



Complementary and Alternative Medicine Use in Modern Obstetrics: A Survey of the Central Association of Obstetricians & Gynecologists Members

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Abstract

The use of complementary and alternative medicine during pregnancy is currently on the rise. A validated survey was conducted at the Central Association of Obstetrician and Gynecologists annual meeting to evaluate the knowledge, attitude, and practice of general obstetricians and gynecologists and maternal-fetal medicine specialists in America. We obtained 128 responses: 73 electronically (57%) and 55 via the paper survey (43%). Forty-five percent reported personally using complementary and alternative medicine and 9% of women respondents used complementary and alternative medicine during pregnancy. Overall, 62% had advised their patients to utilize some form of complementary and alternative medicine in pregnancy. Biofeedback, massage therapy, meditation, and yoga were considered the most effective modalities in pregnancy (median [semi-interquartile range] = 2 [0.5]). Maternal-fetal medicine specialists were significantly more likely to disagree on the use of complementary and alternative medicine for risk reduction of preterm birth compared to obstetricians and gynecologists ($P = .03$). As the use of complementary and alternative medicine continues to rise in reproductive-age women, obstetricians will play an integral role in incorporating complementary and alternative medicine use with conventional medicine.

Keywords

complementary and alternative medicine, pregnancy, obstetrics

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Complementary and alternative medicine has been defined as an array of health care approaches with a history of use or origins outside of mainstream medicine.¹ The National Center for Complementary and Integrative Health, a branch of the National Institutes of Health, reports that more than 33% of Americans use complementary and alternative medicine for specific conditions or overall well-being; the majority are reproductive-age group women.²

The use of complementary and alternative medicine among Americans is on the rise, and more women are turning to complementary and alternative medicine during their pregnancy. According to several Cochrane reviews, there is some evidence to support the use of acupuncture and acupressure for the treatment of nausea and vomiting in pregnancy, the management of labor pain, and potentially in induction of labor.³⁻⁵ Other interventions such as ginger, mint oil, lemon oil, and chamomile may also help relieve early pregnancy nausea and vomiting.³ Several randomized trials support the use of relaxation techniques and yoga to reduce pain during pregnancy and labor.^{6,7}

Despite known benefits of complementary and alternative medicine use in pregnancy, the current prevalence of use in the United States is not well documented. Several studies have been performed on the use of complementary and alternative medicine in obstetrics, revealing a practice rate of 50% to 70%; however, to date, these studies were conducted outside the United States.⁸⁻¹⁰ In 2013, Strouss et al¹¹ examined the prevalence of complementary and alternative medicine use within a single American tertiary care hospital. Results from their survey, conducted twice 5 years apart, showed that 68.5% to 72.0%

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women used at least one type of complementary and alternative medicine during pregnancy. Moreover, the top 3 reasons cited for using complementary and alternative medicine during pregnancy were the following: (1) felt it would improve her health and experience (74%), (2) felt it would be beneficial to her baby (69%), and (3) previous use (60%).¹¹

The use of complementary and alternative medicine during pregnancy also depends on obstetricians' recommendations and these have changed over time. In 2004, Mildren and Stokols¹² randomly sampled 200 Californian physicians and found 61% of physicians discouraged the use of complementary and alternative medicine therapies due to lack of knowledge on the safety and efficacy of complementary and alternative medicine use. Approximately 10 years later, in 2014, the majority of obstetricians from another institution appear to be supportive of complementary and alternative medicine use; however, only 15% actually recommended complementary and alternative medicine use in pregnancy.¹¹ Currently, there is no study that demonstrates the views of obstetricians and gynecologists across the United States.

Maternal-fetal medicine specialists, also known as perinatologists, are high-risk pregnancy experts that focus on managing nonroutine health concerns of the mother and fetus before, during, and after pregnancy. Maternal-fetal medicine specialists are obstetrician-gynecologist physicians who have completed 4 years of obstetrician and gynecologist residency training followed by 2 to 3 years of additional training in education, clinical experience, and research to refine specialized competencies to manage pregnancy.¹³ Pursuing a maternal-fetal medicine specialist fellowship after general obstetrician and gynecologist residency is optional for any physician who has completed his or her residency program. Maternal-fetal medicine specialists focus their attention on managing women at the time of pregnancy, while general obstetricians and gynecologists continue to manage women's health issues including pregnancy.

The primary purpose of this survey was to evaluate the knowledge and attitude of obstetrician-gynecologists on complementary and alternative medicine use during pregnancy. Personal use by physicians and their recommendations on complementary and alternative medicine use in pregnancy to their patients were also evaluated. We also sought to determine if a difference in opinion existed between maternal-fetal medicine specialists and general obstetricians and gynecologists on this topic.

Methods

Approval from the University of Missouri Kansas City Institutional Review Board was obtained (No. 14-419) prior to initiation of the study. The Central Association of Obstetricians and Gynecologists (CAOG) is a nonprofit organization of physicians, established in 1933, that represents hundreds of physicians from the "central" 29 states within the United States. Each year an annual meeting is held to promote optimal health care of women by discussing current medical advances and scientific research. A total of 725 members represent the diverse cohort of the society, which includes active, life, and emeritus members. Life and emeritus CAOG members are physicians

that range from 65 to 101 years of age and are not actively practicing medicine but are vitals members of the society. According to CAOG policies, these members are typically not involved in survey studies and were excluded. A member roster of current and active CAOG members in 2014 was obtained from the conference administrator and comprised the sample.

A survey was developed to assess 5 domains: demographics, personal use of complementary and alternative medicine, perceived effectiveness of 15 common complementary and alternative medicine modalities in pregnancy, the specific use of complementary and alternative medicine modalities in the management of pregnancy, and the incorporation of complementary and alternative medicine use in prenatal medicine. Likert-type response categories of effectiveness of each complementary and alternative medicine modality were categorized as highly, moderately, occasionally, not effective, or harmful. Seventeen statements on individual complementary and alternative medicine therapy use in pregnancy were derived from the American Congress of Obstetricians and Gynecologists (ACOG) Clinical Updates in Women's Health Care booklet titled *Complementary and Alternative Medicine*.¹⁴ Participants were asked to rate their level of agreement on statements about their specific use and integration of complementary and alternative medicine use into medical practice using a 5-point Likert-type scale. All questionnaire items required a single answer response, with the exception of 2 questions where more than one answer could be chosen. One of these questions assessed the reason for not prescribing complementary and alternative medicine and the other queried the resources utilized for complementary and alternative medicine information. Three open-ended questions on personal complementary and alternative medicine use were also included. Data were included for analysis if at least 75% of the survey items were completed. Prior to implementation of the study, the questionnaire was reviewed by an expert panel for face and content validity.

Utilizing the Research Electronic Data Capture (REDCap)¹⁵ to capture data, an anonymous electronic version of the survey was disseminated to all 375 active members 1 week prior to the 2014 Annual CAOG meeting held in Albuquerque, New Mexico. REDCap is a secure, web-based application designed to support data capture for research studies, providing (1) an intuitive interface for validated data entry, (2) audit trails for tracking data manipulation and export procedures, (3) automated export procedures for seamless data downloads to common statistical packages, and (4) procedures for importing data from external sources.¹⁵

The survey was accessible through a unique, one-time use hyperlink created by REDCap. All responses were kept confidential, and survey responses could not be directly connected to an e-mail address. Members who attended the 2014 annual meeting had a second opportunity to anonymously complete a paper version. A sealed collection box was available at the registration table throughout the entire duration of the meeting to return completed surveys. A third and final opportunity was provided 2 weeks after the meeting with a second electronic distribution. In order to discourage individuals from completing the survey multiple times, respondents were instructed to only submit the survey once.

Table 1. Baseline Demographic Characteristics of All Respondents.

Characteristic	Respondents (N = 128), n (%)
Sex	
Male	82 (64.1)
Female	45 (35.2)
Current academic status	
Student	0
Resident	8 (6.3)
Fellow (MFM only)	3 (2.3)
Board-certified generalist	69 (53.9)
Board-certified MFM specialist	43 (33.6)
Board-certified gynecology oncologist	1 (0.8)
Board-certified reproductive endocrinologist	1 (0.8)
Board-certified urogynecologist	2 (1.6)
Other	1 (0.8)
Total number of years you have practiced obstetrics after residency ^a	21.4 (0-47)
Ethnicity	
Caucasian	105 (82)
African American	11 (8.6)
Hispanic	2 (1.6)
Asian	5 (3.9)
Multiracial/other	5 (3.9)
Midwives integrated in your obstetric practice	54 (42.2)

Abbreviation: MFM, maternal-fetal medicine.

^aData presented as mean (range).

Study data were collected and managed using REDCap hosted at the University of Missouri Kansas City.¹⁵ Statistical analyses were conducted with SPSS version 21. Descriptive statistics were computed to characterize demographic and personal complementary and alternative medicine use data. Median and semi-interquartile range values were obtained for rating data and Likert scales. In order to examine the underlying factor structure of the attitudinal items, principal components analysis with Varimax rotation was used. Based on item loadings, subscales were identified and items that cross-loaded or had factor loadings <0.4 were eliminated. Internal consistency estimates of reliability (Cronbach α) were evaluated to ensure subscale reliability and mean scores computed for each subscale for subsequent analysis.¹⁶

Mean subscale scores were computed based on the specific use of complementary and alternative medicine for nausea, labor pain reduction, labor duration reduction, risk of preterm birth, and moxibustion. Effectiveness score medians (semi-interquartile range) were calculated for individual complementary and alternative medicine modalities utilizing the same 5-point scale, where highly effective = 1 and harmful = 5. Response comparisons between maternal-fetal medicine specialists and obstetricians and gynecologists were conducted using the Mann-Whitney *U* test, χ^2 test, and Fisher's exact test where applicable. A *P* value of <.05 was considered significant for all analyses.

Results

Of the 375 active CAOG members, 73 responded electronically and 55 via paper for a total response rate of 34% (n = 128). Data used for comparison consisted of 115 surveys of which

54% (n = 69) were board-certified obstetricians and gynecologists and 36% (n = 46) were maternal-fetal medicine specialists including fellows. Baseline demographic characteristics of all respondents are presented in Table 1.

Of the 45% of respondents who reported having personally used complementary and alternative medicine for their own health, the most common modalities reported were massage (40%), vitamin and mineral supplements (33%), yoga (19%), chiropractic manipulation (19%), acupuncture (16%), probiotics (12%), and herbal supplements (9%; Table 2). Other less frequently reported modalities included ginger, hypnotherapy, homeopathy and Ayurveda, meditation, Reiki, and Tai Chi. Of the 9.4% of women respondents who stated that they used complementary and alternative medicine modalities during their own pregnancies, massage (33%) and vitamins (25%) were most commonly used. Other specific modalities included acupuncture, aromatherapy, ginger, probiotics, spinal manipulation, and yoga (n = 1 each). Of the clinicians who reported receiving dedicated training in complementary and alternative medicine (11%), supplemental training included acupuncture, biofeedback, hypnotherapy, and yoga. Overall, 62% reported they advised their patients to utilize some form of complementary and alternative medicine in pregnancy. Reasons cited for 38% of practitioners not recommending complementary and alternative medicine included a lack of training in complementary and alternative medicine use and insufficient evidence on the efficacy and safety of prenatal complementary and alternative medicine.

Attitudinal scores about effectiveness of 15 most common complementary and alternative medicine modalities are presented in Table 3. Overall, massage was the most common modality considered to be moderately to highly effective by 56% of respondents, followed by yoga (46%), meditation (41%), and biofeedback (38%). Black cohosh was not only considered not effective by 27%, it was thought to be the most harmful complementary and alternative medicine modality in pregnancy on the list. Although over 40% of respondents were not familiar with homeopathy, it was also considered to be not effective and possibly harmful in pregnancy.

All statements derived from the ACOG publication could be correctly answered with strongly agree or agree (Supplement 1, available online at <http://journals.sagepub.com/doi/suppl/10.1177/2156587216671215>). The majority of respondents agreed only on the following: acupuncture and yoga can reduce low back pain in pregnancy (54% and 76%); ginger (1 g/day) can treat nausea (67%); hypnosis, massage therapy, and yoga can effectively reduce labor pain (52%, 69%, and 54%, respectively). However, 49% of the group disagreed with the use of moxibustion to evert a breech fetus to vertex position. The median scores for the remainder of the questions remained neutral.

Statistical comparisons between maternal-fetal medicine specialists and obstetricians and gynecologists were largely non-significant. There were no differences in gender (*P* = .79), ethnicity (*P* = .56), and reported personal complementary and alternative medicine use (*P* = .20) for the respective groups. Responses to 2 out of the 17 specific use statements differed between the 2 groups. Maternal-fetal medicine specialists disagreed on "Fish supplements containing omega-3 fatty acids can

Table 2. Personal Complementary and Alternative Medicine Use^a.

	Respondents (N = 128), n (%)
Have you <i>personally</i> used any Complementary and Alternative Medicine (CAM) for your own health in the past 5 years?	
No	70 (54.7)
Yes, please specify	58 (45.3)
If female, did you ever use CAM during a pregnancy?	
Male/never been pregnant	82 (64.1)
No	30 (23.4)
Yes, please specify	12 (9.4)
Have you received any training beyond medical school or residency on the use of CAM (ie, yoga, acupuncture, acupressure, hypnotherapy, etc)?	
No	113 (88.3)
Yes, please specify	15 (11.7)
Do you routinely query your pregnant patients about their use of CAM during the pregnancy?	
No	84 (65.6)
Yes	43 (33.6)
Have you ever prescribed, referred, or advised the use of any CAM to your pregnant patients?	
No	
Please indicate the reason for <i>not</i> using CAM (check all that apply):	49 (38.3)
Not enough evidence on the efficacy of CAM during pregnancy	24 (18.8)
Not enough evidence on the safety of CAM during pregnancy	13 (10.2)
No training in the use of CAM during pregnancy	25 (19.5)
Bad patient experience with previous CAM use during pregnancy	2 (1.6)
Conventional medicine is sufficient for the management of pregnancy	5 (3.9)
Other	3 (2.3)
Yes	
What sources of information do you use to find out about CAM use in pregnancy? (check all that apply):	79 (61.7)
ACOG resources	35 (27.3)
Peer reviewed journal articles	33 (25.8)
Professional colleagues	45 (35.2)
Personal experience	32 (25.0)
Family and friends	9 (7.0)
CAM providers	21 (16.4)
Magazines/television	3 (2.3)
Internet (nonmedical sites)	8 (6.3)
Others	4 (3.1)

Abbreviation: ACOG, American Congress of Obstetricians and Gynecologists.

^aTotal N may vary due to the possibility of multiple answers and all respondents did not answer all questions.

lower the risk of preterm birth” and “Moxibustion can turn a breech baby to a vertex position,” while the obstetricians and gynecologists remained neutral ($P = .06$, $P = .21$, respectively). A significant difference was noted in the subscale analysis in which maternal-fetal medicine specialists were more likely to disagree on the use of complementary and alternative medicine for risk reduction of preterm birth ($P = .03$; Table 4). There was no significant difference on the opinions of integration of complementary and alternative medicine use into prenatal medicine between maternal-fetal medicine specialists and obstetricians and gynecologists (Table 5). Both groups agreed that there is value in complementary and alternative medicine use in pregnancy and it should be integrated into clinical care and training.

Discussion

Complementary and alternative medicine use is prevalent in the United States and utilization in pregnancy is on the rise.¹

We assessed the current attitudes, knowledge, and practice of complementary and alternative medicine use among a diverse cohort of obstetricians and demonstrated that complementary and alternative medicine use in pregnancy has been advised by more than 60% of American obstetricians. While the evidence of complementary and alternative medicine use in pregnancy may be debatable, maternal-fetal medicine specialists were more likely to refute the use of complementary and alternative medicine modalities to reduce the risk of preterm birth when compared to obstetricians and gynecologists.

There are 3 main findings from our study. First, we were able to identify a knowledge gap on complementary and alternative medicine modalities that can be used during pregnancy. When queried specifically on 15 complementary and alternative medicine modalities and how familiar respondents were with them, a sizable proportion of respondents were unfamiliar with most of the modalities. Black cohosh (*Cimicifuga racemosa*) is frequently used to relieve vasomotor menopausal and

Table 3. Ratings of Effectiveness of CAM Modalities in Pregnancy^a.

Modality	Effectiveness Score, Median (SIQ)	Harmful, n (%)	Not Familiar With Modality, n (%)
Acupuncture	3 (0.5)	0	20 (15.6)
Acupressure	3 (0.5)	0	39 (30.5)
Aromatherapy	3 (0.5)	0	43 (33.6)
Biofeedback	2 (0.5)	0	30 (23.4)
Black cohosh	4 (1.0)	27 (21.1)	39 (30.5)
Chiropractic	3 (0.5)	11 (8.6)	10 (7.8)
Ginger	3 (0.5)	0	18 (14.1)
Homeopathy	4 (0.5)	4 (3.1)	53 (41.4)
Hypnosis/guided imagery	3 (0.5)	0	36 (28.1)
Massage therapy	2 (0.5)	1 (0.8)	11 (8.6)
Meditation	2 (0.5)	0	22 (17.2)
Music therapy	3 (0.5)	1 (0.8)	35 (27.3)
Reflexology	3 (0.5)	3 (2.3)	57 (44.5)
Traditional Chinese medicine	3 (0.5)	6 (4.7)	65 (50.8)
Yoga	2 (0.1)	1 (0.8)	17 (13.3)

Abbreviations: CAM, complementary and alternative medicine; SIQ, semi-interquartile range.

^aEffectiveness scale: 1 = Highly; 2 = Moderately; 3 = Occasionally; 4 = Not; 5 = Harmful.

Table 4. Comparison of Subscale Scores From Obstetricians and Gynecologists and MFMs on CAM Use in Pregnancy.

Subscale Scores (Cronbach α)	Generalists (n = 69), Mean (SD)	MFM (n = 46), Mean (SD)	P
CAM use for treatment of nausea in pregnancy ($\alpha = .75$)	2.5 (0.5)	2.5 (0.7)	.97
CAM use for reduction in pregnancy or labor pain ($\alpha = .79$)	2.3 (0.4)	2.5 (0.7)	.14
CAM use for reduction in labor duration ($\alpha = .62$)	3.3 (0.6)	3.4 (0.7)	.46
CAM use and the risk of preterm birth ($\alpha = .75$)	3.2 (0.4)	3.4 (0.6)	.03
Moxibustion use in pregnancy ($\alpha = .49$)	3.4 (0.6)	3.5 (0.7)	.23
CAM use and sleep in pregnancy (single item)	2.1 (0.7)	2.2 (0.8)	.60

Abbreviations: CAM, complementary and alternative medicine; MFM, maternal-fetal medicine; SD, standard deviation.

premenstrual symptoms. It is commonly ingested as a tea or supplement and advised to be used with caution in pregnancy, particularly in the first trimester, due to its purported labor-inducing effects and possible miscarriage risk.¹⁷ Due to the lack of supporting evidence for benefits and undetermined safety profile in pregnancy, avoiding black cohosh during pregnancy and lactation is advised. We demonstrated that only 21% of respondents felt this to be a harmful modality during pregnancy while more than 30% were not familiar with it. This emphasizes the need for further education and training on complementary and alternative medicine use in pregnancy.

Second, the modalities thought to be most effective in pregnancy were consistent with other studies. Biofeedback, chiropractic care, acupuncture, and meditation were considered highly effective complementary and alternative medicine modalities in a 2008 survey study of American Medical Association obstetricians.¹⁸ These mind-body and body based manipulative practices are readily available to the general public and appear to be the most common complementary and alternative medicine modalities used in pregnancy.¹⁹ Several Cochrane reviews support the use of acupuncture, acupressure, yoga, and relaxation techniques to reduce labor pain and increasing satisfaction with pain relief.^{5,6}

Third, our study queried the specific use of complementary and alternative medicine in pregnancy based on ACOG literature. The ACOG Clinical Updates in Women’s Health Care booklet, *Complementary and Alternative Medicine*, was first published in October 2004, replaced in October 2011 with the current edition, and reaffirmed in 2015 with several updates on nonpregnant use.¹⁴ This publication incorporated Cochrane reviews, meta-analyses and systematic reviews, and randomized trials on which they base their recommendations. ACOG supports the use of acupuncture, acupressure, ginger in the treatment of nausea and vomiting in pregnancy, acupuncture, and mind-body techniques such as relaxation techniques, biofeedback, and hypnosis for reducing labor pain, and although additional research is warranted, acupuncture appears to be safe to shorten the duration of labor.¹⁴ As new research continues to emerge, it is imperative that physicians are aware of the support provided by ACOG in use of several complementary and alternative medicine modalities in pregnancy.

The limitations of our study must be acknowledged. First, the response rate was 34%, which may reflect self-selection leading to response bias. However, on assessment of the general background of all CAOG members obtained at the time of becoming a registered member, the gender and specialty response rate found on our survey appropriately represents the total group. For example, approximately 64% of all active CAOG members are male. Of those who claimed a practice specialty, approximately 20% are maternal-fetal medicine specialists and 34% are general obstetricians and gynecologists (more than 40% did not specify). Second, this anonymous survey study aimed to capture all CAOG members who are currently involved in obstetric patient care, and members were given multiple attempts to complete the survey. A member could have completed the survey more than once; however, the likelihood of this occurrence is low and the unique identifier provided by REDCap prevented recurrent online submissions.

Third, although we assessed opinions on effectiveness of complementary and alternative medicine, we did not assess any pregnancy outcomes of women who utilized complementary and alternative medicine during their pregnancy after being advised to do so by their physician. Positive or negative pregnancy outcomes may influence whether or not complementary and alternative medicine use is recommended again by a physician. In our survey, we demonstrated that 25% of physicians utilize personal experience as a source to recommend complementary and alternative medicine use, while 1.6% of respondents do not

Table 5. Attitudes About Integration of CAM Use Into Prenatal Medicine^a.

	Total Respondents (N = 128), Median (SIQ)	Ob-Gyns (N = 69), Median (SIQ)	MFM (N = 46), Median (SIQ)	P
Clinical care should integrate the best conventional and CAM practices. Irrespective of personal beliefs, health care professionals should have knowledge about commonly used CAM methods.	2 (0.5)	2 (0.5)	2 (0.6)	.35
While a few CAM approaches may have limited health benefits, they have no true impact on treatment of symptoms, conditions and/or diseases of pregnancy.	2 (0.0)	2 (0.0)	2 (0.0)	.53
There is value in complementary and alternative medicine use in pregnancy.	3 (0.9)	3 (1.0)	3 (1.0)	.92
Health care professional should receive formal training in medical school about CAM methods that can be used during pregnancy.	2 (0.5)	2 (0.5)	2 (0.5)	.54
	2 (0.5)	2 (0.5)	2 (0.5)	.50

Abbreviations: CAM, complementary and alternative medicine; MFM, maternal-fetal medicine; SIQ, semi-interquartile range.

^aMedian scale: 1 = Strongly agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly disagree.

recommend utilization of complementary and alternative medicine due to a negative patient experience with previous complementary and alternative medicine use during pregnancy. Due to the nature of this survey study, these outcomes were not possible to obtain.

Conclusions

Complementary and alternative medicine use has been integrated into the norm in many countries and is becoming more main stream within the US health care system as demonstrated by the integration into medical school curriculum, reimbursement by third party payers for select therapies, and the development of the National Center for Complementary and Integrative Health via the National Institutes of Health.¹⁸ Utilizing a diverse cohort of obstetricians, we demonstrated that complementary and alternative medicine use in pregnancy has been advised by more than 60% of American obstetricians and only 21% of them are aware that black cohosh is harmful in pregnancy. Despite the increasing awareness of complementary and alternative medicine use in contemporary obstetrics, a lack of ACOG-supported recommendations remains. As the use of complementary and alternative medicine continues to rise in reproductive age women, obstetricians and gynecologists and maternal-fetal medicine specialists will play an integral role in incorporating complementary and alternative medicine use with conventional medicine. Our study calls for a greater awareness regarding complementary and alternative medicine use in pregnancy and support for further scientific studies to provide evidence based advice to optimize patient care.

Author Contributions

SB and KBW designed the study; collected, analyzed, and interpreted the data; and drafted the manuscript. DM contributed to designing the study and drafting the manuscript. All authors have read and approved the final manuscript.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Ethical Approval

This study did not require approval from the ethics committee. Approval from the University of Missouri Kansas City Institutional Review Board was obtained (No. 14-419) prior to initiation of the study. All participants were over the age of 18 years and consent to publish was not required. All participants consented to participation by completion of the survey.

Supplemental Material

Supplemental materials are available at <http://journals.sagepub.com/doi/suppl/10.1177/2156587216671215>.

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