

PREVALENCE OF DEPRESSIVE FEELINGS IN OLDER ADULT MEDICARE  
HOME HEALTH BENEFICIARIES IN TEXAS

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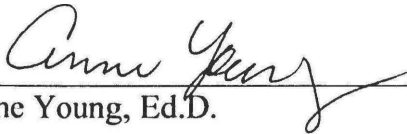
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I am submitting herewith a dissertation written by Kelly S. Vandenberg entitled "Prevalence of Depressive Feelings in Older Adult Medicare Home Health Beneficiaries in Texas." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy with a major in Nursing.



Ann Malecha, Ph.D., Major Professor

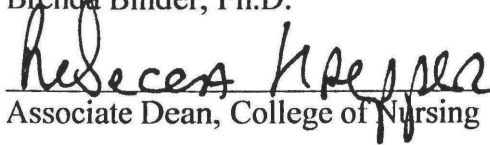
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## DEDICATION

I dedicate this study to my husband.

Thomas Scott Vandenberg “Van”

We all have treasures in our lives, even when times are demanding.

I have been blessed by God to have had such a wonderful encounter

that changed my life for good.

I also dedicate this study to my daughter

Sarah Katherine Vandenberg.

She is the angel that assisted my journey to understanding the joys in

my life.

## ACKNOWLEDGMENTS

It is my pleasure to acknowledge two people who have accepted me without judgment, obligations, expectations, or need, Lloyd and Iva Vandenberg.

In an unexpected way, I was blessed to be connected to two people that have given me a tremendous joy.

I also acknowledge Susan Ring who taught me that God put us on this earth together. Even research is not done alone. To my friends Derotha Presley and Joyce Travillo who supported me even when I wanted to give up. To Ann Malecha, Anne Young, Mary Watson, and Brenda Binder who walked with me during this journey.

## ABSTRACT

KELLY S. VANDENBERG

### PREVALENCE OF DEPRESSIVE FEELINGS IN OLDER ADULT MEDICARE HOME HEALTH BENEFICIARIES IN TEXAS

DECEMBER 2008

This study examined the prevalence of depressive feelings in older adults to determine if depressive feelings increased the length of stay. This quantitative analysis used a national database of Medicare home health beneficiaries, who were age 65 years and older in the state of Texas in 2005. Depressive mood was the largest reported depressive feeling ( $n = 25,837$ ; 21.9%). Specific depressive feelings, sense of failure or self reproach, hopelessness, thoughts of death, and thoughts of suicide were found in less than one percent of the population. Therefore, all depressive feelings were grouped into one variable called *at least one depressive feeling*.

Sample size was 118,172 beneficiaries. Beneficiaries with at least one depressive feeling represented 22.7% ( $n = 26,808$ ) of the sample. The sample was mostly Caucasian 65.6% ( $n = 77,562$ ), female 66% ( $n = 78,733$ ), with a mean age of 78.19 years ( $SD = 7.756$ ), and a mean length of stay of 56.75 days ( $SD=48.699$ ). Females ( $n = 18,820$ ; 15.9%) reported more depressive feelings than males ( $n = 7,988$ ; 6.9%). Of the 26,808 beneficiaries who reported depressive feelings, the largest ethnic group was Caucasians ( $n = 17,935$ ; 66.9%) followed by Hispanics ( $n = 6,165$ ; 23%) and African Americans ( $n = 2,708$ ; 10.1%).

Using a multivariate regression analysis, differences between age, ethnicity, and the presence of *at least one depressive feeling* was significant ( $F = 3.774$ ;  $df=2/118,154$ ;  $p = .023$ ) when predicting the length of stay. Although Hispanics and African-Americans had longer lengths of stay compared to Caucasians regardless of reported depressive feelings, the slopes comparing groups were significant. There was a significant increase in length of stay, with Caucasians age 70 who reported depressive feelings compared to Hispanics age 70 and 85 or African-Americans age 70 and 85 who reported depressive feelings.

Future investigation is needed to determine if Hispanics and African-Americans do not report depressive feelings due to cultural and social influences or barriers. Although thought of suicide was represented by 0.4% ( $n = 468$ ) beneficiaries in the sample, additional investigation of this specific depressive feeling is needed due to the severity of the consequences.

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## CHAPTER I

### INTRODUCTION

Approximately eight to twenty percent of older adults in the community suffer from depressive feelings (United States Department of Health and Human Services [USDHHS], 1999). In primary care settings, 37% of older adults suffer from depressive feelings that do not meet the criteria for the diagnosis of major depression (USDHHS, 1999). Additionally, older adults in home health settings report depressive feelings two times more than those in primary care (Bruce et al., 2002). These depressive feelings can cause distress and functional impairments requiring a significant increase in effort to remain near normal functioning (American Psychiatric Association [APA], 2000; Penninx, Guralnik, Ferrucci, Simonsick, Deeg, & Wallace, 1998).

The literature revealed a variety of terms and criteria when describing the symptoms of older adults who suffer from depressive feelings and do not meet the criteria for a diagnosis of clinical depression. Some terms or concepts that are used interchangeably with the term depressive feelings include depressive symptoms, minor depression, and subsyndromal or subthreshold depression (Bruce et al., 2004; Cole & Dendukuri, 2003; APA, 2000; Druss, Rohrbaugh, & Rosenheck, 1999; Katon, Lin, Russo, & Unutzer, 2003; Madigan, 2002; Sharp & Lipsky, 2002; USDHHS, 1999). At this time, diagnostic guidelines for depressive feelings have not been developed by the

APA (APA, 2000; USDHHS, 1999). However, the APA has initiated some guidelines for research on minor depression (APA, 2000).

Understanding the impact of depressive feelings on older adults in home health care settings was in line with Healthy People 2010's objectives (USDHHR, 2000b). Healthy People 2010 encourages the public health community to investigate depressive feelings and increase treatment for recognized depression. In addition, 13 federal agencies have come together to form the Federal Interagency Forum on Aging-Related Statistics, and determined that measuring depressive feelings would be a good indicator of general well-being (Federal Interagency Forum on Aging-Related Statistics, 2004).

Although there was limited research on depressive feelings in the home health setting for older adults, preliminary research indicated that depressive feelings were also associated with increased age, chronic health problems, gender (female), and increased length of stay in health care settings (APA, 2000; Bruce et al., 2002; Federal Interagency Forum on Aging-Related Statistics, 2004; Peng, Navaie-Waliser, & Feldman, 2003; USDHHS, 1999, 2000b). In particular, Medicare home health services provide care for a population that has an increase risk for depressive feelings because they have had a significant change in health that is usually associated with complex and chronic health conditions requiring hospitalization and subsequent home care (Chapman, Perry, & Strine, 2005; Cole & Dendukuri, 2003; Harper-Jaques, 2004; Shaughnessy et al., 1994; Tsai, Tak, Moore, & Palencia, 2002; Wells & Burman, 1991). Unfortunately, few studies have investigated depressive feelings in the home health environment and no studies were

reported on the Medicare home health population, who appeared to be at the greatest risk for experiencing depressive feelings.

Demographic characteristics from preliminary studies suggested that vulnerable older adults with depressive feelings were more likely to be female, white, and have chronic health conditions often associated with increases in depressive feelings (APA, 2000; Bruce et al., 2002; Federal Interagency Forum on Aging-Related Statistics, 2004; Peng, Navaie-Waliser, & Feldman, 2003; USDHHS, 1999, 2000b). However, racial differences for depressive feelings in the older adult home health population were inconclusive and recommendations from the Surgeon General indicated the need for additional investigation (USDHHS, 1999).

In 2002, the Federal Interagency Forum on Aging-Related Statistics determined that measuring depressive feelings would be a good indicator of general well-being because older adults with physical illness reported more depressive feelings, and more health care resources were utilized by older adults who reported depressive feelings. In addition, 20% of older adults ages 85 years and older and 13% of older adults ages 65 to 69 years had four or more depressive feelings on the Center for Epidemiological Studies Depression Scale. The number of depressive feelings experienced by these older adults was deemed clinically relevant (Federal Interagency Forum on Aging-Related Statistics, 2004).

This study used the term *depressive feelings* as defined by the Center for Medicare and Medicaid Services (CMS) standardized data collection tool called the

Outcome and Assessment Information Set (OASIS). The OASIS defined depressive feelings as having five subcomponents depressed mood (e.g., feeling sad, tearful), sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide (USDHHS, 1999). Literature revealed additional information on the following specific depressive feelings investigated in this study.

Depressed mood was defined as reports or observations of feeling sad or tearful in OASIS item 590 (USDHHS, 1999). Peng et al., (2003) explored differences in health outcomes between different ethnic groups in home health patients 75 years and older using OASIS item 590, and reported that the largest group that experienced depressed mood was white females.

Sense of failure or self reproach included in the APA criteria for depression was used in the development of the OASIS (APA, 2000; USDHHS, 1999). Although the importance of this variable is distinguished in these largely used instruments, only one article provided clarification of the variable. Shapiro (2006) defines self reproach as a sense of guilt for an unavoidable mistake or action that includes a sense of self punishment.

Hopelessness was the only variable under OASIS item 590 that did not appear in the APA criteria for depression. Stern, Dhanda, and Hazuda (2001) reported an increase in mortality when hopelessness was present with or without depression. Recommendations from the study indicated further investigation to determine if a

relationship exists between hopelessness and depressed feelings or if they were isolated symptoms.

Thoughts of death were under OASIS item 590 and stemmed from the depression criteria from the APA. The APA clarified *thoughts of death* as occurring daily and not just a fear of dying (APA, 2000). There was an absence of recent literature in the United States for the home health population on *thoughts of death*.

Thoughts of suicide have been pushed to the top of the public health agenda in the United States. The numbers of suicides in older adults has increased and are highest in older Caucasian men age 85 years and older in the United States (Szanto et al., 2002). Bruce et al., (2004) reported that additional interventions for those who report suicidal ideations decrease depressive mood. Depression is the strongest risk factor for suicide (Bruce et al., 2004). The investigation into the connection between depressive feelings and suicide is in need.

### Problem of Study

The purposes of this study were

1. to determine the prevalence of depressive feelings (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide) in Medicare home health older adults over the age of 65 at the start of care in Texas during 2005:
2. to describe the relationship between depressive feelings (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of

suicide) and demographic characteristics (age, race, gender) between Medicare home health older adults over the age of 65, at the start of care in Texas during 2005:

3. to determine if depressive feelings (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide) predict length of stay in Medicare home health beneficiaries over the age of 65 at the start of care in Texas during 2005 who were discharged into the community.

### Rationale

The prevalence of depressive feelings in older adults in primary care settings has been estimated at 37% (USDHHS, 1999). Although older adults who receive home health are twice as likely to suffer from depressive feelings compared to older adults in primary care settings (Bruce et al., 2002), there was a lack of published studies that reported the prevalence of depressive feelings in the Medicare home health population. However, preliminary research for all settings indicated that depressive feelings experienced by older adults results in functional impairments and significant distress that was clinically relevant (APA, 2000). In addition, more utilization of health care resources were shifted to the care of older adults experiencing depressive feelings ( Druss et al., 1999; Federal Interagency Forum on Aging-Related Statistics, 2004; Katon et al., 2003).

Studies on the relationship between depressive feelings and cost of health care were conducted with adults 60 years and older with depressive feelings. One sample of 11,679 patients over the age of 60 years in primary care settings found increases in costs for patients with depression compared to those without depression. Healthcare cost for

those patients with depression and those with depressive feelings were the same (Katon et al., 2003). Another study of 1,360 medical and surgical in patients at the Veterans Administration not receiving psychiatric treatment, found a significant increase in length of stay for those with increased depressive feelings compared to those without depressive feelings (Druss et al., 1999). Little is known about depressive feelings in homebound older adults and no research has been reported to determine the effects of depressive feelings in the Medicare home health population.

Healthy People 2010 alerted primary care providers that depressive feelings were in need of investigation (USDHHR, 2000b), and thirteen federal agencies united and reported the statistical need for additional study on depressive feelings in older adults (Federal Interagency Forum on Aging-Related Statistics, 2004). Medicare home health beneficiaries are required to meet strict guidelines, discussed further under definitions, in order to qualify for health care in the home (Chapman, Perry, & Strine, 2005; Cole & Dendukuri, 2003; Harper-Jaques, 2004; Shaughnessy et al., 1994; Tsai, Tak, Moore, & Palencia, 2002; Wells & Burman, 1991). Since this population reflects more complex health issues and recent changes in health status, it was hypothesized that their reports of depressive feelings would be twice that of the primary care setting. Research on depressive feelings in the Medicare home health population has not been located during the literature search. However, one study on depressed mood, a subcomponent of depressive feelings, reported depressed mood at discharge related strongly to reports or observations of depressed mood on admission into home health care (Peng et al., 2003).



Approximately 1,700 certified Medicare home health agencies were located in the state of Texas (*Home Health Compare*, 2003). California, Florida, and Texas experienced the highest Medicare enrollment of older adults, 65 years and older in 2004. Of these three states, Texas received the highest reimbursement (\$1,334,025,246) for Medicare home health services. Although Texas (237,754) was second only to Florida (260,706) for number of beneficiaries who received Medicare home health services, Texas demonstrated the highest number of visits (10,931,833) and the highest average reimbursement per beneficiary (\$5,611) (CMS, 2004).

#### Theoretical Framework

The framework for this study was based on the Adversities, Beliefs, and Consequences model (ABC) developed in 1955 by Albert Ellis (Ellis, 2001). The model was developed to support a cognitive approach to psychotherapy. The basic assumption of the ABC model was that a person will behave and feel based on the assumption of believing-emoting-behaving (Ellis, 2001).

Ellis used a mathematical equation to describe the ABC model where  $A \times B = C$  (see Table 1). This equation posits that adversities (A) promote beliefs (B) that result in consequences (C). Adversities were defined as phenomenon that interferes with someone's ability to function or to be happy. Beliefs were defined as the emotional and behavioral thought processes of an individual. These beliefs can include rational or irrational thought processes. Consequences were defined as the outcome beliefs that were triggered by adversities. Consequences could be positive or negative depending on the

interaction between the adversity and beliefs of the individual (Ellis, 2001). Ellis (2001) focused on beliefs and explored the differences between rational and irrational beliefs. When certain adversities arise and prompt the increase of irrational beliefs (IBs) then people have an increased risk for negative consequences. Ellis (2001) believed by changing irrational beliefs to more rational beliefs, positive outcomes would be promoted.

Table 1

*ABC Model Connected to Study Variables*

Model Concept	Concept Definition	Study Variables
Adversities	Interferes with someone's ability to function or to be happy	Age Ethnicity Gender
Beliefs	Emotional and behavioral thought processes	5 Depressive feelings 1. Depressed mood 2. Sense of failure or self reproach 3. Hopelessness 4. Recurrent thoughts of death 5. Thoughts of suicide
Consequences	Results of beliefs	Length of stay

Ellis (2001) recognized that certain adversities promote increases in self-destructive irrational behaviors. For example, in this study the home health population

faced adversities such as a change in health requiring hospitalization and follow-up care in the home. These adversities prompted a belief response that may be rational or irrational. One theory proposed that increases in irrational behaviors (IBs) would promote negative consequences (Ellis, 2001). This study focused on depressive feelings as irrational beliefs. These depressive feelings or irrational beliefs included reported or observed: (a) depressed mood, (b) sense of failure or self reproach, (c) hopelessness, (d) recurrent thoughts of death, and (e) thoughts of suicide.

The C in Ellis' (2001) model represented the consequences of irrational beliefs. Although increases in rational beliefs can promote positive consequences, increases in IBs can promote negative consequences. For example, increased depressive feelings would promote consequences such as depression or extended length of stay.

Certain adversities, (A) increase irrational behaviors (IBs) in individuals, lead to negative consequences (C) (Ellis, 2001). This study investigated selected adversities (A) and prevalence of depressive feelings (B) in Medicare patients and their length of stay (C) in home health care (see Table 1). Based on the literature review, the adversities (A) selected for this study included age, gender, and race. Additionally, the consequence (C) selected for this study included length of stay in home health care. Preliminary research indicated that the presence of depressive feelings may result in increase length of stay (Druss et al., 1999).

### Assumptions

The assumptions using Ellis' theoretical framework include:

1. A human will behave and feel based on how they think.
2. All humans face adversities.
3. Rational beliefs promote positive consequences.
4. Irrational beliefs promote negative consequences.
5. Consequences are the result of adversities and beliefs.

### Research Questions

This study investigated the following overall question:

What is the prevalence of each depressive feelings and combinations of depressive feelings (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide) at the start of care in Medicare home health beneficiaries 65 years and older in Texas during 2005?

Using hierarchical regression analyses, the study investigated the following eight questions (Table 2).

Table 2

*Each Depressive Feeling and All Combinations of Depressive Feelings (df)*

# Of df	Combinations defined
One	<ol style="list-style-type: none"> <li>1. Depressed Mood</li> <li>2. Sense of Failure or Self Reproach</li> <li>3. Hopelessness</li> <li>4. Recurrent Thoughts of Death</li> <li>5. Thoughts of Suicide</li> </ol>
Two	<ol style="list-style-type: none"> <li>1. Depressed Mood and Sense of Failure or Self Reproach</li> <li>2. Depressive Mood and Hopelessness</li> <li>3. Depressive Mood and Recurrent Thoughts of Death</li> <li>4. Depressive Mood and Thoughts of Suicide</li> <li>5. Sense of Failure or Self Reproach and Hopelessness</li> <li>6. Sense of Failure or Self Reproach and Recurrent Thoughts of Death</li> <li>7. Sense of Failure or Self Reproach and Thoughts of Suicide</li> <li>8. Hopelessness and Recurrent Thoughts of Death</li> <li>9. Hopelessness and Recurrent Thoughts of Suicide</li> <li>10. Recurrent Thoughts of Death and Thoughts of Suicide</li> </ol>

Table 2 (Continued)

*Each Depressive Feeling and All Combinations of Depressive Feelings (df)*

# Of df	Combinations defined
Three	<ol style="list-style-type: none"> <li>1. Depressive Mood and Sense of Failure or Self Reproach and Hopelessness</li> <li>2. Depressive Mood and Sense of Failure or Self Reproach and Thoughts of Death</li> <li>3. Depressive Mood and Sense of Failure or Self Reproach and Thoughts of Suicide</li> <li>4. Sense of Failure or Self Reproach and Hopelessness and Recurrent Thoughts of Death</li> <li>5. Sense of Failure or Self Reproach and Hopelessness and Recurrent Thoughts of Suicide</li> <li>6. Hopelessness and Recurrent Thoughts of Death and Thoughts of Suicide</li> </ol>

Table 2 (Continued)

*Each Depressive Feeling and All Combinations of Depressive Feelings (df)*

# Of df	Combinations defined
Four	<ol style="list-style-type: none"> <li>1. Depressive Mood and Sense of Failure or Self Reproach and Hopelessness and Recurrent Thoughts of Death</li> <li>2. Depressive Mood and Sense of Failure or Self Reproach and Hopelessness and Thoughts of Suicide</li> <li>3. Sense of Failure or Self Reproach and Hopelessness and Recurrent Thoughts of Death and Thoughts of Suicide</li> </ol>
Five	<ol style="list-style-type: none"> <li>1. Depressive Mood and Sense of Failure or Self Reproach and Hopelessness and Recurrent Thoughts of Death and Thoughts of Suicide</li> </ol>

1. Do depressive feelings and all combinations of depressive feelings (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide) predict the length of stay for Medicare home health beneficiaries discharged to the community, during 2005 in the state of Texas?
2. Does an interaction between age and depressive feelings and all combinations of depressive feelings (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide) add anything over and above the

two variables by themselves when predicting length of stay for Medicare home health beneficiaries age 65 years and older at the start of care in Texas for 2005?

3. Does an interaction between gender and depressive feelings and all combinations of depressive feelings (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide) add anything over and above the two variables by themselves when predicting length of stay for Medicare home health beneficiaries age 65 years and older at the start of care in Texas for 2005?
4. Does an interaction between ethnic groups and depressive feelings and all combinations of depressive feelings (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide) add anything over and above the two variables by themselves when predicting length of stay for Medicare home health beneficiaries age 65 years and older at the start of care in Texas for 2005?
5. Does an interaction between age and gender and depressive feelings and all combinations of depressive feelings (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide) add anything over and above the two variables by themselves when predicting length of stay for Medicare home health beneficiaries age 65 years and older at the start of care in Texas for 2005?
6. Does an interaction between age and ethnic groups and depressive feelings and all combinations of depressive feelings (depressed mood, sense of failure or self



reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide) add anything over and above the two variables by themselves when predicting length of stay for Medicare home health beneficiaries age 65 years and older at the start of care in Texas for 2005?

7. Does an interaction between gender and ethnic groups and depressive feelings and all combinations of depressive feelings (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide) add anything over and above the two variables by themselves when predicting length of stay for Medicare home health beneficiaries age 65 years and older at the start of care in Texas for 2005?
8. Does an interaction between age, gender, and ethnic groups and depressive feelings and all combinations of depressive feelings (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide) add anything over and above the two variables by themselves when predicting length of stay for Medicare home health beneficiaries age 65 years and older at the start of care in Texas for 2005?

#### Definition of Terms

The following definitions are used for this study:

1. Medicare home health beneficiaries were conceptually defined by the Center for Medicare and Medicaid Services and the Department of Health and Human Services as persons receiving Medicare benefits, and health care in a home setting because

they require intermittent skilled services for post-acute-care needs and chronic conditions. Beneficiaries must be homebound and require skilled nursing or skilled therapy as ordered by a physician (CMS & USDHHS, 2004). In addition, only home health agencies participating under Medicare regulations are allowed to provide services. No time limits are imposed on the length of care. However, the beneficiary must meet eligibility criteria during the entire time care is provided. These benefits differ from eligibility criteria for other programs including hospice care and adult day care services (CMS & USDHHS, 2004).

The operational definition for Medicare home health beneficiaries used in this study included all Medicare beneficiaries age 65 years and older entered into the OASIS database during the year 2005 in Texas. CMS database OASIS item 063 identified Medicare beneficiaries' home health status and item MO050 identified beneficiaries' state of residence. All entries coded as 01 (start of care) in item 100 (the reason for assessment) were included in this study. In addition, only those beneficiaries who were admitted and discharged during 2005 were included. If the beneficiary received more than one episode of care from home health services during 2005, the first entry remained and additional duplications were excluded in order to meet the assumption for independence in statistical analyses. All eligible beneficiaries were required to meet the criteria as stated by CMS and USDHHS in the state of Texas for (CMS & USDHHS, 2004). Beneficiaries who received care under hospice or adult day care programs were not used in this study.

2. Depressive feelings were conceptually defined by Albert Ellis (2001) as self-defeating or irrational beliefs (IB's) produced by a confrontation with an adverse (A) event. The emotional responses from IB's are depressed feelings. These depressed feelings can promote negative consequences (C) such as increased lengths of stay which reflect additional time needed for health care (Ellis, 2001).

The operational definition used in this study was defined as all data entered into OASIS item 590 at the start of care on Medicare home health beneficiaries 65 years and older, who qualified for Medicare home health services in Texas for the year 2005. OASIS item 590 was titled *Depressive feelings reported or observed in patient* and includes item responses developed from DSM-IV (Hittle et al., 2002a). There were six categories for item 590 that were coded 0 for no and 1 for yes. These six categories were depressed mood (e.g., feeling sad, tearful), sense of failure or self reproach, hopelessness, recurrent thoughts of death, thoughts of suicide, none of the above feelings observed or reported.

3. Depressed mood was conceptually defined as the observation or report of feeling sad or tearful (Hittle et al., 2002a). The operational definition used in this study was defined as all data entered into OASIS item 590 at the start of care on Medicare home health beneficiaries age 65 years and older, who qualified for Medicare home health services in Texas for the year 2005. OASIS item 590 was titled *Depressive feelings reported or observed in patient* and included item responses developed from DSM-IV

(Hittle et al., 2002a). One of the six categories listed in item 590 was depressed mood. This category was coded 0 for no and 1 for yes.

4. Sense of failure or self reproach was conceptually defined as “the act or an instance of charging oneself with a fault or mistake” (Berube et. al., 1985, p. 1113). Shapiro (2006) defined the term further by describing someone with excessive personal responsibility from failures or mistakes not capable of avoiding and resulting in a form of self punishment.

The operational definition used in this study was defined as all data entered into OASIS item 590 at the start of care on Medicare home health beneficiaries 65 years and older, who qualified for Medicare home health services in Texas for the year 2005. OASIS item 590 was titled *Depressive feelings reported or observed in patient* and included item responses developed from DSM-IV (Hittle et al., 2002a). One of the six categories listed in item 590 is sense of failure or self reproach. This category was coded 0 for no and 1 for yes.

5. Hopelessness was conceptually defined as “a psychologic condition characterized by a belief that all efforts to alter one’s life situation will be fruitless” (Glanze, et al., 1986, p. 540). The operational definition used in this study was defined as all data entered into OASIS item 590 at the start of care on Medicare home health beneficiaries 65 and older, who qualified for Medicare home health services in Texas for the year 2005. OASIS item 590 is titled *Depressive feelings reported or observed in patient* and included item responses developed from DSM-IV (Hittle et al., 2002a).

Hopelessness was one of six categories listed in item 590. This category was coded 0 for no and 1 for yes.

6. Recurrent thoughts of death were conceptually defined as constant thoughts of death. It does not include fears of dying, but daily thoughts of death (APA, 2000). The operational definition used in this study was defined as all data entered into OASIS item 590 at the start of care on Medicare home health beneficiaries 65 years and older, who qualified for Medicare home health services in Texas for the year 2005. OASIS item 590 is titled *Depressive feelings reported or observed in patient* and included item responses developed from DSM-IV (Hittle et al., 2002a). One of the six categories listed in item 590 was recurrent thoughts of death. This category was coded 0 for no and 1 for yes.
7. Thoughts of suicide were conceptually defined as thoughts of *taking one's own life* (Glanze et al., 1986). The operational definition used in this study was defined as all data entered into OASIS item 590 at the start of care on Medicare home health beneficiaries 65 years and older, who qualified for Medicare home health services in Texas for the year 2005. OASIS item 590 was titled *Depressive feelings reported or observed in patient* and included item responses developed from DSM-IV (Hittle et al., 2002a). One of the six categories listed in item 590 was thoughts of suicide. This category was coded 0 for no and 1 for yes.
8. Age was conceptually defined as the period of time someone exists (Berube et al., 1985). The operational definition used in this study was defined as all data entered

into OASIS item 030 (start of care date) and OASIS item 066 (birth date) (Hittle et al., 2002a). Data length for item 030 and item 066 contained 8 characters that included year, month, and day. To determine age on Medicare beneficiaries 65 years and older, who qualified for Medicare home health services in Texas for the year 2005 OASIS item 066 was subtracted from item OASIS item 030.

9. Ethnicity was conceptually defined as “A local geographic or global human population distinguished as a more or less distinct group by genetically transmitted physical characteristics” (Berube et. al., 1985, p. 1020). The operational definition used in this study was defined as all data entered into OASIS item 140 at the start of care on Medicare home health beneficiaries 65 years and older, who qualified for Medicare home health services in Texas for the year 2005. OASIS item 140’s seven categories were coded 0 for no and 1 for yes. The seven categories included American Indian or Alaska Native, Asian, Black or African-American, Hispanic or Latino, Native Hawaiian or Pacific Islander, White, and unknown (Hittle et al., 2002a).
10. Gender was conceptually defined as “A set of two or more categories, as masculine, feminine “(Berube et al., 1985, p. 552). The operational definition used in this study was defined as all data entered into OASIS item 069 on Medicare beneficiaries 65 years and older, who qualified for Medicare home health services in Texas for the year 2005. Codes for item 069 were 1 for male and 2 for female (Hittle et al., 2002a).

11. Length of stay was conceptually defined as total number of days care was provided to a beneficiary in a home care environment. The operational definition used in this study was defined as all data entered into OASIS item 030 (start of care date) and item 906 (Discharge Transfer/Death date) on Medicare beneficiaries 65 years and older, who qualified for Medicare home health services in Texas for the year 2005 and identified in item 870 (discharge disposition coded as 1 in database) as being discharged into the community (Hittle et al., 2002a). Calculation for length of stay was determined by subtracting the start of care date item 030 from the discharge date item 906 for Medicare home health beneficiaries who meet these criteria. OASIS item 030 and item 906 had 8 characters in data length that include year, month, and date.

#### Limitations

Limitations expected in this study were problems associated with the collection of data. While training has been provided for healthcare personnel, the OASIS data collection was exclusively conducted via interview (CMS & USDHHS, 2004). The expression or reports of depressive feelings of patients from various cultures and the stigma of a mental illness may limit the accuracy of the information from the beneficiary (Brown, Bruce, Raue, & Nassisi, 2004).

These unknown limits or barriers also suggested an expected limitation in the use of Ellis' (2001) theoretical framework. Beneficiaries who deny depressive feelings that are present due to these barriers would not be identified in the current framework. A concern since the framework depends on the responses for depressive feelings.

A second limitation was based on study design. The focus of the investigation only includes those beneficiaries who were discharged to the community, limits the generalizability to the entire home health population. Beneficiaries who were transferred to another facility, location, hospital, or discharged due to death were not included in this study.

The last limitation also associated with the study design. Due to the statistical regression analyses and the need to meet the assumption for independence, the study required that only the first admission be included in the data analyses, and additional admissions were deleted. The unknown percentages of those first admissions not reflected as a discharge to the community would eliminate the beneficiary from study. The impact of this decision is unknown.

### Summary

With 37% of patients in primary care settings exhibiting depressive feelings and preliminary studies indicating that depressive feelings were twice as likely in home health patients, recommendations suggested that additional investigation of depressive feelings in home health was in need (Bruce et al., 2002). Federal agencies developed objectives specifically for depressive feelings in the elderly (Federal Interagency Forum on Aging-Related Statistics, 2004; USDHHS, 2000a). However, no studies have investigated depressive feelings in the Medicare home health population.

Increases in depressive feelings have been linked with increases in age and are more common in the female population (Bruce et al., 2002; Federal Interagency Forum



on Aging-Related Statistics, 2004; USHHS, 1999). Although some information suggested that depressive feelings occurred more frequently in the white population, the literature was vague and recommended additional study (Bruce et al., 2002; USDHHS, 1999). In addition, the length of stay outcome in older home health adults has not been reported. However, one study at an in-patient facility reported that increases in depressive feelings were associated with increased lengths of stay (Druss et al., 1999).

Using Albert Ellis (2001) concepts in his ABC theory, this study investigated the prevalence and demographic characteristics (age, ethnicity, and gender) of depressive feelings in the Medicare home health beneficiaries in Texas for 2005. In addition, this study analyzed whether depressive feelings predicted length of stay (consequence). Interactions between depressive feelings and age, ethnicity, and gender were also investigated to determine if there were any common activators that may require additional study. And finally, this study investigated if the length of stay, a consequence, was longer for those with depressive feelings compared to those without depressive feelings at the start of care for beneficiaries who were discharged into the community.

Data for this Medicare population has been collected at a Federal level. This research used Federal data for the state of Texas. Since the state of Texas had a large number of Medicare beneficiaries and experienced the highest reimbursement per beneficiary and highest number of visits in 2004 (CMS, 2004), it was a prime starting point for this study.

Understanding the impact of depressive feelings in older adults on admission to home health care services could alert the nurse and benefit the patient. Armed with more information on the impact of depressive feelings (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide) would assist the nurse in identifying the need for additional mental health assessment and possible services. In addition, the nurse would have the knowledge to adjust the plan of care to provide higher quality of care to Medicare home health beneficiaries.

## CHAPTER II

### LITERATURE REVIEW

The purpose of this chapter was to review literature that is pertinent to the research questions of this study. The Cumulative Index to Nursing and Allied Health Literature (CINAHL), Psychology and Behavioral Sciences Collection, and PsycINFO (OVID) were databases used to search keywords. Keywords included depressed mood, hopelessness, self reproach, thoughts of suicide, thoughts of death, depressive symptoms, depressive feelings, minor depression, subsyndromal depression, and subthreshold depression. The literature review began with a national overview of objectives related to depressive feelings. The majority of the literature review focused on depressive feelings. Since limited research existed on older adult home health patients, additional studies on depressive feelings were also included. In addition, the overview of depressive feelings associated concepts of, depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide were discussed more in depth, as well as demographic variables of age, gender, and ethnicity associated with depressive feelings.

#### National Health Objectives: Depression and Depressive Feelings

The older adult population faces unique circumstances contributing to under recognized depression and depressive feelings. Strict criteria used to clinically diagnose depression, stigma attached to depression, complex health problems, acceptance of

normal aging processes, and social responses to loss often divert the assessment and diagnosis of depression (USDHHS, 1999). National objectives prompted the research community to investigate risk factors and implement screening methods to help recognize and treat elderly individuals earlier and more appropriately (Federal Interagency Forum on Aging-Related Statistics, 2004; Sharp & Lipsky, 2002; USDHHS, 2000b). Since depressive feelings alone have been associated with a significant impact on functional abilities of older adults and health care cost, additional investigation into depressive feelings were needed (APA, 2000).

Two major federal agencies published recommendations on addressing depressive feelings. The Federal Interagency Forum on Aging and Related Statistics was established in 1986 to assist the collaboration between thirteen federal agencies on the collection of statistical data in the aging population (Federal Interagency Forum on Aging-Related Statistics, 2004). This forum includes the Administration on Aging, Agency for Healthcare Research and Quality, Bureau of Labor Statistics, Census Bureau, CMS, Department of Veterans Affairs, National Center for Health Statistics, National Institute on Aging, Office of the Assistant Secretary for Planning and Evaluation of Health and Human Services, Office of Management and Budget, and the Social Security Administration (*Description of the Forum*, 2000). Depressive feelings have been identified by the forum as a leading health indicator (indicator eighteen) in older adults (Federal Interagency Forum on Aging-Related Statistics, 2004).

The second major agency, the USDHHS (2000a), developed 467 national objectives, Healthy People 2010, to address health issues in the United States. In 1979, planning for Healthy People was initiated by the Surgeon General. A 10-year plan was presented in 1990 and again in 2000. Healthy People 2010, developed by the U.S. Department of Health and Human Services (HHS) involved scientific experts in Federal agencies to lead the nation into a healthy future by focusing on developed national objectives. The Secretary's Council on National Health Promotion and Disease Prevention Objectives for 2010, Healthy People Steering Committee, Human and Health Services Office of Public Health and Science, Office of Disease Prevention and Health Promotion, the Healthy People Consortium and the public all shared in the efforts to develop objectives and focus research in these areas. Healthy People 2010 objective on depressive feelings is addressed in 18-9b (USDHHS, 2000c).

These national organizations publish ongoing reports and statistics. Currently, the Federal Interagency Forum on Aging-Related Statistics, Healthy People 2010, and the United States Surgeon General reports suggest that increases in age are associated with increases in depressive feelings. However, these reports did not specifically differentiate based on type of health care environments. An analysis of literature by the office of Surgeon General found increased depressive feelings with age, but decreased depression diagnoses (USDHHS, 1999). The report found that the majority of older adults who committed suicide had seen their primary care physician within the last month. More alarming was the information that most of those who committed suicide were recognized

as not having any symptoms of depression thus were not referred for mental health treatment while others were not being treated with recommended dosages of medications. This alarming report called out to primary care practices to assess for symptoms of depression (USDHHS, 1999).

In 2004, the Federal Interagency Forum on Aging-Related Statistics reported that 16% of women age 65-69 years and 22% of women age 85 years and older reported depressive feelings in 2002 (Federal Interagency Forum on Aging-Related Statistics, 2004). In that same report 10% of men age 65-69 years and 15% of men age 85 years and older reported depressive feelings in 2002 (Federal Interagency Forum on Aging-Related Statistics, 2004). Together, 20% of those age 85 years and older suffered from depressive feelings considered clinically-relevant, while only 13% of individuals age 65-69 years were clinically-relevant (Federal Interagency Forum on Aging-Related Statistics, 2004). Racial differences for depressive feelings in elderly home health beneficiaries are currently inconclusive and recommendations from the Surgeon General's report indicated the need for additional investigation (USDHHS, 1999).

In 2002, Bruce and colleagues investigated major depression in home health patients age 65 years and older. Using the DSM-IV criteria for major depression, Bruce and colleagues conducted structured clinical interviews (SCID). Using a random sample of 539 home health patients, 73 (13.5%) were diagnosed with major depression indicating that depression was twice as common in home health when compared to primary care. In addition, results of the study indicated that 78% of home health patients with depression

were not receiving treatment. The study did recognize findings impact of time restraints and financial pressures faced by the nurse-physician-patient triad, should prompt development of organizational alerts to improve identification and treatment for patients with depression (Bruce et al., 2002). Study limitations include limited generalizability since sample was selected from a single agency in New York City. However, the results warrant the current investigation into the depressive feelings, defined in this study, since the OASIS is a uniform method of collecting data on home health patients. Analysis of depressive feelings would provide valuable information that may alert nurses for additional assessment earlier.

Multiple barriers exist when assessing depressive feelings in older adults. Older adults usually suffer from late-onset depression where usual means of diagnosing are not effective. Many times these older adults have complex medical needs and decreased sensory abilities, and have many times experienced the death of loved ones. With these common life occurrences and changes, many attribute the changes in psychological behavior as “normal aging”. In addition, older adults are less likely to report symptoms of depression since it carries a mental health stigma. Finally, the amount of time to investigate symptoms of depression in a health care system that has an explosion of older adults, limited resources, and limited number of providers creates an environment where mental health issues have limited priority (USDHHR, 1999).

Nurses are in a unique position to face the challenge. Since nurses work closer with patients and have longer episodes of contact, their ability to recognize symptoms

would benefit. Nurses are also in a position to investigate more effective tools in recognizing depressive feeling in older adults (Mcadam & Wright, 2005). Investigating and understanding depressive feelings is a step in that direction.

### Depressive Feelings

Only five studies related to depressive feelings were included in this literature review. An additional study was added that examined depressive mood. These studies were published from 1997 to 2003. Although this study focused on the Medicare home health population age 65 years and older, no studies were found that investigated depressive feelings. However, Ferry, Elias, and Treland (2000) did use OASIS Medicare home health data on beneficiaries age 44-97 years to determine if depressive feeling could predict the number of visits. Since there were limited studies in the Medicare home health population, three other studies on depressive feelings in older adults conducted in primary care, community, and Veterans Administration were included in the analysis. The fifth study using undergraduate students was included in the literature review because of the comparison between three groups (non-depressed, depressive feelings, and depression) (McDermut, Haaga, Bilek, 1997). In addition, this study was included since it supported the framework of this study. The following studies are discussed in chronological order beginning with the most recent.

Katon, Lin, Russo, and Unutzer, (2003) explored the healthcare costs of individuals with and without depressive feelings, and individuals with depressive feelings but not diagnosed with depression. The study included a sample of 9,001 patients 60



years and older from a primary care setting in the Pacific Northwest. The mean age of the sample, with depressive feelings that did not meet DSM-V criteria, was 73 years of age ( $SD=8.3$ ). Although additional information from the results provided support that women experienced more depressive feeling, the most significant finding in this study was that there was an increase in total ambulatory and inpatient costs for those who experience depressive feelings without a diagnosis of depression when compared to those without depressive feelings. More surprisingly, findings indicated no difference in costs associated to those with depression and those patients who had depressive feelings without the diagnosis of depression. This study recognized the importance for additional investigation of those with depressive feelings that extended beyond those patients with the diagnosis of depression.

Ferry et al's., (2000) main interest in their investigation was to determine methods of predicting the number of visits for home health beneficiaries by using a multiple regression analysis. The investigation included records of 44 Medicare beneficiaries at one home health care agency in Reno, Nevada. The study included 13 male and 31 female patients with ages ranging from 44 to 97 years ( $M=82$ ;  $SD=10.04$ ). Their findings revealed increased difficulty predicting the number of visits a beneficiary would require if experiencing any depressive feelings ( $r = 0.21$ ) (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide) when compared to beneficiaries without depressive feelings ( $r = 0.50$ ) (Ferry et. al., 2000).

Although it is exciting to see the OASIS data being analyzed, the investigation does have the limitations of small sample size as well as a limited geographical location.

Druss, Rohrbaugh, and Rosenheck, (1999) investigated depressive feelings in the Unified Psycho-geriatric Biopsychosocial Evaluation and Treatment program sponsored by the Department of Veterans Affairs. The study included 38-item Rand Mental Health Index to determine if an increase in depressive feelings was associated with an increase in healthcare costs. A sample of 1,360 inpatient Veterans Administration beneficiaries participated in the study. Participants were from medical and surgical settings and did not receive psychiatric treatment. The research did find an increase in length of stay associated with increases in depressive feelings ( $t=4.28$ ,  $df=1261$ ,  $p=.0008$ ). Although the majority of patients seen in the VA system are men, the study provided a limited amount of demographic information. Future recommendations challenged researchers to investigate mechanisms to identify underlying causes of cost increases in addition to length of stay (Druss et al., 1999).

Penninx et al., (1998) investigated the impact of depressive symptoms on physical activity in older persons located in the community. This four year prospective cohort study included in an epidemiologic study of the elderly in two counties located in the state of Iowa. Depressive feelings were identified by using the 11-item version of the Center for Epidemiologic Studies Depression Scale. Physical ability was based on a performance test that measured standing balance, walking speed, and getting up from a chair. The study included 1,286 older persons with a mean age of 77.7 ( $SD= 4.9$ ). The

sample was mostly female ( $n= 887$ ; 69%). There were 1,149 (89.3%) participants who had no depressed mood, while 137 (10.7%) had a depressed mood. Using logistic regression models, the study revealed a significant decline in the performance of depressed group members, when compared to the non-depressed group ( $\beta = -0.774$ ;  $p = <.001$ ). Ethnic differences were limitations of the study, with only one African American participant.

McDermut et al., (1997) conducted a study to examine Ellis's assumption that irrational beliefs were associated with depression. Although the study investigated depression, it also compared irrational beliefs to dysphoric (depressive feelings) and compared depressed, dysphoric, and non-depressed undergraduate students and community citizens. While many instruments were used in this study, one instrument that measured depressive feelings was the Beck Depression Inventory (BDI). As the depressive feelings increased, the severity of the category increased from non-depressed to dysphoric to depressed. Mean BDI scores for the non-depressed were 4.9 ( $SD=8.7$ ), for the dysphoric 17.3 ( $SD=5.6$ ), and for the depressed 22.3 ( $SD=8.2$ ). Statistical significance was found between all three groups: non-depressed and depressed groups ( $p < .05$ ); non-depressed and dysphoric groups ( $p < .025$ ); and dysphoric and depressed groups ( $p < .025$ ). This study indicates that as depressive feelings or irrational thoughts increased, the severity of irrational beliefs increased. Although this study is limited because of the small sample size of 79 and the sample did not include older adults, the investigation did identify the existence of a group between non-depressed and depressed. However, the

impact of these increased depressive feelings was not investigated in relation to health outcomes (McDermut et al., 1997).

### *Depressed Mood*

The OASIS MO590 (depressive feelings reported or observed in patient) contains six items. One item in particular is depressed mood (e.g., feeling sad, tearful). Only one study using the item from the OASIS was found. Note that other studies include concepts similar to depressed mood, but their context was based on instrumental scores and not this specific item alone.

Peng, Navaie-Waliser, and Feldman, (2003) studied 20,826 home health patients in a large northeast home health agency. The purpose of the study was to explore if any differences in health outcomes existed between African Americans, Hispanics, Asians, and Whites. The study investigated multiple variables from the OASIS database, and included the variable depressive feelings. More specifically, the investigation included depressed mood. No other depressive feelings from OASIS item 590 were used in the study. Peng et al., (2003) reported a larger percentage of Caucasian females (23.4%) with depressive feelings on admission and discharge to home health services when compared to African American (17.2%), Hispanic (21.9%), and Asian (19.4%). Using a multivariate analyses Peng et al. (2003), also found that patients with depressive feelings at discharge, also reported depressive feelings on admission ( $OR= 6.02, p= <.001$ ). For example, Caucasians who reported depressed mood at discharge (23.4%) reported depressed mood at discharge (19.1%) (Peng et al., 2003).

One limitation of the study was that the sample only consisted of older adults age 75 years and older. Therefore, the analysis lacked information on older adults 65-74 years old. Although the percentage of those who experienced this particular depressive feeling was higher than the eight to twenty percent expected from older adults in the community, it was lower than the 37% expected in older adults in the primary care setting (USHHS, 1999). The exclusion of older adults ages 65 to 74 years may account for the lower than expected report of depressive mood which was approximately 20% for each ethnic group under study. Another limitation of the study was the analysis of data from 1999. The collection of OASIS data was in the initial stages and the implementation of additional training for data collection could have impact on data collected later in time.

#### *Sense of Failure or Self Reproach*

Sense of failure or self reproach is conceptually defined as inappropriate guilt beyond just being ill that occurs on a daily basis (APA, 2000). Although the DSM-IV includes this concept in criteria for a depression diagnosis, only one recent mention of self reproach was found in the literature. Shapiro's report in 2006 was intended to clarify the concept in the psychiatry community. The definition indicates that a person not only feels a sense of guilt for an action or mistake, but also includes a sense of self punishment. This overwhelming sense of self reproach involves actions or mistakes the person was not able to avoid.

## *Hopelessness*

Hopelessness was the only concept included in the OASIS item 590 that did not appear as part of the DSM-IV criteria for the diagnosis of depression. Although the development of the OASIS utilized information from the DSM-IV guidelines and categorized them in behavioral and cognitive formats, hopelessness was included. Part of the reason for the inclusion of hopelessness in the OASIS, may be due to the recent research on the concept of hopelessness. Two studies are included in this review. One study investigates hopelessness as a predictor of mortality. The second study investigates the construct of hopelessness in the Geriatric Hopelessness Scale (GHS). Both studies used samples of older adults in the United States. No literature was found that related to the home health care arenas or the use of the OASIS information.

Stern, Dhanda, and Hazuda (2001) investigated the relationship between hopelessness and mortality. The study investigated over 700 older adults in a community that consisted of older Mexican and European Americans. In this longitudinal study conducted in San Antonio, Texas, subjects were classified as hopeless if they answered no to the question *Are you hopeful about the future?* Using a Cox analysis and controlling for age, gender, and income, the study indicated a significant ( $\chi^2 = 27.9$ ;  $df = 3$ ;  $p = .0001$ ) increase in mortality when hopelessness was present despite the presence of depressed or not depressed status. Limitation of the study included concerns about data reliability since the investigation determined death through death certificate review. Future research recommendations indicated an additional need for investigation between hopelessness

and depressive feelings to determine if relationships exist or if they are isolated symptoms (Stern et al., 2001).

Hayslip, Lopez, and Nation (2001) investigated the concept of hopelessness and variables that predict hopelessness. The sample consisted of 107 older persons in the community with a mean age of 72.5 and a SD of 6.87. The subjects were mostly women (72%). A weakly intercorrelated principal factor analysis (mean  $r = 0.07$ ) and an internal consistency coefficient of 0.69 overshadowed the results of variables tested to predict hopelessness. Hayslip et al. (2001) findings suggest psychometric limitations and suggested future research focusing on the relationship between hopelessness and depression in older persons.

#### *Recurrent Thoughts of Death*

The DSM-IV defines recurrent thoughts of death as a daily experience and not just fears of dying (APA, 2000). Recent literature on thoughts of death has focused on populations with human immunodeficiency virus (Roberson, Parsons, Van der Horst, & Hall, 2006), and patients with major depression in psychiatric institutions (Fountoulakis et al., 2004). Investigation into the concept *thoughts of death* in the older persons living in the United States was not found. No literature exists for “thoughts of death” in the home health population.

#### *Thoughts of Suicide*

In the United States, suicide rates in the elderly have reached a high level of concern in the public health arena. Two studies were included in this review. The first

was a meta-analysis that alerts the scientific community of the growing concern for suicide in the elderly and signs that may predispose the risk (Szanto et al., 2002). The second study compared elderly primary care patients with and without suicidal ideations (Bruce et al., 2004).

Szanto et al. (2002) reviewed literature of suicides in the elderly. Men over age 75 years had highest rate of suicide. In the United States, the highest suicide rate was found among Caucasian men age 85 years and older. These suicides were more often lethal and long planned. Some studies suggested that the elderly's plans for suicide are difficult to detect. Hopelessness and physical illness were considered warning sign that could indicate suicidal behavior for older adults, especially in nursing homes.

Bruce et al. (2004) conducted a randomized controlled trial in collaboration with the Prevention of Suicide in Primary Care Elderly (PROSPECT). The sample of 598 adults ages 60 years and older were recruited from 20 primary care practices in New York City. The interventions compared ten sites with depression care managers to ten sites where usual care was given. The Scale for Suicidal Ideation (SSI) was used to measure suicidal ideations. The survey was conducted at baseline and followed-up at four, eight, and twelve months. The majority of the sample in the intervention group were women ( $n = 221$ , 69.1%), and ( $n = 207$ , 74.5%) in the usual care group. Those who received the intervention were more likely to report suicidal ideations on the initial interview ( $n = 94$ , 29.4% vs.  $n = 56$ , 20.1%,  $p = .01$ ). The sample was divided into two categories, major depression and clinically significant minor depression. The results of a



post hoc analyses using the omnibus test reported that suicidal ideations did decrease over time for the depressed group ( $\chi^2_3 = 12.5; p = .006$ ), but no decrease was observed in the clinically significant minor depression only group ( $\chi^2_3 = 0.2; p = 0.98$ ). Bruce et al., (2004) suggested that the use of depression care managers helped to identify older adults with depression and suicidal ideations, thus providing interventions to decrease depression severity. Limitations of this study included small geographical area from which the sample was recruited. In addition, ethnic limitations existed since the majority of the sample was African American (Bruce et al., 2004).

#### Summary

The door has been opened by national agencies to the investigation of criteria on depression since it has been more difficult to recognize in older adults. Current concerns focus on the association between depressive feelings and health outcomes. The collaboration of 13 federal agencies has resulted in the collection and analysis of data on depressive feelings of older adults. These agencies have determined that depressive feelings do impact the general well-being of patients. So significant were findings, that the Federal Interagency Forum on Aging-Related Statistics has established depressive feelings as health indicator number eighteen in older adults (Federal Interagency Forum on Aging-Related Statistics, 2004). In addition, Healthy People 2010 has also urged the research community to investigate depressive feelings in older adults to help understand the impact on this population (USDHHS, 2000c).

The review of literature related to depressive feelings has produced only a few studies that have involved multiple health care settings and different definitions of depressive feelings. The overall theme of these studies seems to be that depressive feelings alone impact health outcomes in the older adult population. Currently, preliminary research has indicated that increases in depressive feelings are associated with age, race, gender (female), and health care costs (Druss et al., 1999; Ferry et al., 2000; Katon et al., 2003; McDermut et al., 1997; Peng et al., 2003; Penninx et al., 1998). However, the limitations of the studies suggested that additional research needs to be conducted on depressive feelings to determine significance.

Alerts to investigate depressive feelings have been focused on the primary care settings since it is estimated 37% suffer from depressive feelings. However, research conducted by Bruce et al., (2002), indicated that depressive feelings are twice as likely to occur in the home health setting. Home health services provide care to all ages and the majority of reimbursements for services are supported through Medicare, Medicaid, Hospice, private insurance and community organizations. Each of these entities serves unique populations.

In particular, Medicare home health beneficiaries face a combination of risk factors that may increase depressive feelings. Such risks include the significant changes in health that often require hospitalization in order to qualify for Medicare home health benefits, complex health conditions, and diagnoses of chronic conditions associated with depression (Chapman et al., 2005; Cole & Dendukuri, 2003; Harper-Jaques, 2004;

Shaughnessy et al., 1994; Tsai et al., 2002; USDHHS, 1999; Wells & Burman, 1991).

Currently, no studies have been located that specifically address depressive feelings in the Medicare home health population.

There is a need to investigate the home health environment to determine the relationship between depressive feelings and home health patients. Using Medicare home health beneficiaries, this study investigated depressive feelings (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide). Understanding the prevalence, demographics, and the impact on length of stay closes the gap in the literature so that nurses may create a plan of care to increase the quality of life for Medicare home health beneficiaries.

## CHAPTER III

### PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

This study was a quantitative retrospective analysis of the Center for Medicare and Medicaid Services (CMS) approved database on Medicare home health beneficiaries age 65 years and older in the state of Texas during 2005. Although secondary database analyses are done to reexamine or focus the data toward questions that were not explained in the original study (Burns & Groves, 1997), this secondary analysis of this database was used to describe and compare aspects of depressive feelings in the Medicare home health population for the state of Texas during 2005.

#### Setting

The database requested from CMS through the Research Data Assistance Center (ResDAC) included Medicare beneficiaries age 65 years and older who were admitted and discharged from home health care in Texas during 2005. Approximately 1,700 certified Medicare home health agencies were located in the state of Texas in 2004 (*Home Health Compare*, 2004). California, Florida, and Texas experienced the highest Medicare enrollment of older adults in 2004. Of these three states, Texas received the highest reimbursement (\$1,334,025,246) for Medicare home health services. Although Texas was second only to Florida for number of beneficiaries who received Medicare home health services (237,754), Texas demonstrated the highest number of visits

(10,931,833) and the highest average reimbursement per beneficiary (\$5,611) (CMS, 2004).

### Population and Sample

The CMS database requested was based on all Medicare home health beneficiaries over the age of 65 years in the state of Texas during the year 2005. Medicare home health beneficiaries must meet strict criteria for eligibility of benefits. The entries of beneficiaries only included those who were admitted and discharged in the year 2005. Only the first entry into the home health setting was used for this study and duplicate admissions were deleted to meet the statistical assumption for independence.

### Protection of Human Subjects

The Health Insurance Portability and Accountability Act (HIPPA) regulations require strict adherence of Medicare beneficiaries confidentiality (ResDAC, 2003). Although no descriptors for individuals were requested for this database, Institutional Review Board (IRB) approval was granted by Texas Woman's University (TWU) (Appendix A) and CMS (Appendix B) (ResDAC, 2003). In addition, the Data User Agreement (DUA) was provided to CMS for data release (Appendix B) (ResDAC, 2003). The DUA required signatures of researcher and dissertation committee members. Additional approval from CMS was requested before releasing results (Appendix B). As required by CMS, data cells used for analyses were greater than 11 in order to protect the identity of the beneficiaries.

## Instruments

The OASIS is a standardized instrument used to collect data on Medicare home health beneficiaries for the purposes of quality monitoring, reimbursement, and beneficiary information (Hittle et al., 2002b). The development of the OASIS began in the late 1980's. The OASIS was initiated by the Health Care Financing Administration (HCFA), now called the Center for Medicare and Medicaid Service, to develop outcome measures to improve home health quality of care (Shaughnessy et al., 1994). HCFA and the Robert Wood Johnson Foundation contracted with the University of Colorado Center for Health Service and Policy Research to develop standardized questions that would provide information for a national outcomes tracking system (McCall, Peterons, & Moore, 2001).

In the 1990's, home health expenditures reached unexpected limits. Therefore, the Balanced Budget Act included the stipulation that home health services develop a perspective payment system to determine reimbursement rates for Medicare home health beneficiaries (McCall et al., 2001). This stipulation fueled the development of the OASIS instrument. In October 28, 1999, the prospective payment system was published in the Federal Register and became effective October 1, 2000 thus requiring all home health agencies complete the OASIS on each patient in order to determine reimbursement amounts (Martin & Dodd, 2000).

Although the OASIS continues to be a work in progress, the collection of standardized data is required for every Medicare home health beneficiary at the start of

care. The variables from the forms and their corresponding numbers are located in Appendix C. Studies to assess reliability and validity of the questions found on the OASIS have been conducted by the Center for Health Services Research University of Colorado Health Science Center in Denver, Colorado (Hittle et al., 2002b). OASIS item 590 (depressive feelings) had reliability coefficients ranging from 0.40 to 0.60, an inter-rater reliability coefficient of 0.54, and validity established using methods of consensus, criterion, and validation (Hittle et al., 2002a). Data that included variables related to this study were requested from CMS with assistance from ResDAC. Data were analyzed using SPSS (Siegal & Castellan, 1988).

#### Data Collection

This study requested data from CMS with the assistance of ResDAC and included all variables listed in Appendix C. CMS's database included all assessments conducted on Medicare home health patients age 65 years and older for the year 2005 in the state of Texas. All entries must have undergone admission and discharge during the year 2005. Data User Agreements (DUA) were completed by researcher and committee. The database was maintained on a computer located at Texas Woman's University. The computer was not linked with network or internet access. Computer and data was secured in a private office with limited access to only those who signed the DUA.

Data were transmitted from individual home health agencies to CMS. Statisticians at CMS provided a database based on the variables requested. The data were transferred to SPSS format.

After the completion of analysis, the database and programs that contained data will be sent back to CMS within five years of this study. However, if study warrants additional analyses, a request can be made to hold database at Texas Woman's University for a specified period of time. In addition, a request for additional variables may be submitted.

#### Treatment of Data

A multivariate regression analysis was used to test if depressive feelings predict the length of stay. In addition, interactions between each depressive feeling and age, race, and gender were tested. Alpha level for significance was set at 0.05 for the regression analysis. Statistical analysis of variables is located in Appendix C. Data cleaning for patients who had more than one admission within a year using the following procedure. To assure that statistical tests meet assumptions for independence, only the first assessment of patient's with multiple admissions was used for this study. After the deletion of duplicate patients, data was screened for missing data and impossible values, an additional test for assumptions for the regression analyses included tests for linear relationships, homoscedasticity, and normality.

#### Summary

Over the last few years, CMS has collected a tremendous amount of data on Medicare home health patients. This retrospective study of CMS's OASIS database on Medicare home health beneficiaries age 65 years and older in the state of Texas for the year 2005, employed a quantitative design and used a multivariate analysis to determine



if depressive feelings could predict length of stay. In addition, the study tested interactions between depressive feelings and age, gender, and race. A request for database variables was requested by researcher to CMS with the assistance of ResDAC. With permission from Texas Woman's University, CMS, and ResDAC, the analysis of this database provided knowledge on the prevalence of depressive feelings and descriptive characteristics of older adults in the Medicare home health environment for the state of Texas.

## CHAPTER IV

### ANALYSIS OF DATA

The purpose of the following data analyses was to determine if the presence or absence of at least one depressive feeling and one or more of the interactions between depressive feeling and age, ethnic group, and/or gender predicted the length of stay for Medicare home health beneficiaries for the state of Texas in 2005. The following analyses consisted of four major sections. The first section described the process of data reduction. The second described data screening and tested the assumptions for the regression model and descriptions of the sample. The third section reported hypotheses tested. The final section provided a summary of findings.

#### Data Reduction

The CMS database was received on August 6, 2007. Data arrived on a CD in an .exe file. Software to decrypt data and a password from CMS were used to transfer to secure computer without internet access. The data were transferred to SPSS software using the SPSS coach. Data were transferred from text doc to SPSS. Record length was 118 variables with 1,194,149 cases.

Each case was not unique to an individual beneficiary. Each time an admission, transfer, or discharge was coded, an additional case was added. The number of cases per beneficiary ranged from 1 to 30. Screening for gender and ethnicity variables required the file to be restructured to determine if multiple responses were given. Unless specifically

stated, deletions of cases were reported by original cases and not the restructure process in this study. The initial level of screening and reduction of database included the deletion of cases less than 65 years of age. SPSS was used to calculate exact age by subtracting the birthday from the admission date. There were 221,542 cases deleted and the database was reduced to 972,607 cases.

The second level of screening was on documentation of ethnicity. Ethnic groups were recoded with 0 representing no and 1 as yes. SPSS was used to restructure the ethnic variable to determine if multiple responses were given for each beneficiary. After identifying the duplicates, the database was then restructured back into cases. Three different ethnic codes were identified in 530 cases and two different ethnic codes were identified in 21,612 cases. A total of 22,142 cases were deleted from the database since confirmation of which ethnic group was not possible. This level reduced the database to 950,465 cases.

The third level of screening reviewed missing data for ethnicity. Frequencies and histograms indicated 42,021 (18.9%) beneficiaries had missing data for the ethnic variable. The large number of missing data was reviewed with the initial database and indicated no problems with the restructuring process. Additional investigation of missing data for the ethnic variable included the relationship to the individual home health agency. Out of 1,411 agencies, no trend for the missing ethnic data was recognized. However, additional cleaning was required later in the screening process to determine the ethnic composition. Preliminary review of ethnicity was reviewed and three ethnic groups

were recognized. Caucasian 140,992 (63%) cases were the largest ethnicity, Hispanic or Latino 56,144 (23%) cases the second largest, and African-American 30,900 (13%) cases the third largest.

The fourth level of screening reviewed multiple responses for gender. Gender was coded 0 for female and 1 for male. Restructuring was required to identify if any individual beneficiaries were coded for both male and female. A total of 4,586 beneficiaries were identified where different genders had been coded on different entries in the records. These cases were deleted. The database was restructured back into the original form. The database was reduced to 945,879 cases.

The fifth level of screening determined if cases meet criteria for discharge to the community. Since admission and discharge information on an episode of care involved multiple cases, restructuring of the database with SPSS was required to assure that all information was preserved and admission information remained available for analyses. Episodes were identified and database restructured back to original form. A total of 516,125 cases did not meet the criteria for discharge to community. These cases were deleted and the database was reduced to 429,754 cases.

The sixth level of screening determined Medicare status of beneficiaries. Medicare and Medicaid were coded 0 for no and 1 for yes. There were 479 cases that did not meet this requirement. This level reduced the database to 429,275 cases.

The seventh level of screening involved review on episodes of care required the admission and discharge in 2005. Since many beneficiaries had multiple episodes of care,

restructuring was required using SPSS to group the episode and determine if the admission and discharge were both in 2005. The database was restructured back to the original form. There were 82,682 cases deleted that did not meet this requirement. This level reduced the database to 346,643 cases.

The eighth level of screening reviewed type of assessment. Only admission information was required for analyses. Cases that contained other information on discharge and transfers were deleted. A total of 192,030 cases were deleted. This level reduced the database to 154,613 cases.

The ninth level of screening reviewed data for the assumption of independence for the regression model. The first admission was used for analyses and the remaining admissions were deleted. A total of 33,578 cases were deleted. This level reduced the database to 121,035 cases. At this point, the database was reduced to individual beneficiaries and each case represented one beneficiary. Therefore, the term cases reflect an independent subject for the remaining analyses.

The tenth level of screening returned to the ethnicity variable. Since each case reflected one beneficiary, ethnic screening was again reviewed due to missing data noted earlier in the screening. Frequencies and histograms were reviewed to determine if missing data still existed after the reduction of the database. There were 1,498 (1.2%) cases with missing data, a considerable improvement from earlier analysis. Earlier screening may have been due to multiple cases for each beneficiary. Three explanations for missing data have been theorized. First, the variable was not required during the

coding process. Software used to code the assessments required certain information or the agency could not transmit to CMS. Missing ethnic information indicated that the information was not a requirement. The second explanation focused on the tool used to collect the data. Not all ethnic groups were listed in the tool, creating the question, “What do you code if ethnic is known, but category was not available?” The last explanation focused on beneficiaries who may have considered themselves in two different ethnic groups.

There were 6 categories for ethnicity in the final sample. However, three major groups represented most of the database. Caucasians 77,572 (63.7%), Hispanic 27,490 (22.6%), and African American 13,120 (10.8%) represented the majority of the sample. Other categories included Asian 1056 (0.9%), American Indian or Alaska Native 208 (0.2%), native Hawaiian or Pacific Islander 101 (0.1%) and ethnic unknown 1498 (1.2%). Ethnic groups for Caucasians, Hispanic, and African American’s made up the majority of the sample. Due to the small percentage in the remaining categories, the decision was made to delete the Asian, American Indian or Alaska Natives, Native Hawaiian or Pacific Islander and ethnic unknown categories. This level reduced the database to 118,172 cases.

#### Data Screening and Assumptions

Frequencies and histograms were screened for age, gender, length of stay, ethnicity, depressive mood, hopelessness, recurrent thoughts of death, sense of failure or

self reproach, and thoughts of suicide. In addition, the combinations of depressive feelings were reviewed.

Each depressive feeling was reviewed (Table 3). Depressed mood 25,837 (21.9%) was the largest reported depressive feeling. However, hopelessness, sense of failure or self reproach, recurrent thoughts of death, and thoughts of suicide were reported by only 3.2% of the sample. The multiple combinations of each depressive feeling were 0 to 0.3%. Since most depressive feelings and combinations were represented by less than 10% of the sample, a decision was made to create a new variable named *at least one depressive feeling*.

Table 3

*Frequencies and Percentages of Depressive Feelings*

Depressive feelings	N	%
Depressive mood	25,837	21.9%
Hopelessness	2025	1.7%
Sense of failure of self reproach	977	0.8%
Recurrent thoughts of death	396	0.3%
Thoughts of suicide	468	0.4%
No depressive feelings	91,364	77.3%
At least one depressive feeling	26,808	22.7%

Although, the decision to group these variables together was made, the discussion of thoughts of suicide was warranted. The mean age of beneficiaries who reported thoughts of suicide was 78.9% ( $SD = 7.756$ ). Female beneficiaries ( $n = 290$ ; 62%) reported more thoughts of suicide compared to males ( $n = 178$ ; 38%). Ages 71 to 84 years (60%) reported more thoughts of suicide than other age ranges.

After grouping all depressive feelings together, beneficiaries with *at least one depressive feeling* were represented by 26,808 (22.7%) of the sample. The decision would prevent the analysis of depressive feeling combinations initially identified for the study.

Age had a mean of 78.19 years with a standard deviation of 7.658. The range for age was 65 to 110 years. The histogram was reviewed and no lower tail was visible due to the age criteria of the study (Figure 1). However, regression is robust to violations of normality.

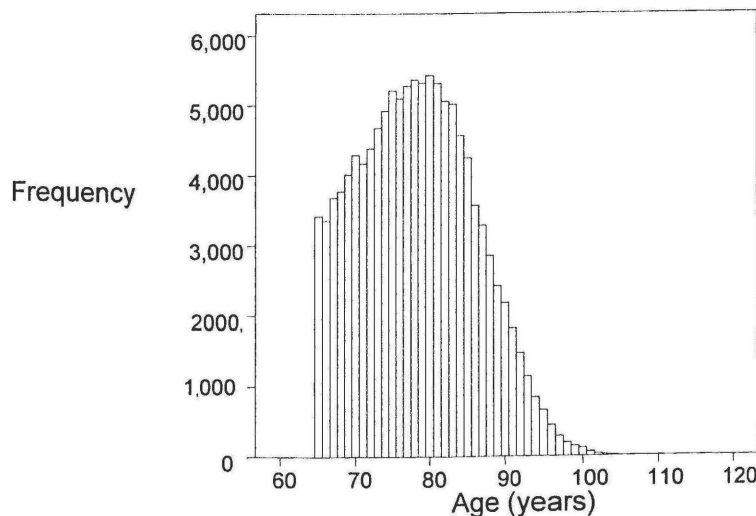


Figure 1. Age of sample ( $N=118,172$ )



Depressive feelings were reflected in 3.713% (4,388) of beneficiaries age 65 to 69 years, 14.546% (17,190) of beneficiaries age 70 to 84 years, and 4.425% (5,230) age 85 years and above (Table 4).

Table 4

*Depressive Feelings for Gender and Age Groups*

Age	Females		Males		Totals	
	n	(%)	n	(%)	n	(%)
65-69	2,965	(2.5%)	1,423	(1.2%)	4,388	(3.7%)
70-84	11,977	(10.1%)	5,213	(4.4%)	17,190	(14.5%)
85-110	3,878	(3.2%)	1,352	(1.1%)	5,230	(4.4%)
Total	18,820	(15.9%)	7,988	(6.7%)	26,808	(22.6%)

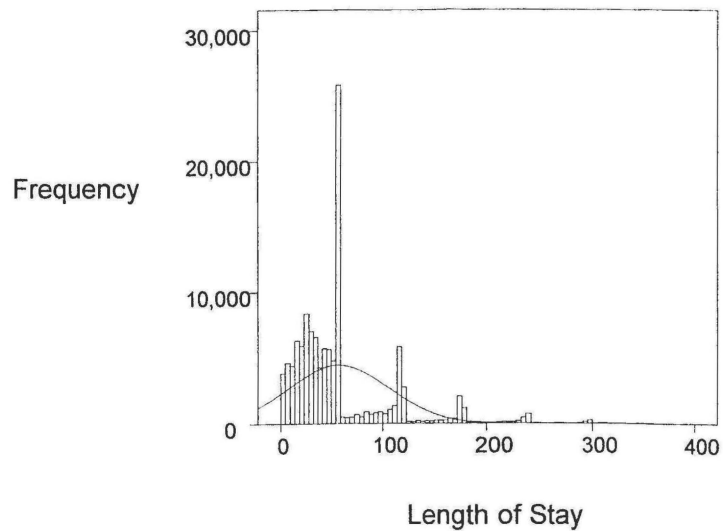
The study sample had 78,733 (66.6%) female beneficiaries and 39,439 (33.4%) male beneficiaries. Of the 118,172 subjects in the study, 26,808 (22.7%) had at least one depressive feeling. Females with depressive feelings (n = 18,820; 15.9%) comprised a larger group than males with depressive feelings (n = 7,988; 6.7%) (Table 5).

Table 5

*Gender of Sample*

Gender	Sample		At least one depressive feeling	
	n	(%)	n	(%)
Female	78,733	(66.6%)	18,820	(15.9%)
Male	39,439	(33.4%)	7,988	(6.7%)
Total	118,172	(100%)	26,808	(22.7%)

Length of stay was calculated by subtracting start of care date from the last visit date. Frequencies and histograms for the length of stay variable had a mean of 56.75 ( $SD=48.699$ ). The histogram indicated increased discharges every 60 days which was consistent with the recertification process in Medicare home health samples (Figure 2).

*Figure 2. Length of stay for sample*

The length of stay variable did reflect a violation for normality. However, regression is robust to the violation of normality. Length of stay ranged from 0 to 359 days. The value was less than 365 days, since the study only accepted beneficiaries with admissions and discharges in 2005. There were 1,463 cases coded with 0 days. This coding of 0 indicated that beneficiaries only required a one time visit. Therefore, the cases were not deleted from the database.

The ethnicity variable used for this study was limited to Caucasians, Hispanic, and African Americans. Other ethnic groups were deleted since they represented less than 10% of the sample (Kleinbaum, Kupper, Nizam, & Muller, 2008). Caucasians (n = 7,562; 65.6%), were the largest ethnic group represented in the sample, Hispanic (n = 27,490; 23.3%) and African Americans (n = 13,120; 11.1%) were smaller. Of the 26,808 cases that reported depressive feelings, 17,935 (66.9%) were Caucasians, 6,165 (23.0%) were Hispanics and 2,708 (10.1%) were African Americans (Table 6).

Table 6

*Ethnicity and Depressive Feelings (N=26,808)*

Ethnicity	Entire Sample		At least one depressive feeling		
	n	(%)	n	(% of df)	(% of sample)
Caucasians	77,562	(65.6%)	17,935	(66.9%)	(15%)
Hispanic	27,490	(23.3%)	6,165	(23.0%)	(5%)
African American	13,120	(11.1%)	2,708	(10.1%)	(2%)
Total	118,172	(100%)	26,808	(100%)	(22.7%)

Scatter plots between each predictor (age, gender, ethnicity, at least one depressive feeling) and the outcome (length of stay) were analyzed to identify data points that were distant from other data points, curvilinear relationships, and close relationships between predictors. This included the scatter plots of each pair of predictors.

No curvilinear relationships were noted. No close relationships were noted between predictors. However, there were odd patterns noted between length of stay and age. No figure was included due to CMS HIPPA requirements. Some points in the scatter plot could be used as identifiers.

The review of this scatter plot indicated that the spread around lines every 60 days were reflected by recertification requirements for home health services under Medicare. Therefore, the pattern suggests a reflection that is consistent with the nature of the variable.

The assumption of independence related to time was tested with a scatter plot (Figure 3). The pattern was reflective of the study criteria. All subjects required the admission and discharge in 2005. Subjects admitted earlier in the year might potentially have a longer length of stay than those admitted later in the year. Therefore, more subjects were admitted earlier in the year and as time progressed, a consistent drop was noted. The same spread around lines for length of stay was similar to the above omitted scatter plot between age and length of stay. The visual spread is noted around every 60 days for length of stay. Again, this reflects the recertification process of home health and

was consistent with the nature of the variable. Regression is robust with violations of normality.

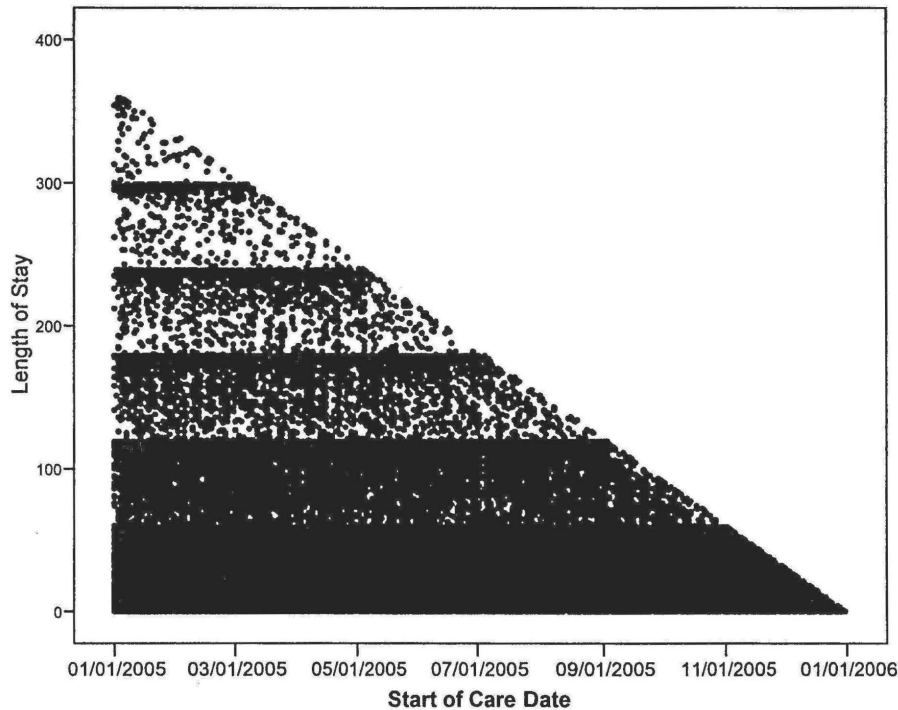


Figure 3. Scatter plot testing assumption of independence related to time

Collinearity diagnostics were obtained to determine if any two predictors were too closely related. Variance inflation factors (VIF's) for at least one depressive feeling was above 200. Other interactions that included at least one depressive feeling also had VIF's greater than 200. Further investigation was performed by centering the age variable. Age was the only ratio variable and centering was recommended by Kleinbaum et al., (2008). The mean age (78.19) was subtracted from all cases to create the variable *centered mean age*. Frequencies and histogram were reviewed. The *centered mean age* was .0013 ( $SD = 7.658$ ) and ranged from -13.19 to 31.81. Collinearity analysis was then performed again.

All VIF's were within normal ranges and below 10 for all variables and interactions (Table 7). With age centered, a correlation matrix was performed. No high correlations were noted. Therefore, there were no close relationships observed that would violate the regression analyses.

Table 7

*Collinearity Analysis of Variable and Combinations of Variables*

Variables and interactions	Tolerance	VIF
Centered age	.757	1.322
At least on depressive feeling	.468	2.137
Gender	.776	1.288
Ethnic (Hispanic)	.729	1.371
Ethnic (African American)	.753	1.329
Depressive feelings and centered age	.420	2.383
Depressive feelings and gender	.427	2.343
Depressive feelings and ethnic (Hispanic)	.441	2.268
Depressive feelings and ethnic (African American)	.505	1.980
Depressive feelings and centered age and gender	.473	2.113
Depressive feelings and centered age and ethnic (Hispanic)	.512	1.955

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Table 7 (Continued)

*Collinearity Analysis of Variable and Combinations of Variables*

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Variables and interactions	Tolerance	VIF
Depressive feelings and centered age and ethnic (African American)	.527	1.749
Depressive feelings and gender and ethnic (Hispanic)	.442	2.343
Depressive feelings and gender and ethnic (African American)	.501	2.134
Depressive feelings and centered age and gender and ethnic (Hispanic)	.496	2.018
Depressive feelings and centered age and gender and ethnic (African American)	.519	1.927

---

SPSS was used to perform a residuals analysis. Probability and standardized residual scatter plot were examined. No curvilinear relationships, violations of homoscedasticity, or outliers were noted (Figures 4 and 5). The patterns on the scatter plot discussed earlier were not related to homoscedasticity.

### Normal P-P Plot of Regression Standardized Residual

Dependent Variable: lenght of stay

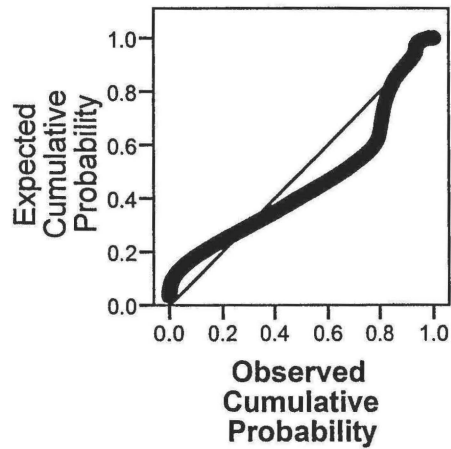


Figure 4. Observed and expected probability plots.

### Scatterplot

Dependent Variable: lenght of stay

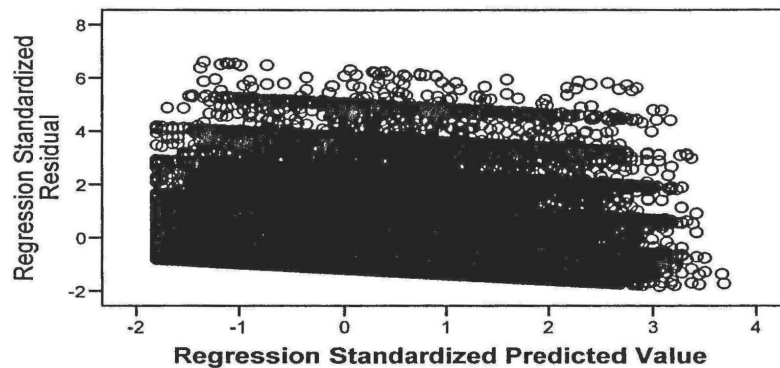


Figure 5. Residual analysis scatter plot.

Influential points were analyzed using a regression analysis. After reviewing the standardized DfFit's, no points were noted.



## Findings

Initially, the study began with one general research question and eight research questions using a regression analyses. The general research question was to examine the prevalence of each depressive feeling and combinations of depressive feelings. Of the 118,172 beneficiaries included in this sample, depressed mood was reported by 21.9% (25,837). The remaining four depressive feelings (hopelessness, sense of failure or self reproach, recurrent thoughts of death, and thoughts of suicide) represented less than one percent of all depressive feelings reported. Therefore, a decision was made to combine all depressive feelings into one variable named *at least one depressive feeling* 22.7% (26,808). This variable was used in the eight regression research questions, and eliminating the proposed combinations of analyses.

In addition to the combined depressive feelings, the ethnicity variable was also changed. Due to small percentages in some ethnicities, only three ethnic groups (Caucasians, Hispanic, and African American) were used for the regression research questions.

The analytical strategy for the eight regression research questions began with the most complex questions. Therefore, research question eight, a four way analysis, was examined first. Then, research question seven, six, and five, three way interactions, were examined. Due to significant findings on the three way interactions, research questions four, three, two and one were eliminated and not tested.

The regression research question number eight was examined first. The question examined if there was a four way interaction between age, gender, and ethnic groups and the presence of at least one depressive feeling that predicted the length of stay. There were no significant findings and the interaction was dropped from the analyses (Table 8). An additional analysis of residuals and influential points were performed. The results indicated the database remained intact for continual analyses of three way interactions.

Table 8

*Results of Hypotheses Testing \*0.05 alpha level*

Tested	<i>F</i>	<i>df</i>	<i>p</i>
4 Way interaction			
Age; gender; ethnic; and at least one depressive feeling	.772	2;118,148	.462
3 Way interactions			
1. Gender; ethnic; and at least one depressive feeling	.904	2;118,152	.405
2. Age; ethnic; and at least one depressive feeling	3.774	2;118,154	.023*
3. Age; gender; and at least on depressive feeling	.127	2;118,150	.881

The seventh regression research question was examined next. The question examined whether a three way interaction existed between gender, ethnicity, and the presence of at least one depressive feeling that predicted the length of stay. There were no significant findings and the interaction was dropped from the analyses (Table 8). An

additional analysis of residuals and influential points were performed. The results indicated the database remained intact for continual analyses of three way interactions.

The sixth regression research question was examined next. The question examined whether a three way interaction existed between age, ethnicity, and the presence of at least one depressive feeling that predicted the length of stay. The interaction between age, ethnic group, and the presence of at least one depressive feeling was statistically significant (Table 8). The effect of this significance was  $r^2 = 0.01$ . Although the effect was too small to recommend any changes at a policy level, the continued investigation was included to determine the differences between ethnic groups for future investigation.

Post hoc testing to determine the location of differences between age, ethnic, and the presence of at least one depressive feeling involved four steps (Dawson & Richter, 2006). The first step was the calculation and plot of each simple slope (Table 9).

Table 9

*Formulas for Simple Slopes of Depressive Feelings*

Ethnicity age	Generic formula	0 <i>df</i>	At least 1 <i>df</i>	Slope
Caucasian 70	$b_1 + b_6(\text{age})$	44.65677	57.35093	12.69416
Caucasian 85	$b_1 + b_6(\text{age})$	53.91177	62.64593	8.73416
Hispanic 70	$b_1 + b_6(\text{age}) + b_8(1) + b_{16}(\text{age})(1)$	60.76672	65.57148	4.80476
Hispanic 85	$b_1 + b_6(\text{age}) + b_8(1) + b_{16}(\text{age})(1)$	65.44672	68.69148	3.24476
African- American 70	$b_1 + b_6(\text{age}) + b_9(1) + b_{17}(\text{age})(1)$	72.24209	75.90981	3.66772
African- American 85	$b_1 + b_6(\text{age}) + b_9(1) + b_{17}(\text{age})(1)$	78.07709	83.42481	5.34772

Six slopes were calculated and plotted (Figure 6). Visual inspection of the graph made it difficult to identify different slopes reflected in the subtlety of the effect.

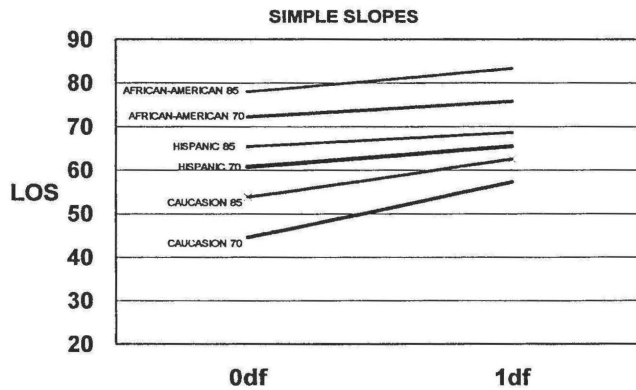


Figure 6. Graph of simple slopes LOS (length of stay) df (depressive feelings)

Aiken and West (1991) recommended testing the slopes for parallelism. This determined if each slope was different from 0 to determine if there were any changes between reports of no depressive feelings and reports of at least one depressive feeling. The degrees of freedom calculated were  $df = n - k - 1$  ( $118,172 - 17 - 1 = 118,154$ ). There were 21 post hoc tests, the alpha level was divided statistical significance and was set at alpha level 0.0023809 (Table 10). All slopes were different from 0 except Hispanic age 85 years and African-American age 70 years. Therefore, there were no differences found between no depressive feelings and the presence of depressive feelings for Hispanics age 85 years and African-Americans age 70 years.

Table 10

*Parallelism of Slopes \*(0.0023809 alpha level)*

Defined Slope	Slope	SE	<i>T</i>	<i>P</i>
Caucasian age 70	12.69416	0.719766907	17.63649	< 0.000*
Caucasian age 85	8.73416	0.612588279	14.2578	< 0.000*
Hispanic age 70	4.80476	0.965878357	4.974498	< 0.000*
Hispanic age 85	3.24476	1.370700916	2.367227	< 0.017
African American age 70	3.66772	1.376844944	2.663858	< 0.007
African American age 85	5.34772	1.632581392	3.275622	< 0.001*

The three additional calculations included the differences between pairs of slopes, standard error of slope differences and testing differences between slopes (Table 11) (Dawson & Richter, 2006). Statistically significant differences were seen between Caucasians age 70 years and all age groups and ethnicities. In addition, there were differences between Caucasians age 85 years and Hispanics age 85 years. Therefore, length of stay was higher for Caucasians age 70 years who reported depressive feelings when compared to all other ages and ethnicities. The length of stay was also higher for Hispanics age 85 years who reported depressive feelings when compared to Caucasians

age 85 years.

Table 11  
*Differences Between Slopes*

Slopes compared	Standard Errors	$t = \text{Standard Error}$	$P$
C 70 & C 85	0.948683298	4.174207	< 0.000*
C 70 & H 70	1.10400779	7.146145	< 0.000*
C 70 & H 85	2.205001859	4.285439	< 0.000*
C 70 & AA 70	1.462352283	6.172548	< 0.000*
C 70 & AA 85	1.848857539	3.973502	< 0.000*
C 85 & H 70	2.037379003	1.928654	<0.053
C 85 & H 85	1.204339321	4.558018	< 0.000*
C 85 & AA 70	2.492724253	2.032491	< 0.042
C 85 & AA 85	1.697961778	1.994415	< 0.046
H70 & H 85	1.897366596	0.822192	< 0.410
H 70 & AA 70	1.508532665	0.753739	< 0.451
H 70 & AA 85	1.647216561	-0.32962	< 0.847
H 85 & AA 70	1.572017812	-0.26906	< 0.787
H 85 & AA 85	1.888007097	-1.11385	< 0.265
AA 70 & AA 85	0.755165015	-2.22468	< 0.026

\*  $p = .002$ ; C=Caucasian; H=Hispanic; AA=African-American

The fifth regression research question was examined next. The question examined whether a three way interaction existed between age, gender, and the presence of at least

one depressive feeling that predicted the length of stay. There were no significant findings and the interaction was dropped from the analyses (Table 8). Since the three way interaction was significant, no additional two ways or one way analyses were pursued.

### Summary

The database from CMS was reduced from over one million cases to 118,172 due to screening criteria deletions. The average beneficiary was a female Caucasian, approximately 78 years of age who received care for two months. Depressive mood (22%) was the most commonly reported depressive feeling. Since other categories of depressive feelings were too small for the analyses, a new variable was created, *at least one depressive feeling*, so they would not be excluded from the study. Also included, but not hidden were the 468 beneficiaries reported thoughts of suicide.

Females (15.9%) reporting *at least one depressive feeling* were more prevalent than males (6.7%) who reported *at least one depressive feeling*. Females (10.135%), who reported *at least one depressive feeling* from ages 69 to 84 years, were larger than any other age category for male and females. Of the 26,808 reported depressive feeling, Caucasians (66.9%) reported more depressive feelings compared to Hispanics (23%) or African Americans (10.1%).

Only one research question was statistically significant. The interaction of age, ethnicity, and the presence of at least one depressive feeling did have a statistically significant impact on length of stay. Although the effect of the impact was less than one percent, post hoc tests were completed to provide additional information for future



investigations. Significant differences were found between: Caucasians age 70 years and age 85 years; Caucasians age 70 years and Hispanics age 70 years; Caucasians age 70 years and Hispanics age 85 years; Caucasians age 70 years and African Americans age 70 years; Caucasians 70 years and African Americans age 85 years; and Caucasians age 85 years and Hispanics age 85 years. When Caucasians reported depressive feelings, their length of stay is significantly higher than other age or ethnic groups who report depressive feelings. Also, Caucasians who reported depressive feelings had a significant longer length of stay compared to Hispanics age 85 years who reported depressive feelings.

## CHAPTER V

### SUMMARY OF THE STUDY

The purpose of this study was to determine if the length of stay increases when Medicare beneficiaries age 65 and older report depressive feelings. Overall the study did provide additional information on depressive feelings with use of the CMS OASIS database. The screening process of data prompted additional decisions related to study design. Statistically significant results related to ethnicity and age was revealed on the sample of Medicare home health beneficiaries. Although limitations prevented generalizations to the home health population, the implications and recommendations for further investigation did add to the body of new knowledge. The intent of this study was not focused on depression, but instead the symptoms that may lead up to or determine if depression was diagnosed. Understanding the symptoms (depressive feelings) first would lay a foundation for future studies on the complex disease of depression in the future.

#### Summary

This study used an OASIS database from CMS to investigate depressive feelings in the Medicare home health beneficiaries age 65 years and older for the state of Texas in 2005. The database included over one million cases. However, the screening process and criteria for study variables reduced the database to 118,172 unique subjects that met the regression model's required assumption for independence. Scatter plots confirmed no curvilinear relationships between predictors. Although normality was challenged due to

the spikes in length of stay, the regression equation was found to be robust and analyses were continued. Collinearity diagnostics and correlation matrices required the age variable to be centered in order to continue the analyses. The residual analyses did not indicate a curvilinear relationship, violations of homoscedasticity, or visible outliers. The assumption for independence related to time was met. Influential analyses did not indicate any outliers.

Initially, this study expected to examine subcategories of depressive feelings. However, hopelessness, self reproach, thoughts of death and thoughts of suicide were less than 4% of all reported depressive feelings combined. Depressed mood (21.9%) was the largest category of the depressive feelings variable. To prevent deletion of the subcategories, a decision was made to group all depressive feelings into one category, *at least one depressive feeling*. This decision was based the initial study intent to explore depressive feelings in general.

Although depressive feelings were grouped together, one depressive feeling, *thoughts of suicide* did require additional explanation. This study revealed that 468 (0.4%) beneficiaries reported *thoughts of suicide*. There were 290 (62%) female and 178 male (38%). The majority of those who reported *thoughts of suicide* were between the ages of 71 to 84 years (50%). Reports of suicide were higher in females than males, but males tend to have more lethal methods to commit suicide and are more successful. Higher rates of successful suicide were reported in Caucasian males 85 years and older (Szanto et al., 2002).

The Medicare sample was mostly Caucasian (65.6%) and female (66%) with a mean age of 78.19 and a mean length of stay of 56.75. *At least one depressive feeling* was reported in (22.7%) of the sample. Of the 26,808 cases that reported depressive feelings, Caucasians (66.9%) group was the largest when compared to the Hispanics (23%) or African Americans (10.1%) groups.

Overall, the group of females (66.6%) reporting *at least on depressive feeling* was larger compared to the group of males (33.4%) in the sample. There was a greater percent of females with depressive feelings (15.9%) when compared to males with depressive feelings (6.7%). In addition, females with depressive feelings between the ages of 70 to 84 years reported more depressive feelings (10.1%) compared to other age and gender categories.

The regression analyses were used to test the interactions between the study variables. The four way interaction between age, gender, ethnicity, and depressive feelings was not significant and did not reflect changes in the length of stay. In addition, the three way interaction between gender, ethnicity and depressive feelings was not statistically significant in relation to the length of stay. However, significant findings from the three way interaction between age, ethnicity and depressive feelings did reflect an impact on length of stay. The three way interaction that tested age, ethnic, and the presence of at least one depressive feeling at a .05 alpha level was statistically significant ( $F = 3.774$ ;  $df = 2/118,154$ ;  $p = .023$ ). Therefore, holding gender constant, the interaction of age, ethnicity, and the presence of at least one depressive feeling resulted in increased

in length of stay. Although the effect size was too small to drive decisions at a policy level, the post hoc test were completed to provide additional information for future research. Twenty-one post hoc tests were performed to determine if the slopes were different from 0 and to identify any differences between slopes.

Since there were 21 post hoc test, the significance level was set at .002 as shown by Bonferroni (Kleinbaum et. al., 2008). Six slopes were calculated and graphed. The visual graph of the slopes did not provide information on where the differences were located. Additional calculations did indicate that all slopes except for Hispanics age 85 years and African-Americans age 70 years were different from 0. Therefore, the presence of at least one depressive feeling increased the length of stay for Caucasians age 70 years and age 85 years, Hispanics age 70 years, and African Americans age 85 years.

Standard errors were calculated to determine the differences between slopes. Fifteen calculations were completed and there were six statistically significant differences between six slopes.

1. Caucasians age 70 years with *at least one depressive feeling* had longer lengths of stay when compared to Caucasians age 85 years.
2. Caucasians age 70 years with *at least one depressive feeling* had longer lengths of stay when compared to Hispanics age 70 years.
3. Caucasians age 70 years with *at least one depressive feeling* had longer lengths of stay when compared to Hispanics age 85 years.

4. Caucasians age 70 years with *at least one depressive feeling* had longer lengths of stay when compared to African-Americans age 70 years.
5. Caucasians age 70 years with *at least one depressive feeling* had longer lengths of stay when compared to African-Americans age 85 years.
6. Caucasians age 85 years with *at least one depressive feeling* had longer lengths of stay when compared to Hispanics age 85 years.

After completing the post hoc test for the interaction of age, ethnicity, and the presence of at least one depressive feeling, one additional hypothesis was tested. The interaction of age, gender, and depressive feelings was tested at alpha .05. No statistical significance was noted. No additional research questions were tested since one of the three way interactions was statistically significant.

#### Discussion of the Findings

With the unknown effects of depressive feelings in the elderly, national organizations suggested that the dangers of not recognizing these symptoms placed the population at risk for failing to recognize and treat depression (Federal Interagency Forum on Aging-Related Statistics, 2004; USDHHR 2000b). Bruce et al., (2002) indicated that home health populations may express depressive feelings at a rate twice that of primary care settings. The significant increase expected by Bruce et al., (2002) was not validated by this study finding. Depressive feelings were seen in 22.7% of the sample. Far less than the 37% Bruce et al., (2002) found in their study of primary care patients. However, the percent of Medicare beneficiaries with depressive feelings was

higher in this study when compared to Pennix et al.'s (1998) study on depressive feelings in older adults in the community.

Ages of those Medicare beneficiaries in this sample with depressive feelings did not reflect the statistics associated with older adults in the community as reported by the Federal Interagency Forum on Aging-Related Statistics (2004). The agency reported that larger percentages of depressive feelings were reported in older adults age 85 and older. This study revealed the largest age group who reported *at least one depressive feeling* was the group ages 69 to 84 years (14.5%).

This study was consistent with findings from the Federal Interagency Forum on Aging-Related Statistics (2004) and the Ferry et al., study in 2000 regarding gender. These previous research indicated more females reported depressive feelings when compared to males. This study found a higher percentage of females with depressive feelings.

This study found a significant interaction between age, ethnicity, and *at least one depressive feeling*. Post hoc tests indicated that Caucasians had higher lengths of stay after reporting at least one depressive feeling when compared to the Hispanic or African-American groups. In addition, Caucasians age 85 years had higher lengths of stay than Hispanics age 85 years who reported depressive feelings. However, Hispanics and African-Americans demonstrated higher length of stay when compared to Caucasians, regardless of reports of depressive feelings.

Although, the effect size of the significance was small and the generalizability was limited to the state of Texas, it is unknown if these reports have a social or cultural context as indicated in the literature (American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders (APA), 2000). In addition, it is unknown if social or cultural reasons prevented other ethnic groups from reporting or demonstrating emotions that would indicate depressive feelings. Depressive feelings, also known as “Beliefs” according the Ellis (2001) are associated with adversities such as age and ethnic groups. Of all the depressive feelings investigated, depressed mood was the most common reported. Since this study only included Medicare home health beneficiaries who were discharged to home, it is unknown if more severe depressive feelings would have been more prevalent in beneficiaries who returned to the hospital, other care facilities, or ultimately died. It is also unclear if the beliefs of those who reported depressive mood were rational or irrational. Taking into consideration the concerns for acceptance of types of behaviors contributing to under recognized depression (USDHHS, 1999), it is still uncertain what behaviors are acceptable for those who have just had a significant change in health that required hospitalization.

### Conclusions and Implications

Conclusions of this study are:

1. Depressive feelings were reported in 22.7% (26,808) of the sample.
2. Depressed mood is reported more than hopelessness, sense of failure or self reproach, recurrent thoughts of death, and thoughts of suicide.



3. Caucasians report more depressive feelings and have significantly higher lengths of stay after reporting a depressive feeling than Hispanics or African-Americans.

The sample of this investigation focused on Medicare home health beneficiaries who ultimately were discharged to the community. The results did reflect those who returned to the hospital, another care facility, or those who died. This may account for the reason that the reported depressive feelings did not reach higher levels as expected from the literature review.

Another caution relates to the small effects of the statistical significance reported in this study. The small effect size of less than one percent does not provide strong enough evidence at a policy level. However, it does provide additional information on ethnicity demographics and interactions between age, ethnicity and *at least one depressive feeling*.

Caucasians report depressive feelings more and demonstrated higher lengths of stay after reporting at least one depressive feeling. However, Hispanics and African Americans demonstrated higher lengths of stay regardless of depressive feelings, suggesting further investigation on cultural implications when reporting these depressive feelings.

The available databases from CMS are valuable. However, those interested in using the data should be aware that statistical support is necessary. The processes of cleaning and creating variables from other information require a substantial amount of time and resources. Those who are interested in investigating the ethnicity variable

should be aware of the category limitations of the database. These categories are more specific to race and not ethnicity. An important concept since the international diversity is growing and more emphasis is being placed on ethnicity. This study suggests that cultural components that limit the report of depressive feelings should be investigated further.

#### Recommendations for Further Study

The investigation of depressive feeling using the OASIS database has prompted seven recommendations for further study. The experience of working with the OASIS database, limitations of the study, and the creation of additional questions have driven these recommendations. In addition, the results and demographic information of this study provided suggestions for additional research.

1. The first recommendation focuses on the study design. Selecting only those who were discharged to the community limited the overall impact of those who were discharged for other reasons and limited the impact on the Medicare home health population in general. Literature suggests that the presence of depressive feelings causes functional impairments and additional stress (APA, 2000). Further investigation on the impact of depressive feelings for those who were transferred to another facility or back to the hospital is recommended.
2. The second recommendation focuses on the differences between depressive feelings and depression in older adults. Future research should focus on examining differences between depressive feelings and depression to determine the relationship. Especially since under recognized depression in older adults may be due to barriers in criteria for

diagnosis, stigma, social aspects, acceptance due to complex health problems and or the normal aging processes (USDHHS, 1999). With the understanding of barriers to diagnosis of depression, those same barriers should be investigated in relation to depressive feelings.

3. The third recommendation for future studies relates to the significant findings in ethnicity. Although the effect size was small, examining whether cultural barriers exist when reporting depressive feelings would clarify if the differences actually exist or all skewed. Examining those ethnic groups in relation to ages would also provide more insight on specific populations to examine.
4. The fourth recommendation includes additional studies on age categories since the population in the United States is expected to increase and complex health issues are expected in the older adult. Previous research indicated larger percentages of depressive feelings in older adults age 85 years and older. However, this study did not support those findings. Instead, larger percentages were found in ages 70 to 84 years. Additional investigation is needed to determine the age range of those most at risk for depressive feelings.
5. The fifth recommendations for future studies are based on the use of the OASIS database. Future studies would benefit by comparing depressive mood to all depressive feelings. Depressive mood was the most common reported depressive feeling in this sample during this study and from earlier studies (Peng et al., (2003).

Comparing depressed mood and all depressive feelings would provide information on future decisions to group all depressive feelings together.

6. The sixth recommendation was also specific to the sub category of suicide. Although a small number (468) of the sample reported *thoughts of suicide*, the irreversible act itself challenges researchers to further investigate the symptom. With literature supporting the increases in suicide in older adults (Bruce et al., 2004) and the reality that most of those who did commit suicide had recent contact with health care providers, supports the recommendations for additional investigation.
7. The last recommendation is to utilize the generosity of CMS to provide researchers with databases that have endless benefits. This study was limited to one state. Note that national samples are available and comparisons between states or rural versus urban populations are possible (ResDAC, 2003).

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## APPENDIX A

Internal Review Board: Texas Woman's University

**TEXAS WOMAN'S UNIVERSITY**

DENTON DALLAS HOUSTON

**INSTITUTIONAL REVIEW BOARD**

6700 Fannin, Houston, Texas 77030 713/794-2074

**MEMORANDUM**

TO: Ann Malelcha TWU ID #0408611  
Kelly S. Vandenberg Student ID #0618141

FROM: IRB

DATE: April 30, 2007

SUBJECT: IRB Exempt Application

TITLE: **"Prevalence of Depressive Feelings in older adult medicare home health beneficiaries in Texas."**

This application is **approved**.

Any changes in the study must receive review and approval prior to implementation unless the change is necessary for the safety of subjects. In addition, you must inform the IRB of adverse events encountered during the study or of any new and significant information that may impact a research participant's safety or willingness to continue in your study.

  
William P. Hanten, Ed.D.  
Chairperson

## APPENDIX B

### Center for Medicare and Medicaid Approval and DUA



DEPARTMENT OF HEALTH & HUMAN SERVICES

Centers for Medicare & Medicaid S  
7500 Security Boulevard  
Baltimore, MD 21244-1850

July 2, 2007

Ann Malecha  
Texas Women's University at Houston  
6700 Fannin  
Houston, TX 77030

Dear Ms. Malecha:

Enclosed is a copy of the signed Data Use Agreement (DUA) that the Texas Women's University at Houston has entered into with the Centers for Medicare & Medicaid Services (CMS) for your project entitled "Prevalence of Depressive Feelings in Older Adult Medicare Home Health Beneficiaries in Texas." A copy of the DUA is attached for your records so that you may refer to it for information regarding the use of the data and/or the data access privileges you have received from CMS. Please refer to the DUA number 17571 when addressing inquiries of any nature concerning this agreement. I have enclosed the CMS DUA Guidelines which outlines your responsibilities in terms of safeguarding the confidentiality of CMS data.

This approval is based on the understanding that personnel within your organization and any subcontracting organization's personnel will comply with all requirements of this Agreement into which you have entered. It is your responsibility to convey a copy of this agreement and CMS DUA Guidelines to the ccs listed below for your organization and/or any subcontracting organization. Please emphasize the importance of complying with this agreement. Note that this approval only applies to this request for the study mentioned above. Any additional purpose will have to be reviewed and approved by CMS.

**Please be advised that new policy changes will be effective August 1, 2005, concerning requests for CMS identifiable data.** Issuances of future DUAs will not be processed until **ALL EXPIRED DUAS FOR YOUR NAME** have been resolved. Expired DUAs are those that have lapsed their "retention date" per item #8 of the DUA form. Resolution of expired DUAs is addressed at the following CMS website: [www.cms.hhs.gov/privacyact/requests/](http://www.cms.hhs.gov/privacyact/requests/) under "DUA Extensions, Return or Destruction of CMS Data."



Page 2

If you have any questions about this DUA, the new policy change for future requests, or the use of the CMS data, you may contact me at (410) 786-0184.

Sincerely,

A handwritten signature in cursive script that reads "Robin Dalton".

Robin Dalton  
Division of Privacy Compliance  
Enterprise Architecture and Strategy Group  
Office of Information Services  
Division of Privacy Compliance

Enclosures

Cc:

Kelly Vandenberg/Brenda Binder/Anne Young/Mary Watson, Texas Women's  
University at Houston

**Centers for Medicare & Medicaid Services (CMS)  
Data Use Agreement (DUA) Guidelines**

1. Requestor agrees to notify CMS if their project is completed sooner than the expiration date specified in the DUA.
2. Requestor agrees that any data provided by CMS will not be physically moved or electronically transmitted in any way from the site indicated in the DUA without expressed written authorization from CMS. If location needs to be modified, the DUA should be updated to include the new location.
3. Upon completion of the project and/or expiration of the DUA, the data must be returned to CMS at the requestor's expense, or destroyed and a statement certifying this action sent to CMS. The Requestor agrees that no data, copies, or parts thereof, shall be retained when the file(s) are returned or destroyed, unless CMS has authorized in writing such retention of said file(s). These options are explained below:
  - a. Return data (and any derivative files) to CMS along with a letter delineating the data set names and volume/serial numbers of the files being returned. The letter should reference the DUA number and study name. This letter and the data should be sent to the following address:

**Centers for Medicare & Medicaid Services  
CMS Data Center  
North Building  
Attention: Data Release Area  
7500 Security Boulevard  
Baltimore, Maryland 21244-1850; or**

- b. Destroy data and provide a letter to CMS on your organization's letterhead certifying that this action has taken place. This letter must reference the DUA number, study name, the data set names, and volume/serial numbers of the files being destroyed. The Requestor should forward this information to:

**Director DPCDD  
Centers for Medicare & Medicaid Services  
Division of Privacy Compliance  
Enterprise Architecture and Strategy Group  
Office of Information Services  
7500 Security Boulevard  
Mailstop: N2-04-27  
Baltimore, Maryland 21244-1850**

4. If the project is still active and the DUA has expired, a one (1) year extension may be granted. The extension will only be approved if the data will continue to be used for the original project purpose and the expiration date has occurred within the past year; otherwise, a new DUA must be negotiated. The letter requesting an extension should be directed to the name and address in item 3b above.
5. Please visit our new website, Privacy Protected Data Request: Policies and Procedures at: <http://www.cms.hhs.gov/PrivProtectedData/>.

**DATA USE AGREEMENT**

DUA #

17571

**AGREEMENT FOR USE OF CENTERS FOR MEDICARE & MEDICAID SERVICES (CMS) DATA  
CONTAINING INDIVIDUAL SPECIFIC INFORMATION)**

In order to secure data that reside in a CMS Privacy Act System of Records; in order to ensure the integrity, security, and confidentiality of information maintained by the CMS; and to permit appropriate disclosure and use of such data as permitted by law, CMS and **Texas Woman's University at Houston** enter into this agreement to comply with the following specific paragraphs. (Requestor)

1. This Agreement is by and between the Centers for Medicare & Medicaid Services (CMS), a component of the U.S. Department of Health and Human Services (HHS), and Texas Woman's University at Houston, hereinafter termed "User."
2. This Agreement addresses the conditions under which CMS will disclose and the User will obtain, use, reuse and disclose the CMS data file(s) specified in section 5 and/or any derivative file(s) that contain direct individual identifiers or elements that can be used in concert with other information to identify individuals. This Agreement supersedes any and all agreements between the parties with respect to the use of data from the files specified in section 5 and preempts and overrides any instructions, directions, agreements, or other understanding in or pertaining to any grant award or other prior communication from the Department of Health and Human Services or any of its components with respect to the data specified herein. Further, the terms of this Agreement can be changed only by a written modification to this Agreement or by the parties adopting a new agreement. The parties agree further that instructions or interpretations issued to the User concerning this Agreement or the data specified herein, shall not be valid unless issued in writing by the CMS point-of-contact specified in section 5 or the CMS signatory to this Agreement shown in section 21.
3. The parties mutually agree that CMS retains all ownership rights to the data file(s) referred to in this Agreement, and that the User does not obtain any right, title, or interest in any of the data furnished by CMS.
4. The User represents, and in furnishing the data file(s) specified in section 5 CMS relies upon such representation, that such data file(s) will be used solely for the following purpose(s).

Prevalence of depressive feelings in older adult Medicare home health beneficiaries in Texas

Name of the Study/Project

CMS Contract No (If applicable)

The User represents further that the facts and statements made in any study or research protocol or project plan submitted to CMS for each purpose are complete and accurate. Further, the User represents that said study protocol(s) or project plans, that have been approved by CMS or other appropriate entity as CMS may determine, represent the total use(s) to which the data file(s) specified in section 5 will be put.

The User agrees not to disclose, use or reuse the data covered by this agreement except as specified in an Attachment to this Agreement or except as CMS shall authorize in writing or as otherwise required by law, sell, rent, lease, loan, or otherwise grant access to the data covered by this Agreement. The User affirms that the requested data is the minimum necessary to achieve the purposes stated in this section. The User agrees that, within the User organization and the organizations of its agents, access to the data covered by this Agreement shall be limited to the minimum amount of data and minimum number of individuals necessary to achieve the purpose stated in this section (i.e., individual's access to the data will be on a need-to-know basis).

5. The following CMS data file(s) is/are covered under this Agreement.

Files	Year(s)	System of Record
OASIS (Texas only)	2005	

6. The parties mutually agree that the aforesaid file(s) (and/or any derivative file(s)) including those files that directly identify individuals and those that can be used in concert with other information to identify individuals may be retained by the User until April 30, 2012, hereinafter known as the "Retention Date." The User agrees to notify CMS within 30 days of the completion of the purpose specified in section 4 if the purpose is completed before the aforementioned retention date. Upon such notice or retention date, whichever occurs sooner, CMS will notify the User either to return all data files to CMS at the User's expense or to destroy such data. If CMS elects to have the User destroy the data, the User agrees to destroy and send written certification of the destruction of the files to CMS within 30 days of receiving CMS's instruction. If CMS elects to have the data returned, the User agrees to return all files and any derivative files to CMS within 30 days of receiving notice to that effect. The User agrees not to retain CMS files or any parts thereof, after the aforementioned file(s) are returned or destroyed unless the appropriate Systems Manager or the person designated in section 21 of this Agreement grants written authorization. The User acknowledges that the date is not contingent upon action by CMS, and the User agrees to assume the duty to ask CMS for instructions under this paragraph if instructions are not received within 30 days of the retention date's passing.

The Agreement may be terminated by either party at any time for any reason upon 30 days written notice. Upon notice of termination by User, CMS will cease releasing data from the file(s) to the User under this Agreement and will notify the User to either return all data files to CMS at the User's expense or destroy such data file(s), using the same procedures stated in the preceding paragraph. Sections 3, 4, 6, 9, 10, 11, 12, 14, 15 and 16 shall survive termination of this Agreement.

7. The User agrees to establish appropriate administrative, technical, and physical safeguards to protect the confidentiality of the data and to prevent unauthorized use or access to it. The safeguards shall provide a level and scope of security that is not less than the level and scope of security established by the Office of Management and Budget (OMB) in OMB Circular No. A-130, Appendix III--Security of Federal Automated Information Systems (<http://www.whitehouse.gov/omb/circulars/a130/a130.html>), which sets forth guidelines for security plans for automated information systems in Federal agencies. The User acknowledges that the use of unsecured telecommunications, including the Internet, to transmit individually identifiable or deducible information derived from the file(s) specified in section 5 is prohibited. Further, the User agrees that the data must not be physically moved, transmitted or disclosed in any way from or by the site indicated in section 18 without written approval from CMS unless such movement, transmission or disclosure is required by a law.
8. The User agrees to grant access to the data to the authorized representatives of CMS or DHHS Office of the Inspector General at the site indicated in section 4 for the purpose of inspecting to confirm compliance with the terms of this agreement.

9. The User agrees not to disclose direct findings, listings, or information derived from the file(s) specified in section 5, with or without direct identifiers, if such findings, listings, or information can, by themselves or in combination with other data, be used to deduce an individual's identity unless it obtains written authorization to do so from the appropriate System Manager or the person designated in section 21 of this Agreement. Examples of such data elements include, but are not limited to geographic location, age if > 89, sex, diagnosis and procedure, admission/discharge date(s), or date of death. The User agrees further that CMS shall be the sole judge as to whether any finding, listing, information, or any combination of data extracted or derived from CMS's files identifies or could, with reasonable effort, be used to identify an individual.
10. The User agrees that, absent express written authorization from the appropriate System Manager or the person designated in section 21 of this Agreement to do so, the User shall not attempt to link records included in the file(s) specified in section 5 to any other individually identifiable source of information. This includes attempts to link the data to other CMS data file(s). A protocol that includes the linkage of specific files that has been approved in accordance with section 4 constitutes express authorization from CMS to link files as described in the protocol.
11. The User agrees to submit to CMS a copy of all findings within 30 days of making such findings. The parties mutually agree that the User has made findings with respect to the data covered by this Agreement when the User prepares any report other writing for submission to another party (including but not limited to any manuscript to be submitted for publication) concerning any purpose specified in section 4 (regardless of whether the report or other writing expressly refers to such purpose, to CMS, or to the files specified in section 5 or any data derived from such files). The User agrees not to submit such findings to any other party until CMS finds that the findings do not breach the confidentiality of CMS' data by allowing for the identification of the data's subject individuals. CMS agrees to make determination about approval and to notify the user within 4 to 6 weeks after receipt of findings. CMS may withhold approval for publication only if it determines that the format in which data are presented may result in identification of individual beneficiaries. The User agrees further to submit its findings to the National Technical Information Service (NTIS, 5285 Port Royal Road, Springfield, Virginia 22161) within 30 days of receiving notice from CMS to do so.
12. The User understands and agrees that they may not reuse original or derivative data file(s) without prior written approval from the appropriate System Manager or the person designated in section 21 of this Agreement.
13. The parties mutually agree that the following specified Attachments are part of this Agreement:

Signature addendum to DUA

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14. The User agrees that in the event CMS determines or has a reasonable belief that the User has made or may have made a use, reuse or disclosure of the aforesaid file(s) that is not authorized by this Agreement or another written authorization from the appropriate System Manager or the person designated in section 21 of this Agreement, CMS, at its sole discretion, may require the User to: (a) promptly investigate and report to CMS the User's determinations regarding any alleged or actual unauthorized use, reuse or disclosure, (b) promptly resolve any problems identified by the investigation; (c) if requested by CMS, submit a formal response to an allegation of unauthorized use, reuse or disclosure; (d) if requested by CMS, submit a corrective action plan with steps designed to prevent any future unauthorized uses, reuses or disclosures; and (e) if requested by CMS, return data files to CMS or destroy the data files it received from CMS under this agreement. The User understands that as a result of CMS's determination or reasonable belief that unauthorized uses, reuses or disclosures have taken place, CMS may refuse to release further CMS data to the User for a period of time to be determined by CMS.

15. The User hereby acknowledges that criminal penalties under § 1106(a) of the Social Security Act (42 U.S.C. § 1306(a)), including a fine not exceeding \$10,000 or imprisonment not exceeding 5 years, or both, may apply to disclosures of information that are covered by § 1106 and that are not authorized by regulation or by Federal law. The User further acknowledges that criminal penalties under the Privacy Act (5 U.S.C. § 552a(i)(3)) may apply if it is determined that the Requestor or Custodian, or any individual employed or affiliated therewith, knowingly and willfully obtained the file(s) under false pretenses. Any person found to have violated sec. (i)(3) of the Privacy Act shall be guilty of a misdemeanor and fined not more than \$5,000. Finally, the User acknowledges that criminal penalties may be imposed under 18 U.S.C. § 641 if it is determined that the User, or any individual employed or affiliated therewith, has taken or converted to his own use data file(s), or received the file(s) knowing that they were stolen or converted. Under such circumstances, they shall be fined under Title 18 or imprisoned not more than 10 years, or both; but if the value of such property does not exceed the sum of \$1,000, they shall be fined under Title 18 or imprisoned not more than 1 year, or both.

16. By signing this Agreement, the User agrees to abide by all provisions set out in this Agreement and acknowledges having received notice of potential criminal or administrative penalties for violation of the terms of the Agreement.

17. On behalf of the User the undersigned individual hereby attests that he or she is authorized to legally bind the User to the terms this Agreement and agrees to all the terms specified herein.

Name and Title of User (typed or printed) Ann Malecha, PhD		
Company/Organization Texas Woman's University at Houston		
Street Address 6700 Fannin		
City Houston	State Texas	ZIP Code 77030
Office Telephone (Include Area Code) (713) 794-2725		E-Mail Address (If applicable) amalecha@twu.edu
Signature <i>Ann Malecha</i>		Date 5/23/07

18. The parties mutually agree that the following named individual is designated as Custodian of the file(s) on behalf of the User and will be the person responsible for the observance of all conditions of use and for establishment and maintenance of security arrangements as specified in this Agreement to prevent unauthorized use. The User agrees to notify CMS within fifteen (15) days of any change of custodianship. The parties mutually agree that CMS may disapprove the appointment of a custodian or may require the appointment of a new custodian at any time.

The Custodian hereby acknowledges his/her appointment as Custodian of the aforesaid file(s) on behalf of the User, and agrees to comply with all of the provisions of this Agreement on behalf of the User.

Name and Custodian (typed or printed) Kelly S. Vandenberg, MSN		
Company/Organization Texas Woman's University at Houston		
Street Address 6700 Fannin		
City Houston	State Texas	ZIP Code 77030
Office Telephone (Include Area Code) (713) 446-5966		E-Mail Address (If applicable) kvandenberg@houston.rr.com
Signature <i>Kelly S. Vandenberg</i>		Date 5-23-07



19. The disclosure provision(s) that allows the discretionary release of CMS data for the purpose(s) stated in section 4 follow(s). (To be completed by CMS staff.)

20. On behalf of \_\_\_\_\_ the undersigned individual hereby acknowledges that the aforesaid Federal agency sponsors or otherwise supports the User's request for and use of CMS data, agrees to support CMS in ensuring that the User maintains and uses CMS's data in accordance with the terms of this Agreement, and agrees further to make no statement to the User concerning the interpretation of the terms of this Agreement and to refer all questions of such interpretation or compliance with the terms of this Agreement to the CMS official named in section 21 (or to his or her successor).

Typed or Printed Name		Title of Federal Representative	
Signature		Date	
Office Telephone (Include Area Code)		E-Mail Address (If applicable)	

21. The parties mutually agree that the following named individual will be designated as point-of-contact for the Agreement on behalf of CMS.

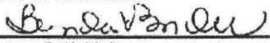
On behalf of CMS the undersigned individual hereby attests that he or she is authorized to enter into this Agreement and agrees to all the terms specified herein.

Name of CMS Representative (typed or printed)			
Title/Component			
Street Address			
City			
Office Telephone (Include Area Code)		E-Mail Address (If applicable)	
Zip Code			
a.	Typed or Printed Name and Title of CMS Representative		Date
	Signature <i>Robin Dalton</i>		Date <i>7/12/07</i>
b.	Concur/Nonconcur	Signature of CMS System Manager or Business Owner	Date
	<i>0 ASIS</i>	<i>see e-mail from Pat Sevard</i>	<i>7/6/07</i>
	Concur/Nonconcur	Signature of CMS System Manager or Business Owner	Date
	Concur/Nonconcur	Signature of CMS System Manager or Business Owner	Date

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0938-0734. The time required to complete this information collection is estimated to average 30 minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form please write to: CMS 7500 Security Boulevard Attn: Reports Clearance Officer Baltimore, Maryland 21244-1850.

**ADDENDUM TO DATA USE AGREEMENT (DUA)**

Addendum to DUA for . If this is an addendum to a previously approved DUA, insert the CMS assigned DUA number here: **17571**. The following individual(s) may/will have access to CMS data that is being requested for this agreement. Their signatures attest to their agreement to the terms of this Data Use Agreement:

Name and Title of Individual ( <i>typed or printed</i> )		
<b>Brenda Binder, PhD</b>		
Task / Role of this Individual	Company/Organization	
<b>Committee member</b>	<b>Texas Woman's University at Houston</b>	
Street Address		
<b>6700 Fannin Room 7418</b>		
City	State	Zip Code
<b>Houston</b>	<b>Texas</b>	<b>77030</b>
Office Telephone ( <i>Include Area Code</i> )	E-Mail Address ( <i>If applicable</i> )	
<b>713-794-2887</b>	<b>bbinder@twu.edu</b>	
Signature of Individual	Date:	
	<b>05-23-07</b>	
Signature of CMS Representative	Date:	
Signature of CMS Project Officer ( <i>if applicable</i> )	Date:	

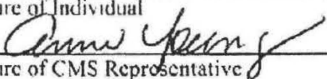
Name and Title of Individual ( <i>typed or printed</i> )		
Task / Role of this Individual	Company/Organization	
Street Address		
City	State	Zip Code
Office Telephone ( <i>Include Area Code</i> )	E-Mail Address ( <i>If applicable</i> )	
Signature of Individual	Date:	
Signature of CMS Representative	Date:	
Signature of CMS Project Officer ( <i>if applicable</i> )	Date:	

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0938-0734. The time required to complete this information collection is estimated to average 30 minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to: CMS, 7500 Security Boulevard, Attn: Reports Clearance Officer, Baltimore, Maryland 21244-1850



**ADDENDUM TO DATA USE AGREEMENT (DUA)**

Addendum to DUA for . If this is an addendum to a previously approved DUA, insert the CMS assigned DUA number here: 17571. The following individual(s) may/will have access to CMS data that is being requested for this agreement. Their signatures attest to their agreement to the terms of this Data Use Agreement:

Name and Title of Individual (typed or printed) <b>Anne Young, EdD</b>		
Task / Role of this Individual <b>Committee member</b>	Company/Organization <b>Texas Woman's University at Houston</b>	
Street Address <b>6700 Fannin Room 6031</b>		
City <b>Houston</b>	State <b>Texas</b>	Zip Code <b>77030</b>
Office Telephone (Include Area Code) <b>713-794-2109</b>	E-Mail Address (If applicable) <b>EYoung@twu.edu</b>	
Signature of Individual 	Date: <b>5/24/07</b>	
Signature of CMS Representative	Date:	
Signature of CMS Project Officer (if applicable)	Date:	

Name and Title of Individual (typed or printed)		
Task / Role of this Individual	Company/Organization	
Street Address		
City	State	Zip Code
Office Telephone (Include Area Code)	E-Mail Address (If applicable)	
Signature of Individual	Date:	
Signature of CMS Representative	Date:	
Signature of CMS Project Officer (if applicable)	Date:	

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0938-0734. The time required to complete this information collection is estimated to average 30 minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to: CMS, 7500 Security Boulevard, Attn: Reports Clearance Officer, Baltimore, Maryland 21244-1850.

### ADDENDUM TO DATA USE AGREEMENT (DUA)

Addendum to DUA for 751. If this is an addendum to a previously approved DUA, insert the CMS assigned DUA number here: 751. The following individual(s) may/will have access to CMS data that is being requested for this agreement. Their signatures attest to their agreement to the terms of this Data Use Agreement:

Name and Title of Individual (typed or printed)		
Mary Watson, PhD		
Task / Role of this Individual	Company/Organization	
statistician	Texas Woman's University at Houston	
Street Address		
6700 Fannin Room 6017		
City	State	Zip Code
Houston	Texas	77030
Office Telephone (Include Area Code)	E-Mail Address (If applicable)	
713-794-2058	mwatson@twu.edu	
Signature of Individual	Date:	
<i>Mary Watson</i>	6/4/07	
Signature of CMS Representative	Date:	
Signature of CMS Project Officer (if applicable)	Date:	

Name and Title of Individual (typed or printed)		
Task / Role of this Individual	Company/Organization	
Street Address		
City	State	Zip Code
Office Telephone (Include Area Code)	E-Mail Address (If applicable)	
Signature of Individual	Date:	
Signature of CMS Representative	Date:	
Signature of CMS Project Officer (if applicable)	Date:	

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0938-0734. The time required to complete this information collection is estimated to average 30 minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to: CMS, 7500 Security Boulevard, Attn: Reports Clearance Officer, Baltimore, Maryland 21244-1850.

## Privacy Board Review Summary Sheet

Date reviewed by CMS Privacy Board (to be completed by CMS staff):

Requestor name, title, and institution:

Ann Malecha, PhD  
Professor at Texas Woman's University at Houston

Funding Source:

Self funded by Kelly S. Vandenberg for dissertation.

Title of the research study:

Prevalence of depressive feelings in older adult Medicare home health beneficiaries in Texas

Data requested:

OASIS admission and discharge data in Texas for the year 2005 based on effective date.

Brief description of the study:

This study will investigate the prevalence and demographic characteristics (age, race, gender) of depressive feelings in the Medicare home health beneficiaries in Texas for 2005. In addition, this study will use a multiple regression model to analyze if depressive feelings predict length of stay. Data for this Medicare population has been collected at an individual level. This research will use Federal database OASIS for the state of Texas, since Texas has a large number of Medicare beneficiaries and experienced the highest reimbursement per beneficiary and highest number of visits in 2004.

Understanding the impact of depressive feelings in older adults on admission to home health care services will alert the nurse and benefit the patient. Armed with more information on the impact of depressive feelings (depressed mood, sense of failure or self reproach, hopelessness, recurrent thoughts of death, and thoughts of suicide) will assist the nurse in identifying the need for additional mental health investigations. In addition, the investigation on depressive feelings will provide additional information for the development of instruments that would identify depression in the older adult population

*To be completed by CMS*

Did the requestor demonstrate:

- Potential benefit to beneficiaries or the CMS Programs
- Need for identifiable data
- Impossible/impracticable to obtain patient consent
- Minimal risk to beneficiary's privacy if data is disclosed
- Need to contact beneficiaries via Beneficiary Notification Letter

Notes / Comments:

Privacy Board's Decision:

Signature of Board Member:

APPROVED  
S. M. S. Davis  
4/22/07

Updated 9/15/06

## Vandenberg, Kelly

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**From:** Sroka, Stephen M. (CMS/OIS) [Stephen.Sroka@cms.hhs.gov]  
**Sent:** Thursday, July 31, 2008 12:33 PM  
**To:** Vandenberg, Kelly  
**Subject:** RE: Vandenberg (approval requested)

Kelly--Based on your submittal, the Centers for Medicare & Medicaid Services (CMS) approve your chapter/tables as submitted. This approval is based on the use of CMS data and does not represent a CMS endorsement of or comment on the actual submittal itself. CMS' main concern is to ensure that no cells (patients, admittances, discharges, etc.) less than 11 are displayed in any fashion and to protect the privacy and identity of beneficiaries nationwide. Please contact me at 410-786-3680 if you have any questions. Thank you.

-----Original Message-----

**From:** Vandenberg, Kelly [mailto:KVandenberg@mail.twu.edu]  
**Sent:** Thursday, July 31, 2008 12:53 PM  
**To:** Sroka, Stephen M. (CMS/OIS)  
**Subject:** RE: Vandenberg (approval requested)

Stephen,  
After we spoke, you said I could send 9 pages.  
I do not understand the 50 screens.  
I did change the format for each page to single space and decreased the material down to 3 pages.  
I have attached it with this email. Please let me know if the is sufficient.  
I hope to defend on the 5th of August.

Thank you for your time,  
Kelly S. Vandenberg

-----Original Message-----

**From:** Sroka, Stephen M. (CMS/OIS) [mailto:Stephen.Sroka@cms.hhs.gov]  
**Sent:** Thursday, July 31, 2008 11:44 AM  
**To:** Vandenberg, Kelly  
**Subject:** RE: Vandenberg (approval requested)

Kelly--We only accept 6 pages or less via email. Your submittal contains 50 screens. Are there just 6 or so representative pages showing use of the data that you can send me? If you're not sure or can't separate out, then send the whole pkg. via fedex or other carrier.  
Address to:

Maribel Franey  
Director, Division of Privacy Compliance Mail stop N2-04-27 7500 Security Blvd.  
Balto, MD 21244-1850

Contact me if you have any questions. Thank you.

-----Original Message-----

**From:** Vandenberg, Kelly [mailto:KVandenberg@mail.twu.edu]  
**Sent:** Monday, July 28, 2008 5:09 PM  
**To:** Sroka, Stephen M. (CMS/OIS)  
**Subject:** Vandenberg (approval requested)

Stephen,

## APPENDIX C

### OASIS Item Levels and Statistical Analysis

## Appendix C

### *OASIS Item Levels and Statistical Analysis*

Variable	Name	Categories	Statistical test	Sample limits
Item 590	Depressive	0-No; 1-Yes	Variable used in	All Medicare home health
*OASIS	feelings	Recode for demographic analysis:	below statistics	patients in Texas during 2005.
dmission				Delete duplicates. Accept only
form		1-Depressed mood	Frequencies of entire	patient episodes that were
		2-Sense of failure or self reproach	population and for	admitted and discharged in
		3-Hopelessness	each category of	2005.
		4-Recurrent thoughts of death		
		5-Thoughts of suicide		
		6-one of the above feelings observed or reported	depressive feelings,	
		Recode for chi square analysis:		
		No's for all categories	Multivariate	
		0-No	regression	
		Yes in any five categories as		
		1-Yes		

Item 030	Age	Calculate age by subtracting MO030 from MO066	Frequencies of age	All Medicare home health
*		Use ratio data for t-test	for entire sample and	patients in Texas during 2005.
Item 030		Recode in following categories for frequencies	each depressive	Delete duplicates. Accept only
Item 066		0-age 65-74	feeling	patient episodes that were
(birth		1-age 75-84		admitted and discharged in
date)		2-age 85 and older	Multivariate analysis	2005.
Item 140	Race	Black or African-American	Frequencies for entire	All Medicare home health
*OASIS		Hispanic or Latino	population, groups	patients in Texas during 2005.
admissio		White	with depressive	Delete duplicates. Accept only
n form		Asian	feeling and those	patient episodes that were
		Other	without depressive	admitted and discharged in
		All codes 0-NO	feelings	2005.
		1-YES		
		Recode to:		
		0-Black or African-American	Multivariate analysis	
		1-Hispanic or Latino		
		2-White		
		3-Asian		
		4-other		

*item	Gender	1-Male	Frequencies of entire	All Medicare home health
069		2-Female	population, groups	patients in Texas during 2005.
OASIS			with each depressive	Delete duplicates. Accept only
admissio			feeling and group	patient episodes that were
n form			without depressive	admitted and discharged in
			feelings	2005.
			Multivariate analysis	

Item 030	LOS	Item 870 reason for assessment	Frequencies of	All Medicare home health
admissio		1-Patient remained in community	patients with each	patients in Texas during 2005.
n date		2-Patient transferred to non institutional hospice	depressive feeling	Delete duplicates. Accept only
Item 906		3-Unknown because patient moved to a geographic		patient episodes that were
Discharg		Location not served by this agency	Multivariate analysis	admitted and discharged in
e date		UK- other unknown		2005.
		Only select entries in category 1		Limit analysis to patients
				discharged to community only

\*at Start of Care-items 100=01; 150 Medicare (traditional fee for service) and Medicare (HMO/managed care) 1= YES