

HEALTH LITERACY, DEPRESSION AND SELF CARE
IN MILITARY VETERANS WITH HEPATITIS C

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HEALTH LITERACY, DEPRESSION AND SELF CARE IN MILITARY
VETERANS WITH HEPATITIS C

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Health Literacy, Depression and Self Care in Military Veterans with Hepatitis C

Introduction

In this study, we looked at the relationship of health literacy to depression, and self-care in a small sample of military veterans living with Hepatitis C (HCV). We also explored whether psychoeducational interventions appear to impact health literacy, depression, and/or self-care. Further, we explored the use of information gained from sources outside the hospital milieu to enhance knowledge about HCV. A primary challenge to optimal psychological and physical care for military veteran patients diagnosed with HCV is the ability to correctly interpret directions/instructions for care as provided by treating health professionals. To provide background, we will briefly describe health literacy, self-care, depression, and Hepatitis C.

Health Literacy

Health literacy is a concept relatively new to the field of psychology. The World Health Organization (WHO) refers to health literacy as the concept of an individual's "cognitive and social skills which determine the motivation and ability to gain access to, understand, and use information in ways to promote and maintain good health" (Nutbeam, p. 357, 1998). In this way, health literacy holds greater value beyond an ability to read pamphlets and successfully set appointments. Increased health literacy is essential to empowerment which in turn may result in liberated personal, social, and cultural development. Ultimately, this may result in enhanced health behaviors (Nutbeam, 1998). The definition of functional health literacy includes a basic ability required to navigate a health care system (Mika, Kelly, Price, Franquiz, & Villarreal, 2005). Researchers have found in the last decade that health literacy strongly predicts

health status, more so than socioeconomic status, age, or ethnicity (Williams et al. 1998, Lindau et al. 2002, Schillinger et al. 2002, Parker, Ratzen, & Lurie, 2003).

It is important to distinguish between general literacy and health literacy. As of 1993, the U.S. population had the highest level of education than at any other time in its history (Kirsch et al., 1993). Kirsch et al. (1993) found that the average American was reported to have a 12th grade or higher level of education. Although the average U.S. citizen is currently considered highly educated, the average reading abilities of these individuals are found to hover between the eighth and ninth grade levels (Stedman & Kaestle, 1991). In 1993, Kirsch et al. (1993) reported in the U.S. Department of Education's National Adult Literacy Survey (NALS) that 40 to 44 million U.S. citizens were functionally illiterate. Literacy was examined by NALS via an assessment of a practical ability to read and demonstration of numeracy skills utilized on a daily basis (Parker, 2000). An additional 50 million of those US citizens assessed in the 1993 NALS study were found to be marginally literate. This meant that at that time, about half of the adult US population had significant challenges reading and was unable to demonstrate simple mathematical computations (Kirsch et al. 1993). Inadequate literacy skills were most prevalent among the elderly with about half scoring in the lowest skills level (Kirsch, et al., 1993). What was further discovered is that while a literate individual may be able to comprehend familiar terms and content, he/she may have some difficulty understanding unfamiliar vocabulary and concepts while encountering prescriptions, bottle labels, appointment slips, or health instructions provided by a nurse or physician (Speros, 2005).

Researchers have found a strong relationship between the inability to read and adequate care of one's health among patients with a chronic or terminal disease such as HCV. The U.S. Department of Education found that 75% of participants living with a chronic illness had limited general literacy skills (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993). Baker et al. (1997) found that hospitalized patients who had low health literacy had an increased chance of reporting poor health and were more likely to have been hospitalized compared to those patients who had high health literacy. They further found that those patients with low health literacy who were diagnosed with a chronic illness had a poor understanding and education regarding their illness. Williams et al. (1998) found a relationship between poor health literacy and less knowledge and understanding of chronic illness in patients with diabetes and hypertension. Researchers have explored possible contributors to compromised health literacy in populations with chronic illnesses (Baker et al. 1996; Baker et al. 1997).

Factors Impacting Health Literacy.

Vulnerable Populations and Health Literacy. Three groups of patients are specifically identified to be likely to have poor health literacy: the elderly, the illiterate, and those individuals living with chronic illness(s) (Baker et al., 1996, Baker et al., 1997). Partially because of the constantly evolving nature of the U.S. health care system, challenges continue for these most vulnerable individuals and result in their receiving compromised health care services. It is increasingly difficult for such individuals to attain health care attention in an appropriate and effective manner.

Role of Shame and Patient-Physician Communication. Two additional factors appear to negatively influence health literacy: shame and poor patient-physician

communication. The social stigma associated with illiteracy, coupled with a lack of confidence, prevents an individual with low literacy skills from requesting simpler, more understandable instructions for medications, asking for clarification when they do not understand self-care health instructions or medication labels, or asking for clarity regarding medical forms (Parker, 2000). Further, for the individual with low health literacy, poor patient-physician communication becomes a challenge far worse than for those who possess adequate health literacy. Often, physicians engage in medical discussions with patients with ease and falsely assume that the patient comprehends what the physician is presenting to them. Mayeaux, Murphy, Arnold, David, Jackson, and Sentell (1996) found that patients often do not feel that their physicians adequately explain their illness or treatment plans in a manner that is understandable. Some physicians realize that time spent with each patient is limited and therefore rely on health education pamphlets or brochures to supplement information that either was not understood or excluded from the conversation; or, perhaps offers simpler terms. Contrary to the physicians' intentions, a number of studies show that the information included in these pamphlets are written in a manner that greatly exceeds patients' reading abilities (Parker, 2000). Further, Doak et al. (1996) found that patients with limited literacy, most of whom possess limited background health knowledge and vocabulary, obtain little information from health education literature/materials. The impact of low health literacy on the miscommunication between physician and patient was studied by the Council on Scientific Affairs for the American Medical Association (1999). They found that an increasing gap between patients' reading aptitude and their health literacy needs. To further compound the problem of individuals with low health literacy, many health

education materials and messages regarding disease prevention and/or screenings are inaccessible to those with low literacy (Parker, 2000). Those individuals who are health illiterate and have access to health education materials and messages may be unable to read and comprehend the value of the messages (Parker, 2000).

Gender Differences and Health Literacy. There are also gender differences in contributors to health literacy. In general, women tend to have more awareness of illness symptoms while men tend to lack awareness of health problems and prolong seeking assistance when health problems arise (Verbrugge, 1982; Verbrugge, 1980). There are also gender differences in the manner in which health literacy is established and maintained. Men also tend to be less health literate than women. Drummond and Smith (2006) examined health maintenance in World War II and Vietnam male veterans 65 years or older. They found that the majority of these men had dramatically lowered levels of health literacy when compared to their wives. This finding is important in that the male participants suggested that their level of health literacy was dependent on the health literacy level of their wives (2006). What is inferred from this finding is that men have been shown to utilize their wives as a means for obtaining health information and the wives retain a higher level of health literacy. More often than not, women serve as the primary seekers of health information for themselves and for their children and family members (Hibbard, Greenlick, Jimison, Kunkel, & Tusler, 1999; Stoller, 1993).

The aforementioned contributing factors of compromised health literacy point to the interest by some researchers as to their impact on one's self-care. Over the years, the definition of self-care has changed numerous times (Godfrey et al., 2011). However, a number of researchers have explored the impact of health literacy on self-care,

articulating ways in which one's understanding of medical information impacts their ability to manage their disease.

Self-Care

Self-care, also referred to in the literature as self-management, is operationally defined as one's ability to engage in a range of intentional activities carried throughout life to promote psychological health, physical health, maintain life, and prevent disease. Further, an individual engages in self-care on their own behalf or for the benefit of others and also includes care received by others. Moreover, self-care allows for a continuity of care amid interactions in a healthcare system which results in an individual's ability to engage in increased disease management (Godfrey et al., 2011).

Individuals living with a chronic illness are expected to self-manage their disease. Further, they are expected to possess and/or obtain knowledge related to their disease subsequent to their initial diagnosis. There are challenges for the patient living with a chronic illness such as sustained motivation, methods of effective communication with medical professionals, and factors such as shame or fear associated with not knowing how to engage in self-care behaviors. Such challenges have been identified among various populations with varied chronic illnesses.

Among impoverished populations, those patients with chronic illnesses such as hypertension, asthma, or diabetes who also have low health literacy skills (compared to high health literate) were found to possess less education regarding their illness and disease treatment thus resulting in poor disease management skills (Williams, Baker, Parker, & Nurss, 1998b; Williams, Baker, Honig, Lee, & Nowlan, 1998a). For example, those patients with low health literacy were less able than high health literate patients to

correctly utilize a meter-dosed inhaler. Further, these patients with low health literacy participating in standardized educational programs regarding diabetes or asthma were found to possess less knowledge and self-management skills than those patients with high health literacy. Non-indigent populations were also studied and found to be similar. Gazmararian, Williams, Peel, and Baker (2003) found that among non-indigent patients aged 65 and older diagnosed with at least one chronic illness (i.e., asthma, diabetes, congestive heart failure, or hypertension), health literacy was an independent predictor of a patient's knowledge of his/her chronic illness. Further, health literacy was shown to be an independent predictor even after controlling for age, disease duration, and previous attendance at a standardized disease-specific education class. Participation in an education class has been examined by some researchers as a form of social support, a possible contributor to increased self-care (Rozanski, 2005; DiMatteo, 2004; Martin, Riopelle, Steckart, Geshlke, & Lin, 2001).

Social Support and Chronic Illness. Numerous researchers have investigated the impact of social support on health behaviors among people with chronic illnesses. Among patients diagnosed with cardiac diseases, Rozanski (2005) found that cardiac rehabilitation social support programs only assist patients in the short-term and that ultimately, their increased health is due primarily to self-management. He further explained that social support in the form of behavioral management is best utilized when combined with strategies that promote self-care among cardiac patients. On the other hand, other researchers found that social support in the form of structured or unstructured support groups serves as a potential contributor to increased adherence to new self-management behaviors (DiMatteo, 2004). Individuals with HIV/AIDS have been studied

with regards to the effect of social support groups and health behaviors. Individuals living with HIV/AIDS participating in social support groups have been shown to engage in fewer acts of unprotected receptive anal intercourse as opposed to those who did not participate in the social support group (Martin, Riopelle, Steckart, Geshlke, & Lin, 2001). While increased behavioral health outcomes resulted from participants described in the aforementioned studies, depression as a function of increased medical knowledge and/or social support becomes particularly noteworthy when considering the side effect of increased depression resulting from Hepatitis C treatment. Based on the results of the aforementioned studies, we see that increased behavioral outcomes are influenced by a patient's association with some form of social support. Knowing that a side effect of HCV treatment is increased depression, we see social support as particularly noteworthy in terms of a possible means to prevent increased depression.

Depression

Depression, according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth edition, Text Revised (DSM-IV-TR) diagnostic codes (American Psychiatric Association, 2000), is characterized behaviorally on a continuum of the following symptoms: depressed mood, hopelessness, helplessness, loss of interest/pleasure, changes in appetite, changes in weight, difficulty in sleeping, loss of energy, feelings of worthlessness, feelings of guilt, trouble concentrating, suicidal thoughts/plan/attempts, delusions, hallucinations, and physical aches/pains. Depression is highly comorbid with HCV, a disease similar to most chronic diseases in this comorbidity (Yates & Gleason, 1998; Bayliss, Gandek, Bungay, Sugano, Hsu, & Ware, 1998). Depression affects HCV negatively in the way it accelerates the course of the

illness, intensifies physical symptoms, causes impairment in functioning, reduces treatment compliance, and reduces quality of life (Dwight, Kowdley, Russo, Ciechanowski, Larson, & Katon, 2000).

Currently, there are three hypotheses regarding the prevalence of depression among individuals living with HCV. First, some researchers hypothesized that the course of HCV progression instigates psychiatric morbidity (Golden, O'Dwyer, & Conroy, 2005). Others refuted this claim stating there is no existence of a HCV specific fatigue or depression based on epidemiological evidence (Wessely & Pariente, 2002). Second, some investigators believe that depression is more noted among those living with HCV because most of these patients come from subgroups of the population who are more likely to be living with a psychiatric disorder (Golden, O'Dwyer, & Conroy, 2005). Third, some researchers postulate that with the rate of disease labeling that occurs with HCV diagnosis, the associated stigma promotes higher rates of depression diagnoses (Golden, O'Dwyer, & Conroy, 2005). Cordoba et al. (2003) concluded that the process of labeling associated with HCV diagnosis is potentially a main component in patients' experience of high distress. In addition, depression is a known side effect of interferon treatment for HCV, one that is likely to occur over the first three months of treatment (Musselman et al., 2001).

Researchers have found associations between depression and decreased coping ability to chronic medical illnesses (Alexopoulos & Chester, 1992; Baldwin, 1991; Murphy, 1983) and decreased adherence to medication regimens and diets (Unutzer, Patrick, Diehr, Simon, Grembowski, & Katon, 2000). Researchers examining gender differences in those affected by chronic illness found that when compared to men, women

tend to report higher rates of depression. These gender differences were found in research focused on people affected by osteoarthritis, multiple sclerosis, and coronary artery disease (Sherman, 2003; Steck, Amsler, Kappos, & Burgin, 2000; Ai, Peterson, Dunkle, Saunders, Bolling, & Buchtel, 1997). In general, severity of illness was associated with severity of experienced depression among women. Researchers also found that women in comparison to men tend to have worse psychological adjustment following a coronary artery bypass graft surgery (CABG) in terms of depression, anxiety, and sleep disorders (Stanton, 1987).

Military Veterans and Depression. It is important to understand both the occurrence of depression and the manner in which depression manifests, occurs, and influences the ways in which military veterans engage in health care behaviors. Depression among military veterans has been widely studied. There is a high prevalence rate of depression in primary care settings serving veterans (i.e., the Veteran's Health Administration [VAMC]). For the VAMC patient population, depression is one of the most common chronic psychological illnesses with some researchers reporting prevalence rates approaching 30% (Hankin et al., 1999). Researchers examining deployed versus non-deployed military veterans participating in the first Gulf War found that depressive illness occurred more frequently for the deployed individuals (Black et al., 2007). On average, 10-15% of military patients display depressive symptoms that are considered "significant" (Katon & Schulberg, 1992).

Health Literacy and Depression. Few researchers have examined the relationship between health literacy and depression but Liu, et al. (2006) noted important implications regarding depression treatment and management. They concluded that there

is a negative relationship between patient education and risk of nondiagnosis of depression and nontreatment of depression with antidepressants within the VAMC medical system. Further, Liu, et al. (2006) suggested that increased patient education of depressive illness and treatment would potentially lead to enhanced depression management. While not a specific focus of this study, based on the aforementioned study we would expect that the likelihood of a patient with HCV who is well-educated on depressive illness would have higher adaptive responses to HCV treatment resulting in less depressive symptoms than those who were less educated about depressive illness. Treatment for HCV is unique in its inherent potential for increased depressive symptoms. By this we mean, that a side effect of HCV treatment (discussed below) is increased depression.

Hepatitis C (HCV)

It is important to understand the Hepatitis C virus and its associated treatment. The HCV virus is one which has devastating psychological and physical effects. Discovered in 1989, HCV is a single-stranded RNA virus that contains differing genotypes and is typically treated by a chemical intervention in the form of weekly intramuscular or subcutaneous injections known as Interferon alpha treatment. The various genotypes respond differently to this treatment. As of 2002, approximately 170 million people worldwide and as of 2008, as high as 3.9 million people in the United States were diagnosed and living with chronic HCV (Centers for Disease Control and Prevention, 2010). HCV is primarily transmitted through blood to blood contact and most individuals who are infected acquired the virus through blood transfusions prior to 1990 or through injection drug use. Prior to 1990, blood screens for the presence of HCV

did not occur. HCV infection is most commonly associated with individuals who are sexually promiscuous. Perinatal transmission of HCV from mother to a fetus or an infant is rare but possible. HCV infection leads to chronic hepatitis. Chronic in this case refers to lasting longer than six months. The effects of chronic HCV vary from person to person. Some individuals will experience minimal liver disease and others will develop cirrhosis. Those individuals who develop cirrhosis as a result of HCV infection are at an increased risk of developing hepatocellular carcinoma, or primary liver cancer.

Additional side effects to Interferon alpha treatment are flu-like symptoms, depression, rashes, and abnormal blood counts (Worman, 2002). Treatment side effects and disease management in these ways impact various segments of the world's population in differing ways. For some, the ability to respond to living with HCV can be challenged particularly by socioeconomic factors.

HCV and Socioeconomic Status. The rates of HCV infection and the impact of socioeconomic status are a great concern. The number of people living with HCV continues to grow due in part to the advancement of HCV treatment resulting in increased numbers living longer and to the number of individuals with new infections each year. Over time, socioeconomic factors have influenced a change in perspective of what most consider to be an expected population at risk of acquiring HCV. Today, individuals from disenfranchised communities are at great risk of not only acquiring HCV but of poorly maintaining their health. Because these individuals live in impoverished communities, they often have limited educational opportunities and thus possess poor literacy skills. Williams et al. (1995) indicated that upwards of 35% of English-speaking patients at public hospitals display inadequate functional health literacy. This is particularly

startling and noteworthy given that inadequate functional health literacy is highly associated with poor health outcomes among individuals diagnosed with chronic diseases (Baker, Parker, Williams, Clark, & Nurss, 1997). In this way, other research has shown that one's ability to engage in self-care becomes compromised ultimately resulting in poor behavioral health outcomes.

HCV and Self-Care. HCV is a chronic disease. Individuals diagnosed with chronic illnesses are at greater risk of compromised health care. For instance, many individuals struggle with maintaining their health under the advice of their physician. They may struggle with being able to follow instructions from their physicians regarding follow up self-care or they may struggle with comprehending the physician's verbal description of a diagnosis. For the individual who has poor health literacy, these types of struggles increase with the inability to read and comprehend medical language. In this way, patients with low health literacy are greatly challenged in being able to accurately follow instructions on a bottle of medication; effectively communicate with their physicians; fully understand their diagnosed illness and the means to maintain their health; and, fully understand their health prognosis and resulting health outcomes. Additionally, for those individuals with low health literacy, understanding the ways to correctly prepare for diagnostic studies and consistently maintain follow-up medical appointments can be overwhelming (Parker, 2000). Researchers have examined the impact of poor health literacy specifically among individual with HCV.

HCV and Health Literacy. Again, many individuals living with a chronic or terminal illness such as HCV are likely to have low health literacy. The National Adult Literacy Survey found that 75% of respondents with a chronic disease had limited

literacy skills (Kirsch, et al., 1993). Baker et al. (1996) found that individuals with limited literacy skills were challenged in accessing health services and had worse health outcomes than those individuals with full literacy skills. In a number of smaller studies, researchers found that low health literacy was associated with decreased medication adherence, knowledge of disease and self-care management skills (Williams et al., 1998a; Williams et al., 1998b; Kalichman et al., 1999; Kim et al., 1999). Patients who had diabetes, asthma, or hypertension and also had low health literacy had poor knowledge of their own chronic condition(s); increased medication errors; and, non-adherence. Additionally, patients with inadequate health literacy who had chronic diseases had less understanding of their disease than patients with adequate literacy (Williams et al., 1998a; Williams et al., 1998b).

Purpose of Study

Although previous researchers found a high association between health literacy and health behavior among those with chronic illness, few have investigated veteran populations with the chronic illness HCV. Further, none to our knowledge have explored the relationship of health literacy in veterans who have co-morbid HCV and clinical depression in relationship to their self-care health behaviors. Finally, researchers have not assessed whether a psychoeducational group for veterans with HCV while receiving interferon treatment for HCV increases health literacy, increases self care behaviors, or decreases depression symptoms.

When we initiated this study, there was no published research regarding health literacy among veterans with HCV. The purpose of this study was to describe health literacy, depression, and self-care in a sample of veterans with HCV and to explore the

relationships of these variables to one another. In addition, we were interested in exploring the veterans' engagement in activities three-months after their initial diagnosis that conceptually could increase health literacy, namely participation in a psychoeducational class, referral to outside sources of information, and/or use of informational packet on health literacy, depression, and self-care. We decided to explore after a three month period to allow time for patients to engage in health behaviors such as seeking health information from non-VAMC sources as well as to explore the impact of participation in a VAMC psychoeducational class on health literacy. As a side effect of alpha interferon treatment, increased depression is known to occur during the first three months of treatment (Musselman et al., 2001). Given this, we decided on a three month period in order to potentially allow for the occurrence of increased depression for those participants receiving alpha interferon treatment.

Again, our goal in this study was primarily exploratory. First we described study participant demographic and medical characteristics. We then explored the following questions based upon findings reported above in other populations with chronic or terminal diseases. For the total sample of participants who completed the self-report questionnaires at the time of their initial diagnosis: 1) Is health literacy related to depression in this sample of military veterans diagnosed with HCV receiving services from a VAMC? 2) Is health literacy related to self-care in this sample of military veterans diagnosed with HCV receiving services from a VAMC? 3) Descriptively, do there appear to be differences in health literacy, depression, or self-care in study participants at their initial HCV diagnosis time point and three months post diagnosis time point and those participants who did not participate in this study three months post

diagnosis? Also, descriptively, do there appear to be differences in health literacy, depression, or self-care in study participants who have begun interferon treatment and those who have not at three months post diagnosis time point?

And, finally, 4) Descriptively, how does participation in VAMC psychoeducational intervention(s) and /or the use of outside information sources appear to relate to demographic characteristics and health literacy, depression or self care in those study participants participating at the three-months post diagnosis time point?

Method

Participants

Thirty participants were recruited from the VAMC located in the southwestern region of the United States. One other patient consented to participate but never returned. Patients were selected from the first of two time points in the HCV treatment process as conducted by the VAMC. These two time points include at the time of initial HCV diagnosis/pre-HCV treatment and three months post diagnosis. As previously mentioned, we selected a three month period between time points to allow participants time to engage in health education seeking behaviors utilizing non-VAMC sources; to explore the impact of participation in a VAMC psychoeducational class; and to allow for the potential occurrence of increased depression among those patients receiving alpha interferon treatment. Patients asked to participate in the study were those who received an HCV diagnosis by the VAMC and had yet to participate in an initially required, later optional psychoeducational intervention provided by the VAMC.

Most of the participants were male (n=29) with only one female. They had a mean age of 55.71 (range = 49 to 67). Of note were sample characteristics with respect to

combat status, educational level, and level of income. More participant veterans did not face combat versus those who did face combat. The majority held a high school diploma or GED. Also, the majority of veterans reported that they earned less than \$20,000 per year. Other sample characteristics are presented in Table 1.

The date of HCV diagnosis for study participants ranged from February 2010 to January 2011. On average, veterans in this study reported taking up to five medications. None of the 13 participants who only completed self-report questionnaires at the initial diagnosis time point began alpha interferon treatment during the course of this study. Further, only five of the 17 participants who completed self-report questionnaires at the initial diagnosis and three month post diagnosis time points began alpha interferon treatment. Study participants varied along a wide spectrum of both psychological and medical disorders with most considered as living with comorbid conditions (both psychological and medical diagnoses) as identified by the VAMC.

Table 1

Selected Demographics of Study Participants and Subgroup Participating 3 Months Post Diagnosis and Those Who Participated at Time of Initial Diagnosis Only

| Descriptors | Total N = 30 | % of Total | INITIAL3 n=17 | % of INITIAL3 | INITIAL n = 13 | % of INITIAL |
|----------------------------|-----------------|------------|------------------|------------------|-------------------|-----------------|
| Race/ Ethnicity | | | | | | |
| Caucasian | 18 | 60% | 11 | 65% | 7 | 53.8% |
| African American | 9 | 30% | 5 | 29% | 4 | 30.8% |
| Native American | 2 | 6% | 1 | 6% | 1 | 7.7% |
| Mixed Race | 1 | 3% | 0 | 0% | 1 | 7.7% |
| Age | | | | | | |
| Under 49 | 2 | 6% | 0 | 0% | 2 | 15.4% |
| 50-59 | 22 | 73% | 14 | 82.4% | 8 | 61.5% |

| Descriptors | Total N = 30 | % of Total | INITIAL3 n=17 | % of INITIAL3 | INITIAL n = 13 | % of INITIAL |
|---|-----------------|------------|------------------|------------------|-------------------|-----------------|
| 60-69 | 6 | 20% | 3 | 17.6% | 3 | 23.1% |
| Combat Status | | | | | | |
| Faced combat | 9 | 30% | 6 | 29.4% | 3 | 38.5% |
| No combat | 21 | 70% | 11 | 70.6% | 10 | 76.9% |
| Years of Education | | | | | | |
| Less than 12 | 8 | 26 | 3 | 17.8 | 5 | 38.5% |
| High school or GED | 15 | 50% | 9 | 52.9% | 6 | 46.2% |
| Some college | 4 | 13% | 3 | 17.6% | 1 | 7.7% |
| College degree | 3 | 10% | 2 | 11.8% | 1 | 7.7% |
| Income/Year | | | | | | |
| \$0 - \$20,000. | 21 | 70% | 11 | 64.7% | 10 | 76.9% |
| \$20 - \$40,000 | 7 | 23% | 5 | 29.4% | 2 | 15.4% |
| \$40 - \$60,000/ | 2 | 6% | 1 | 5.9% | 1 | 7.7% |
| Viral Count | | | | | | |
| Low | 8 | 27% | 5 | 29.4% | 3 | 23.1% |
| Medium | 1 | 3% | 0 | 0% | 1 | 7.7% |
| High | 1 | 3% | 1 | 5.9% | 0 | 0% |
| Very High | 1 | 3% | 0 | 0% | 1 | 7.7% |
| Did not know | 19 | 63% | 11 | 70.6% | 8 | 61.5% |
| Number of Medications ^a | | | | | | |
| Up to 5 | 12 | 40% | 8 | 47.1% | 4 | 30.8% |
| 6 to 10 | 11 | 37% | 7 | 41.2% | 4 | 30.8% |
| 11 to 15 | 3 | 10% | 0 | 0% | 3 | 23.1% |
| 16 to 20 | 4 | 13% | 2 | 11.8% | 2 | 15.4% |

Note. INITIAL refers to the scores of the subgroup of the sample participating only at time of initial diagnosis; INITIAL3 refers to the scores at the time of initial diagnosis of the subgroup of the sample that participated at the time of initial diagnosis and again at three-months post diagnosis; 3MONTHS refers to the scores at three-months post diagnosis of the subgroup of the sample that participated at the time of initial diagnosis and again at three-months post diagnosis.

Sums may not total to 100% due to rounding. Actual HCV viral counts are “Low” (20,000 to 1,000,000), “Medium” (1,000,000 to 5,000,000), “High” (5,000,000 to 25,000,000), and “Very High” (above 25,000,000).

^aCurrent number of medications taken” was assessed at the three month post diagnosis time point for participants who provided data at initial diagnosis and three months post diagnosis time points (n = 17).

“Current number of medications taken” was assessed at time of initial diagnosis for participants who only participated at that time (n = 13).

Procedures

Participants completed an informed consent approved by two Institutional Review Boards. Despite a participant’s ability to read, each participant was briefly interviewed by the researcher to validate their educational level and ability to complete the self-report instruments. All potential participants were able to read the necessary level.

At the time of initial diagnosis confirming the presence of HCV all study participants (N=30) completed the self-report instruments assessing level of health literacy, depression, and self-care. Of the 30 study participants, 17 participants again completed the same self-report questionnaires three month post-diagnosis. These 17 study participants also answered a series of questions about their attendance a psychoeducational group, use of material from that group, and/or use of resources outside the VAMC designed to increase health literacy about HCV. Some of these 17 participated in a psychoeducational class (described below). As indicated above, only five of these 17 participants had begun interferon treatment for HCV at three months post diagnosis. Thirteen participants only completed the self-assessments at the time of their initial diagnosis; none of them began interferon treatment for HCV during the course of the current study.

Measures

The Test of Functional Health Literacy in Adults (TOFHLA). Health literacy was measured utilizing the reading comprehension and numeracy sections of the Test of Functional Health Literacy in Adults (TOFHLA) (Norton, 1996). This instrument is consistent with the WHO (World Health Organization, 1998) definition of health literacy.

The TOFHLA takes about 20 minutes to complete and consists of two parts, reading comprehension and numeracy. There are 50 multiple-choice items included in the TOFHLA. The reading comprehension section of the TOFHLA consists of three passages to which participants provide responses after reading. The first passage contains instructions that are written for patients receiving a treatment for upper gastrointestinal complications. The second passage contains a patient rights and responsibilities section of a Medicaid application form. The third passage contains a standard patient informed consent for surgery. Using the modified Cloze procedure every fifth to seventh word in each sentence of each passage is omitted and the participant is offered four possible options to select from in order to complete a sentence (Nurss, Parker, Williams, & Baker, 1995). For example, “You must have an _____ (a. asthma, b. empty, c. incest, d. anemia) stomach when you come for _____ (a. is, b. am, c. if, d. it).” The numeracy section contains 17 items that contain information derived from actual hospital forms and labeled prescription vials. The numeracy section assesses a patient’s ability to do the following: read and comprehend directions for taking a medication, monitor blood glucose level, adhere to medical appointments, and obtain financial assistance. Each numeracy score is multiplied by a constant, 2.941 in order to create a score ranging from zero to 50. This is the same range used for the reading comprehension section. The sum of the reading comprehension and numeracy scores indicates the total TOFHLA score ultimately ranging from zero to 100. The sum TOFHLA score is based on difficulty and clinical importance of each individual item. The total TOFHLA score is divided into three categories of functional health literacy: inadequate, marginal, and adequate. A sum score of 59 or below constitutes inadequate

functional health literacy and this means that the participant understands less than 60% of standard health care information per the test. A sum score between 60 and 74 constitutes marginal functional health literacy. A sum score of 75 or greater constitutes adequate functional health literacy. For the purposes of this study, we categorized TOFHLA scores ranging from zero to 74 (inadequate and marginal functional health literacy) into the category of “low functional health literacy” and scores ranging from 75 to 100 (adequate functional health literacy) fall into the category of “high functional health literacy.” For all other analyses, the TOFHLA scores were treated as a continuous variable with the range of zero to 74. The TOFHLA has been found to be a valid and reliable instrument for measuring functional health literacy (Parker, 2000; Schillinger et al., 2002; Parker, Baker, Williams, & Nurss, 1995; Baker, Williams, Parker, Gazmararian, & Nurss, 1999; Baker, Gazmararian, Williams, Scott, Parker, Green, et al., 2002). The reliability computed at the initial diagnosis time point for the total sample of 30 participants showed a correlation coefficient of $\alpha = .931$. For the 17 participants who completed self-report questionnaires at both the initial diagnosis and three month post diagnosis time points, the reliability computed at the initial diagnosis time point showed a correlation coefficient of $\alpha = .810$.

The Beck Depression Inventory Fast Screen (BDI-FS). Participants completed the Beck Depression Inventor Fast Screen (BDI-FS). The BDI-FS is based on the Beck Depression Inventory (BDI) which was revised in 1996 and renamed The Beck Depression Inventory-II (BDI-II) (Beck et al., 1996). Several studies have investigated the validity of the BDI and found high to moderate correlations of concurrent validity (.55 to .96, *Median r = .72*) with clinical ratings for psychiatric populations (Beck, Steer,

& Garbin, 1988). As with the BDI, the BDI-II has been shown to demonstrate strong psychometric properties among both psychiatric and normal populations (Groth-Marnat, 1999). The BDI-II is a self-administered instrument containing 21 items and requires that an individual have at least a fifth to sixth grade level reading ability in order to comprehend the items adequately. Participants respond by rating the intensity of symptoms based on a scale of zero to three. Beck et al. (2000) developed the BDI-FS in an effort to address patients who attribute depressive symptoms to medical problems, challenges with substance use, and or challenges with alcohol use. The BDI-FS contains seven of the 21 items contained in the BDI-II and is consistent with DSM-IV diagnostic criteria. The items contained in the BDI-FS pertain to the following cognitive and affective symptoms: loss of pleasure, sadness, pessimism, suicidal ideation, self dislike, past failure, and self criticalness (Beck et al., 2000). Scores within the range of 10-21 indicate severe depression; 7-9 moderate; 4-6 mild, and 0-3 minimal (Beck et al., 2000). The BDI-FS has been rarely examined thus far. A study conducted by Krefetz et al. (2004) examined a sample of patients with HIV ($N = 63$) who sought treatment at a chronic pain clinic. In their study, they found the BDI-FS to have strong internal consistency ($\alpha = .84$). Poole et al. (2008) compared the BDI-FS to the BDI-II and found that the BDI-FS showed strong agreement with the BDI-II and was “[equally] able to detect clinical change in a pain clinic population” (2008). The aforementioned reasons justify our selection of the BDI-FS as a means for assessing depression in this study. Additionally, the BDI-FS afforded a more efficient administration, decreased patient resistance, and decreased fatigue. The reliability computed at the initial diagnosis time point testing for the total sample of 30 participants showed a correlation coefficient of $\alpha =$

925. For the 17 participants who completed the initial diagnosis and three month post diagnosis time point testing, the reliability computed at the initial diagnosis time point showed a correlation coefficient of $\alpha = .896$.

Self-Care Assessment. Participants completed the Self-Care Assessment Worksheet (Norton, 1996), used to assess self-care behaviors that demonstrate both psychological and physical well-being. It is a self-administered instrument containing 70 items and takes about five to 10 minutes to complete. Participants respond by rating the frequency of behaviors that a participant has engaged in that is directed toward self-care. The frequency of a described behavior is based on a scale that ranges from 1 (It never occurred to me) to 5 (Frequently). The authors provided no procedures for scoring. The sum scores for the Self-Care Assessment range from 0 to 350. For the purposes of this study, we simply split at the mean of the range of possible scores and categorized Self-Care Assessment scores ranging from 0 to 175 as categorized as “low to medium self-care” and scores ranging from 176 to 350 as “medium to high self-care.” Statements included in this instrument address the following areas of self-care: physical self-care, psychological self-care, emotional self-care, spiritual self-care, professional self-care, and balance. Current information regarding reliability and validity of the Self-Care Assessment is unknown. The reliability computed at the initial diagnosis time point testing for the total sample of 30 participants showed a correlation coefficient of $\alpha = .959$. For the 17 participants who completed self-report questionnaires at initial HCV diagnosis and three months post HCV diagnosis, the reliability computed at the initial diagnosis time point showed a correlation coefficient of $\alpha = .975$.

Factors Conceptualized as Potentially Impacting Health Literacy

The VAMC HCV Treatment protocol offered the opportunity or mandated attendance at one of two psychoeducational classes. These two classes are the GI Liver Class (voluntary, but initially required) and the GI Get Ready class (mandated for certain patients). Each class provided information pertinent to HCV education and also potentially provided social support. Since the behavior of consulting external sources of health-related information could conceivably increase health literacy, the 17 participants who completed self-report measures at the three month post-diagnosis time point were queried about HCV information they gained from non-VAMC sources such as a library, the internet, or family members. Below we describe the psychoeducational classes and questions presented to participants.

GI Liver Class. This optional, initially required, class provides basic information about HCV in terms of the physiological effect of the virus, description of alpha interferon treatment and relevant medications, dietary instructions for improved response to treatment, and psychological responses to alpha interferon treatment.

GI Get Ready Class. This class is a mandatory class provided to those HCV patients who report current substance use (drug and alcohol use). Enrolled patients must complete their participation in this class and report sobriety for a period of 60 days in order to receive alpha interferon treatment.

Questions about Other Information Consulted about HCV. Study participants were asked questions that addressed their perceptions of their ability to gain access to and/or utilize information gathered via the VAMC psychoeducational interventions or non-VAMC sources. The following questions were presented in a 4-point Likert scale ranging from 1 = None of the time to 4 = All of the time: “How often did you refer to the

informational packet provided to you in the GI Liver class?”, “How often did you refer to informational materials provided to you in the GI Get Ready class?”, “How often did you refer to other sources of information (such as the internet, television, or the library) regarding your treatment of HCV?” and, “How often did you discuss your treatment for HCV with other people you know (people who do not belong to the VAMC)?” These questions were asked to explore the impact on health literacy as influenced by contact with medical and psychological professionals, and other outside support (i.e., family members, friends, or technology).

Other Participant Self-Report Questions. Some information pertaining to the participants’ biomedical data was obtained through self-report measures. In addition to the demographic information, participants were asked about their current health status: month and year they were diagnosed as HCV positive, their current experience of any HCV-related symptoms, and their most recent HCV viral count. They were also asked about their current medication regimen.

Information from Participant Medical Records. Patient information was also collected from medical records. This was done to validate self-reported data to ensure accuracy of report. Information collected included the following: age, gender, medications prescribed, date of HCV diagnosis, start date of Interferon treatment, and knowledge of most recent viral count.

RESULTS

All statistical analyses were performed using Predictive Analytic Software (PASW) 18.0 (SPSS Inc., Chicago, IL) and alpha values were set at the 0.05 level. Standard statistical methods were used for descriptive statistics.

Research Questions

As previously described, we investigated the responses of the 30 participants who completed self-report questionnaires at initial diagnosis and posed two research questions. We wanted to see if there was a relationship between health literacy and depression for the veterans diagnosed with HCV in this study. We also wanted to see there was a relationship between health literacy and self-care. Spearman's rho analyses were conducted to address these research questions. We further separated the total sample into those who only completed the assessments at the time of initial diagnosis (n=13; INITIAL) and those who completed the self-report questionnaires at the initial diagnosis time point and at the three-month post diagnosis time point (n=17; INITIAL3). In addition, we looked descriptively at the responses for the INITIAL3 participants again at the three-months post diagnosis time period (n=17; 3MONTHS) to see both if there appeared to be changes from initial diagnosis and how these appeared to relate or not to use of materials which could conceptually increase health literacy. We first present the results of our research questions analyses addressing our total sample. Following, we present descriptive observations addressing the questions the subgroups of the sample.

Question 1. Is health literacy related to depression in this sample of military veterans diagnosed with HCV receiving services from a VAMC? We used the nonparametric Spearman's rho statistic for analysis of this question because of its ability to measure a significant rank correlation between two ordinal variables deriving from a small sample of non-normally distributed data (Siegel, 1956, Conover, 1971). No statistically significant association was found between health literacy and depression, $r_s = .188$, $n = 30$, $p > .05$ (one-tailed).

Question 2. Is health literacy related to self-care in this sample of military veterans diagnosed with HCV receiving services from a VAMC? We used the nonparametric Spearman’s rho statistic for analysis of this question because of its ability to measure a significant rank correlation between two ordinal variables deriving from a small sample of non-normally distributed data (Siegel, 1956, Conover, 1971). There was not a statistically significant association found between health literacy and depression, $r_s = -.092$, $n = 30$, $p > .05$ (one-tailed).

Descriptive Observations and Questions

Mean scores on the measures of health literacy, depression, and self-care behaviors are shown in Table 2 for the total sample, INITIAL, INITIAL3, and 3MONTHS subgroups of the sample.

Table 2

Means and Standard Deviations of Scores on Instruments Measuring Health Literacy, Depression, and Self-Care at Time of Initial Diagnosis for Total Sample, Those Who Only Participated at Time of Initial Diagnosis, and Those Who Participated at Both Times, and at Three Months Post Diagnosis for Those Who Participated at Both Times

| Measure | At Time of Initial Diagnosis | | | After 3 Months |
|---------|------------------------------|-------------------|--------------------|-------------------|
| | Total (N=30) | INITIAL (n=13) | INITIAL3 (n=17) | 3MONTHS (n=17) |
| TOFHLA | 86.07 (12.09) | 79.61 (13.91) | 91.00 (7.76) | 88.41 (8.95) |
| BDI-SF | 3.46 (3.95) | 2.84 (4.50) | 3.94 (3.54) | 5.29 (4.59) |
| SCA | 243.40 (44.97) | 258.61(47.41) | 231.76(40.59) | 229.52 (31.66) |

Note. INITIAL refers to the score of the subgroup of the sample participating only at time of initial diagnosis; INITIAL3 refers to the scores at the time of initial diagnosis of the subgroup of the sample that participated at the time of initial diagnosis and again at three-months post diagnosis; 3MONTHS refers to the scores at three-months post diagnosis of the subgroup of the sample that participated at the time of initial diagnosis and again at three-months post diagnosis.

Question 3. Descriptively, do there appear to be differences in health literacy, depression, or self-care in study participants at their initial HCV diagnosis time point and three months post diagnosis time point and those participants who did not participate in this study three months post diagnosis? Also, descriptively, do there appear to be differences in health literacy, depression, or self-care in study participants who have begun interferon treatment and those who have not at three months post diagnosis time point?

Because this was an exploratory descriptive study with a small sample size we were not able to test for differences between those who only participated and completed the measures at the time of initial diagnosis and those who completed the measures at time of initial diagnosis and again three months after diagnosis. We were also unable to test for any change in scores from scores at the initial time of diagnosis and after three months for those who participated three months after the initiation of treatment. However, it is interesting to note that those who participated in the initial diagnosis only demonstrated mean scores for health literacy and depression lower than the mean scores for health literacy and depression for those who participated also three months post diagnosis. Also, as indicated in Table 2 the initial diagnosis only subgroup demonstrated a higher mean score for self-care compared to the mean scores for the initial diagnosis and three months post diagnosis subgroup.

Among those belonging to the subgroup who participated at both initial diagnosis and at three months post diagnosis, five participants reported at three months post diagnosis that they began alpha interferon treatment. None of those belonging to the initial diagnosis only subgroup reported starting alpha interferon treatment. We observed

at the three month diagnosis time point no noteworthy difference between mean scores of depression between those who began alpha interferon treatment compared to those did not ($M = 5.17$, $SD = 4.85$ and $M = 5.60$, $SD = 4.39$ respectively).

Question 4. Descriptively, how do participation in VAMC psychoeducational intervention(s) and /or the use of outside information sources appear to relate to demographic characteristics and health literacy, depression or self care in those study participants participating at the three months post diagnosis time point?

Certain characteristics were observed as common among study participants who participated in a psychoeducational class. The characteristics of “adequate functional health literacy” and “medium to high self-care” were observed in those study participants who indicated they did not refer to informational packets provided by the psychoeducational classes. Specifically, of the study participants in this subgroup 3MONTHS who reported that they did not refer to the GI Liver class information packet, 58.8% showed evidence of “adequate functional health literacy” and 58.8% “medium to high self-care”. We observed a similar response to the informational packet provided by the GI Get Ready class. The majority of participants in the sample subgroup 3MONTHS ($n=17$) who reported that they did not refer to the informational packet provided by the GI Get Ready class possessed “adequate functional health literacy” (88.2%) and “medium to high self-care” (94.1%). We further observed that among those who reported that they did not refer to the informational packet provided by the GI Get Ready class, 70.6% were in the “low depression” category.

Further, we observed a common set of characteristics held by participants in the sample subgroup 3MONTHS ($n=17$) as it relates to their education-seeking behaviors.

The majority of these study participants who reported that they referred to other sources of information (e.g., library, internet, television) to obtain knowledge of information related to HCV possessed “adequate functional health literacy” (64.7%), “low depression” (52.9%), and “medium to high self-care” (70.6%). Also, the majority of these study participants, who reported discussing interferon treatment with non-VAMC people (e.g., family members, spouses, friends) possessed “adequate functional health literacy” (64.7%, n = 17) and “medium to high self-care” (70.6%, n = 17).

Differing education-seeking behaviors were also observed among participants in the sample subgroup 3MONTHS (n=17). Of study participants the subgroup 3MONTHS who held a high school diploma or GED, 41.2% referred to other sources of information and 35.5% discussed interferon treatment with non-VAMC people. Regarding knowledge of viral count among study participants in the 3MONTH subgroup, 41.2% who reported that they did not know their viral count referred to other sources of information and 41.7% discussed interferon treatment with non-VAMC people.

Also of interest are the education-seeking behaviors of veterans who faced combat and those who did not face combat. Of the study participants in the 3MONTH subgroup who reported that they did not face combat, 47.1% referred to other sources of information and 29.4% discussed treatment with non-VAMC people and 41.2% of patients who reported that they did not face combat reported that they discussed interferon treatment with non-VAMC people. Two out of the five participants belonging to this subgroup reported that they faced combat and began alpha interferon treatment. None of those who faced combat and began receiving treatment reported referring to either other sources of information or discussing treatment with non-VAMC people. Of

those who faced combat and did not receive alpha interferon treatment, 66.7% reported that they referred to other sources of information and 66.7% reported that they discussed interferon treatment with non-VAMC people.

Education-seeking behaviors among study participants in the 3MONTH subgroup were also observed as differing by race with 47.1% of Caucasians reporting that they referred to other sources of information and 41.2% of Caucasian reporting that they discussed interferon treatment with non-VAMC people. Eighteen percent of African Americans referred to other sources of information and 18% of African Americans discussed treatment with non-VAMC people. Only one participant in our study identifying as “Mixed Race” reported referring to both other sources of information and discussing treatment with non-VAMC people. No Native Americans in this subgroup referred to other sources of information and only one discussed treatment with non-VAMC people.

Further, in terms of age in the 3MONTH subgroup, we noted that of those in the 50 to 59 age range, 58.8% reported that they referred to other sources of information and 52.9% reported that they discussed interferon treatment with non-VAMC people. Comparatively, 12% of those falling in the 60-69 age range referred to other sources of information and 18% discussed treatment with non-VAMC people.

DISCUSSION

Prior research has shown the possibility for increased patient education of depressive illness leading to enhanced depression management (Liu, et al., 2006). Further, previous researchers found that patients with chronic illnesses such as HCV tend to have low health literacy and more difficulty engaging in appropriate self management

skills (Kirsch, et al., 1993; Kim et al., 1999). While previous researchers explored the impact of depression and health literacy on disease management, we did not find any studies that addressed these dynamics in military veterans with HCV. In the current study, we looked at the relationship between health literacy, depression, and self-care among military veterans at the time of their initial diagnosis with HCV. We also explored the relationship between scores on health literacy, depression, and self-care measures among military veterans who completed measures at only the time of their initial HCV diagnosis compared to scores of those completed the measures both at the time of their initial diagnosis and at three- months post diagnosis. Lastly, we explored in study participants three months post diagnosis the use of non-VAMC-affiliated resources on health literacy, depression, and self-care.

We found no significant relationship between health literacy and depression. We also did not find a significant relationship between health literacy and self-care. These findings may be due in part to our small sample size or factors unique to this sample.

We observed that for the subgroup of veterans who completed the self-report instruments at three months post HCV diagnosis, mean scores for health literacy and self-care fell by two points and mean scores on depression increased by two points. While means scores for depression were expected to increase (perhaps based on effect of alpha interferon treatment and/or sense of stigma or shame associated with diagnosis), decreasing scores on health literacy and self-care were surprising. However, this observation of decreased scores could once again reflect the influence of declining health as a function of HCV disease and/or HCV treatment.

We found no previous reported research which addressed knowledge of viral count among a military veteran population, so this study is the first to do so. We observed that viral counts for the majority of veteran participants in this sample were accurately reported and were in the “Low” range. It is encouraging that they obtained this information and were able to recall it accurately. This observation possibly speaks to a sense of empowerment on behalf of some participants to perhaps engage in communication (passive or active) with their physician regarding HCV viral counts and/or to participate in education-seeking behaviors. In other words, veterans who were aware of their viral counts may have inquired about their viral count or, they were informed by a physician of their viral count and the veteran learned of a value associated with knowing this number as it relates to their health care/management. What is alarming to note is the majority of veterans who reported that they did not know their viral count. It is encouraging to observe that while a majority of patients in the subgroup that participated three-months post diagnosis reported that they did not know their viral count, over a third sought information about HCV and interferon treatment.

There was not enough participation in the GI Liver class and the GI Get Ready class to distinguish between them regarding health literacy, depression, and self-care. Similarly, there were no distinctions between study participants referring to other sources of information (e.g., library, internet, television) or discussing interferon treatment with non-VAMC people (e.g., family members, spouses, friends) in this study.

Our observation that participants with “adequate functional health literacy”, “low depression”, and “medium to high self-care” reported obtaining knowledge from non-VAMC sources is important to note because it may point to a patient’s sense of

confidence in initiating searches to obtain more knowledge as a function of his/her a) increased ability to read and correctly interpret medical information, b) decreased depression, and c) engagement of self-care behaviors. Also, it is important to note that those participants who fell in the combined categories of “adequate functional health literacy” and “medium to high self-care” additionally were likely to discuss interferon treatment with non-VAMC people and did not refer to informational packets provided by the GI Liver and GI Get Ready classes. This observation may indicate a patient’s ability to initiate research specific to interferon treatment with others outside of their VAMC physician based on their existing increased health literacy and increased ability to engage in self-care behaviors. For the patient falling in these categories and reporting this information, the possibility of high health literacy and increased self-care could have also contributed to an unwillingness of such a patient to utilize the information packet as a source of referral. What is unknown is the patient’s perception of the information packet. Perhaps it was seen as overwhelming in its content, too simplistic, or a review of knowledge previously acquired. Since the intent of the GI Get Ready class is to address substance use and preparation for sobriety as it relates to HCV treatment, a patient falling within the above categories could have been reluctant to refer to the informational packet because of any associated shame regarding difficulties with sobriety. None of the participants in the GI Get Ready class fell into the aforementioned categories. Further, none of the five participants who reportedly began alpha interferon treatment referred to other sources of information nor discussed HCV treatment with non-VAMC people.

Limitations

There were a number of limitations to this study. The biggest concern is the small sample size. Initially, we had proposed a much larger sample size which was not obtained for a myriad of reasons including institutional data collection delays. But more important factors included a patient's willingness to participate and a patient's physical ability to participate in the study. Veterans diagnosed with HCV comprise a physically vulnerable population in which some patients were perhaps unable to physically withstand the duration of the survey completion time period due to severely deteriorated health as influenced by the effects of HCV and HCV medical treatment. The rate of attrition increased at time two for similar reasons.

Additional limitations were discovered throughout the course of the study. Factors such as social desirability, self-report biases, psychological impairment (i.e., depression, anxiety) and/or physical impairment (i.e., fatigue, loss of energy, bodily pain) contributing to poor recall may have accounted for inaccuracies among the self-report measures. Additionally, the Self-Care Assessment we used did not have instructions for scoring, however we used it because it seemed appropriate to our questions and because we found no other suitable measure. Even though there are typically more males patients at a VAMC, we only had one female veteran in this study. A larger sample of military veterans would have increased representativeness between genders. Given our sample size, we were only able to nonparametrically look at associations in our total sample and explore descriptively other data from the sample subgroups. Having a larger number of participants would have afforded more complex analyses which would have allowed for an assessment of causal inferences. Also, having a greater number of participants with a wider age range would have allowed us to examine age effects. With more participants at

the time point three-months post diagnosis, we could examine differences from the initial diagnosis time point and the three month diagnosis time point. More participants would allow for extending the design to collect data beyond three-months post diagnosis time to other time points and enable an increased understanding of the effects of depression on health literacy and self-care (as they relate to the presence of participation in psychoeducational interventions). Lastly, alpha interferon treatment start dates were not recorded.

Numerous challenges were presented in the solicitation and retention of participants in this study. Changes to the VAMC treatment protocol for patients diagnosed with HCV occurred during the study period. At the beginning of the study, patients seeking interferon treatment were required to attend the GI Liver Screening class prior to treatment. Over the course of the study, this requirement was removed and thus, the class became optional for patients seeking this treatment. Our initial intent was to study the effect of “standardized interventions” (in other words, systematic interventions [i.e., psychoeducational classes] as created and facilitated by VAMC psychologists) proved to be a challenge in recruiting patients diagnosed with HCV as appropriate candidates for this study (only those who chose to participate in the GI Liver Screening class). Thus, to allow for a larger number of participants, we changed the study design to include participants who did not attend the GI Liver Screening class. Also, patients who were unable to continue participation in the study resulted in incomplete data collection. One participant only consented to participate in this study and did not return to continue participation. Thus, in some cases participants were able to only complete the self-report measure at the time of their initial diagnosis and one patient consented to participate and

did not return. This was due to various factors such as illness due to substance use, lack of interest in continued participation, and inability to attend appointments due to lack of transportation. Illness effects due to HCV and/or other medical conditions (fatigue, physical pain) also played a part in subject recruitment and retention. In this way, participants were unable to attend even their medical appointments and thus declined continued participation in the study. Further, psychological challenges such as decreased mood/depression made participation for some participants difficult as well. Upon consenting, some patients were reluctant to participate in the study citing that they were not motivated to attend appointments at the VAMC due to decreased mood. Others reported that they were frustrated with the health care they received at the VAMC and as a result expressed disinterest in contributing to research conducted at the VAMC. Additionally, some patients claimed that they were homeless and could not guarantee attendance for a three-month post-diagnosis research appointment. Lastly, compensation to patients for participating in research studies was not permitted at the VAMC. If this study were to be replicated, consideration should be given to the above challenges with respect to subject recruitment and retention.

Conclusions and Suggestion for Future Research

Based upon our observations in this study, we would like to highlight a number of specific characteristics of the veteran population diagnosed with HCV receiving treatment at a VAMC from which we obtained our sample. Because of our small sample size and the descriptive and exploratory nature of our study, we want to caution again on generalizing from this data.

We observed no relationship between health literacy and depression; and no relationship between health literacy and self-care when patients were initially diagnosed nor at three months past their initial diagnosis. Future replications of this study with a larger sample size could produce differing results that would support previous research findings that point to such relationships in non-veteran populations with chronic illnesses.

Included in our study were observations made regarding the use of information gained from the psychoeducational classes provided by the VAMC. We observed that while these classes contributed to increased health literacy, reports of increased depression among the initial diagnosis and post diagnosis sample was also noted for those patients who participated in such classes. Future replication of this study could assess specific elements of information disseminated in these classes that possibly contribute to increased depression. Also, future research could explore attend to a patient's perception of the information packet provided by the GI Liver and GI Get Ready class. Further, other factors such as social support, influence of substance use, effects of HCV illness, and/or effects of alpha interferon treatment could be studied as possibly contributing to increased depression. Moreover, future replications of this research could study contributors such as effect of interferon treatment, response to recent receipt of HCV diagnosis, increased depression as a function of living with fatigue or physical pain, change in psychosocial support, or comorbid factors (other psychopathology and/or other medical conditions).

The construct of self-care was important when considering the impact of health literacy on one's ability to engage in self-advocating behaviors. We observed that self-care behaviors seemed to have worsened among patients three months after their initial

diagnosis compared to those tested at the initial diagnosis testing time point. As with the behavioral decompensation of increased depression, future replications of this study should explore possible contributing factors to decreased self-care such as social support, influence of substance use, effects of HCV illness, and/or effects of alpha interferon treatment.

When observing scores of health literacy and self-care among the initial diagnosis and post diagnosis sample, we were surprised by the decrease in both measurements at the post diagnosis time point. It is conceivable that psychological factors such as a lack of social support, use of mind-altering substances, and/or the physiological effects of alpha interferon treatment have also contributed to this observation. Future replication of this study could look into these potential factors.

Knowledge of viral count among patients who reported this number was found to be accurate however, the majority of patients in this study reported that they were unaware of this number. Often times, patients were observed as referring to their spouse for medical information (such as viral count [among other pieces of medical information]). We also observed that while the majority of patients across both samples in our study were unaware of their viral count, most engaged in education-seeking behaviors. Future replication of this study could explore motivators of this type of behavior.

For those patients who inquired about viral count, future research could look at whether the patient consulted with a physician or a family member. While not formally collected as data in this study, it was not uncommon in this study for patients to have reported that they frequently consulted with their spouse to obtain medical information

related to their health care, noting that the responsibility of their health care rested on their spouse. Further, occasionally patients had difficulty reporting such information as the number of medications they were currently taking and their level of income. In these occasional instances, they would disclose to this researcher that since their spouse held responsibility for such information they would have to consult with their spouse and respond at a later time (this follow-up typically occurred later on the day of testing or the next day). This behavior is consistent with previous findings described by Drummond and Smith (2006).

Education-seeking behaviors were observed not only among the majority of patients who were unaware of their viral count, but also among patients who had adequate functional health literacy, low depression, and were within the range of medium to high self-care. While previous research points to the likelihood of education-seeking behaviors among patients who are psychologically healthier, future replication of this study could again, explore motivating factors that contribute to such behaviors. We are not surprised by such an observation and at the same time, future replication could examine specific factors that contribute to self health advocacy. Future replication could explore those factors that either align with or function independent of high psychological well-being. Further, with a larger sample size, future replications of this study could also explore the association between viral count and increased education seeking behaviors. Future study of motivators of this behavior among this specific subset of veterans (reportedly, unaware of their viral count) could be explored.

While overall, we observed no statistical relationship between health literacy, depression, and self-care, we may glean some understanding of education-seeking

behaviors among veterans with HCV from our observations of participant responses. Of note, is the role of motivating factors that contribute to education-seeking behaviors for health information. We observed participants who sought information relevant to HCV, however, we lacked an assessment of motivating factors leading to such a behavior. Further, the role of level of education, role of income level, use of substances, and/or psychological disorders unrelated to depression could be explored as to their impact on motivations for interests in acquiring increased health-related knowledge. Lastly, previous studies have described the roles of social support, gender, and shame on health literacy among patients with chronic illness (DiMatteo, 2004; Rozanski, 2005; Martin, Riopelle, Steckart, Geshlke, & Lin, 2001; Verbrugge, 1980; Verbrugge, 1981; Drummond & Smith, 2006; Parker, 2000; Hibbard, Greenlick, Jimison, Kunkel & Tusler, 1999; Stoller, 1993). In the current study, we did not include in our study aims these roles for the following reasons: unstable treatment protocol at the VAMC to ensure consistent participation in a social support group and a lack of access to a more representative population of female veterans. Our intent to understand the role of shame assisted us in our ability to conceptualize potential challenges that may account for decreased psychological and physical status among the military veteran population. Future replications of the current study could be augmented by an exploration of social support, gender, and shame as it pertains to health literacy, depression, and self-care among veterans with HCV.

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APPENDIX A

Review of the Literature

Because there is paucity of literature regarding the impact of health literacy on self-care health management among military individuals living with HCV in the following review, I will present research closely related and applicable to the current study. My objective in this review is to elucidate the following topics as they pertain to the current study: initial interests and understandings of the concept “health literacy”; identifying the difference between general literacy and health literacy; initial understandings of health literacy as discovered through the Williams et al. (1995) study; the association between health literacy and patients’ self-care behaviors; populations significantly affected by poor health literacy; the role of shame in health literacy status; and, the role of communication in health literacy status. I will also discuss the various ways in which depression impacts military veterans living with HCV. My intent in reviewing these topics is to further support the relevance of the current study.

Health Literacy

Health literacy as a concept. Health literacy is a concept relatively new to the field of psychology. The term was first used in 1974 in a paper that commented on a need for minimum health education standards for every grade school level in the USA (National Library of Medicine, 2000). The term “health literacy” was not widely

examined and discussed as a concept in the scientific literature until 1992 (Speros, 1995). Since the new millennium, published research literature contains studies indicating that health literacy is a strong predictor of health status, a stronger predictor than socioeconomic status, age, or ethnicity (Williams et al. 1998, Lindau et al. 2002, Schillinger et al. 2002, Parker, Ratzen, & Lurie, 2003). As more researchers explored the nuances of the term “health literacy,” a clearer understanding emerged concerning the influence of the marked difference between types of literacy.

General literacy versus health literacy. The distinction between general literacy and health literacy is an important one. As of 1993, the U.S. population represented itself as having acquired the highest level of education than any other time in its history (Kirsch et al., 1993). Kirsch et al. (1993) found that the average American was reported to have a 12th grade or higher level of education. Although the average U.S. citizen is currently considered highly educated, the average reading abilities of these individuals are found to hover between the eighth and ninth grade levels (Stedman and Kaestle, 1991). In 1993, the US Department of Education’s National Adult Literacy Survey (NALS) reported that 40 to 44 million U.S. citizens were functionally illiterate (Kirsch et al. 1993). “The NALS assessed practical, everyday reading and numeracy skills required to function in everyday situations” (Parker, p. 277, 2000). An additional 50 million of those Americans assessed in the 1993 NALS study were found to be marginally literate. This meant that at that time, about half of the adult US population had significant challenges reading and were unable to demonstrate simple mathematical computations (Kirsch et al. 1993). Inadequate literacy skills were most prevalent among the elderly with about half scoring in the lowest skills level (Kirsch, et al., 1993). What

was further discovered through research is that while a literate individual may be able to comprehend familiar terms and content, he/she may have some difficulty understanding unfamiliar vocabulary and concepts while encountering prescriptions, bottle labels, appointment slips, or health instructions provided by a nurse or physician (Speros, 2005).

The Williams et al. (1995) study. In 1995, the largest study of health literacy was conducted. Williams et al. (1995) found in their landmark study that one third of English speaking US patients were unable to read and understand basic health-related materials. Moreover, they found that 60% of those English-speaking US patients were unable to read a routine consent form, 26% were unable to understand information provided on an appointment slip, and 42% were unable to understand directions for taking prescriptions medications. The study also provided evidence that those populations most likely to report poor overall health and were elderly reported having poor health literacy. In sum, Williams et al. (1995) found that those individuals with the most need of health care services were those who lacked strong health literacy skills, skills needed in order to allow them to function as strong consumers of health care. This in turn, prevents this population from the ability to acquire adequate health care.

Health literacy and depression. In this section, I am describing depression among military veterans and the need for increased efforts for health literacy interventions. According to Hankin, Spiro, Miller, & Kazis (1999), depression is identified by the Veteran's Affairs system as being one of the most frequently diagnosed psychological disorders with a prevalence rate of approximately 30%. Differences between those veterans deployed for war service and those non-deployed in relationship to depression have been studied as well. Black et al. (2004) noted that among a sample

of 602 veterans serving in the first Gulf War, 32% met the DSM-IV criteria for major depressive disorder, dysthymia, or depressive disorder NOS. Further, Black found that compared with depressed non-deployed veterans, depressed veterans who were deployed had significantly higher lifetime rates of comorbidity with cognitive dysfunction and anxiety disorders (55% versus 35%) and (33% versus 10% respectively). It was concluded in the Black study that experienced depression among deployed veterans accounted for increased reports of physical and psychological symptoms of depression. Few studies have examined the relationship between health literacy and depression but Liu, Campbell, Chaney, Li, McDonell, & Fihn (2006) noted important implications regarding depression treatment and management. The study conducted by Liu, Campbell, Chaney, Li, McDonell, & Fihn (2006) concluded that there is a negative relationship between patient education and risk of nondiagnosis of depression and nontreatment of depression with antidepressants within the VAMC medical system. Further, Liu, et al. (2006) suggested that increased patient education of depressive illness and treatment would potentially lead to enhanced depression management.

Health literacy and self-care behaviors. It is only within the past decade that researchers have examined the associations between health literacy and patients' abilities to understand medical information and self-care information. Further, it was only during the past decade that researchers have identified the importance of understanding these types of associations of health literacy and health outcomes (Speros, 2005). Many patients have challenges in communicating with health care providers and following up with health care instructions due to a lack of an understanding of basic health vocabulary, limited health knowledge background, and difficulty in assimilating novel concepts and

knowledge (Doak, Doak, & Root, 1996). For individuals with poor literacy, instructions regarding how to correctly take prescription medications, instructions regarding how to prepare for medical visits, and directions for attending follow-up appointments can be overwhelming (Parker, 2000). Additionally, patients who possess low health literacy have been shown to report taking medications incorrectly (e.g., incorrect dosages or frequency); may be unaware of treatment side effects; or may not understand the need for follow-up tests (Baker et al., 1996). Williams et al. (1995), the first published study of functioning health literacy in the U.S., reported that 42% of patients examined in a public hospital were unable to comprehend instructions for taking medications on an empty stomach and 43% were unable to understand the rights and responsibilities section of a Medicaid application (Williams et al., 1995).

Significantly affected populations. Three groups of patients have been specifically identified in the research literature as most prone to a victimization of poor health literacy. These are the elderly, the illiterate, and those individuals living with chronic illnesses(s). Due in part to the constantly evolving nature of the US health care system, challenges continue to be presented to those who are most vulnerable to receiving compromised health care services. It is increasingly difficult for the aforementioned populations to attain health care attention in the manner that is appropriate and effective.

Individuals living with chronic or terminal illnesses have been discussed in the research literature as it relates to the impact of health literacy. The National Adult Literacy Survey found that 75% of respondents with a chronic disease additionally had limited literacy skills (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993). Baker et al. (1996) found that individuals with limited literacy skills evidenced challenges in accessing

health services and had worse health outcomes than those individuals with full literacy skills. In a number of smaller studies, researchers have also shown that low health literacy is associated with decreased medication adherence, knowledge of disease and self-care management skills (Williams et al., 1998a; Williams et al., 1998b; Kalichman et al., 1999; Kim et al., 1999). These researchers found that patients who have diabetes, asthma, or hypertension and also have low health literacy have poor knowledge of their own chronic condition(s); increased medication errors; and, non-adherence. Additionally, patients with inadequate health literacy who have chronic diseases have less understanding of their disease than patients with adequate literacy (Williams et al., 1998a; Williams et al., 1998b).

Shame. One variable influencing the quality of the impact of poor health literacy on attaining adequate health care is shame. Shame has been identified in the research literature as a major factor that affects the ability of an individual with poor health literacy to acquire adequate health care. The social stigma associated with illiteracy, coupled with a lack of confidence, prevents an individual with low literacy skills from requesting simpler, more understandable instructions for medications, asking for clarification when they do not understand self-care health instructions or medication labels, or asking for clarity regarding medical forms (Parker, 2000).

Patient-physician communication. The miscommunication between physicians and patients is an ongoing struggle. For the low health literacy individual, this becomes a challenge far worse than for those who possess adequate health literacy. Numerous individuals have low health literacy (Davis, Williams, Branch, & Green, 1999). Often times, physicians engage in medical discussions with patients with ease and falsely

assume that the patient comprehends what the physician is presenting to them. Studies show that patients often times do not feel that their physicians adequately explain their illness or treatment plans in a manner that is understandable (Mayeaux, Murphy, Arnold, David, Jackson, & Sentell, 1996). Some physicians realize that time spent with each patient may be limited and therefore rely on health education pamphlets or brochures to supplement information that either was not understood or excluded from the conversation; or, perhaps offer simpler terms. Contrary to the intention behind such a physician who supplies these materials, a number of studies show that information included in the aforementioned examples of health literature are written in a manner that greatly exceeds patients' reading abilities (Parker, 2000). Further, Doak et al. (1996) found that patients with limited literacy, most of whom possess limited background health knowledge and vocabulary, obtain less information from health education literature/materials. The impact of low health literacy on the miscommunication between physician and patient has been studied by the Council on Scientific Affairs for the American Medical Association (1999). It was discovered that in fact, what exists is an increasing disparity between patients' reading aptitude and their health literacy needs. To further compound the problem of individuals with low health literacy, many health education materials and messages regarding disease prevention and/or screenings are inaccessible to those with low literacy (Parker, 2000). Those individuals who are health illiterate and have access to health education materials and messages may be unable to read and comprehend the value of the messages (Parker, 2000).

Health literacy and gender differences. Gender differences exist between men and women when considering contributors to health literacy. There are significant

gender differences in the incidence of illness, prognosis, mortality rates, and morbidity rates (Waldon, 1983; Verbrugge, 1982; Linzer, Spitzer, Kroenke, et al., 1996). In general, women tend to have more awareness of illness symptoms. Further, in general men lack awareness of health problems and tend to prolong seeking assistance when health problems occur (Verbrugge, 1982; Verbrugge, 1980).

Gender differences also exist with regards to the manner in which health literacy is established and maintained. Similar to the way in which men perceive health status, men tend to be less health literate than women. Drummond & Smith (2006) examined health maintenance in World War II and Vietnam male veterans 65 years or older. They found that the majority of these men had dramatically lowered levels of health literacy when compared to their wives' level of health literacy. This finding is important in that the male participants in this study suggested that their level of health literacy was dependent of the health literacy level of their wives (2006). What is inferred from this finding is that men have been shown to utilize their wives as a means for obtaining health information and the wives retain a higher level of health literacy. Perhaps this difference is due in part to the manner in which men and women implement acquired health knowledge towards increasing positive health behaviors. Drummond and Smith (2006) further found that low health literacy rates were found for the men because men in their study tended to rely on consulting with their doctors and holding faith in the word of their physicians (versus seeking additional information from external sources). Another finding from this study that points to men's low health literacy rates is that the men involved in this study tended to report consulting their doctors and holding faith in the word of their physicians (2006). In sum, the findings from this study suggest that the

gender difference in health literacy level is due in large part to the sources in which men and women utilize in order to obtain health information and the resulting affect on health behaviors.

Women's rates of health literacy generally tend to be higher than men's rates of health literacy due to a number of factors. More often than not, women serve as the primary seekers of health information for themselves and for their children and family members (Hibbard, Greenlick, Jimison, Kunkel, & Tusler, 1999; Stoller, 1993). Women from the ages of 20 to 82 have also been shown to creatively construct ways in which to educate themselves in order to manage both acute and chronic health problems that occur at the home and for themselves (Wathen & Harris, 2007). For instance, women have been shown to obtain health information by consulting with pharmacies, nurses, home remedy books, veterinarians, and the internet (Wathen & Harris, 2007).

Women living in rural areas are a particularly compromised population who face unique obstacles relating to health literacy. In rural areas, numerous challenges are presented when considering people's access to health care and health information (in turn, resulting in decreased health literacy). Women residing in rural areas encounter more difficulty in accessing health care that is close to their homes. Additionally, women use health care services more than men and children and also prefer to receive medical care from a female physician but what exists is a paucity of women physicians in rural areas (Sutherns, McPhedran, & Haworth-Brockman, 2004). Further, health clinics focused on women (i.e., women's shelters) are often not found in rural areas (Sutherns, McPhedran, & Haworth-Brockman, 2004). Rural locations also present challenges in terms of one's ability to travel great distances for health services during inclement

weather, one's ability to trust in a physician's policy on confidentiality, and one's confidence in the competency of a physician's ability (Wathen & Harris, 2007).

In spite of women's challenges in general for accessing health information and services, most women have been shown to have higher rates of health information than men. Gender differences noted in the present discussion speak to the manner in which men and women utilize resources. Based on information gleaned from current literature regarding gender differences in health literacy, women more so than men access not only physical resources of health information but personal resources in obtaining health information. What this means is that in general, women are more likely to have higher levels of basic reading and numeracy skills; and health literacy as opposed to men.

Men and women also differ with regards to the manner in which they interpret and treat depression. Men tend to externalize psychological problems, particularly depression, by attributing them to such factors as pressure from peers and problems stemming from the family (Waterton & Wynne, 1999; Lincoln, 1990). Men are also more likely to rely on medications such as sleeping pills and alcohol in order to deal with what they identify as "depression" (Denzin & Lincoln, 1998; Guba & Lincoln, 1988). This is a serious problem when considering that most men are underdiagnosed for depression because men do not typically correctly identify depression; and, this results in a low prevalence rate of depression among men (Lincoln, 1990; Locke, Silverman, & Spirduso, 1998). The implications of men's behaviors directed towards the treatment of depression (i.e., sleeping pills and alcohol) are enormous when considering the fact that most have low health literacy levels.

Health literacy and chronic illness. In this section, I review the importance of health literacy as it impacts health behaviors of those individuals afflicted by chronic illness. Individuals living with a chronic illness are expected to self-manage their disease. Further, they are expected to possess and/or obtain knowledge related to their disease subsequent to their initial diagnosis. Numerous challenges are presented to the patient living with a chronic illness such as sustained motivation, methods of effective communication with medical professionals, and factors such as shame or fear associated with not knowing how to engage in self-care behaviors. Via the scientific literature, these challenges have been identified as existing among various populations with varied chronic illnesses.

Studies have shown that among impoverished populations, those patients with chronic illnesses such as hypertension, asthma, or diabetes and have low health literacy skills (compared to high health literate) possess less education regarding their illness and disease treatment thus resulting in poor disease management skills (Williams, Baker, Parker, & Nurss, 1998b; Williams, Baker, Honig, Lee, & Nowlan, 1998a). These studies showed that those patients with low health literacy were unable than high health literate patients to correctly utilize a meter-dosed inhaler. Further, these studies have shown that patients with low health literacy participating in standardized educational programs regarding diabetes or asthma possessed less knowledge and self-management skills than those patients with high health literacy. Non-indigent populations have also been studied and have shown similar results. Gazmararian, Williams, Peel, and Baker (2003) conducted a study that showed that among non-indigent patients aged 65 and older diagnosed with at least one chronic illness (i.e., asthma, diabetes, congestive heart failure,

or hypertension), health literacy was proven to be an independent predictor of a patient's knowledge of their chronic illness. Further, the investigators of this study explained that health literacy was shown to be an independent predictor even after controlling for age, disease duration, and previous attendance at a standardized disease-specific education class.

Gender differences and Hepatitis C and health behaviors. In the following section, I discuss the gender differences among patients diagnosed with hepatitis C with regards to associated health behaviors. To begin, as of 2003 in the United States, 2.5 percent of men and 1.2 percent of women were diagnosed with hepatitis C and these percentages are increasing each year per gender (Alter et al., 1999). Individuals diagnosed with a severe mental illness are at even greater risk for becoming hepatitis C infected. For individuals diagnosed with a severe mental illness in addition to their hepatitis C diagnosis, the rates are even higher at 19.6 percent for men and 9.8 percent for women (Rosenberg, Goodman, Osher, et al., 2001).

Studies have noted particular nuances in the way men and women contract and manage hepatitis C. Consistent with numerous studies, Butterfield, et al. (2003) found that men tend to become infected more so than women through injection drug use, needle sharing, or crack cocaine use. Men also tend to poorly engage in strong health maintenance and health-seeking behaviors than women (Uitenbroek, Kerekovska, & Festchieva, 1996; Schofield, Connell, Walker, Wood, & Butland, 2000). Unlike women, men also tend to seek medical attention once the symptoms of hepatitis C manifested not prior to experienced symptoms (Temple-Smith et al., 2007). This is important to understand because individuals diagnosed with hepatitis C often feel well and may not

experience any symptoms while the virus is slowly causing damage to the liver. In this way, symptom severity is no marker of disease progression or extent of liver deterioration (Temple-Smith et al., 2007).

Women. Studies have also been fairly consistent with findings addressing the manner in which women acquire and manage hepatitis C. In a study by Butterfield et al. (2003), women were shown to have been at a higher risk of acquiring hepatitis C through sex-related risk behaviors. In this way, women in this study were more likely than men to engage in unprotected vaginal sex, anal sex, unprotected sex in exchange for drugs or money or gifts. Unlike men, women however do engage in better health management of their hepatitis C disease. In a study conducted by Temple-Smith et al. (2007), half of the women infected with hepatitis C who had never experienced symptoms still visited with their physician for hepatitis C treatment.

Depression

Depression and military veterans. It is important to understand the occurrence of depression among military veterans. It is also important to understand the manner in which depression manifests, occurs, and influences the ways in which military veterans engage in health care behaviors. The occurrence of depression among military veterans has been widely studied. Though depression is quite often identified in the general population, it is known to have a high prevalence rate amid primary care settings (i.e., the Veteran's Health Administration). For the VAMC patient population, depression stands out as one of the most common chronic psychological illnesses with some studies evidencing prevalence rates approaching 30% (Hankin et al., 1999). Researchers examining deployed versus non-deployed military veterans participating in the first Gulf

War found that depressive illness occurred more frequently for the deployed individuals (Black et al., 2007). On average, 10-15% of military patients display depressive symptoms that are considered “significant” (Katon & Schulberg, 1992). In a study examining patient data from fiscal years 1997-2001, Kirchner, Curran, & Aikens (2004) found that primary and secondary diagnoses of depression were made and it was discovered that primary diagnoses were found to increase while secondary diagnoses remained stable over the span of five years. At primary care settings, depression is typically underdetected and undertreated (Liu, Campbell, Chaney, Li, McDonnell, & Fihn, 2006). Further, fewer than half of those primary care patients identified as having depression received adequate care for the treatment of depression (Simon, VonKorff, Wagner, & Barlow, 1993). Moreover, those military veterans diagnosed with depression may not always receive proper treatment based on the severity of their diagnosed depression. Liu, Campbell, Chaney, Li, McDonnell, and Fihn (2006) found that military patients diagnosed with mild or moderate symptoms were at an increased risk of being undiagnosed and/or untreated versus those patients diagnosed with severe depression.

The risk of being undetected or untreated for depression in primary care settings profoundly implicates a patient’s ability to effectively engage in improved health behaviors. Encouraging to this concern of compromised health care management is that some researchers suggest that those patients identified with symptoms of depression versus those who are not identified demonstrate greater improvement regarding depression symptoms (Simon et al., 1999). Further, military patients who were diagnosed with a comorbid psychiatric disorder were found in one study to be more likely to adhere to treatment recommendations (Busch, Leslie, & Rosenheck, 2004).

Additionally, the responsibility of the physician seems to be more important to the potential for patient's successful health management versus a sole reliance of the patient to care for his/her self. Busch, Leslie, and Rosenheck (2004) conducted a comparative study examining the VAMC health care system and that of the private sector. They found that the VAMC and private sector health care systems had little differences regarding the way in which patients adhered to pharmacotherapy for the treatment of depression. But it was the role of the physician in a patient's treatment of depression that more greatly influenced the patient's health management indicating the salience of the responsibility of the health care worker in providing adequate care. Unfortunately, some researchers point to other barriers in which patients unknowingly are at risk for poor health care received by the VAMC. For instance, younger military patients and male patients were found to be less likely to receive guideline-level treatment for depression (Busch, Leslie, & Rosenheck, 2004). Lastly, and most important to the current study, Liu, Campbell, Chaney, Li, McDonnell, and Fihn (2006) reported that lower levels of patient education were associated with increased risk of nondiagnosis or nontreatment with antidepressants within the VAMC system. They further supported the need for patient education of the illness and treatment of depression suggesting that this type of information would lead to improved depression management among affected military veterans.

Depression and gender and chronic illness. In this section, I discuss information gleaned from examples of existing research that pertains to what is currently understood about the relationship between depression, gender, and chronic illness. To begin, the literature has shown an association between depression and decreased coping

ability to chronic medical illnesses (Alexopoulos & Chester, 1992; Baldwin, 1991; Murphy, 1983) and decreased adherence to medication regimens and diets (Unutzer, Patrick, Diehr, Simon, Grembowski, & Katon, 2000). Amid a number of studies examining gender differences of populations affected by chronic illness, the literature displays a fairly consistent understanding that when compared to men, women affected by chronic illness tend to report higher rates of depression. Examples of such gender studies include those examining populations affected by osteoarthritis, multiple sclerosis, and coronary artery disease (Sherman, 2003; Steck, Amsler, Kappos, & Burgin, 2000); Ai, Peterson, Dunkle, Saunders, Bolling, & Buchtel, 1997). In general, severity of illness was associated with severity of experienced depression among women. Further, studies have suggested that women diagnosed with coronary heart disease are at a higher risk of experiencing depressive symptoms (Holahan, Moos, Holahan, & Brennan, 1995; Sokol, Folks, David, Herrick, & Freeman, 1987; Stanton, 1987). It has also been suggested that depression impedes one's ability to recover, and promotes the occurrence of new cardiac problems such as heart attacks and surgical procedures (Carney et al. 1988; Carney, Rich, & Jaffe, 1995). Research has also shown that women versus men tend to have worse psychological adjustment following a coronary artery bypass graft surgery (CABG) in terms of depression, anxiety, and sleep disorders (Stanton, 1987). In a study conducted by Ai, Peterson, Dunkle, Saunders, Bolling, and Buchtel (1997), it was found that women with coronary heart disease who were from low socioeconomic backgrounds and had poor health in general were at increased risk for depression postoperative CABG surgery. The literature additionally provides evidence that individuals of both gender with the least education are at a significantly higher risk of death from coronary heart disease

(American Heart Association, 1994). Investigators involved in the Ai study believe that higher education is used by individuals with coronary heart disease as a means to guard against the effects of depression and that in this way, education may contribute to the prevention of death given an educated person's access to stronger psychological and social resources (Ai, Peterson, Dunkle, Saunders, Bolling, & Buchtel, 1997).

Depression and Hepatitis C. In the following section, I address the relationship between depression and hepatitis C as explained by current research literature. Hepatitis C is a disease similar to most chronic diseases in that the prevalence of depression occurs (Yates & Gleason, 1998; Bayliss, Gandek, Bungay, Sugano, Hsu, & Ware, 1998). Depression affects hepatitis C negatively in the way it accelerates the course of the illness, intensifies physical symptoms, causes impairment in functioning, reduces treatment compliance, and reduces quality of life (Dwight, Kowdley, Russo, Ciechanowski, Larson, & Katon, 2000). The medical intervention associated with treatment of hepatitis C is interferon alpha, a chemical that is introduced into the body which in turn contains neuropsychiatric effects (Golden, O'Dwyer, & Conroy, 2005). For this reason, psychiatric disorders are carefully monitored by medical professionals in order to determine the course or discontinuation of interferon alpha treatment (Zdilar, Franco-Bronson, Buchler, Locala, & Younossi, 2000).

Currently, three hypotheses have been posed by researchers regarding the prevalence of depression among individuals living with hepatitis C. First, some researchers have hypothesized that the course of hepatitis C progression instigates psychiatric morbidity (Golden, O'Dwyer, & Conroy, 2005). Studies have refuted this claim stating there is no existence of a HCV specific fatigue or depression based on

epidemiological evidence (Wessely & Pariante, 2002). Second, some investigators believe that depression is more noted among those living with hepatitis C because most of these patients come from subgroups of the population that are more likely to be living with a psychiatric disorder (Golden, O'Dwyer, & Conroy, 2005). Third, some researchers postulate that with the rate of disease labeling that occurs with hepatitis C diagnosis, the associated stigma promotes higher rates of depression diagnoses (Golden, O'Dwyer, & Conroy, 2005). Research conducted by Cordoba et al. (2003) concluded that the process of labeling associated with hepatitis C diagnosis is potentially a main component in patients' experience of high distress.

Social support effects on chronic illness and health behaviors. In this section, I discuss the influence of social support on patients diagnosed with a chronic illness and the implications for their health behaviors. What exists in the literature are few studies that address the impact of social support on health behaviors among chronically ill populations. Among patients diagnosed with cardiac diseases, Rozanski (2005) explained that cardiac rehabilitation social support programs only assist patients in the short-term and that ultimately, their increased health is due primarily to self-management. Rozanski further explained that social support in the form of behavioral management is best utilized when combined with strategies that promote self-care among cardiac patients. On the other hand, studies have shown that social support in the form of structured or unstructured support groups serves as a potential contributor to increased adherence to new self-management behaviors (DiMatteo, 2004). Individuals with HIV/AIDS have been studied with regards to the effect of social support groups and health behaviors. Individuals living with HIV/AIDS participating in social support

groups have been shown to engage in fewer acts of unprotected receptive anal intercourse as opposed to those who did not participate in the social support group (Martin, Riopelle, Steckart, Geshlke, & Lin, 2001).

Support groups are conducted in various ways. Support groups conducted in medical settings typically come in the form of either structured psychoeducational groups or experiential groups. Researchers have investigated the effectiveness of each type of group among chronically ill populations. Mulder et al. (1994) discussed experiential groups as those that afford greater opportunity for patients to express feelings as opposed to structured groups. It is believed that through greater expression of emotion in experiential groups, patients gain an increased sense of social support and trust, thus resulting in behavioral change with respect to disease maintenance.

The Role of Health Literacy in Counseling Psychology

In this section, I review the relevance and importance of health literacy as a practice of health psychology as conducted by counseling psychologists. When considering chronically ill populations (such as hepatitis C), the goal of health literacy has much in common with the attitude of the counseling psychologist. From the perspective of counseling psychology, the implementation of improved health literacy among chronically ill populations is commensurate with the paradigm in which counseling psychology subscribes. In this way, counseling psychologists may enhance the welfare of chronically ill populations by increasing health literacy. By increasing health literacy, counseling psychologists assist the chronically ill person by moving them through long-term challenges via a developmental perspective inherent to the disposition of counseling psychology. Further, the counseling psychologist is better equipped to

serve such a population because he/she can provide an augmented opportunity for increased health literacy accounting for a patient's individuality per the patient's contributing contextual factors such as culture and specific health beliefs towards perceived cause and prognosis of their illness (McRae & Smith, 1998).

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APPENDIX B

Instruments

Oklahoma City VAMC
921 NE 13th Street
Oklahoma City, OK 73104

Oklahoma State University, Stillwater
434 Willard Hall
Stillwater, OK 74078

Patient's code **Initials** **Date**
_____ _____ _____

Check one: **Baseline** _____ **Posttest 3 mo** _____ **6 mo** _____ **12 mo** _____

BDI

Participant social security number _____

Date _____

Instructions: This questionnaire consists of seven groups of statements. Reach each group of statements carefully, then pick out the **one statement** in each group that best describes the way you have been feeling during the **past two weeks, including today**. Circle the number beside the statement you have picked. If several statements in one group seem to apply equally well, choose the statement with the highest number beside it.

Sadness

- 0 I do not feel sad.
- 1 I feel sad much of the time.
- 2 I am sad all the time.
- 3 I am so sad or unhappy that I can't stand it.

Pessimism

- 0 I am not discouraged about my future.
- 1 I feel more discouraged about my future than I used to be.
- 2 I do not expect things to work out for me.
- 3 I feel my future is hopeless and will only get worse.

Past Failure

- 0 I do not feel like a failure.
- 1 I have failed more than I should have.
- 2 As I look back, I see a lot of failures.
- 3 I feel I am a total failure as a person.

Self-Dislike

- 0 I feel the same about myself as ever.
- 1 I have lost confidence in myself.
- 2 I am disappointed in myself.
- 3 I dislike myself.

Self-Criticalness

- 0 I don't criticize or blame myself more than usual.
- 1 I am more critical of myself than I used to be.
- 2 I criticize myself for all of my faults.
- 3 I blame myself for everything bad that happens.

Suicidal Thoughts and Wishes

- 0 I don't have any thoughts of killing myself.
- 1 I have thoughts of killing myself, but I would not carry them out.
- 2 I would like to kill myself.
- 3 I would kill myself if I had the chance.

Loss of Interest

- 0 I have not lost interest in other people or activities.
- 1 I am less interested in other people or things than before.
- 2 I have lost most of my interest in other people or things.
- 3 It's hard to get interested in anything.

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Stillwater, OK 74078

Patient's code **Initials** **Date**

Check one: **Baseline** ____ **Posttest 3 mo** ____ **6 mo** ____ **12 mo** ____

Instructions: This survey asks for some background information and your views about information that you use to care for your health. This information will help keep track of how you use health information and how well you are able to care for your health.

Answer every question by circling the most appropriate response. If you are unsure about how to answer a question, please give the best answer you can.

Age _____

Years of education completed _____

Income level _____

Racial identity _____

Gender _____

Month and year diagnosed with HCV _____

HCV-related symptoms (current) _____

Most recent HCV viral count _____

Combat status _____

Number of medications taken (currently) _____

1. Did you attend the GI Liver class, GI Get Ready class, or the Hep C support group?

Yes (Go to question 1A) No (Go to question 4)

1A. Of the below options, please circle the class and/or group you attended.

GI Liver class GI Get Ready class Hep C support group

2. How often did you refer to the informational packet provided to you in the GI Liver class?

1. None of the time
2. Some of the time
3. Most of the time
4. All of the time
5. Not Applicable – I did not attend this class

3. How often did you refer to informational materials provided to you in the GI Get Ready class?

1. None of the time
2. Some of the time
3. Most of the time
4. All of the time
5. Not Applicable – I did not attend this class

4. **How often did you refer to other sources of information (such as the internet, television, or the library) regarding your treatment of HCV?**
 1. None of the time
 2. Some of the time
 3. Most of the time
 4. All of the time

5. **How often did you discuss your treatment for HCV with other people you know (people who do not belong to the VA Medical Center)?**
 1. None of the time
 2. Some of the time
 3. Most of the time
 4. All of the time

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Oklahoma State University, Stillwater
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Patient's code **Initials** **Date**
_____ _____ _____

Check one: **Baseline** ____ **Posttest 3 mo** ____ **6 mo** ____ **12 mo** ____

SCA

This assessment tool provides an overview of effective strategies to maintain self-care.

Using the scale below, rate the following areas in terms of frequency:

- 5 = Frequently
- 4 = Occasionally
- 3 = Rarely
- 2 = Never
- 1 = It never occurred to me

Physical Self-Care

- ____ Eat regularly (e.g. breakfast, lunch and dinner)
- ____ Eat healthy
- ____ Exercise
- ____ Get regular medical care for prevention
- ____ Get medical care when needed
- ____ Take time off when needed
- ____ Get massages
- ____ Dance, swim, walk, run, play sports, sing, or do some other physical activity that is fun
- ____ Take time to be sexual – with yourself, with a partner

- Get enough sleep
- Wear clothes you like
- Take vacations
- Take day trips or mini-vacations
- Make time away from telephones
- Other:

- 5 = Frequently
- 4 = Occasionally
- 3 = Rarely
- 2 = Never
- 1 = It never occurred to me

Psychological Self-Care

- Make time for self-reflection
- Have your own personal psychotherapy
- Write in a journal
- Read literature that is unrelated to work
- Do something at which you are not an expert or in charge
- Decrease stress in your life
- Let others know different aspects of you
- Notice your inner experience – listen to your thoughts, judgments, beliefs, attitudes, and feelings
- Engage your intelligence in a new area, e.g. go to an art museum, history exhibit, sports event, auction, theater performance
- Practice receiving from others

- ___ Be curious
- ___ Say "no" to extra responsibilities sometimes
- ___ Other:

Emotional Self-Care

- ___ Spend time with others whose company you enjoy
- ___ Stay in contact with important people in your life
- ___ Give yourself affirmations, praise yourself
- ___ Love yourself

- 5 = Frequently
- 4 = Occasionally
- 3 = Rarely
- 2 = Never
- 1 = It never occurred to me

- ___ Re-read favorite books, re-view favorite movies
- ___ Identify comforting activities, objects, people, relationships, places and seek them out
- ___ Allow yourself to cry
- ___ Find things that make you laugh
- ___ Express your outrage in social action, letters and donations, marches, protests
- ___ Play with children
- ___ Other:

Spiritual Self-Care

- ___ Make time for reflection
- ___ Spend time with nature
- ___ Find a spiritual connection or community
- ___ Be open to inspiration

- ___ Cherish your optimism and hope
- ___ Be aware of nonmaterial aspects of life
- ___ Try at times not to be in charge or the expert
- ___ Be open to not knowing
- ___ Identify what is meaningful to you and notice its place in your life
- ___ Meditate
- ___ Pray
- ___ Sing

- 5 = Frequently
- 4 = Occasionally
- 3 = Rarely
- 2 = Never
- 1 = It never occurred to me

- ___ Spend time with children
- ___ Have experiences of awe
- ___ Contribute to causes in which you believe
- ___ Read inspirational literature (talks, music, etc.)
- ___ Other:

Workplace or Professional Self-Care

- ___ Take a break during the workday (e.g. lunch)
- ___ Take time to chat with co-workers
- ___ Make quiet time to complete tasks
- ___ Identify projects or tasks that are exciting and rewarding
- ___ Set limits with your clients and colleagues
- ___ Balance your caseload so that no one day or part of a day is “too much”

_____ Arrange your work space so it is comfortable and comforting

_____ Get regular supervision or consultation

_____ Negotiate for your needs (benefits, pay raise)

_____ Have a peer support group

_____ Develop a non-trauma area of professional interest

_____ Other:

Balance

_____ Strive for balance within your work-life and workday

5 = Frequently

4 = Occasionally

3 = Rarely

2 = Never

1 = It never occurred to me

_____ Strive for balance among work, family, relationships, play and rest

IRB Forms

Oklahoma State University Institutional Review Board

Date: Tuesday, January 26, 2010 Protocol Expires: 11/30/2010

IRB Application No: ED08116

Proposal Title: Depression, Self-Care, and Health Literacy in Military Veterans Living With Hepatitis C

Reviewed and Processed as: Expedited
Continuation

Status Recommended by Reviewer(s): **Approved**

Principal Investigator(s) :

John Tassej
921 NE 13th St.
Oklahoma City, OK 73104

Sue Jacobs
431 Willard
Stillwater, OK 74078

Sunil Obediah ✓
434 Willard
Stillwater, OK 74078

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modifications to the research project approved by the IRB must be submitted for approval with the advisor's signature. The IRB office MUST be notified in writing when a project is complete. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

Signature :



Shelia Kennison, Chair, Institutional Review Board

Tuesday, January 26, 2010
Date

Oklahoma State University Institutional Review Board

Date: Monday, February 09, 2009
IRB Application No ED08116
Proposal Title: Depression, Self-Care, and Health Literacy in Military Veterans Living With Hepatitis C

Reviewed and Processed as: Expedited

Status Recommended by Reviewer(s): Approved Protocol Expires: 11/30/2010

Principal Investigator(s): John Tassej, Sue Jacobs, Sunil Obediah
921 NE 13th St., 431 Willard, 434 Willard
Oklahoma City, OK 73104 Stillwater, OK 74078 Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

X The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

- 1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Handwritten signature of Shelia Kennison, Chair
Institutional Review Board



The University of Oklahoma®
Health Sciences Center

INSTITUTIONAL REVIEW BOARD

IRB Number: 14194

Amendment Approval Date: November 19, 2010

November 22, 2010

John Tasse, Ph.D.
Dept of Psychiatry and Behavioral Sciences-COM
921 N.E. 13th, VAMC 183E
Oklahoma City, OK 73104-5076

RE: IRB No. 14194: Depression, Self-care, and Health Literacy in Military Veterans Living With Hepatitis C

Dear Dr. Tasse:

On behalf of the Institutional Review Board (IRB), I have reviewed your protocol modification form. It is my judgement that this modification allows for the rights and welfare of the research subjects to be respected. Further, it has been determined that the study will continue to be conducted in a manner consistent with the requirements of 45 CFR 46 or 21CFR 50.56 as amended; and that the potential benefits to subjects and others warrant the risks subjects may choose to incur.

This letter documents approval to conduct the research as described in:

Amend Form Dated: October 25, 2010

Survey Instrument Dated: October 25, 2010 Post-test questionnaire

Amendment Summary:

Revised post-test questionnaire to include all offered psychoeducational interventions.

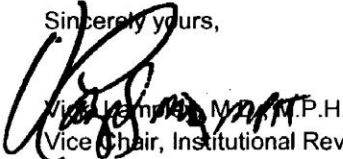
This letter covers only the approval of the above referenced modification. All other conditions, including the original expiration date, from the approval granted December 14, 2009 are still effective.

Any proposed change in approved research including the protocol, consent document, or other recruitment materials cannot be initiated without IRB approval except when necessary to eliminate immediate hazards to participants. Changes in approved research initiated without IRB approval to eliminate immediate hazards to the participant must be promptly reported to the IRB. Completion of approved research must be reported to the IRB.

If consent form revisions are a part of this modification, you will be provided with a new stamped copy of your consent form. Please use this stamped copy for all future consent documentation. Please discontinue use of all outdated versions of this consent form.

If you have any questions about these procedures or need additional assistance, please do not hesitate to call the IRB office at (405) 271-2045 or send an email to irb@ouhsc.edu.

Sincerely yours,


Virginia L. M. M.P.H.
Vice Chair, Institutional Review Board



The University of Oklahoma®
Health Sciences Center

INSTITUTIONAL REVIEW BOARD

IRB Number: 14194

Approval Date: December 14, 2009

December 15, 2009

John Tassej, Ph.D.
Dept of Psychiatry and Behavioral Sciences-COM
921 N.E. 13th, VAMC 183E
Oklahoma City, OK 73104-5076

RE: Depression, Self-care, and Health Literacy in Military Veterans Living With Hepatitis C

Dear Dr. Tassej:

Thank you for completing and returning the IRB Application for Continuing Review (Progress Report) for the above-referenced study. You have indicated that the study is still active. At the meeting held December 14, 2009 the Institutional Review Board (IRB) reviewed and approved the Progress Report and determined that this study was appropriate for continuation.

This letter documents approval to conduct the research as described in:

Cont Review Form Dated: November 30, 2009

Protocol Dated: November 30, 2009

Consent form - Subject - VA 10-1086 Dated: January 08, 2009

Priv - Prep to Research Dated: January 06, 2005

Survey Instrument Dated: November 30, 2009 SCA

Survey Instrument Dated: November 30, 2009 BDI

Survey Instrument Dated: November 30, 2009 TOFHLA

Please remember that any change in the protocol, consent document or other recruitment materials (advertisements, etc.) must be approved by the IRB prior to its incorporation into the study procedures. Submit a completed Protocol Modification form to the IRB office. Any serious, unanticipated adverse events involving participants enrolled in this study at OUHSC must be reported within four working days on the IRB Adverse Event Report form. Any event which involves the death of a participant must be reported no later than the next working day. All other adverse events (from outside sites) must be forwarded to the IRB office within 14 working days of receipt.

Approximately three months prior to the expiration date of this approval, you will be contacted by the IRB staff about procedures necessary to maintain this approval in an active status. Although every attempt will be made to notify you when a study is due for review, it is the responsibility of the investigator to assure that their studies receive review prior to expiration.

The approval of this study expires on November 30, 2010 and must be reviewed by the convened IRB prior to this time if you wish to remain in an active status. Federal regulations do not allow for extensions to be given on the expiration date.

If we can be of further assistance, please call the IRB office at (405) 271-2045 or send an email to irb@ouhsc.edu.

Sincerely yours,

Martina Jelley, M.D., M.S.P.H.

Chair, Institutional Review Board
Post Office Box 26901 • 1000 S.L. Young Blvd., Room 176
Oklahoma City, Oklahoma 73126-0901 • (405) 271-2045 • FAX: (405) 271-1677



VITA

Sunil Obediah

Candidate for the Degree of

Doctor of Philosophy

Thesis: HEALTH LITERACY, DEPRESSION, AND SELF CARE IN MILITARY VETERANS LIVING WITH HEPATITIS C

Major Field: Educational Psychology, Option Counseling Psychology

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Counseling Psychology at Oklahoma State University, Stillwater, Oklahoma in July, 2011.

Completed the requirements for the Master of Arts in Psychology at Pepperdine University, Malibu, California in 2002.

Completed the requirements for the Bachelor of Arts in Psychology at California State University, Northridge, Northridge, California in 1996.

Experience:

Pre-Doctoral Psychology Intern. The University of Southern California, Los Angeles, California. APA Accredited Pre-Doctoral Internship. August 2008 to July 2009.

Doctoral Student Intake Counselor. Oklahoma State University, Stillwater, Stillwater, Oklahoma. August 2007 to May 2008.

Doctoral Student Counselor. Department of Veterans Affairs, VAMC Medical Center, Oklahoma City, Oklahoma. August 2005 to August 2006.

Professional Memberships:

Member – Psy Chi, The National Honor Society in Psychology

Student Member – Western Psychological Association

Name: Sunil Obediah

Date of Degree: July 2011

Institution: Oklahoma State University

Location: Stillwater, Oklahoma

Title of Study: HEALTH LITERACY, DEPRESSION, AND SELF CARE IN
MILITARY VETERANS WITH HEPATITIS C

Pages in Study: 85 Candidate for the Degree of Doctor of Philosophy

Major Field: Educational Psychology with option in Counseling Psychology

Scope and Method of Study: Health literacy refers to a person's cognitive and behavioral ability to utilize health-related information toward the promotion and maintenance of health. This study explored the functional health literacy, experience of depression, and experience of self-care in military veterans diagnosed with Hepatitis C (HCV) at a southwest Veterans Administration Medical Center (VAMC). *Method:* Functional health literacy, experience of depression, and experience of self-care of 30 military veterans were assessed via responses to the Test of Functional Health Literacy in Adults, the Beck Depression Inventory – Fast Screen, a Self Care assessment, and questions regarding supplemental information provided by either psychoeducational interventions facilitated by the VAMC and/or non-VAMC related means (i.e., media, public literature, etc.).

Findings and Conclusions: *Results:* Nonparametric analyses were used to address questions regarding the relationship between health literacy and depression; and, health literacy and self-care. No statistically significant associations were found between health literacy and depression or health literacy and self-care. Descriptive observations were made regarding a subgroup of 13 study participants who completed self-report instruments only at the time of their initial HCV diagnosis and a subgroup of 17 participants who completed the self-report instruments both at the time of their initial HCV diagnosis and three months post diagnosis. Further, observations were made regarding education-seeking behavior, knowledge of viral count, and response to VAMC-based psychoeducational interventions. *Implications:* While there were no statistically significant findings in this study, future replication may afford more meaningful analyses with a larger sample size. It is encouraged that future replications of this study should include a larger, more representative population of veterans diagnosed with HCV. Further, motivators for education-seeking behaviors should be assessed along with possible effects of substance use on depression management among this population.

ADVISOR'S APPROVAL: Dr. Sue C. Jacobs

ADVISOR'S APPROVAL: Dr. Sue C. Jacobs
