DESCRIPTIVE STUDY ON THE USAGE OF HERBALS BY INFANTS AND CHILDREN OF FAMILIES PARTICIPATING IN THE SPECIAL SUPPLEMENTAL NUTRITION PROGRAM FOR WOMEN, INFANTS AND CHILDREN (WIC) IN WISCONSIN

By

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ABSTRACT

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Descriptive Study of the Usage of Herbals by Infants and Children Participating in the
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Medicinal herb usage has become a popular form of complementary and alternative therapy practiced among adults.[1,2,3,4] Whether herbs are being given to their infants and children is unknown. The pharmacological effects of herbs are potentially harmful, thus determining the prevalence of herbal use among infants and children can help healthcare professionals appropriately prioritize this issue among the communities they serve. Describing herbal use practices among infants and children and their caregivers will enable healthcare professionals to address applicable educational topics, and deliver credible information to caregivers in the most effective manner.

The goal of this study was to profile and determine the prevalence of herbal usage among infants and children of families participating in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). A self-report survey was

developed that requested descriptive as well as demographic data. The sample was comprised of 1479 caregivers recruited from 24 WIC projects in Wisconsin. Herbal use was prevalent among the infants and children of families participating in the WIC Program. Nearly one-third of caregivers provided their children herbs. The majority of children that received herbal doses were less than 5 years old. Caregiver demographic characteristics associated with childhood herbal usage include being 30 years of age and above, post high school education, rural location and nonwhite or Hispanic ethnicity. Popular herbs used among infants and children were aloe vera, garlic, peppermint, chamomile and manzanilla. Caregivers utilized many of the same types of herbs given to their children. Frequent reasons for giving herbs to infants and children included burns, food, colic, cold and stomach ache. The majority of the reasons appeared to be related to acute illness and symptom relief. The most popular information sources utilized by caregivers that gave herbs to their children were family, friends and books. Caregivers primarily relied on family for information on herbs.

The results of this study show that herbal usage is prevalent in a low-income population. Overall, caregivers reported few herbs associated with adverse effects. However, since research supporting the usage of herbal products by children has not been established, an opportunity exists for unsafe practices. Healthcare professionals must become educated about safe herbal practices and the herbs used within their community in order to provide their clients with well-rounded information. Healthcare professionals must also provide herbal information to family and friends of caregivers through popular information sources in order to reach the clientele they serve.

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LIST OF ABBREVIATIONS

AAP – American Academy of Pediatrics

ANPR – Advance Notice of Proposed Rulemaking

CAM – Complementary and Alternative Medicine

CN – Caregivers that do not give herbs to their children

CY – Caregivers that give herbs to their children

DRV – Daily Recommended Value

DSHEA – Dietary Supplement and Health Education Act

FDA – Food and Drug Administration

FN – Families that do not use herbs

FY – Families that use herbs

GMP – Good Manufacturing Practices

NLEA – Nutrition Labeling and Education Act

RDI – Reference of Daily Intake

TFOCAM – Task Force on Complementary and Alternative Medicine

USDA – United States Department of Agriculture

USP – United States Pharmacopoeia

WIC – Special Supplemental Nutrition Program for Women, Infants and Children

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

OVERVIEW

Traditionally, herbs have been used for medicinal purposes throughout history, although the popularity of herbal remedies diminished with the development of synthetic drugs in the early 20th century.[5] However, during the past decade, a resurgence in the usage of herbal remedies has occurred. Recent studies have shown that the prevalence of herbal usage among adults ranges from 12 to 61 percent.[1,2,3,4] The number of herbal products are numerous, with over 20,000 currently available on the market.[6] Since the passage of the Dietary Supplement and Health Education Act of 1994 (DSHEA), the growth of herb sales has flourished in the United States.[5] The Hartman group estimates that the sales of herbal products will exceed 7 billion by 2003, surpassing the sales of vitamins, which have historically transcended herbal products.[7] The reasons attributed to the increased usage of herbal remedies vary, including a dissatisfaction with modern health care[2,8,9] and greater personal responsibility toward self care.[2,9-11] Technological advances have increased the ability to convey information, which has resulted in consumers becoming much more informed on health information and treatment options.

Herbs are popularized by the belief that they are safer, having fewer side effects than synthetic drugs.[12] Since herbs are packaged similarly to drugs, promoted as "natural" and do not require a prescription, consumers are lead to assume that manufacturers of herbal products practice the same industry standards that drug manufacturers are required to follow.[12] However, the Food and Drug Administration

(FDA) does not require herbal manufacturers to follow good manufacturing practices (GMP's) or guarantee quality, safe products prior to marketing them. Herbal manufacturers are allowed to label their products with statements that imply health benefits. Literature accompanying herbs support the benefits implicated on herb labels. However, efficacy cannot be guaranteed since the mechanism and identity of many bioactive components in herbs have not been established.[13]

RATIONALE

The use of medicinal herbs is classified as a type of complementary alternative medicine (CAM) since it is not a therapy conventionally practiced by modern medicine. Types of CAM therapies include acupuncture, massage and prayer. Although evidence exists on the increased prevalence of herbal usage among adults, the prevalence of herbal usage among children is unknown. Studies have shown that the use of CAM among children is prevalent.[14-21] The American Academy of Pediatrics (AAP) has recognized the increased utilization of CAM within the pediatric population. Recently, the AAP approved the formation of the Task Force on Complementary and Alternative Medicine (TFOCAM), which will provide a technical report and compendium to describe major CAM modalities, providing data on utilization and expenditure, current research, case studies and anecdotal and evidence-based information and a discussion of legal and ethical issues.[22] The usage of herbal preparations is believed to be a common therapy utilized by families for their children.[23] Several CAM studies support this, showing that herbal usage is a popular type of CAM therapy employed by caregivers.[16,18,21] Alluding to the increased usage of herbs among children is the increased marketing of herbal products targeted for children.[24]

Although some herbal therapies with a long history of usage are well tolerated by most children,[6] this population is at a greater risk for experiencing adverse effects of herbs. According to Brinker, "the rapid development and maturing functional capacity of the young make them more susceptible to potential toxicities that are found even in some of the relatively safe medicinal plants."[25] The effects of herbs on the growth and development of children are unknown since very little research has been conducted. As with other pharmacological substances, some herbals have been known to cause electrolyte imbalances,[25,26] while others contain compounds that block the absorption of nutrients.[25] Usage of herbals with these effects are potentially devastating, especially if they are used on a long-term basis.

In comparison to an adult, determining a dosing regimen for a child is difficult because a child's metabolism continually fluctuates as a result from undergoing growth and development.[27] For example, children have higher proportions of total body water and extracellular fluid as well as differing proportions of muscle and fat, all of which affect how bioactive components are distributed and absorbed within the body.[27] Infants, especially newborns are a very sensitive group since they have an increased permeability in the intestine as well as slower glomular filtration rate which can result in a greater absorption rate.[27] Children have increased skin permeability, which can also increase absorption of bioactive compounds.[27] Despite these variations, pediatric doses are usually extrapolated from established adult dosages by only utilizing weight as a variable.[27] However, a single variable can not possibly account for the metabolic differences between a child and an adult. Several resources on child herbal usage also follow this approach, advising caregivers to use only weight[28] or age[29,30] to determine

herbal dosages for their children. Since many bioactive components of herbs remain unidentified,[13] this practice may be harmful to a child. When factoring in the questionable safety and quality of herbal products, it is clear that caregivers providing herbal remedies must be especially careful.

The need for a caregiver to determine an herbal dosage for their child is plausible since most herbal products only list an adult dosage. The probability of calculating a correct dosage is improbable because caregivers are not likely to be knowledgeable of variables a physician or a pharmacist would consider when determining a dosage, such as presence of disease and drug interactions. Since the adverse effects of herbal products are not commonly printed on their labels, it is difficult for caregivers to be vigilant of complications their child may experience. Children may also receive a subtherapeutic dosage, resulting in a delay of treatment.

PROBLEM STATEMENT

Studies have shown that consumers usually do not inform their physician about usage of CAM.[1,11,16,18,19,21,31,32] Users of herbal remedies tended not to obtain information on herbs from healthcare professionals, preferring to rely on information from family, friends and written materials.[2,4,33] The reliability of popular information sources is questionable since locating credible information is an insurmountable task.[34] Buck and Michel express that "health care providers can play an important role in educating patients and their parents about the potential risks of herbal therapies and the need to closely monitor any use in children."[6] The more knowledge healthcare professionals acquire on CAM therapies, such as herbal use, the better they can empower caregivers to make informed decisions on whether herbal usage is appropriate for their child. By

providing an open atmosphere, caregivers will likely be more receptive to advice on important issues surrounding herbal usage such as safety, risks and benefits.

This project was conducted to describe the prevalence of herbal use among infants and children. A study instrument was developed and distributed to caregivers of infants and children of families participating in the WIC Program in Wisconsin. The study had eight objectives: identifying herbs used by infants and children, including the frequency with which each herb is used; identifying infant and child herbal user ages; identifying herbs used by caregivers and the frequency with which each herb is used; identifying reasons for herbal usage in children; indicating sources of herbal information for caregivers; comparing childhood herbal usage between urban and rural dwellers; identifying associations between childhood herbal usage and caregiver age, gender, ethnicity, and education level; and profiling childhood herbal usage according to age, type, reason and demographic characteristic. The outcomes of this project can help inform healthcare professionals on the practices of herbal usage among caregivers and their infants and children as well as address potential educational needs.

ASSUMPTIONS

1. Caregivers that participated in this study were assumed to be honest, providing credible information on the herbal usage practices among themselves and their children.
2. WIC staff participating in survey distribution diligently followed survey distribution procedures outlined on the instructions and script.
3. WIC staff encouraged everyone to complete a survey, regardless of whether herbs were given to their children.

DELIMITATION

The data resulting from this study are applicable to caregivers (18 years of age and older) of infants and children from families participating in the WIC Program in Wisconsin.

LIMITATIONS

1. WIC directors were allowed to indicate the number of Spanish surveys received at each project. This supports the possibility that Spanish surveys were needed at a project and were not distributed because a WIC director may have thought it too difficult to include Spanish-speaking participants.
2. Statistics used to determine the number of surveys for distribution may have not have been reflective of the sample when the surveys were actually distributed.
3. Surveys were not available in other languages beside Spanish and English, which may have excluded participants.

4. Illiterate and mentally/physically disabled persons may have been excluded since they were more likely to require extra time from WIC staff to aid in survey completion.
5. Enrollment in the WIC program varies throughout the year, which may have influenced the representiveness of the data.
6. Information was gathered via a self-report survey instead of an impromptu interview, which may have resulted in an incorrect interpretation of the information provided.

ORGANIZATION OF THE REPORT

This report is organized into 5 chapters. Chapter 2 contains a review of literature and Chapter 3 details the research methods employed. Chapter 4 presents the results of the study, including both demographic and descriptive data on the participants. The demographic data include a comparison between caregivers that give herbs to their children and caregivers that do not. The descriptive data relates the prevalence of herbal usage among children and their caregivers, as well as the frequency and type of herbs used. In addition, the reasons caregivers gave herbs to their children are described, as well as information sources utilized by the caregivers of children that received herbs. Chapter 5 includes a discussion and a conclusion as well as recommendations for future studies. References and Appendixes follow Chapter 5.

CHAPTER 2

REVIEW OF LITERATURE

INTRODUCTION

Herbal use is becoming an increasingly prevalent practice among American adults. Results of a nationally representative survey conducted by Eisenburg et al in 1997, demonstrated a fourfold increase in herbal usage for health reasons since 1991.[1] In 1999, another nationally representative survey conducted by Prevention Magazine and Princeton Survey Research Associates indicated that 49 percent of adults surveyed used an herbal remedy in the past 12 months.[2] An extrapolation of this figure means that over 91 million American adults have used herbal remedies.[2] Although retail sales in the United States have leveled off in recent years,[35,36] the business of herbs and botanicals is expected to grow at an average annual growth rate of 9.7 percent through 2004.[35]

Although data on prevalence of use are emerging in the adult population, little is known regarding frequency of use in the pediatric population.[37] The adult demographics remain important, as young children are not responsible for the type and extent of healthcare chosen by their caregivers.[37] Since herbal usage among adults has increased during the past decade, a question arises on whether this is also true for children as well. A concern is evident as the data supporting the efficacy of herbal medicines are limited according to contemporary Western scientific standards.[38] In addition, clinically important types of information are particularly sparse in the literature including the effects of herbs in children.[39]

The goal of this study was to determine the prevalence of herbal use among infants and children of families participating in the WIC Program in Wisconsin. The study had eight objectives: identifying herbs used by infants and children, including the frequency with which each herb is used; identifying infant and child herbal user ages; identifying herbs used by caregivers and the frequency with which each herb is used; identifying reasons for herbal usage in children; indicating sources of herbal information for caregivers; comparing childhood herbal usage between urban and rural dwellers; identifying associations between childhood herbal usage and caregiver age, gender, ethnicity, and education level; and profiling childhood herbal usage according to age, type, reason and demographic characteristic.

POPULATION

This study targeted infants and children of families involved in WIC. The WIC program is a Federally subsidized nutrition program that serves low-income women, infants and children up to the age of 5. Nationwide, the WIC program served an average of 7.2 million people each month during the fiscal year of 2000.[40] One in four new mothers and 45 percent of all infants born in the United States were served by the WIC program.[41]

The mission of the WIC Program is "to safeguard the health of low-income women, infants and children up to the age of 5 who are at nutritional risk."[42] The WIC program provides nutrition education, referrals to healthcare and vouchers for supplemental foods.[41] The vouchers, also known as drafts or coupons, list the type and quantity of WIC-approved foods to be redeemed, which are consistent with the participant's needs.[43] The participant may redeem these vouchers at any participating

grocery store or pharmacy. WIC-approved foods are excellent sources of one or more of the following nutrients frequently lacking in the diets of the program's participants: protein, calcium, iron, and retinol (Vitamin A) and ascorbic acid (Vitamin C).[40] WIC-approved foods include iron-fortified infant formula and cereal, iron-fortified adult cereal, fruit juice and/or vegetable juice rich in ascorbic acid, eggs, milk, cheese, peanut butter, dried beans or peas, tuna fish and carrots.[40] Special infant formulas and medical foods may also be provided for specified medical conditions.[40]

The WIC program can be accessed in each State, the District of Columbia, 33 Indian Tribal Organizations, Puerto Rico, the Virgin Islands, American Samoa, and Guam.[40] Participants of the WIC Program must meet the following eligibility requirements: confirmed residency, gross income at or below 185 percent of the U.S. Poverty Income guidelines, and be determined at "nutritional risk" by a health professional.[40] Two types of nutritional risk are recognized for WIC eligibility: "high priority medically-based risks such as anemia, underweight, maternal age, history of pregnancy complications, or poor pregnancy outcomes; and diet-based risks such as inadequate dietary pattern."[40] Nutritional risk is based on Federal guidelines and upon WIC nutrition risk criteria developed by United States Department of Agriculture (USDA) Food and Nutrition Service in conjunction with State and local WIC agency experts.[40]

REGULATION AND SAFETY OF HERBS

Herbal Supplements Defined

An herb is traditionally defined as "a seed-producing annual, biennial, or perennial that does not develop persistent woody tissue but dies down at the end of a growing season."[44] In this study, the term herb was defined as it is in the botanical business — "plants or plant parts that are used for savory, aromatic, or other uses."[5] Today, herbs are mainly used for cooking, fragrance and healthcare.[5]

Legal Classification

In the United States, herbs are regulated as dietary supplements under the DSHEA. Under DSHEA, "the term dietary supplement (1) means a product (other than tobacco) intended to supplement the diet that bears or contains one or more of the following dietary ingredients: (A) a vitamin; (B) a mineral; (C) an herb or other botanical; (D) an amino acid; (E) a dietary supplement used by man to supplement the diet by increasing the total dietary intake; or (F) a concentrate, metabolite, constituent, extract, or combination of any ingredient described in clause (A), (B), (C), (D), or (E)."[45] The definition recognizes a variety of forms in which herbs and other dietary supplements may be ingested including capsule, powder, softgel, gelcap, tablet, liquid, or other form.[45]

Federal Regulation

The passage of the DSHEA in 1994 had a major impact on the regulation of herbs and other dietary supplements. Prior to the enactment of the DSHEA, the FDA regulated dietary supplements as food additives. In 1993, the FDA published a comprehensive Advance Notice of Proposed Rulemaking (ANPR) which referenced to the increased

consumer use of dietary supplements, also referring to an internal FDA three year review of possible regulatory approaches for dietary supplements.[46] The ANPR linked certain botanical supplements to specific reports of serious illness, suggesting that some botanical products were inherently drugs and not dietary supplements.[46] The ANPR also indicated that many dietary supplements were unapproved food additives.[46] A considerable protest from consumers and the dietary supplement industry followed, generating more letters to Congress than received during the Vietnam War.[37,47] "The ANPR was a significant factor in industry and congressional efforts to develop and secure passage of DSHEA."[46]

Once DSHEA was enacted, dietary supplements were regulated as food and therefore were not required to secure approval from the FDA prior to marketing. This act had considerable impact because approval by the FDA was required when dietary supplements were regulated as food additives. The FDA determines the safeness of a dietary supplement "based on conditions of recommended use, as suggested on the product label or, in the absence of such recommendations or suggestions, on ordinary conditions of use".[45] "New" dietary supplements (marketed after October 15, 1994) must have adequate information available to assure they do not pose "a significant or unreasonable risk of illness or injury".[45] Manufacturers of new dietary supplements must provide the FDA with evidence, based upon a history of use or other evidence of safety at least 75 days before marketing. The passage of the DSHEA shifted the burden of proving the safeness of a dietary supplement from the manufacturer to the FDA.

Labeling and Promotion of Herbs and Other Dietary Supplements

Governing Laws The passage of the DSHEA amended the Nutrition Labeling and Education Act (NLEA) of 1990, allowing herbs and other dietary supplements to carry nutrition support statements without premarket approval from the FDA.[45] If an herb or other dietary supplement manufacturer decides to put a nutrition support claim on their label, they have up to 30 days after the supplement is initially marketed to notify the FDA of their claim.[48] The types of nutrition support statements allowed include (1) statements of benefit related to a classical nutrient deficiency disease, (2) a statement that describes the role of a nutrient or dietary ingredient intended to affect structure or function in humans, (3) a statement that characterizes the documented mechanism by which a nutrient or dietary ingredient acts to maintain structure or function and (4) a statement that describes general well-being from consumption of a nutrient or dietary ingredient.[49] If a dietary supplement bears a nutrition support statement, it must also carry the following disclaimer, "This statement has not been evaluated by the FDA. This product is not intended to diagnose, treat, cure, or prevent any disease."[49]

As far as the nutrition information included on the label, manufacturers are required to include certain information, including the quantity of each dietary ingredient per serving and the sources of the dietary ingredients. Herbs and other botanicals must also indicate the part of the plant used for each ingredient.[45] Manufacturers are not required to specify a Reference of Daily Intake (RDI) or Daily Recommended Value (DRV).[45] Although dietary supplements can indicate the RDI's or DRV's, claims on the percentage levels for ingredients can be stated when a DRV is not established.[45]

Promotion Supporting literature is allowed to accompany herbs and other dietary supplements, provided it is physically separated from the product being sold. The information must (1) not be false or misleading, (2) not promote a particular manufacturer or brand, (3) present a balanced view of the scientific information, (4) not have any information appended to it and (5) be presented in its entirety unless it is an author-or editor-prepared abstract of a peer-reviewed scientific publication.[48] The FDA is responsible to bear the burden of proof of claims made by the manufacturer, including the appropriateness of the supporting literature accompanying the dietary supplements.

Studies on Herbal Safety

Lack of Research According to FDA standards, an insufficient number of large-scale, randomized, double-blinded, placebo-controlled trials exist worldwide to prove the safeness and effectiveness of herbal preparations. The pharmacological activities and bioactive components of many herbal ingredients are poorly understood because an inadequate number of stringent scientific studies have been conducted.[50] In fact, scientists have only begun to identify bioactive components in medicinal herbs[13] and their effect on body processes. Since many bioactive components in herbs have not been identified, the rationale of possible herb-drug interactions is difficult to justify[50] as well as interactions with other substances.

Many of the proclamations made on herbs are based upon historical references and open-label clinical trial data.[8] Most of the information that exists is relative to the history of traditional use. Although traditional use is often touted to be a sufficient reason to label an herb as "safe", a review of historical literature on herbs yielded little evidence of this perspective.[51] Indeed, the history of traditional use is helpful in the

identification of herbs that display "acute and obvious signs of toxicity."[50] However, it was very possible for premodern societies to have overlooked "more subtle and chronic forms of toxicity."[3,50] Besides the fact that it was more difficult to detect these types of toxicities during the premodern era, the issue was also of lower significance due to "shorter life spans, differences in mortality curve and a lack of alternative treatments."[51]

Much of the existing research on medicinal herbs has been conducted outside of the United States in areas where herbs are more frequently utilized in healthcare.[5] Germany is often viewed as the most advanced in the usage of medicinal herbs,[5] as it has produced the most accurate information available on the safety and effectiveness of herbs and other phytomedicines.[47] In Germany, the Federal Health Agency convened a commission of reputable scientists and practitioners, known as the German Commission E, in order to examine information on the safety and efficacy of commonly used herbs.[47] Based upon these findings the Commission E developed a series of monographs on over 300 herbs, which now serves as a primary resource for the Physician's Desk Reference on Herbal Medicines.[8]

Limitations on Research In the United States, research on herbs has not flourished as it has in other countries, mainly due to an emphasis of research on isolated plant constituents and synthetic compounds for the development of drugs.[5,47] A primary reason for this, is that in comparison to herbs, the incentive to perform research on drugs has an immense potential to be vastly more financially rewarding.[5] For instance, the FDA requires drug manufacturers to prove both the safety and effectiveness of a drug before it is allowed to be marketed in the United States. According to estimates by the drug industry, the average cost to prove a drug's safety and effectiveness is $350

million.[5] While it is possible for a drug manufacturer to recover from its losses through the sale of the drug, the company usually must have an exclusive right to sell it.[5] As herbs and other plants cannot be patented, a company financing research on an herb cannot be financially reimbursed for their research through sales. Thus the initiative to perform extensive research on herbs to prove their safeness and effectiveness is very difficult to harvest.

Special Considerations with Childhood Herbal Usage

The growth and development that occurs during infancy and childhood can be altered by a variety of genetic, nutritional and environmental factors.[52] As with drugs and other substances with pharmacological properties, herbs exhibit effects on biological processes.[49] Since very few clinical trials have been conducted on children, the extent of these effects on a child's growth and development are unknown.

In relation to herb usage, special consideration must be taken for the pediatric population as several characteristics distinguish it from the adult population. For example, infant and child metabolism is much more rapid than adult metabolism. In addition, certain organ systems such as the central nervous and lymphatic systems are not fully developed even by the time the child reaches late childhood.[52] These factors significantly alter the rate and extent to which an herb is utilized in the body, producing effects different from those elicited in an adult.

Due to the lack of study on the effects of herbs in children, standardized dosing of herbal preparations has not been established. Resources on child herb usage recommend dosing herbs that utilize formulas such as Clark's Rule that only uses weight as a variable,[28] and Young's Rule and Cowling's Rule that only utilize age as a variable.[29]

Since the variables in these formulas do not comprehensively account for metabolic differences, it is almost certain that the dosage calculated will not be suitable for a child.[53] When comparing the amount of the herbal preparation administered per kilogram of body weight, infants and children very possibly could receive amounts greater than an adult would usually consume.[54] Although no approach to dosing, even for prescription drugs is a guarantee of safety and efficacy for infants and children,[53] at least there is knowledge of the drug's composition and the mechanisms of action. Knowing the composition and mechanism of actions of herbs can be indispensable information when determining possible acute and long-term side effects. Thus, parents administering herbs to their children may unknowingly be putting them at risk.

ADULT HERBAL USAGE

Prevalence of Herbal Usage in Adults in the United States

National Surveys on Herb Usage Since caregivers ultimately determine their child's healthcare decisions, profiling the prevalence of herbal usage in adults is likely to be indicative of the prevalence of herbal usage among children. After a thorough literature review, few synopses of the studies located depict the prevalence of herbal usage among adults. In 1991 and 1997, Eisenberg et al conducted two nationally representative surveys that portrayed the prevalence of CAM utilized in the United States.[1,31] Of the CAM therapies represented, the use of herbal therapies by adults significantly increased from 2.5 percent in 1991 to 12.1 percent in 1997.[1,31] Two nationally representative surveys performed by Prevention Magazine also found an increase in the usage of herbal remedies by adults from 1997 to 1999, respectively rising from 32 to 49 percent.[2,33]

Other Studies on Herb Usage In 1991, a survey was distributed to patients infected with the human immunodeficiency virus attending a clinic in San Fransisco.[55] Twenty-two percent of the 114 participants indicated use of herbal products within the past 3 months.[55] Since this population was inflicted with a chronic, life-threatening illness, the results do not represent the average adult population. In 1994, a study was conducted on acutely ill or injured patients presenting to an urban emergency department.[32] Nearly 22 percent of the 623 patients indicated usage of herbal preparations.[32] In 1999, a study was performed on an adult sample randomly selected from the Minneapolis/St. Paul metropolitan area that had somewhat similar demographic characteristics to the population distribution data from the 1990 US Census Bureau.[4] Just over 61 percent of participants used herbal preparations within the past 12 months.[4] The sizable increase in the expenditure on herbals in the past decade suggests authenticity of the statistics reported above.

Demographic Characteristics Among Adults Using Herbs

Adult CAM user Demographics Since data are scarce on the demographic profile of herb users, the demographic profiles of adults using CAM therapies will be explored. Herbal usage was included as a type of CAM therapy in the following studies. According to a nationally representative study performed in 1991, Eisenberg et al found that respondents within the age range of 25 through 49 years with incomes above $35,000 used significantly more CAM therapies.[31] A follow-up study conducted in 1997, showed significance of CAM therapies among respondents 35 through 49 years with incomes above $50,000.[1] These studies also found that CAM users tended to be female,[1] having some college education.[1,31] In relation to ethnicity, both studies found that the use of

unconventional therapies was less common among African Americans in comparison to whites, Hispanics, Asians or people of other ethnicities[1,31] Comparisons between urban and rural locations were not performed, although CAM usage was more common in western United States.[1,31]

Adult Herbal user Demographics The demographic characteristics profiling a "typical" user of herbal remedies are limited since only a few studies exist. Concerning age, there was no statistical significance found on the age group most likely to use herbal remedies.[4,32,56] According to a nationally representative study, herbal users tended to be 45 through 74 years, although the study over-sampled adults over the age of 60.[57] Harnack et al did not find statistical significance for age, however, herbal users were more likely to be younger.[4]

Studies that examined gender and educational status were similar to the CAM user profile — a female[4,32,56] with some post high school education.[4,56] Studies researching the prevalence of folk/home remedies in addition to herbals found a statistical significance with the female gender[58] with some college education.[10] Herbal usage was found to be prevalent in urban areas.[4,32] Klepser et al cross-examined both urban and rural areas and found no statistical differences between herb users.[56] Brown and Marcy also did not find statistical significance between urban and rural location.[10] Concerning income, Loera et al found that a report of financial strain was a significant predictor of herb or folk remedy usage.[58]

Studies examining ethnicity found a higher usage of herbs among minority groups. Nationally representative data suggest people in ethnic groups other than white, black and Hispanic tend to use more herbals.[57] Hung et al found that the use of herbs was

significantly greater among Asians compared to whites, Hispanics and African Americans, though 75 percent of the sample surveyed comprised of Hispanics, African Americans and Asians.[32]

Reasons for Herb Usage among Adults

Many reasons have been purported as responsible for the resurgence of herbal usage for medicinal purposes in the past decade. A study examining the reasons for usage of alternative medicine found that the majority of users found this type of therapy to be more congruent with their own values, beliefs, and philosophical orientations toward health and life.[59] For example, herbal therapies are a popular tradition in some cultures. In effort to have greater affinity with their culture, immigrants may continue to use herbs in order to keep with traditional value and belief systems.

Some consumers seek a more "natural lifestyle", using herbal therapies as a way to conform.[9] Increased consumer-direct marketing has heightened the consumer's awareness of the adverse effects of prescription medications since drug companies are obligated to disclose possible side effects of their products.[8] Announcements of prescription drugs withdrawn from the market due to their dangerous side effects have prompted consumers to seek safer alternatives. As herbs are commonly marketed as "all natural" the public may equate this as meaning "all safe".[60] This belief may associate herbs with having fewer side effects, compared to prescription medications. A survey conducted by International Communications Research for Prevention magazine showed that the majority of respondents who used herbal remedies thought that they were as good or better than nonherbal remedies in terms of efficacy, safety and cost.[33] A study assessing perceptions of the safety and efficacy of herbal therapies found those who

reported herbal use tended to be significantly less positive of the safety of prescription agents, having a more positive belief concerning the safety of herbal products.[56]

Others believe the increased use of herbals is due to dissatisfaction with modern health care.[2,8,9] According to a survey assessing the prevalence of herbal usage in adults, 47 percent of consumers thought their health care plan was more concerned about making money than providing care.[2] The increased costs of health care, especially expensive prescription medications surely fuel this frustration. Many consumers perceive herbal remedies as less expensive compared to prescription medications.[2,8,33,61]

Conditions in Which Herbal Therapies are Utilized

Several sources suggest that CAM is primarily used for chronic conditions.[1,38,59] People with these chronic conditions are likely more prone to seek alternatives especially when contemporary medical treatments have not provided a solution. Few studies have explored the specific reasons herbs are used. In general, both chronic and acute conditions were identified in studies on the prevalence of herbal usage in adults.[2,4,10] Chronic conditions included anxiety, allergies, depression, enlarged prostrate and high cholesterol. Acute conditions identified included burns, congestion, diarrhea, headaches, insomnia, symptoms associated with menopause, rashes, treatment of cold and flu, stomach ailments and weight loss. Health maintenance and prevention of disease are also prominent reasons indicated.[2,4] Johnston indicated that 75 percent of 2000 respondents in a nationally representative survey reported that they use herbs to ensure good health.[2] Harnack et al found that promotion of general health and well being was the most frequently reported reason for herbal use for 5 out of 13 herbs presented.[4]

Common herbs used by adults in the United States include echinacea, garlic, ginkgo, ginseng and St. John's wort.[2,4,39,62,63] Other common herbs used by adults included chamomile, ginger, goldenseal, saw palmetto and valerian. Most, if not all of these herbs have been claimed to be a remedy for both chronic and acute conditions, including the specific conditions presented above.

Reported Information Sources

Few studies have explored popular sources of herbal information. Concerns about reliability and consumer misinformation suggest a need for such studies. Three studies have reported information sources, however the methodology employed on each study differed and was undefined. A variety of information sources were reported but the most popular were family, friends and written materials.[2,4,33] Other information sources reported included the internet, television, health food stores, alternative medical practitioners, toll-free numbers, the radio and health professionals including doctors and pharmacists. Studies examining the prevalence of childhood CAM usage reported that information was commonly obtained by word of mouth[14,15] and family and friends.[16,17] Data presented by Harnack et al show that healthcare professionals, including doctors and pharmacists, were the least cited information sources for most herbs included in their study.[4]

CHILDHOOD HERBAL USAGE

Infants and Children-Defined

The term childhood "denotes that period in the human lifespan from the acquisition of language at one or two years to the onset of adolescence at 12 or 13 years."[64] Instead of following this classification system, the term infants and children

will be further subdivided to better identify the population being studied. Age groups will be defined according to delineations found in the Merck Manual[65]: newborn (birth through 3 weeks); infant (1month through 11 months); early childhood (1 year through 4 years), middle childhood (5 years through 10 years) and adolescence (11 years through 17 years).

Reasons Children are Given Herbs

The reasons caregivers administer herbal remedies to their children are not completely clear due to the lack of study. Bove suggested that parents utilize herbal remedies because they want to take a more active role in their child's healthcare and want safe, effective methods to enhance their child's well-being.[30] Bove also indicated that parents often initially seek herbal therapies after their child has suffered from a constantly recurring illness.[30] These reasons were similar to those parents use who seek CAM therapies for their children with chronic disease. Parents unsatisfied with conventional treatment, believe alternative therapies may possibly provide better results.[15,66,67] Parents also fear the side effects from conventional drug treatments[15,21,67] especially those that can potentially interfere with a child's growth and development. Kemper[68] suggested therapeutic goals for which CAM therapies are utilized exist in five major categories:

(1) Curing disease

(2) Managing or minimizing symptoms

(3) Preventing disease

(4) Promoting wellness/resilience and minimizing stress/toxins

(5) Achieving inner peace and harmony

In addition to the reasons above, herbal therapies can provide parents a degree of autonomy in the care of their children. Parents want to provide the best care for their children and often want to take an active part. When parents are able to contribute to their child's care, they can feel they have fulfilled their responsibility as a parent. In the case of self-limiting conditions, a parent can feel that the care that they provided contributed to the condition's resolution.

For chronic and serious conditions, parents can feel helpless, especially when they feel they are not contributing to their child's care. This feeling can be exaggerated if parents feel that conventional therapies are too complex, or do not offer certainty of cure or improvement of the child's condition.[69] Some parents are unwilling to relinquish control over their child's health[67] and may seek alternative therapies such as herbs to regain some of that control. Others may feel that these therapies can enhance conventional therapies already undertaken.[66] A high prevalence of CAM usage was reported by studies on children with chronic illnesses such as cancer, juvenile arthritis and asthma.[16,66,70-72] Specific reasons for children from a general population are not clear as of yet, though respiratory ailments were a common reason for this population to seek CAM treatment.[14,15,18] Gardiner et al report herbs are frequently used for dermatologic conditions in the pediatric population.[73]

Efficacy of Herb Usage in Children – Clinical Trials

Very few clinical trials evaluating the efficacy of herbal remedies have been performed in humans. Information on children is even more sparse. Of these trials, even fewer are double-blind, randomized, placebo-controlled studies and with results

published in English. After a thorough literature search, the synopses of two clinical trials conducted on infants and children were located.

In a randomized, double-blind, placebo-controlled study, thirty-three 2 to 8 week-old infants were given an herbal tea preparation containing chamomile, vervain, licorice, fennel and balm-mint to determine its efficacy in infantile colic. Parents were able to give a 150 mL herbal tea with every episode of colic, up to 3 times per day. They also kept diaries of their infants sleep patterns, incidences of colic, medical problems (if any) and severity of colic episodes, covering 7 days with no therapy and 7 days of treatment. The results indicated that 19 (57%) of infants treated with the herbal tea had an elimination of colic compared to 9 (26%) of the infants receiving the placebo. In addition, infants receiving the herbal tea experienced less severity of symptoms compared to placebo. Both results were significant.[74]

Another trial was conducted on children to assess the efficacy of evening primrose oil for atopic eczema. Twelve children, aged 2 through 4 years, with atopic eczema were given a total of 3 g of evening primrose oil for 20 weeks. After 4 weeks of treatment, the children's symptoms significantly improved and health was maintained after 20 weeks.[75] Though the results of these studies are promising, more clinical trials need to be performed, especially on the effects on long-term use. Much of the traditional literature relates the effects of herbs when used on a short-term basis.[51]

Types and Typical Uses of Common Herbs Observed in Pediatrics

Herbs are usually indicated for specific disorders, therefore knowing the herbs used provides insight into the reasons they are used. The synopses of studies indicating herbs parents commonly give to their children have not been located following a

thorough literature review. Most, if not all the available information on this topic is based upon observations of health care clinicians who choose to inquire about this practice. Herbs are used for various reasons, varying according to each particular herb. Table 1 depicts common herbs used by children and adolescents, based upon observations by Gardiner and Kemper.[76]

Table 1 – Common Herbs Used by Children and Adolescents

Herb	Typical Uses Across all Ages
Aloe Vera	Minor burn, abrasions, insect bites, acne, poison ivy, sunburn, skin irritations, frostbite, canker sores, peptic ulcers, digestive disorders, laxative
Calendula	Skin irritations, rashes, cold sores, eczema, conjunctivitis
Catnip	Low-grade fever, upper respiratory tract infection, colic, headache, nervousness, sleep disorders, indigestion
Chamomile	Skin irritation, prevention and treatment of cracked nipples, colic, peptic ulcer disease, teething, sleep problems, anxiety
Evening Primrose Oil	Asthmatic coughs, whooping cough, gastrointestinal disorders, mastalgia, premenstrual syndrome, atopic eczema, psoriasis, acne, rheumatoid arthritis, multiple sclerosis and autoimmune diseases, diabetic neuropathy, intermittent claudication
Fennel	Colic, dyspnea, bloating, fullness, flatulence and diarrhea in infants, cough, bronchitis, upper respiratory tract infection, conjunctivitis
Feverfew	Migraine headache, nausea and vomiting, arthritis, fever
Garlic	Ear infection, upper respiratory tract infection, cough, bronchitis, atherosclerosis, high cholesterol, hypertension, gastrointestinal disorders, menstrual disorders, diabetes mellitus
Ginger	Colic, anorexia, indigestion, prevention of vomiting and nausea in motion sickness, morning sickness, postoperative nausea, upper respiratory tract infection, cough, bronchitis
Ginkgo Biloba	Improving circulation in the brain and periphery, arteriosclerosis, cerebral ischemia, claudication, Alzheimer disease, dementia, senility, arthritic and rheumatic problems, lung and bronchial congestion, Raynaud's disease, tinnitus, vertigo, attention deficit hyperactivity disorder
Goldenseal	Conjunctivitis, boils, inflammation of gums, hemorrhoids, fungal infections, diarrhea and other digestive disorders, upper respiratory tract infection, postpartum bleeding
Hops	Nervousness, irritability, insomnia, indigestion
Lemon Balm	Oral and genital herpes, insomnia, anxiety, depression
Licorice	Asthma, cough, sore throat, upper respiratory tract infection, bronchitis, stomach ulcers, digestive disturbances, constipation, colic, cholestatic liver disorders and liver disease, adrenocorticid insufficiency, hypokalemia, hypertonia, arthritis
Peppermint	Muscle aches, neuralgia, headache, indigestion, nausea, diarrhea, flatulent colic, anorexia, inflammatory bowel disease, upper respiratory tract infection, cough, tension headache, and spastic complaints of the gastrointestinal tract, gallbladder and bile ducts
Purple Cone Flower (Echinacea *sp*)	Boils, ulcerations, burns, herpes simplex, prevention and supportive therapy for upper respiratory tract infection, urinary tract infection, yeast infection, and other infections
Slippery Elm Bark	Minor skin irritation, cold sores, ulcers, abcesses, boils, diarrhea, colic, inflammation or ulcerations of stomach or duodenum , urinary tract infections, sore throats, upper respiratory tract infections, abortifacient
St. John's Wort	Wounds, burns, neuralgia, contusions, depression, nervousness, anxiety
Thyme	Bronchitis, cough, sore throat, upper respiratory tract infection, indigestion, colic, gastritis, dyspepsia, diarrhea, enuresis
Valerian	Insomnia, restlessness, menstrual cramps, rheumatic pain

*Adapted from Gardiner and Kemper[76]

Murphy[77] observed many of the same herbs in practice as Gardiner and Kemper — see Table 2. The actions of the herbs indicated in Table 1 correspond to the various organ systems for each herb indicated in Table 2.

Table 2 – Common Herbs Used in Pediatrics

System	Herb Used
Cardiovascular	Hawthorn, Horse Chestnut
Dermic	Aloe, Calendula, Evening Primrose Oil, Tea Tree Oil
Gastroenterologic	Chamomile, Ginger, Milk Thistle, Peppermint
Gynecologic	Chasteberry, Dong Quai Root, Evening Primrose Oil, Pennyroyal
Immunologic	Astragalus, Echinacea, Elderberry, Garlic
Neurologic	Chamomile, Kava, Lavender, St. John's Wort, Valerian Root
Oncologic	Cat's Claw, Essiac, Hoxsey
Renal	Cranberry, Dandelion, Uva Ursi

*Adapted from Murphy[77]

Prevalence of Herbal Usage Among Children

Limitations in Assessment The prevalence of herbal usage among children in the United States is unknown. Many factors contribute to the difficulty in assessing CAM and herbal usage in infants and children. First, prevalence studies may not be generalizable to the general population because the survey population included chronically ill children. Second, the population definition varies among studies. Third, the definition of CAM varies among studies and at times, herbs are not included as a type of CAM therapy. Fourth, the results on the individual prevalence of herbs are sometimes not available because they are combined with another type of CAM therapy or the results were unreported. Lastly, few studies assessing the prevalence of herbal usage in the United States are available.

Characteristics among Families of Child Herbal Users Studies on groups of children from a general population have shown the prevalence of CAM usage to range from 7-70 percent.[14-21] When herbal usage was individually assessed among those using

CAM therapies, the prevalence of herbal usage varied from 6-74 percent.[16-19,21] The synopses of these five studies examining the prevalence of herbal usage will be described below.

Studies Targeting Children Friedman et al performed a study comparing CAM usage among 81 families of children with cancer with 80 families of children with usual childhood illnesses.[16] No statistical difference in CAM usage was found between these two groups. Among CAM therapies, the prevalence of herbal usage in children with cancer was 8.6 percent, which was not significantly different compared to the prevalence of 6.3 percent with usual childhood illnesses.

Ottolini et al reported the prevalence and reasons for CAM use among children in a primary pediatric care practice in the Washington D.C. area.[18] A cross-sectional survey of parents at four Children's National Medical Center Pediatric Research Network practices was distributed from July through November 1998. Twenty-one percent of 348 participants admitted to treating their child with a CAM therapy over the past year.[18] Over 40 percent of children receiving CAM therapies used herbal therapies.[18] The factors associated with child CAM usage included parental use of CAM, greater parent age and greater child age.[18] Reasons associated with CAM usage were complaints of frequent respiratory illness, asthma, headaches and nosebleeds.[18] Interestingly, 81 percent of parents of child CAM users wanted to discuss their usage of CAM therapies but only 36 percent actually did so.[18] Child CAM use was not associated with ethnicity and parental education.[18]

Sawni-Sikand et al reported the prevalence and factors associated with CAM usage in children.[21] A self-report questionnaire administered to 1013 caregivers at six general pediatric practices in urban and suburban Detroit from August through December 1999 showed that twelve percent of caregivers had treated their child with a CAM therapy.[21] Of CAM users, 41 percent used herbal therapies. Factors significantly associated with child CAM usage included child age greater than 5 years, regular medication use, and having an ongoing medical problem.[21] Also associated were maternal age greater than 31 years, religious affiliation, caregiver or spousal usage of CAM and the child's caretaker being born outside of the United States.[21] Sixty-six percent failed to report CAM use to their primary physician.[21] Common reasons for CAM usage included friends/family who had good results (40%), word-of-mouth (30%), presence of chronic medical problems in the child (28%), worried about side effects of traditional medicine (27%) and dissatisfaction with traditional medicine (25%).[21] Statistical differences were not found among ethnicity, sex, mother's education, and family income although there was a trend of higher CAM usage among children of Asian, Hispanic, American Indian and multiracial mothers in comparison to white and African American mothers.[21] Forty-six percent of parents giving their children CAM therapies consulted an alternative practitioner and 11 percent received a physician referral for CAM therapy.[21]

Studies Targeting Adolescents Two other CAM studies examined herbal use in children but specifically included adolescents. Breuner et al evaluated the usage of CAM by homeless youth presenting at a free clinic located in Seattle, Washington from January 29, 1998 through March 5, 1998.[17] A self-administered, cross-sectional survey was

distributed to 157 youth, aged 14 through 21 years. Sixty-two percent of respondents were female, with an average age of 18.5 yrs and 10.6 years of school completed.[17] Nearly 72 percent of the respondents were homeless; others in tentative housing situations or estranged from their families.[17] Approximately 66 percent reported chronic health problems.[17] Seventy percent of the respondents reported CAM usage.[17] Of those reporting CAM usage, about 74 percent utilized herbal remedies.[17] The most common reasons for CAM usage included "it's natural and organic" (43.9%), low cost (28%), perceived efficacy (26.1%), negative experiences with physicians (24.2%), friends recommended or use CAM (20%) and pervasive mistrust of physicians (19%).[17]

Wilson and Klein examined the prevalence of CAM usage among adolescents living in Monroe County, New York.[19] A random-digit-dial telephone survey was conducted on 216 adolescents, 14 through 19 years old.[19] Fifty-three percent of the adolescents admitted to using at least 1 CAM therapy over the past 6 months.[19] Eighty percent did not report CAM usage to their healthcare providers.[19] Ten percent of CAM users utilized herbs.[19] No difference was found among CAM users concerning age, gender, ethnicity or financial status though suburban adolescents were found to be significantly more likely to use CAM than city youth.[19] Of CAM users that utilized herbal therapies, 83 percent did not admit usage to their healthcare providers.[19]

Summary The results of the studies above suggest that a relevant number of children and adolescents are using CAM therapies, with a significant portion utilizing herbal therapies. Caregivers of children who used CAM were more likely to use CAM treatments themselves.[16,18,21] In addition, greater parent age and greater child age were associated with a higher prevalence of CAM usage.[18,21] The majority of caregivers,

including adolescent users, failed to notify health care providers about using a CAM therapy.[16,18,19] This practice was also common among adults utilizing CAM.[1,11,31,32]

Safety of Giving Herbs to Infants and Children

FDA Regulation Under the DSHEA, the FDA carries the burden of proof on whether an herb is safe. The DSHEA allows herbs and other dietary supplements to be marketed without prior approval and can only be taken off the market if the FDA can prove that it poses an unreasonable risk to consumers. Unfortunately, the FDA does not have adequate resources[57,78] to assure that all herbs and other dietary supplements on the market are safe, quality products with standardized potencies. Since consumers rely on the FDA to keep their food, drugs and food additives safe, they may not realize that they are actually trusting the herb manufacturer to ensure the herbs they buy are safe.

The US Pharmacopoeia (USP) has issued standards for herbal manufacturers although FDA-approved quality control procedures have not yet been established.[79] Although some manufacturers follow GMP's, which are encouraged by the FDA, several others do not as they are not required to do so. This is a concern since many variables can affect an herb and its resulting potency, such as climate, altitude, fertilization, pesticide usage and disease. Later, the harvest period and storage conditions an herb is exposed to can have an effect. During the manufacturing process, other variables can alter the resultant product such as species misidentification and unstandardized herbal ingredients. Herbal supplements have been found to contain little to none of the active ingredient, contain other herbs instead of the herb claimed and even be contaminated with heavy metals, prescription drugs and unidentified substances. For example, the FDA recently issued a dietary-supplement recall on two herbal supplements.[80] PC SPES which

is labeled "for prostate health" was found to contain a prescription blood thinner (Coumadin®); SPES labeled "for strengthening the immune system" was found to contain a prescription antianxiety drug (Xanax®).[80] Although adult herbal users are vulnerable to these hazards, infants and children are even more threatened, as their immune systems are not as resilient as their adult counterparts. In an instance where a substance causes an unpleasant reaction in an adult, to a child, the effects may be devastating and even deadly.

Marketing and Promotion Tremendous efforts are being made to promote herbal products for children.[24] Marketers appeal to children, offering herbal supplements in various, "fun" forms such as fruit drinks, gummy bears and other candy-like concoctions. Marketers appeal to parents with statements attesting that their products are natural, supported by structure/function claims that are potentially misleading. Especially vulnerable to marketing claims are parents of children with chronic disease, as they are more likely to be a captive audience.

Herbs, as well other dietary supplements are allowed to carry "structure/function" claims on their labels, which can be misleading at times. For example, ginkgo sometimes carries a claim such as "increases circulation to the brain". This type of statement may lead some people to believe that increased circulation to the brain must also mean that this type of effect could improve their thought processes and memory. A conclusion of this sort is very possible, especially if results of an enthusiastically promoted study attribute positive effects on their subjects' thought processes and memory to gingko's effect of increasing circulation to the brain. Although the FDA does not allow herb or other dietary supplement manufacturers to make specific health claims on their products,

it does allow claims in relation to health maintenance.[3] Literature may also accompany herbs and other dietary supplements but much of it is intended for the promotion of sales,[47] often in the form of anecdotal accounts.[81,82]

The media's portrayal of herbs and other dietary supplements can be very influential. For example, the results of just one clinical trial may be excessively promoted with over-exaggerated claims, encouraging people to believe that a certain herb is the "miracle cure" for an illness or disease. This constant product affirmation can be very convincing, especially when all other avenues to treat a specific condition have been futile. The media's portrayal of herbs can also be convincing when the marketed "solution" appears to be a more convenient alternative to conventional treatments.

Professional Guidance Tyler advocates that a need exists "for health care professionals, especially pharmacists, to judge the quality of available products and to interpret the products' role in preventing and treating disease for the lay consumer."[47] Since so little research on herbs exists, many healthcare professionals feel inadequate to advise consumers. A study focusing on attitudes towards herbal medicine reported that 96 percent of pharmacists surveyed did not feel they had enough information on potential interactions involving herbal products.[83] Due to the vast amount of misinformation, it is difficult for health care professionals to gather reliable and accurate information on herbs.[37] If trained health care professionals believe it is difficult to obtain accurate information, consumers are highly likely to be misinformed about the herbs they use.

Summary

Malden Nesheim, chairman of the Presidential Commission on Dietary Supplement Labels, noted he felt that consumers do not have sufficient information to

make informed choices regarding herbal use.[49] The laws governing the dietary supplement industry assumes that consumers "…have the ability to weigh alternatives and reason before following advice from an unregulated industry."[84] Eliason et al articulates the current dilemma on this issue:

> In the United States both patients and health care providers must do their own literature research into the efficacy and safety of herbal products. This process is difficult because of having to sort through the many misleading claims in the popular press as well as doing legitimate scientific research, and the information available in the US medical literature concerning the effectiveness of herbal and dietary supplements is limited.[34]

Since little information on the long-term effects of herbs on infants and children exists, the safety of herbs in this population must be questioned. Although some double-blind, randomized, placebo-controlled studies exist, many more studies are needed before conclusive recommendations can be made. This lack of information hinders parents that choose to give herbals to their children, especially when dosing is in question. Aside from the fact that there are no guarantees in an herbal product's dosage, concentration, safety or efficacy, the dosing information specific to children is usually not indicated on the label unless the product is targeted for children. Unless a parent seeks out additional information for guidance, it is very possible that an inappropriate dosage will be provided to the child. Caregivers who choose to provide their children with herbal remedies carry a great responsibility, as justification for childhood herbal use is not scientifically validated at this time. Knowing the prevalence of herbal usage can be helpful in determining the extent consumer information is needed on herbal remedies. This study attempts to determine the prevalence of herb usage among infants and children of families participating in the WIC Program in Wisconsin.

CHAPTER 3

METHODOLOGY

INTRODUCTION

The popularity of herbal use in the United States continues to grow. Herb and botanical market sales have increased between 2 and 3 billion dollars since the early 1990's.[9,35,62] Surveys report that the prevalence of herbal usage by adults exceeds 41 percent.[2,4,56] The increased herbal usage reported by adults may be due to a major trend towards greater personal responsibility and choice in health care.[5] Since herbal usage among adults has increased there is the unanswered question on whether this is also true for the children they care for.

The prevalence of herbal use by children in the United States is largely unknown. Studies exist, describing the prevalence of complementary/alternative medicine (CAM) use in children but many of these feature children with serious or chronic medical conditions. Studies that depict children from a general population report CAM usage ranging from 12 percent to over 50 percent.[14,16,85] Because herbs are often grouped together with other CAM therapies such as vitamins, prayer and massage, it is difficult to assess the prevalence of herbal usage.

The goal of this study is to determine the prevalence of herbal usage among the infants and children of families participating in the WIC Program. The study presented is limited to low-income families in the State of Wisconsin that participate in the WIC program. Although WIC only serves infants and children up to the age of five, all infants and children up to the age of seventeen were included in this study, regardless of whether they individually qualified for the program.

RESEARCH DESIGN

The study conducted was descriptive, utilizing a self-report survey to depict the prevalence of herbal usage among children and infants of Wisconsin families participating in the WIC Program.

STUDY POPULATION

The study population consisted of low-income Wisconsin families participating in the WIC program. Statistics from November 2000 show that the total number of women, infants and children enrolled was 107,073.[86] The number of infants served was 26,395; the number of children served up to the age of 5 was 55,089.[86] The WIC Nutrition Coordinator in Wisconsin established that the average family enrolled in WIC consisted of 2 infant or child participants. Based upon this approximation, the average number of families enrolled in WIC was 35,691. The figures above do not represent all infants and children from WIC families in Wisconsin as the WIC program is limited to serving infants and children below the age of 5 years at nutritional risk.

Participants of the WIC program are served by staff located at facilities known as projects. In November 2000, 65 WIC Projects in Wisconsin were apportioned into five regions: Rhinelander/Northern Region, Green Bay/Northeast Region, Milwaukee/Southeast Region, Madison/Southern Region and Eau Claire/Western Region. An additional project, primarily serving Native Americans was dispersed throughout each region, except the Milwaukee/Southern Region. Each WIC project served an area approximately equivalent to the size of a Wisconsin county, although this varied according to the area's population and available resources.

SUBJECT RECRUITMENT

Phase 1

Subject recruitment occurred in two separate phases for this study. In November 2000, the researcher contacted Wisconsin's WIC Nutrition Coordinator regarding the initiation of survey distribution. Details of the study, including a current version of the survey were shared. The WIC Nutrition Coordinator noted that the decision on whether to participate would be left up to individual WIC project directors, although participation in the study would be encouraged. To achieve a representative sample of WIC projects in Wisconsin, a random stratified sampling technique was implemented to ensure the sample was ethno- and geo-stratified. This technique allowed representation of major minority groups and rural as well as urban residents. Projects included in the study were determined using information from the 2000 WIC Project Directory provided by Wisconsin's WIC Nutrition Coordinator. Information utilized included project distribution among regions, caseload and project numbers.

Subject Selection In Phase 1, twenty percent of projects from each of the five regions were randomly selected to ensure equal representation. To determine representation by location, projects were designated as located in an urban place or rural setting based upon the population determined by the 2000 U.S. Census.[87] The definitions for urban place and rural setting are listed below.

> The Census Bureau defines 'rural' as "the population and territory outside any urban area and the urban part of any place with a decennial census population of 2,500 or more." 'Urban place' is defined as "any place with a decennial census population of 2,500 or more, whether incorporated or census designated, any place regardless of population located within an urban area."[88]

Since a large proportion of WIC projects were located in areas with a population of 2,500 or greater, the majority of projects randomly selected originated from urban places. In order to ensure representation of Wisconsin's major minority groups, one project for each targeted minority group was selected in addition to the projects randomly selected. Minority groups that were targeted included African American, Hispanic, Hmong and Native American. Projects known to have a high enrollment of a particular minority group were selected. Prior to recruitment, representative projects for each minority group, as well as randomly selected projects were confirmed by the WIC Nutrition Coordinator. A total of 26 percent of WIC projects in Wisconsin were selected to participate in Phase 1 (20 percent selected randomly; 6 percent selected to ensure representation of each targeted minority group).

Determination of Sample Sizes The number of families represented by the sample was established in order to determine the number of surveys to distribute to each project. According to the WIC Nutrition Coordinator, the average family enrolled in WIC consists of 2 children or infants per family. This meant that half the total number of infants and children would equal the total number of families represented. Using this approximation, the sample reflected 12,656 families. The WIC Nutrition Coordinator recommended reducing the sample selected to 2000 families since this figure was representative of all Wisconsin families participating in WIC, based on previous research and a feasible number to survey.

The WIC Nutrition Coordinator determined the total number of families to survey for each project, using the November 2000 WIC Program Enrolled and Participation Report.[86] The WIC Nutrition Coordinator verified that the figures from the November

2000 report were reflective of the current WIC population in Wisconsin. Information utilized included the total number infants and children for each project. The WIC Nutrition Coordinator determined that sixteen percent of the total sample size, reflecting 2,037 families, was a more appropriate sample size to use because it was a representative number of all Wisconsin families participating in WIC. Therefore, the individual sample size for each project was equivalent to sixteen percent of the sample size originally determined. Table 3 summarizes the steps taken to calculate sample sizes for each project requested to participate in Phase 1. The calculations of the number of families and sample sizes for each project are shown in Table 4, located below Table 3.

Table 3. Steps to Calculate Sample Sizes for Phase 1

Step 1	Randomly select 20 percent of WIC projects from each of the designated WIC project regions in Wisconsin
Step 2	Select one project to ensure representation of each the four targeted minority groups
Step 3	Find the total number of infants and children on the Enrollment and Participation Report for each project and divide by 2 to calculate the total number of families for each project
Step 4	Multiply the total number of families by 16 percent in order to calculate the sample size for each project

Table 4. Data Used to Determine Sample Sizes for WIC Projects Requested to Participate in Phase 1

WIC Project Number*	Total Number of Infants and Children	Total Number of Families†	Sample Size‡
X	704	352	**56**
X	2046	1023	**163**
X	1006	503	**80**
X	1555	778	**124**
X	2229	1115	**178**
X	1319	660	**105**
X	742	371	**78**
X	907	454	**72**
X	1513	757	**120**
X	522	261	**42**
X	2805	1403	**224**
X	4759	2380	**379**
X	2715	1358	**217**
X	242	121	**20**
X	433	217	**34**
X	273	137	**22**
X	928	464	**74**
X	614	307	**49**
TOTAL	25312	12656	**2037**

* Project numbers were concealed to ensure confidentiality
† Total number of families is half of the total number of infants and children
‡ Sample size is equivalent to 16% of the total number of families

Adjustment to Sampling Outcomes Adjustments in the project sample were allowed in order to accommodate recommendations from WIC Program management staff. A request was made to replace two projects experiencing critical staff limitations. WIC staff recommended that the first project be replaced with a specific project with a similar demographic profile in regards to region, ethnic profile and location. Since a recommendation was not given for replacement of the second project, a project was randomly selected to take its place.

Participation Encouragement

Notification As shown in Appendix A, a memo was sent by Wisconsin's WIC Program Director and Nutrition Coordinator on February 28, 2001 to alert selected WIC

project directors about the study, encouraging participation. The memo explained the study's purpose, providing a brief synopsis on information to be collected, survey distribution and the process of project selection for participation. A statement was included, relating that approval was granted by the University of Wisconsin-Stout Institutional Review Board for the Protection of Human Studies in Graduate Research, and by the Wisconsin Division of Public Health Administrator. In addition, the memo indicated that the survey was pilot tested and translated into Spanish. Project directors were requested to contact the researcher on their decision to participate either via phone or electronic mail by March 14, 2001. In addition, project directors were notified that additional information, multiple copies of the survey, and instructions would be forthcoming. A statement was included in the memo, encouraging project directors to contact the researcher or WIC Nutrition Coordinator of Wisconsin with any questions or comments. A listing of the number of families to survey per project as well as a copy of the survey were sent along with the memo. The memo and its attachments are shown in Appendix A. One project that replaced one of the original projects was sent a separate memo requesting participation because the memos to projects had been previously sent. This memo, shown in Appendix B, was sent along with the original memo and attachments. Phase 1 of survey distribution was scheduled to begin April 2001.

Outcome Out of 18 projects selected, a total of 13 project directors agreed to participate. Nine of the 13 project directors planned to participate in the first phase of survey distribution, while 4 project directors planned to participate in the second phase of survey distribution. Three project directors with substantial Spanish speaking populations agreed to postpone distribution of both their English and Spanish surveys due

to time needed for translation. One project director agreed to start survey distribution along with the projects receiving Spanish surveys because of late notice on participation. These four projects were included in Phase 2 of subject recruitment.

Following an agreement to participate, each project director was thanked and alerted that they would be contacted soon with further information. Table 5 shows the number of surveys determined for each project to distribute. The number of surveys to distribute was the sum of the sample size plus extra surveys. The number of extra surveys was equivalent to 10 percent of the sample size calculated for each project. A figure of 10 percent was randomly selected, based upon experience. A total of 885 surveys were to be distributed to WIC project directors participating in Phase 1 of survey distribution.

Table 5. Projects Participating in Phase 1 of Survey Distribution

WIC Project Number*	Number of Surveys†
X	180
X	80
X	132
X	47
X	247
X	38
X	25
X	82
X	54
TOTAL	**885**

*Project numbers were concealed to ensure confidentiality;
† Equal to the sum of the sample size plus the 10 percent extra surveys determined for each WIC project

PHASE 2

The researcher requested permission from the WIC Nutrition Coordinator to include additional projects in the study, since several projects did not agree to participate. The inclusion of additional projects was intended to produce a proportionate sample of Wisconsin families participating in the WIC program, ethno and geo-stratified. The participation of additional projects would also help to achieve representation of all Wisconsin families participating in WIC.

Since the Spanish survey was planned to be ready in June 2001, another survey distribution period was already targeted to begin for the 4 projects awaiting its completion. Permission was granted to include additional projects during this second survey distribution period. The WIC Nutrition Coordinator asked the researcher to reduce the number of surveys requested of each project to make survey distribution a less taxing undertaking in effort to increase overall participation.

Subject Selection Projects were selected in a fashion similar to Phase 1. In order to still obtain an adequate number of returned surveys following a reduction in the sample size per project, 30 percent of projects from each of the five regions were randomly selected to participate in Phase 2. The selection of this percentage, based upon the participation rate in Phase 1, allowed for a reduction in the number of surveys each project would be requested to complete. Consequently, the participation rate was thought to increase for Phase 2 since projects would not be requested to complete as great a proportion of surveys as projects in Phase 1.

The majority of projects were selected from urban areas due to the increased proportion of projects located in areas with a population of 2,500 or more.

Since the original projects representing Hmong and Native American minority groups chose not to participate, one project needed to be selected for each group in addition to randomly selected projects to ensure representation. Since projects representing these minority groups happened to be selected during random project selection, it was not necessary to select additional projects. As in Phase 1, projects were deemed adequate to represent a minority group if a high enrollment of that particular group was indicated on the Enrolled and Participation Report.[86] Prior to recruitment, the WIC Nutrition Coordinator verified all projects selected to participate in Phase 2.

Determination of Sample Sizes Information from the November 2000 WIC Enrolled and Participation Report was also used to determine sample sizes for Phase 2.[86] As in Phase 1, the approximation of 2 infants or children per family was used to determine the number of families enrolled in each project. The number of families determined was 12,579. In congruence with the sample size calculations for Phase 1, each of the project's total sample size was reduced by 16 percent. Next, the sample size projected for each project was reduced by 20 percent in order to follow the WIC Nutrition Coordinator's request to reduce the number of surveys for each project to distribute. Thus, the final sample size for projects participating in Phase 2 was 80 percent of the original sample size determined. A 20 percent reduction was thought to be appropriate because the resultant sample sizes were a small percentage of the total number of families projected for each project. Table 6 summarizes the steps taken to calculate sample sizes for each project requested to participate in Phase 2. The calculations of the number of families and sample sizes for each project are shown in Table 7, located below Table 6.

Table 6. Steps to Calculate Sample Sizes for Phase 2

Step 1	Randomly select 30 percent of WIC projects from each of the designated WIC project regions in Wisconsin
Step 2	Find the total number of infants and children on the Enrollment and Participation Report for each project and divide by 2 to calculate the total number of families for each project
Step 3	Multiply the total number of families by 16 percent in order to calculate the sample size for each project
Step 4	Multiply the sample size by 80 percent in order to calculate the final sample size for each project

Table 7. Data Used to Determine Sample Sizes for WIC Projects Requested to Participate in Phase 2

WIC Project number*	Total Number of Infants and Children	Total Number of Families†	Sample Size‡	Final Sample Size§
X	392	196	31	**25**
X	769	385	61	**49**
X	347	174	28	**22**
X	1640	820	131	**105**
X	350	175	28	**22**
X	2347	1174	187	**150**
X	1643	822	130	**104**
X	375	188	30	**24**
X	736	368	59	**12**
X	1027	514	82	**66**
X	178	89	14	**11**
X	1019	510	81	**65**
X	180	90	14	**11**
X	2274	1137	182	**192**
X	479	240	38	**30**
X	1152	576	92	**74**
X	2297	1149	183	**146**
X	313	157	25	**20**
X	435	218	35	**28**
X	204	102	16	**13**
X	6168	3084	491	**98**
X	833	417	66	**53**
TOTAL	25158	12579	2004	**1320**

* Project numbers were concealed to ensure confidentiality
† Total number of families is half of the total number of infants and children
‡ Sample size is equivalent to 16% of the total number of families
§ Final sample size is 80% of sample size

Proportioning Spanish and English Surveys Surveys printed in Spanish were available to all WIC project directors indicating a need. The availability of these surveys was stated in the memos sent to all WIC project directors participating in both Phase 1 and 2 — see Appendices A and C. The WIC Nutrition Coordinator indicated that two of the randomly chosen WIC projects were known to have substantially large Spanish-speaking populations, in addition to the project selected to represent the Hispanic population. The researcher contacted the directors of these three projects in order to confirm whether the determined number of Spanish surveys was accurate in accordance to the existing population. The reason for this was that the statistics used to determine the number of Spanish surveys were dated from November 2000, which was 6 months prior to the period the surveys were to be distributed to projects.

The number of Spanish surveys to distribute was determined using proportionate sampling; the proportion of each project's study subjects to receive a Spanish survey was equivalent to the proportion of Hispanics in the project's population. The number of Spanish surveys sent were not only based on proportion but guided also by feasibility and a noted change in Hispanic population in Spring 2001. The proportion of Hispanic in each project was indicated in the November 2000 WIC Program Enrolled and Participation Report for Wisconsin, unless otherwise noted.[86] Only the first of the three projects wanted to use the figures from this report. The second project noted that their Hispanic population regularly increases due to a rise in the area's migrant population in the beginning of June. To allow for this increase, 50 Spanish surveys were requested in addition to the number of Spanish surveys determined. The third WIC project director

requested a lower number of Spanish surveys than projected because the project director thought this figure was more attainable in balance with the existing workload.

Two additional project directors received Spanish surveys because they indicated a need for them. The first project director supplied the most recent caseload percentage, which was an increase from the November 2000 figure. The second project director also indicated a rise in Hispanic caseload since November 2000. As the current Hispanic caseload percentage could not be provided, the project director requested a specific number of Spanish surveys.

Participation Encouragement

Notification On May 7, 2001, a memo nearly identical to the February 28, 2001 memo was sent to notify project directors of the survey. In addition to the memo's original contents, projects currently participating in the survey were highlighted as well as a need for additional participation in order to increase the study's validity — see Appendix C. Along with the memo, a listing of the number of families to survey per project was included, as well as a copy of the survey. Project directors were requested to contact the researcher either by phone or electronic mail on their decision to participate by May 23, 2001. Phase 2 was scheduled to begin in June 2001.

Outcome Out of 22 projects selected, a total of 11 project directors agreed to participate. A total of 15 projects agreed to participate during Phase 2, which included the four projects selected during Phase 1 beginning survey distribution at this time. As in Phase 1, each project director was thanked and alerted that they would be contacted soon with further information, following an agreement to participate.

Table 8 shows the number of surveys determined for each project to distribute. The number of surveys to distribute was the sum of the sample size plus extra surveys. The extra surveys were equivalent to 10 percent of the sample size determined for each project. The breakdown of Spanish and English surveys for WIC projects receiving both versions is also indicated in Table 8. A total of 1366 surveys were to be distributed to WIC project directors participating in Phase 2 of survey distribution.

Table 8. Projects Participating in Phase 2 of Survey Distribution

WIC Project Number*	Number of Surveys†	English Surveys‡	Spanish Surveys‡
X	**120**	56	64
X	**24**		
X	**165**		
X	**26**		
X	**15**		
X	**80**	48	32
X	**15**		
X	**220**	110	110
X	**69**		
X	**191**	160	31
X	**13**		
X	**211**	100	111
X	**33**		
X	**24**		
X	**160**		
TOTAL	**1366**	1018	348

*Project numbers were concealed to ensure confidentiality
†Equal to the sum of the sample size plus the number of extra surveys determined for each WIC project; ‡Only projects that received Spanish surveys have a number listed

A total of fifty-six percent of WIC project directors in Wisconsin were asked to participate during both phases of survey distribution (26% - Phase 1, 30% - Phase 2). Additional projects were not asked to participate as it was thought the goal of 2000 returned surveys could be attained. Furthermore, the researcher concluded that the survey would not be very burdensome for participants to complete or time consuming for WIC staff to distribute or provide assistance on, because the survey contained just 4 questions with a 4.5 grade reading level.

STUDY INSTRUMENT

Survey Development

Overview

Focus A self-report survey was developed for this study, depicted in Appendix D. Several factors were considered during survey development. Conciseness was an important factor to consider since many WIC participants typically have limited time due to preoccupations with attending to their children and impendent obligations such as work. WIC staff also has limited time as they must follow a daily appointment schedule and allow time for unscheduled walk-ins while fulfilling their job responsibilities. Thus the intention of the survey's design was to allow participants to efficiently complete the survey, with minimal assistance from WIC staff. Readability was also important factor to consider as WIC directors and nutritionists reported an education level and reading ability below 12th grade for a relevant number of WIC participants. Another important factor was format, to ensure discernment of the trifolded survey's concealed portions. Font and paper size were also considered during survey development. The survey was limited to a

single piece of paper in order to enhance management of paperwork for WIC staff and decrease survey completion time while enhancing its readability.

Confidentiality To ensure subject confidentiality, the Institutional Review Board for the Protection of Human Subjects at the University of Wisconsin-Stout reviewed the survey prior to approval. Forms signifying approval by the Institutional Review Board are shown in Appendix E. The survey was also reviewed and approved by the Administrator of the Wisconsin Division of Public Health and the WIC Program in Wisconsin, which complies with Federal WIC Regulations and instructions/policies ensuring confidentiality of participant information. In addition, the researcher completed and signed a form entitled Agreement for Use of WIC Participant Information for Research, shown in Appendix E. The purpose of this agreement was to assure participant confidentiality, utilization of appropriate methods to contact WIC participants and materials utilized by participants, utilization of appropriate procedures to inform staff of the study and approval of all materials for publication and/or dissemination. Study participants were informed that participation was voluntary and that they could remain anonymous as self-identifying information was not requested. Confidentiality was ensured during survey distribution by providing an envelope with each survey so participants could seal their surveys upon completion. Survey instructions directed participants to deposit the concealed surveys into a sealed collection box. Finally, WIC staff was provided instructions to direct participants to follow the procedures for returning surveys. All returned surveys indicating participants under 18 years old were discarded.

Survey Description and Rationale

Introduction Panel For this study, the survey developed comprised of 4 questions, requesting descriptive and demographic data. The survey was trifolded with an introductory statement located on the front panel. The introductory statement identified the researcher, purpose of the study and contact information. In order to ensure confidentiality, the following phrases were included in this section: identification not required, participation is voluntary and consent to participate is indicated by the return of a completed survey.

Question 1 Once the survey was unfolded, the first question was shown. The question was stated: "In the chart below, place a check by the herb(s) that you give or have given to your child(ren) for an illness, symptom or disease. Then list the reason (illness, symptom or disease) you give each herb to your child(ren). Finally, list the ages of the child(ren) that are given the herb(s)." A heading preceding this question, directed participants to proceed to the fourth and last question if the participant or their children have never used herbs. The first question was designed to collect descriptive data on herbal use by children. The question consisted of a table containing a list of 39 herbs. Many of the herbs included in the list were commonly used by children as observed by pediatric clinicians in practice.[76,77] Other herbs added to the list were reported to be utilized by caregivers participating in selected WIC projects. A minimum of one WIC project within each region served by the WIC program was contacted in order to identify herbs commonly used by participants. The selection of WIC projects for this purpose was based upon urban location and/or ethnic proportions to ensure diversity. Five

additional spaces were included to allow caregivers to list herbs other than shown. Adjacent to each listed herb was a check box to indicate whether the child ever used it. Next to the checkbox within the table was a space where participants were instructed to list the reason(s) each herb was given to their child(ren). An attempt was made to limit reasons pertaining to medical conditions by specifying the words *illness*, *symptom* or *disease* in parentheses under the column heading. Otherwise, this query was left open-ended to allow participants to liberally respond.

Next to the reason column, participants were instructed to list the age of each child receiving each herb indicated. This was the only piece of demographic information collected on children. Caregivers were permitted to list as many ages as the provided space allowed. Instructions for each of these three sections were located directly above the table for clarification.

Question 2 On the opposite side of the page, in the left panel, a second question inquired on the caregiver's past and present herb usage. The question was stated: "Put a check by the herb(s) that you have used yourself for an illness, symptom or disease." This question was structured similarly to question 1 except only the herb list and adjacent checkbox to indicate usage of an herb were present. The herb list was identical to the herb list in the first question to allow the researcher to discern possible associations of herbal usage between the caregiver and their children. As in question 1, five additional spaces were provided to allow the participant to indicate other herbs utilized.

Question 3 The final piece of descriptive data was requested in the third question, located in the center panel. The question was stated: "How did you get the information about the herbs used?" Caregivers were requested to indicate herbal

information sources by placing a mark next to any of the listed information sources utilized. Information sources listed included a variety of media, laypersons and healthcare professionals. An additional space was included to allow caregivers to list an information source not included in the list provided.

Question 4 The fourth and last question was located in the center panel, below the third question. The question was stated: "Please complete the following information about yourself." Caregivers were requested to list their demographic data, including age, sex, ethnicity and education level. After listing their age and indicating their gender, caregivers were asked to place a mark next to their education level. Four categories of educational levels were available including: less than 12th grade, high school diploma/GED, some post high school and completed college. Finally, caregivers were asked to place a mark next to their ethnicity. The ethnicity categories included African American, Hispanic, Hmong, Native American, White and "don't belong to these groups." The minority groups listed corresponded to the minority groups considered during project selection. The purpose of collecting demographic data was to assure participant eligibility and to enable better identification of the sample selected.

Face and Content Validity

During development, qualified persons reviewed the survey twice for conciseness, readability, format and content. The reviewers included a Milwaukee WIC director and her team of dietitians, a Madison WIC director, the Wisconsin State Nutrition Coordinator and five registered dietitians employed by the WIC Program. The research advisor, a registered dietitian from Kansas State University, also reviewed the survey as well as a graduate student in the Food and Nutritional Sciences program at the

University of Wisconsin-Stout who recently developed a survey on prevalence of dietary supplement usage for another population.

During the first review, adjustments primarily associated with format and content were recommended. Below is a listing of the changes that were made following the review:

- Replaced question inquiring on children's medical conditions with a question on herbal information sources
- Increased the amount of space provided where caregivers were asked to list reasons for herbal use
- Incorporated additional, relevant herbs to the herb list
- Reformatted survey into a trifolded style
- Altered certain words and phrases to reduce reading level and clarify survey contents

All former reviewers participated in the second review except the Madison WIC director, the graduate student and one dietitian employed by WIC. Changes that followed the second review are listed below:

- Reformatted survey to clarify its contents
- Altered certain words and phrases to reduce reading level and clarify survey contents

Survey Translation

Modifications The survey was translated into Spanish because large numbers of Spanish-speaking clients were enrolled at several of the WIC projects. Previously, the study advisor had involved the WIC Program in Kansas to participate in a separate, analogous study described in this manuscript. Since the WIC Program in Kansas serves a large Spanish speaking population, the WIC administrators at the Kansas Department of Health and Environment agreed to support the cost of the survey's translation. Once pilot testing concluded, the survey was sent for translation to the Kansas Department of Health and Environment. A bilingual registered dietitian employed by the Kansas WIC program

was recruited to translate the survey. Upon the translator's discretion, alteration of the herb list was allowed in order to accommodate herbs popular among the Hispanic WIC community in Kansas. It was hoped these herbs would also be popular among the Hispanic WIC community in Wisconsin. The translator added 7 herbs and 2 additional blank spaces, replacing nine herbs from the English version. The herbs replaced included aloe vera, chamomile, cranberry, essiac, feverfew, hawthorn, hoxsey, slippery elm and uva ursi. Herbs added to the list included guava, stinging nettle, hops and tea tree. Hops and tea tree were listed both in Spanish and in English on the survey. Also added to the list were three unidentified herbs. This oversight was not detected until after distribution to WIC projects. Herbs that could not be translated remained in English, including calendula, chasteberry, dong quai, echinacea, gingko biloba, goldenseal and kava.

Review of Translated Survey Upon review of the translated survey, the researcher detected that certain words and phrases were not bolded and underlined as in the English version. The drawback of this was that key portions of the survey were not emphasized in parallel to the English version. Since the researcher was not familiar with Spanish, the thoroughness of the translation could not be reviewed. To verify the correctness of the translation as well as the format, a local high school Spanish teacher was recruited to review the survey. Prior to reviewing the survey, the teacher confirmed that the Spanish used on the survey was consistent with the dialect she practiced. The teacher was asked to evaluate the survey for correctness, and to verify whether the language used had a reading level parallel to the English version. The language used was confirmed to be elementary, definitely qualifying for a reading level between 4th and 6th grade. Key changes that were suggested included the addition of words and phrases

throughout the survey, as the teacher thought parts of it were incomplete. In addition, certain words and phrases were changed into more understandable terms, in order to correspond to the English version. Punctuation and accents were altered to conform to the parlance used. Since the teacher was unfamiliar with herb translation, the herb list was not evaluated.

Based upon these suggestions, corrections were made and the survey was sent to the Kansas Department of Health and Environment to verify the accuracy of the survey translation. The translators recruited to review the survey were WIC nutritionists serving the Hispanic population. Upon review, the translation was considered correct, although the translators were uncertain of a few words. A Spanish professor from the University of Wisconsin-Stout was consulted, later correcting these words upon evaluation. Once the translators recruited by the WIC program in Kansas reevaluated the survey, the survey was sent back to the researcher. The final change was reorganizing the herb list into alphabetical order to enable the Spanish-speaking participants to locate herbs with the same ease as their English-speaking counterparts. The Spanish version of the survey is shown in Appendix F.

DATA COLLECTION

Pilot Testing Survey Administration

Pilot Test One: Validated Survey Once final revisions were made on face content and validity, the survey was pilot tested January 15th through 19th, 2001. See Appendix G for the version of the survey pilot tested. Pilot testing was conducted to evaluate the survey's readability, format and content by observing the accuracy and variation of responses, follow-through with survey completion, and the interest, attention

and thought processes demonstrated during survey completion. Pilot testing was intended to involve persons within each education level represented, although persons with a high school education or below were targeted to ensure that readability was adequate. Participants were recruited from 1 urban and 2 suburban daycare centers located in Milwaukee, Menomonee Falls, and Germantown. In addition, participants were also recruited from a Milwaukee Head Start Program. Dependent upon the preference of the involved facility, parents were either interviewed by the researcher or given a survey to complete at home.

Two daycare centers in Milwaukee and Menomonee Falls agreed to participate in pilot testing, provided that the facility's staff distributed surveys with no contact from the researcher. On January 15th and 16th, the researcher met with each daycare center director to review the survey's overall purpose and pilot testing objectives. Following approval, ten surveys were given to each director. The director was instructed to encourage caregivers to feel free to write-in comments such as negative and positive aspects and items to change on the survey. The surveys were to be distributed by the director and participants would be able to complete the survey at the facility or at home. Returned surveys were collected on January 19th.

Impromptu interviews were conducted at a Milwaukee Head Start Program and a daycare center in Germantown on January 16th and 17th. Participants were recruited upon the director's discretion. At the Milwaukee Head Start facility, the director personally recruited caregivers for participation. At the Germantown daycare center, the director left the researcher to independently recruit caregivers. One day prior to pilot

testing, the Germantown director sent a notice to parents, relating the study's purpose, the time pilot testing would take place and a brief description of the researcher.

During the interviews, the researcher asked participants to describe their thought process, throughout survey completion. Upon completion, participants were asked to mention one positive and one negative aspect of the survey as well as items they would change if they were able to do so. Finally, participants were asked if they understood the survey and whether they thought it was easy to follow.

Seventeen surveys were pilot tested. Below is a summary of the number of surveys pilot tested according to the type of pilot testing conducted, educational level represented and whether the survey indicated herbal usage by the child or caregiver.

Characteristics Represented	No.
Type of Pilot Test	
Impromptu interview	10
Self-report	7
Educational Level Represented	
<12th grade or high school diploma/GED	5
Some post high school or completed college	12
Herbal Use by Child or Caregiver	
Child	5
Caregiver	8

In general, some of the participants did not follow the instructions correctly. For instance some caregivers thought question 1 asked about their personal herbal usage though the question asked about herbal usage by their children. Other participants became confused on how to proceed if their family did not use herbs. Most notable during pilot testing was that some participants appeared confused upon viewing question 3. Participants noted that they thought question 3 was identical to question 1 at first glance. In order to alleviate this confusion, the reading level of the directions and introduction was decreased in order to make them more understandable. Key elements

throughout the survey were bolded and underlined for greater emphasis. Next, question 1 was enlarged to distinguish it from question 3, which in turn increased the amount of space available to list reasons for herb usage. The next change was associated with the second question, which asked about the caregiver's prior and current herb usage. Question 2 originally had separate columns, which differentiated between prior and current herb usage. During pilot testing, it was discovered that notable amount of extra time was needed to distinguished these two periods. In addition, according to study objectives, the columns differentiating between periods of usage were unnecessary, so the columns were merged. The final change made after pilot testing was the addition of a 4th section in question 4, which requested caregivers to note their ethnicity. A few reviewers had previously noted that this would be a good addition in order to better portray the study sample.

Based upon feedback from pilot testing, several changes were made on the survey. A summary of these changes is listed below:

- Decreased reading level of directions by using more elementary phrasing and underlining and bolding key elements for emphasis
- Enlarged Question 1
- Merged columns differentiating between current and prior herb usage in Question 3
- Added a section to Question 4 on caregiver ethnicity

Pilot Test Two: Revised Form of Validated Survey A second pilot test was conducted at a WIC project to assess the revised survey for conciseness, readability, format and content as well as its face validity and ease of administration. Four surveys were distributed to a WIC project located at the Sheboygan County Health and Human Service Department. A WIC dietitian distributed the surveys following individual education sessions. The dietitian was provided with a script to follow during survey

distribution — see Appendix I. Prior to pilot testing, the researcher gave the dietitian instructions to encourage participants to verbalize their thought process and to observe the process of survey completion, noting follow-through with directions. The dietitian was requested to ask participants if they had any comments, and to inquire whether they thought the survey was clear and understandable. The dietitian was also requested to ask participants to reveal 1 positive and 1 negative aspect of the survey.

Two of the four caregivers that participated in the second pilot test did not graduate from high school, while the other two were college graduates. Following pilot testing, the dietitian suggested increasing white space in the introduction to make it appear less overwhelming. Also, suggested was reassignment of a few directions to increase their clarity. After incorporating these suggestions, the survey was finalized and ready for distribution. A final total of 21 surveys were pilot tested prior to survey distribution.

Communication with Projects

Data collection took place during two distribution periods stretching from April through August of 2001. The first distribution period (Phase 1) began in April and the second (Phase 2) in June, which each period lasting up to 3 months because drafts were issued at 3-month intervals. On March 21 and May 13, 2001, a message was sent via email or mail (project dependent) notifying all participating project directors that they would receive a package containing: a collection box, surveys with accompanying envelopes, a list of the number of families to survey per project, a large return envelope for the surveys, survey distribution instructions and a script to follow during survey distribution. The date of the notice depended upon the distribution period the project was

involved. Participating project directors were sent this message approximately 1 to 2 weeks prior to beginning survey distribution. The packages containing all necessary items for survey distribution were sent to WIC project directors, who were responsible for delineating information concerning survey distribution for WIC staff. A total of 2,251 surveys were distributed to 24 projects: 1903 English and 348 Spanish. Later, during the survey distribution period, contact was made with the project directors to ascertain data collection progress. Other than a few project directors noting survey distribution difficulties associated with time constraints, the distribution process was reported to have went well among participating projects.

Survey Dissemination Training

Instructions and a script were sent to each participating WIC project director prior to and upon receiving supplies for survey distribution. The instructions and script were provided to ensure that surveys were distributed identically among all participating projects. The instructions, seen in Appendix H, provided a brief outline on materials needed, collection box set-up, distribution directions for WIC staff and guidelines for returning surveys. The instructions also related that surveys were to be distributed only when nutrition vouchers were issued to help lessen the chance of a family being surveyed more than once. In addition, surveys were not to be distributed to anyone under 18 years old as the study was approved for adults only. WIC directors were instructed to request all WIC staff to review the survey prior to distribution. The script sent along with the instructions, seen in Appendix I, established the dialogue WIC staff was to follow during survey distribution. Both the instructions and script indicated procedures for participants to follow after survey completion. Also provided was the procedure detailing the return

of surveys to the researcher once distribution was complete. The researcher's phone number and email address were provided for questions and concerns regarding the procedures described.

Survey Distribution Process

Data were collected through a self-report survey distributed by the WIC clerk when participants received a WIC voucher. A script was provided to the clerk for survey distribution to enhance uniformity in survey receipt — see Appendix I. The script instructed the clerk to tell participants the survey's purpose, relating that everyone was encouraged to complete the survey, even if herbs were not given to their children. The clerk was also instructed to tell participants to seal the completed survey in the envelope attached and place it into the collection box, which was to be pointed out by the clerk. Participants were asked to comply with this procedure although participants could remain anonymous since self-identifying information was not requested. Finally, the clerk was instructed to offer to answer any questions, emphasizing participants should feel free to ask. The importance of encouraging participation was emphasized in the script.

Data collection concluded in August, with all surveys received by September 2001. Most WIC directors returned the surveys via mail within a month after initiating survey distribution. Once surveys were returned to the researcher, each was examined in order to verify that the caregiver completing the survey was at least 18 years of age. All surveys indicating a caregiver younger than 18 years were immediately discarded. Following this procedure, an identification number was assigned to each survey. The identification number allowed surveys to be distinguished by state, project number, location and type of language it was printed in.

DATA ANALYSIS

Prior to data entry, all surveys printed in English were coded following coding procedures shown in Appendix J. Following survey coding, the data were entered by the researcher using SPSS 10.0.5.[89] Spanish surveys were sent to the Department of Human Nutrition at Kansas State University, where a volunteer graduate student translated and coded the surveys, and entered the data using SPSS 10.0.5.[89] Two translators from the WIC Program in Kansas aided the student with translation, including the original translator. Another graduate student from the language department at Kansas State University also aided in the translation. To ensure identical survey coding and data entry for both English and Spanish data, procedures outlined in a data codebook and in a list of coding rules (Appendix J) were abided by both the researcher and the graduate student. The researcher provided guidance to the graduate student, communicating regularly on survey coding and data entry.

The researcher analyzed the data using SPSS 10.0.5.[89] The syntax utilized in data analysis is shown in Appendix K. Frequencies were used to portray study participation, sample demographic profile, and the prevalence of herbal usage among caregivers and their children. Since a random stratified sampling technique was employed, data were assumed to have a normal distribution. Comparisons were made between caregivers that give herbs to children and caregivers that do not give herbs to their children as well as between families that use herbs and families that do not use herbs. Differences in age and educational level were compared utilizing a 2-tailed independent t test. To compare differences in gender, ethnicity and location, a Pearson Chi Square test was performed. Statistical significance was obtained when $P \leq .05$.

CHAPTER 4

RESULTS

INTRODUCTION

The goal of this study was to determine the prevalence of herbal use among infants and children of families participating in the WIC Program in Wisconsin. The study had eight objectives: identifying herbs used by infants and children, including the frequency with which each herb is used; identifying infant and child herbal user ages; identifying herbs used by caregivers and the frequency with which each herb is used; identifying reasons for herbal usage in children; indicating sources of herbal information for caregivers; comparing childhood herbal usage between urban and rural dwellers; identifying associations between childhood herbal usage and caregiver age, gender, ethnicity, and education level; and profiling childhood herbal usage according to age, type, reason and demographic characteristic.

Data were obtained utilizing a self-report survey. Participants completing the survey were caregivers of infants and children of families participating in the WIC Program in Wisconsin. Participants were requested to provide descriptive data on herbal usage by their children as well as their own personal herbal usage. Participants were also requested to provide demographic data pertaining to themselves and their children. The results of this study will be presented in the following order: study participation, sample profile, herbal usage among caregivers and herbal usage among children.

STUDY PARTICIPATION

Table 9 shows the number of surveys sent to and returned by participating WIC projects. Twenty-four WIC project directors participated in survey distribution, representing 56 percent of WIC projects in Wisconsin. Of the 2,251 surveys sent to projects, 1479 (66%) surveys were returned. Participation rates among individual projects ranged from 24 to 100 percent. The number of returned surveys that were printed in English was 1342 (71%) out of 1903, representing 91 percent of the total surveys returned. The number of returned surveys that were printed in Spanish was 137 (39%) out of 348. Nine percent of the surveys returned were printed in Spanish.

Table 9 – Surveys Sent and Returned by All Participating WIC Projects

Project Number*	Number of Surveys sent†	English Surveys‡	Spanish Surveys‡	Number of Surveys returned	English Surveys‡	Spanish Surveys ‡
X	180			146		
X	120	56	64	37	29	8
X	24			23		
X	165			66		
X	26			26		
X	15			6		
X	80			76		
X	132			123		
X	80	48	32	41	31	10
X	15			12		
X	47			41		
X	247			59		
X	220	110	110	199	97	102
X	69			65		
X	191	160	31	109	97	12
X	13			10		
X	211	100	111	41	36	5
X	33			30		
X	24			19		
X	38			42		
X	160			155		
X	25			24		
X	82			80		
X	54			49		
TOTAL	**2251**	1903	348	**1479**	1342	137

*Project numbers were concealed to ensure confidentiality; †Equal to the sum of the sample size plus the number of extra surveys determined for each WIC project; ‡Projects that did not receive Spanish surveys do not have a breakdown listed.

SAMPLE PROFILE

Demographic Characteristics

The demographic characteristics of the sample are shown in Table 10. The ages of the caregivers that completed the survey ranged from 18 to 94 years with a mean age of 28 years. Most of the participants were female, representing 93 percent of the sample. Sixty-five percent (n = 967) had a high school education or less; 31 percent (n = 462) had post high school education. The majority of caregivers identified themselves as white, Hispanic or African American, representing 88 percent of the sample (n = 1310). Approximately 45 percent of caregivers were of an ethnicity other than white (n = 611). Concerning location, 1329 (90%) of surveys originated from urban places while 150 (10%) were from rural areas.

The demographic characteristics of the entire WIC population are also shown in Table 10. Statistics on ethnicity and location were derived from the November 2000 Enrolled and Participation Report,[86] while the statistics on education level were from the December 2000 Project Summary Quarterly Statistics.[90] Data on caregiver age and gender were not available. When comparing the sample demographic characteristics with the entire WIC population, ethnicity and location were very similar. The proportions of white, Native American and Hispanic ethnicities were nearly identical, although less African Americans were represented by the sample (17%) in comparison to the WIC population (23%). Representation of Hmongs could not be evaluated since data were not available. However when Hmong and people from an "other" ethnicity from the sample were combined and compared with the combined percentage of Asians and people from an ethnicity other than white, black and Hispanic from the WIC population, the proportions were very similar. The sample reflected the WIC population in regards to

location since 90 percent of the caregivers originated from an urban place compared to 87 percent of the entire WIC population. Concerning education, caregivers from the sample were notably more educated, with nearly 31 percent having a post high school education compared to approximately 18 percent of the WIC population.

Table 10. Demographic Profile of Caregivers Completing Survey

Age Range	**Caregiver***	**WIC Population†**
18-24	587 (39.689)	
25-29	335 (22.650)	
30-39	382 (25.828)	
≥40	102 (6.897)	
Sex		
Female	1374 (92.901)	
Male	57 (3.850)	
Education Level		
Less than 12th grade	352 (23.800)	34.4
High school Diploma/GED	615 (41.580)	46.3
Some post high school	306 (20.690)	17.5‡
Completed college	156 (10.548)	
Ethnicity		
Hmong	29 (1.961)	(5.2)§
Don't belong to one of these groups/ mixed ethnicity	59 (3.989)	
Native American	33 (2.231)	(2.3)
Hispanic	233 (15.754)	(15.1)
African American	257 (17.377)	(23.0)
White	820 (55.443)	(54.4)
Location		
Urban	1329 (89.858)	(86.919)
Rural	150 (10.142)	(13.081)

*Entries are Frequencies [percentages in parentheses (parens)]; Percentages may not equal 100% due to missing variables; †percentages in parens; ‡Some post high school and completed college; §Asian and people of ethnicities other than Hispanic, white and black.

Prevalence of Herbal Usage

Entire Sample Caregivers completing the survey were asked to indicate any past or present herbal usage by their children, including any personal herb usage. Herbal usage was indicated for a child when a mark was placed in the check box adjacent to a listed herb in question 1. Likewise, herb usage was indicated for the caregiver when a mark was placed in the check box adjacent to a listed herb in question 2. Table 11 depicts herbal usage among families that participated in the study. Each survey represented one family, comprising of one caregiver and his/her children. Overall, 680 surveys (46%) indicated past or present herbal usage either by a caregiver or child. A total of 488 surveys (33%) indicated that caregivers provided herbs to their children.

Families Utilizing Herbs Of the 680 surveys that reported herbal usage by either child or caregiver, 13 percent indicated herbal usage only by children, while 59 percent indicated herbal usage by both the child and caregiver. Of the 591 caregivers that used herbs, 399 (68%) also gave herbs to their children.

Table 11. Herbal Usage Among Families Participating in the Study*

Status	Number of Families (%)
Neither Child or Caregiver Uses Herbs	799 (54.023)
Just Child(ren) Use Herbs	89 (6.018)
Just Caregiver Uses Herbs	192 (12.982)
Both Child and Caregiver Use Herbs	399 (26.978)

*One survey is equivalent to one family

HERBAL USAGE AMONG CAREGIVERS

Of the total 591 caregivers that indicated personal herbal usage, 32 percent were the sole herbal users in the family. The average number of herbs used among caregivers that used herbs was 3.66; the median number of herbs used was 2. Overall, caregivers reported 75 different types of herbs. Hoxsey was the only herb listed in the herb list on the survey printed in English that was not indicated as being used by the caregiver. The herbs listed on the Spanish survey that were not indicated as being used by the caregiver included arandano, galanga raiz china, ortiga and pringamosa. The number of herbs used by an individual caregiver ranged from 1 to 27 herbs. A summary of the number of types of herbs used by caregivers is shown in Table 12. Herbs that caregivers used most frequently included aloe vera, garlic, ginseng, peppermint and chamomile. Table 13, located below Table 12, shows the frequencies of herbs used by caregivers. An extended listing on the frequencies of herbs used by caregivers can be found in Table 1 of Appendix L.

Table 12. Number of Herb Types Used By Caregivers*

Number of Herb Types	Frequency
1	188 (31.810)
2	115 (19.459)
3 or more	288 (48.731)
5 or more	150 (25.400)
10 or more	42 (7.107)

*Entries are Frequencies (percentages in parens)

Table 13. Herbal Use Among Caregivers*

Aloe Vera 376 (63.621)	Garlic 205 (34.687)	Ginseng 136 (23.012)	Peppermint 135 (22.843)
Chamomile 129 (21.827)	Echinacea 118 (19.966)	Cranberry 109 (18.443)	Manzanilla† 93 (15.736)
Ginger 89 (15.059)	Lavender 74 (12.521)	Gingko Biloba 72 (12.183)	St. John's Wort 66 (11.168)
Tea Tree 61 (10.321)	Lemon Grass 53 (8.968)	Goldenseal 38 (6.430)	Cinnamon 33 (5.584)
Fennel 31 (5.245)	Lemon Balm 30 (5.076)	Licorice 28 (4.738)	Yerba/Yierba Buena‡ 29 (4.907)
Evening Primrose 21 (3.553)	Kava 20 (3.384)	Dandelion 18 (3.046)	Limon§ 15 (2.538)
Calendula 15 (2.538)	Catnip 15 (2.538)	Milk Thistle 11 (1.861)	Feverfew 11 (1.861)
Dong Quai 11 (1.861)	Fennugreek 11 (1.861)	Slippery Elm 10 (1.692)	Hops 9 (1.523)
Azahares/ Naranjo‖ 8 (1.354)	Savila¶ 7 (1.184)	Penny Royal 6 (1.015)	Elderberry 6 (1.015)

*Table Entries are Frequencies (percentages in parens). Percentage reflects the frequency among caregivers that use/have used herbs. Herbs used by ≤5 caregivers are not represented. See Table 1 of Appendix L for an extended listing; †Chamomile[25]; ‡Spearmint[91,96] or Peppermint[92,93]; §Lemon[92] or Key Lime[94]; ‖Orange blossom[95] ¶Unidentified

HERBAL USAGE AMONG CHILDREN

Demographic Comparison of Caregivers That Give/Do Not Give Herbal to Their Children

The demographic profile of caregivers that give herbs to their children (CY) and caregivers that do not give herbs to their children (CN) is shown and compared in Table 14. The mean age of CY was significantly greater compared to CN. Nearly 39 percent of CY were 30 years and older in comparison to 30 percent of CN, which was also significantly different. The distribution by gender for CY and CN was similar between both groups. The average education level obtained by CY was not significantly greater than CN. However, a significantly greater proportion of CY had some post high school or college education (34%) in comparison to CN (30%). The two lowest education levels were compared as well as the two highest educational levels between CY and CN. Both comparisons were not statistically significant. The proportion of CY of an ethnicity other than white (45%) was significantly greater compared to CN (39%). When comparing Hispanics and non-Hispanics, CY had a significantly greater proportion of Hispanics (24%) than CN (12%). A significantly greater proportion of CY were from a rural location compared to CN.

Table 14. Demographic Profile and Comparison of Caregivers that Do/Do not Provide Herbs to Their Children

	Caregivers that Give Herbs to their Children* n = 488	Caregivers that Do Not Give Herbs to their Children* n = 991	Independent Samples Test	Caregivers that Give Herbs to their Children Mean/SD	Caregivers that Do Not Give Herbs to their Children Mean/SD	P
Age Range†						
18-24	157 (32.172)	430 (43.391)	$t_{1404} = 2.445$‡	28.49/7.25‡	27.38/8.32‡	.015‡
25-29	108 (22.131)	227 (22.906)				
30-39	153 (31.352)	229 (23.108)	$x^2_1 = 20.034$§	NA§	NA§	.000§
≥40	37 (7.582)	65 (6.559)				
Sex						
Female	446 (91.393)	938 (93.643)	$x^2_1 = .019$	NA	NA	.890
Male	19 (3.893)	38 (3.835)				
Education Level						
Less than 12th grade	114 (23.361)	238 (24.016)	$t_{867.352} = 1.587$‖	2.24/.97‖	2.16/.91‖	.113‖
High school Diploma/GED	182 (37.295)	433 (43.693)	$x^2_1 = 4.720$¶	NA¶	NA¶	.030¶
Some post High school	109 (22.336)	197 (19.879)	$x^2_1 = .822$#	NA#	NA#	.365#
Completed College	59 (12.090)	97 (9.788)	$x^2_1 = .216$**	NA**	NA**	.642**

*Entries are Frequencies (percentages in parens); Percentages may not equal 100% due to missing variables; †Values represent years; ‡Compares average age; §Compares <30 and ≥30; ‖Compares average education level; ¶Compares ≤high school and >high school; #Compares <12th grade and high school diploma/GED; **Compares some post high school education and completed college; ††Compares white and nonwhite; ‡‡Compares Hispanic and non-Hispanic

Table 14. Demographic Profile and Comparison of Caregivers that Do/Do not Provide Herbs to Their Children Cont

	Caregivers that Give Herbs to their Children* n = 488	Caregivers that Do Not Give Herbs to their Children* n = 991	Independent Samples Test	Caregivers that Give Herbs to their Children Mean/SD	Caregivers that Do Not give Herbs to their Children Mean/SD	P
Ethnicity						
Hmong	10 (2.049)	19 (1.917)	x^2_1= 5.995††	NA††	NA††	.014††
Native American	18 (3.689)	15 (1.514)	X^2_1= 39.839‡‡	NA‡‡	NA‡‡	.000‡‡
Don't belong to one of these groups /mixed ethnicity	16 (3.279)	43 (4.339)				
Hispanic	117 (23.975)	116 (11.705)				
African American	59 (12.090)	198 (19.980)				
White	245 (50.205)	575 (58.022)				
Location						
Urban place	423 (86.680)	906 (91.423)	x^2_1= 8.070	NA	NA	.005
Rural	65 (13.320)	85 (8.577)				

*Entries are Frequencies (percentages in parens); Percentages may not equal 100% due to missing variables; †Values represent years; ‡Compares average age; §Compares <30 and ≥30; ‖Compares average education level; ¶Compares ≤high school and >high school; #Compares <12th grade and high school diploma/GED; **Compares some post high school education and completed college; ††Compares white and nonwhite; ‡‡Compares Hispanic and non-Hispanic

Demographic Comparison of Families That Use/Do Not Use Herbals

Families were identified as herbal users if either the caregiver or child used herbs. One survey represented 1 family. The demographic characteristics of families that use herbs (FY) and families that do not use herbs (FN) are shown in Table 15. The mean age of FY was greater compared to FN, although this difference was not significant. However, a significantly greater proportion of FY (36%) were 30 years and older compared with FN (30%). The gender distribution between both groups was similar. The average education level obtained by FY was significantly greater than FN. Thirty-six percent of FY had post high school education compared to 28 percent among FN, which was also significantly different. When the two lowest education levels were compared as well as the two highest educational levels, herbal usage was not significantly different between FY and FN. The proportion of FY of an ethnicity other than white was not significantly different than FN. However a significantly greater proportion of Hispanics were FY (21%) compared to FN (11%). FY were also significantly more likely to be from a rural location (12%) compared to FN (9%).

Table 15. Demographic Profile and Comparison of Families that Use/Do Not Use Herbs

	Families that Use Herbs* n = 680	Families that Do Not Use Herbs* n = 799	Independent Samples Test	Families that Use Herbs Mean/SD	Families that Do Not Use Herbs Mean/SD	P
Age Range†						
18-24	235 (34.559)	352 (44.055)	$t_{1404} = 1.804$‡	28.16/7.22‡	27.39/8.58‡	.071‡
25-29	155 (22.794)	180 (22.528)				
30-39	199 (29.265)	183 (22.904)	$x^2_1 = 13.331$§	NA §	NA §	.000§
≥40	48 (7.059)	54 (6.758)				
Sex						
Female	630 (92.647)	744 (93.116)	$x^2_1 = 1.161$	NA	NA	.281
Male	22 (3.235)	35 (4.380)				
Education Level						
Less than 12th grade	149 (21.912)	203 (25.407)	$t_{1365.462} = 2.778$‖	2.26/.95‖	2.12/.91‖	.006‖
High school Diploma/GED	263 (38.676)	352 (44.055)	$x^2_1 = 10.998$¶	NA ¶	NA ¶	.001¶
Some post High school	161 (23.676)	145 (18.148)	$x^2_1 = .017$#	NA #	NA #	.895#
Completed College	79 (11.618)	77 (9.637)	$x^2_1 = .161$**	NA **	NA **	.688**

*Entries are Frequencies (percentages in parens); Percentages may not equal 100% due to missing variables; †Values represent years; ‡Compares average age; §Compares <30 and ≥30; ‖Compares average education level; ¶Compares ≤high school and >high school; #Compares <12th grade and high school diploma/GED; **Compares some post high school education and completed college; ††Compares white and nonwhite; ‡‡Compares Hispanic and non-Hispanic

Table 15. Demographic Profile and Comparison of Families that Use/Do Not Use Herbs Cont

	Families that Use Herbs * n = 680	Families that Do Not Use Herbs * n = 799	Independent Samples Test	Families that Use Herbs Mean/SD	Families that Do Not Use Herbs Mean/SD	P
Ethnicity						
Hmong	11 (1.618)	18 (2.253)	$x^2_1 = .188$††	NA††	NA††	.665††
Native American	20 (2.941)	13 (1.627)	$x^2_1 = 29.857$‡‡	NA‡‡	NA‡‡	.000‡‡
Don't belong to one of these groups /mixed ethnicity	22 (3.235)	37 (4.631)				
Hispanic	144 (21.176)	89 (11.139)				
African American	85 (12.500)	172 (21.527)				
White	369 (54.265)	451 (56.446)				
Location						
Urban place	599 (88.088)	730 (91.364)	$x^2_1 = 4.326$	NA	NA	.038
Rural	81 (11.912)	69 (8.636)				

*Entries are Frequencies (percentages in parens); Percentages may not equal 100% due to missing variables; †Values represent years; ‡Compares average age; §Compares <30 and ≥30; ‖Compares average education level; ¶Compares ≤high school and >high school; #Compares <12th grade and high school diploma/GED; **Compares some post high school education and completed college; ††Compares white and nonwhite; ‡‡Compares Hispanic and non-Hispanic

Ages of Children Using Herbs

A total of 488 caregivers indicated herbal usage by their children, which represented 744 children. It was possible that more children were actually represented since only 1 child was assumed when the number of children delineated was unclear — see Appendix J. Child herbal users were classified into 5 age categories as suggested in the Merck Manual[65]: newborn (birth through 3 weeks); infant (1month through 11 months); early childhood (1 year through 4 years), middle childhood (5 years through 10 years) and adolescence (11 years through 17 years). The frequency of herbal doses provided to children in each of these age categories is shown in Table 16. Children aged 1 through 4 years old were the most frequent recipients of herbal doses (38%). An herbal dosage was defined as equivalent to an instance when one herb was provided to a child. Approximately 51 percent of children receiving herbal doses were under 5 years of age, with 13 percent of the children under the age of 1 year.

Table 16. Herbal Dosage Frequency Across Age Categories*

Age Categories	Frequency (%)
Newborn	22 (1.433)
Infant	181 (11.792)
Early Childhood	586 (38.176)
Middle Childhood	371 (24.169)
Adolescent	99 (6.450)
<5years old	789 (51.401)

*One herbal dosage is equivalent to an instance when one herb was provided to a child. Percentages may not equal 100% due to missing variables.

Number and Type of Herbs Used

Children given herbs used an average of 2 herbs; the median number of herbs used was 1. As previously shown in Table 11, 89 (6%) caregivers used herbs only for their children while 399 (27%) caregivers indicated concomitant herbal use. Overall, 53 different types of herbs were given to children in this study. The number of herbs given to an individual child in a family ranged from 1 to 16. The number of herb types used by children is shown in Table 17. Herbs most frequently given to children included aloe vera, garlic, peppermint, chamomile and manzanilla. Herbs listed on the English survey that were not used by children included dong quai, hawthorn, hops, hoxsey, penny royal and uva ursi. Herbs listed on the Spanish survey that were not used by children included arandano, galanga raiz china, ortiga and pringamosa. Table 18 details herbal usage by children. Information provided on each herb includes the number of children; the number of families represented; age range, mean, median and standard deviation of children's ages; and frequencies of the age categories. An extended listing on the frequencies of herbs used by children can be found in Table 2 of Appendix L.

Table 17. Number of Herb Types Used By Children*

Number of Herb Types	Frequency
1	245 (50.205)
2	104 (21.311)
3 or more	139 (28.484)
5 or more	52 (10.656)
10 or more	6 (1.230)

*Entries are Frequencies (percentages in parens)

Table 18. Herbal Usage Among Children*

	Aloe Vera n = 417	Garlic n = 175	Peppermint n = 124	Chamomile n = 107	Manzanilla¶ n = 104	Lavender n = 78	Echinacea n = 66
Families Represented†	272	117	86	80	97	54	40
Age Range‡	.25-204	.25	.25-204	1-168	.25	3-168	9-180
Mean Age/ Median Age‡	98.173/ 60.000	107.254/ 93.000	90.593/ 48.000	57.677/ 36.000	15.160/ 4.000	54.011/ 33.500	118.667/ 96.000
Standard Deviation‡	104.818	96.779	107.163	73.258	31.124	61.609	108.118
Newborn§‖	1 (0.240)	1(0.571)	1(0.806)	0	10 (9.615)	0	0
Infant§‖	20 (4.796)	3 (1.714)	11(8.871)	19 (17.757)	54 (51.923)	17 (21.795)	1 (1.515)
Early Childhood§‖	177 (42.446)	71(40.571)	47 (37.903)	49 (45.794)	23 (22.115)	41(52.564)	29 (43.939)
Middle Childhood§‖	132 (31.655)	42(24.000)	31 (25.000)	24 (22.430)	6 (5.769)	9 (11.538)	22 (33.333)
Adolescent§‖	28 (6.715)	11(6.286)	10 (8.065)	3 (2.804)	0	3 (3.846)	7 (10.606)
<5years old§	198 (47.482)	75 (42.857)	59 (47.581)	68 (63.551)	87 (83.654)	58 (74.359)	30 (45.455)

*Herbs used by ≤5 children are not represented. See Table 2 of Appendix L for an extended listing; †One survey is equivalent to one family; ‡Values represent months; § Table Entries are Frequencies (percentages in parens); ‖Percentages may not equal 100% due to missing variables; ¶Chamomile[25]; #Spearmint[91,95]/Peppermint[92,93]

Table 18. Herbal Usage Among Children Cont*

	Cranberry n = 64	Ginger n = 52	Tea Tree n = 37	Fennel n = 29	Yerba/Yierba Buena# n = 25	Catnip n = 23	Lemon Grass n = 21
Families Represented†	58	39	n = 26	n = 22	n = 25	n = 17	n = 18
Age Range‡	4-204	3	.25-168	.25-144	.25-36	3-168	1-144
Mean Age/ Median Age‡	70.962/ 48.000	74.389/ 48.000	93.645/ 36.000	68.357/ 30.000	6.800/ 3.000	73.667/ 48.000	72.864/ 48.000
Standard Deviation‡	63.135	71.518	119.966	77.530	10.032	81.605	74.839
Newborn§‖	0	0	1 (2.703)	2 (6.897)	3 (12.000)	0	0
Infant§‖	5 (7.813)	5 (9.615)	2 (5.405)	4 (13.793)	18 (72.000)	4 (17.391)	2 (9.524)
Early Childhood§‖	19 (29.688)	21 (40.385)	15 (40.541)	9 (31.034)	4 (16.000)	8 (34.783)	5 (23.810)
Middle Childhood§‖	15 (23.438)	11 (21.154)	8 (21.622)	6 (20.690)	0	4 (17.391)	6 (28.571)
Adolescent§‖	6 (9.375)	3 (5.769)	4 (10.811)	1 (3.448)	0	2 (8.696)	1 (4.762)
<5years old§	24 (37.500)	26 (50.000)	18 (48.649)	15 (51.724)	25 (100.000)	12 (52.174)	7 (33.333)

*Herbs used by ≤5 children are not represented. See Table 2 of Appendix L for an extended listing; †One survey is equivalent to one family; ‡Values represent months; § Table Entries are Frequencies (percentages in parens); ‖Percentages may not equal 100% due to missing variables; ¶Chamomile[25]; #Spearmint[91,95]/Peppermint[92,93,93]

Table 18. Herbal Usage Among Children Cont*

	Calendula n = 19	Licorice n = 17	Elderberry n = 16	Lemon Balm n = 16	Ginseng n = 15	St.John's Wort n = 14	Goldenseal n = 10
Families Represented†	n = 10	n = 10	N = 8	n = 10	n = 14	n = 14	n = 6
Age Range‡	4-108	12-156	24-108	12-144	30-192	4-156	156
Mean Age/ Median Age‡	71.857/ 54.000	135.000/ 126.000	141.600/ 108.000	128.500/ 108.000	100.500/ 90.000	80.800/ 78.000	149.850/ 108.000
Standard Deviation‡	63.959	119.442	112.378	101.090	68.826	60.363	115.207
Newborn§‖	0	0	0	0	0	0	1(10.000)
Infant§‖	4 (21.053)	0	0	0	0	1 (7.143)	0
Early Childhood§‖	10 (52.632)	8 (47.059)	8 (50.000)	5 (31.250)	2 (13.333)	3 (21.429)	2 (20.000)
Middle Childhood§‖	2 (10.526)	4 (23.529)	5 (31.250)	7 (43.750)	2 (13.333)	3 (21.429)	3 (30.000)
Adolescent§‖	0	3 (17.647)	0	2 (12.500)	1 (6.667)	3 (21.429)	3 (30.000)
<5years old§	14 (73.684)	8 (47.059)	8 (50.000)	5 (31.250)	2 (13.333)	4 (28.571)	3 (30.000)

*Herbs used by ≤5 children are not represented. See Table 2 of Appendix L for an extended listing; †One survey is equivalent to one family; ‡Values represent months; § Table Entries are Frequencies (percentages in parens); ‖Percentages may not equal 100% due to missing variables; ¶Chamomile[25]; #Spearmint[91,95]/Peppermint[92,93]

Table 18. Herbal Usage Among Children Cont*

	Slippery Elm n = 9	Dandelion n = 8	Astragalus n = 7	Feverfew n = 6	Ginkgo Biloba n = 6
Families Represented†	n = 4	n = 5	n = 4	n = 3	n = 6
Age Range‡	24-168	36-144	24 - 108	.25	24-30
Mean Age/ Median Age‡	244.000/ 240.000	180.000/ 144.000	100.000/ 108.000	200.000/ 240.000	26.000/ 24.000
Standard Deviation‡	174.035	129.800	72.333	159.800	3.464
Newborn§‖	0	0	0	0	0
Infant§‖	0	0	0	0	0
Early Childhood§‖	2 (22.222)	1 (12.500)	4 (57.143)	1 (16.667)	3 (50.000)
Middle Childhood§‖	4 (44.444)	3 (37.500)	2 (28.571)	3 (50.000)	0
Adolescent§‖	2 (22.222)	2 (25.000)	0	2 (33.333)	0
<5years old§	2 (22.222)	1 (12.500)	4 (57.143)	1 (16.667)	3 (50.000)

*Herbs used by ≤5 children are not represented. See Table 2 of Appendix L for an extended listing; †One survey is equivalent to one family; ‡Values represent months; § Table Entries are Frequencies (percentages in parens); ‖Percentages may not equal 100% due to missing variables; ¶Chamomile[25]; #Spearmint[91,95]/Peppermint[92,93]

Reasons Children Are Given Herbals

Caregivers were asked to provide the reasons herbs were used for each herb indicated. Each reason was assessed and categorized according to the interpretation by a panel of experts. In order to express the reasons as they were listed on the survey, reasons were not combined into a single category unless they had similar connotations. The reasons caregivers cited were organized into 99 separate categories. In each category, the primary reason was listed first. Table 19 shows the most frequent reasons caregivers cited among all herbs indicated. Table 20 shows the most popular reasons caregivers listed for individual herbs. A complete listing of reasons herbals were used by children and reasons individual herbs were utilized are shown respectively in Tables 3 and 4 located in Appendix L.

Table 19. Most Frequently Cited Reasons for the Usage of Herbals by Children*

Reasons	Families†
Burn	146
Food/Cooking/Flavor/Drinking	132
Colic	81
Cold	73
Stomach Ache	51
Cut/Scrape/Abrasion	50
Dry Skin/Itching	37
Calming/Relaxation	35
Indigestion/Upset Stomach	32
Bathing	32

*See Table 3 located in Appendix L for a complete listing; †One survey is equivalent to one family

Table 20. Most Frequent Reasons Individual Herbs Were Given to Children*

Aloe Vera	Burn (145) Cut (37) Dry Skin (31)
Garlic	Food (57) Cold (6) Illness/Symptom (3)
Peppermint	Indigestion/Upset Stomach (15) Food (10) Cold (9)
Chamomile	Calming/Relaxation (16) Bathwater (10) Cold (7)
Manzanilla†	Colic (48) Stomach ache (21) Gas (13)
Lavender	Bathwater (22) Calming/Relaxation (10) Insomnia/Sleep (6)
Echinacea	Cold (27) Flu (5)/ Immune System(5) Illness/Symptom (3)
Cranberry	UTI (12)/ Food (12) Urination/Bladder (9) Constipation (3)/ Illness/Symptom (3)/ Clean/Cleans System (3)
Ginger	Food (17) Indigestion/Upset Stomach (3) Cough (3)/ Stomach (3) Fever(2)/ Headache (2)/ Cold (2)/
Tea Tree	Cut (8) Rash/Hives (2)/ Sore throat (2)/ Cold (2)/ Cold Sores (2)/ Ear Infection (2)/ Lice (2)

*Numbers represent the number of families who provided each response. One survey is equivalent to one family. See Table 4 located in Appendix L for a complete listing; †Chamomile[25]; ‡Spearmint[91,95]/Peppermint[92,93]

Table 20. Most Frequent Reasons Individual Herbs Were Given to Children Cont*

Fennel	Food (7) Gas (3) Colic (2)/ Indigestion/Upset stomach (2)/ Stomach Ache (2)
Yerba/Yierba Buena‡	Colic (13) Stomach Ache (8) Diarrhea (1)/ Gas (1)/ Stomach (1)/ Food (1)
Catnip	Rash/Hives (4) Stomach ache (2)/ Insomnia/Sleep (2) Calming (1)/ Colic (1)/ Gas (1)/ Chicken Pox (1)/ Cold (21)/ Measles (1)/ Stomach (1)/ Food (1)/ Indigestion/Upset Stomach (1)/ Fatigue (1)/ Teething (1)
Lemon Grass	Food (6) Illness/Symptom (2) Gas (1)/ Stomach ache (1)/ Cough (1) Nerves (1) Broken bone (1) Cold (1)/ Fatigue (1)
Calendula	Rash/Hives (5) Cut (3) Sensitive Skin (1)/ Dry skin (1)/ Poison Ivy (1)/ Salve (1)
Licorice	Food (5) Cure All (1)

*Numbers represent the number of families who provided each response. One survey is equivalent to one family. See Table 4 located in Appendix L for a complete listing; †Chamomile[25]; ‡Spearmint[91,95]/Peppermint[92,93]

Table 20. Most Frequent Reasons Individual Herbs Were Given to Children Cont*

Elderberry	Illness/Symptom (1)/ Fever (1) Flu (1)/ Immune System (1)/ Vitamin (1)
Lemon Balm	Cold (2)/ Food (2) Indigestion/Upset stomach (1)/ Stomach Ache (1) Chest (1) Fatigue (1)
Ginseng	Energy (4) Body aches (1)/ Insomnia/Sleep (1)/ Cut (1) Cold (1) Flu(1) Food (1) Vitamin (1)
St. John's Wort	Depression (3) Mood Enhancer (2) Cold (1)/ Anxiety (1)/ Eczema (1)/ Wart (1)/ Bones (1)/ Pill (1)/ Calming/ Relaxation (1)/ Antioxidant (1)
Goldenseal	Illness/Symptom (1)/ Stomach Ache (1)/ Cut (1)/ Cold (1) Prevention (1)/ Fatigue (1)
Dandelion	Food (2) Cold (1)/ Wart (1)
Astragalus	Cold (3) Flu (1)/ Cough (1)
Ginkgo Biloba	Mental Alertness/ Memory Help (2) Mind Meds (1)/ Vitamin (1)

*Numbers represent the number of families who provided each response. One survey is equivalent to one family. See Table 4 located in Appendix L for a complete listing; †Chamomile[25]; ‡Spearmint[91,95]/Peppermint[92,93]

Information Sources Used by Caregivers

Caregivers were encouraged to list all sources utilized to obtain information on herbs. The average number of information sources used by caregivers that gave herbs to their children was 1.9. Two hundred twenty-one caregivers (45%) used one information source and 111 (23%) used 3 or more information sources. Approximately 6 percent (n = 31) of caregivers reported that they were not sure where they obtained information on at least 1 herb indicated.

Caregivers obtained information on herbals from a variety of sources. Caregivers that gave herbs to their children listed a total of 25 different information sources. In addition to the information sources listed, 11 other information sources not listed were indicated. The number of information sources utilized by caregivers that gave their children herbs is shown in Table 21. The majority of caregivers indicated family as an information source on herbs. Table 22 shows the frequency information sources were utilized by caregivers that gave herbs to their children. Table 23 shows the frequency of the most popular information sources indicated in Table 22, when only a single information source was indicated. Nearly 77 percent of caregivers used family as their single source of information on herbs utilized for their children (n = 352).

Table 21. Number of Information Sources Utilized By Caregivers that Give Herbs To Their Children*

Number of Information Sources Utilized	Frequency n = 488
1	221 (45.287)
2	89 (18.238)
3	57 (11.680)
4	32 (6.557)
5 or more	22 (4.508)

*Entries are Frequencies (percentages in parens). Percentages may not equal 100% due to missing variables

Table 22. Information Sources Frequently Used By Caregivers that Give Herbs To Their Children*

Information Source	Frequency n = 488
Family	338 (69.262)
Friends	145 (29.713)
Book	74 (15.164)
Medical Doctor	66 (13.525)
Not sure, just heard of it	31 (6.352)
Television	30 (6.148)
Health Food Store Clerk	30 (6.148)
Newspaper/Magazine	24 (4.918)
Nurse	21 (4.303)
Pharmacist	20 (4.098)
Pamphlet/Health Food Store Flier	16 (3.279)
Chiropractor	14 (2.869)
WIC	8 (1.639)
Self	7 (1.434)
Dietitian	7 (1.434)
Radio	4 (0.820)
Herbalist	4 (0.820)
Internet	4 (0.820)
Midwife	4 (0.820)
Eye Doctor	2 (0.410)
Holistic Therapist	1 (0.205)
Naturopath	1 (0.205)
Shamen	1 (0.205)
Elders	1 (0.205)
Church	1 (0.205)
Reading Labels	1 (0.205)

*Table Entries are Frequencies (percentages in parens); Percentages reflect the frequency of caregivers utilizing each information source among all caregivers that give herbs to their children

Table 23. Frequency of Popular Information Sources Utilized When 1 Information Source Was Indicated*

Information Source	Frequency n = 226†
Family	173 (76.549)
Friends	15 (6.637)
Book	5 (2.212)
Medical Doctor	2 (0.885)
Not sure, just heard of it	4 (1.770)
Television	2 (0.885)
Health Food Store Clerk	2 (0.885)
Newspaper/Magazine	1 (0.442)
Nurse	1 (0.442)
Pharmacist	3 (1.327)
Pamphlet/Health Food Store Flier	0

*Entries are Frequencies (percentages in parens);
† Includes missing variables and "not sure, just heard of it" responses. A value of 0 indicates that additional information sources were used

CHAPTER 5

DISCUSSION

INTRODUCTION

Providers of healthcare are acknowledging the increased prevalence of CAM usage among children. In March 2001, the AAP released a policy statement that provided recommendations to guide pediatricians in counseling families about CAM.[96] Pediatricians were encouraged to become educated about CAM therapies, in order to enable them to provide unbiased and sound information for caregivers. Furthermore, they were encouraged to be receptive to the caregiver's motivation for utilizing CAM therapy for their child. Although these recommendations were primarily targeted at pediatricians dealing with families of children with chronic conditions and disabilities, the AAP extended these recommendations to all pediatricians providing counsel to families requesting advice on CAM therapies. The recommendations are listed below: [96]

1. Seek information for yourself and be prepared to share it with families.
2. Evaluate the scientific merits of specific therapeutic approaches.
3. Identify risks or potential harmful effects.
4. Provide families with information on a range of treatment options (avoid therapeutic nihilism).
5. Educate families to evaluate information about all treatment approaches.
6. Avoid dismissal of CAM in ways that communicate a lack of sensitivity or concern for the family's perspective.
7. Recognize feeling threatened and guard against becoming defensive.
8. If the CAM approach is endorsed, offer to assist in monitoring and evaluating the response.
9. Actively listen to the family and the child with chronic illness.

The AAP's recommendations can help provide an open environment to encourage caregivers to share their questions and concerns about CAM therapies. Since caregivers also obtain healthcare from professionals other than pediatricians, it is important for all healthcare professionals to follow these recommendations within their realm of expertise.

Presently, many caregivers do not inform their healthcare providers about CAM usage for themselves[1,11,31,32] or their children.[16,18,19,21] Herbs, a type of CAM therapy, are an important issue to address since little is known about their effects in humans, especially children. Due to the vast amount of information available on herbs, healthcare professionals need to take responsibility to aid caregivers on making informed decisions regarding their children's healthcare. Once the prevalence of herbal usage is determined, health care professionals can be alerted to the extent of this practice, which can help prioritize the need for acknowledging this issue within their community. An increased awareness on the number and types of herbal therapies, and reasons they are utilized, as well as the demographic profile of herbal users and their children, can help healthcare professionals address valid issues to the appropriate audience.

A self-report survey was developed to collect descriptive and demographic data in order to profile childhood herbal usage. Participants that completed the survey were caregivers of infants and children from families participating in the WIC program in Wisconsin. All 1479 caregivers that completed the survey were recruited from 24 WIC projects, which represented 56 percent of the total WIC projects in Wisconsin. This study was performed to determine the prevalence of herbal usage among the infants and children of families participating in the WIC Program in Wisconsin. The study had eight objectives: identifying herbs used by infants and children, including the frequency with which each herb is used; identifying infant and child herbal user ages; identifying herbs used by caregivers and the frequency with which each herb is used; identifying reasons for herbal usage in children; indicating sources of herbal information for caregivers; comparing childhood herbal usage between urban and rural dwellers; identifying

associations between childhood herbal usage and caregiver age, gender, ethnicity, and education level; and profiling childhood herbal usage according to age, type, reason and demographic characteristic.

DISCUSSION

Study Participation

The total number of children that used herbs was 744, although it is quite possible that this number was underestimated since a conservative approach was taken in order to avoid inflating results — see Appendix J. The number of children that this study represented was estimated because the survey was designed to indicate only children that were herbal users. In order to estimate the number of children represented by the sample, the figure of 2 infants or children per family was used. Since one survey returned represented one family, a total of 2958 infants and children were represented by the returned surveys. Using this total, the estimated prevalence of herbal usage among infants and children in the sample was 25 percent.

Sample Profile

Demographic Characteristics The sample was generally representative of the WIC population in terms of ethnicity and location, although the sample was more educated — see Table 10 in the results chapter. A greater percentage of caregivers from the sample had post high school education (31%) compared with the WIC population (17.5%). In addition, the sample had a lower number of caregivers with less than a high school education (24%) compared to the WIC population (34%). The differences in education level may have been that caregivers with a higher education level were more likely to complete a survey in comparison to less educated caregivers. For instance, the

task of completing the survey may have been viewed as a greater hardship among caregivers with less education since they are more likely to have a difficult time reading and understanding written materials than their more educated counterparts. In addition, caregivers with less education may have not been able to understand the purpose or relevance of the survey, perceiving it as a waste of time.

Prevalence of Herbal Usage Among Caregivers and Their Children

Prevalence Among Caregivers The results of this study demonstrated that herbal usage is a prevalent practice among caregivers participating in the WIC Program in Wisconsin. Forty percent of caregivers indicated that they had used an herb to treat themselves for an illness, symptom or disease. Although recent studies indicated prevalence rates of 49 and 60 percent,[2,4] the prevalence demonstrated in this study is more substantial compared to earlier studies.[1,31-33]

Prevalence Among Children Herbal usage is a prevalent practice among the infants and children of families participating in the WIC Program in Wisconsin. Thirty-three percent of the caregivers participating in this study indicated that they gave herbs to their children to treat an illness, symptom or disease. Although the prevalence of herbal usage among children was lower than their caregivers, it was nonetheless a popular practice. The high prevalence of herbal usage among children was not completely surprising as herbs were commonly utilized by children in studies that depicted the usage of various CAM therapies.[16-19,21]

Concomitant Usage of Caregiver and Child Concomitant usage of herbs by caregivers and their child was prominent. Among the caregivers utilizing herbs, 68 percent indicated that they gave herbs to their children. This result was consistent with

studies examining the prevalence of CAM usage among children. Ottolini et al found that that 94 percent of the caregivers of children using CAM, also used CAM for themselves.[18] Sawni-Sikand et al found that 46 percent of the caregivers of children using CAM saw a CAM provider themselves.[21] According to Speigellblatt and Laine-Ammara, parents who used CAM were three times as likely to prefer alternative medicine for their child when compared to parents that did not use CAM.[15] In Wilson and Klein's study, 62 percent of adolescents that used herbs indicated that their parents used some form of CAM therapy.[19]

Associations of Herbal Usage Among Demographic Characteristics

Caregiver Age and Gender Caregivers that gave their children herbs were significantly older compared to caregivers that chose not to give herbals. This finding corroborated with findings from CAM studies performed by Ottolini et al and Sawni-Sikand et al.[18,21] Caregivers that provided CAM therapies to their children were also significantly older than caregivers that did not provide CAM.[18,21] The caregiver's gender was not a significant determinant of childhood herbal usage in this study. However, 93 percent of the participants were women, thereby blunting the interpretation of gender effects. Herbal usage was significantly more common among females according to several studies on herbal usage in adults.[4,32,56-58]

Caregiver Education Although the average education level was not significantly different, caregivers that give their children herbs were significantly likely to have post high school education. The amount of post high school education did not matter since herbal usage among those that completed college did not use significantly more herbs than caregivers with just some post high school education. This was also true

among caregivers from the two lowest education levels. Caregiver education was not associated with childhood CAM usage in studies indicating herbal use as a type of CAM therapy.[18,21] Interestingly, the educational profile of these samples greatly differed. Most of the participants (68%) in a study by Sawni-Sikand et al had a college education or above.[21] In a study by Ottolini et al, 65 percent of the participants had a bachelor or postgraduate degree, while just 1% of the sample did not graduate from high school.[18] This sharply contrasted with this study's sample, where 31 percent of the participants had post high school education and 24 percent did not graduate from high school. Studies on herbal usage by adults were inconclusive. Klepser et al found that education was significantly associated with herbal use.[56] Harnack et al found that adults with post high school education were more likely to use herbs.[4] Hung et al did not find any association with educational status.[32] The reason herbal usage was more prevalent among caregivers with a higher education, may be that they are more likely to be exposed to a greater amount of information, increasing their chances to learn about herbal usage. They may feel more knowledgeable and confident in practicing self-care rather than seeking the advice of a health professional.

Caregiver Ethnicity Caregivers that gave herbs to their children were significantly more likely to be a non-white ethnicity compared to caregivers that did not give herbs to their children. Hispanic caregivers were also significantly more likely to give herbs to their children. This finding was contrary to studies on childhood CAM usage. Pitetti et al found that the child's ethnicity was not associated with CAM usage.[14] Ottolini et al compared CAM usage among children and caregiver ethnicities including African American, white and people of an "other ethnicity" and found no relationship

between ethnicity and herbal usage.[18] Sawni-Sikand et al also did not find significance between ethnicity and CAM usage although the results showed trends of greater usage among children's mothers who were either Asian, Hispanic, multiracial and American Indian.[21] In addition, child CAM usage was significantly associated among children whose parents were born outside of the United States.[21] Breevort suggests that ethnic populations in the United States may constitute a significant proportion of purchasers of botanicals.[9] Studies on herbal usage in adults support the notion that this practice is common among ethnicities other than white. Studies have shown that herbal use was more common among Asians[32] and also by people in ethnic groups other than white, black and Hispanic.[57] According to Fugh-Berman, herbs are used more among immigrants from Asian, African, Caribbean and Central and South American cultures.[97]

Location Rural location was significantly associated with childhood herbal usage. In studies profiling herb and other botanical usage among adults, differences between rural and urban location were not evident.[10,56] It has been suggested that herbal usage may be more prevalent in rural areas due to greater access to plants and a belief that plants with medicinal properties to cure a certain disease grow in areas where that disease exists.[98] However, it may be more likely that the differences found in this study are due to limited access to healthcare, since healthcare is more likely to be located in more populous areas. Caregivers may also feel it is more feasible to use herbs because they may be more available. It may take less effort and time for caregivers to obtain herbs in regard to transportation and time-off requested from work.

Financial Status The results of this study show that herbal use is a prevalent practice among children of low-income families. This is supported by studies on the herbal/folk remedy usage. A study on the herbal/folk remedy usage by elderly, Mexican-American women found that financial strain was a significant predictor of herbal usage.[58] Another study on a low-income population found that 56 percent utilized herbs and other dietary supplements.[99] However, studies on CAM usage among children and adolescents found that financial status was not a predictor of CAM usage.[17,19]

It was interesting that herbal usage is prevalent in this low-income population since herbs are generally not covered by most insurance plans. However herbs may be a lower-cost alternative in comparison to doctor visits and prescription medications. This theory is especially possible considering low-income families are prone to carry inadequate health insurance to cover contemporary healthcare. As quoted from Loera et al, "recent Mexican-American immigrants rely more on herbal medicines than on allopathic medicine because of limited access to medical care."[58] A literature review of CAM therapies supports this theory as lower-income groups often utilized CAM or folk methods as a substitute for conventional care.[100]

Demographic Differences Between Herbal Users/Nonusers Herbal usage among families was significantly associated with caregivers 30 years and older, post high school education, Hispanic ethnicity and rural location. Since these characteristics were also significantly associated among caregivers that gave herbs to their children, these characteristics are strong indicators on whether herbs would be used by any family member. Caregivers that gave herbs to their children were also significantly more likely to be an ethnicity other than white.

Herbal Usage Among Caregivers

Among the 591 caregivers that used herbs, the average number of herbs used was 3.66. Sixty-eight percent of these caregivers used more than 1 herb. The frequency of using more than 1 herb was not completely surprising since it would be assumed that people satisfied with the effects of one herb would be more willing to try other herbs. This was evident in that a substantial number of caregivers used 5 or more herbs, representing 18 percent of the total caregivers that utilized herbs. In fact, the frequency of caregivers using 5 or more herbs was almost as common as the frequency of caregivers that used 2 herbs (19.5%). Usage of 10 or more herbs was not all that uncommon as 42 (6.6%) caregivers used this many types.

The most common herbs that caregivers reported using for themselves were aloe vera, garlic, ginseng, peppermint and chamomile. The popularity of aloe vera,[9,56,101] garlic,[2,4,9,32,39,63,101] ginseng[2,4,39,63,101] and chamomile[39,63,102] coincide with reports from the literature. Peppermint was not an herb popularly reported although Brevoort indicated that it was a top selling herb in the mid 1990's.[9] However, literature purporting the medicinal effects of peppermint is not that uncommon, which may have promoted its usage in this population. In addition, peppermint is a traditional herb used among migrants and seasonal farmworkers,[92] a subpopulation that is likely to be eligible for the WIC program.

Herbal Usage Among Children

Child Age Herbal doses were predominantly given to young children. Children under the age of 5 received almost 51 percent of the herbal doses provided to children in this study. Usage of herbs was not uncommon among newborns and infants

since this group received 13 percent of the herbal doses. It is unknown whether the prevalence of herbal usage among infants and children is greater among this population since studies have not examined this topic. CAM studies have shown that older children are predominant users of CAM therapies, although most involved older children, adolescents and young adults. In a CAM study by Sawni-Sikland et al, children older than 5 years were significantly more likely to use CAM even though 70 percent of the children in their sample were 5 years of age and younger.[21] Ottolini et al also reported that older children were more likely to use CAM.[18] Evidence exists that the prevalence of herbal usage among adolescents is quite prominent.[17,19]

Number of Herbs Used The average number of herbs used by the 744 children in this study was 2 herbs per child. This was less than the average number of 3.66 herbs used among caregivers utilizing herbs. Children also used less herb types compared to their caregivers. The overall number of types of herbs used by children was 53 in contrast to the 75 different types used by their caregivers. As shown in Tables 12 and 17, only one herb was used by 32 percent of the caregivers, with single herb use by 50 percent of the children. In addition, less children used 5 or more herbs (11%) in comparison to their caregivers (25%).

The fact that children used fewer herbs and herb types than their caregivers could be attributed to several reasons. For example, it is more difficult for children to convey a specific ailment, as their language and capacity for understanding are limited in comparison to an adult. Since there are fewer reasons a child could describe to justify for needing an herbal remedy, consequently there may be fewer types of herbs that could be given to a child. Another reason children may have utilized fewer herbs is that an adult

experiences another host of ailments that occur once puberty is reached, such as menstrual cramps and acne. There simply could be more reasons an adult would use herbs in comparison to a child. Caregivers may also be more cautious about giving herbs to children. For example, caregivers may only give their children herbs that have a well-known reputation for safety. Caregivers may be more willing to experiment with unfamiliar herbs on themselves, rather than experimenting on their children.

Type and Relative Safety of Herbs Used The herbs used most by caregivers were the herbs most often given to their children. The most popular herbs used by children were aloe vera, chamomile, peppermint, garlic and manzanilla. Manzanilla, an herb commonly used by the Hispanic population[92] is a specific type of chamomile referred to as German chamomile.[25] Four of the herbs used by children were among the 5 most popular herbs used by caregivers. This occurrence supports the theory that caregivers are most likely to give herbs to their children that they feel are safe to use on themselves. Most of the herbs popular among children in this study are commonly thought to be relatively safe of serious side effects.[3] However, Brinker cautions that "great care should be taken to insure proper dosage in utilizing a plant with any record of adverse effects, …especially when medicating the young who are often more reactive to large doses."[25] Although few herbs used were absolutely contraindicated for use in children, popular herbs such as aloe, fennel and peppermint are contraindicated for children depending upon the form in which they are used.[25] A few of the herbs indicated were highly toxic and generally not recommended for neither children or adults. The frequencies of children using herbs known to produce toxic effects included licorice[25,47,76] (17), penny royal[3,5,76,77] (1), wormwood[76] (1), basil[25] (2) and an herbal preparation

containing wild indigo[25] and white cedar[25] (1). Children were also given kava (3), which has potentially strong sedative effects.[25]

Reasons for Herbal Usage The top 10 reasons herbs were used by children included burns, food, colic, cold, stomach ache, cut/scrape/abrasion, dry skin/itching, calming/relaxation, indigestion/upset stomach and bathing. In this study, herbs appear to be given to children primarily for acute conditions. Since the reasons given could be symptoms of both acute and chronic conditions, it could not be determined which type of condition herbs were most frequently utilized. In the case of chronic conditions, herbs may be used to manage the condition rather than to "cure" it. Distinguishing whether the herb was used for an acute or chronic condition was difficult, since the specificity of the response could not be determined. Generally, studies on herbal usage report that herbs are used for both acute and chronic conditions.[2,4,10]

Since caregivers were free to list any reason an herb was used for their children, the actual meaning of some of the answers was difficult to determine. For instance, many caregivers listed the form in which the herb was utilized, such as pill, powder and bath. A primary example was food, which was the second most common reason listed. This type of response made it difficult to determine whether the herb was used for medicinal or culinary reasons. Since caregivers were specifically asked to list only herbs used for an illness, symptom or disease, it can only be assumed that either the herb was used in the form of food for a medicinal purpose, or that the caregiver misread the question and listed herbs solely valued for culinary purposes. As it was a frequent practice for caregivers to list the form in which they utilized an herb, it was quite possible that the caregiver may

have been unsure of the reason and thought that listing the form was more informative than not completing the question.

Herbal Information Sources Utilized By Caregivers Most of the caregivers utilized few resources to obtain information on the herbs used by their children. In fact, 45 percent of the caregivers that gave herbs to their children utilized just 1 information source. Caregivers used a variety of information sources. The most frequent information sources utilized were consistent with studies on CAM and herbal usage. Family, friends and written materials were among the most popular information sources utilized by adult herbal users.[2,4,33] Among caregivers providing CAM to their children, word of mouth[21] and family, friends[16] were the most frequent sources. The frequency of consulting a doctor for information on herbs was consistent with studies performed by Prevention magazine, where the prevalence was 9 and 28 percent.[2,33] In a study by Harnack et al, participants infrequently consulted any health professional.[4] Among parents that utilize CAM for their children, most did not consult their pediatrician about this practice.[16,18,21]

Interestingly, approximately 77 percent of caregivers that indicated one information source used only family to obtain information on herbs utilized by their children. Since family was the top information source used by caregivers, a substantial number of caregivers obtaining herbal information from only 1 source. Although the WIC population is not very different from other populations concerning the types of information sources utilized, the fact remains is that obtaining information solely from family and/or friends potentially means that the caregiver is not obtaining information on herbs from reliable sources. Family members could unintentionally misinform each other, especially if information obtained is anecdotal or incomplete. Although physicians

and pharmacists often lack the knowledge in the use of herbs,[103] they would at least be able to assist in helping caregivers in making informed decisions on whether herbal usage is appropriate for their child. Since no single information source contains exclusive information on any herb, using too few information sources can lead to misinformation and an incomplete portrayal of the herb being used.

CONCLUSION

Although the sample size was not large enough to be representative of all WIC families in Wisconsin, the sample size was sufficient to give a good indication that herbal usage is a prevalent practice among the infants and children of families participating in the WIC program. Since little is known about the effects of herbals in children, caution must be taken because this population is more sensitive to the pharmacological effects of herbs. In addition, herbs may be unsafe as they are not regulated by the FDA for efficacy, purity and standardization of ingredients. According to Buck and Michel, "health care providers are in a unique position to counter mass media with a cautionary note about the potential risks of using these products in children."[6] Since most of the published information on herbs is based upon case reports or anecdotal evidence,[6] healthcare professionals need to help deliver reliable information to caregivers. As shown in this study, caregivers are generally reluctant to consult health professionals, feeling more comfortable in relying on advice from family and friends. Policies similar to the AAP CAM policy should be adopted in order to produce a more inviting environment for clients to discuss CAM, so balanced information can be provided in a non-threatening manner. The results of this study indicate that herbal usage is an issue that can no longer be ignored. The results also advocate a need for education among

healthcare professionals so they can be informed on issues surrounding herbal usage as well as the types of herbs commonly used within their community. In turn, this will allow healthcare professionals to provide their clients with well-rounded information so they can make more informed decisions on their children's healthcare. Healthcare professionals need to also provide information to family and friends of WIC participants through popular mediums such as newspaper, television, pamphlets and magazines. Healthcare professionals can utilize the information provided from this study to develop programs and/or policies to help address herbal usage among the WIC population. Information on the types of herbs, frequency of use, reasons for use and information sources can help establish a basis for classes and educational materials.

The goal and the objectives of this study were met.

Goal:	Determine the prevalence of herbal use among infants and children of families participating in the WIC Program in Wisconsin.
Outcome:	Thirty-three percent of the caregivers participating in this study reported herbal usage by their children.
Objective 1:	Identify herbs used by infants and children, including the frequency with which each herb is used
Outcome:	The most popular herbs (as well as their frequencies) used by infants and children include aloe vera (417), garlic (175), peppermint (124) and chamomile (107). Manzanilla (104), a specific type of chamomile, was also a popular herb. The frequencies of other herbs used by children are listed in Table 18 in Chapter 4 and Table 2 located in Appendix L.

Objective 2: Identify infants and child herbal user ages

Outcome: The majority of children receiving herb doses (38%) were 1 through 4 years of age. Newborns received the fewest herb doses (<2%) although newborns and infants as a group received approximately 13 percent of the doses. Children 5 through 10 years of age received approximately 24 percent of the herb doses. Adolescents received approximately 6 percent of the herb doses.

Objective 3: Identify herbs used by caregivers, including the frequency with which each herb is used

Outcome: The five most popular herbs used by caregivers (as well as their frequencies) included aloe vera (376), garlic (205), ginseng (136), peppermint (135) and chamomile (129). The frequencies of other herbs used by caregivers are listed in Table 13 in Chapter 4 and Table 1 located in Appendix L.

Objective 4: Identify reasons for herbal usage in children

Outcome: The 10 most frequent reasons children were given herbs include burn, food/cooking/flavor/drinking, colic, cold, stomach ache, cut/scrape/abrasion, dry skin/itching, calming/relaxation, indigestion/upset stomach and bathing. Other reasons children were given herbals are in Table 3 located in Appendix L. Reasons individual herbs were used are in Table 20 in Chapter 4 and Table 4 located in Appendix L.

Objective 5: Indicate sources of herbal information for caregivers

Outcome: The information sources most commonly used by caregivers that gave herbs to their children included family, friends, book, medical doctor, not sure, just heard of it, television, health food store clerk, newspaper/magazine, nurse, pharmacist, pamphlet/health food store flier, chiropractor, WIC, self and dietitian. Other information sources utilized by caregivers are located in Table 22 in Chapter 4.

Objective 6: Compare childhood herbal usage between urban and rural dwellers

Outcome: Rural dwellers were significantly more likely to give their children herbs in comparison to urban dwellers. In addition, families that utilized herbs were significantly to be more likely to live in a rural area.

Objective 7: Identify associations between childhood herbal usage and caregiver age, gender, ethnicity, and education level

Outcome: Caregivers that gave their children herbs were significantly more likely to be nonwhite or Hispanic, have a greater average age, 30 years and older, post high school education and live in a rural location in comparison to caregivers that did not give herbs to their children. Gender was not a significant factor.

Objective 8: Profile childhood herbal usage according to age, type, reason and demographic characteristic

Outcome: Children that used herbs tend to be less than 5 years old. Their caregivers were significantly more likely to be nonwhite or Hispanic, have a greater average age, 30 years and older, post high school education and live in a rural location. Common types of herbs used included aloe vera, garlic, chamomile, ginger and manzanilla. The most common reasons herbs were given to children included burn, food, colic, cold and stomach ache. The majority of herbs given to children appeared to be related to acute illness or relief of symptoms.

RECOMMENDATIONS

Recommendations for future studies:

1. Organizing a preliminary meeting among WIC staff may have increased the participation rate by WIC projects. Although a memo was sent to encourage participation, an actual presentation may have better informed WIC staff of the project's purpose as well as the study's relevance in relation to their purpose and position within WIC.
2. Translating the survey into other languages other than Spanish may have provided a more diverse sample.
3. Inclusion of a question on the number of children in each family would have helped to more accurately portray the actual prevalence of herbal usage by the sample as well as within the population being studied.
4. Inclusion of an example on how to complete the reason column in the first question may have yielded more descriptive answers, which may have eliminated answers that were difficult to interpret.
5. Elaboration on the example describing how to complete the age column in the first question may have allowed better interpretation of the number of children utilizing herbs. For example, more participants may have been deterred from stating age ranges and other unspecified enumerations.
6. Provision of incentives may have increased participation among caregivers and WIC staff.

7. Inclusion of a question inquiring on the type of family and friends caregivers obtained herbal information would have allowed better discernment of their reliability as information sources.
8. Gather information through an impromptu interview rather than a self report survey to eliminate the frequency of incomplete responses.
9. Distribute the survey to a similar age group, but a different socioeconomic level such as a daycare setting or nanny agency in order to determine whether financial status has an influence on the prevalence of herbal use.
10. Investigate other CAM modalities to determine the prevalence of their usage in relation to herbals.
11. Evaluate educational interventions to determine the most effective approach for relaying herbal information to caregivers.

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APPENDIX A

Memo Requesting Participation by WIC Project Directors – Phase 1

Memo Attachments

- **Example of Survey**
- **List of Families to Survey**

Scott McCallum
GOVERNOR

State of Wisconsin
Department of Health and Family Services

DIVISION OF PUBLIC HEALTH
1 WEST WILSON STREET
P O BOX 2659
MADISON WI 53701-2659

608-266-1251
FAX: 608-267-2832
www.dhfs.state.wi.us

TO: WIC Directors at Projects [redacted]

FROM: Patti Herrick, State WIC Director
Connie Welch, WIC Nutrition Coordinator

DATE: February 28, 2001

RE: Study of Herbal Use in WIC Children – **Response Requested by March 14th**

A graduate student at UW-Stout, Jennifer Priebe, working under Dr. Barbara Lohse Knous, would like to help us study the extent of herbal use in WIC children. The use of dietary supplements among adults has significantly increased in the past decade, but the extent of use by children is unknown. This information is very important for a child's health because the health affects of many dietary supplements, especially some herbal and metabolites, are under-researched and may result in growth and developmental problems.

This project has been approved by the UW-Stout Institutional Review Board for the Protection of Human Studies in Graduate Research, and by the Wisconsin Division of Public Health Administrator. Connie has been communicating with Jennifer and Barbara to design the survey and to determine the Projects to survey. We now are requesting your assistance in administering the surveys.

We selected 20% of the Projects in each Region, with various racial/ethnic groups represented. The total participant sample is about 2,000 families with infants and children. A copy of the survey is enclosed. It was pilot-tested and has also been translated into Spanish (for Projects [redacted] and [redacted]). The information to be collected includes caregiver demographic background and supplement use, child supplement use, and the purpose for use. The process includes selecting families randomly by proportioning the number requested (see the enclosed list) amongst all certifications and draft issuances at all your sites in April. For example, if we ask you to survey 80 families, and your caseload is split about 60% at your biggest site, 20% at another site, and 10% at each of 2 others, give the survey to the first 48 families at the biggest site, and 16, 8, and 8, respectively. If a parent/caregiver no-shows for their appointment or refuses to complete the survey, give it to the next family, until all surveys have been distributed and returned to you. Jennifer will tally and analyze the results, and produce a final report due by December.

If you are willing to participate, please contact Jennifer Priebe at [redacted] or [redacted] by March 14th. Additional information, multiple copies of the survey, and instructions will be forthcoming. If you have any questions or comments regarding the project please contact Connie Welch at [redacted] or [redacted] or contact Jennifer.

Thank you for considering participation in this study. The information will be of benefit to all of us in WIC and public health nutrition.

Cc: Regional Office Nutrition Consultants, Jennifer Priebe, Barbara Lohse Knous

The typical format may be slightly different, and it will be tri-folded. (Also available in Spanish.

2. Put a check (✓) by the herb(s) that **YOU** have used yourself for an illness, symptom or disease.

Herbs	✓ (if used)	Herbs	✓ (if used)
Aloe Vera		Hawthorn	
Astragalus		Hops	
Calendula		Horse Chestnut	
Catnip		Hoxsey	
Cat's Claw		Kava	
Chamomile		Lavender	
Chasteberry		Lemon Balm	
Cranberry		Lemon Grass	
Dandelion		Licorice	
Dong Quai		Manzanilla	
Echinacea		Milk Thistle	
Elderberry		Peppermint	
Essiac		Penny Royal	
Evening Primrose		Slippery Elm	
Fennel		St. John's Wort	
Fennugreek		Tea Tree	
Feverfew		Uva Ursi	
Garlic		Other:	
Ginger		Other:	
Ginkgo Biloba		Other:	
Ginseng		Other:	
Goldenseal		Other:	

→ → → →

3. How did you get the information about the herbs used? (Check all the apply)

___Family
___Friends
___Television
___Radio
___Book
___Medical Doctor
___Newspaper/Magazine
___Health Food Store Clerk
___Pamphlet/Health Food Store Flier
___Not sure, just heard of it
___Other:_____
___Pharmacist
___Eye Doctor
___Chiropractor
___Dietitian
___Nurse

4. Please complete the following information about **YOURSELF**:

Age (round to the nearest year):____

Sex (circle): M F

Education Level (check one):

____Less than 12th grade
____High School Diploma/GED
____Some post high school
____Completed college

Ethnic Group (check one):

___African American
___Native American
___Don't belong to these groups
___Hispanic
___Hmong
___White

When you have finished filling out the survey, place it into the envelope provided and put into the box marked SURVEYS. ***Thank You!***

FYI - This information is required by the UW-Stout Human Subjects Committee

Hi, I am Jennifer Priebe, a graduate student in the Food and Nutritional Sciences program at the University of Wisconsin-Stout.

Your help by providing any information on herb use by your children would very much be appreciated to help me complete my thesis project.

The purpose of this survey is to study herb usage by children. You do not have to give your name. You will not be able to be identified by anyone. Only University faculty involved with this project and I will see your answers.

Participation is voluntary and you have the right to withdraw at any time. Choosing not to participate will not affect services available to you from WIC or any other source. By returning this completed survey you are providing consent for me to use this information in my study.

For any questions or concerns, you may call Jennifer Priebe at [redacted] or Dr. Ted Knous, Chair, UW-Stout Institutional Review Board for The Protection of Human Subjects in Research, 11 HH, UW-Stout, Menomonie, WI 54751, [redacted] or Barbara Lohse Knous, PhD, RD, LD at [redacted]

Thank You!

If you and your child(ren) have never used herbs, stop here and go to Question #4, then return the survey.

1. ■ In the chart below, **place a check** (✓) by the **herb(s) that you give or have given to your child(ren) for an illness, symptom or disease.**

   ■ Then, **list the reason** (illness, symptom or disease) you give each herb to your child(ren).

   ■ Finally, **list the ages** of the child(ren) that are given the herb(s). For example, if you have three children ages 6 months, 3 years and 6 years, you would put (6mo, 3, 6) in that space.

Herbs	✓ (if used)	Reason For Use (list illness, symptom or disease)	Ages of Children using this herb	Herbs	✓ (if used)	Reason For Use (list illness, symptom or disease)	Ages of Children using this herb
Aloe Vera				Hawthorn			
Astragalus				Hops			
Calendula				Horse Chestnut			
Catnip				Hoxsey			
Cat's Claw				Kava			
Chamomile				Lavender			
Chasteberry				Lemon Balm			
Cranberry				Lemon Grass			
Dandelion				Licorice			
Dong Quai				Manzanilla			
Echinacea				Milk Thistle			
Elderberry				Peppermint			
Essiac				Penny Royal			
Evening Primrose				Slippery Elm			
Fennel				St. John's Wort			
Fennugreek				Tea Tree			
Feverfew				Uva Ursi			
Garlic				Other:_____			
Ginger				Other:_____			
Ginkgo Biloba				Other:_____			
Ginseng				Other:_____			
Goldenseal				Other:_____			

Herbal Use in Children:
Number of Families (with Children) to Survey

Project Number	Number of Families
X	**56**
X	**163**
X	**80**
X	**124**
X	**178**
X	**105**
X	**78**
X	**72**
X	**120**
X	**42**
X	**224**
X	**379**
X	**217**
X	**20**
X	**34**
X	**22**
X	**74**
X	**49**
TOTAL	**2037**

APPENDIX B

Memo Requesting Participation by WIC Project Director of Replacement Project – Phase 1

DIVISION OF PUBLIC HEALTH

1 WEST WILSON STREET
P O BOX 2659
MADISON WI 53701-2659

608-266-1251
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www.dhfs.state.wi.us

State of Wisconsin
Department of Health and Family Services

Scott McCallum
GOVERNOR

TO: [redacted], WIC Project Director
[redacted] Department of Public Health

FROM: Patti Herrick, State WIC Director
Connie Welch, WIC Nutrition Coordinator

DATE: March 9, 2001

RE: Study of Herbal Use in WIC Children – **Response Requested by March 16th**

We are in the process of recruiting WIC Projects to participate in a study of herbal use in WIC children. The study is designed by a student at UW-Stout, working under Dr. Barbara Lohse Knous.

One of the initial Projects is not able to participate (WIC Director is resigning). Your Project is next on the "random" selection list. For more information, please read the enclosed memo that was sent to the original 18 Projects. A copy of the survey is also enclosed. The number of families you are asked to survey is 72, during the month of April.

We hope your Project can participate. **Please respond to Jennifer Priebe at [redacted] or [redacted] by March 16th**. If you have any questions, please Jennifer or me ([redacted] or [redacted]).

Thank you.

Cc: JoAnn Wegenke, Jennifer Priebe, Barbara Lohse Knous

APPENDIX C

Memo Requesting Participation by WIC Project Directors – Phase 2

Memo Attachments

- Example of Survey
- List of Families to Survey

DIVISION OF PUBLIC HEALTH

1 WEST WILSON STREET
P O BOX 2659
MADISON WI 53701-2659

608-266-1251
FAX: 608-267-2832
www.dhfs.state.wi.us

Scott McCallum
GOVERNOR

State of Wisconsin
Department of Health and Family Services

TO: WIC Directors at Projects [redacted]

FROM: Patti Herrick, State WIC Director
Connie Welch, WIC Nutrition Coordinator

DATE: May 7, 2001

RE: Study of Herbal Use in WIC Children

A graduate student at UW-Stout, Jennifer Priebe, working under Dr. Barbara Lohse Knous, would like to help us study the extent of herbal use in WIC children. The use of dietary supplements among adults has significantly increased in the past decade, but the extent of use by children is unknown. This information is very important for a child's health because the health affects of many dietary supplements, especially some herbal and metabolites, are under-researched and may result in growth and developmental problems.

This project has been approved by the UW-Stout Institutional Review Board for the Protection of Human Studies in Graduate Research, and by the Wisconsin Division of Public Health Administrator. Connie has been communicating with Jennifer and Barbara to design the survey and to determine the Projects to survey. Currently nine Projects ([redacted]) are participating in survey distribution. In order to increase the validity of the study, we are requesting your assistance in administering the surveys.

We selected 30% of the Projects in each Region, with various racial/ethnic groups represented. The total participant sample is about 2,500 families with infants and children. A copy of the survey is enclosed. It was pilot-tested and also has been translated into Spanish (for Projects [redacted] and [redacted]). The information to be collected includes caregiver demographic background and supplement use, child supplement use, and the purpose for use. The process includes selecting families randomly by proportioning the number requested (see the enclosed list) amongst all certifications and draft issuances at all your sites in June. For example, if we ask you to survey 80 families, and your caseload is split about 60% at your biggest site, 20% at another site, and 10% at each of 2 others, give the survey to the first 48 families at the biggest site, and 16, 8, and 8, respectively. If a parent/caregiver no-shows for their appointment or refuses to complete the survey, give it to the next family, until all surveys have been distributed and returned to you. Jennifer will tally and analyze the results, and produce a final report due by December.

If you are willing to participate, please contact Jennifer Priebe at [redacted] or [redacted] **by May 23rd**. Additional information, multiple copies of the survey, and instructions will be forthcoming. If you have any questions or comments regarding the project please contact Connie Welch at [redacted] or [redacted] or Jennifer.

Thank you for considering participation in this study. The information will be of benefit to all of us in WIC and public health nutrition.

The typical format may be slightly different, and it will be tri-folded. (Also available in Spanish.

2. Put a check (✓) by the herb(s) that **YOU** have used yourself for an illness, symptom or disease.

Herbs	✓ (if used)	Herbs	✓ (if used)
Aloe Vera		Hawthorn	
Astragalus		Hops	
Calendula		Horse Chestnut	
Catnip		Hoxsey	
Cat's Claw		Kava	
Chamomile		Lavender	
Chasteberry		Lemon Balm	
Cranberry		Lemon Grass	
Dandelion		Licorice	
Dong Quai		Manzanilla	
Echinacea		Milk Thistle	
Elderberry		Peppermint	
Essiac		Penny Royal	
Evening Primrose		Slippery Elm	
Fennel		St. John's Wort	
Fennugreek		Tea Tree	
Feverfew		Uva Ursi	
Garlic		Other:	
Ginger		Other:	
Ginkgo Biloba		Other:	
Ginseng		Other:	
Goldenseal		Other:	

→ → → →

3. How did you get the information about the herbs used? (Check all the apply)

___Family
___Friends
___Television
___Radio
___Book
___Medical Doctor
___Newspaper/Magazine
___Health Food Store Clerk
___Pamphlet/Health Food Store Flier
___Not sure, just heard of it
___Other:_____
___Pharmacist
___Eye Doctor
___Chiropractor
___Dietitian
___Nurse

4. Please complete the following information about **YOURSELF**:

Age (round to the nearest year):____

Sex (circle): M F

Education Level (check one):

____Less than 12th grade
____High School Diploma/GED
____Some post high school
____Completed college

Ethnic Group (check one):

___African American
___Native American
___Don't belong to these groups
___Hispanic
___Hmong
___White

When you have finished filling out the survey, place it into the envelope provided and put into the box marked SURVEYS. ***Thank You!***

FYI - This information is required by the UW-Stout Human Subjects Committee

Hi, I am Jennifer Priebe, a graduate student in the Food and Nutritional Sciences program at the University of Wisconsin-Stout.

Your help by providing any information on herb use by your children would very much be appreciated to help me complete my thesis project.

The purpose of this survey is to study herb usage by children. You do not have to give your name. You will not be able to be identified by anyone. Only University faculty involved with this project and I will see your answers.

Participation is voluntary and you have the right to withdraw at any time. Choosing not to participate will not affect services available to you from WIC or any other source. By returning this completed survey you are providing consent for me to use this information in my study.

For any questions or concerns, you may call Jennifer Priebe at [redacted] or Dr. Ted Knous, Chair, UW-Stout Institutional Review Board for The Protection of Human Subjects in Research, 11 HH, UW-Stout, Menomonie, WI 54751, [redacted] or Barbara Lohse Knous, PhD, RD, LD at [redacted]

Thank You!

If you and your child(ren) have never used herbs, stop here and go to Question #4, then return the survey.

1. ■ In the chart below, **place a check** (✓) by the **herb(s) that you give or have given to your child(ren) for an illness, symptom or disease.**

   ■ Then, **list the reason** (illness, symptom or disease) you give each herb to your child(ren).

   ■ Finally, **list the ages** of the child(ren) that are given the herb(s). For example, if you have three children ages 6 months, 3 years and 6 years, you would put (6mo, 3, 6) in that space.

Herbs	✓ (if used)	Reason For Use (list illness, symptom or disease)	Ages of Children using this herb	Herbs	✓ (if used)	Reason For Use (list illness, symptom or disease)	Ages of Children using this herb
Aloe Vera				Hawthorn			
Astragalus				Hops			
Calendula				Horse Chestnut			
Catnip				Hoxsey			
Cat's Claw				Kava			
Chamomile				Lavender			
Chasteberry				Lemon Balm			
Cranberry				Lemon Grass			
Dandelion				Licorice			
Dong Quai				Manzanilla			
Echinacea				Milk Thistle			
Elderberry				Peppermint			
Essiac				Penny Royal			
Evening Primrose				Slippery Elm			
Fennel				St. John's Wort			
Fennugreek				Tea Tree			
Feverfew				Uva Ursi			
Garlic				Other:_____			
Ginger				Other:_____			
Ginkgo Biloba				Other:_____			
Ginseng				Other:_____			
Goldenseal				Other:_____			

Herbal Use in Children:
Number of Families (with Children) to Survey

Project Number	Number of Families
X	**25**
X	**49**
X	**22**
X	**105**
X	**22**
X	**150**
X	**104**
X	**24**
X	**12**
X	**66**
X	**11**
X	**65**
X	**11**
X	**192**
X	**30**
X	**74**
X	**146**
X	**20**
X	**28**
X	**13**
X	**98**
X	**53**
TOTAL	**1320**

APPENDIX D

Survey Instrument - English

2. Put a check (✓) by the herb(s) that **YOU** have used yourself for an illness, symptom or disease.

Herbs	✓ (if used)	Herbs	✓ (if used)
Aloe Vera		Hawthorn	
Astragalus		Hops	
Calendula		Horse Chestnut	
Catnip		Hoxsey	
Cat's Claw		Kava	
Chamomile		Lavender	
Chasteberry		Lemon Balm	
Cranberry		Lemon Grass	
Dandelion		Licorice	
Dong Quai		Manzanilla	
Echinacea		Milk Thistle	
Elderberry		Peppermint	
Essiac		Penny Royal	
Evening Primrose		Slippery Elm	
Fennel		St. John's Wort	
Fennugreek		Tea Tree	
Feverfew		Uva Ursi	
Garlic		Other:_____	
Ginger		Other:_____	
Ginkgo Biloba		Other:_____	
Ginseng		Other:_____	
Goldenseal		Other:_____	

→ → → →

3. How did you get the information about the herbs used? (Check all the apply)

___Family
___Friends
___Television
___Radio
___Book
___Medical Doctor
___Newspaper/Magazine
___Health Food Store Clerk
___Pamphlet/Health Food Store Flier
___Not sure, just heard of it
___Other:_____
___Pharmacist
___Eye Doctor
___Chiropractor
___Dietitian
___Nurse

4. Please complete the following information about **YOURSELF**:

Age (round to the nearest year):____

Sex (circle): M F

Education Level (check one):

____Less than 12th grade
____High School Diploma/GED
____Some post high school
____Completed college

Ethnic Group (check one):

___African American
___Native American
___Don't belong to these groups
___Hispanic
___Hmong
___White

When you have finished filling out the survey, place it into the envelope provided and put into the box marked SURVEYS.

Thank You!

Hi, I am Jennifer Priebe, a graduate student in the Food and Nutritional Sciences program at the University of Wisconsin-Stout.

Your help by providing any information on herb use by your children would very much be appreciated to help me complete my thesis project.

The purpose of this survey is to study herb usage by children. You do not have to give your name. You will not be able to be identified by anyone. Only University faculty involved with this project and I will see your answers.

Participation is voluntary and you have the right to withdraw at any time. Choosing not to participate will not affect services available to you from WIC or any other source. By returning this completed survey you are providing consent for me to use this information in my study.

For any questions or concerns, you may call Jennifer Priebe at [redacted] or Dr. Ted Knous, Chair, UW-Stout Institutional Review Board for The Protection of Human Subjects in Research, 11 HH, UW-Stout, Menomonie, WI 54751, [redacted], or Barbara Lohse Knous, PhD, RD, LD at [redacted].

Thank You!

If you and your child(ren) have never used herbs, stop here and go to Question #4, then return the survey.

1. ■ In the chart below, **place a check** (✓) by the **herb(s) that you give or have given to your child(ren) for an illness, symptom or disease.**

   ■ Then, **list the reason** (illness, symptom or disease) you give each herb to your child(ren).

   ■ Finally, **list the ages** of the child(ren) that are given the herb(s). For example, if you have three children ages 6 months, 3 years and 6 years, you would put (6mo, 3, 6) in that space.

Herbs	✓ (if used)	Reason For Use (list illness, symptom or disease)	Ages of Children using this herb	Herbs	✓ (if used)	Reason For Use (list illness, symptom or disease)	Ages of Children using this herb
Aloe Vera				Hawthorn			
Astragalus				Hops			
Calendula				Horse Chestnut			
Catnip				Hoxsey			
Cat's Claw				Kava			
Chamomile				Lavender			
Chasteberry				Lemon Balm			
Cranberry				Lemon Grass			
Dandelion				Licorice			
Dong Quai				Manzanilla			
Echinacea				Milk Thistle			
Elderberry				Peppermint			
Essiac				Penny Royal			
Evening Primrose				Slippery Elm			
Fennel				St. John's Wort			
Fenugreek				Tea Tree			
Feverfew				Uva Ursi			
Garlic				Other:_____			
Ginger				Other:_____			
Ginkgo Biloba				Other:_____			
Ginseng				Other:_____			
Goldenseal				Other:_____			

APPENDIX E

- **Institutional Review Board**

- Protection of Human Subjects in Research
- Preliminary Statement of Research: Approval of Research Topic and Protection of Human Subjects

- **WIC Program**

- Agreement for Use of WIC Participant Information for Research

S:graduate student human subjects\Word.
6 '99

University of Wisconsin-Stout
The Graduate College
Protection of Human Subjects in Research
(For All Plan A or Plan B Type Research Projects)

This form must be filed prior to any Graduate Student doing research involving human subjects. A separate form must be completed for their research paper study.

Investigator(s):
(Include full name, student ID #, if appropriate, Department/College, daytime phone number, and your signature)

Jennifer R. Priebe, [redacted] Department of Food and Nutrition

[redacted]

Jennifer R Priebe

Project Title: Use of Herbal Preparations by Children Participating in the Supplemental Nutrition Program for Women, Infants and Children (WIC)

Research Advisor's Signature (if applicable) Barbara Fahrenkrug Date 11-22-00
(Signature means that the advisor has read the student response to this form and confirms the responses to be accurate.)

Degree Major: Food & Nutritional Sciences Dept./College endorsing request approval: Food and Nutrition

Sponsor (Funding agency, if applicable): _____

Is this project being supported by Federal Funding? ___Yes _X_No

You must answer all of the following questions completely and attach all required forms.

1. State the objective and significance of your proposed research.

The objective of this study is to determine the prevalence of herbal usage among children. Many dietary supplements, especially herbal preparations are under-researched, having unkno

2. Does your research involve human subjects or official records about human subjects? _X_Yes ___No
   If YES, continue with this form. ***If NO, stop here, except see 6a-attach project abstract!***

3. Can the subjects be identified directly or through any type of identifiers? ___Yes _X_No
   If YES, please explain.

4. Special precautions must be included in your research procedures if any of these special populations or research areas are included. Are any of the subjects:

			Does the research deal with questions concerning:		
a) minors (under 18 years of age)?	X Yes	No	a) sexual behaviors?	Yes	X No
b) legally incompetent?	Yes	X No	b) drug use?	Yes	X No
c) prisoners?	Yes	X No	c) illegal conduct?	Yes	X No
d) pregnant women, if affected by the research?	X Yes	No	d) use of alcohol?	Yes	X No
e) institutionalized?	Yes	X No			
f) mentally incapacitated?	Yes	X No			

5. Voluntary participation/consent form:
   Describe the method (a) for selecting subjects and (b) for assuring that their participation is voluntary. If subjects are children and they are capable of assent, they must give their permission, along with that of their parent or guardian, or authorized representative. NOTE: A school district cannot give permission or consent on behalf of minor children. If more room is needed, continue on attached page.

A) Any participant of Women, Infants and Children (WIC) site participating in the survey distribution will be given a survey to complete at the time they come to pick up their nutrition vouchers (drafts).

B) The survey will state that the act of returning a completed survey is voluntarily providing consent to use the provided information in the study.

6. **Attachments to this form: (NO ACTION WILL BE TAKEN WITHOUT THESE FORMS)**

_X_ a. Abstract of the proposed study (limited to 1-2 pages).

_X_ b. Consent Form(s). **(A COPY OF THE CONSENT FORM(S) MUST BE ATTACHED.)** Form should include: explanation of procedures, risk, safeguards, freedom to withdraw, confidentiality, offer to answer inquiries, third party referral for concerns, and signature (only if the subjects can be identified by any means. If the survey is strictly anonymous, then a signature is not required.)

_X_ c. Questionnaire/Survey Instrument. **(A COPY MYST BE ATTACHED TO THIS FORM.)** Also, if survey is being conducted verbally, a copy of introductory comments and survey questions being asked must be attached to this form. If the survey is a published/purchased instrument, a photocopy of the complete survey will suffice.

7. **Procedures:** Describe how subjects will be involved in detail, especially if the study involves false or misleading information to subjects or withholds information such that their informed consent might be questioned or if the research uses procedures designed to modify the thinking, attitudes, or other aspects of the behavior of the subjects.

The subject will be given a survey to complete on a volunteer basis. The subject will give information that includes their age, education level, gender and their child's age. Next, the subject is instructed to indicate herbs that they use for themselves and their children.

8. **Confidentiality:** Describe the methods to be used to ensure the confidentiality of data obtained.

A security envelope will be attached to each survey for the subject to place the survey into. The enclosed survey will be given to the WIC staff to put into a larger envelope. When all surveys are returned, the larger envelope will be sealed and mailed to researcher

9. **Risks:** Describe the risks to the subjects and the precautions that will be taken to minimize them. (Risk includes any potential or actual physical risk of discomfort, harassment, invasion of privacy, risk of physical activity, risk to dignity and self-respect, and psychological, emotional, or behavioral risk.) Also, address any procedures that might be different from what is commonly established practice for research of this type.

One risk is that the subjects may get an impression that they should be using some of the herbs listed on the form. Another risk is that the subjects may feel monitored and may not want to participate as often in WIC. The subject may not want to be monitored in any way about what they do to care for their children.

10. **Benefits:** Describe any benefits to the subjects and/or society. (These will be balanced against risk.)

The subjects may have increased awareness of herbal usage among themselves and their children by completing the survey. I ultimately hope to publish these findings to not only add to the existing literature, but to also stimulate further research.

The project or activity described above must adhere to the University's policies and institutional assurance with the U.S. Department of HHS regarding the use of human subjects. University review and approval is required. **REMEMBER: You are in violation of UW-Stout and UW System policies if you begin your study before approval is obtained.**

X Send Copy of Approval to Advisor

Institutional Review Board Action:

✓ Project approved through Expedited Review

___ Project must adhere to the full review process, time of Board meeting: _____

___ Project not approved at this time.

Signature: Susan Eberhardt 12-11-00

Title/date: Chairman, Institutional Review Board / Graduate College Subcommittee — Date

DEC 4 2000

The Graduate School
University of Wisconsin-Stout

PRELIMINARY STATEMENT OF RESEARCH: APPROVAL OF RESEARCH TOPIC AND PROTECTION OF HUMAN SUBJECTS

Student Jennifer (First) R. (Middle) Priebe (Last) Stout I.D. # [redacted]

Address [redacted] (Street) [redacted], WI (City/State) [redacted] (Zip)

Date 11/20/00 Degree Major Food and Nutritional Sciences

Tentative Research Area or Title Use of Herbal Preparations by Children Participating in the Supplemental Nutrition Program for Women, Infants and Children (WIC)

Statement of Problem to be Investigated:
Check one: X Thesis-Plan A ___Problem-Plan B ___Ed.S. Field Study

This study seeks to determine the prevalence of herbal usage by children. This study will target children involved in the Supplemental Nutrition Program for Women, Infants and Children (WIC) in Wisconsin and Kansas. The prevalence of herbal use by children is largely unknown. Since the use of dietary supplements among adults has significantly increased in the past decade, it is not known whether dietary supplements are also being given to their children. Many dietary supplements, especially herbal preparations are under-researched, having unknown effects upon children's growth and development. The prevalence of herbal use will be the target of research efforts to ensure safe use of these preparations by children.

Qualifications of Student for Study:
I have performed an extensive literature search on children's herbal usage. These efforts have led me to discover a need for research in this area. I believe I have sufficient background to be able to ask intelligent questions to determine the prevalence of herbal usage. I obtained a BS in dietetics in May 1999. Currently I am working towards completing my master's degree in the Food and Nutritional Sciences program. I have earned 18 credits towards this degree. Since May 1999, I have worked at the Dunn County Office on Aging as a nutrition intervention specialist. In January 2001, I will begin the dietetic internship at the University of Wisconsin-Stout.

Tentative Design of the Research:

A self-report survey will be distributed to Women, Infants and Children (WIC) sites in Wisconsin [redacted]. The WIC staff will distribute the survey to the participant and provide instructions. Information collected will include the child's age and type of herbals given to both the subject and their children. Demographic information that will be collected from the subject will include age, education level, gender and whether they live in an urban or rural location. Results will be analyzed using SPSS 10.0. Prevalence of product use will be analyzed. Survey results will be compared using t-tests and chi-square to assess differences in geography, age groups, and other demographic factors.

(Over)

Proposed Use of Findings:

I hope to learn which herbs are most frequently given to children and how prevalent this practice is in Wisconsin[redacted]. Once the prevalence of herbal use in children is known, this will alert dietitians, doctors and other members of the healthcare field to this practice. I hope my findings will prompt further research on children's use of herbals in other areas of the country. I also hope my study will prompt research regarding long- and short-term effects of herbal usage in children.

Is information being collected from or about people in this study? Yes X No____

(THE PROTECTION OF HUMAN SUBJECTS FORM AND ALL OTHER PERTINENT INFORMATION MUST BE ATTACHED TO THIS FORM)

In accordance with my research advisor and my graduate program, my research report will be prepared according to the specifications of the following style manual:

American Medical Association Manual of Style
(Name of Style Manual)

I am working with my graduate research adviser and subcommittee for the protection of human subjects in graduate study research. I am submitting this preliminary research plan and understand that legislation requires that protection of human subjects is assured and that my plan for protection is approved before I collect any data.

Student's Signature Jennifer R. Priebe **Date** 11/20/00

1. Acceptance by Research Adviser:
   I recommend and approve the research plan as delineated.

Barbara John Knox — 11-22-00
(Research Adviser's Signature) (Date)

2. Approval by Graduate Program Director:

James Otten — 11/30/00
(Program Director's Signature) (Date)

When each signature above is affixed, bring to the Graduate School Office where it will be forwarded to the Chair of the Committee on Protection of Human Subjects in Graduate Student Research. **Gathering of data should not begin until approval from the Committee on the Protection of Human Subjects in Graduate Student Research has been received.**

FOR OFFICE USE ONLY

Protection of Human Subjects in Graduate Student Research Action:

✓ The Research Design/Protocols are sufficient to protect the Human Subjects and the Researcher

____ This research does not involve human subjects, approved as presented

Approval Signature Susan Eberhard (Committee Chair) Date 12-1-00

Distribution of copies:
(1) Graduate School (2) Research Advisor (3) Program Director (4) Student

DEC 13 2000

104-1001 A/B
Rev. 12/99
Syretaste/Word

Agreement for Use of WIC Participant Information for Research (rev 2/24/00)

Researcher name and position: Jennifer Priebe, Graduate Student
Affiliation: University of Wisconsin-Stout
Telephone/e-mail: [redacted]

Summary of Proposed Study/Research

Summarize the purpose of the study (include information/data to be collected, rationale, references/justification as needed, and anticipated uses of the data).

The purpose of the study is to determine the prevalence of herbal usage in children. This study will target children involved in the Supplemental Nutrition Program for Women, Infants, and Children (WIC) in Wisconsin. The prevalence of herbal use by children is largely unknown. Since the use of dietary supplements among adults has significantly increased in the past decade, it is not known whether dietary supplements are also being given to their children. Many dietary supplements, especially herbal preparations are under-researched, having unknown effects upon children's growth and development. Information that will be collected will include child's age and type of herbals taken by both the caregiver and their children, reason(s) child is given herbs and the source where herbal information is obtained by the caregiver. Demographic information that will be collected about the caregiver will include age, education level, gender and whether they live in an urban or rural location. The data obtained will alert dietitians, doctors and other members of the healthcare field to the practice of herbal use. I hope my findings will prompt further research on children's use of herbals in other areas of the country. I also hope my study will prompt research regarding long- and short-term effects of herbal usage in children.

Summarize the process (include how information/data will be obtained, timeline, etc.)

A self-report survey will be distributed to randomly selected WIC sites in Wisconsin. The WIC staff will distribute the surveys to all caregivers (subjects) when they collect their nutrition voucher. The purpose of the survey and instructions on how to complete it will be provided in the survey. An envelope will be attached to each survey and the caregiver will receive instructions to put the completed survey into the attached envelope. The caregiver will also be instructed to place the envelope into a marked box, which will be available at each site. The caregiver will be allowed to return the survey by the end of the day the following nutrition voucher is to be collected. After this time period, the WIC director will take the surveys out of the box, place them into the provided envelope(s) and return the surveys to the researcher. Depending upon location, the researcher will either personally collect the surveys or have them returned by mail.

Assurances

1. The researcher(s) involved in this Project will keep identifying participant information confidential. No identifying (or potentially identifying) information will be released in any way. (The purpose is to assure compliance with Federal WIC Regulations and Instructions/Policies, which may supersede State of Wisconsin confidentiality statutes.)

2. All materials that go to or are used with participants (e.g., letters, surveys, lists of questions for telephone surveys, etc.) will be reviewed and approved by the State WIC Office prior to implementation. (The purpose is to assure confidentiality and appropriateness for a lower income, low literacy, multi-cultural population.)

3. Procedures for informing appropriate WIC staff (e.g., local WIC staff, DOH Regional Office Nutrition Consultants, USDA) of the study or research will be identified and implemented. (The purpose is to assure that staff who may get questions from participants or local WIC staff are aware of the study, its purpose, etc.)

4. All final drafts of reports, articles, etc. for publication and/or dissemination will be reviewed and approved by the State WIC Office. (The purpose is to assure accuracy of information pertaining to WIC, not study design, etc.)

5. The State WIC Office will provide timely review of materials and expertise pertaining to the best methods to reach/contact the WIC population.

6. Data files, completed participant surveys, etc. will not be shared with other programs or agencies and will be returned to the State WIC Office or destroyed at the conclusion of the research project. No other analyses or publications are permitted without repeating #4.

Signatures

Researcher(s)/Date: Jennifer K. Priebe January 19, 2001
Supervisor/Date: Barbara John Knous January 10, 2001
WIC Program Director/Date: Patti Hunt 3/26/01

APPENDIX F

Survey Instrument - Spanish

2. Marque con este símbolo (✓) la hierba que **USTED** ha usado para alguna enfermedad o síntoma:

Hierba	✓ Si usado	Hierba	✓ Si usado
Ajo		Hops	
Alhucema		Jengibre	
Arbol de Té		Kava	
Arándano		Leche de Cardo	
Astragalo		Limoncillo	
Bálsamo de Limón		Lúpulo	
Baya del saúco		Manzanilla	
Calendula		Menta	
Castaño de Indias		Nébeda	
Centavo Real		Ortiga	
Chasteberry		Pringamosa	
Diente de León		Regaliz	
Dong Quai		Sávila	
Echinacea		Tea Tree	
Fenogreco		Uña de Gato	
Galanga raíz china		Otro:_____	
Gayuba		Otro:_____	
Gingseng		Otro:_____	
Ginkgo Biloba		Otro:_____	
Goldenseal		Otro:_____	
Hepática de San Juan		Otro:_____	
Hinojo		Otro:_____	

→ → → →

3. Como consiguió la información de las hierbas que usted usa o ha usado? (Marque todas las que correspondan)

___Familia
___Amigos
___Televisión
___Radio
___Libro
___Farmacia
___Dietista
___Enfermera
___No estoy segura(o), solamente escuche hablar de ella
___Otro:_____
___Oftalmólogo
___Quiropráctico
___Doctor en Medicina
___Periódico/Revista
___Vendedora de la Tienda Naturista
___Volante en la Tienda Naturista

4. Por favor complete esta información **PERSONAL.**

Edad (al año más cercano):____

Sexo (circule): M F

Nivel de Educación (marque uno):

____Menos de 12^{avo} grado
____Diploma de preparatoria/GED
____Estudios superiores
____Universidad

Grupo Etnico (marque uno):

___Africano-Americano
___Indio Americano
___No pertenezco a estos grupos
___Hispánico
___Asiático
___ Norteamericano (Raza Blanca)

Una vez termine de contestar la encuesta métala en el sobre que se le entregó y colóquela en la caja que dice ENCUESTAS. ***¡ Gracias !***

Hola, me llamo Jennifer Priebe. Soy estudiante de ciencias de la Nutrición en la Univeridad de Wisconsin-Stout.

Su información sobre el uso de las hierbas medicinales de sus niños será muy valiosa para realizar este proyecto.

El propósito de esta encuesta es para realizar un estudio de hierbas medicinales en niños. No es necesario dar su nombre. Nadie podrá identificarle. Solo los universitarios metados en esta encuesta y yo miraremos sus respuestas.

La participación es voluntaria y podrá retirarse en cualquier momento que usted lo desee. Esto no le afectará la participación en el programa WIC o otros servicios sociales. Al contestar esta encuesta me dará autorización para usar esta información en mi estudio.

Si tiene alguna pregunta puede contactara: Jennifer Priebe al telefono: [redacted] o a Ted Knous, Jefe de Investigación y Proyectos del Departamento de Humanidades, 11 HH, UW-Stout, Menomonie, WI 54751, [redacted] o a: Barbara Knous Lohse Knous, PhD, RD, LD al teléfono [redacted]

¡ Gracias !

Si usted y su hijo o hijos nunca han usado hierbas medicinales no continue y pase a la pregunta número 4 y devuelva la encuesta.

1. ■ En la lista a continuación **marque con este símbolo (✓) la ó las hierbas medicinales que usted ha dado o dá a su(s) niño(s) para alguna enfermedad ó síntomas de enfermedad.**

   ■ Después, **escriba la razón** (enfermedad o síntoma) por la cual le ha dado o le da hierbas medicinales a sus niños.

   ■ Finalmente, **escriba las edades** de los niños que reciben o recibieron la o las hierbas medicinales. Por ejemplo, si tiene tres hijos: uno de 6 meses, otro de 3 años y otro de 6 años, escriba: (6m, 3, 6) en el espacio correspondiente.

Hierba	✓ (Si usado)	Razón del uso (escriba enfermedad o síntoma)	Edades de los niños quienes la usan	Hierba	✓ (Si usado)	Razón del uso (escriba enfermedad o síntoma)	Edades de los niños quienes la usan
Ajo				Hops			
Alhucema				Jengibre			
Arbol de Té				Kava			
Arándano				Leche de Cardo			
Astragalo				Limoncillo			
Bálsamo de Limón				Lúpulo			
Baya del saúco				Manzanilla			
Calendula				Menta			
Castaño de Indias				Nébeda			
Centavo Real				Ortiga			
Chasteberry				Pringamosa			
Diente de León				Regaliz			
Dong Quai				Sávila			
Echinacea				Tea Tree			
Fenogreco				Uña de Gato			
Galanga raíz china				Otro:_____			
Gayuba				Otro:_____			
Gingseng				Otro:_____			
Ginkgo Biloba				Otro:_____			
Goldenseal				Otro:_____			
Hepática de San Juan				Otro:_____			
Hinojo				Otro:_____			

APPENDIX G

Survey Instrument - Prior to Pilot Test

4. Put a check (3) by the herb(s) that **YOU as a caregiver** use or have used in the past. Check the white box if you use the herb *currently*. Check the shaded box if you have used the herb only in the *past*.

Herbs	(✓) If Currently Used	(✓) If only used in the Past	Herbs	(✓) If Currently Used	(✓) If only used in the Past
Aloe Vera			Hops		
Astragalus			Horse Chestnut		
Calendula			Hoxsey		
Catnip			Kava		
Cat's Claw			Lavender		
Chamomile			Lemon Balm		
Chaste-berry			Lemon Grass		
Cranberry			Licorice		
Dandelion			Manzanilla		
Dong Quai			Milk Thistle		
Echinacea			Peppermint		
Elderberry			Penny Royal		
Essiac			Slippery Elm		
Evening Primrose			St. John's Wort		
Fennel			Tea Tree		
Fennugreek			Uva Ursi		
Feverfew			Other:_____		
Garlic			Other:_____		
Ginger			Other:_____		
Ginkgo Biloba			Other:_____		
Goldenseal			Other:_____		
Hawthorn			Other:_____		

Hi, I am Jennifer Priebe, a graduate student in the Food and Nutritional Sciences program at the University of Wisconsin-Stout. Your help by providing any information on herbal use by your children would very much be appreciated to help me complete my thesis project. The purpose of this survey is to determine how common herb usage is among children.
The survey is confidential, only the University faculty involved with this research project and I will see the responses. You will not be able to be identified by anyone. Participation is voluntary and you have the right to withdraw at any time. Choosing not to participate will not affect services available to you from WIC or any other source. By returning this completed survey you are providing consent for me to use this information in my study. For any questions or concerns, you may call Jennifer Priebe at _____ or Dr. Ted Knous, Chair, UW-Stout Institutional Review Board for The Protection of Human Subjects in Research, 11 HH, UW-Stout, Menomonie, WI 54751, _____, or Barbara Lohse Knous, PhD, RD, LD at _____.

When you have finished filling out the survey, place it into the envelope provided and put it into the box marked SURVEYS. Thank you!

1. In the chart below, place a check (3) by the herb(s) that you give or have given to your child(ren). Then, list the reason (illness, symptom or disease) you give each herb to your child(ren). Finally, list the ages of the children that are given the herb(s). For example, if you have three children ages 6 months, 3 years and 6 years, you would put (6mo, 3y, 6y) in that space. **If you and your child(ren) have never used herbs, stop here and go to question 2, then return the survey.**

Herbs	✓ (if used)	Reason For Use (list illness, symptom or disease)	Ages of Children using this herb	Herbs	✓ (if used)	Reason For Use (list illness, symptom or disease)	Ages of Children using this herb
Aloe Vera				Hops			
Astragalus				Horse Chestnut			
Calendula				Hoxsey			
Catnip				Kava			
Cat's Claw				Lavender			
Chamomile				Lemon Balm			
Chasteberry				Lemon Grass			
Cranberry				Licorice			
Dandelion				Manzanilla			
Dong Quai				Milk Thistle			
Echinacea				Peppermint			
Elderberry				Penny Royal			
Essiac				Slippery Elm			
Evening Primrose				St. John's Wort			
Fennel				Tea Tree			
Fennugreek				Uva Ursi			
Feverfew				Other:_____			
Garlic				Other:_____			
Ginger				Other:_____			
Ginkgo Biloba				Other:_____			
Goldenseal				Other:_____			
Hawthorn				Other:_____			

2. Please complete the following information about **YOURSELF**:

Age (round to the nearest year):_____

Gender (circle): M F

Education Level (check one):

____a. Less than 12th grade

____b. High School Diploma/GED

____c. Some post high school

____d. Completed college

3. Where did you find information about the herbs you use? (Check all that apply)

____Family
____Friends
____Television
____Newspaper/Magazine
____Pamphlet/Flier in Health Food Store
____Radio
____Book
____Health Food Store Clerk
____Medical Doctor
____Eye Doctor
____Chiropractor
____Dietitian
____Pharmacist
____Nurse
____Not sure, just heard of it
____Other:_____

APPENDIX H

Survey Distribution - Instructions

Instructions for Survey Distribution

1. You will receive a large box that will include 3 items:

    - A box containing surveys that will serve as the survey collection box
    - Script for person(s) who distribute surveys
    - Addressed envelope

2. Remove the surveys and tape the open end of the box.
   This box has a precut slot for persons to deposit completed surveys

To insure confidentiality… surveys should not be returned to WIC staff. WIC staff should direct clients to place the completed survey in the slotted box marked SURVEYS.

3. Please ask WIC staff to review the survey before distribution so that they are able to answer instruction-related questions. Instructions are included on the survey, but clients may have questions that WIC staff could answer.

4. Distribute surveys at the same time as nutrition vouchers to help lessen the chance of a family being surveyed more than once.

5. Surveys should not be distributed to anyone under 18 years old. The Protection of Human Subjects approval is only for adults.

Survey Collection Procedure

When all surveys are collected, open the collection box and transfer the surveys (keep them in the small envelopes) to a large addressed envelope. Send in first class mail.

Questions and concerns about these procedures should be directed to Jennifer Priebe, @ . If email is not an available contact method, call .

APPENDIX I

Survey Distribution – Script

The script below should be followed in order to keep survey distribution the same at all participating sites:

When a participant comes to collect their nutrition voucher say…
Along with the voucher, I'm also giving you a short survey. The purpose of the survey is to study herb usage by children. We are encouraging everyone to complete the survey, even if you don't give your children herbs.

Go on to say…
The survey should only take a couple minutes to complete. When you are finished filling out the survey, you can put the survey in the attached envelope and then put that into the box over there (point to where the box is located). *If you have any questions, feel free to ask me about them. We REALLY appreciate your completing this survey.*

It is important to encourage the participant to complete the survey at the WIC site in order to insure good participation.

APPENDIX J

Coding Rules

CODING RULES

DISQUALIFY SURVEY

- Blank survey
- Caregiver Age <18

DEMOGRAPHIC DATA

Age of Child

- Code age in months. If age of child is 1week, 2 weeks or 3 weeks, code age as .25, .50 and .75 mo, respectively. Otherwise round age to the nearest month.
- Up to five separate ages may be coded. If more than 5 ages are indicated, code only the first five ages listed.
- If abbreviation does not accompany age given, assume age is in years
- If age range is given, code the lowest age.
- If an age for an herb is missing and only 1 child is indicated on the survey, code that age for the herb
- Code as missing
    - Age is not provided and herbs are used by a child
    - Age cannot be determined
    - Only a category is provided, such as "infant"
    - The following type of phrase is used, such as "up to 5 years"
    - An age for an herb is missing and 2 or more children are indicated on the survey

Caregiver Age

- Code as missing
    - Age cannot be determined

Caregiver Gender

- Code as missing
    - Male and female are both circled

Caregiver Education

- If more than 1 education level is indicated, code the highest education level indicated

Caregiver Ethnicity

- If more than 1 ethnicity indicated, code as mixed
- If participants listed an ethnicity not indicated on the survey, code as "don't belong to one of these groups"

DESCRIPTIVE DATA

Number of Children that Use Herbs

- Count ages to determine number of children
- Twins are indicated if an age is repeated in the age column for a specific herb
- If an 18 year old is indicated as a child in question 1, disregard it and do not include in the total of number of children
- Assume 0 children
    - Question 1 is blank
    - If only an ≥18 year old is indicated in question 1
- Assume 1 child
    - Herbal use is apparent, but age is not provided
    - Age range is provided (i.e. 1-12)
    - "+" is provided after age is given (1+)

Indication of Herbal Usage by Children

- Assume herb is not used
    - Just age is marked
- Assume herb is used
    - Herb is checked
    - Reason for usage of herb is given

Reason for Herbal Usage

- Code reasons using the codes listed on the attached value label insert
- Reasons were given the same code only if they had similar connotations
- Up to 3 reasons may be coded for each herb. If more than 3 reasons are indicated, code only the first 3 provided.

Number of Information Sources

- Do not include "not sure, just heard of it" and "other" if no information source is indicated by caregiver next to the blank.
- If only "not sure, just heard of it" is marked, code as 0
- Missing
    - If "other" is marked but no source is indicated
    - Herbs are used by child or caregiver

Type of Information Source

- If pediatrician listed in "other" blank, code as medical doctor
- Only 1 "other" source can be indicated in the blank. If more than 1 is indicated, code the first listed source.
- Missing
    - Herbs are used by either child or caregiver, and no other variable is indicated under question 3.

"Other" Listed Herbs

- Validate that the "other" herbs listed actually are herbs or contain an herb

APPENDIX K

Syntax

```
*STUDY PARTICIPATION.

FREQUENCIES
  VARIABLES=lang
  /ORDER=  ANALYSIS .

*SAMPLE PROFILE - DEMOGRAPHIC CHARACTERISTICS.

FREQUENCIES
  VARIABLES=gvage gvsex gvedu gveth locate
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE SUM
  /ORDER=  ANALYSIS .

*SAMPLE PROFILE - HERBAL USAGE.

FREQUENCIES
  VARIABLES=herbuse
  /ORDER=  ANALYSIS .


*HERBAL USE AMONG CAREGIVERS.

* average number and range of herbs used by caregivers.
USE ALL.
COMPUTE filter_$=(htypegv > 0).
VARIABLE LABEL filter_$ 'htypegv > 0 (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
FREQUENCIES
  VARIABLES=htypegv
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE SUM
  /ORDER=  ANALYSIS .

*frequency of herbal use among caregivers.
FREQUENCIES
  VARIABLES=alogv astgv calgv ctpgv ctcgv chmgv chbgv crbgv dangv dnqgv echgv
  elbgv essgv evegv fengv fgkgv fvrgv gargv gingv gkggv gsggv gldgv hawgv
  hopgv hrsgv hoxgv kavgv lavgv lmbgv lmggv licgv mangv mlkgv pepgv pnygv
  slpgv jongv teagv uvagv ot1gv ot2gv ot3gv ot4gv ot5gv aragv galgv gaygv
  ortgv prigv savgv ot1gv ot2gv ot3gv ot4gv ot5gv
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE SUM
  /ORDER=  ANALYSIS .

*Average number of herb types used by caregivers.
FREQUENCIES
  VARIABLES=htypegv
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN SUM
  /ORDER=  ANALYSIS .

* Range of herb types used by caregivers (will need to count all the different types of
herbals that are listed in the frequency below and add these to the number of herbs
printed on the survey that were indicated by caregivers).
```

```
FREQUENCIES
  VARIABLES=ot1gv ot2gv ot3gv ot4gv ot5gv
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN SUM
  /ORDER=  ANALYSIS .


*ASSOCIATIONS OF HERBAL USAGE BY DEMOGRAPHIC CHARACTERISTIC - COMPARISON
OF
CAREGIVERS THAT GIVE/DO NOT GIVE HERBALS TO THEIR CHILDREN.

*demographic profile of caregivers that give their children herbs.
USE ALL.
COMPUTE filter_$=(ANY(herbuse,1,3)).
VARIABLE LABEL filter_$ 'ANY(herbuse,1,3) (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
FREQUENCIES
  VARIABLES=gvage gvsex gvedu gveth
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE SUM
  /ORDER=  ANALYSIS .

*demographic profile of caregivers that do not give herbs to their children.
USE ALL.
COMPUTE filter_$=(ANY(herbuse,0,2)).
VARIABLE LABEL filter_$ 'ANY(herbuse,0,2) (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
FREQUENCIES
  VARIABLES=gvage gvsex gvedu gveth
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE SUM
  /ORDER=  ANALYSIS .

*does age significantly differ between caregivers who give their children herbs and those
who do not
give their children herbs.
RECODE
herbuse
  (1=1)  (3=1)  (0=2)  (2=2)  INTO  nwherbus .
VARIABLE LABELS nwherbus 'child herb users vs children who are not herbal'+
 ' users'.
EXECUTE .

T-TEST
  GROUPS=nwherbus(1 2)
  /MISSING=ANALYSIS
  /VARIABLES=gvage
  /CRITERIA=CIN(.95) .

*does age significantly (> or equal to 30 and <30 ) differ between caregivers who give
their children herbs and those who do not
give their children herbs.
```

```
RECODE
herbuse
  (1=1)  (3=1)  (0=2)  (2=2)  INTO  nwherbus .
VARIABLE LABELS nwherbus 'child herb users vs children who are not herbal'+
 ' users'.
EXECUTE .

RECODE
  gvage
  (Lowest thru 29=1)  (30 thru Highest=2)  INTO  gvage30 .
EXECUTE .

CROSSTABS
  /TABLES=nwherbus  BY gvage30
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .

*does education level significantly differ between caregivers who give their children
herbs and those who do
not give their children herbs.
RECODE
herbuse
  (1=1)  (3=1)  (0=2)  (2=2)  INTO  nwherbus .
VARIABLE LABELS nwherbus 'child herb users vs children who are not herbal'+
 ' users'.
EXECUTE .

T-TEST
  GROUPS=nwherbus(1 2)
  /MISSING=ANALYSIS
  /VARIABLES=gvedu
  /CRITERIA=CIN(.95) .

RECODE
  gvedu
  (1 thru 2=1)  (3 thru 4=2)  INTO  gvedupst .
EXECUTE .

CROSSTABS
  /TABLES=nwherbus  BY gvedupst
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .

RECODE
  gvedu
  (1=1)  (2=2)  INTO  gveduhs .
EXECUTE .

CROSSTABS
  /TABLES=nwherbus  BY gveduhs
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .
```

```
RECODE
  gvedu
  (3=1)  (4=2)  INTO  gveducol .
EXECUTE .

CROSSTABS
  /TABLES=nwherbus  BY gveducol
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .


*Is there a significant difference in the frequency of herbal use among children from
a rural and urban location.
RECODE
  herbuse
  (1=1)  (3=1)  (0=2)  (2=2)  INTO  nwherbus .
VARIABLE LABELS nwherbus 'child herb users vs children who are not herbal'+
 ' users'.
EXECUTE .

CROSSTABS
  /TABLES=nwherbus  BY locate
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .

*Is there a significant difference in the frequency of herbal use among children of
caregivers
of the female and male gender.
RECODE
  herbuse
  (1=1)  (3=1)  (0=2)  (2=2)  INTO  nwherbus .
VARIABLE LABELS nwherbus 'child herb users vs children who are not herbal'+
 ' users'.
EXECUTE .

CROSSTABS
  /TABLES=nwherbus  BY gvsex
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .

*Is there a significant difference in the frequency of herbal use among children whose
caregivers are white and caregivers of other ethnicities.
RECODE
  herbuse
  (1=1)  (3=1)  (0=2)  (2=2)  INTO  nwherbus .
VARIABLE LABELS nwherbus 'child herb users vs children who are not herbal'+
 ' users'.
EXECUTE .

RECODE
```

```
  gveth
  (6=1)  (7=2)  (1 thru 5=2)  INTO  newgveth .
VARIABLE LABELS newgveth 'whites vs other ethnicities'.
EXECUTE .

CROSSTABS
  /TABLES=nwherbus  BY newgveth
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .

*Is there a significant difference in the frequency of herbal use among children whose
caregivers are hispanic and careigivers of other ethnicities.

RECODE
  herbuse
  (1=1)  (3=1)  (0=2)  (2=2)  INTO  nwherbus .
VARIABLE LABELS nwherbus 'child herb users vs children who are not herbal'+
 ' users'.
EXECUTE .

RECODE
  gveth
  (4=1)  (5 thru 7=2)  (1 thru 3=2)  INTO  hisgveth .
VARIABLE LABELS hisgveth 'hispanics vs other ethnicities'.
EXECUTE .

CROSSTABS
  /TABLES=nwherbus  BY hisgveth
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .


*ASSOCIATIONS OF HERBAL USAGE BY DEMOGRAPHIC CHARACTERISTIC - Comparison of
Families That Use/Do Not Use Herbals

*demographic profile of caregivers in a family where either the child and/or caregiver
use herbs.
USE ALL.
COMPUTE filter_$=(ANY(herbuse,1,2,3)).
VARIABLE LABEL filter_$ 'ANY(herbuse,1,2,3) (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
FREQUENCIES
  VARIABLES=gvage gvsex gvedu gveth
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE SUM
  /ORDER=  ANALYSIS .

*demographic profile of caregivers in a family where NEITHER the child and/or caregiver
use herbs.
USE ALL.
```

```
COMPUTE filter_$=(ANY(herbuse,0)).
VARIABLE LABEL filter_$ 'ANY(herbuse,0) (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
FREQUENCIES
  VARIABLES=gvage gvsex gvedu gveth
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE SUM
  /ORDER=  ANALYSIS .

*Does age of caregiver significantly differ between families where herbal usage occurs
and families where herbal usage does not occur.

RECODE
herbuse
  (1=1)  (2=1)  (3=1)  (0=2)  INTO  nwhrbfam .
VARIABLE LABELS nwhrbfam ' herb users vs not herbal'+
 ' users'.
EXECUTE .

T-TEST
  GROUPS=nwhrbfam(1 2)
  /MISSING=ANALYSIS
  /VARIABLES=gvage
  /CRITERIA=CIN(.95) .

RECODE
  gvage
  (Lowest thru 29=1)  (30 thru Highest=2)  INTO  gvage30 .
EXECUTE .

CROSSTABS
  /TABLES=nwhrbfam  BY gvage30
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .

*Does educational level of caregiver significantly differ between families where herbal
usage occurs and families
where herbal usage does not occur.
RECODE
herbuse
  (1=1)  (2=1)  (3=1)  (0=2)  INTO  nwhrbfam .
VARIABLE LABELS nwhrbfam 'herb users vs not herbal'+
 ' users'.
EXECUTE .

T-TEST
  GROUPS=nwhrbfam(1 2)
  /MISSING=ANALYSIS
  /VARIABLES=gvedu
  /CRITERIA=CIN(.95) .

RECODE
```

```
  gvedu
  (1 thru 2=1)  (3 thru 4=2)  INTO  gvedupst .
EXECUTE .

CROSSTABS
  /TABLES=nwhrbfam  BY gvedupst
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .


RECODE
  gvedu
  (1=1)  (2=2)  INTO  gveduhs .
EXECUTE .

CROSSTABS
  /TABLES=nwhrbfam  BY gveduhs
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .


RECODE
  gvedu
  (3=1)  (4=2)  INTO  gveducol .
EXECUTE .

CROSSTABS
  /TABLES=nwhrbfam  BY gveducol
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .

*Is there a significant difference in the frequency of herbal use among families from a
rural vs urban location.
RECODE
  herbuse
  (1=1)  (2=1)  (3=1)  (0=2)  INTO  nwhrbfam .
VARIABLE LABELS nwhrbfam 'families herb users vs families who are not herbal'+
  ' users'.
EXECUTE .

CROSSTABS
  /TABLES=nwhrbfam  BY locate
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .

*Is there a signficant difference in the frequency of herbal use among children whose
caregivers
of the female vs male gender.
RECODE
  herbuse
  (1=1)  (2=1)  (3=1)  (0=2)  INTO  nwhrbfam .
```

```
VARIABLE LABELS nwhrbfam 'families herb users vs families who are not herbal'+
 ' users'.
EXECUTE .

CROSSTABS
  /TABLES=nwhrbfam  BY gvsex
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .

*Is there a significant difference in the frequency of herbal use among children whose
caregivers
are white and caregivers of other ethnicities.
RECODE
  herbuse
  (1=1)  (2=1)  (3=1)  (0=2)  INTO  nwhrbfam .
VARIABLE LABELS nwhrbfam 'families herb users vs families who are not herbal'+
 ' users'.
EXECUTE .

RECODE
  gveth
  (6=1)  (7=2)  (1 thru 5=2)  INTO  newgveth .
VARIABLE LABELS newgveth 'whites vs other ethnicities'.
EXECUTE .

CROSSTABS
  /TABLES=nwhrbfam  BY newgveth
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .

RECODE
  gveth
  (4=1)  (5 thru 7=2)  (1 thru 3=2)  INTO  hisgveth .
VARIABLE LABELS hisgveth 'hispanics vs other ethnicities'.
EXECUTE .

CROSSTABS
  /TABLES=nwhrbfam  BY hisgveth
  /FORMAT= AVALUE TABLES
  /STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR
  /CELLS= COUNT EXPECTED ROW COLUMN TOTAL .

*HERBAL USE AMONG CHILDREN.

* Identify the average number and range of herb types of herbs used by children per
family – among child herbal users.
USE ALL.
COMPUTE filter_$=(htypecd > 0).
VARIABLE LABEL filter_$ 'htypecd > 0 (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
```

```
EXECUTE .
FREQUENCIES
  VARIABLES=htypecd
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE SUM
  /ORDER=  ANALYSIS .

*number of children using each herb.
COUNT
  aloage = aloage1 aloage2 aloage3 aloage4 aloage5  (MISSING)  aloage1
  aloage2 aloage3 aloage4 aloage5  (.25 thru 210)  .
VARIABLE LABELS aloage 'number of children using aloe vera' .
EXECUTE .
FREQUENCIES
  VARIABLES=aloage
  /ORDER=  ANALYSIS .

DO IF (ot1cd = 1) .
COUNT
  aniage = ot1age1 ot1age2 ot1age3 ot1age4 ot1age5  (MISSING)  ot1age1
ot1age2 ot1age3 ot1age4 ot1age5 (.25 thru 210).
END IF .
EXECUTE .

*families represented.

FREQUENCIES
  VARIABLES=alocd astcd calcd ctpcd ctccd chmcd chbcd crbcd dancd dnqcd echcd
elbcd esscd evecd fencd fgkcd fvrcd garcd gincd gkgcd gsgcd gldcd hawcd hopcd hrscd
hoxcd kavcd lavcd lmbcd lmgcd liccd mancd mlkcd pepcd pnycd slpcd joncd teacd
uvacd
aracd galcd gaycd ortcd pricd savcd otcd1 otcd2
  /ORDER=  ANALYSIS .

*this syntax was done in order to get the number of children in each of the
age ranges specified below including newborns, infants, early childhood,
middle childhood, and adolescents (also children below 5 years old which is
the sum of newborns, infants and early childhood).

COUNT newalo=aloage1 aloage2 aloage3 aloage4 aloage5 (.25 thru .75)
           /infalo=aloage1 aloage2 aloage3 aloage4 aloage5 (1 thru 11)
          /earalo=aloage1 aloage2 aloage3 aloage4 aloage5 (12 thru 59)
          /midalo=aloage1 aloage2 aloage3 aloage4 aloage5 (60 thru 131)
          /adlalo=aloage1 aloage2 aloage3 aloage4 aloage5 (132 thru 210).

FREQUENCIES
  VARIABLES=newalo infalo earalo midalo adlalo
  /STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN
  /ORDER=  ANALYSIS .

*Number - Newborns.

COMPUTE newall = newalo + newast + newcal + newctp + newctc + newchm + newchb +
newcrb + newdan + newdnq + newech + newelb + newess + neweve + newfen + newfgk
+ newfvr + newgar + newgin + newgkg + newgsg + newgld + newhaw + newhop +
```

```
newhrs + newhox + newkav + newlav + newlmb + newlmg + newlic + newman + newmlk
+ newpep + newpny + newslp + newjon + newtea + newuva + newara + newgal + newgay
+ newort + newpri + newsav + newot1 + newot2 + newot3 + newot4 + newot5.
EXECUTE .
FREQUENCIES
  VARIABLES=newall
  /ORDER=  ANALYSIS .

*Number – Infants.

COMPUTE infall = infalo + infast + infcal + infctp + infctc + infchm + infchb + infcrb +
infdan + infdnq + infech + infelb + infess + infeve + inffen + inffgk + inffvr + infgar +
infgin + infgkg + infgsg + infgld + infhaw + infhop + infhrs + infhox + infkav +
inflav + inflmb + inflmg + inflic + infman + infmlk + infpep + infpny + infslp + infjon +
inftea + infuva + infara + infgal + infgay + infort + infpri + infsav + infot1 + infot2 +
infot3 + infot4 + infot5.
EXECUTE .
FREQUENCIES
  VARIABLES=infall
  /ORDER=  ANALYSIS .

*Number – Early Childhood.

COMPUTE earall = earalo + earast + earcal + earctp + earctc + earchm + earchb + earcrb
+
eardan + eardnq + earech + earelb + earess + eareve + earfen + earfgk + earfvr + eargar
+
eargin + eargkg + eargsg + eargld + earhaw + earhop + earhrs + earhox + earkav +
earlav + earlmb + earlmg + earlic + earman + earmlk + earpep + earpny + earslp + earjon
+
eartea + earuva + earara + eargal + eargay + earort + earpri + earsav + earot1 + earot2 +
earot3 + earot4 + earot5.
EXECUTE .
FREQUENCIES
  VARIABLES=earall
  /ORDER=  ANALYSIS .

*Number – Middle Childhood.

COMPUTE midall = midalo + midast + midcal + midctp + midctc + midchm + midchb +
midcrb +
middan + middnq + midech + midelb + midess + mideve + midfen + midfgk + midfvr +
midgar +
midgin + midgkg + midgsg + midgld + midhaw + midhop + midhrs + midhox + midkav
+
midlav + midlmb + midlmg + midlic + midman + midmlk + midpep + midpny + midslp +
midjon +
midtea + miduva + midara + midgal + midgay + midort + midpri + midsav + midot1 +
midot2 +
midot3 + midot4 + midot5.
EXECUTE .
FREQUENCIES
  VARIABLES=midall
  /ORDER=  ANALYSIS .
```

```
* Number – Adolescents.

COMPUTE adlall = adlalo + adlast + adlcal + adlctp + adlctc + adlchm + adlchb + adlcrb +
adldan + adldnq + adlech + adlelb + adless + adleve + adlfen + adlfgk + adlfvr + adlgar +
adlgin + adlgkg + adlgsg + adlgld + adlhaw + adlhop + adlhrs + adlhox + adlkav +
adllav + adllmb + adllmg + adllic + adlman + adlmlk + adlpep + adlpny + adlslp + adljon
+
adltea + adluva + adlara + adlgal + adlgay + adlort + adlpri + adlsav + adlot1 + adlot2 +
adlot3 + adlot4 + adlot5.
EXECUTE .
FREQUENCIES
  VARIABLES=adlall
  /ORDER=  ANALYSIS .


*mean, standard deviation, median age of children using each herb
.
IF (aloage1 > 0 | aloage2 > 0 | aloage3 > 0 | aloage4 > 0 | aloage5 > 0)
  aloage = aloage1 + aloage2 + aloage3 + aloage4 + aloage5 .
EXECUTE .
FREQUENCIES
  VARIABLES=aloage
  /STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN
  /ORDER=  ANALYSIS .

*Mean, standard deviation, median age of children that used herbs listed in “other”
blank.

FREQUENCIES
  VARIABLES=ot1cd ot2cd ot3cd ot4cd ot5cd
  /ORDER=  ANALYSIS .

COMPUTE filter_$=(ot1cd = 14 | ot2cd = 14).
VARIABLE LABEL filter_$ 'ot1cd = 14 | ot2cd = 14 (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .

IF (ot1age1 > 0 | ot1age2 > 0 | ot1age3 > 0 | ot1age4 > 0 | ot1age5 > 0 |
ot2age1 > 0 | ot2age2 > 0 | ot2age3 > 0 | ot2age4 > 0 | ot2age5 > 0)
otage =  ot1age1 + ot1age2 + ot1age3 + ot1age4 + ot1age5 +
ot2age1 + ot2age2 + ot2age3 + ot2age4 + ot2age5.
EXECUTE .
FREQUENCIES
  VARIABLES=otage
  /STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN
  /ORDER=  ANALYSIS .

*Upper-end of age range for each herb.

FREQUENCIES
  VARIABLES=aloage1 aloage2 aloage3 aloage4 aloage5
  /STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN
```

```
  /ORDER=  ANALYSIS .

*Lower-end of age range for each herb.

FREQUENCIES
  VARIABLES=aloage1 aloage2 aloage3 aloage4 aloage5 astage1 astage2 astage3
  astage4 astage5 calage1  calage2  calage3  calage4  calage5 ctpage1  ctpage2
 ctpage3  ctpage4  ctpage5 ctcage1  ctcage2  ctcage3  ctcage4  ctcage5
chmage1  chmage2  chmage3  chmage4  chmage5 chbage1  chbage2  chbage3
 chbage4  chbage5 crbage1 crbage2  crbage3 crbage4 crbage5 danage1 danage2
  danage3  danage4  danage5 dnqage1 dnqage2 dnqage3 dnqage4 dnqage5
 echage1 echage2 echage3  echage4 echage5 elbage1  elbage2 elbage3
elbage4  elbage5 essage1  essage2  essage3 essage4  essage5 eveage1
eveage2  eveage3  eveage4  eveage5 fenage1  fenage2  fenage3  fenage4
fenage5 fgkage1  fgkage2  fgkage3 fgkage4  fgkage5 fvrage1  fvrage2
fvrage3  fvrage4  fvrage5 garage1  garage2  garage3  garage4  garage5
ginage1  ginage2  ginage3  ginage4 ginage5 gkgage1  gkgage2  gkgage3
 gkgage4  gkgage5 gsgage1  gsgage2  gsgage3  gsgage4  gsgage5
gldage1  gldage2  gldage3  gldage4 gldage5 hawage1  hawage2
hawage3  hawage4  hawage5 hopage1  hopage2  hopage3  hopage4 hopage5
hrsage1  hrsage2  hrsage3  hrsage4  hrsage5 hoxage1  hoxage2  hoxage3
 hoxage4  hoxage5 kavage1  kavage2 kavage3  kavage4  kavage5
lavage1  lavage2  lavage3  lavage4  lavage5 lmbage1  lmbage2  lmbage3
 lmbage4  lmbage5 lmgage1  lmgage2 lmgage3  lmgage4  lmgage5
licage1  licage2  licage3  licage4 licage5 manage1  manage2  manage3
 manage4  manage5 mlkage1  mlkage2  mlkage3  mlkage4  mlkage5
pepage1  pepage2  pepage3  pepage4  pepage5 pnyage1  pnyage2
pnyage3 pnyage4  pnyage5 slpage1  slpage2  slpage3  slpage4
slpage5 jonage1  jonage2  jonage3  jonage4  jonage5 teaage1  teaage2
 teaage3 teaage4  teaage5 uvaage1  uvaage2 uvaage3  uvaage4
 uvaage5 araage1  araage2  araage3  araage4  araage5
galage1  galage2  galage3  galage4  galage5 gayage1  gayage2
gayage3  gayage4  gayage ortage1  ortage2 ortage3  ortage4  ortage5
priage1  priage2  priage3  priage4  priage5 savage1  savage2  savage3
 savage4 savage5
/ORDER=  ANALYSIS .

*Frequency of each reason among all herbs.

COUNT
  herb100 = alor1 alor2 alor3 astr1 astr2 astr3 calr1 calr2 calr3 ctpr1 ctpr2
  ctpr3 ctcr1 ctcr2 ctcr3 chmr1 chmr2 chmr3 chbr1 chbr2 chbr3 crbr1 crbr2
  crbr3 danr1 danr2 danr3 dnqr1 dnqr2 dnqr3 echr1 echr2 echr3 elbr1 elbr2
  elbr3 essr1 essr2 essr3 ever1 ever2 ever3 fenr1 fenr2 fenr3 fgkr1 fgkr2
  fgkr3 fvrr1 fvrr2 fvrr3 garr1 garr2 garr3 ginr1 ginr2 ginr3 gkgr1 gkgr2
  gkgr3 gsgr1 gsgr2 gsgr3 gldr1 gldr2 gldr3 hawr1 hawr2 hawr3 hopr1 hopr2
  hopr3 hrsr1 hrsr2 hrsr3 hoxr1 hoxr2 hoxr3 kavr1 kavr2 kavr3 lavr1 lavr2
  lavr3 lmbr1 lmbr2 lmbr3 lmgr1 lmgr2 lmgr3 licr1 licr2 licr3 manr1 manr2
  manr3 mlkr1 mlkr2 mlkr3 pepr1 pepr2 pepr3 pnyr1 pnyr2 pnyr3 slpr1 slpr2
  slpr3 jonr1 jonr2 jonr3 tear1 tear2 tear3 uvar1 uvar2 uvar3 ot1r1 ot1r2
  ot1r3 ot2r1 ot2r2 ot2r3 ot3r1 ot3r2 ot3r3 ot4r1 ot4r2 ot4r3 ot5r1 ot5r2
  ot5r3 arar1 arar2 arar3 galr1 galr2 galr3 gayr1 gayr2 gayr3 ortr1 ortr2
  ortr3 prir1 prir2 prir3 savr1 savr2 savr3  (100)  .
EXECUTE .
```

```
FREQUENCIES
  VARIABLES=herb100 herb101 herb102 herb103 herb104 herb105 herb106 herb107
herb108 herb109 herb110 herb111 herb112 herb113 herb114 herb115 herb116
herb117
herb118 herb119 herb120 herb121 herb122 herb123 herb124 herb125 herb126
herb127
herb128 herb129 herb130 herb131 herb132 herb133 herb208 herb200 herb201
herb202 herb203
herb204 herb205 herb206 herb207 herb300 herb301 herb302 herb303 herb304
herb305 herb306
herb307 herb308 herb309 herb310 herb311 herb312 herb313 herb314 herb315
herb316 herb317
herb318 herb319 herb320 herb400 herb401 herb402 herb501 herb502 herb503
herb504 herb505
herb506 herb507 herb508 herb509 herb510 herb511 herb512 herb513 herb514
herb601 herb602
herb603 herb604 herb605 herb606 herb607 herb608 herb609 herb610 herb611
herb612
herb614 herb701 herb702 herb703 herb704 herb705 herb706 herb707 herb708
herb709 herb710
herb711 herb712 herb800
  /ORDER=  ANALYSIS .

*Frequency of each reason for each herb.

FREQUENCIES
  VARIABLES=alor1 alor2 alor3 astr1 astr2 astr3 calr1 calr2 calr3 ctpr1 ctpr2
  ctpr3 ctcr1 ctcr2 ctcr3 chmr1 chmr2 chmr3 chbr1 chbr2 chbr3 crbr1 crbr2
  crbr3 danr1 danr2 danr3 dnqr1 dnqr2 dnqr3 echr1 echr2 echr3 elbr1 elbr2
  elbr3 essr1 essr2 essr3 ever1 ever2 ever3 fenr1 fenr2 fenr3 fgkr1 fgkr2
  fgkr3 fvrr1 fvrr2 fvrr3 garr1 garr2 garr3 ginr1 ginr2 ginr3 gkgr1 gkgr2
  gkgr3 gsgr1 gsgr2 gsgr3 gldr1 gldr2 gldr3 hawr1 hawr2 hawr3 hopr1 hopr2
  hopr3 hrsr1 hrsr2 hrsr3 hoxr1 hoxr2 hoxr3 kavr1 kavr2 kavr3 lavr1 lavr2
  lavr3 lmbr1 lmbr2 lmbr3 lmgr1 lmgr2 lmgr3 licr1 licr2 licr3 manr1 manr2
  manr3 mlkr1 mlkr2 mlkr3 pepr1 pepr2 pepr3 pnyr1 pnyr2 pnyr3 slpr1 slpr2
  slpr3 jonr1 jonr2 jonr3 tear1 tear2 tear3 uvar1 uvar2 uvar3 arar1 arar2
  arar3 galr1 galr2 galr3 gayr1 gayr2 gayr3 ortr1 ortr2 ortr3 prir1 prir2
  prir3 savr1 savr2 savr3
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE SUM
  /ORDER=  ANALYSIS .

USE ALL.
COMPUTE filter_$=(ot1cd = 1).
VARIABLE LABEL filter_$ 'ot1cd = 1 (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
FREQUENCIES
  VARIABLES=ot1r1 ot1r2 ot1r3
  /ORDER=  ANALYSIS .
```

```
*average number and range of information sources used in families where the child uses
an herb.
USE ALL.
COMPUTE filter_$=(ANY(herbuse,1,3)).
VARIABLE LABEL filter_$ 'ANY(herbuse,1,3) (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
FREQUENCIES
  VARIABLES=numinfo
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE SUM
  /ORDER=  ANALYSIS .

* Information Sources Caregivers Use in Families Where Children are Given Herbs.
USE ALL.
COMPUTE filter_$=(ANY(herbuse,1,3)).
VARIABLE LABEL filter_$ 'ANY(herbuse,1,3) (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
FREQUENCIES
  VARIABLES=faminfo frdinfo telinfo radinfo bkinfo mdinfo newinfo clrinfo
  flrinfo notinfo otinfo phminfo eyeinfo chiinfo rdinfo rninfo
  /ORDER=  ANALYSIS .

*number of information sources used when a single source
was indicated.

FILTER OFF.
USE ALL.
SELECT IF(ANY(herbuse,1,3)).
EXECUTE .
FILTER OFF.
USE ALL.
SELECT IF(numinfo = 1).
EXECUTE .

FREQUENCIES
  VARIABLES=faminfo frdinfo telinfo radinfo bkinfo mdinfo newinfo clrinfo
  flrinfo notinfo otinfo phminfo eyeinfo chiinfo rdinfo rninfo
  /ORDER=  ANALYSIS .
```

APPENDIX L

Table 1. Herbal Usage Among Caregivers[a]

Horse Chestnut 5	Astragulas 4	Cat's Claw 4	Chasteberry 3
Linden 3	Essiac 2	Hawthorn 2	Uva Ursi 2
Raspberry 2	Raspberry Leaf 2	Mother's Milk Tea[b] 2	Ani Estrella/ Anis De Estrella[c] 2
Arnica 2	Epasote[d] 2	Gayuba[e] 2	Laurel 1
Nutritrim[f] 1	Onion 1	OPC-3[g] 1	Rose Hips 1
Sacred Bark 1	Thyme 1	Valerian 1	Horehound 1
Herbal Tea 1	Metabolife[h] 1	Poleo[i] 1	Estafiate[j] 1
Coriander 1	False Unicorn 1	Green Tea 1	Ciruela Pasa[k] 1
Black Negro 1	Apple Pectin 1	Linseed 1	Gordo Lobo[l] 1
Marshmallow 1	Cola de Caballo[m] 1	Blue Konash 1	

[a]Herbs used by $\leq$ 5 caregivers are represented. Table Entries are Frequencies. Each herb was used by <1 percent of caregivers that use/have used herbs. Translations not referenced were provided by the Spanish translator; [b]Combination of Fennugreek, Lemon Verbena, Coriander, Blessed Thistle, Lemongrass, Spearmint, Althea Root, Fennel and Anise[1]; [c]Star Anise; [d]Wormseed[2]; [e]Guava; [f]Contains Cornsilk, Parsley and Uva Ursi[3]; [g]Contains Pine Bark, Grapeseed and Bilberry[4]; [h]Contains an herbal blend containing Ma Huang[5]; [i]Penny Royal[2,6]/Peppermint[7]; [j]Wormwood[8,9]; [k]Prune[10,11]; [l]Pearly Everlasting[6]; [m]Horse Tail[2,6]

Table 2. Herbal Usage Among Children[a]

Rishi Mushroom 5/1	Evening Primrose 4/3	Fennugreek 4/2	Savila[b] 4/3
Cat's Claw 3/3	Chasteberry 3/2	Essiac 3/3	Kava 3/3
Milk Thistle 3/3	Thyme 3/1	Horse Chestnut 2/2	Gayuba[c] 2/1
Anise 2/2	Red Clover 2/2	Cinnamon 2/2	Limon[d] 2/2
Ani Estrella[e] 2/2	Albahaca[f] 2/2	Laurel 1/1	Orange Herbs 1/1
Horehound 1/1	Poleo[g] 1/1	Cedron[h] 1/1	Esberitox[i] 1/1
Estafiate[j] 1/1	Ciruela Pasa[k] 1/1	Toranja[l] 1/1	

[a]Table entries are frequencies. Children utilizing herb/Families giving herb to children. Translations not referenced were provided by the Spanish translator; [b]Unidentified; [c]Guava; [d]Lemon[8]/Key Lime[10]; [e]Star Anise; [f]Basil; [g]Penny Royal[2,6]/Peppermint[7]; [h]Lemon Verbena[6]; [i]Contains Echinacea, White Cedar and Wild Indigo[12]; [j]Wormwood[8,9]; [k]Prune[10,11]; [l]Grapefruit

Table 3. Reasons for the Use of Herbals by Children

Reasons	Families*
Burn	146
Food/Cooking/Flavor/Drinking	132
Colic	81
Cold	73
Stomach Ache	51
Cut/Scrape/Abrasion	50
Dry Skin/Itching	37
Calming/Relaxation	35
Indigestion/Upset Stomach	32
Bathing	32
Rash/Hives	29
Illness/Symptom	26
Gas	26
Undefinitve Answer	20
Lotion	20
Stomach	17
Skin	13
Flu	13
Insomnia/Sleep time/Rest/Sleep	12
Cough	12
UTI/Bladder Infection	11
Urinary/Urination/Bladder	11
Sore Throat	10
Fatigue	9
Immune System	9
Eczema	8
Constipation	7
Teething	7
Diarrhea	6
Fever	6
Congestion	5
Headache	5
Ear Infection	5
Vitamin	5
Clean/Cleans System	5
Irritability/Fussy	4
Prevention	4
Salve	4
Energy	4
Well Being/Overall Wellness	3
Bug Bites	3

*One survey is equivalent to one family

Table 3. Reasons for the Use of Herbals by Children Cont

Reasons	Families*
Sore	3
Depression	3
Wart	3
Yeast Infection/Yeast	3
Shampoo	3
Nerves	2
Digestion	2
Mental alertness/Memory Help	2
Bad Breath/Breath	2
Cramps	2
Runny nose	2
Pain	2
Scar	2
Chicken Pox	2
Cold Sores	2
Lice	2
Poison Ivy	2
Blood/Healthy Blood/High Blood	2
Heart/Heart Immune	2
Throat	2
Toothpaste	2
Sunscreen	2
Antibiotic	2
Aromatherapy/Smell	2
Cure All	2
Mood Enhancer	2
Anxiety	1
Vomiting	1
Bronchitis	1
Sensitive Skin	1
Body Aches	1
Ear Ache	1
Hiccups	1
Injury	1
Broken bone	1
Bruises	1
Asthma	1
High Blood Pressure	1
Lead Poisoning	1
Measles	1
Ringworm	1
Skin Allergies	1

*One survey is equivalent to one family

Table 3. Reasons for the Use of Herbals by Children Cont

Reasons	Families*
To Stay Healthy	1
Bones	1
Brain/Mind Meds	1
Chest	1
Cholesterol	1
Ears	1
Fingers, Diabetic	1
Massage	1
Health Reason	1
Healing	1
Eye Drops	1
Antioxidant	1
Bug Repellent	1
Hair	1
Diaper Wipes	1
Pill	1
Powder	1

*One survey is equivalent to one family

Table 4. Reasons Individual Herbs Were Given to Children[a]

Aloe Vera	Burn (145) Cut (37) Dry Skin (31) Rash/Hives (17) Lotion (15) Skin (9) Eczema (4) Illness/Symptom (3) Bug Bites (3) Sore (3) Scar (2)/ Cold (2)/ Sunscreen (2) Stomach Ache (1)/ Ear Infection (1)/ Poison Ivy (1)/ Hair (1)/ Diaper Wipes (1)/ Healing (1)/ Indigestion/Upset Stomach (1)/ Fatigue (1)/ Bruises (1)/ Stomach (1)/ Injury (1)/ Urination/Bladder (1)
Astragalus	Cold (3) Flu (1)/ Cough (1)
Calendula	Rash/Hives (5) Cut (3) Sensitive Skin (1)/ Dry skin (1)/ Poison Ivy (1)/ Salve (1)

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Table 4. Reasons Individual Herbs Were Given to Children Cont[a]

Catnip	Rash/Hives (4) Stomach ache (2)/ Insomnia/Sleep (2) Calming/Relaxation (1)/ Colic (1)/ Gas (1)/ Chicken Pox (1)/ Cold (21)/ Measles (1)/ Stomach (1)/ Food (1)/ Indigestion/Upset Stomach (1)/ Fatigue (1)/ Teething (1)
Cat's Claw	Cold (1)/ Yeast Infection/Yeast (1)/
Chamomile	Calming/Relaxation (16) Bathwater (10) Cold (7) Indigestion/Upset Stomach (5)/ Food (5) Colic (4) Stomach Ache (3)/ Dry Skin (3)/ Insomnia/Sleep (3)/ Teething (3)/ Illness/Symptom (2)/ Irritability (2)/ Constipation (2)/ Cough (2)/ Stomach (2)/ Lotion (2)

[a]Numbers represent the number of families that provided each response. One survey is equivalent to one family. Translations not referenced were provided by the Spanish translator; [b]Chamomile[2]; [c]Guava; [d]Unidentified; [e]Basil; [f]Star Anise; [g]Lemon Verbena[6]; [h]Prune[10,11]; [i]Contains Echinacea, White Cedar and Wild Indigo[12]; [j]Wormwood[8,9]; [k]Penny Royal[2,6]/Peppermint[7]; [l]Grapefruit; [m]Spearmint[6,13]/Peppermint[8,9]

Table 4. Reasons Individual Herbs Were Given to Children Cont[a]

Chamomile	Gas (1)/ Bronchitis (1)/ Rash/Hives (1)/ Fever (1)/ Asthma (1)/ Chicken Pox (1)/ Skin (1)/ Urination/Bladder (1)/ Powder (1)/ Salve (1)/ Shampoo (1)/ Well Being/Overall Wellness (1)/ Cramps (1)/ Fatigue (1)
Chasteberry	Food (1)
Cranberry	UTI (12)/ Food (12) Urination/Bladder (9) Constipation (3)/ Illness/Symptom (3)/ Clean/Cleans System (3) Stomach Ache (1)/ Cold (1)/ Yeast Infection/Yeast (1)/ Prevention (1)/ Stomach (1)/ Antibiotic (1)/
Dandelion	Food (2) Cold (1)/ Wart (1)

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Table 4. Reasons Individual Herbs Were Given to Children Cont[a]

Echinacea	Cold (27) Flu (5)/ Immune System (5) Illness/Symptom (3) Sore Throat (1)/ Eczema (1)/ Prevention (1)/ To Stay Healthy (1)/ Cough (1)/ Well Being/Overall Wellness (1)
Elderberry	Illness/Symptom (1)/ Fever (1) Flu (1)/ Immune System (1)/ Vitamin (1)
Essiac	Cold (1)/ Eczema (1)
Evening Primrose	Eczema (1)/ Skin (1)
Fennel	Food (7) Gas (3) Colic (2)/ Indigestion/Upset stomach (2)/ Stomach Ache (2) Illness/Symptom (1)/ Bad Breath (1)/ Stomach (1)/ Cramps (1)/ Fatigue (1)
Fennugreek	Cold (1)/ Food (1)/ Runny Nose (1)
Feverfew	Fever (1)/ Headache (1)/ Food (1)

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Table 4. Reasons Individual Herbs Were Given to Children Cont[a]

Garlic	Food (57) Cold (6) Illness/Symptom (3) Ear Infection (2)/ Healthy Blood/High Blood (2)/ Heart/Heart Immune (2) Calming/Relaxation (1)/ Diarrhea (1)/ Gas (1)/ Earache (1)/ High Blood Pressure (1)/ Prevention (1)/ Cholesterol (1)/ Immune System (1)/ Bug Repellent (1)/ Clean/Cleans System (1)/ Cure All (1)/ Health Reason (1)/ Well Being/Overall Wellness (1)/ Wart (1)
Ginger	Food (17) Indigestion/Upset Stomach (3) Cough (3)/ Stomach (3) Fever (2)/ Headache (2)/ Cold (2)/ Illness/Symptom (1)/ Colic (1)/ Sore Throat (1)/ Throat (1)/ Flu (1)/ Stomach Ache (1)
Ginkgo Biloba	Mental Alertness/Memory Help (2) Mind Meds (1)/ Vitamin (1)

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Table 4. Reasons Individual Herbs Were Given to Children Cont[a]

Ginseng	Energy (4) Body aches (1)/ Insomnia/Sleep (1)/ Cut (1) Cold (1) Flu (1) Food (1) Vitamin (1)
Goldenseal	Illness/Symptom (1)/ Stomach Ache (1)/ Cut (1)/ Cold (1) Prevention (1)/ Fatigue (1)
Kava	Calming/Relaxation (2)
Lavender	Bathwater (22) Calming/Relaxation (10) Insomnia/Sleep (6) Lotion (3) Irritability (2)/ Congestion (2)/ Dry Skin (2)/ Aromatherapy/Smell (2)/ Illness/Symptom (1)/ Colic (1)/ Teething (1)/ Skin (1)/ Food (1)/ Salve (1)/ Shampoo (1)/ Massage (1)/ Burn (1)
Lemon Balm	Cold (2)/ Food (2) Indigestion/Upset stomach (1)/ Stomach Ache (1) Chest (1) Fatigue (1)

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Table 4. Reasons Individual Herbs Were Given to Children Cont[a]

Lemon Grass	Food (6) Illness/Symptom (2) Gas (1)/ Stomach ache (1)/ Cough (1) Nerves (1) Broken bone (1) Cold (1)/ Fatigue (1)
Licorice	Food (5) Cure All (1)
Manzanilla[b]	Colic (48) Stomach ache (21) Gas (13) Indigestion/Upset Stomach (3) Illness/Symptom (2)/ Calming/Relaxation (2)/ Pain (2)/ Food (2) Diarrhea (1)/ Digestion (1)/ Cough (1)/ Nerves (1)/ Cold (1)/ Stomach (1)/ Throat (1)/ Congestion (1)/ Eye Drops (1)
Peppermint	Indigestion/Upset Stomach (15) Food (10) Cold (9) Stomach Ache (7) Stomach (6) Colic (4)/ Gas (4)/ Sore Throat (4)

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Table 4. Reasons Individual Herbs Were Given to Children Cont[a]

Peppermint	Illness/Symptom (2)/ Calming/Relaxation (2)/ Congestion (2)/ Cough (2) Constipation (1)/ Diarrhea (1)/ Bad Breath (1)/ Headache (1)/ Hiccups (1)/ Teething (1)/ Flu (1)/ Skin (1)/ Toothpaste (1)/ Digestion (1)/ Vomiting (1)
Slippery Elm	Sore Throat (2) Stomach Ache (1)/ Fatigue (1)
St. John's Wort	Depression (3) Mood Enhancer (2) Cold (1)/ Anxiety (1)/ Eczema (1)/ Wart (1)/ Bones (1)/ Pill (1)/ Calming/Relaxation (1)/ Antioxidant (1)
Tea Tree	Cut (8) Rash/Hives (2)/ Sore Throat (2)/ Cold (2)/ Cold Sores (2)/ Ear Infection (2)/ Lice (2) Illness/Symptom (1)/ Ringworm (1)/ Yeast Infection/Yeast (1)/

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Table 4. Reasons Individual Herbs Were Given to Children Cont[a]

Tea Tree	Ears (1)/ Fingers, Diabetic (1)/ Salve (1)/ Antibiotic (1)/ Toothpaste (1)
Gayuba[c]	Food (1)
Savila[d]	Cold (1)/ Shampoo (1)
Albahaca[e]	Colic (1)/ Stomach Ache (1)
Ani Estrella[f]	Colic (2)
Anise	Colic (1)/ Indigestion/Upset Stomach (1)
Cedron[g]	Colic (1)
Cinnamon	Fever (1)
Ciruela Pasa[h]	Constipation (1)
Esberitox[i]	Vitamin (1)/ Immune System (1)
Estafiate[j]	Diarrhea (1)
Horehound	Cough (1)
Laurel	Colic (1)/
Orange Herbs	Gas (1)
Poleo[k]	Diarrhea (1)
Red Clover	Skin Allergies (1)/ Vitamin (1)/ Lead Poisoning (1)
Rishi Mushroom	Immune System (1)
Thyme	Cold (1)/ Runny Nose (1)
Tornja[l]	Clean/Cleans System (1)
Yerba/Yierba Buena[m]	Colic (13) Stomach Ache (8) Diarrhea (1)/ Gas (1)/ Stomach (1)/ Food (1)

[a]Numbers represent the number of families that provided each response. One survey is equivalent to one family. Translations not referenced were provided by the Spanish translator; [b]Chamomile[2]; [c]Guava; [d]Unidentified; [e]Basil; [f]Star Anise; [g]Lemon Verbena[6]; [h]Prune[10,11]; [i]Contains Echinacea, White Cedar and Wild Indigo[12]; [j]Wormwood[8,9]; [k]Penny Royal[2,6]/Peppermint[7]; [l]Grapefruit; [m]Spearmint[6,13]/Peppermint[8,9]

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