PSYCHOSOCIAL CORRELATES OF INSOMNIA SEVERITY IN PRIMARY CARE

FUNDING SOURCE: American Academy of Family Physicians Foundation Grant.
WORD COUNT: 2,684

INTRODUCTION:

Chronic insomnia is defined as difficulty initiating or maintaining sleep or non-restorative sleep that impairs daytime functioning.[1] An estimated 40 to 70 million Americans are affected with insomnia intermittently and 10 to 20 percent are affected chronically.[2] Placed in perspective, this figure is double the prevalence of major depression (6.6 percent per year).[3] Insomnia consequences are substantive and include mood disturbances, medication habituation, memory impairment, daytime fatigue, vocational and interpersonal difficulties, increased healthcare utilization, impaired health status, [4, 5, 6]and accidents.[7] Insomnia costs exceed 42 billion dollars each year.[8] Insomnia is thus a primary care concern in view of its prevalence, consequences and costs.

Insomnia severity often leads to distress and resultant help-seeking in primary care.[9,10] Therapeutic responses typically address the sleep disturbance itself.[11] An adjunctive approach, addressing psychosocial factors that accentuate insomnia severity and help-seeking can also reduce distress and enhance well-being.[12] Several psychosocial factors-poor health status,[13] depression,[14] low self-efficacy perceptions,[15] and dysfunctional beliefs about sleep[16] have been associated with insomnia severity in recent literature. However, none of these studies nor other major reviews of insomnia in primary care[9-11,17] indicate which of these factors best predict insomnia severity.

Addressing potential predictors of insomnia severity has important clinical management implications. Specifically, if poor health status is most salient, then address of contributory comorbidities such as arthritis, heart failure, and other chronic medical illnesses should be prioritized. Alternatively, time and resources should be directed to management of depressive symptoms should these best predict insomnia severity. A net relationship with low self-efficacy would indicate a role for self-efficacy enhancement techniques that facilitate personalized, achievable goal-setting and self-care.[18] Pre-eminence of dysfunctional beliefs would warrant greater emphasis on integration of cognitive-behavioral approaches in medical settings.[19] Knowing how relationships vary across sociodemographic subgroups can also inform management.

Accordingly, this study was conducted to identify individual and net psychosocial correlates of insomnia severity and to determine whether these relationships vary with sociodemographic attributes.

METHODS:

This non-experimental, correlational, cross-sectional study assessed the relationships between insomnia severity, health status, depression, self-efficacy, dysfunctional beliefs about sleep, and demographic factors. Participants were recruited consecutively from patients 18 years old or above seen for care at three clinical sites. These included a hospital-sponsored primary care clinic (site 1) and two urban, academic Family Practice Centers (sites 2 and 3). The study was advertised by flyers posted in waiting rooms and exam rooms. Exclusionary criteria included being under age 18, illiteracy, or lacking cognitive capacity to complete informed consent or respond to surveys. Inclusion criteria entailed being age 18 or above with clinically significant

insomnia as indicated by a score of 8 or above on the Insomnia Severity Index (ISI). This is a 7-item questionnaire that asks respondents to rate severity of recent problems with sleep onset, sleep maintenance, early waking, and impact of insomnia using a 5-point Likert scale (0 = not at all, 4 = extremely). ISI scores may range from 0 to 28. Higher scores indicate more severe insomnia, within 4 categories: absence of insomnia (0-7), mild (8-14), moderate (15-21), and severe insomnia (22-28).[20]

Following the approval of the study by the Institutional Review Board, a study coordinator obtained informed consent then distributed survey packets to participants. The study took between 20 and 30 minutes to complete. The coordinator was available to provide clarification if requested. Participants received a 10 dollar cash honorarium upon completion. Surveys were then stored without names or other means of personal identification. Data were entered and stored in a secure, password-protected database accessible only to members of the research team.

Measures: Insomnia severity was measured with the Insomnia Severity Index as discussed above. The ISI has a reported Cronbach's Alpha > 0.70 and documented validity.[21] Calculated Cronbach's alpha for the ISI in this study was 0.84.

Health Status was measured with the SF-8,[22] a shorter adaptation of the Medical Outcomes Study SF-36 global health status measure.[23] Participants use a 5-point scale to indicate their health status. The sum of the ratings provides an overall score that can range from 8 (poor) to 40 (excellent). The SF-8 has excellent convergent validity with the SF-36 (correlation coefficients 0.67 to 0.79 for 7 of 8 items) and high test-retest reliability (0.8 to 0.88).[24] Calculated Cronbach's alpha for the SF-8 in this study was 0.88.

Depressive symptoms were assessed with the Center for Epidemiological Studies-Depression scale (CES-D), a 20-item self-report screening measure assessing the frequency of depressive mood and symptoms during the past week.[25] The CES-D has excellent internal consistency (coefficient alpha >0.85),[26] test-retest reliability coefficients of 0.40 to 0.70, and correlates well with other depression measures. Responses are scored on a 4-point Likert scale ranging from 0 to 3. Calculated Cronbach's alpha for the CES-D in this study was 0.88. Summed scores may range from 0 to 60; 4 items being reverse-coded. A score of 16 to 21 suggests mild to moderate depression with higher scores indicating severe disorder.[27]

Self-Efficacy was measured by the 9-item Self-Efficacy for Sleep Scale (SE-S).[28] On this measure, participants use a 5-point scale (range 1-5) to indicate their level of confidence in performing various behaviors that are necessary to get to sleep. The sum of the confidence ratings provides an overall score of sleep self-efficacy that can range from 9 to 45, with higher ratings reflecting more confidence. Concurrent validity for the SE-S scale is constituted through congruence of higher SE-S scores with improved sleep quality (Pittsburg Sleep Quality Index) scores [29]as well as subjective (sleep diary) and objective (actigraphy) of total sleep time and sleep efficiency in randomized clinical trials of behavioral sleep treatments.[30,31] Internal reliability for the SE-S in this study (Cronbach's alpha = 0.85 compares favorably with Cronbach's alpha results (0.71-0.86) reported in these trials. Test-retest reliability for the SE-S has been established as well.[32]

Dysfunctional beliefs regarding sleep were measured using the 20-item Dysfunctional Beliefs about Sleep (DBAS) scale.[33] On this measure, participants indicate their levels of agreement with statements concerning sleep by placing a mark on a 100 millimeter line ranging from strongly disagree (0.00) to strongly agree (1.00). A higher score indicates more dysfunctional

beliefs and attitudes regarding sleep. The total score is calculated from the average score of all items with one item reverse scored. Cronbach's Alpha of 0.77 to 0.80 has been reported for the DBAS. Calculated Cronbach's alpha for the DBAS in this study was 0.84.

Measured sociodemographic variables included age, gender, race, marital status and education. All were assessed by a researcher-designed survey. Age was measured as ratio (continuous) level data. Gender, race, marital status, and educational level were categorical.

Statistical analyses first entailed characterization of participants using descriptive and summary statistics (mean and standard deviation for continuous variables; percentages for categorical variables). Individual associations with insomnia severity were examined using Pearson Correlation Coefficients for continuous data and Spearman Correlation Coefficients for non-interval data. All variables were screened for normality prior to conducting analysis. Means were imputed for five cases that had less than two missing values for the CES-D. Step-wise linear regression was then conducted in order to examine health status, depression, self-efficacy, and dysfunctional beliefs as net predictors of insomnia severity.

RESULTS:

There were 236 participants with 163 from site 1, 56 from site 2, and 17 from site 3. As shown in table 1, mean age was 45 (range: 19-91) with 221 participants reporting. Participants were 74 percent female (n=236), 74 percent African American (n=160), and 36 percent married (n=236). Of 235 participants reporting educational level, 64 percent reported a high school education, 17 percent were college graduates, and 19 percent reported post-graduate education. Ten percent (30 participants) age 65 or above.

According to Cohen[34], in order to obtain a significant effect size to achieve a power level equal to or greater than .80 while detecting at least a moderate level of difference between correlated variables, an N=125 would be necessary to achieve an alpha = .01. This was number was exceeded for this study, thus ensured adequate power for practical significance.

As noted in Tables 1 and 2, there is no significant variation by site with regard to socio-demographic attributes and means for the ISI, SF-8, CES-D, SE-S, and DBAS. Accordingly, data were pooled in subsequent analyses.

Table 2 reports means and standard deviations for the ISI, SF-8, CES-D, SE-S, and DBAS. Insomnia severity was moderate (mean 17; range: 8-29). Means for hypothesized predictors of insomnia were moderate for health status as measured by the SF-8 (mean: 24; range: 8-42); moderate for depression measured by the Center for Epidemiologic Studies Depression Scale (CES-D) (mean: 22; range: 0-49); midrange for Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS) (mean: .50; range: .06-.94); and moderate for self-efficacy as measured by the Self-Efficacy for Sleep Scale (SE-S) (mean: 23; range: 9-45).

Table 3 consists of individual Pearson Correlation Coefficients for independent variables with ISI scores (insomnia severity). There were no significant associations between insomnia severity and socio-demographic status. However, health status, depression, self-efficacy, and dysfunctional beliefs were all significantly correlated ($p < .01$). As health status and self-efficacy increased, insomnia severity decreased, demonstrating an inverse association. Depressive symptomology and dysfunctional beliefs about sleep had a positive relationship with insomnia severity in that as they increased, severity increased.

A step-wise linear regression was then conducted in order to determined the predictive power of the level of health status, depression, dysfunctional beliefs about sleep, and self-efficacy on participant perceptions of their insomnia severity (Table 4). Following the completion of the regression, the model providing the best predictive power of insomnia severity included both self-efficacy and level of depression (R^2=.306). Reported level of self-efficacy with regard to sleep was the strongest predictor for the model. Neither Dysfunctional beliefs (R^2=.003) nor health status (R^2=.014) approached significance for inclusion in the model.

DISCUSSION:

This study was conducted to identify psychosocial correlates of insomnia severity in primary care settings and to examine differences in findings by sociodemographic attributes. Demographic variables were not correlated with sleep severity. However, results did indicate that poor health status, higher depression scores, low self efficacy, and higher dysfunctional beliefs about sleep all had significant individual associations with insomnia severity. Only low self-efficacy and depressive symptoms had significant net predictive relationships as indicated by a step-wise linear regression. Poor health status was not a predictor of insomnia severity in the regression models but did retain strong associations with low self-efficacy and depressive symptoms.

This study found a strong net relationship between insomnia severity and depression. This is in keeping with other reports.[35] In their seminal study of insomnia in primary care, Simon and Von Korff[17] reported that compared to controls, insomnia patients were significantly more likely to suffer co-morbid depression. More recently, Alattar et al[14] conducted a study using a practice based research network reaffirming this relationship.

Simon and Von Korff[28] also reported that insomnia patients had greater impairment of health status. Other studies using the SF-36 health status measure, from which the SF-8 is derived, have also found insomnia related to impaired health status.[36] The relationship between insomnia and patient perceptions of impaired health status in this study, however, was indirect. While health status lost significance in the stepwise linear regression, it was strongly and significantly related ($r = 0.60$, $p < .001$) to depression, suggesting that depression accounts for the health status impairment. Together these findings reaffirm the importance of screening for depression in the evaluation of insomnia, especially as the severity of the insomnia complaint increases.

The other major finding of this study, the strong net relationship between low self-efficacy for sleep and insomnia severity has not received attention in prior literature. Self-efficacy in general has received limited study in relation to insomnia. Higher self-efficacy is associated with successful hypnotic tapering.[37,38] Improved self-efficacy for sleep is noted as an outcome of behavioral sleep treatment trials.[39,40] Self-efficacy perceptions also predict response and adherence to behavioral treatment for insomnia.[41,42] To our knowledge, no study has related low self-efficacy for sleep to insomnia severity. This finding suggests that interventions aimed at improving self-efficacy for sleep can reduce insomnia severity and resultant impairment of mood and well-being. This strategy could also increase patient capacity to apply evidence-based behavioral sleep techniques[43] and reduce long-term use of hypnotics, thereby reducing habituation and side-effects.

Several other study variables did not relate to insomnia severity. Although age and female gender are consistently recognized as insomnia risk factors, and other sociodemographic factors such as divorce, race, and socioeconomic status are recognized as risk factors in some studies,[44] these sociodemographic factors did not have a significant relationship with insomnia severity.

These findings suggest that approaches to severe insomnia in primary care need not vary by sociodemographic status.

In addition, dysfunctional beliefs about sleep did not emerge as a net predictor of insomnia severity. Together these findings suggest that insomnia is a multifaceted phenomenon in that factors that predict occurrence (sociodemographic factors) and perpetuation (dysfunctional beliefs) differ from those related to severity. This multidimensionality argues for a multidimensional treatment approach that addresses both the insomnia itself and that factors that underscore degree of distress.

Several potential limitations need acknowledgement in discussion of these results. First, data were collected at three separate sites. Comparison of results by site reveals no observable differences but unrecognized biases may have impacted results. Second, biases resulting from misunderstanding of survey items, erroneous, or falsified responses may have impacted results. Third, incomplete reporting of ethnicity may have obscured relationships between race and insomnia severity. Nonetheless, the study sample was predominantly female and African American, an attribute that may limit generalizability. On the other hand, this predominantly African-American sample advances understanding among a group at risk for greater insomnia severity and consequences.[45] Fourth, the 10 dollar reimbursement for survey completion may have inflated ISI scores to allow participation. Fifth, the cross-sectional design reveals associations but not cause and effect between insomnia severity and hypothesized predictors. Sixth, despite the significant predictive power of self-efficacy and level of depression on insomnia severity, it should be noted that these variables only accounted for 30% of insomnia severity variance. Other, unmeasured variables also contribute. However, in research

concerning psychosocial factors, predictive associations greater than r> .50 or $R^2 \geq .25$ still point to effect sizes that are clinically important.[34]

Further research with longitudinal assessment of predictor and outcome variables would delineate these relationships while confirming findings of this initial study. Future research might also include a broader range of predictors, such as anxiety, a control group that does not suffer from insomnia, differentiation of primary versus co-morbid (secondary to medical or psychiatric disorders)[1] insomnia, and exclusion of other sleep disorders causing daytime sleepiness.

From a clinical perspective, this study underscores the importance of assessing and managing co-morbid depression as part of an insomnia treatment plan. This conclusion reinforces findings of prior research. In addition, lower degrees of self-efficacy most strongly predicted insomnia severity in this study. This finding argues for insomnia interventions that facilitate self-efficacy for sleep-inducing behavioral change.

Self-efficacy, belief in one's ability to perform a particular health-related behavior,[46] is a dynamic, modifiable attribute. Primary care clinicians can increase self-efficacy through current office counseling techniques such as motivational interviewing that help patients experience success through formulation of personalized, achievable goals.[47] In addition, self-efficacy enhancement is key to self-care promotion,[48] a core concept in the Chronic Care Model,[49] which underpins the Patient-Centered Medical Home (PCMH).[50]

Self-efficacy enhancement interventions also embody other PCMH precepts including whole person orientation and team-based care through group visits.[51,52] Such interventions have been used to improve diabetes outcomes in Family Medicine.[53] They have not been examined as a

means of increasing patient capacity for successfully undertaking behavioral sleep treatments such as stimulus-control, sleep restriction, relaxation, or paradoxical intention.[54] It is noteworthy that prorated, self-efficacy for sleep in this preliminary study was 5.2 on a scale of 0 to 10. This level was mid range such that an intervention is likely to increase levels to a range of 7, the point at which an individual can achieve the desired behavior.[55] Moreover, given the correlation between low self-efficacy and depression, enhancing self-efficacy would likely ameliorate the latter. Self-efficacy enhancement in relation to insomnia therefore merits examination.

Table 1

Demographic Information

Age	All Sites	Site 1	Site 2	Site 3
Mean	45	45	44	45
Range	19 – 91	19 – 83	20 – 68	22 – 91
Gender (n=236)				
Male	61 (26%)	45 (28%)	16 (29%)	1 (6%)
Female	175 (74%)	118 (72%)	40 (71%)	16 (94%)
Ethnicity (n=160)				
African-American	119 (74%)	101 (73%)	6 (60%)	12 (71%)
Caucasian	34 (21%)	26 (20%)	3 (30%)	5 (29%)
Asian	2 (1%)	1 (1%)	0 (0%)	0 (0%)
Hispanic	1 (.5%)	1 (1%)	1 (10%)	0 (0%)
Other	4 (2.5%)	4 (3%)	0 (0%)	0 (0%)
Relationship Status (n=236)				
Married	84 (36%)	56 (34%)	19 (34%)	9 (52%)
Widowed	17 (7%)	11 (7%)	5 (9%)	1 (6%)
Never Married	73 (31%)	52 (32%)	18 (32%)	3 (18%)
Divorced	62 (26%)	44 (27%)	14 (25%)	4 (24%)
Level of Education (n=235)				
Some High School	43 (18%)	34 (21%)	8 (14%)	1 (6%)
High School Graduate	107 (46%)	70 (43%)	27 (48%)	10 (58%)
College Graduate	40 (17%)	26 (16%)	10 (18%)	4 (24%)
Professional/Graduate	45 (19%)	32 (20%)	11 (20%)	2 (12%)

Table 2

Instrumentation

	Total		Site 1		Site 2		Site 3	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
ISI	17	5.4	16	5.4	20	4.2	17	7.2
CES-D	22	11.2	22	11.2	23	11.6	24	9.8
SE-S	23	7.2	24	7.4	22	6.1	22	8.9
DBAS	.50	.15	.51	.16	.50	.14	.52	.14
SF-8	24	6.8	24	6.9	24	6.7	23	6.2

Table 3

Correlations with Insomnia Severity Index Scores

Relationship Status	Race	Education	Gender	Age
r=-0.03	r=-0.023	r=0.017	r=-0.065	r=-0.034

SF-8*	CES-D*	SE-S*	DBAS*
r =0.36	r = 0.39	r = -0.52	r = 0.31

*p<.01

Table 4

Regression Analysis for Insomnia Severity

	R^2	F	Adjusted R^2	β
Model One: SE-S*	.266	84.77	.263	- .516
Model Two: SE-S and	.312	52.78	.306	- .427
CES-D*				.232
Excluded from Models:				
DBAS			.003	
SF-8			.014	

*p<.001

REFERENCES:

[1] NIH State-of-the-Science Conference Statement on manifestations and management of chronic insomnia in adults.NIH Consens State Sci Statements. 2005 Jun 13-15;22(2):1-30.

[2] Trans-NIH Sleep Research Coordinating Committee. 2003 National Sleep Disorders Research Plan. US Department of Health and Human Services. National Institute of Health. http://www.nhlbisupport.com/sleep/research/research-a.htm.

[3] Kessler RC, Berglund P, Demler O, Jin R, Koretz D, Merikangas KR, Rush AJ, Walters EE, Wang PS; National Comorbidity Survey Replication. The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). JAMA 2003; 289(23):3095-105.

[4] Silber MH. Clinical practice. Chronic insomnia. N Engl J Med 2005; 353(8):803-10.

[5] Katz DA, McHorney CA. The relationship between insomnia and health-related quality of life in patients with chronic illness. J Fam Pract. 2002;51:229-235.

[6] Breslau N, Roth T, Rosenthal L, et al. Sleep disturbances and psychiatric disorders: a longitudinal epidemiological study of young adults. Biol Psychiatry 1996; 39:411-18.

[7] Costa E, Silva JA, Chase M, Sartorius M, Roth T. Special report from a symposium held by the World Health Organization and the World Federation of Sleep Research Societies: an overview of insomnias and related disorders -- recognition, epidemiology, and rational management. Sleep 1996;19:412-416.

[8] Buscemi N, Vandermeer B, Friesen C, Bialy L, Tubman M, Ospina M, Klassen TP, Witmans M.Manifestations and management of chronic insomnia in adults.Evid Rep Technol Assess (Summ). 2005 Jun;(125):1-10.

[9] Shochat T, Umphress J, Israel AG, Ancoli-Israel S. Insomnia in primary care patients. Sleep 1999;22(suppl 2):5359-S365.

[10] Bartlett DJ, Marshall NS, Williams A, Grunstein RR. Predictors of primary medical care consultation for sleep disorders. Sleep Med. 2008; 9(8):857-64.

[11] Culpepper L. Insomnia: a primary care perspective. J Clin Psychiatry 2005; 66 Suppl 9:14-17.

[12] Aikens JE, Rouse ME. Help-seeking for insomnia among adult patients in primary care. J Am Board Fam Pract. 2005; 18(4):257-61.

[13] Hohagen F, Rink K, Kappler C, et al. Prevalence and treatment of insomnia in general practice. A longitudinal study. Eur Arch Psychiatry Clin Neurosci 1993;242:329-36.

[14] Alattar M, Harrington JJ, Mitchell CM, Sloane P. Sleep Problems in Primary Care: A North Carolina Family Practice Research Network (NC-FP-RN) Study. J Am Board Fam Med 2007;20:365–374.

[15] Hamblin JE. Insomnia: An Ignored Health Problem. Primary Care: Clinics in Office Practice 2007; 34(3):659-74.

[16] Morin CM, Blais F, Savard J. Are changes in beliefs and attitudes about sleep related to sleep improvements in the treatment of insomnia? Behav Res Ther. 2002 l; 40(7):741-52.

[17] Simon GE, Vonkorff M. Prevalence, burden, and treatment of insomnia in primary care. Am J Psychiatry 1997; 154(10):1417–23.

[18] Barlow J, Wright C, Sheasby J, Turner A, Hainsworth J. Self-management approaches for people with chronic conditions: a review. Patient Educ Couns 2002;48:177-87.

[19] Bluestein D, Cubic BA. Psychologists and primary care physicians: a training model for creating collaborative relationships. J Clin Psychol Med Settings. 2009; 16(1):101-12.

[20] Morin CM; Beaulieu-Bonneau S; LeBlanc M et al. Self-help treatment for insomnia: A randomized controlled trial. Sleep 2005; 28(10):1319-27.

[21] Bastien CH, Vallières A, Morin CM. Validation of the insomnia severity index as an outcome measure for insomnia research. Sleep Med 2001; 2: 297–30.

[22] http://www.sf-36.org/tools/sf8.shtml. Accessed 12-16-08

[23] Ware JE, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). Med Care 1992; 30:473-83.

[24] Gulati S, Coughlin PA, Hatfield J, Chetter IC. Quality of life in patients with lower limb ischemia; revised suggestions for analysis. J Vasc Surg 2009; 49(1):122-6.

[25] Lewinsohn P. M., Seeley J. R., Roberts R. E., Allen N. B., (1997);. Center for Epidemiologic Studies Depression Scale (CES-D) as a screening instrument for depression among community-residing older adults. Psychology and Aging. 12:277-287.

[26] Roberts RE. Reliability of the CES-D Scale in different ethnic contexts. Psychiatry Res 1980; 2(2):125-34.

[27] Myers JK, Weissman MM. Use of a self-report symptom scale to detect depression in a community sample. Am J Psychiatry 1980; 137(9):1081-4.

[28] Lacks P. Behavioral Treatment for Persistent Insomnia. New York, NY: Pergamon Press, 1987. 79.

[29] Currie SR, Wilson KG, Curran D. Clinical significance and predictors of treatment response to cognitive-behavior therapy for insomnia secondary to chronic pain. J Behav Med. 2002 Apr;25(2):135-53.

[30] Edinger JD, Sampson WS. A primary care "friendly" cognitive behavioral insomnia therapy. Sleep. 2003; 26(2):177-82.

[31] Edinger JD, Wohlgemuth WK, Radtke RA, Coffman CJ, Carney CE. Dose-response effects of cognitive-behavioral insomnia therapy: A randomized clinical trial. Sleep 2007; 30(2): 203-212.

[32] Fichten CS, Libman E, Creti L, Amsel R, Sabourin S, Brender W, Bailes S. Role of Thoughts During Nocturnal Awake Times in the Insomnia Experience of Older Adults. Cognitive Therapy and Research 2001; 25(6):665–92.

[33] Morin CM, Blais F, Savard J. Are changes in beliefs and attitudes about sleep related to sleep improvements in the treatment of insomnia? Behav Res Ther 2002; 40(7):741-52.

[34] Cohen J. Quantitative Methods in Psychology: A Power Primer. Psych Bulletin 1992; 112(1): 155-159.

[35] Roth T. Insomnia: Definition, Prevalence, Etiology, and Consequences. J Clin Sleep Med. 2007; 3(5 Suppl): S7–S10.

[36] Katz DA, McHorney CA. Clinical correlates of insomnia in patients with chronic illness. Arch Intern Med. 1998; 158(10):1099-1107.

[37] Belleville G, Morin CM. Hypnotic discontinuation in chronic insomnia: impact of psychological distress, readiness to change, and self-efficacy. Health Psychol 2008; 27(2):239-48.

[38] Bélanger L, Morin CM, Bastien C, Ladouceur R.Self-efficacy and compliance with benzodiazepine taper in older adults with chronic insomnia. Health Psychol 2005; 24(3):281-7.

[39] Harris J, Lack L, Wright H, Gradisar M, Brooks A. Intensive Sleep Retraining treatment for chronic primary insomnia: a preliminary investigation. J Sleep Res 2007; 16(3):276-84.

[40] Edinger JD, Wohlgemuth WK, Radtke RA, Coffman CJ, Carney CE. Dose-response effects of cognitive-behavioral insomnia therapy: a randomized clinical trial. Sleep 2007; 30(2):203-12.

[41] Bouchard S, Bastien C, Morin CM. Self-efficacy and adherence to cognitive-behavioral treatment of insomnia. Behav Sleep Med 2003; 1(4):187-99.

[42] Edinger JD, Carney CE, Wohlgemuth WK. Pretherapy cognitive dispositions and treatment outcome in cognitive behavior therapy for insomnia. Behav Ther. 2008; 39(4):406-16.

[43] Whitworth JD, Crownover BK, Nichols W, Hallgren JD. Clinical inquiries. Which nondrug alternatives can help with insomnia? J Fam Pract 2007; 56(10):836-7, 840.

[44] Buscemi N, Vandermeer B, Friesen C, Bialy L, Tubman M, Ospina M, Klassen TP, Witmans M. Manifestations and management of chronic insomnia in adults. AHRQ Evid Rep Technol Assess 2005; (125):1-10.

[45] Mezick EJ, Matthews KA, Hall M, Strollo PJ Jr, Buysse DJ, Kamarck TW, Owens JF, Reis SE.Influence of race and socioeconomic status on sleep: Pittsburgh SleepSCORE project. Psychosom Med 2008; 70(4):410-16.

[46] Bandura A. Human Agency in Social Cognitive Theory. American Psychologist 1989; 44:1175-84.

[47] Searight HR. Realistic Approaches to Counseling in the Office Setting. Am Fam Physician 2009; 79(4):277-84.

[48] Coleman MT, Newton KS. Supporting self-management in patients with chronic illness. Am Fam Physician 2005; 72(8):1503-10.

[49] Bodenheimer T, Lorig K, Holman H, Grumbach K Patient self-management of chronic disease in primary care. JAMA. 2002; 288(19):2469-75.

[50] Robert Graham Center. The Patient Centered Medical Home: History, seven core features, evidence and transformational change. November 2007, p 5. http://www.graham-center.org/online/etc/medialib/graham/documents/ publications/mongraphs-books/2007/rgcmo-medical-home.Par.0001.File.tmp/rgcmo-medical-home.pdf. Accessed September 10, 2009

[51] Mitchell D. FP Finds Move to PCMH Well Worth Investment. 2-17-09. http://www.aafp.org/online/en/home/publications/news/news-now/pcmh/20090217andrews-q-a.html. Accessed September 7, 2009

[52] Rosenthal TC. The Medical Home: Growing Evidence to Support a New Approach to Primary Care. J Am Board Fam Med 2008; 21(5):427-40.

[53] Langford AT, Sawyer DR, Gioimo S, Brownson CA, O'Toole ML. Patient-centered goal setting as a tool to improve diabetes self-management. Diabetes Educ. 2007; 33 Suppl 6:139S-144S.

[54] Harsora P, Kessman J. Nonpharmacologic Management of Chronic Insomnia. Am Fam Physician 79(2):125-130,131-132.

[55] Marks R, Allegrante JP, Lorig K. A review and synthesis of research evidence for self-efficacy-enhancing interventions for reducing chronic disability: implications for health education practice (part I). Health Promot Pract 2005; 6(1):37-43.