JAOA ORIGINAL CONTRIBUTION

Awareness and Use of Osteopathic Physicians in the United States: Results of the Second Osteopathic Survey of Health Care in America (OSTEOSURV-II)

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The Second Osteopathic Survey of Health Care in America (OSTEOSURV-II), a national telephone survey conducted during 2000 using random-digit dialing, was used to address questions about public awareness of the osteopathic medical profession and use of osteopathic physicians. A total of 499 adult, noninstitutionalized, household respondents were surveyed. The main outcomes included prevalence of and multivariate factors associated with awareness and use of osteopathic physicians.

The overall response rate was 64%. The prevalence of awareness, lifetime use, and current use of osteopathic physicians among unscreened respondents was 46%, 16%, and 7%, respectively. Among lifetime users, 84% received primary care; 52%, osteopathic manipulative treatment; and 25%, specialty care. The multivariate factors most strongly associated with awareness of osteopathic physicians were college education (rate ratio [RR], 1.86; 95% confidence interval [CI], 1.43-2.40), 60 or more years of age (RR, 1.52; 95% CI, 1.15-2.01), and Midwest residence (RR, 1.39; 95% CI, 1.05-1.84). Nonwhites, including Hispanics, were less likely to be aware of osteopathic physicians (RR, 0.54; 95% CI, 0.38-0.76). Respondents with college education (RR, 2.34; 95% CI, 1.44-3.79), respondents of intermediate age (RR, 1.71; 95% CI, 1.12-2.61), and women (RR, 1.68; 95% CI, 1.12-2.52) were more likely to report lifetime use of osteopathic physicians. Nonwhites were less likely to report lifetime use (RR, 0.25; 95% CI, 0.11-0.57).

Greater promotional efforts are needed to increase awareness of osteopathic medicine and to remove barriers to using osteopathic physicians, particularly among nonwhites.

Andrew Taylor Still, MD, DO, founded osteopathy on the premise that spinal manipulation could improve blood and lymph flow and thereby facilitate the body's self-healing capabilities.[1,2] Although Still believed that osteopathic manipulative treatment (OMT) could stand on its own as a healing art, including the treatment of patients with organic disease, many of his followers used other therapeutic approaches to complement OMT.[3] *Osteopathy* eventually underwent a transformation to become *osteopathic medicine*, the latter being characterized as full-service health care.[4] Today, osteopathic physicians are licensed in all 50 states to do anything that allopathic physicians do.[2]

This transformation has created new challenges for the osteopathic medical profession—challenges referred to as the "paradox of osteopathy,"[2] the "parallel profession,"[3,5] the "separate-but-equal" issue,[4] and the "dilemma."[6] These controversies have even raised questions about the continued existence of the osteopathic medical profession. Responses to these challenges have been characterized by calls for more research on the mechanisms and efficacy of OMT[1,7-9] and greater attention to public policy issues concerning the geographic distribution of osteopathic physicians,[4] rural health care needs,[10] and the contributions of osteopathic physicians to primary care.[2,4,11] The American Osteopathic Association recently introduced its Campaign for Osteopathic Unity with the objectives of raising public awareness of the profession, accentuating the distinctiveness of osteopathic medicine, and unifying the various organizations that represent osteopathic medicine.[12] An alternative view is that osteopathic physicians are "frozen in place" with no apparent resolution to their identity crisis.[6]

Although osteopathic physicians account for more than 58 million ambulatory patient visits annually in the United States,[13] little has been published about these patients. Two-year data from the National Ambulatory Medical Care Survey in 1977-1978 showed that back symptoms were the most common reason for visits to osteopathic physicians, accounting for 11% of the 60 million visits.[14] These data, however, may not accurately reflect the use of osteopathic physicians today. The ever-increasing number of osteopathic graduates entering allopathic residency programs[15] may be shifting osteopathic physicians' attitudes and practice patterns, particularly with regard to OMT.[16] The objectives of the present study were to measure and determine the factors associated with awareness and use of osteopathic physicians in the United States.

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Methods

Survey Methods

The Osteopathic Survey of Health Care in America (OSTEOSURV) is a longitudinal instrument for research in the realm of osteopathic medicine. A description of the First Osteopathic Survey of Health Care in America (OSTEOSURV-I), which was developed and conducted in 1998, and its results have been previously published.[17] Data from OSTEOSURV-I and the Second Osteopathic Survey of Health Care in America (OSTEOSURV-II) support the validity and reliability of the OSTEOSURV instrument using a variety of methods, including interitem correlations, factor analysis, internal consistency, and test-retest.[18]

The OSTEOSURV-II was approved by the Institutional Review Board of the University of North Texas Health Science Center at Fort Worth. It was conducted from March 2000 through July 2000 using trained telephone interviewers, random-digit dialing techniques, and a computer-assisted survey methodology. The eligible population included noninstitutionalized, English-speaking residents of the United States 18 years of age or older having telephones in their households. Random-digit dialing was used to generate the survey sample because it offers the best coverage of active telephone numbers, including unlisted numbers. All telephone exchanges in the United States were identified, and random numbers were generated for each exchange based on proportional population estimates. The purpose of this methodology was to obtain a sample of respondents that adequately reflected the general US population. Telephone numbers were then dialed at least five times using a rotating schedule of callbacks to ensure that a number was tried on various combinations of days and evenings and on weekdays and weekends.

A total of 3427 numbers were dialed; however, 1882 did not result in an eligible contact. The latter consisted of 668 numbers that were busy or not answered, 462 numbers that were disconnected or not in service, 368 numbers that were dedicated to answering devices or fax machines, 208 numbers for business organizations or government agencies, 117 contacts who did not speak English, 27 contacts who did not respond coherently to the interviewer, 21 contacts who were minors, and 11 contacts who claimed to have been previously interviewed. The remaining 1545 contacts were eligible for participation.

The goal of the survey was to complete approximately 500 interviews, including about 50% of respondents who were aware of osteopathic physicians and 25% who had used osteopathic physicians. In June 2000, after 361 interviews had been completed, there were 46% of respondents who were aware of osteopathic physicians, 16% who had used osteopathic physicians, and 7% who were current patients of osteopathic physicians. Subsequently, the following survey items were used as screening criteria to increase these percentages: "Are you aware of or do you know about doctors of osteopathic medicine (DOs)?" and "Have you ever received any medical treatment or care from a doctor of osteopathic medicine (DO)?" Respondents who answered affirmatively to these screening items were preferentially interviewed as was a random sample of those who screened negative on both items.

After the 1545 eligible contacts had been made, 949 (61%) agreed to participate, but only 456 were asked to complete

Table 1
Sociodemographic Characteristics of OSTEOSURV-II Respondents*

Characteristic	Respondents (n = 499) No.	Respondents (n = 499) %	National Referents† %
Age, mean (SD), y	46.3 (16.5)	——	47.6 (14.4)
18-29	90	18	——
30-39	100	20	——
40-49	115	23	——
50-59	72	14	——
60-69	64	13	——
>70	57	11	——
Sex			
Men	170	34	49
Women	329	66	51
Race‡			
White	405	86	83
Black	40	8	13
Asian/Pacific Islander	18	4	4
American Indian/ Native American	9	2	1
Geographic region			
Northeast	88	18	19
Midwest	132	27	24
South	179	36	36
West	96	19	21

*Data are presented as number and percentage unless otherwise indicated. Totals may not equal 499 because of item nonresponse. OSTEOSURV-II indicates Second Osteopathic Survey of Health Care in America; SF-36, Medical Outcomes Study Short Form-36 Survey.

†Referent characteristics were based on data from the US Census Bureau[20] except for general health perceptions. For variables that were categorized differently than in OSTEOSURV-II, only the mean (SD) was compared using methods for grouped data.

‡A total of 13 (3%) respondents who described themselves as Hispanic are not included in the table because people of Hispanic origin may be of any race.

§Referents for this characteristic were selected from the general US population.[19]

(*continued*)

Table 1 (continued)
Sociodemographic Characteristics of OSTEOSURV-II Respondents*

Characteristic	Respondents (n = 499) No.	Respondents (n = 499) %	National Referents† %
Education, mean (SD), y	13.9 (2.1)	——	13.3 (2.1)
<12	57	11	——
12	121	24	——
13-15	172	35	——
16	86	17	——
>17	62	12	——
Residence			
Urban/suburban	310	63	75
Rural	179	37	25
Annual household income, mean (SD),$	44,500 (25,600)	——	43,500 (28,200)
<15,000	58	13	——
15,001-25,000	75	16	——
25,001-40,000	107	24	——
40,001-60,000	83	18	——
>60,001	132	29	——
Health insurance coverage			
No	49	10	17
Yes	449	90	83
General health perceptions§			
SF-36 score, mean (SD)	71.6 (21.1)		72.0 (20.3)

*Data are presented as number and percentage unless otherwise indicated. Totals may not equal 499 because of item nonresponse. OSTEOSURV-II indicates Second Osteopathic Survey of Health Care in America; SF-36, Medical Outcomes Study Short Form-36 Survey.

†Referent characteristics were based on data from the US Census Bureau[20] except for general health perceptions. For variables that were categorized differently than in OSTEOSURV-II, only the mean (SD) was compared using methods for grouped data.

‡A total of 13 (3%) respondents who described themselves as Hispanic are not included in the table because people of Hispanic origin may be of any race.

§Referents for this characteristic were selected from the general US population.[19]

the interview. The "aware" and "ever used" respondents comprised 49% and 24% of the sample, respectively, thus approaching the initial survey goals. At this point, to further increase the response rate, initial refusers were randomly contacted and offered a financial incentive of $20 to complete the survey. Another 43 respondents were acquired in this manner, including 19 (44%) who were aware of and 4 (9%) who had used osteopathic physicians. The distribution of "aware" and "ever used" respondents among the converted refusers was not significantly different than that of the initially unscreened respondents. Overall, 992 (64%) of the 1545 eligible contacts agreed to participate and 499 of these were asked to complete the interview.

The OSTEOSURV-II interview was presented as a survey about the ambulatory health care of Americans. The survey instrument consisted of 72 items with nominal or ordinal scale response options and required approximately 10 minutes for completion. In addition to seeking information about use of osteopathic physicians and perceptions of osteopathic medicine, the survey also queried respondents about sociodemographic characteristics, perceptions of general health, patient satisfaction, use of other health care providers, and miscellaneous topics. Use of OMT was measured by asking respondents whether they had ever received treatment of muscles, bones, or joints from an osteopathic physician. Although this approach systematically overestimates the use of OMT to some degree, it avoids differential sources of bias that may be introduced by asking respondents to discriminate between OMT and other palpatory or diagnostic procedures. Perceptions of general health were based on the Medical Outcomes Study Short Form 36 Survey.[19]

Statistical Methods

Descriptive statistics were used to characterize survey respondents and to summarize the results. Respondent characteristics were compared to national referents to assess the adequacy of the survey sampling process.[20] Multiple logistic regression was used to compute odds ratios and 95% confidence intervals (CIs) for factors associated with awareness and use of osteopathic physicians while adjusting for potential confounding variables. Because the odds ratio can be a misleading measure of association,[21] particularly in cross-sectional studies such as the present survey,[22] formulae were used to convert the multivariate odds ratios and 95% CIs to rate ratios (RRs) and their associated 95% CIs.[23] Multivariate RRs and 95% CIs were estimated for factors associated with awareness, use, and use given awareness of osteopathic physicians. Regression models were used to explain the following types of use: (1) having ever used an osteopathic physician (lifetime use); (2) having ever used an osteopathic physician for primary care (lifetime primary care use); (3) having ever used an osteopathic physician for OMT (lifetime OMT use); and (4) being a current patient of an osteopathic physician (current use).

SYSTAT for Windows, Version 7.0 (Systat Software Inc, Richmond, Calif) was used for data management and to perform statistical analyses. Hypotheses were tested at the .05 level of significance using two-sided tests.

Table 2
Multivariate Factors Associated With Awareness of Osteopathic Physicians*

Characteristic	No. Aware	No. Not Aware	RR	95% CI	P
Age, y					
18-39	71	119	1.00		
40-59	108	79	1.41	1.11-1.81	.01
>60	65	56	1.52	1.15-2.01	.003
Sex					
Men	72	98	1.00		
Women	172	157	1.23	0.99-1.53	.06
Race/ethnicity†					
White	216	189	1.00		
Nonwhite	23	57	0.54	0.38-0.76	<.001
Education, y					
≤12	61	117	1.00		
13-15	89	83	1.56	1.19-2.04	.001
≥16	94	54	1.86	1.43-2.40	<.001
Residence					
Urban/suburban	160	150	1.00		
Rural	82	97	0.91	0.74-1.12	.37
Geographic region					
Northeast	39	49	1.00		
Midwest	77	55	1.39	1.05-1.84	.02
South	75	104	1.06	0.77-1.46	.71
West	52	44	1.30	0.95-1.77	.10

*Odds ratios, confidence intervals, and *P* values were originally computed using multiple logistic regression and adjusted for all other variables in the table. Rate ratios (RRs) and 95% confidence intervals (CIs) were then computed using conversion formulae. The regression analysis included 474 (95%) respondents who provided complete data. Preliminary regression models included annual household income, health insurance coverage, and general health perceptions as independent variables, but these were not significant factors.

†Hispanics were included in the nonwhite category for this analysis.

Results

The sociodemographic characteristics of the 499 OSTEOSURV-II respondents are summarized in *Table 1*. Respondents were generally similar to national referents[20] with the exception of sex (66% women). Blacks (8%) and Hispanics (3%) were somewhat underrepresented. The latter is attributed to language barriers in responding to the survey. However, the screening items introduced toward the latter part of the survey decreased the percentage of nonwhite and Hispanic respondents as well. The general health of respondents was comparable to national norms.[19]

A total of 244 (49%) respondents were aware of osteopathic physicians. There were 114 (23%) respondents who had received health care from osteopathic physicians. Of these, 96 (84%) received primary care, 59 (52%) received OMT, and 28 (25%) received specialty care. There were 59 (12%) respondents who were current patients of osteopathic physicians. The multivariate RRs and 95% CIs for awareness of osteopathic physicians are presented in *Table 2*. Education was strongly associated with awareness (RR, 1.86; 95% CI, 1.43-2.40 for college graduates; RR, 1.56; 95% CI, 1.19-2.04 for respondents with some college education). Increasing age, particularly 60 or more years (RR, 1.52; 95% CI, 1.15-2.01), and Midwest residence (RR, 1.39; 95% CI, 1.05-1.84) were also associated with awareness. Nonwhites, including Hispanics, were much less likely to be aware of osteopathic physicians (RR, 0.54; 95% CI, 0.38-0.76).

The multivariate RRs and 95% CIs for use of osteopathic physicians are presented in *Table 3*. Those respondents with greater education, particularly completion of college (RR, 2.34;

Table 3
Multivariate Factors Associated With Lifetime and Current Use of Osteopathic Physicians*

Characteristic	Lifetime Use					Lifetime Primary Care Use				
	Users, No.	Nonusers, No.	RR	95% CI	*P*	Users, No.	Nonusers, No.	RR	95% CI	*P*
Age, y										
18-39	30	160	1.00			24	166	1.00		
40-59	57	130	1.71	1.12-2.61	.01	53	134	2.07	1.30-3.30	.002
⩾60	27	94	1.40	0.84-2.34	.19	19	102	1.33	0.74-2.41	.34
Sex										
Men	27	143	1.00			24	146	1.00		
Women	87	242	1.68	1.12-2.52	.01	72	257	1.55	1.00-2.42	.05
Race/ethnicity†										
White	106	299	1.00			89	316	1.00		
Nonwhite	6	74	0.25	0.11-0.57	.001	6	74	0.31	0.13-0.72	.01
Education, y										
⩽12	24	154	1.00			19	159	1.00		
13-15	45	127	1.96	1.21-3.17	.01	39	133	2.00	1.16-3.43	.01
⩾16	45	103	2.34	1.44-3.79	.001	38	110	2.32	1.34-4.02	.003
Residence										
Urban/suburban	68	242	1.00			55	255	1.00		
Rural	45	134	1.22	0.85-1.75	.28	40	139	1.36	0.91-2.02	.13
Geographic region										
Northeast	16	72	1.00			14	74	1.00		
Midwest	38	94	1.61	0.93-2.78	.09	33	99	1.66	0.92-2.99	.10
South	35	144	1.16	0.66-2.03	.61	30	149	1.13	0.61-2.10	.70
West	24	72	1.37	0.74-2.51	.31	18	78	1.14	0.58-2.23	.71

*Odds ratios, confidence intervals, and *P* values were originally computed using multiple logistic regression and adjusted for all other variables in the table. Rate ratios (RRs) and 95% confidence intervals (CIs) were then computed using conversion formulae. The regression analyses included 474 (95%) respondents who provided complete data. Preliminary regression models included annual household income, health insurance coverage, and general health perceptions as independent variables, but these were not significant factors.

†Hispanics were included in the nonwhite category for these analyses.

(*continued*)

95% CI, 1.44-3.79), and women (RR, 1.68; 95% CI, 1.12-2.52) were associated with having used an osteopathic physician. Intermediate age (40 to 59 years) (RR, 1.71; 95% CI, 1.12-2.61) was also associated with lifetime osteopathic physician use. A trend toward greater lifetime use was observed in the Midwest. Nonwhites were much less likely to have used an osteopathic physician (RR, 0.25; 95% CI, 0.11-0.57). Similar results with regard to age, sex, race/ethnicity, and education were generally observed in the regression models for lifetime primary care use, lifetime OMT use, and current use of osteopathic physicians (*Table 3*). As shown in *Table 4*, even when limited to respondents who were aware of osteopathic physicians, nonwhites were less likely to have used an osteopathic physician (RR, 0.45; 95% CI, 0.22-0.89). This finding should be interpreted with caution, however, because of the relatively small numbers on which it is based.

Comments

The results of this study are important because little empirical research has been published in the medical and social sciences literature that addresses the transformation of osteopathic medicine that has taken place during the past 3 decades.[4,24] In the initially unscreened survey sample, 46% of respondents were aware of osteopathic physicians, 16% had used osteopathic physicians, and 7% were current patients. Among all respondents who reported having used osteopathic physicians, 84% received primary care, 52% received OMT, and 25% received specialty care. These results are gen-

Table 3 (continued)
Multivariate Factors Associated With Lifetime and Current Use of Osteopathic Physicians*

	Lifetime OMT Use					Current Use				
Characteristic	Users, No.	Nonusers, No.	RR	95% CI	*P*	Users, No.	Nonusers, No.	RR	95% CI	*P*
Age, y										
18-39	15	175	1.00	——	——	21	169	1.00	——	——
40-59	31	156	1.78	0.97-3.28	.06	28	159	1.14	0.64-2.04	.66
⩾60	13	108	1.32	0.63-2.77	.46	10	111	0.74	0.35-1.57	.44
Sex										
Men	11	159	1.00	——	——	12	158	1.00	——	——
Women	48	281	2.31	1.23-4.34	.01	47	282	2.15	1.16-3.97	.01
Race/ethnicity†										
White	56	349	1.00	——	——	53	352	1.00	——	——
Nonwhite	3	77	0.28	0.09-0.85	.02	5	75	0.34	0.13-0.91	.03
Education, y										
⩽12	11	167	1.00	——	——	12	166	1.00	——	——
13-15	27	145	2.37	1.18-4.73	.01	18	154	1.49	0.71-3.14	.29
⩾16	21	127	2.18	1.05-4.53	.04	29	119	2.70	1.36-5.35	.004
Residence										
Urban/suburban	32	278	1.00	——	——	39	271	1.00	——	——
Rural	27	152	1.43	0.86-2.39	.17	20	159	0.96	0.58-1.59	.89
Geographic region										
Northeast	9	79	1.00	——	——	11	77	1.00	——	——
Midwest	18	114	1.17	0.54-2.54	.70	16	116	1.09	0.50-2.35	.83
South	19	160	0.95	0.46-1.96	.88	17	162	0.91	0.44-1.89	.80
West	13	83	1.18	0.50-2.77	.71	14	82	1.26	0.58-2.76	.56

*Odds ratios, confidence intervals, and *P* values were originally computed using multiple logistic regression and adjusted for all other variables in the table. Rate ratios (RRs) and 95% confidence intervals (CIs) were then computed using conversion formulae. The regression analyses included 474 (95%) respondents who provided complete data. Preliminary regression models included annual household income, health insurance coverage, and general health perceptions as independent variables, but these were not significant factors.
†Hispanics were included in the nonwhite category for these analyses.

erally similar to those of OSTEOSURV-I, although a higher percentage of respondents in the present survey reported being a current patient of an osteopathic physician and ever receiving primary care services from an osteopathic physician. It is unclear if the latter findings can be attributed to random variance over the two OSTEOSURV administrations, minor methodologic differences in the two surveys, or real differences in awareness or use of osteopathic physicians over time, possibly as a result of promotional efforts such as the Campaign for Osteopathic Unity. Additional research is needed in this area.

Awareness of osteopathic physicians was directly associated with age, education, and Midwest residence; nonwhites were less likely to be aware of osteopathic physicians (*Table 2*). Lifetime use of osteopathic physicians was most strongly associated with education, women, and intermediate age (40 to 59 years); nonwhites were less likely to have ever used an osteopathic physician (*Table 3*), even when the analysis was limited to respondents who were aware of osteopathic physicians (*Table 4*).

While osteopathic physicians are accepted as conventional practitioners, OMT is still viewed as the most distinctive feature of osteopathic medicine.[2,16] Yet, according to the National Center for Complementary and Alternative Medicine (NCCAM) of the National Institutes of Health, OMT is part of one of the five major domains of complementary and alternative health care and medical practices, defined as "manipulative and body-based methods."[25] Under this rubric,

Table 4
Multivariate Factors Associated With Lifetime Use of Osteopathic Physicians Among Respondents Who Were Aware of Osteopathic Physicians*

Characteristic	Users, No.	Nonusers, No.	RR	95% CI	*P*
Age, y					
18-39	30	41	1.00	——	——
40-59	57	51	1.20	0.85-1.70	.30
>60	27	38	0.90	0.58-1.41	.64
Sex					
Men	27	45	1.00	——	——
Women	87	85	1.33	0.95-1.86	.10
Race/ethnicity†					
White	106	110	1.00	——	——
Nonwhite	6	17	0.45	0.22-0.89	.02
Education, y					
<12	24	37	1.00	——	——
13-15	45	44	1.28	0.87-1.90	.21
>16	45	49	1.27	0.86-1.88	.24
Residence					
Urban/suburban	68	92	1.00	——	——
Rural	45	37	1.30	0.97-1.74	.08
Geographic region					
Northeast	16	23	1.00	——	——
Midwest	38	39	1.11	0.69-1.80	.66
South	35	40	1.10	0.68-1.79	.70
West	24	28	1.07	0.64-1.78	.80

*Odds ratios, confidence intervals, and *P* values were originally computed using multiple logistic regression and adjusted for all other variables in the table. Rate ratios (RRs) and 95% confidence intervals (CIs) were then computed using conversion formulae. The regression analysis was limited to the 244 respondents who were aware of osteopathic physicians and included 237 (97%) respondents who provided complete data. Preliminary regression models included annual household income, health insurance coverage, and general health perceptions, but these were not significant factors.

†Hispanics were included in the nonwhite category for this analysis.

NCCAM notes, "Some osteopaths, who place particular emphasis on the musculoskeletal system, believing that all of the body's systems work together and that disturbances in one system may have an impact upon function elsewhere in the body, practice OMT." If one views osteopathic physicians using the paradigm of complementary and alternative medicine, then the results of the present study are congruent with other recent studies conducted in the United States.

Eisenberg et al[26] found that alternative medicine was more commonly used by people aged 35 to 49 years, women, and people with at least some college education; blacks were less likely to use alternative medicine.[26] Another study found high levels of education to be strongly associated with use of alternative medicine and that blacks reported substantially less use than other races.[27] The latter study concluded that health care alternatives were used because they were more congruent with the values, beliefs, and philosophic orientations toward health and life of the patients. Nevertheless, for chiropractors, the most established of the alternative nonphysician clinicians,[28] different factors were associated with their use in the treatment of back pain[29]: men and those with only a high school education were more likely to use chiropractic, though blacks were still less likely to use chiropractic.

That lifetime use of osteopathic physicians is significantly higher among persons 40 to 59 years of age but not among those 60 years or older suggests that historical factors, per-

haps existing 20 or more years ago, seriously inhibit use of osteopathic physicians by older Americans. This may be related to the evolution of osteopathic medicine's mission and identity, which was described as "manual medicine" until 1950, "family practice/manual medicine" from 1951 to 1970, and "full-service care/multispecialty orientation" from 1971 to the present.[11] Despite this evolution, a study reported in the early-1970s found that the occupational prestige of osteopathic physicians was lower than most of the other 40 medical and allied health professionals.[30] Amazingly, only practical nurses, nurses' aides, and chiropractors were consistently afforded less prestige than osteopathic physicians. A study conducted in 1978 continued to report cognitive and perceptual biases in favor of allopathic physicians despite utilization biases in favor of osteopathic physicians.[24]

A possible explanation for the greater use of osteopathic physicians among women is that osteopathic physicians may provide the general and preventive care more often sought by women than men.[31] The National Ambulatory Medical Care Survey in 1977-1978 found that 46% of visits to osteopathic physicians included blood pressure checks, 9% involved dietary counseling, and 3% were used to perform Papanicolaou testing; the respective percentages for visits to allopathic physicians were 33%, 7%, and 5%.[14] Another rationale is that women may respond more favorably than men to OMT, as indicated by greater perceived efficacy of OMT and greater reductions in pain or discomfort even after adjusting for potential confounders.[32] Unfortunately, changes in osteopathic graduate medical education over the past 2 decades hamper in at least two ways a more definitive analysis of why women use osteopathic physicians. First, by 1985 most osteopathic physicians were obtaining graduate medical education in allopathic residency programs,[33] thus attenuating osteopathic-allopathic differences in practice patterns. Second, as successive cohorts of osteopathic graduates have entered practice, they have reported a gradual, but steady, decline in use of OMT.[16] Thus, OMT may no longer represent a common reason for using osteopathic physicians today.

The low use of osteopathic physicians among nonwhites cannot be attributed to age, sex, education, residence, or geographic region, as these variables were included in the multivariate models. Underrepresented minorities have comprised a smaller percentage of osteopathic than allopathic medical school entrants.[34] This represents a rationale for the decreased lifetime and current use of osteopathic physicians among nonwhites, even if they are aware of osteopathic physicians. Moreover, unlike Hispanics, Asians and Pacific Islanders, and Native Americans, who use alternative medicine as much as or more than whites, blacks use such modes of therapy substantially less.[27] Because blacks comprised the largest block of nonwhites in this study, it is reasonable to speculate that the low use of osteopathic physicians among nonwhites may be related to the perception of osteopathic medicine as an alternative medical practice among blacks.

Findings derived from a cross-sectional survey must be interpreted with caution, particularly because of the uncertain temporal relationships between variables. For example, it is possible that some respondents may have used an osteopathic physician in a rural residence before moving to their current urban or suburban residence. Thus, a relationship between rural residential status and lifetime use of osteopathic physicians may have been obscured by using current residence in the analyses. Because screening items were used toward the latter part of the survey, the overall, crude results cannot be extrapolated to the US population. The overrepresentation of women in the survey may also raise concerns about the generalizability of its findings, even though a preponderance of women is common in many telephone surveys despite using special techniques to minimize this problem.[35,36] Nevertheless, the use of multivariate modeling to adjust for sex and other sociodemographic characteristics (*Tables 2, 3,* and *4*) tends to obviate the problems potentially attributed to using crude survey results or disproportionately sampling certain population segments.

The results of this study have important implications regarding the current efforts in promoting osteopathic medicine. Clearly, awareness of osteopathic physicians is lacking among young adults, and its acquisition with age is strongly affected by sociodemographic factors. Beyond redressing the awareness problem, further research is critically needed to identify and remove the barriers that discourage use of osteopathic physicians, particularly among nonwhites. Intensive promotional efforts are needed to overcome outdated stereotypes of osteopathic physicians, which may still exist among older Americans. Finally, the current emphasis on women's health provides additional impetus to more clearly elucidate and promote the reasons for greater osteopathic physician use among women.

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