

2002

Herbal supplement education in dental hygiene curricula

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HERBAL SUPPLEMENT EDUCATION IN DENTAL HYGIENE CURRICULA

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Thesis submitted to the
School of Dentistry
at West Virginia University
in partial fulfillment of the requirements
for the degree of

Master of Science
In
Dental Hygiene

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Morgantown, West Virginia
2002

ABSTRACT

Herbal Supplement Education in Dental Hygiene Curricula

Lisa Elena Lisauckis

While there is evidence in the literature of herbal supplement education in other disciplines, inclusion in dental hygiene curricula is not reported. The purpose of this study was to assess the prevalence and extent of herbal supplement education in the 256 accredited dental hygiene programs in the United States. A survey was sent to program directors. Data analyses, including frequencies, cumulative frequencies, percentages, analyses of variance, and test of Chi Square were conducted using JMP program. Surveys revealed 63% of respondents (n=160) included herbal supplement education and primarily incorporated it in the pharmacology course (67%). Statistically significant differences ($p \leq .05$) occurred between programs offering herbal supplement education and whether they included questions regarding herbal supplement use on clinical health histories. It can be concluded that herbal supplement education occurs minimally in dental hygiene programs. When it is taught, patients in clinic are asked about their use, and continuing education courses are needed.

DEDICATION

*To my family and friends who have continued to love and encourage me
throughout my academic endeavors.*

ACKNOWLEDGMENTS

The author would like to express thanks and appreciation to certain individuals who have helped make this publication possible.

Erdogan Gunel, Professor, Eberly College of Arts and Sciences, Statistics, for his assistance with the data analysis.

Yetta Bretzman, Manager, Software Training and Consulting, for giving of her time, patience and assistance with the computer programming.

Michael Bagby, Associate Professor, Director of Biomaterials, School of Dentistry, for his help in editing this thesis.

Betty J. Forbes, M.A., R.D., L.D., Division of Family Resources, College of Agriculture and Forestry; and Robert N. Stuchell, D.M.D., Division of Periodontics, School of Dentistry, for giving of their time and guidance while serving on my committee.

Joan Gibson-Howell, R.D.H., M.S.Ed., Division of Dental Hygiene, School of Dentistry, for her ongoing support, encouragement, and friendship.

Christina B. DeBiase, B.S.D.H., M.A., Ed.D., Professor and Director, Division of Dental Hygiene, School of Dentistry, for many years of encouragement, leadership, and mentoring as I have continued my career in dental hygiene.

Patsy and Carl Kalmar, my Aunt and Uncle, for their love and support helping make this degree possible, I am truly grateful.

Frank and Myrtle Lisauckis, my parents, who have shown me nothing but unconditional love throughout my life. I am proud to be called your daughter.

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CHAPTER I

INTRODUCTION

The use of complementary and alternative medicine by the public in the United States is too massive to ignore. Learning institutions are granting doctorate degrees in naturopathy, while traditional schools of medicine, pharmacy, and nursing are offering courses in alternative medicines. Among patients who see traditional health care providers, 33% to 42% use alternative medicine remedies. Many of these patients fail to disclose this fact to their health care providers. About 80% of the world's population use herbs for medicinal purposes; some of this use is not by choice but rather because of a lack of traditional health care.¹

“Despite efforts by health care providers to keep pace with an ever-growing body of factual medical evidence, share knowledge with patients, and to offer new, FDA-approved pharmaceuticals, devices, and procedures at an almost alarming rate, the general public still feels the need to reach out for something more. In an increasing number of instances, that something is herbal medicine.”¹

Congress established The Dietary Supplement Health and Education Act of 1994 to define dietary supplements as essential nutrients, such as vitamins, minerals, and proteins, plus herbs, botanicals, and similar substances such as feverfew, ginseng, enzymes, and hormones. This Act removed the Food and Drug Administration's power to regulate herbal supplements. Before 1994, the FDA would ban unsafe supplements and take them off the market. Now products do not need to be tested for efficacy, and there is no guarantee that they do what they say they do. The manufacturers are not responsible for proving the safety of their products, leaving the FDA with the burden to prove them unsafe.^{2,3}

As health care providers, dental hygienists should be aware of the widespread use of herbal supplements. Yet, there is no evidence in the literature that herbal supplement education is included in current dental hygiene curricula.

PURPOSE OF THE STUDY

The purpose of this study is to assess the prevalence and extent of herbal supplement education in the 256 accredited dental hygiene programs existing in the United States. The results will then be utilized to incorporate herbal supplement education into dental hygiene curricula.

STATEMENT OF THE PROBLEM

To what extent does dental hygiene education in the United States include herbal supplement education as part of the dental hygiene curricula?

SIGNIFICANCE OF THE STUDY

Herbal supplement use cannot be overlooked by health care providers or treated casually. Current literature reveals that Americans spend somewhere between 1.5 billion to 3.4 billion dollars on herbal supplements annually. Documentation shows that 40-60% of the population admits they are using at least one herbal supplement, and 70% of them are not informing their physicians of this use.^{2,4-9}

Although herbal supplements may benefit some people, there are individuals taking these supplements who are virtually unaware of potential risks to their overall health. The risks or side effects associated with herbal supplement use are generally not a concern of the public. These supplements are seen as natural and accessible compared with prescription drugs, suggesting a sense of self-healing.^{6,8-12} Due to the relaxed regulations of the FDA, the labels may not disclose ingredients, risks, side effects, or possible harmful interactions with other substances. Also,

herbal products may contain ingredients other than those indicated on the label.¹³ Therefore, it is essential that health care providers be familiar with herbal supplements that are known to cause interactions with prescription medications and ones that can affect dental treatment.

A dental hygienist is usually the first team member in a dental office to see the patient. She/he is responsible for performing the medical/dental history assessment. This time shared may provide an opportunity for the patient to disclose herbal supplement use that they may have resisted disclosing to their physician. The dental hygienist must be aware of the herbal supplements commonly available to patients and their recommended uses, risks, and the appropriate questions to ask patients who often do not identify these supplements when asked if they are currently taking any medications.¹⁴ Programs responsible for the educational preparation of dental hygienists need to include information related to herbal supplements in their curricula.

RESEARCH QUESTIONS TO BE ANSWERED

- Is herbal supplement education included in dental hygiene curricula?
- Is there a difference in the existence and type of herbal supplement education offered based on program type (degree offered [associate/baccalaureate] and dental school affiliation)?
- Which course includes herbal supplement education as a topic area?
- Is there any association between dental hygiene program type (degree offered, dental school affiliation) and whether continuing education in herbal supplements is offered?
- Is there a difference between those programs that offer herbal supplement in theory (classroom), with those programs that include this information in practice (medical history forms in clinic)?

DEFINITION OF TERMS

1. Allopathic Medicine (Western/conventional medicine) – All methods of proven treatment for disease.
2. Alternative Medicine – Modalities used **instead of** conventional medicine.
3. Complementary Medicine – Modalities used **together with** conventional medicine.
4. Herbs – An herb can be any part of a plant used to make medicine: a leaf, flower, stem, seed, root, fruit, or bark.
5. Herbal supplement – Whole herbs, teas, capsules and tablets, extracts and tinctures.
6. Homeopathy – A system of medical practice that treats disease with minute doses of a remedy that would in healthy persons produce symptoms of the disease being treated.
7. Phytomedicine – The practice of using plants or plant parts to achieve a therapeutic cure.

ASSUMPTIONS

- Dental hygiene program directors are familiar with the contents of the entire dental hygiene curriculum they supervise.
- Due to the lack of FDA standardization, there can be potential risks associated with the use of herbal supplements.

- Dental hygiene students will have clinical experience with patients taking some form of herbal supplement.

LIMITATIONS

- The answers to survey questions may be provided only by the director of each responding accredited dental hygiene program.
- Survey questions may be misinterpreted.

DELIMITATIONS

- This study will survey all undergraduate dental hygiene programs in the United States accredited by the American Dental Association Commission on Dental Accreditation, as listed by the American Dental Hygienists' Association, Fall 2000.

CHAPTER II

LITERATURE REVIEW

INTRODUCTION

A recent study revealed that the percentage of United States adults seeking alternative medicine (e.g. acupuncture, chiropractic, herbal supplements, and homeopathy) increased from 34% in 1990 to 42% in 1997.¹⁵ Another national survey described those individuals with holistic or spiritual orientations more likely to utilize alternative medicine because it fits with their philosophy of life and health.⁴

“Traditional healing, homeopathy, folk or alternative medicine are a few of the terms used to describe the healing practices of “culturally differentiated groups.” These practices are considered non-allopathic, non-institutional treatments lacking formal academic or clinical trials. Alternative healing practices in the United States are based on long-standing multicultural traditions. They begin with the perception of health, the definition of illness and beliefs about etiology, and are followed by preventive and curative practices.”⁵

There are 29,000 different herbal supplements available to consumers in the United States, and an average of 1,000 new products added yearly.^{5,6,16,17} It has been estimated that 80% of the world’s population (4 billion people), use some form of herbal supplement as part of their primary health care. Although the prevalence of herbal supplement use has been high in other countries for many years, the popularity of herbal supplements in the United States has significantly increased in the last 10 years. Eisenberg, et al, estimated the use of herbal remedies alone by United States adults increased from 3% in 1990 to 15% in 1997, a fivefold increase over an eight-year period: another report estimated the use of herbal remedies as high as 34% in 1997.¹⁵

Possible reasons for this increase in the United States include relaxed FDA regulations of herbal supplements, patient disillusionment with a changing health care industry, and a desire for convenient and personal control.⁴ Here is what researchers indicated from national survey results:

- People seek to be actively involved in their own health promotion and disease prevention;
- Conventional medicine has not been effective for their specific problems;
- They believe alternative therapy will be effective;
- They value an emphasis on holistic care;
- They feel they cannot talk with their physician about their health concerns.¹⁸

HISTORY

Herbal medicine, also known as phytotherapy or phytomedicine, has been handed down from generation to generation. Medicinal plants, in ancient times, were chosen for their color or shape of their leaves. A leaf that was heart-shaped, for example, was used for heart problems, while plants with red flowers were thought to cure bleeding disorders.^{6,13}

Herbal medicine can be dated back to the ancient cultures of the Middle East, Greece, China, and India. Evidence of the medicinal use of herbs has been found written on Mesopotamian clay tablets and ancient Egyptian papyrus.¹³ In the 16th Century, botanical gardens were created to grow medicinal plants for medical schools. Herbal medicine practice flourished until the 17th Century when more “scientific” pharmacological remedies were favored.¹⁷

In the United States, the history of herbal use began in the early colonial days when women provided health care in the home. Initially, they used homemade botanical remedies and later purchased similar products as “patent medicines.” In the early 19th Century, scientific

methods became more advanced and preferred, in the United States, and the practice of botanical healing was dismissed as quackery.¹⁷ It was also during this time when many fake remedies would be sold to gullible, desperate Americans. The Food and Drug Act of 1906 was passed to protect the public from mislabeled and adulterated plant remedies, but not from safety and effectiveness.¹³

Between the 1920's and 1970's, herbal use ceased to exist other than in a few ethnic communities. Spices, for cooking purposes, were the only herbs used by mainstream Americans.¹⁹

During the later part of the 1960's, concerns arose over iatrogenic effects of conventional medicine creating a growing desire for more medical self-reliance. Interest in "natural health" and the use of herbal products increased in the United States once again.¹⁷ Coupled with this interest in "natural health" came a belief equating "natural" with "safe."¹⁹

Worldwide, herbal use became popular in 1974 when the World Health Organization, (Geneva, Switzerland), encouraged developing countries to use traditional plant medicines to "fulfill a need unmet by modern systems." In rural areas, of these developing countries, there are additional cultural factors that encourage the use of botanicals, such as interplay between the environment and culture. Natural plant products are perceived to be healthier than manufactured medicine. Additionally, reports of adverse effects of conventional medications are found in the lay press at a much higher rate than reports of herbal toxicities. Physicians often dismiss herbs as harmless placebos, and many consumers and physicians alike mistakenly believe that the FDA has approved anything in a pill form. Thirty percent of all modern drugs are derived from plants. Some of the more familiar ones are listed in Table 1.^{17,20}

Table 1

Table 1. Conventional Medicines Derived From Plants

Atropine (<i>Atropa belladonna</i>)	Physotigmine (<i>Physostigma venenosum</i>)
Digoxin (<i>Digitalis purpurea</i>)	Senna (<i>Cassia acutifolia</i>)
Colchicine (<i>Colchicum autumnale</i>)	Ephedrine (<i>Ephedra sinica</i>)
Quinine (<i>Cinchona officinalis</i>)	Cocaine (<i>Erythroxyton coca</i>)
Codeine (<i>Papaver somniferum</i>)	Salicylin (<i>Salix purpurea</i>)
Vincristine (<i>Catharanthus roseus</i>)	Capsaicin (<i>Capsicum frutescens</i>)
Ipecac (<i>Cephaelis ipecacuanha</i>)	Scopolamine (<i>Datura fastuosa</i>)
Taxol (<i>Taxus brevifolia</i>)	Reserpine (<i>Rauvolfia serpentina</i>)

In Germany, physicians are required to have some training in herbal supplements. Considerable research (including double blind, placebo controlled trials) is ongoing. Germany markets about 700 therapeutic herbs. Physician's recommend and patients use herbal supplement extensively. Manufacturers are required to meet some form of pharmaceutical standards. Commission E, a branch of the German government, similar to the FDA, which has had oversight of herbal supplements and has determined their safety and efficacy, has published 387 monographs, which has been translated into English by the American Botanical Council.^{1,21}

HERBAL SUPPLEMENTS

There are multiple reasons patients turn to herbal therapies. Often cited is a "sense of control; a mental comfort from taking action," which may help to explain why many people taking herbs have diseases that are chronic or incurable, such as diabetes, cancer, arthritis, or

AIDS. In such situations, they often believe that conventional medicine has failed them. When patients use home remedies for acute, often self-limiting conditions, - colds, sore throats, or bee stings - it is often because professional care is not immediately available, too inconvenient, costly, or time consuming.^{4,17,22} Most individuals using herbal supplements do so without professional supervision. Researchers found that 72% of study respondents who used alternative therapies did not inform their physician. Physicians were most likely to be informed about the use of homeopathy (73%) and megavitamin therapy (72%), and least likely to be informed about herbal supplements (11%).^{15,18}

Herbal supplements are readily accessible and viewed as safe by the consumer. Some herbal supplements have great potential and may benefit the user, but lack of rigorous testing may place the public in harms way. “When a drug is prescribed, the dosage and quality of the substance is more or less assured. However, there is no such standardization or quality control for herbal formulations. Thus, patients must be warned to be cautious when using herbs.”²⁰

“As with conventional medicines, herbal supplements interact with drugs in two ways: pharmacokineticly and pharmacodynamically. Pharmacokinetic interactions result in alterations of drug or natural medicine absorption, distribution, metabolism, or elimination. These interactions affect drug action by quantitative alteration, either increasing or decreasing the amount of drug available to have an effect. Pharmacodynamic interactions change the way a drug or natural medicine affects a tissue or organ system. These interactions affect drug action in a qualitative way, either through enhancing effects (synergistic or additive actions) or antagonizing effects.”²³

How conventional medicines interact with the body can be documented because of the standards set by the FDA to test prescription drugs. The amount of active ingredients contained

in each dose is regulated. Since herbal supplements lack rigorous testing, the potency of herbs can vary. This can depend on the climatic and soil conditions where they were grown.

At the Toyama Medical and Pharmaceutical University Hospital in Japan, fresh herbs from around the world are collected, and each batch is analyzed. Differences in the presence of active substances can vary greatly. This depends on where the herbs were grown and how long (up to several months) they were allowed to stand. In the Toyama Hospital, many of the fresh herbs are kept in a special temperature-controlled storage area to ensure quality control.²⁰

The climate in which herbs are grown, how they are cultivated, and allowed to dry all present areas which subject them to adulteration, deterioration, and contamination. And when the supply of an expensive herbal supplement is limited, deliberate adulteration most commonly occurs.¹

Mislabeled and misidentification are factors to consider when purchasing herbal supplements. According to reports, herbal supplements (which can contain more than one ingredient) do not always contain what their label claims, and when the ingredients are analyzed, the supposed active substance of the preparation may not be present at all. If an importer or retailer mistakes one herb for another, serious problems can take place.²⁰ And, the amount of active ingredient in an herbal supplement varies from brand to brand and possibly from bottle to bottle within a particular brand.¹³

Sometimes patients do not even know what they are taking. For example, patients who visit a Chinese traditional medicine practitioner usually receive a prescription unaware of the prescriptions contents. If they experience side effects, it is difficult to determine which substances are the cause.²⁰

TOXIC INGREDIENTS

Toxic ingredients, including pesticides, non-declared drugs, and added chemicals, are sometimes found in herbal preparations. Heavy metals such as arsenic, mercury, lead, and cadmium, as well as the prescription drugs phenylbutazone, aminopyrine, prednisone, testosterone, and diazepam, have also been found in herbal remedies. The above may have been added mistakenly or intentionally depending on how the supplement is prepared.²⁰

The intentional use of lead in traditional folk remedies commonly occurs in many societies. Among people from Laos use a lead-containing preparation. Azarcon, which contains lead tetroxide, and Greta, which contain lead oxide, are Mexican folk remedies that have caused toxic effects.^{1,20}

A case of lead poisoning occurred in a Korean man who bought several bags of dried herbs containing *hai ge fen* (clam-shell powder) from a Chinese herbalist in New York. The adulterated clamshell powder contained high amounts of lead and arsenic.²⁰

TOXIC SIDE EFFECTS

Herbs, in most cases are safer than prescription drugs, which have potentially serious side effects. Herbs have generally stood the test of time, but these, too, have been known to cause toxic reactions. Cases of cyanide poisoning have been reported in people who have ingested the seeds, bark, or leaves of apricots, cassava beans, cherries, choke cherries, peaches, plums and other fruits.^{1,20}

DRUG INTERACTIONS

There are more food and drug interactions reported with warfarin than for any other prescription medication. Therefore, close monitoring of therapy and knowledge of potential interactions of herbs with warfarin are extremely important. Tables 2-4 list herbal supplements to be taken with caution if on warfarin.²⁴

Table 2

Table 2. Potential Increase in Risk of Bleeding	
Angelica Root	Garlic
Capsicum	Ginkgo
Celery	Onion
Chamomile	Parsley
Clove	Turmeric
Feverfew	Willow Bark

Table 3

Table 3. Documented Reports of Possible <i>Increase</i> in Warfarin's Effects		
Danshen	Dong Quai	Vitamin E
Devil's Claw	Papain	

Table 4

Table 4. Documented Reports of Possible <i>Decrease</i> in Warfarin's Effects		
Coenzyme Q10	Ginseng	Green Tea

DENTAL CONSIDERATIONS

If 70% of the American population consumes herbal supplements, then the possibility exists some products may be taken especially related to dental/oral concerns. Lysine, calendula, and clove oil are herbs that can be used in or around the oral cavity to treat lesions or sores. Products designated “herbal” contain herbal extracts as “active” ingredients. While herbal extracts have been used in toothpaste formulations, few of these have demonstrated effectiveness. Other oral health products contain polyphenols, found in green tea, which are purported to inhibit cell proliferation and to have antimicrobial effects. Bloodroot, or sanguinaria (a derivative of *Sanguinaria Canadensis*) has been used in toothpaste and mouth rinse, achieving mixed reviews as to its ability to decrease plaque and gingivitis. It has broad antimicrobial activity and anti-inflammatory properties. Sanguinaria extract has been incorporated in oral rinse and toothpaste products with evidence of safety and effectiveness, although recent reports of concerns are emerging. Studies have shown that there are no added benefits of sanguinarine when used with routine periodontal care.^{1,19,23}

“Dentaplex, a dietary supplement, claims to help clients maintain good oral health, however, the FDA has not evaluated the efficacy of its claims. Dentaplex contains anywhere from 10% to 500% of the recommended daily allowance of certain vitamins or minerals. Whether or not this preparation is helpful in preventing or treating periodontal disease has not been established.”²³

A list of ingredients used in oral health products can be found in Table 5.²³

Table 5

Table 5. Ingredients Used in Oral Health Products			
Bloodroot	Eucalyptus	Licorice root	Soy
Calendula	Fennel	Lycopene	Tea
Cayenne	Garlic	Lysine	Tea tree oil
Chamomile	Ginger	Myrrh	Vitamin C
Clove oil	Goldenseal	Nettle leaves	Watercress
Coenzyme Q10	Grape seed extract	Prickly ash	Witch hazel
Dentaplex	Lactobacillus acidophilus	Rhatany	Zinc
Echinacea	Lemon balm	Sage	

Without a complete patient medical history, including questions about herbal supplement use, difficulties may occur during dental procedures. Not only can an interaction occur when patients take herbal supplements along with prescription medication, but there can be interactions during dental treatment as well. A list of herbal supplements, along with potential reactions is given in Table 6.¹²

Table 6

Table 6. Effects and Interactions		
Botanical Extract	Reputed Therapeutic Action	Potential Drug Cross-Reactions
Cassia cinnamon	Analgesic	Delays dissolution of tetracycline and related compounds
Garlic	Anti-hyperlipidemic hypotensive	Prolongation of bleeding time when used with aspirin or coumadin/warfarin

Gingko	Cognitive function enhancer	Prolongation of bleeding time when used with aspirin or coumadin/warfarin
Licorice Cleavers Bearberry Agrimony	Diuretic	Counteraction of prescription antihypertensive drug effects
Melilot Sweet woodruff Horse chestnut Bromelain	Anticoagulant	Potential of coumarin/warfarin anticoagulants
St. John's wort	Antianxiety, sedative	Possible hypertensive crisis when used with sympathetic amines (pseudoephedrine)
Valerian Skullcap Kava Broom	Sedative	Potential of sedative effects in combination with alcohol, prescription sedatives, hypnotics, and antihistamines
Wild yam Licorice Fenugreek Figwort	Anti-inflammatory	Possible potential of effects of prescription corticosteroids

ACTIONS OF GOVERNMENT

It was briefly mentioned in the INTRODUCTION that in the United States, rigorous testing is not performed on herbal supplements. In 1996, Congress established The Commission on Dietary Supplement Labels as part of The Dietary Supplement Health and Education Act of 1994. President Clinton appointed seven members to this Commission to examine a number of issues associated with labeling of dietary supplements and made a final report in November 1997. The Commission was asked to study and make recommendations to regulate label claims and statements for dietary supplements. This also included the use of literature in connection with the sale of dietary supplements and procedures for evaluating such claims. By obtaining advice from individuals, consumer organizations, the dietary supplement industry, and scientific

organizations, they accomplished their task. The report contains recommendations for regulations and provides guidance to government agencies and the dietary supplement industry regarding safety, label statements, health claims, substantiation of claims, and botanical supplements. In the report, the commission emphasized the importance of public access to the evidence on which label statements are based for consumers to make informed decisions about the use of dietary supplements.^{3,25}

A new regulation, created as part of The Dietary Supplement Health and Education Act, (DSHEA) distinguished between products that claim to “affect the structure or function of the body” and those that claim to prevent, treat or cure disease. The law allows the manufacturers of supplements to sell products without the FDA’s rigorous safety and efficacy review that is required of drugs, as long as they make claims related only to structure or function and not to disease. Agency officials insist this regulation, which took effect on February 7, 2000, is an important part of their 10-year strategy to increase consumer confidence in the safety, composition, and labeling of vitamins, herbs, and other nutritional aids.^{17,26}

Because the FDA is not authorized to require pre-market approval of supplements for safety and efficacy, the agency identifies safety problems largely through voluntary reporting of adverse events by consumers and health professionals. Research shows that less than 1% of supplement-related adverse events are reported to the FDA in this way. When the agency does receive an adverse-event report, it is difficult to obtain sufficient information to evaluate the event and take appropriate action to protect consumers.²⁷

The FDA has limited ability to investigate public health problems related to supplement adverse events because minimal clinical data is available on supplement ingredients and

products. When problems are linked to a marketed supplement, the burden is on the FDA to prove that the product is unsafe or adulterated.²⁷

“The Department of Health and Human Services Office of Inspector General (OIG) found that from 1994 to 1999 the FDA followed up on 801 supplement adverse-event reports but could obtain medical records in only 464 cases and could follow up with consumers on only 214 of the 801 reports.”²⁷

“As a result, the FDA rarely takes safety actions related to supplement adverse-event reports. From January 1994 to June 2000, 32 safety actions were documented, including nine consumer warnings, two “Dear Colleague” letters to health professionals or manufacturers, 15 requests for voluntary recalls, and four product seizures. It is quite clear that at a time when more than 100 million people were taking dietary supplement, the number of FDA safety actions was strikingly low.”²⁷

Ruth A. Nayko, RN, states there are studies that show 40% of the population using some form of unconventional therapy. It’s incumbent on physicians to familiarize themselves with alternative medicine so they can offer appropriate advice. She also states that the liability picture is still evolving and there isn’t much case law as yet, citing part of the problem with the FDA’s classification of herbal supplements. The manufacturers are to provide evidence that they are safe without requiring scientific data or reviews by regulatory agencies. The risk of liability can be decreased by asking all patients about their use of OTC products, including herbal remedies and documenting their answers. Emphasize that a “natural” product isn’t guaranteed to be safe or effective. There is a PDR for Herbal Medicine, published by Medical Economics Co., which includes summaries of 600 preparations. A list of precautions, adverse reactions, dosage, contraindications, and recommended treatment is also included. If a non-traditional product or

treatment is recommended, an informed-consent discussion should take place, describing risks and benefits of the herb and relaying to the patient the lack of long-term clinical trials that would ensure safety and efficacy. Precautions must be taken when recommendations are made for pediatric or geriatric patients, as they are at a much higher risk for toxicity and side effects. Document all discussions in the patient record along with the herb being used with a list of any potential side effects. Monitor and record any adverse reactions.^{16,28,29}

In Michigan, common law is currently requiring the pharmacist to correctly dispense a prescribed medicine, and unless the pharmacist voluntarily undertakes an additional duty, such as warning of drug interaction, they do not have a general duty to provide warnings to patients. However, the law is rapidly changing regarding pharmacist liability based on the pharmacist's duty to warn patients, and Michigan administrative rules require that pharmacist provide information (or at least offer) to patients about prescription drugs. All health care providers must be cautioned before any recommendations for herbal supplement use is to be made. The more unusual the therapy and the greater risk of harm to the patient, the more likely the patient will sue if harmed³⁰

The issue of educating the health care professional is the focus. Should traditional scientifically based medicine be ignored? Literature reveals that herbal supplement education is incorporated within many of the nations medical, nursing and pharmacy schools.

EDUCATION

Alternative methods of care, whether sound or quackery, are all under the heading of CAM. Under this heading, in 1992, Congress created the Office of Alternative Medicine (OAM). OAM was appointed to the National Institute of Health and assigned a substantial budget reaching almost 70 million dollars. Grouping all these unconventional practices under

one heading, one institute, and one budget poses a great problem for the proper orientation of scientific research in this area.³¹

With heightened interest by the public to seek alternative methods of care, the conventional physician could learn more about CAM and improve the doctor-patient relationship, which most patients see as deteriorating. In the United States, more than 70 medical schools offer some type of alternative medicine program.³¹

Although literature did not support herbal supplement education in dental hygiene curricula, it did reveal a vast amount of CAM education is being incorporated within the nation's nursing, pharmacy, and medical schools.³²⁻³⁵ The Rush University College of Nursing in Chicago was recently awarded one of the CAM education grants from the National Center for Complementary and Alternative Medicine at the National Institute of Health. This school of nursing voiced strong support for the inclusion of CAM education into its curriculum and formed a task force in 1996. One step towards their goal was the integration of CAM therapies into clinical practice. An example cited was the provision of a homelike environment which included art, music, relaxation therapy, support groups along with spiritual and nutritional counseling while treating oncology inpatients.³⁶ "Nursing has long prided itself on being a holistic practice, nurses recognize the benefits of addressing patient's needs in relation to their life-styles; nursing care acknowledges an individual's cultural identity, family structure, occupation, and socioeconomic status."³²

A 1998 survey was conducted to determine the extent and prevalence of CAM education in pharmacy schools in the United States. Seventy-seven schools were polled, with 50 sending responses. Thirty-six of these schools offered herbal supplement and other CAM coursework. Of those 50 schools, thirty offered herbal supplement education throughout one or more courses

available in pharmacy education. Most schools offered a combination of required and elective instruction. Fourteen of 31 schools used alternative practitioners as supplemental instructors. Some instructional methods include standard lecture, student oral presentations, video presentations, and case-presented methods. Motivation for inclusion of CAM resulted from student, faculty, practicing community and patient interest, in that order.³⁵

“Results of the 1996-1997 and 1997-1998 Annual Medical School Questionnaire Part II, distributed by the Liaison Committee on Medical Education, indicated a notable increase in instruction in “alternative medicine.” Although no medical school reported offering a separate required course in complementary health care practices, medical schools covering these areas as part of a required course increased to 63 (from 46 in 1996-1997) and medical schools offering a separate elective course increased to 54 (from 47 in 1996-1997). In the 1996-1997 academic year, 34 medical schools offered instruction as part of an elective course, and 28 offered other educational experiences.”³⁷

Another survey from January 1997 received responses from 117 of the 125 US medical schools. Of the 117 schools, 75 (64%) reportedly offered one or more courses in CAM. A total of 123 courses were reported. It was also reported that students played a major role in initiating the development of CAM education. The course format included faculty lecture, seminar, and practitioner lecture/demonstration. The predominant teaching methods were lecture, discussion, and case studies.³⁷

An associate dean from a pharmacy school was quoted as saying that “The faculty is somewhat reluctant to discuss these issues since they have not been formally trained. We realize the importance of these areas since our patients are using herbs and alternative medicines. Our students need to be knowledgeable in order to treat the “whole” patient. They also need to know

how these alternative drugs/methods interact with more traditional treatment modalities.”

Another professor was quoted “We mustn’t lose sight that we have an ethical responsibility to our patient to be scientists first.”³⁵

Here are some suggestions when offering CAM:

- Focus on critical thinking and critical reading of the literature.
- Identify thematic content (i.e., therapies and conditions to be formally addressed) and express the chosen topics in clear, concise learning objectives.
- Include an experiential component.
- Promote a willingness to communicate professionally with alternative health care clinicians.
- Teach students to talk to patients about alternative therapies.³⁷

CHAPTER III

METHODS AND MATERIALS

A 19-question survey was mailed to the directors of accredited dental hygiene programs in the United States (N=256). The American Dental Hygienists' Association provided a current list of programs. Each survey included a cover letter and a short list of the most popular herbal supplements used in the United States.

The cover letter explained that the study was being conducted in partial fulfillment of the requirements for a Master of Science Degree in Dental Hygiene at West Virginia University. The purpose of the study, to assess the prevalence and extent of herbal supplement education in dental hygiene curricula, was also stated. The cover letter also included that all responses would be kept as confidential as legally possible.

Questions on the survey had various formats (multiple choice, fill in the blank). Information requested included the type of dental hygiene degree program, affiliation with a dental school, and the average number of annual graduates. Only those programs where herbal supplement education was currently being taught were to complete the entire survey.

The survey asked all program directors if herbal supplement use was a specific question on the clinical health history form used in the dental hygiene clinic. Another question referred to herbal supplements as a current topic for continuing education courses through each dental hygiene program.

Data analyses, including frequencies, cumulative frequencies, percentages, analyses of variance and test of Chi Square were conducted using JMP program.

RESULTS

DEMOGRAPHICS

(Survey questions 1, 2, 3, and 4; Figures 1, 2, 3, and 4)

Of the 256 surveys, a 63% response rate was achieved (n=160). All returned surveys were used in the data analyses, but responding directors did not always answer all questions.

Therefore, the total response (n) changes question by question.

Question one of the survey asked for the level of education the dental hygiene program offered. In question two, directors were asked to describe their program setting. Responses for both questions are represented in Figures 1 and 2 respectively.

Figure 1

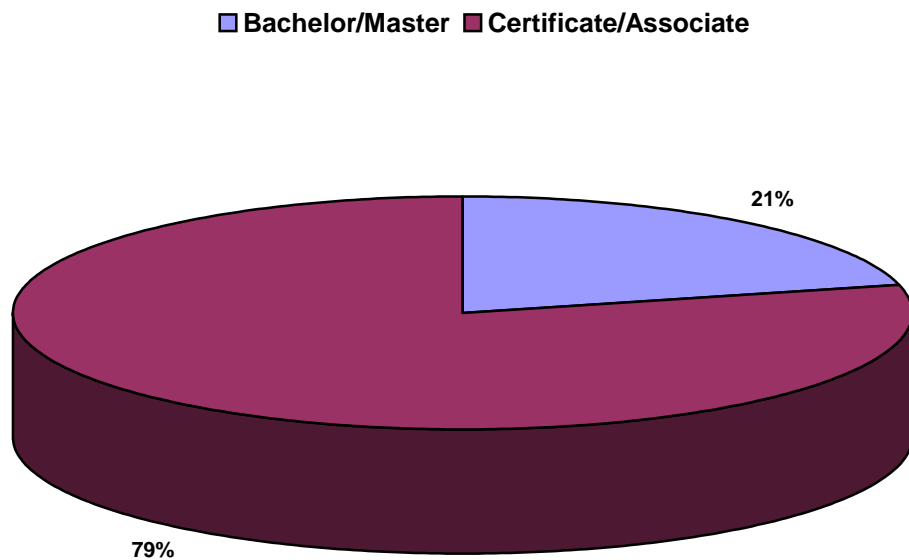


Figure 1. Type of Dental Hygiene Program (n=160)

Figure 2

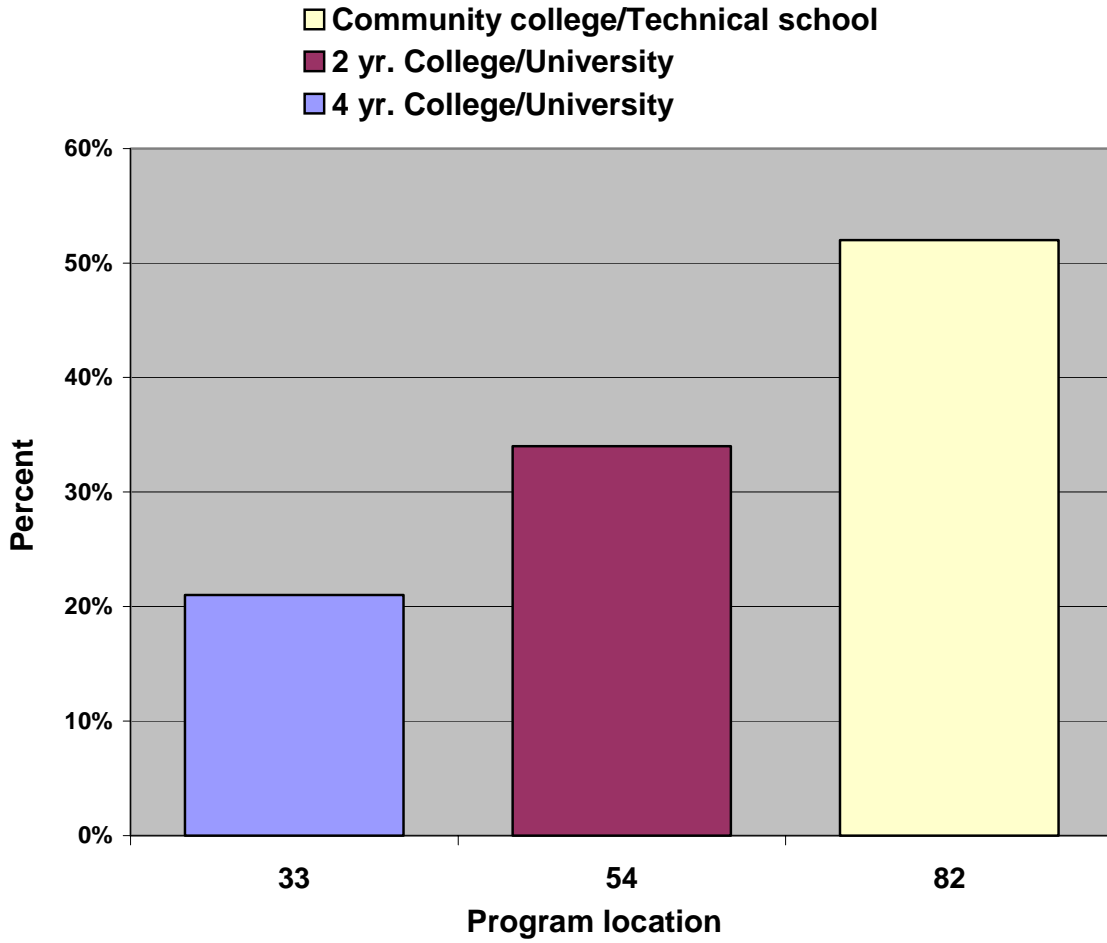


Figure 2. Location of Dental Hygiene Program, in Percent (n=159)

The majority (76%) of dental hygiene programs responding were not affiliated with a dental school. See Figure 3.

Figure 3

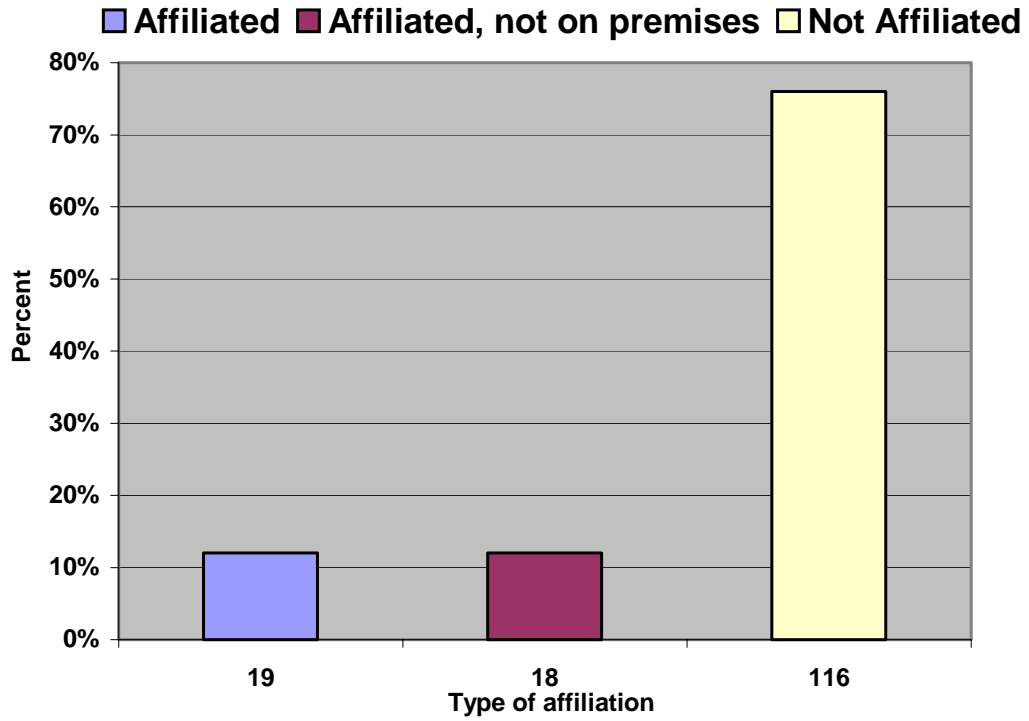


Figure 3. Dental School Affiliation of Dental Hygiene Programs Responding (n=153)

Annual dental hygiene graduates, per program, averaged between 16 and 30 students. A significant difference ($p \leq .05$) between dental hygiene programs by degree granted and program affiliation with a dental school was noted. Certificate/Associate degree programs in dental hygiene are not normally affiliated with a dental school, these programs are generally located within a community college or technical college. See Figure 4.

Figure 4

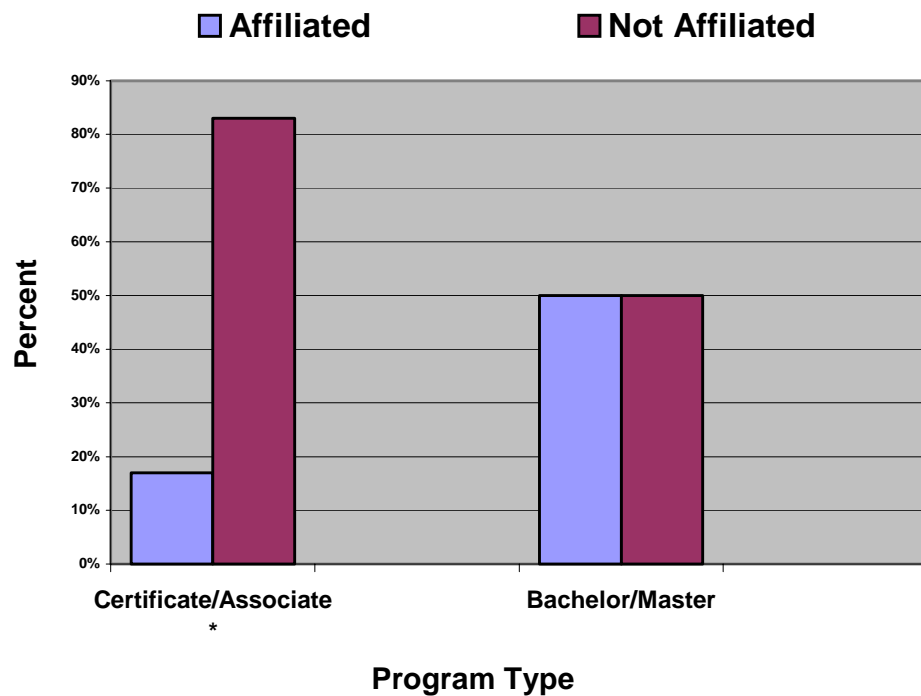


Figure 4. Dental School Affiliation by Dental Hygiene Program Type, in Percent (n=153)

**Significant Difference ($p \leq .05$)*

HERBAL SUPPLEMENT EDUCATION

(Survey questions 5-17; Figures 5-14)

Survey question five asked directors if herbal supplement education was currently offered in their dental hygiene curriculum. Responses are shown in Figure 5.

Figure 5

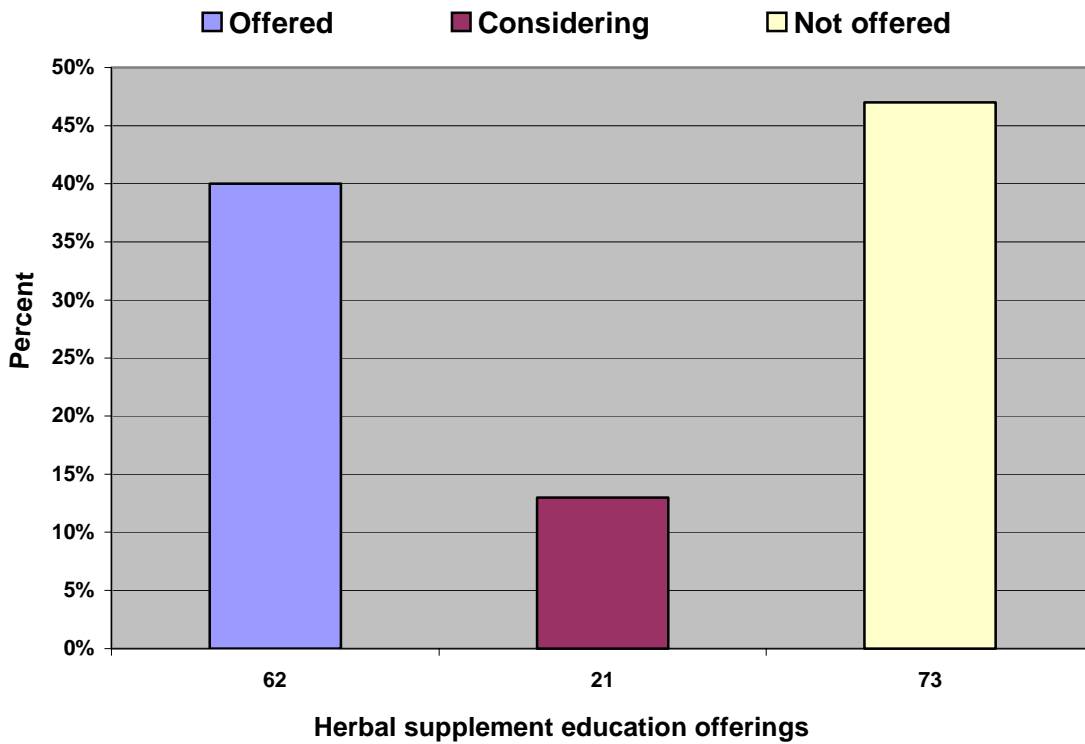


Figure 5. Inclusion of Herbal Supplement Education in Dental Hygiene Programs, in Percent (n=156)

For those programs currently offering herbal supplement education in their curriculum, it has only been included within the past two years, (1999-2001). Those programs that were considering the inclusion of herbal supplement education said they planned to introduce it by the end of 2002.

Program directors currently offering herbal supplement education were asked to complete the entire survey. If this topic was not currently offered, program directors were asked to skip to survey question 17.

The majority, 67% (n=79), of herbal supplement education was taught in the Pharmacology course (See Figure 6).

Figure 6

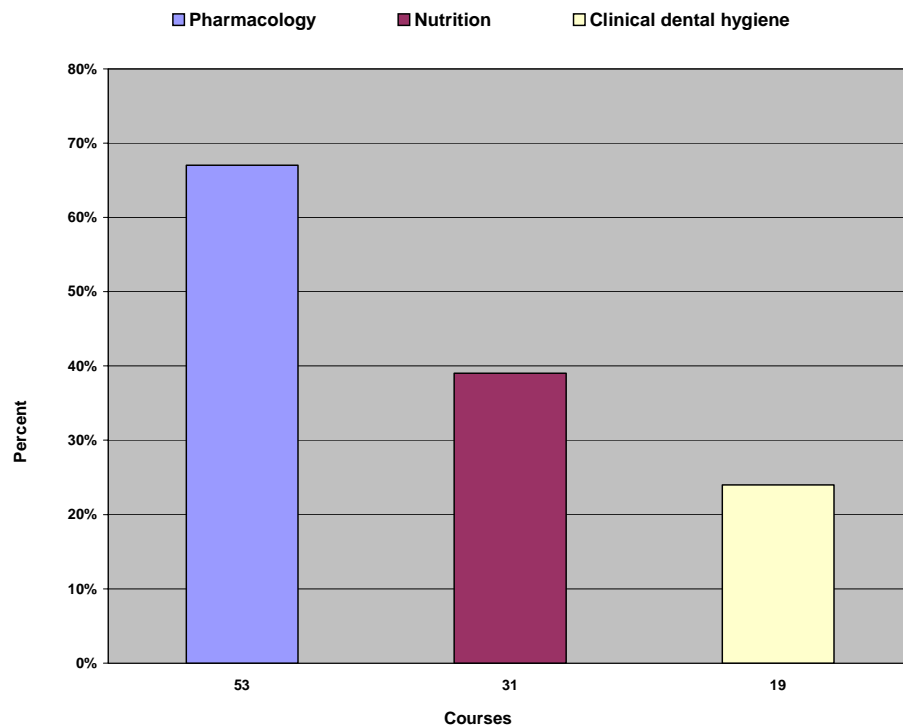


Figure 6. Primary Course Including Herbal Supplement Education, in Percent (n=79)

**Total percent is greater than 100 because respondents*

were allowed to select more than one answer.

The vast majority (94%) of programs offering herbal supplement education devoted less than 10% of a course to this topic. See Figure 7.

Figure 7

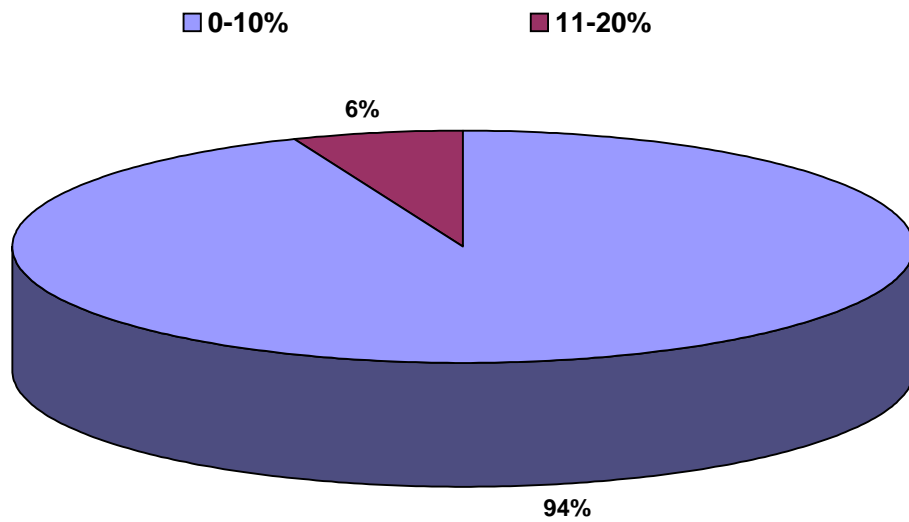


Figure 7. Percentage of Primary Course Time Given to Herbal Supplement Education (n=80)

Figure 8 displays results regarding the primary person(s) responsible for teaching herbals. The dental hygienist teaches this content in approximately two thirds (66%) of dental hygiene programs responding.

Figure 8

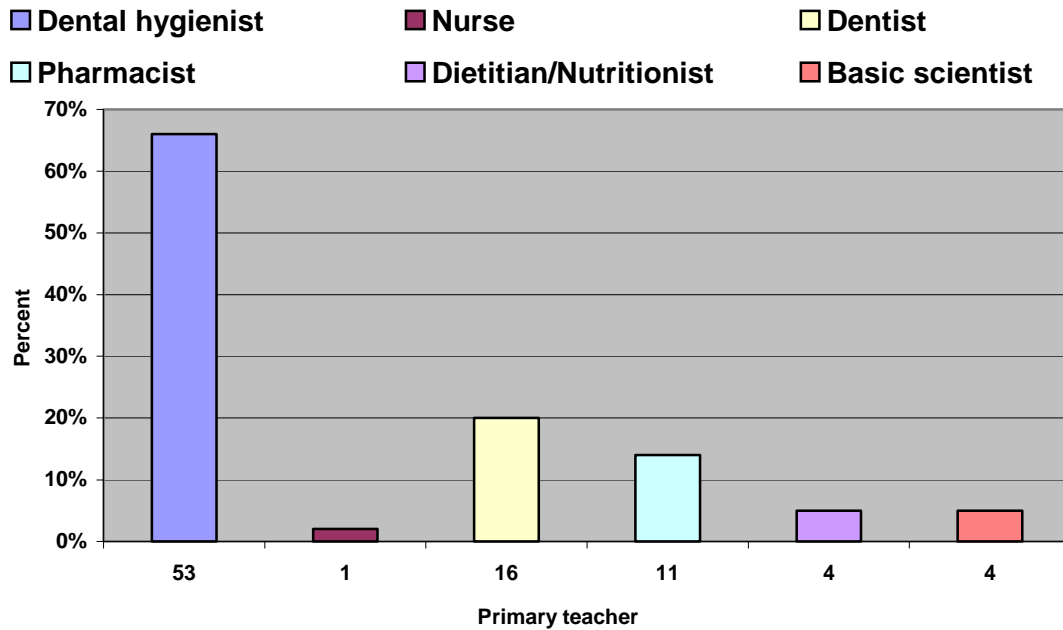


Figure 8. Primary Person Teaching Herbal Supplement Education in Dental Hygiene Programs Responding (n=80)

Herbal supplement education was offered during the second year of the dental hygiene curriculum in 50% of the programs responding and during the first year in 41% of these programs. Standard lecture (97%) and case based presentations (47%) were the top two instructional methodologies utilized. Textbooks were listed as the instructional tool of choice by 69% of the dental hygiene programs responding. An additional 29% listed examples such as scientific journal, continuing education course material and the library in the “Other” category. See Figures 9 and 10.

Figure 9

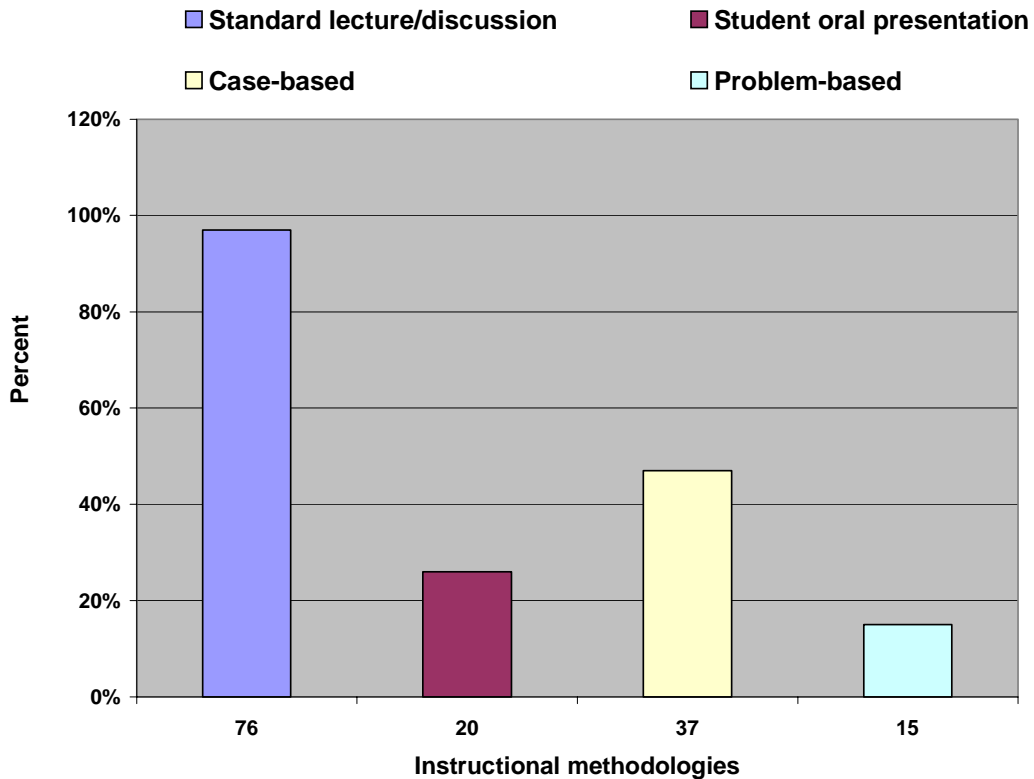


Figure 9. Instructional Methodologies Utilized to Teach Herbal Supplement Content, in Percent (n=78)

**Total percent is greater than 100 because respondents were allowed to select more than one answer.*

Figure 10

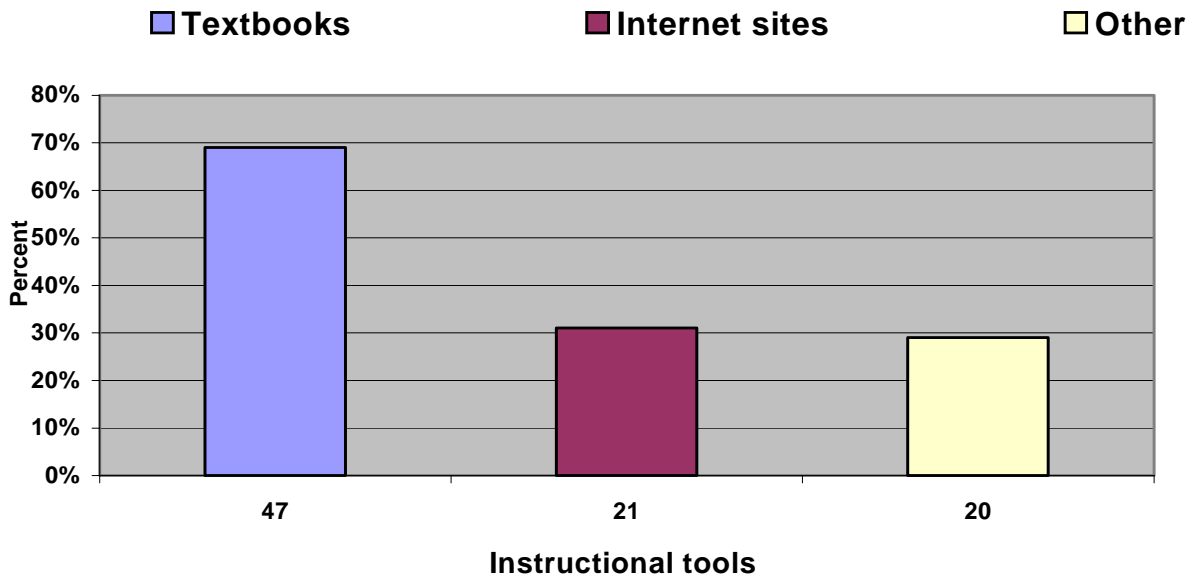


Figure 10. Instructional Tools Utilized to Teach Herbal Supplement Content in Percent (n=68)

**Total percent is greater than 100 because respondents were allowed to select more than one answer.*

Herbal supplement use, toxicities, and prescription drug interactions (Figure 11) were the herbal supplement content areas frequently chosen for inclusion in dental hygiene curricula by program directors responding.

Figure 11

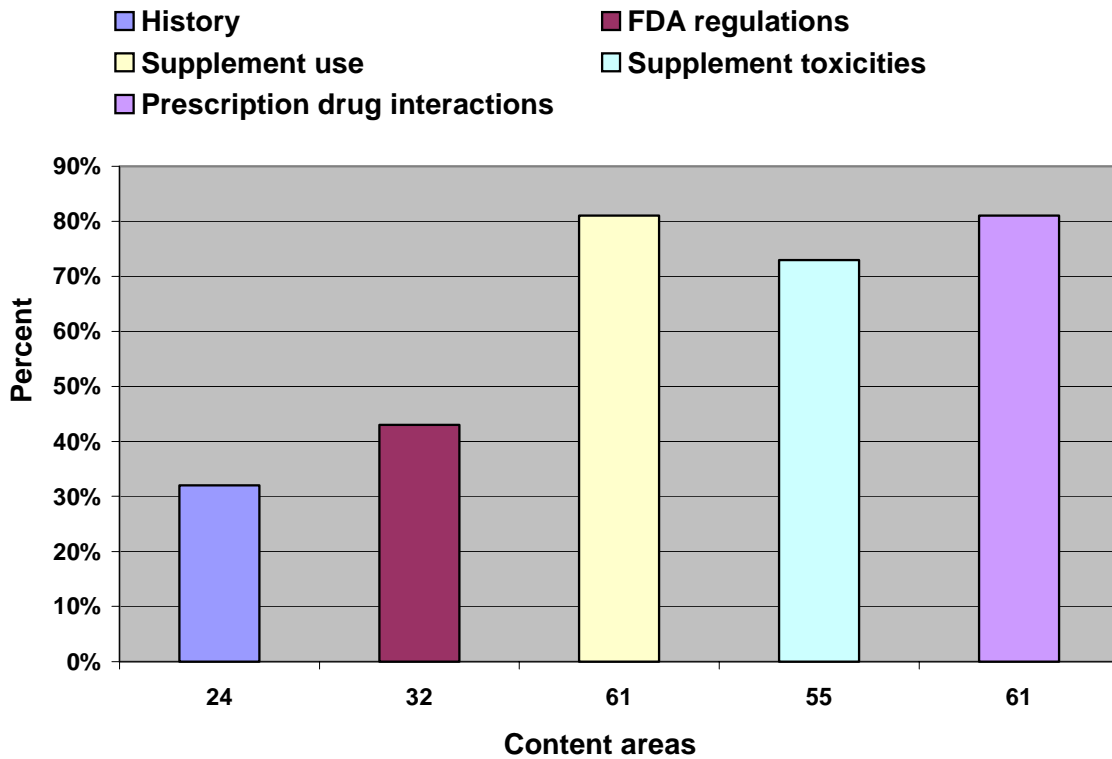


Figure 11. Herbal Supplement Content (n=75)

**Total percent is greater than 100 because respondents were allowed to select more than one answer.*

In all but one program, herbal supplement education was applied in the dental hygiene clinic (99%). Patient health assessment (96%) and patient education (77%) were the most common responses as to how herbal supplement knowledge was applied (Figure 12).

Figure 12

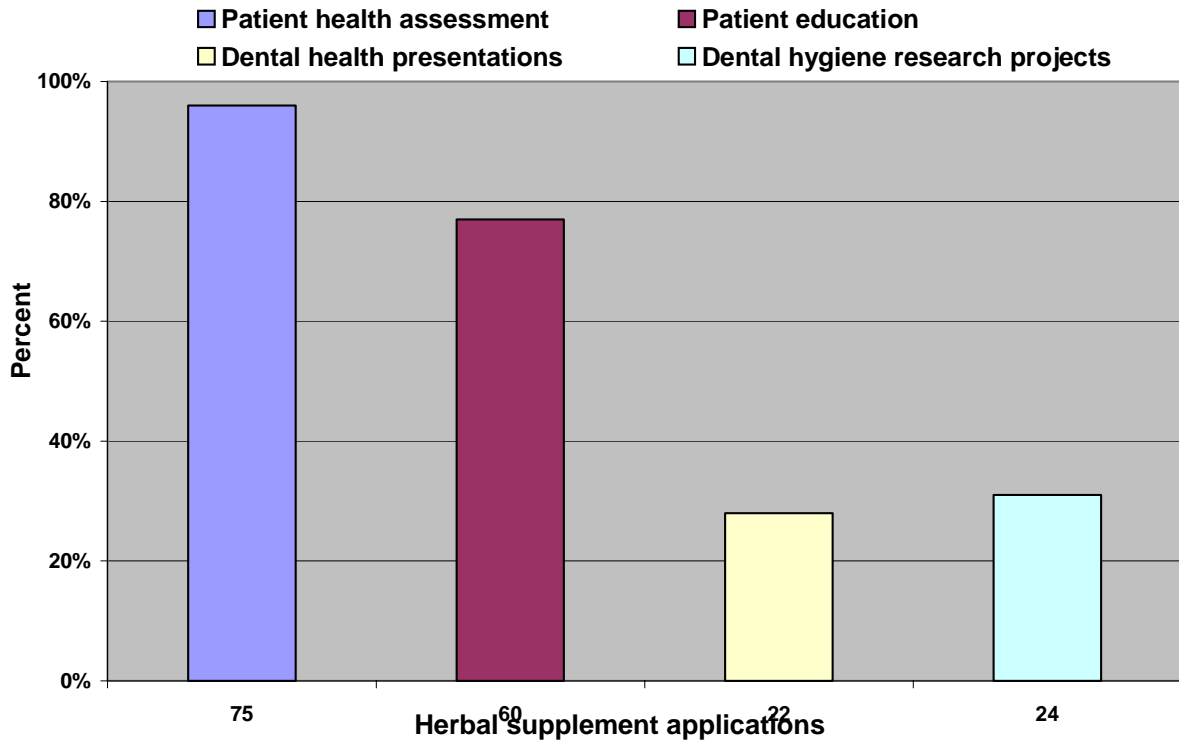


Figure 12. How Students Apply Herbal Supplement Knowledge, in Percent (n=78)

**Total percent is greater than 100 because respondents were allowed to select more than one answer*

Survey questions 17-19 were completed by all survey respondents. The survey asked program directors if a question regarding the use of herbal supplements, vitamins, and/or minerals was currently included on their clinical health history. Ninety-seven programs responding reported affirmatively (n=158). See Figure 13.

Figure 13

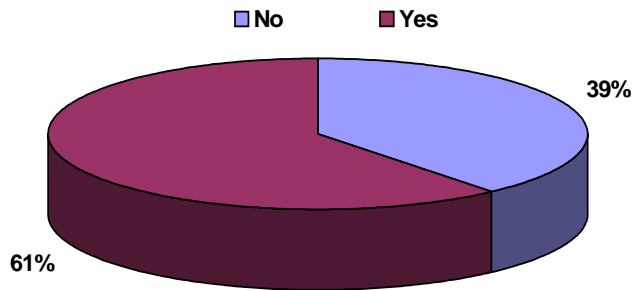


Figure 13. Herbal Supplement Question(s) Included on Clinic Health History by Programs Resonding (n=158)

Significant differences ($p \leq .05$) were found in dental hygiene programs offering herbal supplement education when compared with whether or not a program includes health history questions in their student clinic about herbals. A direct relationship exists between programs offering herbal supplement education and programs including questions about herbal supplements on their clinical health histories. See Figure 14 for comparison.

Figure 14

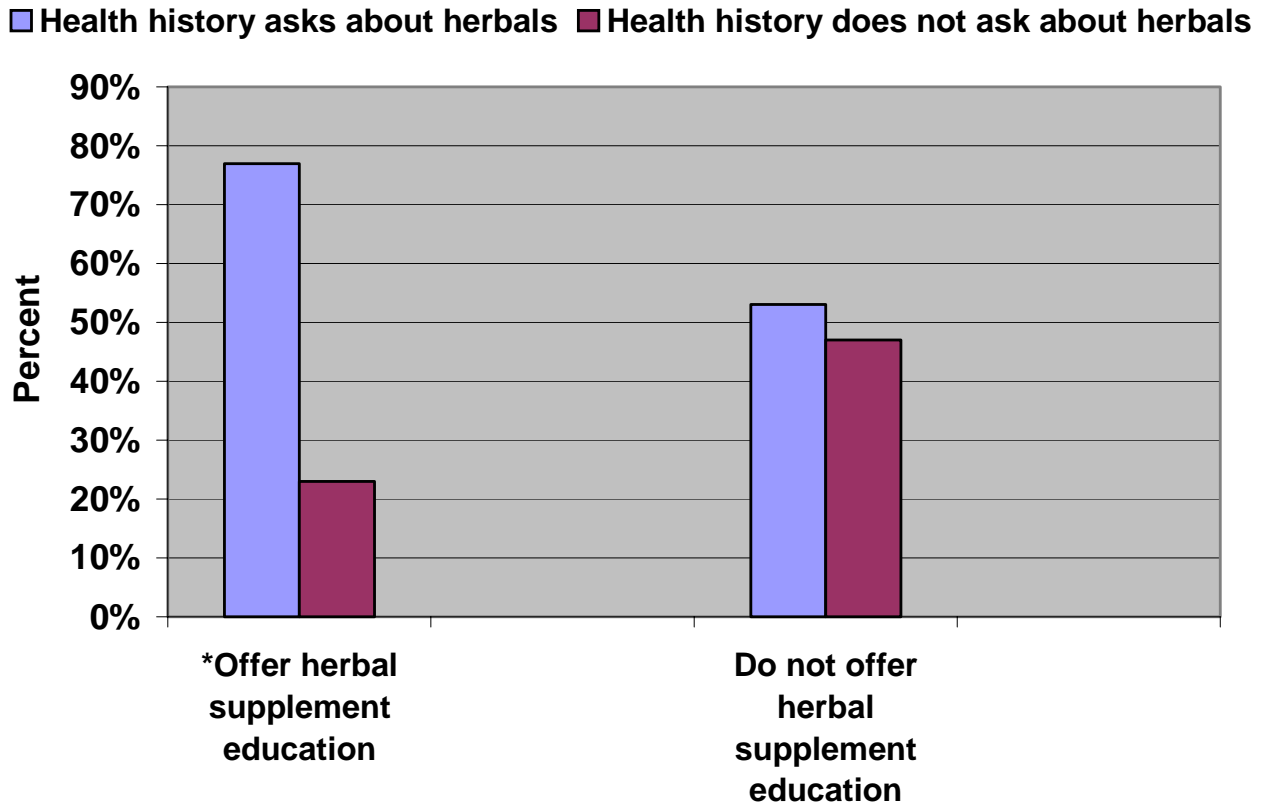


Figure 14. Herbal Supplement Education Offerings by Health History Assessment of Herbals, in Percent (n=158)

**Significant Difference ($p \leq .05$)*

CONTINUING EDUCATION

(Survey questions 18, and 19; Figure 15)

Dental hygiene programs offering continuing education in herbal supplements are described in Figure 15. Approximately 16% of dental hygiene programs responding offer continuing education on this topic. Over half, (58%), reported that the dental hygienist delivers this course.

Figure 15

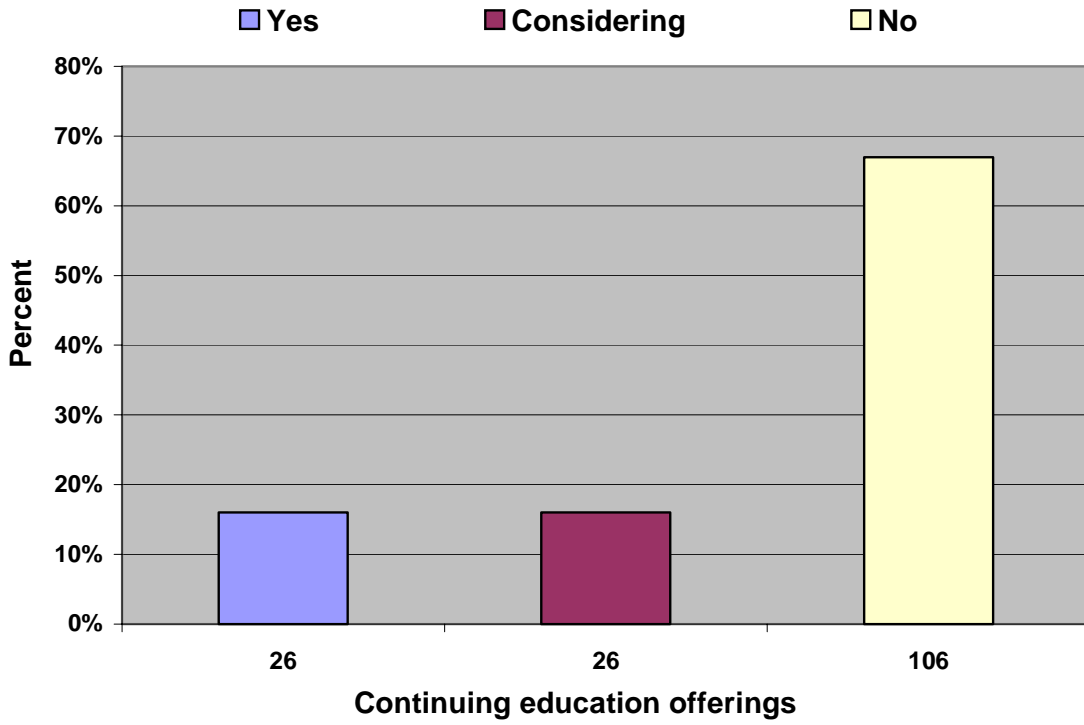


Figure 15. Herbal Supplement Continuing Education by Program Respondents, in Percent (n=158)

DISCUSSION

The types of degree programs responding seemed to be representative of the ratio of certificate/associate to baccalaureate degree programs nationally. There were not many significant differences between program type and the existence and extent of herbal supplement education. When included, it consisted of approximately 10% of the total pharmacology course. Dental hygiene programs offering herbal supplement education had a dental hygienist teaching this content material.

There were no significant differences when comparing the type of degree program with the existence of continuing education courses on this topic. The same was true when comparing program type and the inclusion of herbal supplements on clinic health history forms.

Since only one third of the responding dental hygiene programs currently offer herbal supplement education, the investigator concludes this is a topic that needs to be explored in dental hygiene curricula. Literature supports 29,000 different herbal supplements available in the United States. Literature also supports patients visiting the dental office more frequently than a physician's office, with the dental hygienist being the first team member, in the dental office, to see the patient. If 72% of those using herbal supplements are not disclosing this information to their physician or their pharmacist, the patient may feel more comfortable relaying this information to their dental hygienist. While it may be difficult for the dental hygienist to remain current on the vast topic of herbal supplements, it is important to address this topic in the dental hygiene curriculum and update this information through continuing education.

Supplement use (80.6%) and prescription drug interactions (81.3%) were cited as the educational content related to herbal supplement education currently discussed in dental hygiene curricula. Knowledge of the interactions between prescription drugs and herbal supplements and

the serious complications they pose to patients is imperative. Accurate references to determine whether the patient is at risk for drug interaction or dental complications due to herbal supplement use must be available to the practitioner at all times. See Supplemental Readings.

Educational content regarding FDA regulations was mentioned by 41% (n=75) of respondents. Regulatory sanctions may seem irrelevant compared with supplement use and drug interactions, but this area must be given adequate time in the curricula. Literature reveals consumers view herbal supplements as a food that is safe and natural. Dental hygienists should be adequately prepared with information regarding the lack of FDA testing and standardizations for herbal supplements. Prescription drugs undergo 10-year double blind, randomized and controlled testing as compared to the less rigorous testing of herbal supplements. Due to this lack of testing, the literature addresses the potential contamination, mislabeling, and misidentification that can occur. Even deliberate adulterations can occur when a limited supply of an expensive herbal supplement is in demand.

The investigator's survey revealed the theory of herbal supplement education, presented in classroom lectures, was applied in dental hygiene clinical practice by all (99%; n=80) but one program. This is not surprising since the majority of dental hygiene programs are certificate/associate degree programs, with a limited amount of time to cover all aspect of dental hygiene curricula. Herbal supplement education appears to be incorporated into the dental hygiene clinic most often where it can be utilized most effectively.

Statistically significant differences existed between programs offering herbal supplement education and programs including questions related to herbal supplement use on their clinical health history. Comprehensive, evidence based patient management can only occur by

increasing awareness through herbal supplement education/resources and applying this information in clinical practice.

SUMMARY & CONCLUSIONS

This is an important, critical topic, which can be incorporated throughout the curriculum. In the comment section of the survey, program directors expressed concern that in an already full curriculum, finding time to include another course could be difficult.

Several program directors provided comments on how herbal supplement education has been incorporated into their dental hygiene clinic curriculum. Their suggestions included: 1). Patient care, 2). Recording herbal supplement information on health history forms, 3). Rendering patient health assessments, 4). Patient education regarding herbal supplements.

Standard lecture was utilized as a teaching tool at a much higher rate compared to student participation and independent research. Internet sites, textbooks, videos, student role-playing and case presentations were all listed as delivery methods for herbal supplement education. Creative ideas for actively involving students that were also documented by program directors included:

- Sending students to health food/drug stores to compare and analyze labels and present findings orally to their classmates.
- Doing case-presentations in class on patients that have experienced situations with drug/supplement interactions.

From this study the following can be concluded:

- Knowledge of herbal supplements is critical to the education of dental hygienists;
- There is no difference in associate and baccalaureate dental hygiene programs regarding the existence and extent of herbal supplement education;
- Herbal supplement education can be included in an existing course, in a relatively short amount of time by a dental hygiene faculty member;

- Herbal supplement theory can best be applied clinically in the form of a question on the health history during patient assessment;
- There is a need for continuing education courses on herbal supplement education.

RECOMMENDATIONS FOR FUTURE RESEARCH

If this type of survey were to be repeated, questions about participants' location either by state or region, as described by the US Census Bureau, could be included. The population of the area where the dental hygiene program is geographically located could also prove interesting.

Who initiated herbal supplement education in the dental hygiene curriculum (administration/faculty/student) could be investigated as well.

MODEL FOR HERBAL SUPPLEMENT EDUCATION IN DENTAL HYGIENE CURRICULA

This is a basic outline and can be modified to best deliver course material for herbal supplement education in your dental hygiene program.

I. Course Administration

A. Identify course(s)/faculty (new or existing) to address this topic.

B. Establish content to address course objectives:

1. Recognize potential dangers associated with certain herbal supplements when used alone or with prescription drugs.
2. Understand the differences between the FDA's lack of regulations for herbal supplements and the rigorous testing for prescription medications.
3. Recognize how herbal supplements can be contaminated, mislabeled and misidentified.
4. Encourage patients to inform their physician and pharmacist of their herbal supplement use.

5. Identify appropriate textbooks, web sites, and journals that provide current information on herbal supplements.
- C. Consider an appropriate venue to deliver this course (traditional classroom, Web course, clinical setting).
- D. Ensure appropriate evaluations exist to assess competency in the management of patients taking herbal supplements:
1. Herbal supplement manual
 2. Lunch and learn
 3. Journal club
 4. Patient education (posters/pamphlets)
 5. Advice for treating patients taking herbal supplements:
 - a. Document what your patients are taking.
 - b. Caution patients not to purchase herbal supplements outside the United States.
 - c. Encourage them to buy herbal supplements from a reputable source. Nationally known food and drug manufacturers will have standards in place for their other products.
 - d. Warn them not to believe unsubstantiated claims for miracle cures.
 - e. Explain that “natural” does not assure safety.
 - f. Explain the double blind, randomized, and controlled testing that goes into regulating prescription medications.

- g. Reinforce that all remedies should be clearly labeled and all ingredients listed.
- h. Write to manufactures to learn more about herbal supplements they may be taking.
- i. Get advice from a licensed health provider professionally trained in prescribing herbals.
- j. Caution children, elderly and pregnant patients about herbal supplement use unless their safety can be assured.

II. Course Resources

A. Develop a clearinghouse for herbal supplement resources:

- 1. Guest speakers
- 2. Textbooks
- 3. Scientific journals
- 4. Web sites
- 5. Videos
- 6. Course developed information manual

B. Resource list:

- 1. Alternative Health News Online www.altmedicine.com
- 2. Alternative Medicine Foundation, Inc. www.amfoundation.org
- 3. American Botanical Council www.herbalgram.org
- 4. Botanical Society of America www.botany.org
- 5. Centers for Disease Control and Prevention www.cdc.gov
- 6. Herb Research Foundation www.herbs.org

7. National Center for Complementary and Alternative Medicine
www.nccam.nih.gov
8. U.S. Food and Drug Administration www.fda.gov
9. U.S. National Library of Medicine www.nlm.nih.gov¹
10. www.healthcentral.com/peoplespharmacy/

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APPENDIX A

COVER LETTER

October 29, 2001

Dear Dental Hygiene Program Director,

I am currently conducting thesis research in partial fulfillment of the Master of Science Degree in Dental Hygiene at West Virginia University. The purpose of my research is to assess the prevalence and extent of herbal supplement education in dental hygiene curricula. An herbal supplement refers to any plant, or plant product taken for medicinal use. On the back of this page you will find a list of commonly used herbal supplements that I will be considering throughout my research.

Studies show a significant increase of herbal supplement use in the United States. A recent survey by The Journal of the American Medical Association revealed that of the 42% of Americans taking herbal supplements, 60% would not disclose this information to their physicians. As the public self-prescribes certain supplements, possible interactions with prescription drugs may occur. These interactions may alter the course of dental treatment and require dental hygienists to be knowledgeable about their potential risks. This issue is compounded by the fact that the Food and Drug Administration has no regulatory standards for herbal supplements.

Enclosed you will find a 19- item survey. Completion of this survey should take approximately 15 minutes of your time. A self-addressed, stamped envelope has been numbered to identify non-respondents should a second mailing be necessary. All responses will be kept as confidential as legally possible.

Your participation is voluntary and although you are not required to answer every question on the survey, responding to all items completely would be appreciated and helpful in this research endeavor. My class standing and grades will not be affected by your refusal to participate.

Please complete and return this survey by December 10, 2001. Thank you for your time and effort.

Sincerely yours,

Lisa Lisauckis, BSDH

LIST OF COMMONLY USED HERBAL SUPPLEMENTS

- Ginseng
- Echinacea
- Garlic
- Ginkgo
- St. John's wort
- Ginger
- Ephedra
- Goldenseal
- Chamomile
- Aloe
- Feverfew
- Glucosamine
- Kava
- Melatonin
- Saw palmetto
- Dong quai

APPENDIX B

A SURVEY OF HERBAL SUPPLEMENT EDUCATION IN DENTAL HYGIENE CURRICULA

Please circle one response, (unless otherwise noted), which best describes your dental hygiene program. The numbers in parenthesis at the left of each question are for computer entry.

1. What level of education does your dental hygiene program currently offer? **Circle all that apply.**

- (1) a. Certificate in Dental Hygiene
- (2) b. Associate of Science Degree in Dental Hygiene
- (3) c. Bachelor of Science Degree in Dental Hygiene
- (4) d. Master of Science Degree in Dental Hygiene
- (5) e. Other, please specify: _____

Please answer questions #2 and #3 to describe your dental hygiene program.

2.

- (1) a. 4 year program in college or university
- (2) b. 2 year program in college or university
- (3) c. Community college/Technical school

3.

- (1) a. Affiliated dental school located on premises
- (2) b. Affiliated with dental school, but not located on same premises
- (3) c. Not affiliated with dental school

4. On average, how many students graduate from your dental hygiene program annually?

- (1) a. 0-15
- (2) b. 16-30
- (3) c. 31-45
- (4) d. >45

5. Does your dental hygiene program currently offer herbal supplement education in your curriculum?

- (1) a. Yes. Please go to question # 6
- (2) b. No, but considering the inclusion of this content in the future. Please go to question # 7
- (3) c. No, we do not offer courses. Please go to question # 17

6. Year herbal supplement education was initiated _____

7. Year for herbal supplement education to be initiated _____

8. What course in your curriculum **primarily** addresses herbal supplement education?

- (1) a. Pharmacology
- (2) b. Nutrition
- (3) c. Clinical dental hygiene
- (4) d. Ethics
- (5) e. Herbal supplement education is a separate required course in the curriculum
- (6) f. Herbal supplement education is a separate elective course in the curriculum
- (7) g. Other, please specify: _____

9. What percentage of the **primary** course identified in # 8 relates to herbal supplement education?

- (1) a. 0 – 10%
- (2) b. 11 – 20%
- (3) c. 21 – 30%
- (4) d. 31 – 40%
- (5) e. 41 – 50%
- (6) f. 51 – 60%
- (7) g. 61 – 70%
- (8) h. 71 – 80%
- (9) i. 81 – 90%
- (10) j. 91 – 100%

10. Who is **primarily** responsible for covering this topic area in the classroom?

- (1) a. Dental hygienist

- (2) b. Nurse
- (3) c. Dentist
- (4) d. Dietitian/Nutritionist
- (5) e. Pharmacist
- (6) f. Physician
- (7) g. Basic scientist
- (8) h. Other, please specify: _____

11. During what academic year in the dental hygiene curriculum is the **primary** course in herbal supplement education **initiated?**

- (1) a. 1st
- (2) b. 2nd
- (3) c. 3rd
- (4) d. 4th
- (5) e. Graduate

12. What instructional methodologies are utilized to present herbal supplement education?
Circle all that apply.

- (1) a. Standard lecture/discussion
- (2) b. Student oral presentation
- (3) c. Case-based
- (4) d. Problem-based
- (5) e. Seminar
- (6) f. Independent research/study
- (7) g. Distance learning
- (8) h. Other, please specify: _____

13. What instructional tools are utilized to assist in herbal supplement education?
Please circle all that apply and list references.

- (1) a. Textbook(s), please provide reference:
- (2) b. Video(s), please provide reference
- (3) c. CD ROM, please provide reference:
- (4) d. Internet sites, please provide reference:
- (5) e. Other, please specify: _____

14. What content areas of herbal supplement education does your institution provide? **Circle all that apply.**

- (1) a. History of herbal remedies
- (2) b. Legislative issues regarding the Food and Drug Administrations standards
- (3) c. Supplement use
- (4) d. Supplement toxicities
- (5) e. Prescription drug interactions
- (6) f. Other, please specify: _____

15. Overall, **where** do students apply knowledge of herbal supplement education? **Circle all that apply.**

- (1) a. Dental hygiene clinic
- (2) b. Community dental/public health clinic(s)
- (3) c. Public and/or private school(s)
- (4) d. Hospital(s)
- (5) e. Rehabilitation center(s)
- (6) f. Nursing home(s)
- (7) g. Other, please specify: _____

16. Overall, **how** do students apply knowledge of herbal supplement education? **Circle all that apply.**

- (1) a. Patient health assessment

- (2) b. Patient education
- (3) c. Dental health presentations
- (4) d. Dental hygiene research project(s) (i.e. table clinics or poster sessions)
- (5) e. Community based research project
- (6) f. Interdisciplinary course work with medical, nursing, or other allied health professionals
- (7) g. Interdisciplinary course work with dental students
- (8) h. Other, please specify: _____

17. Does your current clinical medical history include questions regarding the use of herbal supplements, vitamins, and/or minerals?

- (1) a. Yes
- (2) b. No

18. Does your school currently offer continuing education courses in herbal supplement use?

- (1) a. Yes
- (2) b. No, but considering continuing education courses
- (3) c. No

19. If you answered yes to # 18, who is primarily responsible to deliver these courses?

- (1) a. Dental hygienist
- (2) b. Nurse
- (3) c. Dentist

- (4) d. Dietitian/Nutritionist
- (5) e. Pharmacist
- (6) f. Physician
- (7) g. Basic scientist
- (8) h. Other_____

Please feel free to offer comments and/or experiences you have had when educating dental hygiene students about herbal supplements.

Thank you for completing this survey!!

APPENDIX C

IRB

West Virginia University
886 Chestnut Ridge Road

Institutional Review Board

PO Box 6845

Application for Exemption

You must receive approval from the IRB staff prior to beginning the research described below.
Please type all responses and submit this form with original signatures.

1. Title of study: Assessment of Herbal Supplement Education in Dental Hygiene Curricula.

2. Investigators (list all investigators, principal investigator first; attach additional sheets if necessary):

Name	Signature	Dept./College	Address	Tel.No.
Lisa Lisauckis, BSDH		Dental Hygiene/ School of Dentistry		
Christina DeBiase, BSDH, MA, EdD		Dental Hygiene/ School of Dentistry	P.O. Box 9425	293-3922

3. Estimated period of human subject involvement: Starting date: November
2001 Ending date: June 2002

4. Reason for conducting research: Professional Dissertation
 Thesis Class Assignment Other:

(specify) _____

5. Source of funding (if applicable): West Virginia Dental Corporation (pending approval)

6. Number of projected subjects 256 Number of
projected records or data files _____

7. This research involves (check all that apply):

- a. collection or study of existing data, documents, records or specimens
 - b. noneducational practices conducted in established or commonly accepted educational settings
 - c. educational tests (cognitive, diagnostic, aptitude, achievement)
 - d. observation of public behavior
 - e. surveys or interviews:
 mail telephone person-to-person
 - f. any possibility of identifying a subject (discuss in cover letter)
 - g. the possibility that the subject's responses or conduct (if they became public) may place the subject at risk of criminal or civil liability or be damaging to the subject's financial standing or employability
 - h. sensitive aspects of personal behavior (for example: illegal conduct, drug use, sexual behavior or use of alcohol)
 - i. investigator's participation in activities being observed
 - j. only surveys or interviews of elected or appointed public officials or candidates for public office
 - k. audiotaping
 - l. children under age 18 (see Chapter II of the *Guidelines*)
- Note: Interviews and surveys with children are never exempt.
- m. food tasting and evaluation
 - n. research and demonstration projects

8. Goal of research

The goal of my research is to assess the prevalence and extent of herbal supplement education in dental hygiene curricula in the United States.

9. Explanation of procedures involved in research

A survey pertaining to herbal supplement education in dental hygiene curricula will be mailed to all dental hygiene schools in the United States. The chairperson of the department will be asked to complete and return the survey. The survey results will be statistically analyzed and presented in a thesis paper and research poster session.

10. Explanation of known risks to human subjects

There are no known or expected risks to human subjects.

11. Explanation of how records will be kept

After being returned to the principal investigator, the surveys will be kept anonymous and identified by school code only.

A cover letter addressed to respondents must accompany any survey or questionnaire. The cover letter must be on *your departmental letterhead* and must include the following:

1. a statement that the project is research being conducted in partial fulfillment of the requirements for a course, master's thesis, dissertation, etc.,
2. purpose of study,
3. a statement that subjects' responses will be kept anonymous or confidential (explain extent of confidentiality if subjects' names are requested),
4. if audiotaping, a statement that subject is being audiotaped (explain how tapes will be stored or disposed of during and after the study),
5. a statement that subjects do not have to answer every question,
6. a statement that class standing or grades (or status on an athletic team, if applicable) will not be affected by refusal to participate or by withdrawal from the study,
7. a statement that participation is voluntary.

Attached are:

- questionnaire/survey to be used
 - telephone text (including introductory remarks as in a cover letter--see above)
 - cover letter
 - permission from external institution, on their letterhead (if applicable)
- I have reviewed the above information and recommend this study for exemption.

Dean or Director Department Chair Faculty Advisor

VITA

NAME OF AUTHOR: Lisa Elena Lisauckis
DATE OF BIRTH: June 23, 1965
PLACE OF BIRTH: Uniontown, Pennsylvania

PROFESSIONAL EDUCATION

Master of Science in Dental Hygiene Candidate, 2002, West Virginia University
Bachelor of Science in Dental Hygiene, 1991, West Virginia University
Dental Assisting, 1984, West Virginia Career College

PROFESSIONAL DEVELOPMENT

Mid Atlantic HIV/AIDS Mini Residency, 2001, University of Baltimore
Special Olympics Special Smiles, Local Coordinator, 2002, West Virginia University

PROFESSIONAL EXPERIENCE

Dental Hygienist, Joe T. Ruby, D.M.D., 1991 to present, Uniontown, Pennsylvania
Dental Hygienist, Charles P. Yezbak, D.D.S., 1991 to 2000, Uniontown, Pennsylvania
Dental Hygienist, Uniontown Dental Clinic, 1991, Uniontown, Pennsylvania
Dental Assistant, Linda S. Oliver, D.D.S., 1985 to 1987, Morgantown, West Virginia
Dental Assistant, Arnold O. Koon, D.M.D., 1984 to 1985, Masontown, Pennsylvania

AWARDS AND HONORS

American Dental Hygienist Association, 1991 to present
West Virginia Dental Hygienist Association, 1991 to present
Mon Valley Dental Hygienist Association, 1991 to present
Treasurer, 1999 to present
Sigma Phi Alpha, National Dental Hygiene Honor Society, 1991