services.³⁴

A cross-tabulation with alcohol and intervention by a psychologist found that patients who consumed alcohol did not visit a psychologist, and those who visited a psychologist did not consume alcohol, demonstrating the importance of a psychologist in managing depression, and providing coping skills for HIV/AIDS patients so that they do not need to resort to take alcohol to overcome their depression.

Religious leaders

Seven per cent of the 256 respondents reported that they visited religious leaders. Of this number, 89% were South Africans of African origin, and 11% were South Africans of Indian origin. Respondents were in the age group 20-39 years. Sixty-seven per cent of the respondents were females, employed, and had achieved a high school level of education. This is consistent with another study where it was found that there was a high level of spirituality in college students and females.³⁵ In addition, HIV/AIDS patients generally visit churches, mosques or temples to escape the stigma that is attached to HIV/AIDS and discrimination against those living with the condition.³⁶ People living with HIV found that churches were a place of hope, spiritual support and comfort.³⁷

Alcohol

In our study, it was found that over a third of the respondents drank alcohol. Altered immune function has been associated with alcohol use and major depression.³⁸ Thus, these patients ran the risk of poor prognosis because of reduced CD4 activity and increased viral load.³⁹ In addition, the use of alcohol increases the high risk of sexual behaviour in HIV-infected patients.^{17, 40, 41}

Ninety-four per cent of those that consumed alcohol were employed, hence contributory factors could be work stress, their HIV condition, or simply because they could afford it. Many patients begin drinking in an attempt to medicate the symptoms of depression and anxiety,⁴² which is not uncommon in HIV/AIDS sufferers. South Africa is a major epicentre of the HIV epidemic. This may contribute to South Africa having one of the highest levels of alcohol consumption per drinker anywhere in the world.⁴³ Hence, there is a dire need to control the use of alcohol in patients with HIV/AIDS.

Illicit drug use

Fourteen persons (5.8%) abused narcotic drugs in this study. Possible reasons for persons living with HIV/AIDS to abuse drugs (as quoted in other studies) are depression,⁴⁴ needing support, wanting to escape reality, or simply because these individuals have been addicted to a narcotic drug throughout their lives. Many people living with HIV have been exposed to some type of traumatic event in their lives, and may be living with the symptoms of post-traumatic stress disorder. It is likely that they would have a co-morbid substance abuse disorder, resulting in poorer health outcomes.⁴⁵ In addition, this disorder could have a negative impact on health behaviour, low levels of adherence to ARVs, and/or a direct, deleterious effect on immune function.³⁸ The prevalence of depression and psychological distress has been found to be elevated in HIV-infected individuals.³² In order to live a normal life, despite being HIV-infected, patients need to negotiate the demands of chronic illness and their goals of living a "normal" life. In order to enjoy sustainable physical health, social support and financial independence, patients have to work on a number of areas which require persistent effort.³² However, if patients cannot accomplish this, they tend to turn to other sources of comfort, like traditional healers, religious leaders, psychologists, and sometimes illicit drugs.^{33, 46}

Limitations

The results of this study may not be applicable to all private sector patients in South Africa, since the sample size was relatively small

and confined to the eThekweni Metropolitan Municipality. In addition, this was a self-reported study, so the reliability of self-reporting is difficult to substantiate as information was collected and analysed based on what the patients reported. Finally, as a cross-sectional study, the direction of the association may not be causal.

Conclusion

It can be concluded from this study that HIV-positive patients who visited private sector doctors in the eThekweni Metropolitan Municipality of KwaZulu-Natal visited other healthcare practitioners and utilised traditional, complementary and alternative medicines for their health condition, but also consumed alcohol and other illicit drugs which could have had a negative effect on the outcome of their health.

Recommendations

Recommendations are:

- That a study is conducted to ascertain whether or not traditional, complementary and alternative medicines affect the treatment and expected outcomes of patients with HIV/AIDS, and to assess the reasons as to why and to what end patients seek help, comfort and guidance from sources other than conventional medical practitioners and practices.
- Health professionals should take a complete medical drug history, including allopathic and other medicines, to ensure that they are managing their patients effectively, especially in the light of drug interactions between allopathic and traditional, complementary and alternative medicines, and alcohol and illicit drugs.

Acknowledgements — The author would like to thank the patients who participated in this study, the National Research Foundation for funding the study, the pharmacy students for research assistance, and Ms Tonya Esterhuizen for statistical support.

References

1. The Joint United Nations Programme on HIV/AIDS. UNAIDS report on the global AIDS epidemic 2010. UNAID [homepage on the Internet]. 2011. c2011. Available from: http://www.unaids.org/documents/20101123_GlobalReport_em.pdf
2. HIV and AIDS in Kwa Zulu Natal. Project Gateway [homepage on the Internet]. 2008. c2011. Available from: http://www.projectgateway.co.za/HIV_and_AIDS.html
3. Booysen F, Geldenhuys J, Marinkov M. The impact of HIV/AIDS on the South African economy: a review of current evidence. TIPS/DPRU Forum 2003 [homepage on the Internet]. 2003. c2012. Available from: <http://www.tips.org.za/tipsdpruforum/2003>
4. Peltzer K, du Preez NF, Ramlagan S, et al. Use of traditional, complementary and alternative medicine for HIV patients in KwaZulu Natal, South Africa. BMC Public Health. 2008;8:255-68. <http://dx.doi.org/10.1186/1471-2458-8-255>
5. Bodeker G, Ong CK, Grundy C, et al. WHO global atlas of traditional, complementary and alternative medicine. Geneva: WHO Kobe Center; 2005.
6. International HIV & AIDS charity: alternate, complementary and traditional medicine and HIV 2011. Avert [homepage on the Internet]. c2011. Available from: <http://www.avert.org/alternative-medicine-hiv.htm>
7. Naidoo P, Jinabhai CC, Taylor M. Role and contribution of private healthcare sector doctors in the management of HIV-infected patients in the eThekweni Metropolitan area of KwaZulu-Natal. South Afr J Epidemiol Infect. 2007;22(1):13-7.
8. Kendall AE. The global challenge of HIV/AIDS, tuberculosis and malaria. Federation of American Scientists [homepage on the Internet]. 2012. Available from: www.fas.org/sgp/crs/misc/R41802

9. Ma K, Lee SS, Chu EK, et al. Popular use of traditional Chinese medicine in HIV patients in the HAART era. *AIDS Behav.* 2008;12(4):637-42. <http://dx.doi.org/10.1007/s10461-007-9245-4>
10. Dhalla S, Chan KJ, Montaner JS, et al. Complementary and alternative medicine use in British Columbia: a survey of HIV positive people on antiretroviral therapy. *Complement Ther Clin Pract.* 2006;12(4):242-8. <http://dx.doi.org/10.1016/j.ctcp.2006.05.002>
11. London AS, Foote-Ardah CE, Fleishman JA, et al. Use of alternative therapists among people in care for HIV in the United States. *Am J Public Health.* 2003;93(6):980-7. <http://dx.doi.org/10.2105/AJPH.93.6.980>
12. Wiwanitkit V. The use of CAM by HIV-positive patients in Thailand. *Complement Ther Med.* 2003;11(1):39-41. [http://dx.doi.org/10.1016/S0965-2299\(02\)00108-5](http://dx.doi.org/10.1016/S0965-2299(02)00108-5)
13. Ullman D. Controlled clinical trials evaluating the homeopathic treatment of people with human immune deficiency syndrome. *J Altern Complement Med.* 2003;9(1):133-41.
14. Amzat J, Abdullahi AA. Roles of traditional healers in the fight Against HIV/AIDS. *Ethno-Med.* 2008;2(2):153-9.
15. Lucas GM, Gebo KA, Moore RD. Longitudinal assessment of the effects of drug and alcohol abuse on HIV-1 treatment outcomes in an urban clinic. *AIDS.* 2002;16(5):767-74. <http://dx.doi.org/10.1097/00002030-200203290-00012>
16. United States Department of Veterans Affairs Drugs and Alcohol. Effects on the immune system, drugs, alcohol and HIV. VA National HIV/AIDS [homepage on the Internet]. 2011. c2012. Available from: <http://www.hiv.va.gov/patient/alcohol-drugs/immune-system.asp>
17. Olisah VO, Adekeye O, Sheikh TL, et al. Alcohol-related problems and high risk sexual behaviour in patients with HIV/AIDS attending medical clinic in Ahmadu Bello University teaching hospital. 2009. c2012. Available from: http://www.crisanet.org/docs/conference_08/Papers/CAUSES_CONSEQUENCES_DRUG_USE/Olisah_HighRiskSex-AndAlcohol.pdf
18. Oyemade A. Impact of substance abuse on treatment adherence. *Psychiatry (Edgmont).* 2008;5(11):16-19.
19. South Africa's population. South Africa.info [homepage on the Internet]. 2010. c2012. Available from: <http://www.southafrica.info/about/people/population.htm>
20. South Africa HIV and AIDS stats. Avert [homepage on the Internet]. 2011. c2012. Available from: <http://www.avert.org/south-africa-hiv-aids-statistics.htm>
21. Dickinson D. Traditional healers, HIV/AIDS and companies programmes. Wits Business School, University of the Witwatersrand [homepage on the Internet]. 2008. c2011. Available from: http://www.wbs.ac.za/download_files/faculty/lecturing_staff/prof_david_dickinson/2008/Dickinson_2008_4.pdf
22. Ritcher M. Traditional medicines and traditional healers in South Africa. Health Systems Trust [homepage on the Internet]. 2003. c2011. Available from: http://www.hst.org.za/sites/default/files/TAC_Law_Proj.pdf
23. Nxumalo N, Alaba O, Harris B, et al. Utilization of traditional healers in South Africa and costs to patients: findings from a national household survey. *J Publ Health Policy.* 2011;32:5124-36. <http://dx.doi.org/10.1057/jphp.2011.26>
24. Yardley K. The role of herbal adaptogens for human immunodeficiency virus (HIV), cancer and chronic illness. Katolen Yardley, Medical Herbalist [homepage on the Internet]. 2004. c2012. Available from: <http://www.katolenyardley.com/Herbal%20Adaptogens%20and%20HIV.pdf>
25. Doiphode VV, Gupte RB. Role of ayurvedic drugs in management of HIV infection: a pilot project. Proceedings of International Seminar on Complementary Medicines in AIDS. Ayur Educ. Ser No. 68, Pune; 1998. p. 72-80.
26. Malangu N. Self reported use of traditional, complementary and over-the-counter medicines by HIV-infected patients on antiretroviral therapy in Pretoria, South Africa. *Afr J Tradit Complement Altern Med.* 2007;4(3):273-8.
27. Babb DA, Pemba L, Seatlanyane P, et al. Use of traditional medicine by HIV infected individuals in South Africa in the era of antiretroviral therapy. *Psychol Health Med.* 2007;12(3):314-20. <http://dx.doi.org/10.1080/13548500600621511>
28. Fawzi W, Msamanga G, Spiegelman D, et al. Studies of vitamins and minerals and HIV transmission and disease progression. *J Nutr.* 2005;135(4):938-44.
29. Peltzer K, Friend-du Preez N, Ramlagan S, et al. Traditional complementary and alternative medicine and antiretroviral treatment adherence among HIV patients in Kwazulu-Natal, South Africa. *Afr J Tradit Complement Altern Med.* 2010;7(2):125-37.
30. Fairfield KM, Eisenberg DM, Davis RB, et al. Patterns of use, expenditures, and perceived efficacy of complementary and alternative therapies in HIV-infected patients. *Arch Intern Med.* 1998;158(20):2257-64. <http://dx.doi.org/10.1001/archinte.158.20.2257>
31. Chow R, Chin T, Fong IW, et al. Medication use patterns in HIV-positive patients. *Can J Hosp Pharm.* 1993;46(4):171-5.
32. Nerad J, Rorneyn M, Silverman E, et al. General nutrition management in patients infected with human immunodeficiency virus. *Clin Infect Dis.* 2003;36(Suppl 2):S52-62. <http://dx.doi.org/10.1086/cid.2003.36.issue-s2>
33. Chan IWS, Chung RWY. Basics of HIV medicine: meeting the psychosocial needs of HIV patients [homepage on the Internet]. 2007. c2011. Available from: <http://www.info.gov.hk/aids/pdf/g190htm/05.htm>
34. Heckman TG. Barriers to care among persons living with HIV/AIDS in urban and rural areas. *AIDS Care.* 1998;10(3):365-75. <http://dx.doi.org/10.1080/713612410>
35. Spirituality in higher education: a national study of college students search for meaning and purpose. (2000-2003). John Templeton Foundation [homepage on the Internet]. c2012. Available from: https://docs.google.com/viewer?a=v&q=cache:s6ssZOKSX38J:www.spirituality.ucla.edu/docs/reports/Findings_Summary_Pilot.pdf+higher+level+of+education+better+spirituality&hl=en&gl=za&pid=bl&srcid=ADGEEsiPuL_kgf2mysJvO1-lvEyuALGD6iixdY7Mg1-Y4sD3CZNIUB0dSDPDTSSn0bE6iqh6qAd1Q8EsiPEWEI-8D-YdA01WMr7DAoTRLp0qNNpS-WJioiJ2q2CK-rgTJUvBjFoaTG&sig=AHIEtbSgmogXGQBm-XSOW3eaF7a11YP_g
36. Ansari DA, Gaestel A. Senegalese religious leader's perception of HIV/AIDS and implications for challenging stigma and discrimination. *Cult Health Sex.* 2010;12(6):633-48. <http://dx.doi.org/10.1080/13691051003736253>
37. Kurian M. Partnerships between churches and people living with HIV/AIDS [homepage on the Internet]. 2005. c2012. Available from: <http://www.oikoumene.org/en/folder/documents-pdf/guidelines-e.pdf>
38. Schleifer SJ, Keller SE, Czaja S. Major depression and immunity in alcohol dependent persons. *Brain Behav Immun.* 2006;20(1):80-91. <http://dx.doi.org/10.1016/j.bbi.2005.05.006>
39. Baum MK, Rafic C, Lai S, et al. Alcohol use accelerates HIV disease progression. *AIDS Res Hum Retroviruses.* 2010;26(5):511-8. <http://dx.doi.org/10.1089/aid.2009.0211>
40. Samet JH, Phillips SJ, Horton NJ, et al. Detecting alcohol problems in HIV-infected patients: use of the CAGE questionnaire. *AIDS Res Hum Retroviruses.* 2004;20(2):151-5. <http://dx.doi.org/10.1089/088922204773004860>
41. Burnam MA, Bing EG, Morton SC, et al. Use of mental health and substance abuse treatment services among adults with HIV in the United States. *Arch Gen Psychiatry.* 2001;58(8):729-36. <http://dx.doi.org/10.1001/archpsyc.58.8.729>
42. Rodseth D. Dealing with alcohol abuse in general practice. *S Afr Fam Pract.* 2012;54(1):37-41.
43. Peltzer K, Ramlagan S. Alcohol use trends in South Africa. *J Soc Sci.* 2009;18(1):1-12.
44. Rhee YJ, Taitel MS, Walker DR, et al. Narcotic drug use among patients with lower back pain in employer health plans: a retrospective analysis of risk factors and health care services. *Clin Ther.* 2007;29(Suppl):2603-12. <http://dx.doi.org/10.1016/j.clinthera.2007.12.006>
45. Brief DJ, Bollinger AR, Vielhauer MJ, et al. Understanding the interface of HIV, trauma, post-traumatic stress disorder, and substance use and its implications for health outcomes. *AIDS Care.* 2004;16(Suppl 1):S97-120. <http://dx.doi.org/10.1080/09540120412301315259>
46. HIV/AIDS in Africa. Myfundu [homepage on the Internet]. 2007. c2011. Available from: http://myfundu.co.za/e/HIV/Aids_in_Africa_2007