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# Educating Primary Care Providers on Assessment of Herbal Supplements used by Latino Patients.

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EDUCATING PRIMARY CARE PROVIDERS ON ASSESSMENT OF HERBAL  
SUPPLEMENTS USED BY LATINO PATIENTS

by

Elizabeth Arnold

Paper submitted in partial fulfillment of the  
requirements for the degree of

Doctor of Nursing Practice

University of Louisville  
School of Nursing

August 9, 2019

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### Abstract

**Background:** Latino population health care practices are rich in heritage and deeply rooted in ideas and traditions (CDC, 2008). Complementary and alternative medicine (CAM), specifically herbal supplement use, is widely practiced among this population. Literature suggests that there is a significant gap in provider-patient communication regarding herbal supplement use (Malika et al., 2017).

**Aims:** The purpose of this project was to assess commonly used herbal supplements or vitamins and implement a population-specific education for providers in a primary care clinic predominantly serving Latino patients. The project aim was to increase provider assessment and documentation of herbal supplement and vitamin use among the Latino population at the clinic.

**Methods:** Retrospective chart reviews pre and post intervention took place to determine herbal supplement screening. Twenty-seven Latino clinic patients were interviewed as part of the intervention development. The interview responses were transcribed and the ten most commonly used herbal supplements were identified. The educational intervention consisted of two components: (a) a ten-minute oral presentation for providers on herbal supplement use, and (b) laminated handouts identifying common Latino supplements, side effects, metabolic pathway, interactions and contraindications, which were placed in all clinic exam rooms.

**Results:** Two-thirds (66%) of the interviewed patient population reported presently or previously using herbal supplements or vitamins. Following the education, providers self-reported their frequency for assessing supplement use to be a mean of 2.8/4. Prior to the intervention, a random review of 50 records showed no supplement assessments; following the intervention, 30% of the 50 charts contained supplement assessments.

**Keywords:** Hispanic, Latino, Herbal supplements, quality care, Complementary and Alternative Medicine, educational intervention.

## Educating Primary Caregivers on Assessment of Herbal Supplements used by Latino Patients Patients

In the health care community, providers are under obligation to deliver the highest quality care to each of their patients. In 1996 The Institute of Medicine (IOM) defined health care quality as: “The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” (Institute of Medicine Committee on the National Quality Report on Health Care Delivery, 1996). The IOM further dissects the definition of quality and assigns six primary domains: effectiveness, efficiency, equity, patient centeredness, safety and timeliness. Health care practitioners apply these six domains in the care that they provide through patient partnership and individualization, thus molding care to incorporate a patient’s race, ethnicity, socioeconomic status and unique cultural practices into their treatment. Patient demographics are constantly evolving in the United States, which affects treatment strategies when managing patients of unique and diverse cultures.

The Latino demographic accounts for more than half of the national population growth since 2000 and is the nation’s second fastest growing ethnic group (Flores, 2017). A Latino is defined as “a person of Cuban, Mexican, Puerto Rican, South or Central American descent, regardless of race” (US Census Bureau, 2010) Similarly, Hispanic is defined as a person relating to Spain and for persons of Spanish-speaking countries, particularly those of Latin America (US Census Bureau, 2010). These terms are typically used interchangeably, but for the purposes of this project the term Latino will be used to represent either of these ethnic groups.

According to the 2017 U.S. Census Bureau population data, one in seven adults and one in four children are of Latino ethnicity (2017). As of 2016, the national Latino population had reached

58 million and was still rapidly growing (Flores, 2017). The United States Census Bureau estimated that the Hispanic and Latino population will grow by 86% between 2015 and 2050 (United States Census Bureau, 2015). According to the projections, by 2060, the Hispanic and Latino population is projected to reach 119 million (United States Census Bureau, 2015).

This national trend is mirrored in the state of Kentucky. Latinos are the second largest ethnic group in Jefferson County, Kentucky and account for 5.3 % of the total population (U.S. Census Bureau, 2017). This diverse ethnic group represents a significant portion of the minority population of the county as well as the state, and they utilize an appropriately corresponding amount of public sector services (US Census Bureau, 2010). This utilization has led to an increased need for more culturally-focused health care (Malika, Desai, & Belliard, 2017).

Transcultural care, or culturally competent care, is a cornerstone of a holistic health care approach to better serve the Latino population. Culturally competent care is defined by Betancourt, Green, Carrillo, and Owusu Ananeh-Firempong (2016, p. 294) as “care that recognizes the importance of culture at all levels, while increasing cross cultural knowledge and incorporating practices to effectively manage the needs of a diverse patient population.”

Latino population health care practices are rich in heritage and deeply rooted in ideas and traditions (CDC, 2008). A widely used health care practice among this population is the use of complementary and alternative medicine (CAM), specifically herbal supplements. CAM is defined by the National Center for Complementary and Integrative Health (NCCIH) as: “complementary health approaches” that are a group of diverse medical and health care practices and products that are not presently considered to be part of conventional medicine (NIH, 2018, p. 1).

Malika and colleagues (2017) suggest that there is a significant gap in provider-patient communication regarding CAM use. In a recent cross sectional study, the researchers found that CAM use was markedly underreported and provider screening for these practices was low. Among the 318 participants in their study, 286 participants (90%) reported using some type of CAM. Among those, 40% used teas, 25.8% took herbs in the form of a capsule or tablet, and another 25% took natural or raw herbs. Additionally, the majority of participants (74.8%) reported to have never told their healthcare providers about their CAM use. Participants reported limited English skills to communicate with their providers (70%) and of those that disclosed CAM use to their provider, only 31% perceived receiving a positive reaction. The lack of primary care provider's knowledge about specific herbal supplements, coupled with decreased CAM screening, makes it difficult to safely and effectively treat the Latino patient population, resulting in poor quality care (Malika et al., 2017).

As Malika and colleagues discussed, this communication barrier makes CAM screening, specifically screening for herbal supplement use, difficult. The clinic director and a founding clinic APRN expressed the need for a consistent method for providers to accurately screen for herbal supplement use among their Latino population and a language barrier for herbs reported (D. Hayden & S. Robertson, personal communication, September, 19, 2018).

Milika and colleagues (2017) reported that the lack of screening for herbal supplement use leads to potential pharmacological contraindications and potential adverse drug events. Numerous barriers have been identified that affect herbal supplement or vitamin screening. These include: no evidence-based method to consistently screen for herbal supplements, communication barriers between patients and providers, and funding limitations. However,



unfavorable health outcomes of supplements, such as harsh side effects, adverse drug events, drug contraindications and reactions have been observed (Malika et al., 2017).

Betancourt et al., (2016) conducted a literature review of academic, foundational, and government publications focusing on health disparities in care and addressing sociocultural barriers, the level of the health care system at which a cultural barrier occurs and cultural competent strategies that breakdown these barriers. These authors found recurring themes in the literature that are effective in breaking down these barriers: a framework of cultural competence interventions, specifically including more minority involvement in the health care field, further development of interpreter services, and provider education on cross cultural practices.

In a well-designed, randomized control trial (RCT), Genao, Bussey-Jones, George, & Corbie-Smith, (2009) evaluated the effect of a comprehensive cultural competence curriculum. A total of 109 third-year medical students were randomly assigned (based on clerkships) to an intervention (n=47) or control (n=62) group. The intervention curriculum highlighted seven core elements of cultural competence: health disparities, disease incidence and prevalence, stereotyping, exploring culture perception of health problems, communication and language and gender issues. The primary outcome measure was the change score in cultural competence knowledge demonstrated by the students after completing education and pre- and post-education multiple choice questionnaires.

In the control group, the cultural competence education intervention was replaced with lectures on alternative medicine, clinical preventative medicine or domestic violence. All students were assessed using an identical, validated Likert-type evaluation tool, comprised of 40 questions, with a score ranging from 0 to 40 points at the beginning and at the end of the curriculum. The questionnaire was developed for this study by the four authors, and a draft

questionnaire was administered to 11 residents to address question comprehension, test reliability and internal consistency. Test-retest reliability was evaluated by calculating Kappa coefficients for each question. The internal consistency of questions was assessed using Cronbach's  $\alpha$  coefficient. The final draft consisted of 40 questions addressing five domains: exploring culture (Cronbach's  $\alpha= 0.75$ ), perceptions of health and illness (Cronbach's  $\alpha=0.54$ ), stereotyping (Cronbach's  $\alpha= 0.61$ ), knowledge of health disparities (Cronbach's  $\alpha=0.65$ ), and communication and language (Cronbach's  $\alpha=0.82$ ).

Howell and colleagues (2006) assessed the use of herbal supplements among Hispanics and their associated experiences with disclosing use to providers. A patient survey was conducted between October 2003 and February 2004 at five urban health care centers in Indianapolis, IN that treat predominantly Hispanic patients. Surveys were completed by research assistants that were fluent in Spanish. The interviews took place in waiting rooms prior to visits with their providers. Patients were randomly selected and approached visually based on their ethnic appearance. A total of 620 Hispanic individuals completed the verbal herb use questionnaire. The herbs reported to the research assistant were chosen by a group of Hispanic individuals in the community to verify the most commonly used herbs.

In a longitudinal study, Sanner and McAllister (2010) evaluated the level of cultural competence among health science faculty preparing students for health careers. The researchers examined the members' cultural competence before and immediately after a cultural competence training sessions, then 3, 6, and 12 months later. Of the 28 health science faculty, 78% of were nursing faculty in a southern university in the United States. Cultural competence was measured using the Inventory for Assessing the Process of Cultural Competence among Healthcare Professionals (IAPCC) developed by Campinha-Bacote (1999).

Truong, Paradies and Priest (2014) conducted a systematic review of 15 articles published between January 2000 and June 2012 to evaluate cultural competence efficacy. There were three main categories of study outcomes: health service access and utilization outcomes, provider-related outcomes, and patient/client-related outcomes. Six of the eight reviews that examined healthcare provider interventions found moderate evidence of improvement in provider outcomes in relation to cultural competency. Seven of the nine reviews that examined patient and client related outcomes generally found evidence of marginal improvement in health outcomes. Four of the five reviews that addressed outcomes related to access and utilization of health services found moderate evidence of improvement.

### **Educational Intervention Efficacy**

Downs and colleagues (2006) completed a cluster RCT to evaluate the effectiveness of an educational intervention in improving detection and management of dementia in the primary care setting (Downs, Turner, Bryans, Wilcock, Keady, Levin, & Iliffe, 2006). Three educational interventions were evaluated: an electronic tutorial, decision support software and practice based workshops. A total of 36 practices were evaluated in the study. Eight practices were randomly assigned to the electronic tutorial, eight were assigned to decision support software, 10 practices were assigned to practice based workshops and 10 practices were assigned to a control group. The 36 practices reported a collective 683 eligible participants. The final usable participant total was 450 since 104 participants could not be consented, 34 participants' records could not be located, and 95 participants' records were missing a diagnosis of dementia. The primary outcome measure were rates of detection of dementia and adherence to clinical practice guidelines (Downs et al., 2006).

The number of people identified as having dementia after the interventions was 31% of all cases diagnosed in the practice-based workshops, 20% in the electronic tutorials, 30% in the decision support software, and 11% in the control group. Decision support software ( $p= 0.01$ ) and practice based workshops ( $p= 0.01$ ) both significantly improved rates of detection compared with the control group. Therefore, the three educational interventions yielded higher rates of dementia detection. These findings support educational interventions as effective methods to improve care (Downs et al., 2006).

Similarly, Majumdar and colleagues (2004) evaluated the effectiveness of cultural sensitivity training on the knowledge and attitudes of health care providers. The RCT included 114 nurses and home care providers from two home care agencies and one hospital. Additionally, the RCT included patient input ( $n=133$ ) to assist in determining the effects of cultural sensitivity, satisfaction and accessibility to health and social services. Data was collected from both the experimental and control groups at the beginning of the study ( $T_1$ ), at 3 months following randomization ( $T_2$ ), at 6 months following randomization ( $T_3$ ), and at the completion of the control group training ( $T_4$ ) at 12 months.

Both groups were evaluated pre- intervention and then at different intervals of time throughout the study: 3 months, 6 months and 12 months. Nurses and home care providers in the experimental group who completed the three-month phase and the six-month phase demonstrated statistically significant improvement in “cultural awareness” ( $p=.0001$ ), understanding of cultural differences ( $p=.001$ ), cultural beliefs ( $p=.004$ ), adopting health care literature ( $p=.001$ ), considering social circumstances ( $p=.011$ ), and considering culture to be important ( $p=.001$ ); while providers in the control group did not show improvement in these categories.

Many similarities in the T<sub>1</sub> mean scores between the experimental and control groups were found. Their understanding of multiculturalism (2.70 vs. 2.37), cultural awareness (14.66 vs. 13.66), experience interacting with people of other cultures (3.52 vs. 3.31), and comfort in interacting with people of other ethnic groups (4.07 vs. 3.80).

Cultural sensitivity training demonstrated several positive outcomes. Providers in the experimental group who completed T<sub>1</sub> through T<sub>4</sub>, showed an increase in mean score for “present understanding of multiculturalism” at T<sub>2</sub> and T<sub>3</sub>, after training. The difference between experimental and control groups was statistically significant at T<sub>2</sub> and at T<sub>3</sub> ( $p=.0001$ ) but not at T<sub>4</sub>. These findings indicated that cultural sensitivity training was associated with improved understanding of multiculturalism.

Rosenvinge, Skårderud, & Thune-Larsen (2003) investigated an educational program’s effectiveness to improve clinical competence in treating eating disorders using a pre-test/post-test longitudinal design. The Eating Disorder Competence Index (Schmidt, U., Ali, S., Slone, G., Tiller, J., & Treasure, J. 1995) was used to assess educational effectiveness. The index comprises 24 statements about the understanding and treatment of eating disorders. Each correct response receives a score of 1 with a potential perfect score of 24. Conversely, incorrect statements receive “0” (Rosenvinge, Skårderud, & Thune-Larsen, 2003). A total of 78 providers completed the study. The overwhelming majority of the participants (91%) were female.

The Eating Disorder Competence Index created a consistent construct with a Cronbach’s alpha of 0.60 (pre-test) and 0.67 (post-test). The mean pretest score was 12.8 (SD:3.41 range 5-24) and the mean post-test score was 14.6. Using a two-tailed paired sample t-test, the pretest–posttest difference proved statistically significant ( $t(77) = -4.27, p < 0.000$ ). A non-parametric Wilcoxon signed rank test revealed that there were significantly more correct posttest responses

on eight items. On the remaining 16 items no statistically significant improvement in competence scores was detected.

### **Theoretical Framework**

Leininger's transcultural nursing theory (Leininger, 1978) guided this project. This framework supports and cultivates culturally motivated behaviors by incorporating all social and cultural dimensions of a specific population. Application of this theory supports the intervention and core purpose of this evidence-based practice change through integration of the Sunrise Model in which culturally competent nursing care flows into the cultural worldview of individuals, families, groups, and communities. The purpose of this project was to increase herbal supplement screening at the clinic, and as a result, promote more comprehensive cultural care for the Latino community. Leininger's Sunrise Model incorporates different dimensions that each interrelate and encompass cultural care. The Sunrise Model is divided into distinctive levels that address different aspects of providing culturally competent care (Leininger, 1978)

The first level is the world view on cultural and structural dimensions. The second level represents the individual, with integral parts that make one whole. This level demonstrates that a person is a product of their culture. Level three is health and well-being and how the population views folk practices, nursing practice and professional care-cure practices. On this level the nurse acts as a bridge between folk practice and professional system health care. Level four represents culturally competent care provided by the nurse. The role of the nurse is to preserve culturally cultivated practices, integrate cultural practices into their care and restructure their current methods that promote positive patient outcomes.

The unique cultural and social dimensions of the Latino population were incorporated into this quality improvement project. Clinic patient interviews were conducted with a Spanish-

fluent translator (University of Louisville Department of Latin American and Latino Studies (LALS) undergraduate capstone student) prior to the patients' visit with an APRN. Verbal interviews offset potential literacy and educational barriers. The project emphasized the last level of the sunrise model: application to APRN care. Educated APRNs will be able to bridge the current gap in cultural care and restructure their current practices to increase assessment for vitamins and herbal supplement use.

### **Setting and Organizational Assessment**

The evidence based practice change was completed at an urban clinic predominantly serving back track immigrant workers at a local race track. This nonprofit clinic is funded by a private foundation in conjunction with a local School of Nursing and is entirely operated by advanced practice registered nurses (APRN) and has been providing services to the community for over 13 years.

This health care facility primarily services Latino patients who are employed by a local horse racing track as backside workers and this patient demographic is predominantly non-English speaking. Backside workers are typically on a six-month work visa that cover the spring and fall racing seasons. During the off season, the backside workers return home and prepare to return again in early spring. The clinic has a low attrition and high retention of patients. Primary stakeholders of the quality improvement project include the clinic Latino patients and APRNs. The project was very well received and encouraged. The clinic providers were very open to being educated about commonly used herbal supplements among their Latino population. There were no noted barriers to delivery of the educational PowerPoint, as this education was completed at the providers' discretion. The evidence based practice change was supported by the clinic director.

### **Purpose**

The purpose of this project was to assess commonly used herbal supplements or vitamins and implement a population-specific education for providers in a primary care clinic predominantly serving Latino patients. The project aim was to increase provider assessment and documentation of herbal supplement and vitamin use among the Latino population at the clinic. This project contributed to the clinic mission by effectively addressing social and cultural health needs of the Latino patient.

### **Intervention**

Latino patient interviews were completed to identify the most commonly used herbal supplements. Results were integrated into an educational program for the clinic APRNs. The educational intervention consisted of two components: (a) a ten-minute oral presentation for providers on herbal supplement use (b) laminated handouts identifying common Latino herbal supplements, side effects, metabolic pathway, interactions and contraindications which were provided to all APRN providers and placed in all clinic exam rooms. The intervention team consisted of the DNP student (project leader) and the LALS capstone student. The LALS capstone student was fully trained on the interviewing process.

Interprofessional collaboration played an integral part in the data collection and dissemination of information. The patient interviewing was a collaborative effort between the students in the School of Nursing and LALS undergraduate program. All hours contributed to the current project were credited to the LALS capstone student's internship time requirements. The LALS capstone student completed HIPAA and CITI training prior to project participation. Collaboration between the project leader and LALS capstone student enhanced patient engagement. Comparison of interview data and translation between the project leader and LALS



capstone student was conducted to assure inter-rater reliability. The DNP project was approved by the University of Louisville's Institutional Review Board (IRB).

### **Participants**

To obtain the data on the most commonly used vitamins and herbal supplements, a total of 27 Latino clinic patients at were recruited in the clinic waiting area prior to their provider visit. Inclusion criteria for the patient interviews were: clinic patients 18 years of age or older whose primary language was Spanish. There were no exclusion criteria. Participants provided verbal consent when answering the survey questions. A preamble was read to each participant in Spanish by either the project leader or the LALS capstone student in a private space during patient triage. No patient identifiers were collected.

Interview responses were translated, transcribed, and coded by the project leader and LALS capstone student. Physical copies of the transcribed responses were kept in a secured file folder that was kept in the clinic office. The DNP student reviewed the responses and determined the 10 most commonly reported herbal supplements or vitamins. These responses were compiled into a table which included common interactions, side effects, metabolic pathway and contraindications further information on the herbal supplements (Table 1).

### **Data Collection**

All patient interview responses were collected in the clinic by the project leader and LALS capstone student dyad in a private area during patient triage. Interview responses were transcribed after completing the patient interviews and all survey notes were reviewed by the DNP student and the capstone student.

A pre-Intervention EHR review was conducted for a two-week period from July 5, 2018 to July 19, 2018 that matched the 2019 implementation period. During each EHR review, 50

charts were evaluated for documentation of herbal supplement or vitamin use by the provider. After completion of all patient interviews, the herbal supplement chart was assembled and the educational intervention for the providers was created and dispersed. The PowerPoint was emailed to all the clinic APRNs and was viewable at the APRNs' discretion. One week following the email of the educational PowerPoint, the Satisfaction and Implementation Survey (Appendix A) was emailed to the six APRNs; the providers completed the survey within seven days using *SurveyMonkey*®.

### **Measurement**

At the start of the intervention, 27 Latino clinic patients were asked five interview questions pertaining to herbal supplement and vitamin use. The questions elicited responses about vitamin and herbal supplement use, attitudes toward and beliefs about herbs, and patients' comfort level when discussing herb use with providers. The interview questions and scripts, developed in both English and Spanish, are found in Appendices B-E.

The primary outcome measure was the change in percent of provider herbal supplement assessment and documentation.

### **Results**

Twenty-seven patient interviews were completed to create the population-specific provider educational intervention.. Data saturation occurred with fifteen women and 12 men. Sixteen patients reported currently using or previously using herbal supplements or vitamins. Eleven patients reported that they have never used herbal supplements or vitamins. All 27 patients reported that they are more comfortable speaking Spanish. Twenty-two patients reported “no, that they do not believe herbal supplements and vitamins are drugs or medication”, four reported that they were “not sure” and one reported “I don't know.” Finally, 25 patients stated

that they were comfortable informing their provider that they are taking or have taken herbal supplements or vitamins and two patients reported that they were “not sure.” The top ten herbal supplements reported were: Azium, Blu Kote, chamomile, Cinnamon, Cumin, Ginseng, Green Tea, Lavender, Marijuana and Peppermint. Further information regarding these herbal supplements can be found in Table 1.

In the review of 50 charts during the pre-intervention period, no documentation of herbal supplement or vitamin use was found. However, following the intervention, a thorough chart review was completed with particular focus on the patients’ summary pages under *Social History* (the recommended area for documentation). Fifteen out of 50 charts (30%) contained documentation herbal supplement use assessment. Eleven of these 15 were documented in the exact EHR location recommended by the project leader.

Six providers completed the herbal supplement *Implementation and Satisfaction Survey* via online survey database *SurveyMonkey*®. The survey was a five-item, four-point Likert scale questionnaire that assessed provider satisfaction of the education intervention, effectiveness of the educational intervention, whether or not the herbal supplement handout improved their ability to care for their patient population, how frequently they were currently assessing herbal supplement use, and usefulness of the education intervention. The average time to complete the survey was 1 minute and 41 seconds. The average score for the first question on the survey: *Overall, how satisfied were you with the educational program on herbal supplements used among Latinos?* was an average of 3.16 out of 4 ( $\pm 0.3$ , range: 2.8-3.5). The average score for the second question was 3.5 ( $\pm 0.3$ ): *The educational program was an effective method to learn about herbal supplement assessment.* The average score for the third question was 3.33 out of 4 ( $\pm 0.3$ ): *The educational program and laminated handout have improved my ability to deliver*

*comprehensive cultural care.* The average of the fourth question on the survey was 2.8 out of 4 ( $\pm 0.3$ ): *How often are you incorporating herbal supplement and vitamin assessment into your daily practice?* The average of the fifth and final question was 3.5: ( $\pm 0.3$ ) *I find the most Commonly Reported Herbal Supplements useful in assessing and treating patients at the clinic.*

## **Discussion**

### **Interpretation**

Eighteen of the 27 patients interviewed (66%) reported current or previous use of alternative therapies, such as herbal supplements and vitamins. Despite concerns over socially desirable responses, the high rate of positive responses drives the need for consistent assessment by clinic providers. The provider satisfaction and implementation survey results demonstrated that prior to the education, herbal supplement and vitamin use was infrequently assessed.

The proposed recommendation to increase provider screening, supported by literature, was to document provider assessment of herbal supplement use once the provider had screened the patient, regardless of the patients' responses. Based on previous literature (Howell et al., 2006; Juckett, 2013) and evaluation of the patient interview data, it is recommended that providers document their assessment, regardless of patient responses. To ensure sustainability and accessibility of this information, it was recommended to document this in the EHR Practice Fusion on the patient's summary page under *social history*.

The improvement in provider documentation of herbal supplement assessment was very encouraging. There is still a need for a more comprehensive focused assessment of the Latino patient population that would identify homeopathic and folk lore medicinal practices. Such information is pertinent for providers to deliver safe and high quality care.

### **Limitations**

The limitations of this project were the small sample size of APRNs and patients interviewed, which limited data analysis. Additionally, the satisfaction and implementation provider survey and responses to patient interviews relied on self-reported data and were subject to translation and social desirability bias. Respondents may have felt pressured to answer in a manner that aligned culturally with American practices and beliefs, thus skewing qualitative interview response data. Finally, despite efforts to eliminate cultural and linguistic barriers, it was noted that during patient interviews, specifically pertaining to Item 4 (Do you believe herbal supplements or vitamins interact with prescription medications?), there was a language or comprehension barrier that inadvertently affected patient responses.

### **Conclusion**

Herbal supplement and vitamin use in the United States is as high as one-third of the nation's population, with Latinos utilizing herbs more than any other racial or ethnic group (Malika et al., 2017). Herbal supplement use among this population is often underreported and ineffectively assessed (Howell et al., 2006; Juckett, 2013).

Clinic providers expressed the need for a practice change and education that would improve their ability to more adequately assess herbal supplement use by their patient population. Sixty-six percent of the patients interviewed reported currently or previously using herbal supplements or vitamins. Because of the high rate of use, many authors recommend provider assessment and documentation (Malika et al., 2017; Howell et al., 2006; Juckett et al., 2013). The educational PowerPoint, proposed documentation change and herbal supplement chart will be easily woven into the daily practice of the clinic APRNs. Screening patients for herbal supplement and vitamin use requires asking one question and less than two minutes. This intervention can be easily carried out and maintained during patient encounters, ensuring

sustainability of provider assessment. The laminated list of herbal supplements is in every clinic room and will aid the feasibility and sustainability of this project.

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## Appendix A

### Provider Survey

1. Overall, how satisfied were you with the educational program on herbal supplements used among Latinos?

- 1. Very Unsatisfied
- 2. Unsatisfied
- 3. Satisfied
- 4. Very Satisfied

2. The educational program was an effective method to learn about herbal supplement assessment.

- 1. Strongly Disagree
- 2. Disagree
- 3. Agree
- 4. Strongly Agree

3. The educational program and laminated handout have improved my ability to deliver comprehensive cultural care.

- 1. Strongly Disagree
- 2. Disagree
- 3. Agree
- 4. Strongly Agree

4. How often are you incorporating herbal supplement/Vitamin assessment into your daily practice?

- 1. Never
- 2. Sometimes
- 3. Frequently
- 4. Always

5. I find the Most Commonly Reported Herbal Supplements useful in assessing and treating patients at KRHSC.

- 1. Strongly Disagree
- 2. Disagree
- 3. Agree
- 4. Strongly Agree

## Appendix B

### Patient Interview Questions- English

1. Which language do you feel most comfortable speaking?
2. Do you currently take or have you ever taken an herbal supplement or vitamins?
3. Do you believe herbal supplements or vitamins are drugs?
4. Do you believe herbal supplements or vitamins interact with prescription medications?
  - a. Do you believe the supplements or vitamins could have a bad side effect if they're also taking prescribed medicine?
5. Do you feel comfortable informing your health care provider that you take herbal supplements or vitamins?

## Appendix C

## Patient Interview Questions- Spanish

## Preguntas:

1. ¿En qué idioma te sientes más cómodo hablando?
2. ¿Actualmente toma o ha tomado alguna vez un suplemento de hierbas o vitaminas?
  - a. Si es así, ¿qué suplementos de hierbas o vitaminas?
3. ¿Crees que los vitaminas o suplementos de hierbas son drogas?
4. ¿Crees que los vitaminas o suplementos de hierbas interactúan con los medicamentos recetados?
5. ¿Se siente cómodo al informar a su proveedor de atención médica que está tomando suplementos de hierbas o vitaminas?

## Appendix D

### Patient Interview Script - English

Hi, my name is \_\_\_\_\_ and I am a student with the University of Louisville, (School of Nursing / Latino and Latin American Studies Program. I am collecting some information to better serve the patients at Kentucky Racing Health Services Center and would appreciate if you would be willing to provide feedback and answer five questions? Your personal information will not be recorded. The purpose of this project is to collect information on commonly used herbal supplements among the clinic population, primarily the Latino population. If at any time you are uncomfortable or would not like to continue answering questions, please let us know.

The purpose of this survey is collect information on currently used complementary and alternative medicine practices, specifically Latino herbal supplement use. By answering the survey questions, you consent for Kentucky Racing Health Services Center and The University of Louisville to use your responses to identify the most commonly used herbal supplements. The collected data will be used to educate providers at Kentucky Racing Health Services Center on herbal supplements commonly used among the Latino population but not widely understood in western medicine. No information or personal identifiers will be associated with your answers.

## Appendix E

## Patient Interview Script - Spanish

Hola, mi nombre es \_\_\_\_\_ y soy un estudiante de la Universidad de Louisville, (Escuela de Enfermería / Programa de Estudios Latino americanos) Estoy recopilando información para atender mejor a los pacientes en Kentucky Racing Health Services Center y agradecería que lo hiciera). ¿Está dispuesto a proporcionar comentarios y responder cinco preguntas? Su información personal no se registrará. El propósito de este proyecto es recopilar información sobre suplementos herbales de uso común entre la población atendida en KRHSC, principalmente la población latina. Si en algún momento se siente incómodo o no desea continuar respondiendo preguntas, háganoslo saber.

El propósito de esta encuesta es juntar información sobre las prácticas de medicina alternativa que se usan hoy en día, específicamente el uso de de suplementos herbarios de parte de pacientes latinos. Al contestar las preguntas de la encuesta, Ud. le da permiso al for the Kentucky Racing Health Services Center y The University of Louisville a utilizar sus respuestas para identificar los suplementos herbarios más usados. Los datos adquiridos se usarán para educar a los que proveen servicio médico en el Kentucky Racing Health Services Center acerca de los suplementarios usados con más frecuencia por la población latina, suplementarios no tan familiares en la práctica de la medicina occidental. Ninguna información ni identidad personal se asociará con sus respuestas.

Table 1

*Herbal Supplement Chart*

HERB SPANISH TERM	USES	POTENTIAL INTERACTIONS	METABOLIC PATHWAY	COMMON SIDE EFFECTS
<b>Azium</b> <i>esteroide</i> (dexamethasone) <i>Animal Use</i>	In animals: Glucocorticoid steroid, anti- inflammatory, immune-suppression, cancer, central nervous system disorders, blood calcium reduction,	The dosage of AZIUM Powder required is markedly lower than that of prednisone and prednisolone	Synthetic form for Animals – Azium is 10 X more potent than prednisone/prednisolone  CYP450- 3A4	Headache Dizziness Trouble sleeping Mood disturbance, Personality change Bulging eyes Acne Fragile skin Slow healing cuts/ bruises Fatigue Irregular periods Low sex drive Unusual sweating
<b>Blu Kote</b> <i>Topical Ointment</i> <i>Blu Kote</i> <i>Animal Use</i>	In animals: used to coat the skin and protect from fleas, ticks and for treatment of skin irritation, Antiseptic, Fungal infections	Not tested on humans  Manufacturer warning says <b>FOR ANIMAL USE ONLY</b>	Unknown	Unknown in Humans Possible Skin irritation Keep away from eyes, mouth , nostrils and mucous membranes.
<b>Chamomile</b> <i>Manzanilla</i>	GI upset, cough, skin conditions, treatment of hemorrhoids, anti- inflammatory	CNS depressants, other CYP3A4 substrates, CYP1A2 substrates, Sedatives , Not to be taken with NSAIDS and Aspirin Anticoagulant agents, can cause uterine contractions- <b>avoid in pregnancy</b>	CYP3A4	Cross Sensitivity for patients who have allergies to Ragweed
<b>Cinnamon</b> <i>Canela</i>	Diabetes -sugar maintenance, general health maintenance,	Antidiabetic Medications Precautions with other medications that are hard on the Liver		Severe GERD, Vomiting
<b>Cumin</b> <i>Comino</i>	Digestive problems, Diarrhea, colic, bowel,	Cumin might slow blood clotting.		Side effects of cumin are not known



	spasms, gas, urinary retention, bloating, aphrodisiac	Excessive cumin might lower blood sugars.  Antidiabetic medications		
<b>Ginseng</b> <i>Panax ginseng</i> <i>Ginseng</i>	Stimulant Diuretic Digestive aid Stress Improve athletic stamina Hot flashes Depression Asthma	Anticoagulants- Warfarin Antidiabetics Antipsychotics MAO inhibitors Caffeine	Bioavailability is low due to incomplete absorption- limited intestinal absorption  CYP450 / CYP3A4	Insomnia Vaginal Bleeding Tachycardia Hypertension Palpitations Headache Edema Stevens-Johnson Syndrome
<b>Green Tea Extract/</b> <b>Green Tea</b> <i>Te Verde</i>	Perceived idea is weight loss- this is incorrect Vascular issues- improves blood flow Cholesterol High Blood pressure Stabilize Blood Sugar Unsupported data- block plaque formation with Dementia	Reduced absorption of iron from food Hx of kidney stones Anticoagulant medications Overdose > 800 mg could lead to liver damage	CYP2C9  Potential interactions with: CYP2C9, CYP2D6, CYP3A4	Headache, nervousness, sleep problems, vomiting, diarrhea, irritability, irregular heartbeat, tremor, heartburn, dizziness, ringing in the ears, convulsions, and confusion
<b>Lavender</b> <i>Lavandula angustifolia</i> <i>Alhucema</i> <i>Flor de lavanda</i>	Anxiety, insomnia, sleep disturbances, nightmares	Anxiety medications, CNS depressants, Anticoagulation medications- warfarin		Contact dermatitis if used topically, hives
<b>Marijuana</b> <i>Marijuana/ hierba</i>	Stimulant Nerve pain Generalized pain	Antipsychotic medications –Bipolar disorder/schizophrenia Heart Disease- can cause Tachycardia Antabuse Prozac Antipyrine Asthma Patients	Delta-9 THC via CYP450 Stomach absorbs 90% of the ingested THC and passes it on to the liver	Impaired mental functioning Increased Heart Rate Headache Dizziness Drowsiness Dry mouth Nausea paranoid thinking Increased appetite
<b>Peppermint</b> <i>Mentha</i> <i>Mentha piperita</i>	GI upset, gas, colic, gastritis, GERD	CYP450 substrates, antihistamines, PPI, antacids	CYP450	Burning, tingling sensation in the esophagus and mouth