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CANCER

ABSTRACT & COMMENTARY

Imagery for Improving Quality of Life Among Breast Cancer Survivors

By Priscilla Abercrombie, RN, NP, PhD, AHN-BC

Women's Health and Healing, Healdsburg, CA

Dr. Abercrombie reports no financial relationships relevant to this field of study.

SYNOPSIS: This randomized study demonstrated that an imagery program delivered either live or via telemedicine could improve quality of life in breast cancer survivors compared to a wait list group.

SOURCE: Freeman LW, et al. A randomized trial comparing live and telemedicine deliveries of an imagery-based behavioral intervention for breast cancer survivors: Reducing symptoms and barriers to care. *Psychooncology* 2015;24:910-918.

The purpose of this randomized, controlled trial was to evaluate whether an imagery-based group intervention delivered either by live delivery (LD) or by telemedicine delivery (TD) improved quality of life (QOL) among breast cancer survivors compared to a waitlist (WL) group. Participants were recruited via ads, media, and medical referrals. There were two LDs, one in Alaska and one in Washington, in which the facilitator was present at the community health center. One facilitator was a licensed professional counselor and the other a family practice physician. The TD group was held at a community health center in Alaska where the facilitator was remote. The videoconferencing software allowed the facilitator to control the camera direction and interact with small groups or individuals.

One of the facilitators developed the curriculum, which was titled "Envision the Rhythms of Life"

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Summary Points

- The live and telemedicine delivery groups were equally effective in improving quality of life.
- Only some parameters of quality of life were improved compared to the wait list group: fatigue, cognitive function, and sleep.

and consisted of didactic and interactive activities. The authors provided the following example: Participants identified maladaptive "passive imagery," created adaptive "active imagery" with the help and feedback of the group and facilitator, and practiced "targeted imagery" (i.e., imagining healthy immune function). In the last session, participants discussed their long-term plan for using the information from the program.

Participants were randomized into the three groups via adaptive randomization so the groups were balanced by age, gender, stage, chemotherapy, surgery, radiation, and hormone use. The LD and TD groups participated in five 4-hour weekly sessions with approximately 25 people per group. Each member of the group also had a < 10-minute weekly phone call to encourage home practice throughout the program and 3 months after completion. Eligibility criteria included diagnosis of breast cancer; ≥ 18 years of age; no major psychiatric illness (not defined); visual and hearing capable; able to read, write, and speak English; and oriented to person, place, and time. Of the 121 participants consented, 118 were randomized (LD = 48, TD = 23, WL = 47), 104 completed the intervention (LD = 41, TD = 19, WL = 44), and 102 completed the 3-month follow-up (LD = 40, TD = 19, WL = 43). There were no significant differences between groups in loss to follow-up, demographics, medical characteristics, or baseline psychosocial variables. The average class sizes were also the same between the LD and TD groups. For those who missed sessions, all but one attended a make-up session with a facilitator. The reasons for being lost to follow-up included scheduling conflicts, death in family, family illness, medical reasons, and other reasons.

Each participant completed self-report questionnaires at baseline, 1 month, and 3 months post-treatment. The following instruments were used to assess QOL: Medical Outcomes Study (SF-36), Functional Assessment of Cancer Therapy-Breast (FACT-B), FACT-Cog to assess cognitive function, Functional Assessment of Chronic Illness Therapy Spiritual Well-Being Expanded Scale (FACIT-Sp-Ex), FACIT-Fatigue Scale, Brief Symptom Inventory-Global Severity Index (BSI-GSI), Pittsburgh Sleep Quality Index (PSQI), and demographic factors. In addition, the researchers reviewed medical records and tracked attendance.

The authors used a number of statistical approaches to analyze the data within SAS, including descriptive, linear multilevel modeling for the effects of group and time on QOL, Bonferroni to correct for the 8 QOL outcome measures, *t* test for post hoc group comparisons, and χ^2 to examine group differences. A power analysis determined that 45 participants in each group with a 15% dropout rate would allow for a two-sided significance level of 0.05 and 80% power.

The authors found a significant positive group effect on fatigue (FACIT-F), cognitive function (FACT-Cog), and sleep (PSQI) for both of the intervention groups vs the WL group. There was no group effect for the physical component (PCS), mental component (MCS), function (FACT-B), spiritual well-being (FACIT-Sp-Ex), or psychological distress (BSI-GSI). There were no differences between the LD and TD groups on any outcome measure. There was an effect of time on FACT-B only with increasing scores over time. There were no group x time effects that reached statistical significance ($P < 0.011$). There were clinically significant but not statistically significant changes in sleep (PSQI) and fatigue (FACIT-F) from baseline at 1-month and 3-month follow-up for the two intervention groups compared to the WL group. (*See Table 1.*)

■ COMMENTARY

This study indicates that this particular imagery program delivered either live or via telemedicine could have an impact on some important aspects of QOL in breast cancer survivors. The "Envision the Rhythms of Life" program is a unique way of delivering imagery as an intervention. Imagery is commonly studied by having a participant listen to a guided imagery tape or by attending a one-on-one encounter. The techniques used in this study of identifying maladaptive passive imagery and replacing that with active imagery or targeted imagery is regularly a part of imagery programs. It is common to provide imagery either live or remotely by phone or videoconference with individuals. This is the first published study that describes the use of imagery delivered by telemedicine and in a group format. Since this imagery program was delivered in a group format, it is difficult to determine if the results were solely due to the imagery intervention itself or if they also were the result of the social support received in the group setting. In a study published by the authors in 2008, this imagery program was evaluated and showed improvement in various indicators of QOL and reduced stress, but cortisol levels did not significantly improve.[1]

Information about how the facilitators were trained in imagery or how the curriculum was developed was not provided. Certificate programs in imagery offer didactic and practical experience with supervision helping to ensure quality facilitators. In addition, the facilitators in the "Envision the Rhythms of Life" program were referred to as therapists throughout the manuscript, but the facilitators included a licensed professional counselor and a family practice physician. These professionals have different training backgrounds that will affect their ability to facilitate groups and provide psychological therapy. The group size was 25; ideally therapy groups have 10-12 participants and don't exceed 15.[2] It can be difficult to manage the group and provide individual attention when the group is large. In addition, 4 hours is a long session, particularly for individuals with health conditions such as fatigue.

The statistics collected were appropriate for purpose of the study and the type of data collected. The authors randomized participants to the groups using adaptive randomization in the fashion it was designed to be used.[3] This type of randomization is helpful in assuring the groups have similar characteristics. The instruments used in the study have been shown to have good reliability and validity. All of the instruments were subjective measures of quality of life; incorporating objective measures would have strengthened the study results. The authors stated that the study was underpowered to detect differences between the two intervention groups, making it impossible to determine if one intervention was better than the other in improving quality of life.

Table 1: Summary of Results

	Group effect *P* values	Time effect *P* values	Group x time effect *P* values
SF-36 PCS	0.154	0.529	0.111
SF-36 MCS	0.020	0.612	0.661
FACT-B	0.076	0.003	0.208
FACIT-F	0.002	0.084	0.321
FACT-Cog	0.001	0.154	0.687
FACIT-Sp-Ex	0.049	0.657	0.462
BSI-GSI	0.051	0.120	0.032
PSQI	< 0.001	0.346	0.303

One study exclusion criteria was "no major psychiatric illness," but this was not further defined. A systematic review found that up to 66% of breast cancer survivors have depression and up to 33% have anxiety.[4] An assessment of these common psychological conditions along with social support would have given greater insight into the impact of the interventions. Practicing imagery outside of the group would also improve outcomes, but adherence to home practice was not measured. The participants may have simultaneously been using other mind-body and complementary therapies that also could have affected QOL lowering or enhanced the impact of the "Envision the Rhythms of Life" program. In one study, use of complementary and alternative therapies was 86% among newly diagnosed breast cancer patients and many used more than one modality.[5] Finally, participant gender was not reported in this study. Perhaps it is assumed that all the participants were female. Incorporating men and more participants of color would be an important goal for future studies.

In summary, the results of this study suggest that delivering this imagery program either live or via telemedicine could have an impact on some aspects of QOL among breast cancer survivors. From a clinical standpoint, delivering imagery via telemedicine could be an innovative way to reach cancer survivors in rural settings and make a positive impact on QOL. More research is needed to determine if telemedicine is as effective as in-person delivery of group imagery programs. ■

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ABSTRACT & COMMENTARY

Echinacea-based Infusion Noninferior to Oseltamivir in Early Influenza Treatment

By Erica Benedicto, PA-C, MPH

Founder, Shiny Healthy People and Whole Health Collective, Austin, TX

Ms. Benedicto reports no financial relationships relevant to this field of study.

SYNOPSIS: Echinacea Hotdrink was found to be as effective as oseltamivir as early treatment intervention of clinically diagnosed and lab-confirmed influenza virus infections and had fewer adverse effects.

SOURCE: Raus K, et al. Effect of an echinacea-based hot drink versus oseltamivir in influenza treatment: A randomized, double-blind, double-dummy, multicenter, noninferiority clinical trial. *Curr Ther Res Clin Exp* 2015;77:66-72. doi: 10.1016/j.curtheres.2015.04.001.

Influenza virus infections make up the vast majority of acute visits to physicians' offices during the autumn and winter months. With 25-50 million cases of influenza each year resulting in about 150,000 hospitalizations and 30,000-40,000 deaths in the United States, according to the World Health Organization, options for early treatment and intervention are important. Antiviral treatments that are safe, effective, and easy to recommend during high flu season are an essential part of the clinical toolbox. Influenza vaccines are standard, but they may not be available to certain populations or in a timely manner, as experienced with the 2009 H1N1-type pandemic strain of swine origin.[1] As a result, the quest for a complementary approach for this common but challenging acute condition continues.

This study examined the effect of an *Echinacea purpurea*-based infusion vs oseltamivir as early interventional treatment for influenza-positive patients. Neuraminidase inhibitors are recommended within 48 hours of onset of influenza symptoms by the Centers for Disease Control and Prevention (CDC) and are recognized as the gold standard. Both oseltamivir and zanamivir have been shown to reduce severity and duration of symptoms, but early intervention is critical. Adverse effects include nausea, diarrhea, vomiting, and skin, renal, and psychiatric events. A plant-based alternative with similar efficacy, safety, less side effects, and easier accessibility would be an important option to prevent complications of influenza.

Summary Points

- Both clinically diagnosed and virologically confirmed influenza patients participated in a randomized, double-blind, double-dummy, multicenter, noninferiority clinical trial in the Czech Republic.
- Echinaforce Hotdrink was found to be noninferior compared to oseltamivir for early intervential treatment of influenza virus.
- Incidence of complications was lower with Echinaforce Hotdrink and fewer participants experienced adverse events, mostly nausea and vomiting.

The purpose of the study was to determine noninferiority of treatment of influenza virus with Echinaforce Hotdrink (EH) when compared to the neuraminidase inhibitor oseltamivir. The noninferiority study design likely was chosen given the known benefits of neuraminidase inhibitors in suspected influenza infections; it would be unethical to withhold such treatments from this study population in the creation of a true placebo group.

After obtaining informed consent, 473 patients from multiple primary care clinics throughout the Prague

Table 1: Treatment Groups in Echinacea Trial

EH/Echinacea Placebo	Oseltamivir/Oseltamivir placebo
n = 237	n = 236
34 lost to protocol	19 lost to protocol
203 used in analysis of efficacy	217 used in analysis of efficacy

area of the Czech Republic were diagnosed with influenza virus clinically and via nasal swab, and randomized for treatment for 10 days. Most patients were adults, with a mean age of 37 years, and nine children ages 12 to 17 years were included in the study. The treatment and placebo groups were comparable in regard to age, body weight, height, body mass index, and sex distribution.

Patients who had < 48 hours of symptoms were tested using a diagnostic test from mid-turbinate nasal samples. Samples were placed in a tube containing a transport medium and shipped for influenza detection using reverse transcription-PCR. Forty-one patients tested positive for one type of influenza: type A, non-typeable influenza A, influenza B, or coinfection with A and B. Participants were asked to record symptoms over the 10 days of treatment and blood work was taken at the beginning and end of study. Those meeting the inclusion criteria for clinical diagnosis of influenza had at least one respiratory symptom, one constitutional symptom, fever > 37.8° C, and symptoms present for ≤ 48 hours. Exclusion criteria were outlined in the material and methods section. Once randomized, the codes were placed in a sealed envelope and kept closed unless an emergency arose.

The formulation of 240 mg of EH was made from the leaves, flowers, and roots of *E. purpurea*, with an additional 276.5 mg of *Sambucus fructus succus recentis* (elderberry). The echinacea placebo was given the same colorants and flavors as the EH with the same excipients as the echinacea. Both were placed in 200 mL dark brown glass bottles.

Oseltamivir and its placebo were made equally indistinguishable by over-encapsulating the original oseltamivir capsules. Identical placebo capsules were manufactured. All capsules were made by Corden Pharma GmbH and placed in matching bottles with 10 capsules each. All participants took a liquid form of a substance, either echinacea infusion or placebo, from the indistinguishable glass bottles for 10 days. Simultaneously, the entire population took capsules (oseltamivir or placebo) twice daily for 10 days, qualifying it as a double-dummy study. For the first 5 days, those in oseltamivir group took active capsules

Table 2: Percent of Research Subjects Achieving Primary Endpoint in Echinacea vs Oseltamivir Groups

Mild or No Symptoms (Primary Endpoint)	Echinacea Infusion	Oseltamivir
Day 1	1.5%	4.1%
Day 5	50.2%	48.8%
Day 10	90.1%	84.8%

twice daily followed by 5 days of placebo. Of the participants, only 16.2% in the EH group and 18.2% in the oseltamivir group guessed which therapy they received, achieving successful blinding of study.

In the end, 203 and 217 patients were included in per-protocol group for analysis of efficacy. More than 90% of the patients in both groups took at least 80% of the assigned treatment. (*See Table 1.*)

The primary endpoint of the study occurred when the majority of patients had mild or no symptoms after day 1, 5, and 10. Recovery was defined as the first day where symptoms of cough, nasal obstruction, sore throat, fatigue, headache, myalgia, and fever were absent or mild in the evening. At each time point, a similar number of participants had recovered in both groups, as seen in Table 2.

Overall, the study showed noninferiority (95% confidence interval, 0.487-0.5265 by generalized Wilcoxon test). Secondary variables included return to daily activities and sleep disruption among other influenza-associated symptoms. Standard noninferiority methods were used in the statistical analysis.

Recovery from upper respiratory infection symptoms was comparable in the two treatment groups: day 1, 1.5% vs 4.1%; day 5, 50.2% vs 48.8%; and day 10, 90.1% vs 84.8% with EH infusion vs oseltamivir, respectively. Medical complications (i.e., pneumonia, bronchitis, sinusitis, etc.) occurred in both groups with statistically similar rates: EH vs oseltamivir (2.46% vs 6.45%, $P = 0.076$). Adverse effects were also reported by both groups, 11.4% in EH and 13.9% (no *P* value offered) of those in oseltamivir. Of note, nausea and vomiting occurred five times more frequently in the oseltamivir group than the echinacea group.

■ COMMENTARY

There has been ample research on echinacea for early treatment of cold viruses and upper respiratory tract infections. Most of the studies are considered methodologically weak for a variety of reasons. One of the main reasons lies in the variety of sources, species, and preparations available. There is also the issue with

lack of regulation, standardization, and testing. One review showed weak evidence that some studies show minimal benefit of echinacea in treatment, perhaps even prevention, of colds.[3]

This study was double-blind and double-dummy, which minimizes bias. However, in this case, the research was paid for by A. Vogel Bioforce AG, the manufacturer of the EH product, causing concern for a possible conflict of interest in the research results presented here.

All treatments involved in this study, echinacea (and the other herbal medicine in this formulation, elderberry) and oseltamivir, have mechanisms of action that can explain their antiviral effects. Echinacea's mechanism of action immunologically involves production of interferon, TNF, and interleukin-1, in addition to macrophage proliferation and phagocytosis.[4] Oseltamivir inhibits the neuraminidase enzyme. This enzyme causes the virus to be released from infected cells and helps move it through the respiratory tract.[5] Elderberry has multiple mechanisms of action and it works as an antiviral to inhibit replication of the influenza type A and B as well as herpes simplex virus-1 by using coating to render the virus nonfunctional.[8]

[It goes without saying that clinicians should continue to encourage supportive care for people who have suspected influenza, and such advice might include recommending rest and hydration.]

One criticism of this study is that only 41 out of 473 (8%) subjects tested positive for one of the strains of influenza. The CDC states that positive influenza testing is not necessary to make a decision on using antivirals, leaving treatment and prophylaxis decisions to be based on clinical presentation and high influenza activity in the community. Nonetheless, the study would have been more convincing if a greater percentage had been virologically confirmed.

Clinicians and patients in both Europe and North America use *E. purpurea* for its immunological properties. According to this study, the use of EH in early interventional treatment of influenza is approximately equal in therapeutic effects to oseltamivir with a significance level $\alpha = 0.05$ (2-sided). Noninferiority studies show that the new intervention is not inferior to the previous one or that the new treatment is equivalent to standard treatment.[7] In addition to being noninferior, the adverse effects were less severe and less common with EH.

The challenge is trying to make concrete clinical recommendations from this study's results. For instance, for some patients influenza is self-limiting and they will not need either intervention based on the natural course of the disease. In addition, the exact formulation studied in this trial is not available in the United States, but a similar product or products could be used if matched to the dosing described in the materials and methods section.

In the greater context, well-researched herbal alternatives to pharmaceuticals are essential for clinicians. In this case, EH might indeed be an option for suspected influenza or upper respiratory tract infections. It goes without saying that clinicians should continue to encourage supportive care for people who have suspected influenza and such advice might include recommending rest and hydration.

Oseltamivir may need to remain the gold standard for the treatment of suspected influenza until stronger, unbiased evidence for the use of echinacea surfaces. In addition, a reliable source of the particular *E. purpurea*–elderberry combination will need to be available in the United States to begin to use these research results clinically. Until then, clinicians can start to become familiar with some of the comparable third-party certified products available in the United States should particular patient circumstances or requests dictate a botanical option. ■

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ABSTRACT & COMMENTARY

Emergency Department Visits Related to Dietary Supplements

By Ellen Feldman, MD

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Dr. Feldman reports no financial relationships relevant to this field of study.

SYNOPSIS: A 10-year chart review of 63 nationally representative emergency departments reveals 3667 cases of adverse events related to dietary supplement use; these are estimated to represent 23,005 emergency department visits yearly. Characteristics of the visits are described and categorized.

SOURCE: Geller A, et al. Emergency department visits for adverse events related to dietary supplements. *N Engl J Med* 2015;373: 1531-1540.

"Be the kind of person who takes supplements — then skip the supplements."
— Michael Pollan, Food Rules: An Eater's Manual

More than 20% of Americans report the use of dietary supplements on a daily basis.[1,2] Yet, there have been few studies looking at presentations of adverse events related to supplement use. In an effort to address this gap and begin to collect and analyze meaningful data, Geller et al reviewed 10 years of data (Jan. 1, 2004 to Dec. 31, 2013) collected from 63 hospitals enrolled in a study jointly coordinated by Centers for Disease Control and Prevention (CDC), the FDA, and the Consumer Product Safety Commission.

This ongoing study, known as The National Electronic Injury Surveillance System — Cooperative Adverse Drug Event Surveillance (NEISS-CADES) was developed to collect and track specific details of adverse drug events (ADE).[3] The hospitals participating in the study were selected as a stratified probability sample of all U.S. hospitals with specified characteristics. Trained coders were present at each site to abstract relevant data, which was weighted to calculate national averages.

In this investigation of adverse events related specifically to dietary supplements, cases were selected based on the emergency department (ED) clinicians' opinion that the presenting problem was related to use of dietary supplements. For purposes of the study, dietary supplements include herbal products in oral and topical form (botanicals); complementary nutritional products (amino acids supplements, some laxatives, probiotics); and micronutrients (orally ingested vitamin or mineral supplements). The study excluded food or drink products such as herbal teas and energy drinks. The study also excluded cases of intentional overdoses, abuse, withdrawal symptoms, therapeutic failures, and death as adverse events.

Summary Points

- A chart review from 2004-2013 of 63 nationally representative hospitals reveals 3667 cases of emergency department (ED) visits related to adverse effects of dietary supplements (as defined in the article.)
- Calculated estimates based on these representative numbers are 23,005 ED visits and 2154 hospitalizations per year across the United States.
- The authors found that one-fifth of the total visits involved unsupervised ingestion by children. Another one-fourth of the total visits involved young adults, and half of these visits were related to weight loss or energy products. Among older patients, more than one-third of the visits involved choking.

The authors identified 3667 cases from 2004 to 2013; 400 of these resulted in hospitalization. National estimates were derived from these numbers using statistical software and accounting for changes in population. These calculations led to the following estimates of annual nationally occurring events:

- 23,005 ED visits (95% confidence interval [CI], 18,611-27,398);
- 2154 hospitalizations (95% CI, 1342-2967);
- 87% of the visits involved a single agent.

SPECIAL CASES

Children: Unsupervised ingestion by children ≤ 10 years of age accounted for 946 visits (estimated 4871 visits annually) or just over one-fifth of the total cases; almost two-thirds of these cases involved ingestion of micronutrients such as multivitamins or iron. Supplements for sleep, weight loss, and relief of anxiety were implicated in most of the remaining cases.

Older Adults: An estimated 37.6% of the visits in this age group involved swallowing problems or airway obstruction. The bulk of the swallowing problems were related to micronutrients (83.1% estimated). In younger patients, swallowing problems were significantly less common (9.4%). (*See Figure 1.*)

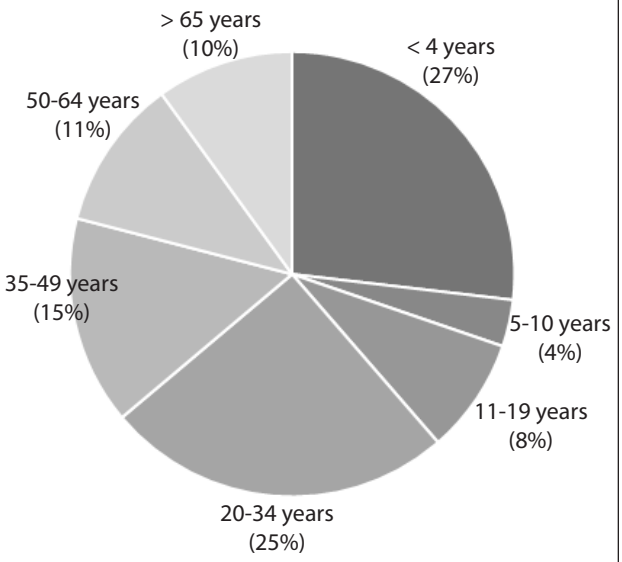
Weight Loss and Energy Products: After excluding cases of unsupervised ingestion by children, these products were implicated as causative agents in more than one-third of the visits. Weight loss products were related to 25.5% of these visits and energy products were involved in 10.0% of these visits.

Single Supplement Cases (after exclusion of unsupervised ingestion by children): Extrapolated data reveals that almost 66% of these cases involved herbal or non-herbal non-nutritional products as delineated above. (*See Figure 2.*) Micronutrients such as vitamins or minerals are implicated in the remaining 33% of the cases. In this category, multivitamins are involved in about 16% of identified cases, while calcium, iron, and potassium each are involved at an occurrence rate of < 5%.

Patient Age and Product Type: Figure 3 shows the estimated annual ED visits (excluded are unsupervised ingestions by children ≤ 10 years old and cases with more than one supplement.)

Weight Loss Products and Age: Estimated number of ADE cases according to age of patient. National estimate of events associated with weight-loss products in those > 65 years of age may be unreliable due to the small numbers involved. (*See Figure 3.*)

Figure 1: Age of Patients (Total 3667)



(Note: Unsupervised ingestion by children accounts for 946 cases.)
Data prior to national estimates.

■ COMMENTARY

The popular press wasted no time alerting the general public to the findings of this study.[3] Reactions varied among the publications and ranged from calling for more controls on "dangerous" dietary supplements to espousing the relative safety of these products compared to their prescription counterparts.[4-6]

True enough, a comparable study in 2006 reviewing adverse events related to conventional pharmaceutical products found a weighted annual estimate of just over 700,000 such events annually across the United States — a number about 30 times higher than the 23,000 yearly visits estimated in this study of adverse events related to nutritional supplements.[7]

Yet one can certainly argue that 23,000 annual ED visits related to any one category of product is unacceptable and that looking toward prevention is necessary. In this regard, two areas of potential harm-reduction emerge fairly readily.

The first involves the 946 cases of children presenting to EDs with unsupervised ingestion of a dietary supplement. Childproof lids currently are not required on dietary supplements unless the supplement contains > 250 mg of elemental iron.[8] Legislation or voluntary action by product manufacturers would be ideal; however, while waiting for such action, primary care practitioners can play a major role by reminding caregivers of young children of the absence of such lids and the wisdom of keeping dietary supplements in secured areas, even if the supplement happens to have child-proof packaging.

The second area involves persons on the other end of the age spectrum. Almost 40% of ED visits for those > 65 years of age involved some form of swallowing dysfunction. Encouraging older adults to utilize the newer mini-multivitamins and to examine the sizes of supplements before purchasing may help reduce the number of visits among this population. Educating the elderly regarding this problem and teaching them about FDA recommendations for size of pharmaceutical tablets (22 mm) is another area of potential intervention.[9]

Figure 2: Conditions for Which Dietary Supplements Were Used and Implicated in a Possible Adverse Effect

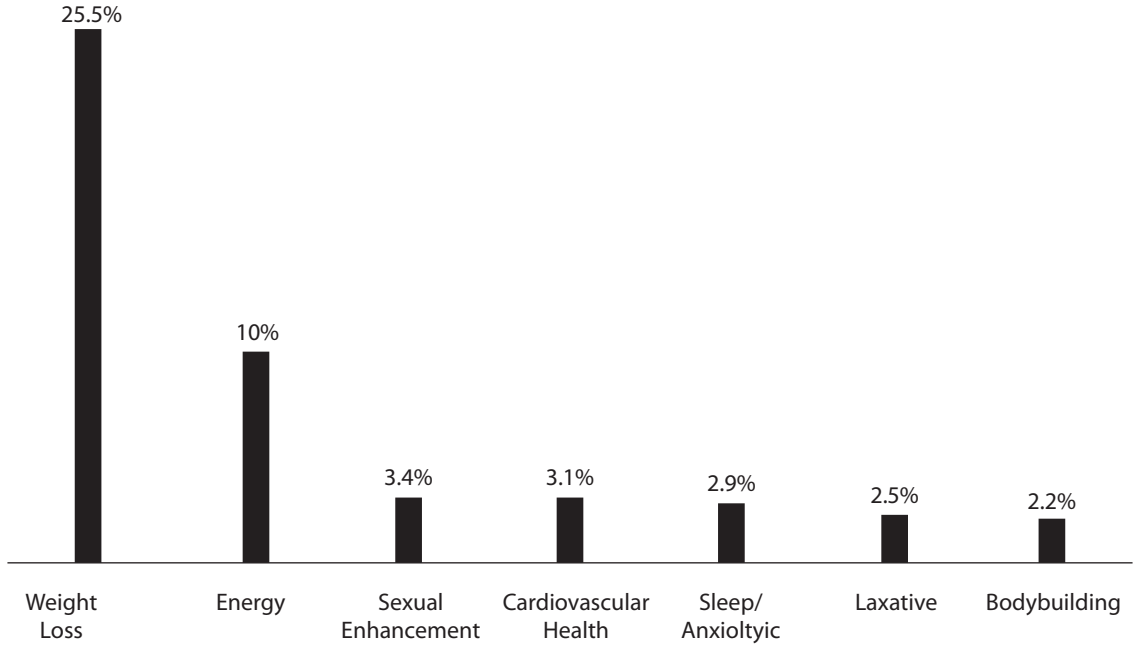
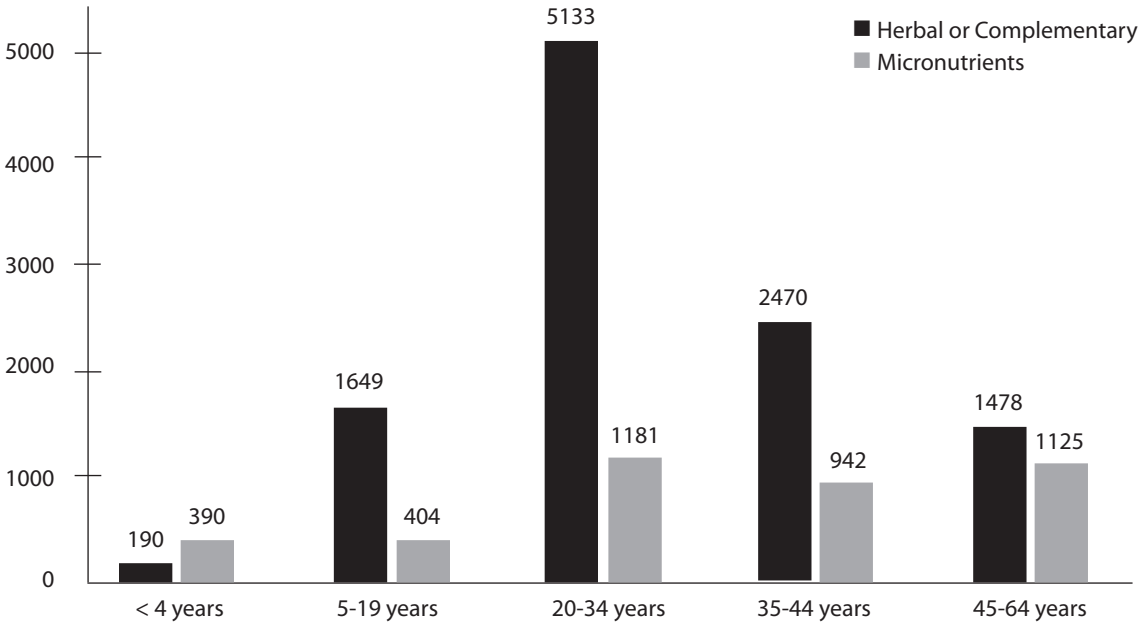


Figure 3: Annual Emergency Department Visits by Age and Product Type



Another area in which primary care providers can play an important role is warning patients about the potential of weight loss and energy products to precipitate cardiac symptoms. Urging product manufactures to acknowledge the possibility of cardiac side effects on relevant product labels also can help patients develop a more nuanced understanding of the role of these products in overall health care.

The authors acknowledged several limitations in the study. There are relatively wide confidence intervals around the estimated national values due to inherent limitations of estimating based on small sample sizes. They acknowledged the numbers may over-represent or under-represent the actual number of cases.

Recall that the identification of cases for inclusion in

this study rely primarily on an ED physician opinion. Errors here can result in a distortion in numbers of cases identified — over-identification if the symptoms are incorrectly attributed to a supplement or under-identification in cases where the ED physician is not aware a supplement is in use.

As awareness of potential adverse effects of supplements grows, it seems more likely that medical practitioners will begin to incorporate questions about patient use of supplements into a routine history. Asking such questions and addressing specific at-risk groups can help both clarify and potentially reduce the adverse events related to use of dietary supplements. Reporting suspected adverse reactions to manufactures and the FDA MedWatch program[10] will assist in developing an accurate ongoing data bank.

The findings from this study can be understood as clear notice to medical providers regarding the importance of recognizing the critical impact of discussing dietary supplement use with patients, as well as a reminder to include the relatively small yet still significant chance for precipitation of an unexpected event. Preventive measures, such as reminding parents of young children to securely store supplements and warning older patients to assess size of products, seem to be easily implemented, cost-effective strategies with the potential to reduce harm in these groups. ■

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ALZHEIMER'S DISEASE

SHORT REPORT

Kirtan Kriya Meditation on Stress and Alzheimer's Disease

By Erica Benedicto, PA-C, MPH

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Ms. Benedicto reports no financial relationships relevant to this field of study.

SYNOPSIS: This review article shows that meditation, particularly Kirtan Kriya, can mitigate the negative biochemical effects of stress.

SOURCE: Khalsa D. Stress, meditation and Alzheimer's disease prevention: Where the evidence stands. *J Alzheimers Dis* 2015;48:1-12.

This review article focuses on a common lifestyle risk factor, chronic stress, and its effects on the brain and Alzheimer's disease (AD). Chronic stress is associated with cognitive decline, memory loss, decreased size of the anterior cingulate cortex, and diminishing telomerase levels. The researcher reviews multiple forms of meditation as primary, secondary, and tertiary prevention and focuses on Kirtan Kriya (KK) meditation. KK uses five specific actions that increase blood flood to certain areas of the brain, among other benefits. Meditative practices, including transcendental meditation, relaxation response, and mindfulness-based stress reduction, also are outlined along with their benefits. These techniques have been shown to positively impact the brain in various ways, including decreasing the expression of inflammatory

Summary Point

- Meditation, specifically Kirtan Kriya, may benefit patients who suffer from mild cognitive impairment, subjective cognitive decline, and Alzheimer's disease.

genes and increasing telomerase activity by 43%.

The KK study looked at 14 participants with memory problems and performed baseline cerebral blood flow levels, SPECT scans, and neuropsychological testing. The comparison group listened to music instead of KK meditation.[1] After 8 weeks, in the meditation group, significant increases were found in the cerebral blood flow ratios in the prefrontal, superior frontal, and superior parietal cortices ($P < 0.05$). A portion of the neuropsychological tests improved as well, but was not statistically significant. Subjectively, participants who completed the 8-week meditation program reported increased memory function, which is important since people with subjective cognitive decline are at higher risk of progressing to both mild cognitive impairment and AD.[2]

Clinicians should find these results encouraging, but the research on meditation is still in its infancy. Based on studies reviewed, the author recommends that meditation, in addition to lifestyle modifications, including nutrition, physical fitness, mental exercises, and social interaction, be part of an AD prevention program.[2] According to his research, KK even can be used as the sole treatment, such as when other lifestyle modifications are too difficult or expensive to institute. ■

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Figure 1: Kirtan Kriya Meditation

Posture: Sit in chair with feet flat on floor

Breath: Normal breathing pattern

Eyes: Closed

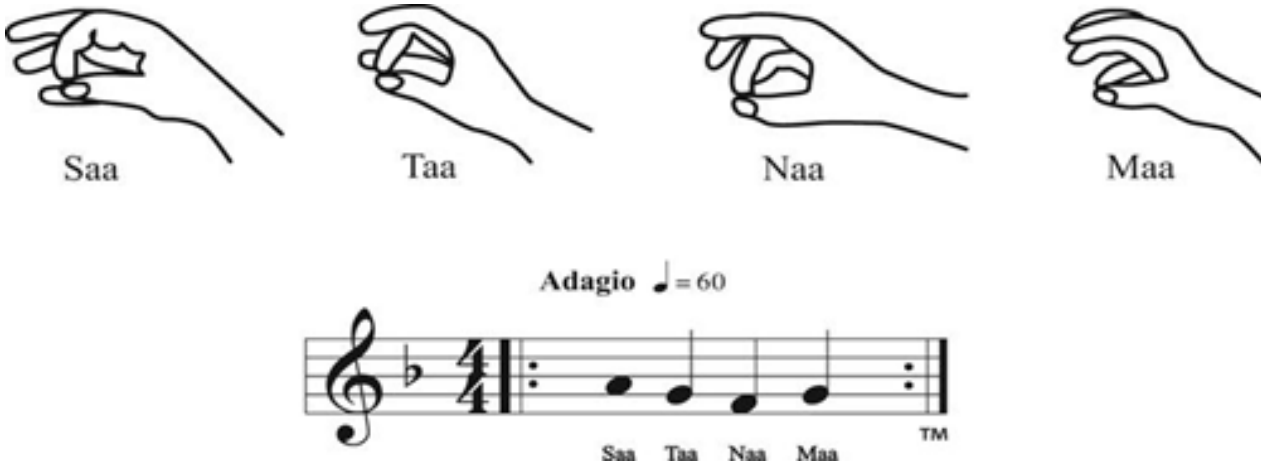
Sounds: Saa, Taa, Naa, Maa, following the tune of "Mary had a little lamb"

Finger Movement: Shown below. Always forward, thumb to index finger, middle, ring, and pinky

Visualization: L-shaped sweep from top of head, down to forehead to out through nose level.

Sequence: Two minutes sing out loud, 2 minutes in stage whisper, 4 minutes say sounds silently to self, whisper for 2 minutes, complete by singing out loud for 2 minutes.

Complete 12 minutes and then inhale deeply a few times and stretch arms overhead before opening eyes.



Adapted from: Khalsa D. Stress, meditation and Alzheimer's disease prevention: Where the evidence stands. *J Alzheimers Dis* 2015;48:1-12.

We Need Your Help!

The *Integrative Medicine Alert* editors are planning topics for 2016 issues and would like your feedback on topics recently covered. Please help us by answering three questions at the following link: http://goahc.co/AMAsurvey15. Thank you for your help!

CME INSTRUCTIONS

To earn credit for this activity, please follow these instructions:

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5. Twice yearly after the test, your browser will be directed to an activity evaluation form, which must be completed to receive your credit letter.

CME QUESTIONS

1. **In breast cancer survivors, an imagery program delivered via telemedicine or live was found to:**
   a. improve all aspects of quality of life studied in both intervention groups but not in the wait list group.
   b. improve fatigue, sleep, and cognitive function only in the live group compared to the telemedicine group.
   c. improve fatigue, sleep, and cognitive function in both intervention groups but not in the wait list group.
   d. improve psychological distress and spiritual well being in both the intervention groups compared to the wait list group.

2. **Which of the following is true about Echinaforce Hotdrink compared to oseltamivir?**
   a. Echinaforce Hotdrink is inferior to ostelmavir as early influenza treatment with more adverse effects.
   b. Echinaforce Hotdrink is noninferior to oseltamivir as early influenza treatment with less adverse effects.
   c. Echinaforce Hotdrink is noninferior to ostelmivir as early influenza treatment with more adverse effects.
   d. Echinaforce Hotdrink is inferior to oseltamivir with less adverse effects.

3. **Which of the following statements is true regarding swallowing problems and dietary supplements?**
   a. In patients ≥ 65 years, almost 90% presented with swallowing problems related to dietary supplements.
   b. Most of the swallowing problems were related to micronutrients.
   c. Most of the patients with swallowing problems associated with use of dietary supplements had pre-existing illnesses or conditions leading to swallowing vulnerabilities.
   d. All of the above

4. **According to the article on meditation and Alzheimer's disease (AD), why is it important to ask patients about their subjective sense of cognitive decline?**
   a. Clinicians can then rule those patients out as appropriate for a meditation intervention.
   b. Those patients with abnormalities might be at increased risk of progression to AD.
   c. There is well-documented evidence that they should meditate twice as much as other groups of older adults.
   d. It is not of clinical importance, but it should be charted as such.

[IN FUTURE ISSUES]

- Exercise and antenatal depression
- Glucosamine and knee pain and function
- Acupuncture and low back pain
- Bright light therapy for depression

Integrative Medicine [ALERT]

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