CHAPTER 26
THE PROBLEM OF MISLEADING AND UNSCIENTIFIC INFORMATION REGARDING NUTRITION

Norman J. Temple, Alice N. Brako, and Jacob Setorglo

Outline
• Marketing of dietary supplements in the United States and Canada
• Examples from South Africa
• Examples from Ghana
• Examples from Kenya

Objectives
By the end of this chapter you should be able to:
• Identify modes of marketing of dietary supplements in North America
• Identify and describe types of dietary supplements
• Recognize misleading and unscientific information regarding supplements
• Understand the difference between claims of health benefits and actual health benefits
• Understand the general problem of the use of unscientific information for the marketing of untested and unproven treatments, especially herbal treatments, in developing countries
• Describe some health consequences of the abuse of herbal preparations
1. INTRODUCTION
People around the world generally have a poor grasp of biomedical science and of issues related to best practices in the prevention and treatment of various diseases. This leaves people vulnerable to those who distribute misleading and unscientific information. In fact, this problem is extremely widespread in almost all countries and comes in many forms. An important example is the marketing of dietary supplements, a topic examined in the first part of this chapter. The discussion focuses on North America, as that is where this problem has been most carefully examined. Later in the chapter we turn our attention to a range of problems seen in developing countries.

This chapter is not intended to be comprehensive, but to provide numerous illustrations of the problem. Students are encouraged to take the message of this chapter and apply it to their own communities; unfortunately, they likely will have little trouble finding many examples of the sort of problems described here.

2. MARKETING OF DIETARY SUPPLEMENTS IN THE UNITED STATES AND CANADA
(section written by Norman Temple)
I reside in Canada and have studied the problem of misleading information in North America, especially in regard to the marketing of dietary supplements (Temple, 2010; Temple, 2013). The situation in North American, especially in the United States, is a paradox. The USA is the home of NASA, Microsoft, Apple, and Boeing. It is also the home to many of the world’s leading research centres for the study of the biomedical sciences. Vast amounts of accurate information are readily available to people in the U.S., both in books and via the Internet. The majority of people have ready access to the Internet, and many people go to school to the age of at least 18, with millions more attending college. Yet despite all that, an enormous market exists for books that are patently inaccurate, health food shops everywhere sell dietary supplements, many of which are useless, and millions of people use practitioners of alternative medicine who practice forms of therapy that have no scientific basis. Here we focus on the marketing of dietary supplements.

2.1 Types of Dietary Supplements Sold
A great variety of dietary supplements are widely sold in North America. Here we are using the term dietary supplement broadly, to include such products as herbs and exotic fruit juices. A few select products illustrate the problems commonly seen with such supplements.

A novel type of dietary supplement is exotic fruit juices, such as acai and goji juices. Sellers claim that these juices are highly beneficial. Health food shops in Canada often charge $50 to $60 per litre for them. By contrast, supermarkets sell other fruit and vegetable juices for less than $3 per litre. Despite this enormous difference in price, there is an absence of credible evidence that exotic fruit juices have any significant nutritional advantage over lower-priced ones.

In North America, herbs are heavily promoted as a class of supplements and are used for a wide variety of reasons, especially as a therapy for various medical disorders. One common problem with herbs is that there can be much variation between different brands of what is supposedly the same herb (Harkey et al., 2001; Draves & Walker, 2003). This may be due to such factors as the actual species of plant used, the part of the plant used, and the extraction method. It is also entirely possible that some manufacturers may simply be using cheap ingredients in place of expensive herbs. As a result, anyone buying these products has little real idea of how medically active they are.

2.2 Claims Made in the Marketing of Dietary Supplements
In recent years, I have examined the marketing of dietary supplements in North America. Weak evidence is often presented as proven facts. Sometimes marketers go to the extreme and claim that their product cures almost anything and everything, even cancer. Typically, the marketers of supplements use scientific evidence the way a drunk uses a lamp post: more for support than illumination.

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2.2.1 Dishonesty and wild exaggerations

Dishonesty and wild exaggerations are seen frequently whenever one looks at the marketing of supplements. A few years ago, flyers were distributed promoting a particular product where the person behind it, Dr. Jesse Stoff, was described as “the world’s leading viroimmunologist.” In fact, this gentleman has apparently never published a scientific paper. In another case, Dr. Earl Mindell, who sells goji juice via multilevel marketing (see Section 2.4 for a definition), was referred to as “Widely regarded as the world’s #1 nutritionist” and his product as “The biggest discovery in nutrition in the last 40 years!” Both claims are ludicrous exaggerations. The reason for making these claims is clearly to make the products look like fantastic breakthroughs and thereby create sales.

2.2.2 How dietary supplements (supposedly) work

Claims are often made that supplements have a wide variety of actions in the body and thereby provide the means to achieve health benefits. The supporting evidence is generally weak. Here are some examples.

Many supplements are marketed with a claim of being “rich in antioxidants.” The obvious implication is that such products will improve health or prevent disease. There is some logic to this claim, as it is well established that antioxidants are important for protection against tissue damage caused by free radicals. In order to investigate this, large randomized clinical trials have been carried out using the three major antioxidant vitamins: β-carotene and vitamins C and E. The major goal of most of these trials has been to determine whether these substances contribute to the prevention of either heart disease or cancer. However, these trials have failed to demonstrate that supplements of antioxidant vitamins are protective against disease. When the results of these trials have been pooled, we find that these supplements lead to an increase of about 2% to 5% in all-cause mortality (Bjelakovic et al., 2012). In short, these findings demonstrate that when sellers of a supplement claim that a product has a high content of antioxidants, this does not mean the product will improve health or prevent disease.

Detoxification is an important biochemical process by which the body eliminates harmful substances. Many herbs are marketed with the claim that they bring about detoxification. This supposedly helps cleanse the body, thereby leading to assorted health benefits. But such claims are without any supporting evidence. Another common claim with herbal supplements is that they stimulate the immune system. The obvious implication of this is that the body will be less susceptible to infections. With few exceptions, the claims lack credibility.

There is a great deal of marketing of supplements with claims that they can induce quick and easy weight loss. Accompanying sales promotion materials will often display a photo of a young woman with a BMI of about 20. For good measure, a mechanism is often added to explain how the supplement supposedly works, such as by stimulating metabolism or blocking the appetite. This marketing is almost certainly highly profitable in view of the huge obesity epidemic that has swept North America, and considering the tens of millions of people desperate for a “cure.” But the evidence is thin that such supplements bring about more than a trivial weight loss.

In each of the above cases we see claims being made that the supplement induces a physiological or biochemical change in the body. In each case the mechanism is sufficiently simple that the average layperson can understand it. But it is a huge distortion of biomedical science to make the leap to the conclusion that the supplement can prevent or cure a disease.

2.2.3 Weakness of supporting evidence

A feature of many marketing claims is the exploitation of weak clinical evidence. For example, one or two small studies of dubious clinical significance may have been conducted, but their results are presented in marketing as substantial “evidence.” Alternately, a particular herb may have been used for centuries as a treatment for a particular condition. This is exploited as the basis of claims that the herb must be effective. Often such evidence looks impressive but collapses when the results of properly conducted clinical trials appear.

A good example of this is the use of ginseng for helping people to overcome fatigue and boost their energy levels. Claims that ginseng is effective for this go back many centuries. However, according to an
authoritative source, a “few studies using ginseng extract... report improvements in patients with fatigue of various causes. However, these results are early, and studies have not been high quality” (MedlinePlus, 2009). The case of *Ginkgo biloba* provides another excellent illustration of the problem of giving too much credence to unreliable forms of evidence. This plant is commonly used to help maintain cognitive health in aging, especially for the memory. However, the results of a large randomized, double-blind trial conducted on elderly subjects reported that the herb was no better than placebo for slowing cognitive decline or improving memory function (Snitz et al., 2009).

Similar to weak clinical evidence being cited as substantial evidence, anecdotal evidence is frequently seen in marketing. A typical example might be as follows: “Many of my customers have taken [this product] and the results are amazing!” A slight variation of anecdotal evidence is the use of testimonials, as in this example: “Susan from Miami says: ‘I lost 12 pounds in my first month while taking Rapid Fat Burn and never felt hungry.’”

What is missing from the marketing claims for supplements, in the great majority of cases, is hard scientific evidence. In particular, support for claims that a supplement really does work requires positive results from one or more well-conducted randomized clinical trials, preferably with clinical endpoints (i.e., real health benefits). Such evidence is referred to as the “gold standard.” For example, if the claim is made that a supplement prevents infections, then the trials should show a reduction in the number of infections, not merely a change in the immune system. Another essential feature of credible evidence is that the results be published in peer-reviewed journals. The study on *Ginkgo biloba* described above is an excellent example of the type of study that is needed for all dietary supplements.

### 2.3 How Dietary Supplements Are Sold

Supplements are sold through a variety of means. In recent years, billions of spam e-mails have been sent out promoting sex-related nutritional supplements. These e-mails typically direct people to a website. While some websites sell just a single product, many others offer a wide variety of supplements.

Multilevel marketing is a form of marketing practiced by many commercial enterprises, such as Avon (cosmetics). The actual salespeople, as well as everyone up the chain, receive a commission. There are many companies operating in North America that sell supplements using this form of marketing.

Most sales of supplements are done directly in supermarkets, chemist shops (drug stores), and health food shops (HFSs). Staff in HFSs seldom have any proper scientific expertise. Nevertheless, whenever a customer asks for advice, the staff are usually quick to recommend the purchase of one or more supplements. Studies done in the USA, Canada, and the UK have consistently shown that most recommendations made by HFS staff are a distortion of the scientific evidence. Moreover, when the same question is asked in different HFSs, there is a huge variation in the advice given (Gotay & Dumitriu, 2000; Vickers et al., 1998; Calder et al., 2000; Buckner et al., 2005). This problem occurs much less often in chemist shops (Temple et al., 2009), which is not surprising since chemist shops normally have a pharmacist on staff. Pharmacists are trained health professionals and must abide by a code of ethics.

### 2.4 Comments on the Marketing of Dietary Supplements

Supplements can sometimes be of much value; in fact, some are critical to good health. In other chapters we have described the value of particular supplements, such as vitamin D. The situations in which supplements can be recommended usually occur in developing countries when dealing with people suffering from malnutrition. (The situation is altogether different when dealing with well-fed people in North America.)

The sale of dietary supplements is highly profitable. This is doubtless the dominant motive for all the deceptive marketing described above. The supplements for which the supporting evidence is strongest cost around $3 to $4 per month. One of the few good examples is vitamin D. But that is not where the peddlers of supplements focus their efforts, as the profits are too slim. Instead, they aim to maximize sales of expensive supplements. For example, a person who walks into an HFS and asks for advice on how to have more energy, cure headaches, and avoid getting cancer will probably be advised to take several different supplements, each costing between $20 and $60 per month. which could easily add up to $100 to $200 per month. And the beneficial effects on health are likely to be trivial at best.
Supplements are not risk free. Some supplements, especially herbs, can induce harmful side effects (Saper et al., 2008). The number of such cases is estimated to run into the tens of thousands per year in the U.S.A. (Cohen, 2009). Several herbal supplements may interact with drugs. This occurs most commonly with St John’s wort, and to a lesser extent with ginkgo (Tsai et al. 2012). Many supplements advertised for improving sex performance are adulterated with possibly harmful drugs (Cohen & Venhuis, 2013). Based on the evidence reviewed here, the general population should be advised that before buying supplements they seek the advice of a qualified health professional, such as a pharmacist or dietitian. Alternately, they could seek information from websites that provide information written by experts. Several excellent websites are listed at the end of the chapter.

Other useful advice is to avoid health food shops as the employees are likely to give inaccurate and misleading advice. Additionally, people should ignore websites of supplement manufacturers and not trust the advice given by people engaged in multilevel marketing. People must use common sense. In particular, everyone should remember the fundamental rule: If things are too good to be true, they probably are.

3. EXAMPLES FROM SOUTH AFRICA

(section written by Norman Temple)
The problem of misleading and unscientific information can be seen in all parts of South Africa, but, not surprisingly, its features vary a great deal depending on ethnicity and education level.

For example, one product sold in South Africa is a patch that is placed on the skin with the claim that it draws out toxins. The package contains the following statement: “Chi Detox patches have negative ions (antioxidants), release far infrared rays, and has all natural ingredients which stimulate the reflexes and meridians and increase blood circulation.” Clearly, the people engaged in the marketing of supplements have learnt well from the United States.

South Africa is little different from most other countries in having a system of traditional medicine that has evolved over time, and there are many traditional healers in that country who target the black population. One healer who operates in Cape Town has shown much enterprise in attracting new business. Leaflets given out on the street describe him as a “Specialist in traditional herbal medicine, fortune teller.” His claimed areas of expertise include the following: “penis enlargement, help pregnant women, women who cannot reproduce and those with period problems, reduce women’s vagina and big stomach, diabetes, high/low blood pressure, bring back lost lover, court cases, divorce and bad debt, remove bad luck and give good luck, get jobs and promotion, clean homes from bad ghosts, heal mad people and epilepsy.”

The most notorious case of bizarre scientific beliefs in South Africa is that of former president Thabo Mbeki. After reading a highly unorthodox website, he decided that the connection between HIV and AIDS was far from proven. His views then became official government policy, with tragic consequences. His health minister, Manto Tshabalala-Msimang, advocated a diet of garlic, olive oil, and lemon to cure the disease.

4. EXAMPLES FROM GHANA

(section written by Jacob Setorglo)
Ghana is a developing country located in West Africa. Here I describe some of the myriad problems of misleading scientific information and abuse of herbs and nutritional supplements. While the information is specific to Ghana, the situation is likely to be quite similar in other countries of West Africa.

The global market for herbal medicines is so huge that the World Health Organization (WHO) (2003) has launched strategies to help developing countries do the following:

• Develop national regulatory frameworks
• Ensure the quality, efficacy, safety, and use of traditional herbs
• Make these herbs accessible and available to the population
• Document herbal remedies that are proven

For the developing world, the question is not whether herbal preparations are useful in the promotion of
health, but how the quality and safety of herbs will be improved for the population. It appears that the use of herbs for the treatment and management of illnesses is here to stay in the developing world.

### 4.1 The Health Delivery System

The health delivery system in Ghana is plural. In addition to conventional/orthodox medical practitioners we also have the Ghana Psychic and Traditional Healers Association (MoH, 2007). Its members include spiritualists, faith healers, priests, and traditional herbalists. The incorporation of these groups into the health delivery system was supposed to help find local antidotes to perennial health problems. Other well-meaning efforts were put in place by the government to enable these healers to acquire formal training and practice safely.

### 4.2 The Legal Framework

A council has been established to register and license traditional healers in Ghana in an attempt to regulate the preparation and sales of herbal medicines and products (WHO, 2001). The Traditional Medicine Practice Council (TMPC) managed to get some herbal drugs included in the national drug list that are prescribed by orthodox doctors (WHO, 2001; MoH, 2004a). In addition, the Ministry of Health developed the traditional health-care system’s code of ethics (GNA, 2004). The practice of herbalism and sale of unorthodox herbs have therefore been officially recognized. This act provided the legal basis for the proliferation of herbal preparations and supplements.

### 4.3 Modes of Sale of Herbal Preparations

The financial returns on the practice of selling herbal preparations are high because the majority of Ghanaians (69%) reside in rural areas and patronize traditional healers. Few rural households have access to a doctor (Senah, 2001). Even in regional capitals, herbalists peddle their products from commercial vehicles.

Sometimes the method of preparation of the herbs has been developed by the herbalist and is kept secret or at least passed between family members. The sellers of herbs sell the “magic remedies,” often on public transport. Popular among these are those for the treatment of haemorrhoids, diabetes, infertility, various cancers (breast, cervical, and prostate), arthritis, epilepsy, typhoid, cardiovascular disorders (including hypertension and stroke), HIV, erectile dysfunction, beriberi, and tooth decay. Sellers often claim that one herb can cure/treat numerous ailments. The mode of application depends on the relief sought from the herbal concoction.

There is disparity in health-care financing in urban areas. As a result of the medical pluralism created by the government, herbalists and other groups claim they have medical expertise. On that basis, they prescribe herbal medicines as solutions to nutritional problems. This is often done during phone-in sessions on the radio. Others appear on national television to promote their herbs.

### 4.4 Abuse of Herbs

The growing demand for herbal “drugs” has triggered an increase in quack herbalists who practice ignorantly and endanger lives on the path to enriching themselves. This has resulted in drug abuse, inappropriate use of herbs, and inaccurate dissemination of medical and nutritional information. Reports indicate that secondary school students have also fallen victims to this menace and are increasingly using herbal concoctions. This has resulted in many reports of chronic liver and kidney complications (ABCnewshealth.com, 2007).

### 4.5 The Problem of Lack of Access to Conventional Health Treatment

There is chronic under-funding of the health-care system in Ghana. This problem is compounded by the high fertility rate. Over the years the government has shifted the burden of health-care cost to the consumer, which has affected health-seeking behaviours. Until the early 1980s, medical treatment was virtually free (Frimpong, 1997). But in the 1990s, the policy of “cash and carry” was introduced. Here, patients pay for every service received at government hospitals.
The pendulum then swung in the other direction. The National Health Insurance Scheme (NHIS), implemented in 2005, was intended to enable all Ghanaians to have access to health care regardless of their ability to pay (Sulzbach et al., 2005). However, not all drugs are covered by the insurance scheme, and with drugs constituting about 60% to 80% of the costs of health care (MoH, 2004b), their affordability became a problem. This is especially challenging as about 45% of Ghanaians live on less than one dollar a day and 35% live in extreme poverty. Compounding the problem, medical professionals often turned patients away because the hospitals had not received NHIS reimbursements for several previous months. There is also a shortage of trained medical personnel. Many orthodox practitioners have gone into private practice, and their fees are often so high that most people cannot afford private health care. Most doctors in Ghana with post-graduate training go into private practice to earn more money, while many others have emigrated (Agyepong et al., 2004).

The combined effect of these various problems is that most people have limited access to orthodox practitioners. There are about 45,000 traditional healers licensed to operate, as opposed to an orthodox doctor-to-patient ratio of a mere 0.15 per 1000 patients, which is a common problem in many developing countries (WHO, 2006). This has enabled herbalists to advance their own interests. As a result, people have continued to patronize traditional herbalists when needing medical and nutritional treatment (IMF, 2005).

4.6 Lack of Legal Enforcement

As part of the measures put in place by the government to streamline the activities of herbalists, institutions such as Mampong, a centre for research into plant medicine, and the Kintampo project were established. The plan was that practitioners would take herbs to the centre for analysis of their chemical composition as well as to substantiate health claims. But most herbalists did not cooperate. The national standards and the food and drugs boards were mandated to certify that before any herbs or supplements are sold, they should meet standards set out in the law. However, in practice, all kinds of products are being sold without going through these two bodies. Many herbal preparations are on the market with labels that flout legal requirements. Unsuspecting individuals are persuaded to buy these items, on which all they are likely to find is the name of the herb and a long list of diseases it can supposedly cure.

4.7 Commonly Abused Substances

Here are a few examples of the herbs and supplements that are being falsely marketed in Ghana and that are deeply rooted in the culture.

- **Alcoholic beverages**: Alcoholic drinks are part of the culture and are used for various occasions such as naming ceremonies for newborns, marriages, and funerals. But the claim in the adverts is that the drinks improve appetite and sexual performance.
- **Multivitamins**: The advertisements for most multivitamins that are marketed and that are claimed to contain certain micronutrients have no scientific basis. This can occur because the advertisements do not pass through regulatory agencies, so the contents are not checked before entering the public domain. As a result of heavy advertising, widespread misinformation about multivitamin supplements is perpetuated in Ghana.
- **HIV/AIDS remedies**: Reverend ministers and other herbalists have come out publicly and claimed to have the cure for HIV/AIDS. They parade individuals and claim to have treated and healed them. The herbs they use for the treatment are kept secret and have not been subjected to any scientific testing. Those who claim to have been healed do not produce any supporting medical evidence.
- **Garlic pills**: These supplements are advertised as a sure way to relieve all forms of joint pain. They are also supposed to solve sexual dysfunction.

5. EXAMPLES FROM KENYA

(section written by Alice Brako)

It is estimated that 80% of the population of Kenya relies on traditional medicine for primary health care,
with herbs being the most popular form of treatment. This is typical of most developing countries (World Health Report, 2008). An under-resourced health-care system has helped create an environment in which many people view herbal medicines as viable and affordable alternatives. However, herbal supplements are not cheap, as illustrated in the case presented below. The case also shows what often starts as a promise to “cure whatever ails you” ends in disappointment as patients realize that they have spent a lot of money without improvements in health. The case also highlights some of the health risks associated with some herbal remedies.

5.1 Leah’s Case

Leah is a Kenyan woman in her early eighties who a few years ago, together with her late husband, heard an announcement on the radio that caught their attention. They were told of an herbalist who cured many diseases, such as arthritis, chest pains, asthma, diabetes, and HIV/AIDS. Both husband and wife suffered from painful chronic arthritis for which they had been taking prescription and over-the-counter painkillers, and yet the pain persisted. They welcomed the news as an opportunity to try an alternative treatment, something “natural and free of side effects,” as the radio announcer promised.

A few days later, Leah and her husband set out on a day’s journey to the nearby town that the radio announcer had directed listeners to go to. They were joined there by many others responding to the same radio message. Once at the “clinic,” as the temporary treatment facilities were referred to, each client’s weight was taken and their blood drawn. Leah and her husband did not meet with the herbalist for a one-on-one consultation, although he came to the waiting room to applaud everyone for coming to his clinic. He did not inform people of his qualifications.

Leah and her husband were each given 500 grams of three different types of powder, and two different types of tablets. These preparations were not labelled, but they were told that they were herbal supplements. They were instructed to take them three times a day and continue with the regimen until they felt better. If they ran out of supplements before they felt better, they should tune in to the radio for an announcement on when the herbalist would next be in town so they could get refills. After completing the first round of treatment and not feeling relief from pain, Leah decided to stop the treatments. Her husband, however, returned for a second round, but he too stopped taking the supplements when his health condition did not improve after four months. By now, Leah and her husband had paid the equivalent of more than $300, a huge sum of money for the average Kenyan.

This case illustrates how unscrupulous marketers of dubious substances exploit people’s vulnerabilities. Many people see herbalists for lifestyle-related chronic diseases for which, even though treatments are available, there are generally no cures. Luckily for Leah and her husband, the remedies they were given had no harmful effect on their conditions. In other cases, however – as, for example, when a person has a disease that needs immediate attention, such as cancer, but postpones seeking conventional treatment while their condition deteriorates – the consequences can be dire.

5.2 Common Problems Seen in Kenya

People often combine herbal treatments with conventional medicines they take for chronic conditions, but they should be informed of possible adverse side effects due to herb-drug interactions. Additionally, there may be adverse herb-nutrient interactions (Boullata, 2005).

In Kenya, the Ministry of Culture is responsible for approving certification that allows an herbalist to practice. However, there are no guidelines regarding safety, labelling, product packaging, weights, measures, and dosage information on herbal preparations. As a result, consumers are often unaware of what ingredients are contained in the supplements they are taking. A recent report indicates that some unethical herbalists grind up conventional drugs, mix them with herbal concoctions, repackage them, and pass them off as herbal supplements which they sell at much higher prices (Wesangula, 2009). In another instance, it was reported that a large proportion of Kenyan herbal medicines were found to be contaminated with high levels of disease-causing microorganisms (Okwemba, 2010).

The techniques and equipment used by some herbalists may pose safety risks to their clients. When staff with unknown qualifications draw blood and perform other invasive procedures, there is a chance of transmitting blood-borne infections, especially if they do not use sterilized instruments.

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While there may be some reputable herbalists, many are driven primarily by the profit motive. Such practitioners pose a very real risk of causing harm to their clients. With the rising popularity of herbal clinics and practitioners and the aggressive marketing strategies with which they promote their products, there is an urgent need to educate people as to the dangers they are exposed to. Community nutritionists and other health-care workers should use public forums, such as women’s group meetings and churches, to disseminate these important messages regarding the health risks associated with the misuse of herbal supplements.

A concerted effort should be made to train all those involved in the provision of health care at the community level, including nutritionists and nurses, to provide clear and well-informed advice on the misuse of herbal preparations. Efforts to train community health-care workers will be difficult without addressing the chronic shortage of conventional medicines. When the nurses at dispensaries are faced with sick patients and they have no drugs to offer, they are placed in a very difficult position; given this situation, they may suggest herbal remedies of undetermined health benefit.

**DISCUSSION QUESTIONS AND EXERCISES**

1. Describe how dietary supplements are marketed in your country. How common is the problem of misleading information in the marketing of dietary supplements?

2. What herbal treatments are widely used in your country? How much reliable evidence is there to support the use of these herbal treatments?

3. Describe three examples of unorthodox and unproven treatments for diseases that are used in your country that are not mentioned in this chapter. What action do you feel your government should take in regulating these treatments?

4. What are the major factors that make people turn to practitioners of unorthodox and unproven treatments for diseases rather than to practitioners of orthodox and proven treatments?

**REFERENCES**


Okwemba A. 2010 (February). Be warned, herbal prescriptions could be harmful. The Kenya Daily Nation.

ADDITIONAL RESOURCES

There are several health-related organizations that supply reliable information on supplements at their websites. These include the following:

- The Mayo Clinic: http://www.mayoclinic.com
- MedlinePlus: http://medlineplus.gov/
- U.S. Food and Drug Administration: http://www.fda.gov/
- World Health Organization (WHO): http://www.who.int/en/

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