

ORIGINAL RESEARCH

Generational Differences in Complementary and Alternative Medicine (CAM) Use in the Context of Chronic Diseases and Pain: Baby Boomers versus the Silent Generation

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Background: More people are supplementing conventional medicine with complementary and alternative medicine (CAM), but studies have not compared CAM use between baby boomers (adults born from 1946 to 1964) and the so-called silent generation (born from 1925 to 1945).

Methods: This study compares CAM usage between baby boomers ($n = 7734$) and the silent generation ($n = 4682$) through secondary analyses of the 2007 National Health Interview Survey data. The analysis also compares chronic disease and pain status. Multivariate logistic regression models were developed to identify generational differences.

Results: Although the silent generation reported twice as many chronic disease (51.3% vs 26.1%; $P < .001$) and more painful conditions (56.1% vs 52.2%; $P < .001$), baby boomers were more likely to use CAM within the past year (43.1% vs 35.4%; $P < .001$). Adjusting for covariates, baby boomers with heart disease, cancer, and diabetes were more likely to use CAM than adults from the silent generation. Chronic pain status was independently associated with greater CAM use (adjusted odds ratio, 2.26; 95% confidence interval, 2.03–2.52).

Conclusions: Baby boomers reported significantly higher rates of CAM use than the silent generation for both chronic diseases and painful conditions. Family physicians caring for the aging population must use patient-centered communication about the risks/benefits of CAM, which is necessary to promote effective coping with chronic illnesses and pain. (J Am Board Fam Med 2014;27:465–473.)

Keywords: Aging, Alternative Medicine, Chronic Disease, Epidemiology, Pain

With dramatic improvements in public health, clinical care, and health technology, the average human lifespan in the United States has increased.

When the last of the baby boomer generation, individuals born between 1946 to 1964, reaches the age of 65 in 2030, the population of older adults will double to 71 million, constituting 20% of the US population.^{1,2} Although the baby boomers have a longer life expectancy than the previous cohort, the silent generation (born 1925 to 1945), baby boomers will have higher rates of chronic conditions such as diabetes, hypertension, and cancer than their predecessors.^{3–7} The increasing proportion of older adults with comorbidities requires innovative strategies to help individuals cope with and prevent aging-related functional decline.

One area of health care that more people are turning to is complementary and alternative medicine (CAM), a group of modalities, practices, and products that either supplement or substitute con-

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ventional medicine.⁸ In 2007, almost 4 of 10 adults reported using CAM within the past 12 months.⁹ Data indicate that middle-aged and older adults seek CAM to manage their chronic illnesses and improve quality of life.^{9–11} In particular, adults with chronic conditions such as arthritis, hypertension, chronic pain, or cancer use CAM significantly more than adults without such diseases.^{12–18}

Despite these emerging data demonstrating the effectiveness of CAM, little is known about generational differences of CAM use, especially in the context of chronic diseases and chronic pain.¹⁹ Previous studies examined CAM use in older adults age ≥ 65 years, but baby boomers have not been included.^{11,13,20} In addition, studies focused on CAM use among patients with one specific chronic disease but lacked a comprehensive examination of CAM use across multiple chronic diseases in older adults.¹⁸ Because family physicians play a major role in caring of the aging populations with chronic illnesses, this knowledge is especially important to guide appropriate patient-centered care. In this article we analyze a nationally representative sample to evaluate CAM use of the baby boomers compared with the silent generation, focusing on chronic disease and pain. Understanding the differences in CAM usage between generations helps inform research and health policy to better meet the needs of aging baby boomers.

Methods

The National Health Interview Survey (NHIS) is an annual population-based, cross-sectional survey conducted by the Centers for Disease Control and Prevention's National Center for Health Statistics.²¹ Our study combined data collected from the 2007 sample adult core and the CAM file. Details on the survey design and content can be found online (<http://www.cdc.gov/nchs/nhis.htm>; last accessed July 20, 2012). This study was approved by the institutional review board at Johns Hopkins University.

Baby Boomers and the Silent Generation

Self-reported age was used to define each generation. Baby boomers include adults born between 1946 to 1964 and who in 2007 were between the ages of 43 and 61.² The silent generation includes adults born between 1925 to 1945 and who in 2007 were between the ages of 62 and 82.

CAM Use

The National Center for Complementary and Alternative Medicine defines CAM as a group of diverse systems, practices, and products used in the health care field that are not considered part of conventional medicine.⁸ CAM therapies are grouped into 5 broad categories: alternative medical system, biologically based, manipulative and body based, mind–body based, and energy medicine.^{8,22} In the 2007 NHIS, adults were asked about their use of 38 CAM therapies in the past 12 months. CAM use was defined as a response of “yes” to any of the specific therapies.

Chronic Diseases

We defined chronic diseases according to a Centers for Disease Control and Prevention report that identified heart disease, cancer, stroke, lung disease, and diabetes as the leading causes of death in the United States.⁴ Heart disease status was determined by people who responded “yes” to any of the following questions: “Have you EVER been told by a doctor or health professional that you had coronary heart disease?” “Have you EVER been told by a doctor or health professional that you had angina pectoris?” or “Have you EVER been told by a doctor or health professional that you had a heart attack?” Cancer status was based on the question, “Have you EVER been told by a doctor or health professional that you had cancer or a malignancy of any kind?” We included every type except non-melanoma skin cancer. Stroke status was determined by people who responded “yes” to “Have you EVER been told by a doctor or health professional that you had a stroke?” Lung disease was assessed by an affirmative response to any of the following questions: “During the past 12 months have you had emphysema?” “Do you still have asthma?” or “Have you been told by a doctor or health professional that you have chronic bronchitis?” Diabetes status was determined by people who responded “yes” to the question, “Have you EVER been told by a doctor or health professional that you have diabetes or sugar diabetes?”

Painful Conditions

Pain status was determined by people who responded “yes” to any of the following questions: “During the past 30 days, have you had any symptoms of pain, aching, or stiffness in or around a joint?” or “Please refer to pain that lasted a whole

day or more. During the past 3 months, did you have: neck pain, lower back pain, facial ache or pain in the jaw muscles or the joint in front of the ear (facial pain), severe headache or migraine (head pain)?”

Covariates

Self-reported demographic variables included sex, education, race/ethnicity, census region, and body mass index. Education was classified as high school graduate or less, some college or technical school, and college or a more advanced degree. Geographic locations were based on US census regions: Northeast, Midwest, South, and West. We defined race/ethnic group as non-Hispanic white, non-Hispanic black, Hispanic, and Asian. For analysis purposes, we created 3 body mass index categories: normal (<25 kg/m²), overweight (25–29 kg/m²), and obese (≥ 30 kg/m²).

Statistical Analysis

All statistical analyses were performed using STATA version 12 (StataCorp, College Station, TX). We accounted for the complex survey design used to collect NHIS data by using survey-specific commands.²³ We first compared demographic and health characteristics between the 2 generations and then tested the generational differences in CAM use with univariate logistic regression. We then evaluated the proportion of CAM use among a subpopulation of people with and without a particular health condition in each cohort and compared it with the other age group.

To identify factors that were associated with CAM use in each generation, we developed multivariate logistic regression models. One model identified independent predictors for CAM use while adjusting for sex, race/ethnicity, education, census region, chronic disease, and painful condition. Another model identified chronic diseases or painful conditions as predictors of CAM use while adjusting for sociodemographics. Statistical tests were 2-sided; $P < .05$ indicated significance.

Results

The 2007 NHIS sampled 23,393 adults ≥ 18 years old, with a response rate of 67.8%.²⁴ Among these, 12,416 (53.1%) were categorized as either the silent generation or baby boomer generation. A total of 7734 (33.1%) respondents were baby boomers,

representing 76 million Americans, and 4682 (20.0%) were of the silent generation, representing 36 million Americans.

Characteristics of Baby Boomers and the Silent Generation

The baby boomer cohort was significantly more educated, racially/ethnically diverse, and obese than the silent generation (Table 1). Of the silent generation, 51% reported having a chronic disease compared with 26.1% of the baby boomers; the older cohort had a substantially higher prevalence of every chronic disease category ($P < .001$ for all categories). For example, the silent generation was 3 times more likely to have heart disease (18.5% vs 5.4%) and cancer (16.0% vs 5.5%) than baby boomers.

Overall the silent generation reported a slightly higher prevalence of painful conditions than baby boomers (56.1% vs 52.2%; $P < .001$). Although baby boomers were less likely to have specific joint pain (34.7% vs 43.1%; $P < .001$), the younger cohort reported more facial pain (4.9% vs 2.8%; $P < .001$) and head pain (13.2% vs 5.7%; $P < .001$) than the silent generation.

CAM Use Among Baby Boomers versus the Silent Generation

Baby boomers reported higher rates of CAM use within the past 12 months than the silent generation (43.1% vs 36.4%; $P < .001$) (Table 2). Baby boomers were more likely to use a modality in each of the major CAM categories (23.3% vs 22.4%; $P = .32$), except for biologically based CAM. The younger generation was twice as likely to report accessing alternative medical systems (4.5% vs 2.2%; $P < .001$). For manipulative and body-based therapies, twice as many baby boomers reported using massage (9.6% vs 4.8%; $P < .001$). Of baby boomers, 21% reported using mind–body medicine compared with 13.7% of the silent generation. Within the mind–body category, baby boomers were almost twice as likely to pursue meditation (11.5% vs 6.7%; $P < .001$) and yoga (5.9% vs 2.2%; $P < .001$).

Multivariate analysis revealed baby boomers had significantly greater odds of CAM use within the past year (adjusted odds ratio [AOR], 1.30; 95% confidence interval [CI], 1.17–1.44) (Table 3). Similarly, compared with the silent generation, baby boomers were significantly more likely to use alter-

Table 1. Characteristics of Participants: Baby Boomers versus the Silent Generation

Characteristics	Baby Boomers (n = 7734)		Silent Generation (n = 4682)		P Value
	%	SE	%	SE	
Demographics					
Sex					.003
Male	48.27	0.64	44.84	0.91	
Female	51.73	0.64	55.16	0.91	
Educational attainment					<.001
High school or less	41.24	0.72	56.63	1.01	
Some college or technical school	27.53	0.63	21.09	0.74	
College or more advanced	31.23	0.77	22.28	0.82	
Race/ethnicity					<.001
Non-Hispanic white	73.85	0.71	80.35	0.69	
Non-Hispanic black	11.40	0.48	8.94	0.44	
Hispanic	10.55	0.48	7.23	0.48	
Asian	4.20	0.28	3.48	0.28	
Census region					.44
Northeast	17.45	0.65	18.50	0.85	
Midwest	24.13	1.00	24.47	0.98	
South	36.52	0.98	36.54	1.15	
West	21.90	0.76	20.48	0.89	
Clinical Factors					
Body mass index					<.001
Normal (<25 kg/m ²)	32.00	0.62	34.51	0.76	
Overweight (25–29.99 kg/m ²)	37.39	0.69	40.00	0.77	
Obese (≥30 kg/m ²)	30.62	0.68	25.48	0.72	
Chronic disease	26.07	0.62	51.30	0.86	<.001
Heart disease*	5.42	0.33	18.52	0.74	<.001
Diabetes	9.53	0.39	19.05	0.69	<.001
Cancer [†]	5.54	0.31	16.01	0.65	<.001
Lung disease [‡]	10.05	0.39	13.21	0.61	<.001
Stroke	2.46	0.23	6.79	0.43	<.001
Painful condition	52.20	0.69	56.07	0.93	<.001
Neck pain	15.96	0.50	14.70	0.59	.10
Lower-back pain	28.26	0.60	29.28	0.76	.28
Facial pain	4.86	0.29	2.76	0.27	<.001
Head pain	13.16	0.48	5.70	0.39	<.001
Joint pain	34.72	0.68	43.14	0.90	<.001

*Heart disease includes coronary heart disease, heart attack, other heart condition.

[†]Cancer includes any cancer except nonmelanoma cancer.

[‡]Lung disease includes asthma, emphysema, or chronic bronchitis in the past 12 months.

SE, standard error.

native medical system, manipulative-based, mind-body, and energy therapies (Table 2).

CAM Use Among Baby Boomers and the Silent Generation With Chronic Diseases

Among the subset of individuals with chronic diseases, CAM use was consistently higher among baby boomers compared with the silent

generation (44.8% vs 36.7%; $P < .001$) (Figure 1). The younger generation with heart disease, diabetes, or cancer was significantly more likely to report using CAM. For example, within the past year, 40.5% of the silent generation with cancer reported using CAM, and more than half (52.1%) of the baby boomers with cancer reported using CAM.

Table 2. Use of Complementary and Alternative Medicine (CAM) in the Past 12 Months: Baby Boomers versus the Silent Generation

CAM Use	Baby Boomers		Silent Generation		P Value
	%	SE	%	SE	
Any CAM therapy	43.05	0.81	36.41	0.91	<.001
Alternative medical systems	4.54	0.28	2.16	0.23	<.0001
Acupuncture	2.09	0.18	1.17	0.18	.001
Ayurveda	0.07	—	0.05	—	.68
Homeopathy	2.28	0.18	0.82	0.14	<.001
Naturopathy	0.51	0.10	0.31	0.10	.12
Traditional healers*	0.34	0.11	0.13	—	.02
Biologically based	23.30	0.68	22.39	0.76	.32
Chelation therapy	0.09	—	0.09	—	.91
Herbs	20.67	0.63	20.89	0.72	.80
Special diets†	4.38	0.29	2.72	0.29	<.001
Manipulative and body based	17.40	0.6	11.64	0.60	<.001
Chiropractic/osteopathic	10.16	0.44	8.09	0.51	.002
Massage	9.57	0.43	4.81	0.39	<.001
Movement based‡	1.51	0.16	0.35	0.11	<.001
Mind–body	21.06	0.69	13.73	0.58	<.001
Biofeedback	0.23	0.07	0.08	—	.10
Meditation	11.45	0.54	6.72	0.42	<.001
Guided imagery	3.23	0.35	1.13	0.18	<.001
Progressive relaxation	4.32	0.31	1.69	0.22	<.001
Deep breathing	15.08	0.61	9.53	0.48	<.001
Hypnosis	0.45	0.09	0.15	—	.02
Stress management	1.17	0.15	0.31	0.07	<.001
Support groups	2.37	0.21	1.09	0.17	<.001
Yoga	5.90	0.33	2.20	0.28	<.001
Tai chi	1.06	0.12	1.05	0.17	.94
Qi gong	0.41	0.08	0.22	0.07	.10
Energy healing/Reiki	0.87	0.12	0.32	0.09	.001

*Traditional healers include curandero, espiritista, hierbero, shaman, botanica, Native American healer, and sobador.

†Special diets include vegetarian, macrobiotic, Atkins, Pritikin, Ornish, The Zone, and South Beach.

‡ Movement-based therapies include Feldenkreis, Alexander technique, Pilates, and Trager.

SE, standard error.

After adjusting for demographic factors (Table 4), baby boomers with chronic diseases were significantly more likely to use CAM than their predecessors (AOR, 1.38; 95% CI, 1.17–1.63). The largest generational gaps between baby boomers and the silent generation are related to diabetes (AOR, 1.64; 95% CI, 1.25–2.15), cancer (AOR, 1.60; 95%

CI, 1.22–2.10), and heart disease (AOR, 1.55; 95% CI, 1.15–2.10).

CAM Use Among Baby Boomers and the Silent Generation With Painful Conditions

Among adults who experienced pain, baby boomers were more likely to report using CAM compared with the silent generation (52.9% vs 43.1%; $P < .001$), as illustrated in Figure 2. Baby boomers with facial pain had dramatically higher rates of CAM use compared with the older cohort (70.2% vs 47.7%; $P < .001$), followed by baby boomers with neck pain (61.5% vs 51.3%; $P < .001$). After adjusting for demographic variables (Table 4), the younger cohort was 38% more likely to use CAM (AOR, 1.38; 95% CI, 1.21–1.57).

Within each generation, adults with a painful condition were substantially more likely to pursue CAM than adults without pain (Figure 2). For baby boomers, CAM use within the past 12 months increased from 32.3% to 52.9% if the adult reported having a painful condition. CAM use also increased in the silent generation, from 28.0% to 43.1%, among adults with a painful condition. Multivariate analysis revealed adults with a painful condition were twice as likely to use CAM than adults without pain (AOR, 2.26; 95% CI, 2.03–2.52) (Table 3).

Discussion

In this study we analyzed generational differences of CAM use between the baby boomers and the silent generation in the context of chronic diseases and painful conditions. While the silent generation reported a substantially higher prevalence of chronic diseases, interestingly, the baby boomers reported higher CAM use regardless of health status. The generational differences of CAM use were greatest in those with diabetes, cancer, and heart disease. Furthermore, individuals with chronic pain were significantly more likely to use CAM than those without pain. Taken together, these data suggest that baby boomers are already using CAM significantly more, and this usage may continue to rise as chronic diseases and painful conditions increase.

Although baby boomers currently report fewer chronic diseases, rates are expected to increase exponentially. By 2030, more than 6 in 10 baby boomers will be managing at least 1 chronic dis-

Table 3. Independent Predictors of Complementary and Alternative Medicine (CAM) Use Among Baby Boomers and the Silent Generation

Predictors of CAM Use	Univariate Analyses		Multivariate Model*	
	OR	95% CI	AOR	95% CI
Generation				
Silent generation		Reference		Reference
Baby Boomer	1.32	1.20–1.45	1.30	1.17–1.44
Sex				
Male		Reference		Reference
Female	1.46	1.35–1.58	1.52	1.40–1.65
Education attainment				
High school or less		Reference		Reference
Some college or technical school	2.16	1.95–2.40	2.01	1.79–2.25
College or more advanced	2.59	2.33–2.88	2.69	2.40–3.02
Race/ethnicity				
Non-Hispanic white		Reference		Reference
Hispanic	0.45	0.39–0.52	0.52	0.44–0.60
Non-Hispanic black	0.45	0.39–0.52	0.51	0.44–0.60
Asian	0.75	0.56–1.01	0.68	0.49–0.93
Census region				
Northeast		Reference		Reference
Midwest	1.21	1.05–1.39	1.16	1.01–1.34
South	0.85	0.74–0.98	0.89	0.78–1.02
West	1.51	1.32–1.72	1.48	1.28–1.70
Chronic disease				
No chronic disease		Reference		Reference
Have chronic diseases	0.99	0.91–1.09	1.04	0.94–1.15
Painful condition				
No painful condition		Reference		Reference
Have painful conditions	2.19	1.97–2.43	2.26	2.03–2.52

*Model adjusted for demographics, chronic diseases, and painful conditions. AOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio.

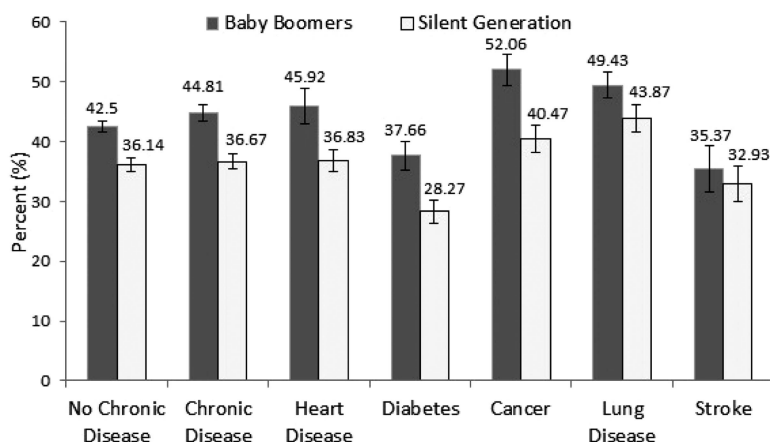
ease. Obesity is a major risk factor for both chronic diseases and painful conditions, and our study showed that baby boomers were significantly more obese than their predecessors.^{4,25} Baby boomers also were more educated and diverse than the silent generation. As demands for health services increase, baby boomers will seek new approaches to health care to address their unique needs and expectations.

Even after adjusting for demographic variables and health status, baby boomers are 30% more likely to use CAM than the silent generation. This higher CAM use is possibly attributed to the resurgence of the holistic health movement in the 1970s, when baby boomers were young adults.^{26–28} Early exposure to massage, relaxation techniques, yoga, and other alternative practices could have influenced their later use of CAM. Furthermore, the

movement for self-care occurred shortly after, and CAM may provide people with a better sense of control and responsibility over the management of their disease.^{28,29}

We hypothesize that more baby boomers will turn to CAM because of a growing interest in self-management programs that emphasize the patient's role in managing chronic diseases. Previous studies reported older adults integrating CAM with conventional practices to treat daily symptoms related to their chronic disease.²⁹ Herbs, dietary supplements, and mind–body medicine are commonly reported modalities for self-management.¹⁸ Current clinical trials for mind–body approaches such as tai chi and yoga show emerging evidence demonstrating an improvement in quality of life for those with chronic diseases.³⁰ More research is needed to evaluate the effectiveness and optimal integration

Figure 1. Use of complementary and alternative medicine in the past year by adults with chronic diseases: baby boomers versus the silent generation.



of CAM into the conventional health system and to improve chronic disease management.

Pain is one of the most cited reasons for CAM use, often because conventional treatments are not completely effective or medications have undesired side effects.^{31,32} One in 2 adults in our study reported having a pain condition. While the prevalence of neck and low-back pain were comparable between the 2 generations, the baby boomers were more likely to report head and facial pain. Several nonpharmacological interventions, such as acupuncture,³³ tai chi,³⁴ yoga,³⁵ and massage,³⁶ have shown evidence in managing chronic pain.

Table 4. Complementary and Alternative Medicine (CAM) Use for Specific Conditions Among Baby Boomer and the Silent Generation

Conditions	Univariate		Multivariate*	
	OR	95% CI	OR	95% CI
Chronic disease	1.40	1.20–1.63	1.38	1.17–1.63
Heart disease	1.46	1.09–1.96	1.55	1.15–2.10
Diabetes	1.53	1.17–2.00	1.64	1.25–2.15
Cancer	1.60	1.23–2.07	1.60	1.22–2.10
Lung disease	1.25	0.97–1.61	1.22	0.93–1.60
Stroke	1.11	0.72–1.72	1.08	0.68–1.72
Painful condition	1.48	1.31–1.67	1.38	1.21–1.57
Neck pain	1.51	1.21–1.90	1.50	1.18–1.90
Lower-back pain	1.21	1.02–1.44	1.16	0.97–1.39
Facial pain	2.58	1.56–4.25	2.07	1.18–3.64
Head pain	1.60	1.12–2.28	1.59	1.11–2.28
Joint pain	1.56	1.36–1.78	1.43	1.23–1.65

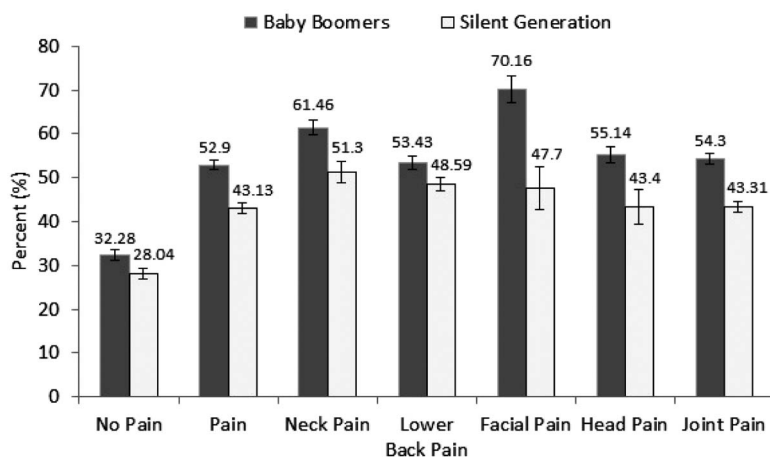
*Multivariate analyses adjusted for demographic factors. CI, confidence interval; OR, odds ratio.

Thoughtful research and incorporation of these strategies in the existing health care system may help the aging population to deal with chronic pain and avoid the potential for unnecessary poly-pharmacy and its unintended health consequences.

This study had several limitations. First, the NHIS data are based on self-reported health status and CAM use, which is inherently subject to recall bias, varied interpretation, and measurement errors. Second, the NHIS does not include military personnel, institutionalized individuals, or terminally ill patients who may have different patterns of CAM use. The third major limitation is that we could not evaluate the causal relationship between aging, chronic diseases, painful conditions, and CAM use given the cross-sectional design of the NHIS. Our analyses are meant to be descriptive and inform the understanding of differences in CAM use between baby boomers and the silent generation with respect to chronic diseases and pain.

Despite these limitations, our study is the first to provide a detailed population-based comparison of the health status of and CAM usage among 2 aging generations, with a special focus on chronic diseases and painful conditions. Baby boomers were more likely to use CAM than the silent generation across multiple chronic diseases and pain conditions. The prevalence of chronic diseases and painful conditions will continue to rise as baby boomers age, challenging our health care system. Our findings suggest future research should test the safety, effectiveness, and optimal integration of CAM for aging-related health issues. Because of the substan-

Figure 2. Use of complementary and alternative medicine in the past year by adults with painful conditions: baby boomers versus the silent generation.



tial use of CAM in the context of chronic illnesses and pain, family physicians need to discuss the risks and benefits of specific CAM approaches with their aging patients to promote safe use of these therapies and effective coping with these conditions.

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