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National Trends in Prayer Use as a Coping Mechanism for Depression: Changes from 2002 to 2007

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Abstract

Objective—To analyze national trends in the use of prayer among individuals with depression.

Method—We adopted a cross-sectional design with data from the adult Alternative Medicine supplement of the National Health Interview Survey (NHIS) 2002 and 2007. Prayer use and depression were combined into 4 categories: prayed in the past 12 months and depressed; 2) prayed in the past 12 months and not depressed; 3) never prayed but depressed; and 4) never prayed and not depressed. Chi-square tests and multinomial logistic regressions were performed to analyze group differences. All analyses adjusted for the complex sample design and were conducted in SAS-callable SUDAAN.

Results—Use of prayer for depression was steady at 6.9% across time, however general prayer increased significantly between 2002 and 2007 (40.2 vs. 45.7). Women, aged 50-64, not-married, with a high school education were more likely to use prayer while depressed compared to those who were neither depressed nor prayed. Lifestyle behaviors (ex. alcohol, smoking, exercise) were also associated with prayer use and depression.

Discussion—Prayer use for depression remained steady with unique relationships occurring among those who smoke, use alcohol, and have irregular exercise. Individuals' use of prayer as a potential complementary treatment for depression suggests that it is critical for mental and physical health treatment providers to be aware of the use of prayer as a coping resource.

Keywords

Prayer; depression; coping; religion; spirituality

In studies examining the effect of religion, prayer, and spirituality and overall well-being, the majority of empirical research have concluded that religion and prayer has a generally positive effect on one's physical health, mental health, and overall life satisfaction (Ferraro & Albrecht-Jensen, 1991). Higher levels of religious practice are reported to be positively

associated with better health (Ferraro & Albrecht-Jensen, 1991; Levin & Chatters, 2008) and less depression (Smith, McCullough, & Poll, 2003). This is particularly true when the religious practice is internally motivated, such as private prayer (Koenig, George, & Peterson, 1998). Additionally, the act of prayer itself may have positive effects on anxiety and tension similar to those of meditation (Elkins, Anchor, & Sandler, 1979), therefore having a positive effect on mental health. The unique spiritual quality of prayer and spiritual activities could have additional unique contributory factors to mental health (Pargament, 2002; Wachholtz & Pargament, 2005, 2008).

Research has shown that people pray more when experiencing stressful life situations (Ai, Peterson, Bolling, & Rodgers, 2006). Prayer and spiritual help seeking may help individuals better cope with life stress and depression (Schnittker, 2001); and research shows an inverse correlation between religiousness and depression that becomes stronger as life stress increases (Smith, et al., 2003).

Prayer has been shown to help the effects of depression in a wide variety of samples. Numerous correlational findings indicate that prayer is a healthy and effective technique for those who are depressed or who are experiencing pain and emotional suffering. Private religious involvement and prayer has been positively correlated with, faster recovery rates of depression, and lower rates of suicide across multiple studies, although some studies find that prayer use may increase in those who are depressed as a means to help cope with depressive symptom (Kennedy, 1998; Koenig, King, & Carson, 2012; Koenig, McCullough, & Larson, 2001, for a review). Prayer is a way for people to cope with depressive symptoms and health issues, across a variety of religions and belief systems (Coleman, et al., 2006). In a study of religious beliefs and practices, faith (belief) and prayer (practice) were seen as the most helpful (Loewenthal, Cinnirella, Evdoka, & Murphy, 2001). "There is an overall positive relationship between many measures of religiosity and measures of mental health, (Loewenthal, et al., 2001), p 293."

While few intervention studies on prayer and depression have been conducted, Rajagopal and colleagues, compared the effects of an individual versus group based prayer intervention to lessen dysthymia and mild depression among elderly individuals (Rajagopal, Mackenzie, Bailey, & Lavizzo-Mourey, 2002). After the single session of prayer-based intervention, there was a significant decrease in depression (Rajagopal, et al., 2002). At the six week follow up, those who continued to use the prayer intervention were significantly less depressed than those who did not continue. In fact, those who had stopped using the prayer intervention became more depressed (Rajagopal, et al., 2002). This study indicates that prayer may be an effective tool for the alleviation of depressive symptoms in both a single session or over a long period of time.

There are many studies that discuss the relationship between depression and religion, suggesting that prayer use as a part of private religious activity is a common way to cope with depressive symptoms (Cooper, Brown, Thi Vu, Ford, & Powe, 2001; Morgan & Jorm, 2008; Smith, et al., 2003). Prayer could be considered a form of self help therapy since it is a self-initiated technique for the treatment of depression without professional guidance (Morgan & Jorm, 2008). While there is limited clinical evidence at the present time for

recommending it as a stand-alone treatment for depression, evidence does suggest that prayer may be a useful tool in preventing or reducing the symptoms of depression (Boelens, Reeves, Replogle, & Koenig, 2012; Morgan & Jorm, 2008). The definition of prayer and the act of prayer itself is used differently among each individual, however research suggests that the same positive physical and mental health outcomes are found across multiple types of prayer (Elkins, et al., 1979)

While advances have been made in medically treating depression with psychotherapy and antidepressants, current studies indicate that successfully treating depression can be a difficult process (DeRubeis, et al., 2005). Findings from the first ever randomized trial of depression care in real world practice settings reveals that depression remains persistent in at least a quarter of individuals (Gilmer, et al., 2005) and the odds of beating depression get reduced as the number of failed treatments increases (Rush, 2007). The increasing rates of persistent depression may imply that the association between depression and prayer may have become stronger over time. However, we are still uncertain how this trend is changing over time. The goal of the present study is to examine trends in the association between prayer and depressive symptoms over time using a nationally representative study of households. We additionally analyze the sub-group differences in this trend over time.

Method

Design

We used a cross-sectional study design and compared trends with two independent cross-sectional samples from the National Health Interview Survey (NHIS). The NHIS covers a wide variety of healthcare topics and information is gathered through personal household interviews (<http://www.cdc.gov/nchs/nhis.htm>). Due to the de-identified database format of this study, this research was given “exempt” status by the University of Massachusetts Medical School IRB.

Data

We derived our data from the 2002 and 2007 NHIS household survey. In both 2002 and 2007, the NHIS included two additional supplements, The Adult Complementary and Alternative Medicine Supplement (ALT) and the Child Complementary and Alternative Medicine Supplement (CAL). We used the ALT supplement from both years to examine prayer use and depression over time. The ALT collected information from sample adults on their use of 18 non-conventional health care practices, including prayer for health reasons (ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2007/srvydesc.pdf).

Analytical Sample

The ALT was administered to a sample of 31,044 adult individuals in 2002 and 23,393 adults over age 18 in 2007. Individuals who had missing values in depression and prayer use variable and those prayed before and did not pray in the past 12 months were not included in the sample. The our final analytical sample size in 2002 was 27,089 representing

179,250,487 individuals and the sample size in 2007 was 20,331 representing 193,749,620 individuals

Measures

Dependent variable: Prayer and depression—We combined whether the respondent has ever prayed specifically for their depression and whether during the past 12 months they prayed specifically for the purpose of their depression to extract the depression variable from the adult sample module. The respondents were also asked how often in the past 30 days they felt depressed or so sad that nothing could cheer them up. The responses were coded on a 5-scale: 1) all of the time; 2) most of the time; 3) some of the time; 4) A little of the time; and 5) none of the time. We combined codes 1 (all of the time) and 2 (most of the time) to classify individuals as having depression.

These variables were combined to arrive at a 4-category dependent variable that combined prayer and depression. The four groups were: 1) Prayed in the past 12 months and Depressed; 2) Prayed in the past 12 months and not depressed; 3) Never prayed but depressed; and 4) Never Prayed and not depressed.

Independent variables—Variations in prayer use and depression were examined by demographic characteristics (Gender, Age, Race/Ethnicity, marital), social support (marital status); socio-economic status (poverty level and health insurance); health status (whether the respondent felt the same or worse or better health than previous year); and life style behaviors (smoking and exercise).

Statistical Techniques

Chi-square tests were used to test for subgroup differences in the use of prayer and depression. Unadjusted multinomial logistic regressions were used to assess bivariate subgroup differences in prayer use and depression in 2002 and 2007. In the multinomial logistic regressions, for the dependent variable the group “never prayed and not depressed” was the reference group. We used regressions rather than simple cross-tabulations because we were specifically interested in analyzing whether the groups differed compared to “never prayed and not depressed”.

We also evaluated subgroup differences in prayer use and depression within a multivariate framework using multinomial logistic regression in which all variables were simultaneously controlled. In these regressions we tested for the trend with the use of indicator variable for the year 2002 versus 2007 as one of the independent variables. In this regressions 2002 served as the reference group. All analyses were adjusted for the complex sample design of the NHIS and were conducted in SAS-callable SUDAAN.

Results

Adult participants over 18 years of age who responded to the adult alternative medicine supplement in 2002 and 2007 were similar demographic, socio-economic, and health characteristics (data not shown in tabular form). In 2002, the respondents represented about 179 million individuals (weighted size) and 194 million individuals in 2007.

Bivariate Description of Prayer Use and Depression

Table 1 describes the characteristics of respondents in terms of prayer use and depression. As can be seen from the weighted percentages, the trend in prayer use and depression changed over time between 2002 and 2007. However, this change was not uniform in all categories of the variable. For example, the percentage of individuals who prayed and reported depression remained the same at 6.9%, while the prayed and not depressed increased from 40.2% in 2002 to 45.7% in 2007. The percentage of individuals who never prayed and reported depression decreased from 4.0% in 2002 to 3.3% in 2007.

Description of Prayer Use and Depression Over Time for Subgroups

The results of series of multinomial regressions in which the dependent variable was depression and prayer and the independent variable was year of observation (2002 versus 2007) are summarized in Table 2. When examined by subgroup differences, we found that for all except for those without any activity limitation and current smokers the likelihood of never prayed and depressed did not change between 2002 and 2007 (Table 2). For almost all groups with very few exceptions (other racial groups, change in health status remaining the same, former alcohol users and unable to do exercise) the likelihood of “prayed and no depression” increased from 2002 to 2007. For example, the odds ratio for year 2007 was 1.27 for women, 1.32 for men, suggesting that there was an increase in men and women who reported no depression but prayed in the past 12 months.

However, change in the likelihood of depressed and prayed differed across subgroups. For example, the likelihood of women who reported depression and prayed in past 12 months increased, the odds ratio was 1.12 and significant. However, this was not the case for men. The groups for whom the likelihood of praying in the last 12 months and reporting depression increased from 2002 to 2007 were: 1) women 2) individuals in the age group 50-64 3) other marital status; 4) individuals with high school education 5) those without health insurance coverage; 6) those who reported same health status; 7) current smokers; and 8) who reported occasional exercise.

Prayer Use and Depression over Time: Results from Multinomial Logistic Regression

Adjusted odds ratio and 95% confidence intervals from a multinomial logistic regression on prayer and depression with pooled 2002 and 2007 are summarized in Table 3. In this regression, when the trend variable (year 2007 compared to 2002) was analyzed, we found that the adjusted odds ratio (AOR) for the group “prayed in the past 12 months and not depressed” was 1.19 with 95% CI = 1.11, 1.27, suggesting that over time the likelihood of praying in individuals who were not depressed increased when compared to individuals who did not use prayer for health concerns in the past 12 months and did not report depression. The time variable was not significant for any other category of the dependent variable.

The profile of individuals who prayed and reported depression differed. Some groups were more likely to be in the group “prayed in the past 12 months and depressed” compared to “never prayed and never depressed”. These were women compared to men, adults in the age-group 50-64 compared to 18-50 years; African Americans and Latinos compared to white; those who reported changing health status (better and worse) compared to those

reported no change in health status health status; those who reported limitation in activities compared to those who did not report any activity limitation; those who did not use alcohol or former alcohol users compared to abstainers. For example, women than men were more likely to be in prayed in the past 12 months and depression compared to “never prayed and never depressed”. The AOR was 2.50 with 95% CI = [2.26, 2.77].

Some groups were less likely to have “never used prayer and depressed” compared to never used prayer and never depressed. These groups were: elderly (aged 65 and older) compared to 18-50 years; married compared to other; those with above high school education compared to less than high school; those who were not poor (middle income, high income) compared to poor; with insurance compared to no insurance, those who never smoked and past smokers compared to current smokers; and those who reported exercise compared to those who were unable to do so. For these groups the AOR ranged from 0.58 (95% CI [0.45, 0.76] for those who reported weekly physical activity to 0.88 (95% CI = [0.78, 0.998] for those with high school education.

Some subgroups were more likely to have prayed in the past 12 months for health concerns group regardless of depression compared to those who never prayed and without depression. These groups were: women compared to men; African Americans and Latinos compared to white; adults in the age group 50-64 compared to those in the age group 18-50 years; those who reported better or worse health compared to those whose health status has not changed in the past 12 months; those who had functional limitations compared to those without functional limitations and those who were abstainers or former alcohol users compared to those who are current alcohol users.

Discussion

The use of prayer for health concerns has increased over the course of the 2002-2007 time frame, even among individuals who had health insurance (Wachholtz & Sambamoorthi, 2011). Mental health variables did not show the same trend, in that the relationship between prayer and depression remained consistent across both time points. The relationship between the subtypes remained stable in that “prayer and not depressed” remained higher than the “prayer and depression” group. However, within these general findings, specific intra-group findings tell a more detailed story.

Socio-demographics of Prayer and Depression

Similar to the current study, a number of socio-demographic characteristics have been correlated with frequency of prayer, including race, gender, and age. Among African-Americans, “Blacks attend religious services more frequently, engage in daily prayer at higher rates, and feel more strongly about their religious beliefs than do whites” (Taylor, 1988, p. 114). In the current study, non-white individuals were more likely to have engaged in prayer regardless of depression status. However, when depression status was taken into account, both Latino and African Americans were increasingly likely to use prayer for health concerns in the context of depression compared to their non-depressed counterparts. Prayer is likely to be a strong self-treatment component for non-white individuals struggling with depression (Cooper, et al., 2001).

Women are more likely to experience depression than men (Nolen-Hoeksema, 2001), and they are also more likely to have prayers related to coping with depression in the present study. This suggests there may be a natural link between depression and the use of prayer for individuals with a faith/spiritual background. In the present study, the link between prayer and depression weakens somewhat among higher income individuals as this group was also the least likely to report experiencing depression and less likely to report any prayer use for health concerns in the past 12 months. More generally, our findings on the use of prayer are similar to other demographic analyses on church attendance from other studies (Newport, 2010), which also suggests that those groups who engage in prayer, are also more likely to be involved in organized religion of some type, rather than being only spiritual outside of organized religious group support. Nationally, studies indicate that suggest women attended church more than men, married respondents attended church more than those who were not married (including single, divorced, separated, or widowed), and that increasing age and level of education are positively related to church attendance (McCaffrey, Eisenberg, Legedza, Davis, & Phillips, 2004; Taylor, 1988).

Implications

As suggested by experimental studies on treatment for depression pharmaceutical and even combined pharmaceutical and psychotherapy treatment for depression does not provide relief from depression for everyone (Fava, et al., 2003). Our study findings suggest that some individuals may be using prayer as an alternative or complementary form of therapy for depression, with certain demographic groups being more likely to use prayer for depression than others. Other research on the relationship between spirituality and mental health suggests that spirituality may be a commonly used active coping strategy for individuals with mental health issues (Cooper, et al., 2001).

At minimum, the potential positive or negative role of spirituality should be assessed in every depression research trial or clinical assessment as some patients are likely using spiritual coping strategies which may account for some of the variability seen among patient responses to treatment. As the correlative nature of this study cannot make any causation determinations, we cannot make definitive statements as to the efficacy of this coping strategy. However, its frequent use, particularly among certain demographics, and the potential positive or negative impact it may have on the depression, should be sufficient to warrant further investigation.

Additionally, while we can identify that individuals were praying for health concerns, we do not have the information to identify the types of prayer, the specific content of the prayer (e.g. rosary, meditative, intervention request), the valence of the prayers (positive/seeking support or negative/feeling abandoned) or the nature of these prayers. Future research would benefit by a closer assessment of the characteristics of the prayers used, and a closer assessment of how these are specifically used in relation to the individual's depression.

Clinically, for those patients with a spiritual faith or background who are struggling with depression, a basic assessment of spirituality should be conducted by providers. Patients with negative spirituality (e.g. abandonment, anger) should be referred for appropriate psychotherapy and/or spiritual counseling to address this issue as it may contribute to

ongoing depression. Further, for patients expressing positive spirituality, similar referrals may be helpful to assist these patients with utilizing positive spiritual coping resources from their faith tradition that may assist with reducing the severity of depression (e.g. meditative prayer, socializing at religious events, and accessing additional feelings of spiritual support from their higher power).

The co-occurring use of prayer for health concerns continues to remain robust across 2002-2007, and shows relatively high levels of use in specific demographic groups. Because this relationship continues to be steady, it suggests that prayer remains a common coping strategy for some individuals when dealing with health concerns, and should be taken into account with considering treatment options and individual coping resources.

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References

- Ai AL, Peterson C, Bolling SF, Rodgers W. Depression, faith-based coping, and short-term postoperative global functioning in adult and older patients undergoing cardiac surgery. *Journal of Psychosomatic Research*. 2006; 60(1):21–28. [PubMed: 16380306]
- Boelens PA, Reeves RR, Replogle WH, Koenig HG. The Effect of Prayer on Depression and Anxiety: Maintenance of Positive Influence One Year After Prayer Intervention. *The International Journal of Psychiatry in Medicine*. 2012; 43(1):85–98.
- Coleman CL, Holzemer WL, Eller LS, Corless I, Reynolds N, Nokes KM, et al. Gender Differences in Use of Prayer as a Self-Care Strategy for Managing Symptoms in African Americans Living With HIV/AIDS. *Journal of the Association of Nurses in AIDS care*. 2006; 17(4):16–23.10.1016/j.jana.2006.05.005 [PubMed: 16849085]
- Cooper LA, Brown C, Thi Vu H, Ford DE, Powe NR. How Important Is Intrinsic Spirituality in Depression Care? *Journal of General Internal Medicine*. 2001; 16(9):634–638. [PubMed: 11556945]
- DeRubeis RJ, Hollon SD, Amsterdam JD, Shelton RC, Young PR, Salomon RM, et al. Cognitive Therapy vs Medications in the Treatment of Moderate to Severe Depression. *Arch Gen Psychiatry*. 2005; 62:409–416. [PubMed: 15809408]
- Elkins D, Anchor K, Sandler H. Relaxation training and prayer behavior as tension reduction techniques. *Behavioral Engineering*. 1979; 5(3):81–87.
- Fava M, Rush AJ, Trivedi MH, Nierenberg AA, Thase ME, Sackeim HA, et al. Background and rationale for the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) study. *Psychiatric Clinics of North America*. 2003; 26(2)
- Ferraro K, Albrecht-Jensen C. Does religion influence adult health? *Journal for the Scientific Study of Religion*. 1991; 30(2):193–202.
- Gilmer W, Trivedi M, Rush A, Wisniewski S, Luther J, Howland R, et al. Factors associated with chronic depressive episodes: a preliminary report from the STAR-D project. *Acta Psychiatrica Scandinavia*. 2005; 112(6):425–433.
- Kennedy, G. Religion and Depression. In: Koenig, HG., editor. *Handbook of Religion and Mental Health*. San Diego,CA: Elsevier Science; 1998. p. 130-146.
- Koenig, H.; King, D.; Carson, VB., editors. *Handbook of Religion and Health*. 2. Oxford: Oxford University Press; 2012.
- Koenig, H.; McCullough, M.; Larson, D. *Handbook of religion and health*. Oxford University Press; USA: 2001.

- Koenig HG, George LK, Peterson BL. Religiosity and Remission of Depression in Medically Ill Older Patients. *American Journal of Psychiatry*. 1998; 155(4):536–542. [PubMed: 9546001]
- Levin J, Chatters LM. Religion, Aging, and Health: Historical Perspectives, Current Trends, and Future Directions -- Public Health. *Journal of Religion, Spirituality & Aging*. 2008; 20(1):153–172.
- Loewenthal KM, Cinnirella M, Evdoka G, Murphy P. Faith conquers all? Beliefs about the role of religious factors in coping with depression among different cultural-religious groups in the UK. *British Journal of Medical Psychology*. 2001; 74(3):293–303. [Article].
- McCaffrey AM, Eisenberg DM, Legedza ATR, Davis RB, Phillips RS. Prayer for Health Concerns: Results of a National Survey on Prevalence and Patterns of Use. *Archives of Internal Medicine*. 2004; 164(8):858–862. [PubMed: 15111371]
- Morgan A, Jorm A. Self-help interventions for depressive disorders and depressive symptoms: a systematic review. *Annals of General Psychiatry*. 2008; 7(1):13. [PubMed: 18710579]
- Newport, F. Americans' Church Attendance Inches Up in 2010. Gallup: Wellbeing 1-7. 2010. Retrieved from <http://www.gallup.com/poll/141044/americans-church-attendance-inches-2010.aspx>
- Nolen-Hoeksema S. Gender differences in depression. *Current Directions in Psychological Science*. 2001; 10(5):173.
- Pargament KI. Is Religion Nothing But ...? Explaining Religion Versus Explaining Religion Away. *Psychological Inquiry*. 2002; 13(3):239–244.
- Rajagopa D, Mackenzie E, Bailey C, Lavizzo-Mourey R. The Effectiveness of a Spiritually-Based Intervention to Alleviate Subsyndromal Anxiety and Minor Depression Among Older Adults. *Journal of Religion and Health*. 2002; 41(2):153–166.
- Rush A. STAR*D: what have we learned? *American Journal of Psychiatry*. 2007; 164(2):201–204. [PubMed: 17267779]
- Schnittker J. When Is Faith Enough? The Effects of Religious Involvement on Depression. *Journal for the Scientific Study of Religion*. 2001; 40(3):393–411.
- Smith TB, McCullough ME, Poll J. Religiousness and depression: Evidence for a main effect and the moderating influence of stressful life events. *Psychological Bulletin*. 2003; 129(4):614–636. [PubMed: 12848223]
- Taylor RJ. Structural Determinants of Religious Participation among Black Americans. *Review of Religious Research*. 1988; 30(2):114–125.
- Wachholtz A, Pargament K. Is Spirituality a Critical Ingredient of Meditation? Comparing the Effects of Spiritual Meditation, Secular Meditation, and Relaxation on Spiritual, Psychological, Cardiac, and Pain Outcomes. *Journal of Behavioral Medicine*. 2005; 28(4):369–384. [PubMed: 16049627]
- Wachholtz A, Pargament K. Migraines and meditation: does spirituality matter? *Journal of Behavioral Medicine*. 2008; 31(4):351–366. [PubMed: 18551362]
- Wachholtz A, Sambamoorthi U. National Trends in Prayer Use as a Coping Mechanism for Health concerns: Changes From 2002 to 2007. *Psychology of Religion and Spirituality*. 2011; 3(2):67–77.

Biography

Dr. Amy Wachholtz is an Assistant Professor of Psychiatry at the University of Massachusetts Medical School, and the Director of Health Psychology at UMass Medical Center. She received her PhD in clinical psychology from Bowling Green State University where she had a dual specialization in Behavioral Medicine and Psychology of Religion. She recently received a NIDA K23 grant to study co-morbid opioid addiction and chronic pain, and she has a number of ongoing research projects examining the how individuals use spirituality to cope with illness. Her research interests focus on 1) bio-psycho-social-spiritual model of illness and 2) the complexities of treating of co-morbid pain and opioid addiction.

Trends in Prayer Use and Depression -- Weighted Percentages by Characteristics of the Study Sample National Health Interview Survey, 2002 and 2007

Table 1

	Prayed and Depressed		Prayed and Not Depressed		Never Prayed and Depressed		Never Prayed and Not Depressed		Sig
	2002	2007	2002	2007	2002	2007	2002	2007	
ALL	6.9	6.9	40.2	45.7	4.0	3.3	48.9	44.1	***
Gender									
Women	9.1	8.9	46.5	51.7	4.2	3.3	40.2	36.1	***
Men	4.5	4.8	33.3	39.2	3.9	3.3	58.3	52.7	***
Race/Ethnicity									
White	6.0	6.1	38.1	43.2	4.1	3.4	51.8	47.3	***
African American	10.7	10.8	54.7	61.2	3.5	2.0	31.1	26.1	***
Latino	9.3	8.2	41.5	48.3	4.4	3.6	44.8	39.9	***
Other	6.2	5.6	32.9	37.7	3.8	4.3	57.2	52.4	
Age									
Less than 50 years	6.1	6.2	35.8	40.7	4.5	3.6	53.6	49.5	***
50-64	8.2	8.5	43.6	49.9	3.5	2.9	44.7	38.7	***
65 and older	8.5	7.3	52.9	58.1	2.7	3.0	35.9	31.6	***
Marital Status									
Married	5.8	5.6	41.7	47.7	3.3	2.8	49.2	44.0	***
Other	8.8	9.2	37.6	42.5	5.3	4.2	48.4	44.1	***
Education									
LT HS	12.0	11.8	39.9	46.9	6.2	4.6	41.9	36.7	***
HS	8.0	8.5	39.1	45.1	4.5	4.0	48.4	42.5	***
Above HS	4.7	4.7	40.9	45.9	3.1	2.6	51.3	46.9	***
Poverty Status									
Poor	14.6	15.6	39.9	44.0	7.3	5.8	38.2	34.6	+
Middle Income	10.7	10.5	43.0	48.7	5.3	4.2	41.0	36.7	***
High Income	4.9	4.7	39.0	45.4	3.4	2.9	52.7	47.1	***
Missing	6.7	6.4	41.6	45.3	3.7	2.5	48.0	45.7	*
Any Insurance									
Yes	6.6	6.3	41.2	46.9	3.6	2.9	48.6	43.9	***

	Prayed and Depressed		Prayed and Not Depressed		Never Prayed and Depressed		Never Prayed and Not Depressed		Sig
	2002	2007	2002	2007	2002	2007	2002	2007	
ALL	6.9	6.9	40.2	40.2	45.7	4.0	3.3	48.9	44.1 ***
No	8.5	9.9	34.6	40.2	40.2	6.4	5.3	50.5	44.6 ***
Change in Health									
Better	7.7	6.8	46.3	51.6	51.6	3.8	3.6	42.2	38.0 ***
Worse	22.5	22.6	43.5	45.9	45.9	8.4	6.3	25.6	25.3 +
Same	4.8	5.1	38.3	44.3	44.3	3.6	2.9	53.4	47.7 ***
Functional Status									
Limited	14.7	14.5	47.5	52.1	52.1	5.8	5.3	32.0	28.0 ***
No limitation	3.5	3.4	36.9	42.8	42.8	3.3	2.4	56.4	51.5 ***
Smoking									
Never	5.8	5.2	42.9	48.5	48.5	3.1	2.8	48.2	43.5 ***
Past	7.0	7.2	43.7	48.1	48.1	3.0	2.4	46.3	42.4 **
Current	9.5	11.6	30.3	35.2	35.2	7.4	5.9	52.9	47.3 ***
Alcohol Use									
Abstainer	7.7	7.6	48.5	51.2	51.2	3.5	3.3	40.3	37.9
Former	10.6	9.6	50.7	52.4	52.4	3.8	3.5	34.8	34.5
Current	5.8	5.2	34.9	39.5	39.5	4.2	3.2	55.0	52.2 ***
Exercise									
Daily	5.8	5.6	37.8	42.9	42.9	4.1	3.1	52.3	48.3
Weekly	3.8	3.6	39.3	44.8	44.8	3.2	2.4	53.8	49.1 ***
Mon/year	7.9	8.1	40.3	46.1	46.1	4.4	3.8	47.4	42.1 ***
Unable to do	21.3	19.1	52.6	54.3	54.3	4.8	3.0	21.3	23.6

Note: Based on adults respondents aged 18 or older with no missing data on use of prayer and depression. Wt %: Weighted percentages. Asterisks represent significant group differences in prayer and depression by subject characteristics based on chi-square tests.

*** p < .001;

** .001 p < .01;

Unadjusted Odds Ratios and 95% Confidence Intervals for Trend (Year 2007) from Multinomial Logistic Regression on Depression and Prayer Use for NHIS 2002 and 2007

Table 2

	Prayed Depressed			Prayed Not Depressed			Never Prayed Depressed		
	OR	95% CI	Sig	OR	95% CI	Sig	OR	95% CI	Sig
Gender									
Women	1.12	[1.00, 1.26]	*	1.27	[1.18, 1.37]	***	0.90	[0.76, 1.06]	
Men	1.18	[1.00, 1.39]		1.32	[1.22, 1.43]	***	0.96	[0.80, 1.15]	
Race/Ethnicity									
White	1.13	[1.00, 1.28]		1.26	[1.17, 1.35]	***	0.92	[0.78, 1.08]	
African American	1.18	[0.95, 1.45]		1.33	[1.15, 1.53]	***	0.68	[0.45, 1.02]	
Latino	1.05	[0.83, 1.31]		1.34	[1.17, 1.54]	***	0.91	[0.66, 1.25]	
Other	0.97	[0.60, 1.56]		1.22	[0.97, 1.54]		1.21	[0.70, 2.09]	
Age									
18-50 years	1.13	[0.98, 1.29]		1.26	[1.17, 1.35]	***	0.86	[0.73, 1.01]	
50-64	1.20	[1.00, 1.43]	*	1.33	[1.19, 1.48]	***	0.95	[0.71, 1.28]	
65 and older	1.01	[0.82, 1.23]		1.28	[1.15, 1.43]	***	1.25	[0.93, 1.68]	
Marital Status									
Married	1.08	[0.94, 1.24]		1.30	[1.20, 1.40]	***	0.95	[0.78, 1.15]	
Other	1.18	[1.04, 1.35]	*	1.29	[1.20, 1.40]	***	0.87	[0.74, 1.03]	
Education									
< HS	1.15	[0.96, 1.37]		1.37	[1.20, 1.56]	***	0.86	[0.67, 1.10]	
HS	1.24	[1.05, 1.47]	*	1.34	[1.21, 1.48]	***	1.01	[0.81, 1.26]	
Above HS	1.10	[0.96, 1.27]		1.25	[1.17, 1.35]	***	0.93	[0.76, 1.14]	
Poverty Status									
Poor	1.22	[0.97, 1.53]		1.24	[1.04, 1.48]	*	0.91	[0.67, 1.23]	
Middle Income	1.07	[0.87, 1.30]		1.26	[1.11, 1.43]	***	0.88	[0.66, 1.18]	
High Income	1.08	[0.93, 1.25]		1.33	[1.24, 1.42]	***	0.95	[0.79, 1.15]	
Missing	1.03	[0.83, 1.29]		1.17	[1.02, 1.33]	*	0.75	[0.55, 1.03]	
Any Insurance									
Yes	1.09	[0.98, 1.22]		1.30	[1.22, 1.38]	***	0.89	[0.77, 1.04]	

	Prayed Depressed		Prayed Not Depressed		Never Prayed Depressed				
	OR	95% CI	Sig	OR	95% CI	Sig			
No	1.33	[1.09, 1.64]	**	1.33	[1.17, 1.52]	***	0.92	[0.73, 1.16]	
Change in Health									
Better	0.97	[0.78, 1.20]		1.24	[1.11, 1.38]	***	1.04	[0.77, 1.41]	
Worse	1.02	[0.82, 1.26]		1.08	[0.89, 1.30]		0.74	[0.55, 1.00]	
Same	1.23	[1.08, 1.41]	**	1.33	[1.25, 1.42]	***	0.92	[0.78, 1.07]	
Functional Status									
Limited	1.14	[1.00, 1.30]		1.26	[1.15, 1.39]	***	1.07	[0.89, 1.29]	
No limitation	1.09	[0.92, 1.28]		1.31	[1.22, 1.40]	***	0.79	[0.66, 0.95]	*
Smoking									
Never	1.04	[0.91, 1.19]		1.30	[1.21, 1.40]	***	1.03	[0.85, 1.25]	
Past	1.11	[0.92, 1.35]		1.20	[1.08, 1.34]	**	0.85	[0.63, 1.14]	
Current	1.38	[1.16, 1.63]	***	1.31	[1.18, 1.47]	***	0.90	[0.73, 1.10]	
Alcohol Use									
Abstainer	1.06	[0.87, 1.28]		1.15	[1.03, 1.29]	*	1.01	[0.80, 1.27]	
Former	0.92	[0.77, 1.10]		1.05	[0.94, 1.17]		0.93	[0.72, 1.21]	
Current	0.96	[0.82, 1.12]		1.21	[1.13, 1.31]	***	0.80	[0.67, 0.97]	*
Exercise									
Daily	1.08	[0.69, 1.70]		1.24	[1.01, 1.52]	*	0.81	[0.50, 1.31]	
Weekly	1.06	[0.84, 1.32]		1.26	[1.15, 1.39]	***	0.84	[0.64, 1.10]	
Mon/year	1.18	[1.05, 1.33]	**	1.33	[1.24, 1.43]	***	0.98	[0.83, 1.16]	
Unable to do	0.84	[0.53, 1.31]		0.93	[0.65, 1.33]		0.58	[0.29, 1.13]	

Note: Based on adults respondents aged 18 or older with no missing data on use of prayer and depression. Asterisks represent significant group differences in prayer and depression for year 2007 compared to 2002 based on multinomial logistic regressions for each characteristic. The reference group for the dependent variable is "never prayed and not depressed."

OR: Odds ratio.

*** p < .001;

** .001 p < .01;

* .01 p < .05

Table 3

Adjusted odds ratios and 95% Confidence Intervals from Multinomial Logistic Regression On Prayer and Depression National Health Interview Survey, 2002 and 2007

Year	Prayed and Depressed			Prayed Not Depressed			Not Prayed and Depressed		
	AOR	95% CI	Sig	AOR	95% CI	Sig	AOR	95% CI	Sig
2002	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
2007	1.03	[0.93,1.14]		1.19	[1.11,1.27]	***	0.88	[0.77,1.01]	
Gender									
Women	2.50	[2.26,2.77]	***	1.82	[1.73,1.93]	***	1.41	[1.24,1.61]	***
Men	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
Race/Ethnicity									
White	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
African American	2.99	[2.61,3.44]	***	2.81	[2.57,3.07]	***	1.08	[0.89,1.32]	
Latino	1.90	[1.63,2.21]	***	1.49	[1.37,1.63]	***	1.11	[0.91,1.35]	
Other	1.13	[0.86,1.48]		0.81	[0.72,0.92]	***	1.10	[0.82,1.49]	
Age									
18-50 years	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
50-64	1.19	[1.05,1.34]	**	1.39	[1.31,1.48]	***	0.87	[0.74,1.01]	
65 and older	0.85	[0.74,0.97]	*	1.73	[1.60, 1.87]	***	0.73	[0.59, 0.89]	**
Marital Status									
Married	0.87	[0.77,0.97]	*	1.29	[1.22,1.36]	***	0.76	[0.67,0.87]	***
Other	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
Education									
LT HS	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
HS	0.88	[0.78,1.00]		1.01	[0.94,1.09]		0.83	[0.70,0.98]	*
Above HS	0.66	[0.58,0.74]	***	1.11	[1.03,1.20]	**	0.63	[0.53,0.76]	***
Poverty Status									
Poor	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
Middle Income	0.80	[0.68,0.94]	**	1.02	[0.92,1.14]		0.78	[0.63,0.96]	*
High	0.48	[0.42,0.56]	***	0.84	[0.76,0.93]	***	0.60	[0.49,0.72]	***

	Prayed and Depressed			Prayed Not Depressed			Not Prayed and Depressed		
	AOR	95% CI	Sig	AOR	95% CI	Sig	AOR	95% CI	Sig
Missing	0.57	[0.49,0.66]	***	0.83	[0.74,0.92]	***	0.56	[0.45,0.70]	***
Any Insurance									
Yes	0.82	[0.72,0.93]	**	1.04	[0.96,1.12]		0.74	[0.63,0.87]	***
No	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
Change in Health									
Better	1.67	[1.46,1.91]	***	1.43	[1.34,1.53]	***	1.36	[1.15,1.62]	***
Worse	4.10	[3.58,4.71]	***	1.61	[1.45,1.78]	***	2.70	[2.27,3.20]	***
Same	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
Functional Status									
Limited	4.92	[4.43,5.46]	***	1.72	[1.61,1.83]	***	2.94	[2.55,3.40]	***
None	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
Smoking									
Never	0.66	[0.58,0.75]	***	1.30	[1.20,1.41]	***	0.61	[0.52,0.71]	***
Past	0.83	[0.72,0.96]	**	1.28	[1.18,1.39]	***	0.56	[0.46,0.68]	***
Current	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
Alcohol Use									
Abstainer	1.20	[1.04,1.38]	*	1.41	[1.31,1.52]	***	1.05	[0.88,1.26]	
Former	1.58	[1.39,1.79]	***	1.63	[1.52,1.75]	***	1.18	[1.01,1.39]	*
Current	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
Exercise									
Daily	0.69	[0.49,0.98]	*	0.80	[0.65,1.00]	*	1.26	[0.83,1.91]	
Weekly	0.58	[0.45,0.76]	***	0.85	[0.70,1.04]		1.10	[0.76,1.60]	
Mon/year	0.72	[0.57,0.91]	**	0.74	[0.62,0.89]	**	1.27	[0.89,1.82]	
Unable to do	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	

Note: Based on adults respondents aged 18 or older with no missing data on use of prayer and depression. Asterisks represent significant group differences in prayer and depression compared to the reference group. The reference group for the dependent variable is “never prayed and not depressed.” The regression also includes intercept terms (not presented).

OR: Odds ratio.

*** p < .001;

** .001 p < .01;

50' < p 10' *

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