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Spiritual Health; Financial Analysis

Characteristics of Adults Who Use Prayer as an Alternative Therapy

Patrick J. O'Connor, MD, MPH; Nicolaas P. Pronk, PhD; Agnes Tan, PhD; Robin R. Whitebird, PhD

Abstract

Purpose. *To describe the demographics, health-related and preventive-health behaviors, health status, and health care charges of adults who do and do not pray for health.*

Design. *Cross-sectional survey with 1-year follow-up.*

Setting. *A Minnesota health plan.*

Subjects. *A stratified random sample of 5107 members age 40 and over with analysis based on 4404 survey respondents (86%).*

Measures. *Survey data included health risks, health practices, use of preventive health services, satisfaction with care, and use of alternative therapies. Health care charges were obtained from administrative data.*

Results. *Overall, 47.2% of study subjects reported that they pray for health, and 90.3% of these believed prayer improved their health. After adjustment for demographics, those who pray had significantly less smoking and alcohol use and more preventive care visits, influenza immunizations, vegetable intake, satisfaction with care, and social support and were more likely to have a regular primary care provider. Rates of functional impairment, depressive symptoms, chronic diseases, and total health care charges were not related to prayer.*

Conclusions. *Those who pray had more favorable health-related behaviors, preventive service use, and satisfaction with care. Discussion of prayer could help guide customization of clinical care. Research that examines the effect of prayer on health status should adjust for variables related both to use of prayer and to health status. (Am J Health Promot 2005;19[5]:369–375.)*

Key Words: Spirituality, Prayer, Preventive Medicine, Behavior, Risk Factors, Health Care Costs

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INTRODUCTION

The proper role of clinician-patient discussions of spirituality or prayer in the office setting remains a controversial issue. Social surveys indicate that up to 90% of Americans pray, and about 66% to 73% of adult patients seen in primary care settings in one study felt that their physician should be aware of their religious and spiritual beliefs.[1] However, less than 10% of patients were willing to forego time spent discussing medical issues for time spent discussing spiritual issues.[2]

Other work suggests that praying for health is a common practice among adults. In one study, a total of 42% of those age 40 and over reported use of alternative therapies other than prayer. The most commonly used alternative therapies were relaxation technique (18%), massage (12%), herbal medicines (10%), and megavitamin therapy (9%). National data suggest similar patterns of alternative therapy use.[3,4] In this same population, the rate of praying for health was 52%.[5] Our understanding of who prays for health, why they pray for health, and whether praying for health is effective remains incomplete.

Meanwhile, research conducted in the fields of marketing, health care, and communications indicates that *customization* of health care is a promising strategy that has the potential to increase patient activation and improve care.[6–8] Clinicians routinely consider patient characteristics such as age, gender, race, and risk factors profiles as important guides to care customization. It is likely that patient spirituality and religious practice conveys information similar to the information conveyed by age, gender, race, or biological risk factors. To examine the potential utility of this concept, it would be important to first assess the correlates of factors such as prayer. If a person's prayer status is independently linked to other factors known to affect health or health risks, then systematic inquiry about prayer might be justified in routine clinical practice, at least in some clinical scenarios.

Spiritual practices and use of prayer have been reported to vary signifi-

cantly by gender, age, educational status, and marital status.[9] To ascertain whether use of prayer is an independent predictor of health or of use to health care services, it is important to control for these and possibly other demographic factors.[10]

Here, we report the results of a simple study designed to describe the characteristics of those who do and do not pray for health. In addition to assessing demographic and psychosocial variables related to use of prayer, the study was also designed to evaluate the relationship of prayer use to preventive care practices, health-related behaviors, satisfaction with care, and total health care charges. We hypothesized a priori that if prayer is an independent predictor of health-related behaviors or of the use of preventive services, then routine inquiry about prayer could contribute meaningful information that clinicians can use to customize care and possibly increase patient adherence to recommended behaviors and services.

METHODS

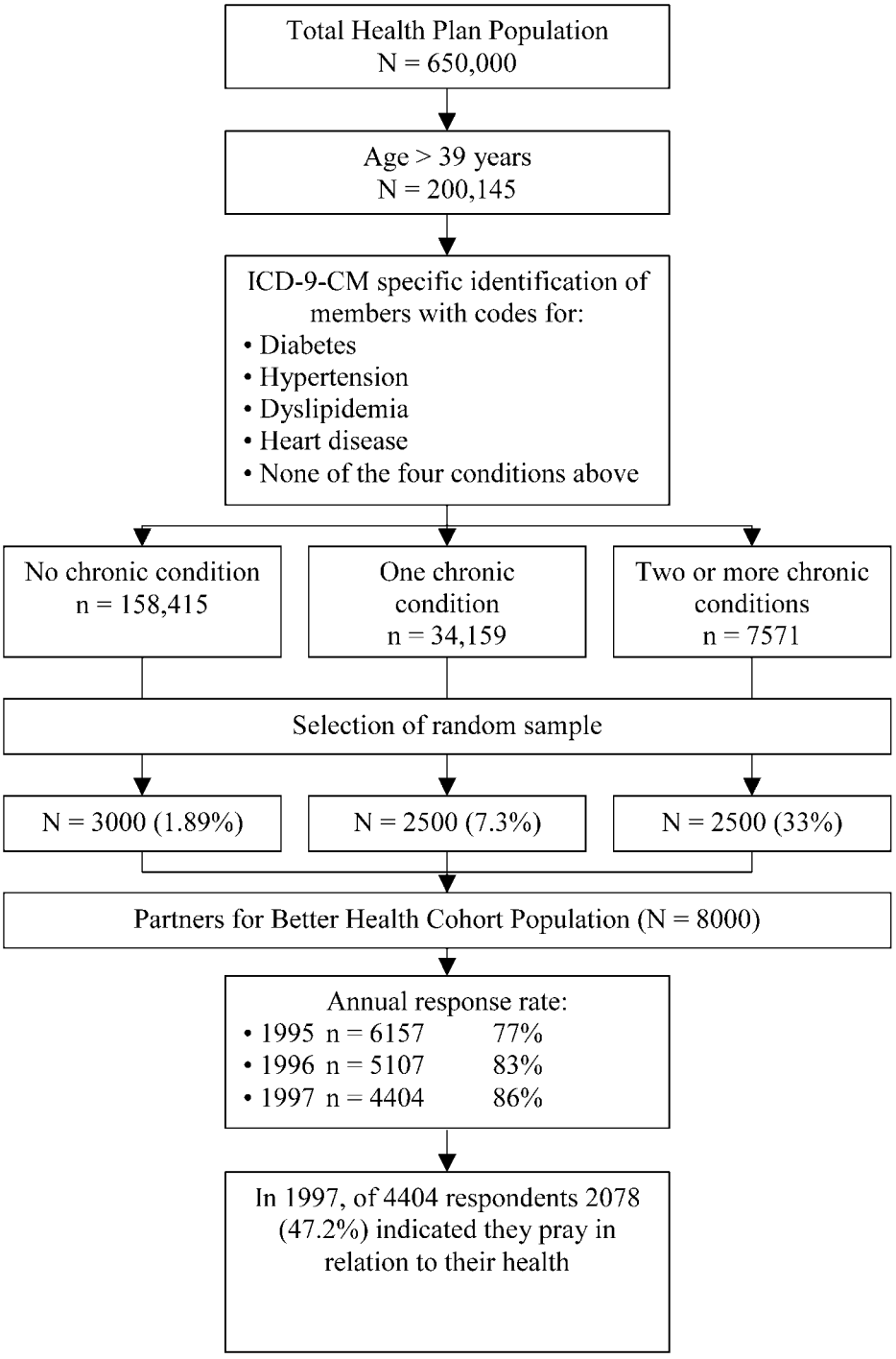
Design

This study was a cross sectional survey with a 1-year follow-up period for collection of health care charge data. Study subjects were partitioned into those who did and those who did not report using prayer for health, and characteristics of these two groups were compared, with statistical adjustment for demographic differences between groups.

Sample

The study was conducted in 1997 at HealthPartners, a large mixed-model MCO with approximately 650,000 members. Study subjects were drawn from a stratified sample of MCO members' aged 40 years and older and included 3000 members with no chronic condition, 2500 members with one chronic condition, and 2500 members with two to four chronic conditions. Chronic conditions used to stratify the sample included diabetes, hypertension, dyslipidemia, and heart disease, which were identified by ICD-9-CM codes, pharmacy data, and laboratory data.[11,12] A flow diagram of the sampling process is depicted in Figure 1.

Figure 1



Selection of Study Subjects

This cohort of 8000 members was followed from 1995 through 1998 with annual surveys, with response rates averaging about 80% each year. The 5107 respondents to the 1996 survey were sent the 1997 survey, and

Table 1

Association of Demographic Characteristics With Prayer in 4404 Adults; Numbers Included in Each Analysis Vary Slightly Because of Missing Data

Characteristic	Do Not Pray (N)	Pray		*p* Value	
		N	%	Unadjusted χ^2	Multivariate Model 1*
Male	1178	887	43.0	<0.0001	Females more likely to pray
Female	900	1439	61.5		<0.01
Age (years)					
<45	170	166	49.4	<0.002†	Over 55 years more likely
45–54	591	580	49.5		to pray
55–64	528	569	51.9		0.08
65–74	436	590	57.5		
≥75	353	421	54.4		
Education					
Less than high school	240	235	49.5	0.77‡	Some college or more less
High school graduate	520	627	54.7		likely to pray
Some college	633	808	56.1		<0.01
College graduate or more	668	641	49.0		
Chronic condition					
None	756	788	51.0	0.08§	Those with >1 chronic condition more
1	657	760	53.6		likely to pray
2+	665	778	53.9		0.17
Working for pay	892	881	49.7	<0.001	<0.04
Not working for pay	883	1084	55.1		
Married or widowed	1771	2035	53.5	0.15	0.02
Other	269	271	50.2		

* After adjustment by other demographic variables listed in the table.
† Over 55 years vs. others.
‡ Some college of more vs. others.
§ Those with more than one chronic condition vs. others.

4404 responded (86.2%). These respondents to the 1997 survey are the subjects of this report. Differences in survey respondents and nonrespondents have been previously analyzed and reported.[13]

Measures

Data were obtained from a standard survey method in which the survey was mailed to the member's home, with subsequent telephone follow-up of those who did not return the survey after two mailings.[14] Core questions were included each year over the 4-year survey period, with additional pertinent questions included on an annual basis.

Questions on use of prayer for health were included in the 1997 survey. The stem for the question about prayer was ''During the last 12 months have you used any of these therapies for your health?'' Seventeen alternative therapies, similar to those reported by Eisenberg et al.[3] in 1993, including prayer, were listed as responses. Respondents were asked to circle or not circle the word ''prayer.'' No examples or definitions for prayer were given; therefore, the respondents arrived at their selection independently. The perceived efficacy of prayer for health was asked with the question, ''Does/did it help?''

The reliability of standard items from the Behavioral Risk Factor Surveillance System (Centers for Disease Control and Prevention) used to assess the following covariates has been reported by Stein et al.[15]: age (reliability range 1.0–.97 across racial and ethnic groups), gender (reliability 1.0 across groups), educational level (reliability .62–.89 across groups), smoking (reliability .79–.90), ethanol use (reliability .73–.93), obesity (reliability .55–.86). Depressive symptoms were measured by a single question that has been shown to have a sensitivity of .69 and specificity of .90 and to classify correctly the depression status of 85.4% of patients in primary care practice: ''Do you often feel sad or depressed?''[16] Satisfaction with care was assessed with questions modified from the Primary Care Assessment Survey with Cronbach's alpha values greater than .90.[17] The Short Form (SF-12) health survey was used to assess patient health status in multiple dimensions. These measures were then compared with, and have a high correlation with the SF-36, for

Table 2

Association of Health-Related Behaviors, Social Characteristics, and Preventive Service Use With Prayer Status

Behavior	N	Do Not Pray (N)	Pray		*p* Value	
			N	%	Unadjusted χ^2	Multivariate Model 2*
Exercise						
≥4 d/wk	1507	686	821	54.5	0.33	0.09
<4 d/wk	2406	1134	1272	52.9		
Current smoker	528	276	252	47.7	<0.01	Nonsmokers pray more
Not current smoker	3679	1660	2019	54.9		<0.01
Never smoked	1551	642	909	58.6	<0.001	Those who never smoked pray more
Current or former smoker	2088	1090	998	47.8		<0.01
Select low-fat foods	1483	660	823	55.5	0.004	
Do not select low-fat foods	2233	1101	1132	50.7		0.80
Five vegetables/d most often	2011	865	1146	57.0	<0.001	Those who eat more vegetables pray more <0.01
Less often	2312	1167	1145	49.5		
More than 5 drinks on occasion	483	297	186	38.5	<0.001	Heavier drinkers pray less <0.01
Deny heavy alcohol consumption	3242	1471	1771	54.6		
Friends						
<1	781	454	327	41.9	<0.001	Those with one or more friends pray more <0.01
≥1	3462	1526	1936	55.9		
Improved health from previous year	877	381	496	56.5	<0.02	Those with improved health pray more
Otherwise	3494	1676	1818	52.0		<0.01
Depressed	545	238	307	56.3	0.14	0.30
Otherwise	3542	1665	1877	53.0		

* After adjustment by age, gender, education, and marital status.

Table 3

Rate of Preventive Health Service Use Within 1 Year by Prayer Status

Preventive Service	Pray (%)	Do Not Pray (%)	*p* Value	
			Unadjusted χ^2	Multivariate Model 3*
Preventive visit	73.7	67.2	<0.001	<0.01
Flu immunization	66.0	60.5	<0.001	<0.01
Mammogram (women)	66.9	64.9	0.37	0.60
Breast exam (women	70.4	65.5	0.01	<0.03
Regular aspirin use	46.6	45.5	0.45	0.19
Estrogen use (women)	67.9	67.7	0.94	0.67
Calcium use (women)	56.7	52.9	0.10	0.44
Brush teeth ≥2 times/d	60.9	55.1	<0.001	0.25

* With adjustment by age, gender, education, and marital status.

which internal reliability scores range from .83 to .90.[18]

Analysis

The bivariate relationships of prayer status with demographics, health behaviors, health status, preventive health service use, and satisfaction were assessed with χ^2 statistics for categorized variables. Multivariate logistic regression models were then used to adjust for appropriate covariates, including age, gender, marital status, and educational level. In all multivariate models, data were adjusted to account for the stratification of the study sample on the basis of chronic disease status, and selected interaction terms were considered. All analyses were done in Statistical Analysis Software, version 6 (SAS Institute, Cary, NC). A two-tailed alpha of .01

Table 4

Degree of Satisfaction and Involvement in Health Care Decisions by Prayer Status

	Pray (%)	Do Not Pray (%)	*p* Value	
			Unadjusted χ^2	Multivariate Model 4*
Have a regular primary care physician	92.3	89.2	<0.001	<0.01
Active in health care decisions	48.8	42.7	<0.001	0.21
Feel safe in discussing issues with primary care physician	91.3	86.3	<0.001	<0.04
Satisfied that health plan provides useful information	58.4	54.8	<0.02	<0.01
Satisfied that health plan improves health	61.8	57.4	<0.001	<0.01

* After adjustment by age, gender, education, and marital status.

was selected to assess statistical significance because of multiple comparisons.[19–21] The study was reviewed in advance, approved, and monitored by the HealthPartners Institutional Review Board.

RESULTS

Table 1 shows unadjusted rates of prayer use among those with selected demographic characteristics. Mean age was 62.1 years for those who pray and 60.9 years for those who do not pray for health.

Table 2 shows unadjusted rates of health-related behaviors in those who do and do not pray. Those who pray smoked less, drank less alcohol, exercised more, and ate more vegetables, but there were no differences in selection of low-fat foods. In addition, rates of prayer were higher in those with more social support and in those who reported their health had improved in the previous year. Those who pray and do not pray had similar rates of depressive symptoms.

Table 3 shows that those who pray had higher rates of preventive service use on all measures; this difference reached significance on three of eight measures. Table 4 shows that those who pray had more involvement with primary care providers, more often felt safe discussing issues with their primary care physician, and had higher satisfaction with their health plan. Subjects that did not pray showed no significant differences regarding more favorable behaviors, practices, or satisfaction on any of 19 measures analyzed.

Four multivariate logistic models were constructed to further assess differences in characteristics of those who pray and do not pray. In these models, the dependent variable was 1 for those who pray and 0 for those who do not pray. All multivariate models adjusted for sample clustering, and selected interaction terms were evaluated. Model 1 focused on demographics and found that female gender ($p < .01$) and fewer years of education ($p < .01$) were related to higher likelihood of praying. Work for pay, educational level, age, race, counts of chronic diseases, and five of six SF-12 functional health domains were not associated with prayer.

Model 2 focused on health-related behaviors and psychosocial variables and adjusted for age, gender, education, and marital status. In this model, praying was associated with not smoking ($p < .01$), never smoking ($p < .01$), less alcohol consumption ($p < .01$), eating more vegetables ($p < .01$), having more friends ($p < .01$), and having the perception of improved health in the last year ($p < .01$). Praying was not linked to consumption of a low-fat diet ($p = .80$), physical activity levels ($p = .04$), or depression ($p = .30$).

Model 3 focused on preventive health care use. After adjustment for age, gender, education, and marital status, praying was associated with greater likelihood of a preventive health visit in the previous year ($p < .01$) and to influenza immunization within 1 year ($p < .01$). Rates of mammography, breast exam, aspirin use, estrogen use, calcium use, and brushing teeth two or more times a day were all more favorable in those who pray, but these differences did not reach statistical significance.

Model 4 focused on satisfaction with care. After adjusting for age, gender, education, and marital status, praying was associated with higher likelihood of having a regular primary care physician ($p < .01$), satisfaction that the health plan provides information ($p < .01$), and satisfaction that health plan improves health ($p < .01$). Praying was not related to being more active in health care decisions ($p = .21$) or to feeling safe discussing issues with primary care physician ($p < .04$).

Use of prayer for health was not significantly related to health status per se, whether measured as self-perceived health status, counts of chronic diseases, or most functional health status scales. Thus, poor health did not appear to be associated with use of prayer.

Total health care charges were not significantly different for those who did or did not pray. The unadjusted mean per member per month (PMPM) charges were $569 PMPM for those who pray and $569 PMPM for those who did not pray over a 24-month period. Only 4.5% of study subjects had zero charges.

DISCUSSION

The intent of this paper is not to evaluate whether prayer affects health,[22–25] but merely to describe the characteristics of those who do and do not pray to improve their health. Most patients surveyed were willing to provide information on prayer use, and prayer was widely practiced in this study population. Nearly half of survey respondents in the study sample pray in relation to health, and over 90% of these believe prayer is an effective way to improve health. Rates of praying for health far exceeded rates of use of

other alternative heath care practices.[5,26,27]

Compared with those who do not pray, those who pray had consistently better profiles of health-related behaviors, preventive health care use, and satisfaction with the provider and health plan. In many ways, the profile of those who pray approximates that of an ''ideal patient'' from the perspective of both physician and health plan. It remains to be seen whether physician-patient discussion of spirituality, religious beliefs, or prayer might increase patient willingness to adopt healthy life styles or use effective preventive services. It is possible that patients who pray would respond more positively to certain patient education strategies than to other strategies.[13,28] These findings confirm and extend the work of others[29,30] who observed no less allopathic health care among those using alternative therapies.

The favorable health behaviors, preventive service use, and satisfaction profiles of those who pray have many implications.[22,31] Physicians and health plans might enjoy higher satisfaction ratings from such patients and, to the extent that prayer is associated with an increased focus on maintaining health and wellness, health plans might find such patients attractive as members. However, the design of this study precludes causal inference, and it remains to be seen whether or not interventions that increase use of prayer could favorably affect health practices, health outcomes, utilization, or costs. Perhaps health plans or physician groups might consider community outreach and partnership programs that include places of worship.[32] Such programs could be designed to encourage such patients to include discussion of spiritual needs or issues in the context of their health care.

The association of prayer with preventive care and healthy life styles has several clinical implications. When caring for a patient, most physicians implicitly assess a patient's mental models of health and disease, willingness to change, and health beliefs because such knowledge often contributes to a more effective and mutually satisfying clinical encounter.[33,34] It is possible that inquiry about use of prayer could provide physicians important clues and lead to more suitably customized approaches to care and education.[6,35]

Beyond that, many patients might desire to talk frankly with their physicians about spiritual dimensions of illness and health, including the use of prayer.[36–38] The high prevalence of prayer use in the study population, as well as its potential utility as a marker for healthier behaviors and practices, strengthens the rational for a broader scope of physician-patient discussion regarding spiritual practices such as prayer.[39–41]

Several factors constrain the interpretation of our results. First, the generalization of our results to other populations is uncertain because of the specific demographic, educational, and ethnic profile of the study population. Second, the descriptive nature of the study precludes causal inference. Although prayer is associated with favorable patterns of health-related behaviors, preventive care use, and satisfaction, these data do not demonstrate that interventions to increase prayer use would necessarily lead to changes in such behaviors, preventive care use, or satisfaction.

SO WHAT? Implications for Health Promotion Practitioners and Researchers

This study seems to indicate that, after controlling for age, gender, comorbidity, and other factors, those who pray have more favorable health-related behaviors, better preventive health care practices, and higher satisfaction with care than those who do not pray. It remains to be seen whether changes in spiritual orientation or practice are related to changes in health-related behaviors or use of preventive services. In the meantime, information about a patient's spiritual practice might help practitioners customize health promotion recommendations. Implications for researchers are even more evident: when examining the relationship between prayer and health outcomes, it could be important to carefully control for health-related behaviors and preventive health care use.

Despite these constraints, the results of our study are interesting and important. The data do not support the hypothesis that people start to pray as their health status worsens, because those who pray have similar rates of functional impairment, depression, and chronic diseases as those who do not pray. The use of prayer for health appears to have an independent association with health-related behaviors and use of preventive services. Therefore, knowledge of the patient's spiritual orientation, including their use of prayer, should be sought and taken into account by clinicians, who might be able to use this information to more effectively customize care recommendations to patients. Research that seeks to causally link prayer to health status must carefully adjust for the association of prayer with health-related behaviors and practices or risk overestimating the apparent effect of prayer on health status.

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