Prayer for Health and Primary Care: Results From the 2002 National Health Interview Survey

Joanne E. Wilkinson, MD, MSc[1], **Robert B. Saper, MD, MPH**[1], **Amy K. Rosen, PhD**[2], **Seth L. Welles, ScD, PhD**[3], and **Larry Culpepper, MD, MPH**[1]

[1] Department of Family Medicine, Boston University

[2] Department of Health Policy and Management, Boston University

[3] Department of Epidemiology and Biostatistics, Drexel University

Abstract

Background and Objectives—Prayer for health (PFH) is common; in 2002, 35% of US adults prayed for their health. We examined the relationship of PFH and primary care visits, with a special focus on African American women, using data from the 2002 National Health Interview Survey (NHIS).

Methods—We used chi-square analyses to compare the demographic (age group, gender, race, region, marital status, educational level, ethnicity) and health-related covariates (alcohol use, smoking status, and selected medical conditions) between individuals who did and did not pray for their health in the past year. Univariate associations between PFH and visit to primary care provider (PCP), with Mantel-Haenszel adjustment for confounding, were determined. Multivariate regression was used to determine independent factors associated with PFH and PCP visit, with SUDAAN to adjust for the clustered survey design.

Results—Subjects who prayed were more likely to be female, older than 58, Black, Southern, separated, divorced or widowed, and nondrinkers. Subjects who prayed were also more likely to have seen a PCP within the past year. Black women who prayed were also more likely to see a PCP.

Conclusions—These findings suggest that people who pray for their health do so in addition to, not instead of, seeking primary care. This finding is maintained but with a smaller effect size, in Black women.

The adoption of religion or prayer as a means of influencing one's health is prevalent in the US population.[1–4] Several publications in the medical literature have addressed the relationship of religion or prayer on the health or well-being of individuals or groups,[5–8] and many show associations between religion or religious service attendance and general health or well-being,[9–14] while others focus on specific outcomes such as mortality,[15,16] in-hospital complications,[17,18] longevity,[19] control of chronic pain,[20–22] depression,[23] self-esteem,[24] and coping with cancer.[25] Still other studies have focused on the association of religion or prayer with health behaviors such as cancer screening,[26–28] smoking,[29,30] and alcohol use.[31]

These studies have all shown a neutral or beneficial association of religion (variably outcomes and have prompted other researchers to propose mechanisms by which religion could affect health. One such mechanism is the locus of control model for health behavior.[32–34] Within the locus of control model, individuals may believe that their religion empowers them to positively

Corresponding Author: Address correspondence to Dr Wilkinson, Boston University, Department of Family Medicine, Dowling 5-South, 840 Harrison Avenue, Boston, MA 02118. Joanne.Wilkinson@bmc.org.

influence their health through prayer (internal locus of control) or that fate is controlling their health and they must accept it (external locus of control). In the former case, we would expect prayer to be associated with other proactive health behaviors such as cancer screening and smoking cessation. In the latter case, prayer may be associated with not seeking medical services.

It is possible that within different social or cultural groups, the perceived locus of control may vary.[35] For example, some studies with these with African American and Latino subjects, particularly women,[36–44] have demonstrated a less consistent health benefit associated with religion than noted in previous studies. Some studies on cancer screening in urban African American women,[35,37,38] noted an association between religiousness and an external locus of control, and women who prayed more and attended religious services were less likely to obtain cancer screening. One study, however, noted an increased incidence of dental visits and women's cancer screening tests[43] in African American churchgoing subjects. This work raises the question of how the locus of control model applies in different social groups and whether religion or prayer can be assumed to have the same association with health behaviors for everyone. Table 1 offers a brief summary of the locus-of-control model with specific examples relating the model to religion or prayer.

The issue of how prayer is used by patients is of particular importance for primary care physicians (PCPs), who see a large cross-section of the population as patients. If people are using prayer as a substitute for medical care, what types of patients are doing this, and what are the implications of this behavior?

We addressed these questions by examining the association between praying for one's health and having a PCP by using a large, nationally representative database (the 2002 National Health Interview Survey [NHIS]). While other studies have suggested that people who pray are more likely to seek medical care,[43] we examined the question focusing specifically on primary care, using a sample large enough to examine variability among different racial and ethnic groups.

This research has two main objectives. The first is to examine the association between prayer for health (PFH), which is the act of engaging in prayer or worship specifically with the goal of improving one's health and whether an individual visited a PCP within the last year. The second is to determine the stratum-specific association between PFH and PCP visit for African American women, since prior studies suggested that people in this group to visit their PCP if they prayed.

Methods

We conducted a cross-sectional secondary data analysis using the 2002 NHIS. The survey involved 31,044 American adults (18 years or older), and Hispanics and African Americans were oversampled. The questions in the NHIS focus on self-reported assessments of health, symptoms, disease prevalence, insurance status, and degree of disability. Data are gathered in face-to-face interviews. In 2002, a supplement was added that contained questions about the use of complementary and alternative medicine (CAM) and prayer for health.

Our project was designated exempt by the Boston University Institutional Review Board. We included subjects if they had completed both the NHIS and CAM supplement interviews.

Variables

PFH was defined as answering yes to any of the PFH was following four questions: In the past 12 months, (1) Have you prayed for your own health? (2) Have you asked someone else to

pray for your health? (3) Have you participated in a prayer group or prayer chain for your health? (4) Have you participated in a healing or sacramental ritual for your health?

We operationalized the PFH variable in two different ways. First, subjects were split into two groups: those who answered yes to any of the above questions and those who answered no to all. This dichotomous variable was used in all the major analyses. Second, we summed the yes answers to the above questions, creating an ordinal scale for PFH. This prayer scale allowed us to compare subjects who had used only one form of PFH with subjects who had used two, three, or four forms. The ordinal variable was included in some of the descriptive analyses for comparison purposes.

The main dependent variable was identified as having had a primary care physician visit. This was defined as a yes response to a question about a visit within the last 12 months to "the usual place where you receive routine or preventive care."[45]

We compared the following demographic covariates between subjects who prayed for health and those who did not: gender, race (white, Black, Asian, mixed, other), ethnicity (Hispanic/non-Hispanic), income, geographic region of the country (Northeast, Midwest, South, and West), educational level (up to 12th grade without graduation, high school graduate, some college or technical school), marital status (married, separated/divorced, widowed, single, living with partner), and age (born before 1944, born between 1944 and 1963, and born after 1963). These age groupings were made for comparison purposes with McCaffrey,[1] who found in her 1998 survey that the baby boom age group (born 1944–1963) was most strongly associated with PFH in a multivariate regression model.

We used a dichotomous variable for complementary and alternative medicine (CAM) use in the past 12 months, defined according to Barnes[46] as having practiced any of the following in the past 12 months: acupuncture, Ayurveda, homeopathy, naturopathy, chelation therapy, herbal products, folk medicine, megavitamin therapy, yoga, chiropractic, massage, relaxation/deep breathing/meditation, tai chi, qi gong, biofeedback, energy healing/Reiki, or hypnosis. This variable was included as a covariate in the analyses.

The following health-related covariates were also analyzed: alcohol use (current, former, never or less than 18 drinks in entire life), smoking (current, former, never), and having been diagnosed with or treated for six categories of health conditions (cardiovascular disease, lung disease, arthritis and related conditions, diabetes, depression and anxiety, and cancer). We created the health condition categories because illness burden may be an important confounder in the analysis of PFH. These conditions were categorized based on a risk-adjustment method developed by Hornbrook[47] using self-reported data. This method groups diagnoses into five categories that were found to be significant predictors of future health care utilization: cardiovascular disease (includes hypertension, high cholesterol, congestive heart failure, myocardial infarction, angina, and stroke), lung disease (includes asthma, emphysema, chronic obstructive pulmonary disease, and chronic bronchitis), diabetes (includes diabetic complications), arthritis (includes osteoarthritis, rheumatoid arthritis, gout, lupus, and other rheumatologic conditions), and depression/anxiety. We added cancer to these groups, because it may be an important potential confounder.

Statistical Analysis

We compared the distribution of demographic and health-related covariates among subjects who had and had not used PFH (both dichotomous and ordinal definitions) in the past 12 months. We used the chi-square test of independence for this comparison.

Next, we calculated crude odds ratios to determine unadjusted associations between PFH and PCP visit using the entire sample (n=31,044). To assess potential effect modification, we conducted stratified analyses. These stratum-specific odds ratios allowed us to observe any variation in the relationship between PFH and PCP visit for specific subgroups (eg, race or gender). The stratum-specific odds ratios for Black women were of particular interest and are reported separately.

Last, we assessed the relationships between PFH and PCP visit using multivariate logistic regression. Covariates were included in the final model if they changed the odds ratio for PFH by 10% or more. An additional multivariate model using the PFH ordinal variable was evaluated. SUDAAN[48] was used for all analyses to adjust for the clustered sampling design of the NHIS.

Results

Table 2 shows demographic and social characteristics of subjects who did and did not use PFH in the past year. The results shown are similar to those published by Bell et al in 2005[3] with some variables classified differently for our analysis. Subjects who used at least one form of PFH were more likely to be female, Black, age 59 or over, former smokers or drinkers, live in the South, use CAM, have an income of $20,000/year or less, and have arthritis, depression/anxiety, cardiovascular disease or cancer (all *P*<.0001). Those who did not use PFH in the past year were more likely to be male, white, age 38 or younger, current smokers or drinkers, live in the Northeast, be non-CAM users, and be single.

We also compared demographic and health variables as they relate to multiple forms of prayer for health used in the past year. In the past year, 21% of the general population used one form of PFH, 14% used two forms, and 8% used three or more forms. Characteristics most associated with the use of two or more forms of PFH were being Southern, Black, or mixed race and having cardiovascular disease, diabetes, depression/anxiety, arthritis, or cancer. The multivariate analysis, with prayer (yes/no) as the dependent variable, showed strong associations between PFH and race, region, marital status, CAM use, and comorbidity, even when adjusting for other variables in the model (Tables 3 and 4).

After adjusting for race and geographic region, subjects who prayed for their health in the past year were 73% more likely to visit a PCP in the same year, compared with subjects who had not prayed for their health in the past year (Table 5). Using prayer for health as an ordinal variable, there was an increasing likelihood of PCP visit with multiple forms of prayer for health used in the past year. The adjusted OR for one form was 1.50 (95% CI= 1.39–1.62), for two forms it was 1.91 (95% CI=1.76–2.07), for three forms it was 2.17 (95% CI=1.91–2.46), and for four forms it was 2.03 (95% CI= 1.57–2.62). Black women were 11% more. likely to visit a PCP if they prayed for their health (OR=1.11).

Discussion

In this large, nationally representative sample of American adults, PFH was associated with having had a PCP visit within the last year. The result is consistent with prior studies[8,11,12,28,44] and supports the notion that if the locus of control model applies to prayer, then it is likely experienced as an internal locus of control, driving the subject both to pray and to visit a PCP in hopes of improving their health. It was particularly striking in this analysis that the likelihood of PCP visit increased with the use of multiple forms of prayer for health indicating that the more one engages in prayer-related behaviors, the more likely one is to visit a primary care physician. It should be noted that the use of multiple forms of prayer for health is not the same as praying more frequently, so it would be inaccurate to label this a "dose response"

relationship, especially since it is impossible to consistently quantify a dose of prayer. Nonetheless, the apparent increase in likelihood of PCP visit is a new, and intriguing, finding.

Previous studies have shown mixed results on the association of prayer with certain health behaviors for African American women, though these studies were generally conducted with smaller, local samples that could have been influenced by cultural factors unique to their city or congregation. In this large, nationally representative sample, Black women were less likely than Caucasian women to attend PCP visits. However, Black women who prayed were more likely to attend PCP visits than Black women who did not pray, though the effect size of prayer was smaller in this group. These findings add to the current literature on African-American women and prayer that was discussed in the background section.[36–44] Further study is required to understand whether prayer is experienced differently or has a different meaning in regard to health in different social and cultural groups.

Limitations

Study limitations included a lack of detail on dimensions of prayer and religiosity. The National Health Interview Survey contains data collected by researchers for general purposes; our analyses were planned after data collection had already occurred. To more fully explore the relationship of prayer/religion and health care utilization, more specific data would be needed (for example, association with organized religion, attendance at services, and beliefs about religion's effect on health or wellness).

In addition, we were not able to evaluate the relationship between illness severity and prayer for health, since NHIS does not include measures of disease severity. Due to the lack of detailed exposure data in NHIS, it is possible that residual confounding exists that we could not account for in our analyses. Nonetheless, the NHIS is an important survey, since it provides nationwide results on individuals' health-related behavior, health-related perceptions, and health-seeking behavior.

Conclusions

Several surveys of patients[49–52] and practitioners[53–55] indicate that most patients would appreciate some discussion of religion as part of their primary care. In fact, some researchers[26] have proposed that patient satisfaction is greater if religion is incorporated into primary care, and researchers and educators have proposed ways to make spiritual assessment an integral part of the medical or social history.[56] Our findings that prayer for health is not only prevalent but is associated with a greater likelihood of primary care physician visits suggest that discussions of religious activity should be part of the social history for many primary care patients.

Acknowledgments

References

1. McCaffrey AM, Eisenberg DM, Legedza AT, Davis RB, Phillips RS. Prayer for health concerns: results of a national survey on prevalence and patterns of use. Arch Intern Med 2004;164:858–62. [PubMed: 15111371]

2. Dunn KS, Horgas AL. The prevalence of prayer as a spiritual self-care modality in elders. J Holist Nurs 2000;18:337–57. [PubMed: 11847791]

3. Bell RA, Suerken C, Quandt SA, Grzywacz JG, Lang W, Arcury TA. Prayer for health among US adults: The 2002 National Health Interview Survey. Complementary Health Practice Review 2005;10:175–88.

4. Hall DE, Curlin F, Koenig HG. When clinical medicine collides with religion. Lancet 2003;362:S28–S29. [PubMed: 14698119]

5. Eckersley RM. Culture, spirituality, religion, and health: looking at the big picture. Med J Aust 2007;186(10 suppl):S54–S56. [PubMed: 17516885]

6. Jantos M, Kiat H. Prayer as medicine: how much have we learned? Med J Aust 2007;186(10 Suppl):S51–S53. [PubMed: 17516884]

7. Williams DR, Sternthal MJ. Spirituality, religion, and health: evidence and research directions. Med J Aust 2007;186(10 suppl):S47–S50. [PubMed: 17516883]

8. Rew L, Wong YJ. A systematic review of associations among religiosity/spirituality and adolescent health attitudes and behaviors. J Adol Health 2006;38(4):433–42.

9. Daaleman TP, Perera S, Studenski SA. Religion, spirituality, and health in geriatric outpatients. Ann Fam Med 2004;2:49–53. [PubMed: 15053283]

10. Koenig HG. An 83-year-old woman with chronic illness and strong religious beliefs. JAMA 2002;288:482–93.

11. Levin JS, Larson DB, Puchalski CM. Religion and spirituality in medicine: research and evaluation. JAMA 1997;278:792–3. [PubMed: 9286846]

12. Strawbridge WJ, Shema SJ, Cohen RD, Kaplan GA. Religious attendance increases survival by improving and maintaining good health behaviors, mental health, and social relationships. Ann Behav Med 2001;23:68–74. [PubMed: 11302358]

13. Mackenzie ER, Rajagopal DE, Meibohm M, Lavizzo-Mourey R. Spiritual support and psychological well-being; older adults' perceptions of the religion and health connection. Altern Ther Health Med 2000;6:37–45. [PubMed: 11076445]

14. Tix AP, Frazier PA. The use of religious coping during stressful life events: main effects, moderation, and meditation. J Consult Clin Psychol 1997;66:411–22. [PubMed: 9583344]

15. Musick MA, House JS, Williams DR. Attendance at religious services and mortality in a national sample. J Health Soc Behav 2004;45:198–213. [PubMed: 15305760]

16. Strawbridge WJ, Cohen RD, Shema SJ, Kaplan GA. Frequent attendance at religious services and mortality over 28 years. Am J Public Health 1997;87:957–61. [PubMed: 9224176]

17. Astin JA, Harkness E, Ernst E. The efficacy of "distant healing:" a systematic review of randomized trials. Ann Intern Med 2000;132:903–91. [PubMed: 10836918]

18. Harris WS, Gowda M, Kolb JW, et al. A randomized, controlled trial of the effects of remote, intercessory prayer on outcomes in patients admitted to the coronary care unit. Arch Intern Med 1999;159:2273–8. [PubMed: 10547166]

19. Hummer RA, Rogers RG, Nam CB, Ellison CG. Religious involvement and US adult mortality. Demography 1999;36:273–85. [PubMed: 10332617]

20. Abriado-Lanza AF, Vasquez E, Echeverria SE. En las manos de Dios: religious and other forms of coping among Latinos with arthritis. J Consult Clin Psychol 2004;72:91–102. [PubMed: 14756618]

21. Dunn KS, Horgas AL. Religious and nonreligious coping in older adults experiencing chronic pain. Pain Manag Nurs 2004;5:19–28. [PubMed: 14999650]

22. Rippentrop EA, Altmaier EM, Chen JJ, Found EM, Keffala VJ. The relationship between religion/spirituality and physical health, mental health, and pain in a chronic pain population. Pain 2005;116:311–21. [PubMed: 15979795]

23. HG, Marcoux E. The association Baetz M, Griffin between spiritual and religious involvement and depressive symptoms in a Canadian population. J Nerv Ment Dis 2004;192:818–22. [PubMed: 15583502]

24. Jang Y, Borenstein-Graves A, Haley WF, Small BJ, Mortimer JA. Determinants of a sense of mastery in African American and white older adults. J Gerontol B Psychol Sci Soc Sci 2003;58:S221–S224. [PubMed: 12878655]

25. Schnoll RA, Harlow LL, Brower L. Spirituality, demographic and disease factors, and adjustment to cancer. Cancer Practice 2000;9:298–304. [PubMed: 11898147]

26. Benjamins MR. Does religion influence patient satisfaction? Am J Health Behav 2006;30:85–91. [PubMed: 16430323]

27. Fox SA, Pitkin K, Paul C, Carson S, Duan N. Breast cancer screening adherence: does church attendance matter? Health Educ Behav 1998;26:742–58. [PubMed: 9813745]

28. Benjamins MR. Religious influences on preventive health care use in a nationally representative sample of middle-aged women. J Behav Med 2006;29:1–16. [PubMed: 16397821]

29. Whooley MA, Boyd AL, Gardin JM, Williams DR. Religious involvement and cigarette smoking in young adults. Arch Intern Med 2002;162:1604–10. [PubMed: 12123404]

30. Gillum RF. Frequency of attendance at religious services and cigarette smoking in American women and men: the Third National Health and Nutrition Examination Survey. Prev Med 2005;41:607–13. [PubMed: 15917059]

31. O'Connor PJ, Pronk NP, Tan A, Whitebird RR. Characteristics of adults who use prayer as an alternative therapy. Am J Health Promot 2005;19:369–75. [PubMed: 15895540]

32. Wallston BS, Wallston KA, Kaplan GD, Maides SA. Development and validation of the health locus of control (HLC) scale. J Consult Clin Psychol 1976;44:580–5. [PubMed: 939841]

33. Masters KS, Wallston KA. Canonical correlation reveals important relations between health locus and control, coping, affect, and values. J Health Psychol 2005;10:719–31. [PubMed: 16033793]

34. Ai AL, Peterson C, Rodgers WL, Tice TN. Faith factors and internal health locus of control in patients prior to open-heart surgery. J Health Psychol 2005;10:669–76. [PubMed: 16033788]

35. Holt CL, Clark EM, Kreuter MW, Rubio D. Spiritual health locus of control and cancer beliefs among urban African-American women. Health Psychol 2003;22(3):294–9. [PubMed: 12790257]

36. Aaron KF, Levine D, Burstin HR. African-American church participation and health care practices. J Gen Intern Med 2003;18:908–13. [PubMed: 14687276]

37. Kang SH, Bloom JR, Romano PS. Cancer screening among African-American women: their use of tests and social support. Am J Public Health 1994;84:101–3. [PubMed: 8279592]

38. Green BL, Lewis RK, Wang MQ, Person S, Rivers B. Powerlessness, destiny, and control: the influence on health behaviors of African Americans. J Community Health 2004;29:15–27. [PubMed: 14768932]

39. Holt CL, Lukwago SN, Kreuter MW. Spirituality, breast cancer beliefs, and mammography utilization among urban African American women. J Health Psychol 2003;8:383–96. [PubMed: 14670216]

40. Brown CM. Exploring the role of religiosity in hypertension management among African Americans. J Health Care Poor Underserved 2000;11:19–32. [PubMed: 10778040]

41. Dessio W, Wade C, Chao M, Kronenberg F, Cushman LF, Kalmuss D. Religion, spirituality, and health care choices of African-American women: results of a national survey. Ethn Dis 2004;14:189–97. [PubMed: 15132203]

42. Arredondo EM, Elder JP, Ayala GX, Campbell NR. Is church attendance associated with Latinas' health practices and self-reported health? Am J Health Behav 2005;29(6):502–11. [PubMed: 16336105]

43. Felix-Aaron K, Levine D, Burstin HR. African-American church participation with health care practices. J Gen Intern Med 2003;18(11):908–13. [PubMed: 14687276]

44. Levin J, Chatters LM, Taylor RJ. Religion, health and medicine in African Americans: implications for physicians. J Natl Med Assoc 2005;97(2):237–49. [PubMed: 15712787]

45. NHIS survey description. Division of Health Interview Statistics, National Center for Health Statistics. [Accessed January 6, 2008]. www.cdc.gov/nchs/data/nhis/srvydesc.pdf

46. Barnes PM, Powell-Griner E, McFann K, Nahin RL. Complementary and alternative medicine use among adults: United States, 2002. Advance Data 2000;343:1–20. [PubMed: 15188733]

47. Hornbrook MC, Goodman MJ. Chronic disease, functional health status, and demographics: a multi-dimensional approach to risk adjustment. Health Serv Res 1996;31:283–307. [PubMed: 8698586]

48. Research Triangle Institute. SUDAAN language manual, release 9.0. Research Triangle Park, NC: Research Triangle Institute; 2004.

49. Dessio W, Wade C, Chao M, Kronenberg F, Cushman LF, Kalmuss D. Religion, spirituality, and health care choices of African-American women: results of a national survey. Ethn Dis 2004;14:189–97. [PubMed: 15132203]

50. Ang DC, Ibrahim SA, Burant CJ, Siminoff LA, Kwoh CK. Ethnic differences in the perception of prayer and consideration of joint arthroplasty. Med Care 2002;40:471–6. [PubMed: 12021673]

51. Ehman JW, Ott BB, Short TH, Ciampa RC, Hansen-Flaschen J. Do patients want physicians to inquire about their spiritual or religious beliefs if they become gravely ill? Arch Intern Med 1999;159:1803–6. [PubMed: 10448785]

52. MacLean CD, Susi B, Phifer N, et al. Patient preference for physician discussion and practice of spirituality. J Gen Intern Med 2003;18:38–43. [PubMed: 12534762]

53. Curlin FA, Lantos JD, Roach CJ, Sellergren SA, Chin MH. Religious characteristics of US physicians: a national survey. J Gen Intern Med 2005;20:629–34. [PubMed: 16050858]

54. McCauley J, Jenckes MV, Tarpley MJ, Koenig HG, Yanek LR, Becker DM. Spiritual beliefs and barriers among managed care practitioners. J Relig Health 2005;44:137–46. [PubMed: 16021729]

55. Monroe MH, Bynum D, Susi B, et al. Primary care physician preferences regarding spiritual behavior in medical practice. Arch Intern Med 2003;163:2751–6. [PubMed: 14662629]

56. Anandarajah G, Hight E. Spirituality and medical practice: using the HOPE questions as a practical tool for spiritual assessment. Am Fam Physician 2001;63(1):81–9. [PubMed: 11195773]

Table 1

Locus of Control Model for Health Behavior With Religion Examples

Locus of Control	Explanation	Religious Example
Internal	Person believes that they have the power to impact or change their health through their behavior	Person prays for their health because they believe it is something they can do to help themselves
External (powerful others)	Person believes that they do not have power to impact their own health, but other people do	Person relies on their religious leader for health advice (and maybe their physician)
External (fate)	Person believes that no one can impact their health, it is all up to fate (or God/higher power)	Person prays for their health (or adopts superstitious behaviors) because they don't believe they can do anything to help themselves

Table 2

Selected Demographic and Health Characteristics of Subjects Who Prayed and Did Not Pray for Their Health in the Past 12 Months

		Prayed in Past 12 Months (n=14,207)	Did Not Pray in Past 12 Months (n=16,837)
Gender[*]	Male, %	39	55
	Female	61	45
Race	White, %	76	84
	Black	16	8
	Asian	<1	<1
	Native American	3	4
	Mixed	5	3
Black female		10	4
Income	≤$20,000/year, %	22	16
	>$20,000/year	78	84
Age	38 and under, %	33	44
	39–58	39	37
	59 and over	28	19
Region[*]	Northeast, %	16	22
	Midwest	24	25
	South	43	33
	West	17	20
Marital status	Single, %	16	22
	Married	59	57
	Divorced/separated	12	9
CAM status	Used in past 12 months, %	41	27
	No use, past 12 months	59	73
Education level	< 12th grade, %	19	15
	High school graduate	26	26
	Any college	55	59
Health	Cardiovascular,[**] %	27	15
	Diabetes	9	5
	Depression[***]	22	11
	Arthritis[****]	28	15
	Cancer	10	5
Smoking	Never smoked, %	56	53
	Former smoker	25	22
	Current smoker	19	25
Alcohol use	Lifetime abstainer, %	26	19
	Former drinker	20	12
	Current drinker	54	69

All *P* values <.0001

CAM—complementary and alternative medicine

*
These proportions also reported in Bell et al,[3] as row percents

**
Cardiovascular=hypertension, myocardial infarction, stroke, arrhythmia, congestive heart failure

***
Depression=depression or anxiety symptoms in past 6 months

****
Arthritis=osteoarthritis, rheumatoid arthritis, gout, lupus, other rheumatologic conditions

Table 3

Selected Characteristics Associated With Use of Multiple Forms of Prayer for Health

	% Using 0	% Using 1	% Using 2	% Using 3+
General population	57	21	14	8
Southern United States	50	21	19	10
Black	39	21	24	16
Mixed race	46	25	18	11
Black female	32	22	28	18
Cardiovascular [*]	42	24	21	13
Diabetes	39	24	23	14
Depression [**]	40	23	23	14
Arthritis [***]	41	24	21	14
Cancer	40	24	22	14

[*] Cardiovascular=hypertension, myocardial infarction, stroke, arrhythmia, congestive heart failure

[**] Depression=depression or anxiety symptoms in past 6 months

[***] Arthritis=osteoarthritis, rheumatoid arthritis, gout, lupus, other rheumatologic conditions

Table 4

Logistic Regression Showing Variables Independently Associated With Prayer for Health in the Past 12 Months (total n=31,044)

	Odds Ratio	95% CI
Female[*]	1.71	1.59–1.85
Black	2.89	2.58–3.24
Mixed race	1.90	1.56–2.32
White	1.00	
South[*]	1.78	1.59–1.99
Midwest[*]	1.39	1.24–1.56
Northeast	1.00	
Married	1.38	1.23–1.54
Widowed	1.37	1.17–1.60
Divorced/separated	1.24	1.08–1.42
Single	1.00	
Age >58	1.10	1.01–1.23
Age 39–58	1.00	
Age <39	0.87	0.81–0.94
Cardiovascular	1.39	1.27–1.52
Diabetes	1.30	1.12–1.50
Depression	1.65	1.50–1.83
Arthritis	1.42	1.29–1.56
Cancer	1.50	1.30–1.73
CAM use in past year	1.68	1.56–1.81

CI—confidence interval

CAM—complementary and alternative medicine

[*] Odds ratios for regional and gender variables also reported in Bell et al,[3] using different regression model.

Table 5

Logistic Regression for the Relationship Between Prayer for Health (Dichotomous Classification) and Primary Care Physician Visit in the Past 12 Months (n=31,044)

	Regression Model With Dichotomous Variable Odds Ratio (95% CI)
Prayer for Health (PFH) (dichotomous)	
PFH	1.73 (1.63–1.84)
No PFH	1.00
Race	
Black	0.82 (0.73–0.92)
Asian	0.73 (0.49–1.08)
Native American/Alaskan Native	0.71 (0.61–0.82)
Mixed race	0.64 (0.56–0.74)
White	1.00
Region	
Midwest	0.82 (0.73–0.92)
South	0.71 (0.63–0.79)
West	0.63 (0.56–0.71)
Northeast	1.00

CI—confidence interval