A CULTURAL CONSENSUS ANALYSIS OF TYPE II DIABETES AND HYPERTENSION

by

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Presented to the Faculty of the Graduate School of

The University of Texas at Arlington in Partial Fulfillment

of the Requirements

for the Degree of

DOCTOR OF PHILOSOPHY

THE UNIVERSITY OF TEXAS AT ARLINGTON

August 2016

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Acknowledgements

Thanks first go to my initial Faculty Mentor, Dr. Pablo Mora, for all of his direction and belief in this project. Dr. Mora was able to provide me with consistent support and encouragement during my first two years at UTA. His instruction and leadership will be sorely missed but fondly remembered. Secondly, I would like to thank my current Faculty Mentor and Dissertation Committee Chairperson, Dr. Angela Liegey Dougall, for all the help and guidance she has provided, not only on this project but during the entirety graduate career here at UTA. Additionally, Dr. Gatchel, my Dissertation Committee Co-chairperson, has supported my work throughout the completion of my degree. I would also like to acknowledge the help of my Committee Members, Dr. Kenworthy, Dr. Ickes, and Dr. Nagoshi, who have all provided valuable insight on this project.

I would also like to thank my fellow graduate students for all of their help and support for this project and throughout my graduate career, as well as the undergraduate students who diligently worked on this project. Finally, I would like to thank my family and friends for their continued support and patience.

August 22, 2016

Abstract

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There has been a dearth of information that explains group beliefs about chronic diseases. The overall aim of this study was to use both qualitative and quantitative methods to understand consensus in illness beliefs among diabetic and hypertensive patients. The cultural consensus and common-sense model of self-regulation were used to provide a theoretical framework for the findings. Older diabetic and hypertensive adults recruited from the community took part in a semi-structured interview and answered questionnaires. Results indicated that all participants shared a single cultural belief regarding these chronic illnesses. Contrary to expectations, there were no differences in cohesive beliefs between members of different socioeconomic statuses in each illness condition, nor were there differences between the two conditions. Qualitative data revealed that diabetic and hypertensive participants spent most of the interviews discussing their medical treatments; subjects focused on their prescribed medications as well as their diet and exercise regimes (or lack thereof). Many of the interviews also

focused on the complications and symptoms that the participants experienced or had heard about, and only a small number of the interviews focused on the actual causes of their conditions. These results highlight the lived experience of the participants, focusing primarily on their daily actions and the consequences of having a chronic illness. In conclusion, via the qualitative data, the current study was able to shed light on participants' beliefs and experiences of having a chronic condition, furthering research in this area. Future directions should focus on other factors, such as level of education, which may better explain differences in cultural beliefs among diabetic and hypertensive patients.

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Chapter 1

Introduction

From 1980 through 2011, the number of adults with diabetes has more than tripled in the United States, increasing from 5.5 million to 19.6 million people (CDC, 2014). At present, 18% of Americans aged 45 and older have this condition (CDC, 2014). Type II diabetes, specifically, accounts for more than 90% of diabetes cases (Balkrishnan et al., 2003; WHO, 2015). With such large increases and such a large proportion of older adults being diagnosed with Type II diabetes, it is important that older adults have an accurate understanding of the causes, symptoms, and treatments associated with the disease.

Historically, research on Type II diabetes has focused on predicting disease risk (Aekplakorn et al., 2006; Hippisley-Cox et al., 2009; Schmidt et al., 2013; Wang et al., 2005), treatment interventions (Diabetes Prevention Program Research Group, 2002; Wing et al., 1998), and adherence to prescribed treatment (Balkrishnan et al., 2003; Donnan, MacDonald, & Morris, 2002; Gonzalez et al., 2007). This research has focused on ways to identify at risk *individuals* and how to treat them; however, very little information has focused on the ways *groups* view the causes, symptoms, and treatments of the disease. Theoretical approaches, such as the common-sense model of self-regulation (Leventhal, Leventhal, & Contrada, 1998) and the cultural consensus model (Romney, Weller,

& Batchelder, 1986), provide a framework for describing the beliefs that groups have about Type II diabetes.

Using the aforementioned theoretical models as a framework, a mixed methods methodological approach was used to explore/support the meanings behind illness beliefs and to highlight the ways these beliefs translate into healthcare decision-making and health behaviors. This approach was innovative in that previous studies had not looked at group beliefs about diabetes based on financial strain, used as a proxy for socioeconomic status (SES), quantitatively or qualitatively, and this study filled both of those gaps. Specifically, this study explored if there were group differences between high and low SES diabetic participants on questions related to the causes, symptoms, treatments, complications, and general knowledge about Type II diabetes. It also explored if there were differences between high and low SES hypertensive participants on the same concepts related to hypertension; high SES individuals were expected to evidence more consensus than low SES individuals for both diabetic and hypertensive groups. This study also determined if there were perceived differences between disease types. Because having hypertension is often a risk factor for developing diabetes, it was hypothesized that participants with diabetes would have more similar beliefs than the hypertensive controls. Lastly, demographic factors were explored to determine which were associated with the degree of cultural consistency an individual had with regard to these chronic

conditions. Qualitative data were used to build on the cultural consensus analysis (CCA) and elucidate the types of beliefs groups had in relation to various aspects of their diseases. Overall, this study explored and identified common beliefs regarding these two chronic illnesses by differentiating high SES from low SES patients. It also identified differences between a more advanced chronic illness and one which is a precursor to many other diseases.

1.1 Type II Diabetes

Diabetes mellitus is a syndrome in which the body is unable to metabolize carbohydrates, fats, and proteins due to the lack of insulin secretion or decreased tissue sensitivity to insulin (Guyton & Hall, 2010). Insulin is a hormone synthesized in the pancreas, which plays an important role in the uptake, storage, and use of glucose. Type II diabetes, specifically, is caused by the decrease in tissue sensitivity, known as insulin resistance. This condition inhibits the efficient uptake and utilization of glucose by most cells in the body, resulting in an increase in plasma insulin concentration. Blood glucose rises as a result of the body's inability to appropriately utilize and store carbohydrates, which stimulates an increase in insulin secretion (Guyton & Hall, 2010). Unmanaged diabetes can lead to a variety of additional health complications such as heart disease, kidney failure, blindness, and lower-extremity amputations (CDC, 2015a).

Given the widespread prevalence of diabetes, as well as the potential serious consequences from having the disease, it is important to understand the

risk factors, symptoms, and treatment options available. The exact cause of diabetes is still unknown; however, there seems to be a link to obesity (Tuomilehto et al, 2001). Type II diabetes is a slow-developing disorder that usually begins with excessive weight gain. Aside from obesity, other risk factors include old age, physical inactivity, past history of gestational diabetes, family history of diabetes, and race/ethnicity (Hispanic and African Americans are at a greater risk than Caucasian Americans; CDC, 2015a). Other genetic factors, such as polycystic ovary syndrome and Cushing's syndrome, can also cause insulin resistance (Guyton & Hall, 2010).

Because obesity plays a large role in the development of diabetes, preventing or delaying the onset of Type II diabetes is relatively straightforward. Individuals should maintain a healthy body weight, engage in regular physical activity, and eat a healthy diet. A healthy body weight is often identified via body mass index (BMI), in which people should strive to have a BMI of 18.5-24.9 kg/m^2 to remain within healthy levels. Individuals who are classified as either overweight or obese are at higher risk (Mokdad et al., 2003). Weight distribution should also be considered when managing body weight; high amounts of visceral adipose tissue result in a greater risk for developing the disease (Chan et al., 1994). Regular exercise is also encouraged (Helmrich, Regland, Leung, & Paffenbarger, 1991). Engaging in at least 30 minutes of moderate-intensity physical activity on most days is recommended; however, more physical activity is needed to reduce weight

(Garber et al., 2011). Predominately sedentary lifestyles are associated with increased risk for Type II diabetes (Healy et al., 2008). Lastly, eating healthy (the recommended five servings of fruits and vegetables each day), while reducing fat and sugar intake is also important (CDC, 2015b).

Unfortunately, more than two-thirds (68.8%) of the adult population in the United States is overweight or obese (NIDDK, 2012), and 52% of adults do not meet the recommended minimum requirements for physical activity (ACSM, 2011). Due in part to an increase in sedentary lifestyles, diabetes has become more prevalent, and, therefore, being able to identify its symptoms is important. Symptoms of Type II diabetes are often less pronounced than symptoms of Type I diabetes, and for this reason diagnosing Type II diabetes is often delayed. However, symptoms such as frequent urination, frequent thirst, increased hunger, changes in vision, tingling/numbness in hands/feet, fatigue, dry skin, and slow wound healing, can all be signs of Type II diabetes (CDC, 2015a). Once pre-diabetes or diabetes has been diagnosed, it is important to ensure that patients adhere to their physicians' recommended treatment regimen. Unfortunately, there is no cure for Type II diabetes, but weight loss and healthy eating have been found to aid in the management of the condition (Ferchak & Meneghini, 2004).

As well as maintaining a healthy weight and diet, patients with Type II diabetes use other techniques to manage their condition (e.g., blood glucose testing, oral medication, and insulin). When exercising and eating healthy are not

enough to regulate glucose levels, some individuals take oral medications (such as metformin) to help lower their blood glucose levels. This is ideal for people who have recently developed Type II diabetes or those who need very little insulin to regulate their glucose levels (ADA, 2015h). Unfortunately, these pills may become less effective over time. When this occurs, physicians usually prescribe combination therapy, in which a patient uses both oral medications as well as insulin shots to help the insulin work more effectively. The management of Type II diabetes is of great importance given its link to neuropathy, blindness, and other debilitating conditions (CDC, 2008).

1.2 Diabetes and Socioeconomic Status

According to the World Health Organization, Type II diabetes prevalence is growing the most rapidly in low- and middle-income countries, and more than 80% of diabetes related deaths occur in these areas (2015). Moreover, in high income countries, the prevalence is highest in poorer individuals, indicating that there is a relationship between socioeconomic status and diabetes prevalence (WHO, 2016). This inverse relationship between SES and Type II diabetes has consistently been noted (Hwang & Shon, 2014; Larrañaga et al., 2005; Lidfeldt et al., 2007), especially in relation to middle aged adults (Connolly et al., 2000) and women (Robbins et al., 2011). Additionally, Robbins et al (2000) showed that greater Type II diabetes prevalence in African American women is partially explained by differences in their income compared to that of non-Hispanic white

women. Another study found that not only was low income a risk factor for developing Type II diabetes, but that living in a low SES neighborhood is also a factor (Krishnan et al., 2010). Lee et al (2011) found that lower income predicted a higher incidence of diabetes regardless of level of education. Other studies have examined whether differences in SES are related to the treatments and complications associated with Type II diabetes. For example, a study by Billings and colleagues (1993) found that individuals with low income and from low-income ZIP codes had higher rates of hospitalizations for ambulatory care sensitive conditions (e.g. Type II diabetes and hypertension) compared to individuals from high income households and high-income areas. Additionally, low-income patients had higher levels of disease severity when hospitalized, which suggests a more stringent threshold for hospital admittance. A related study found that patients in low-income neighborhoods had more ambulatory care visits, indicating that their higher hospitalizations rates are not due to inaccessibility or under-utilization of care (Roos et al., 2005).

Although many studies have examined the relationship between SES and the prevalence/outcomes of Type II diabetes, no studies were found which sought to explain differences in beliefs regarding the condition based on high versus low SES. It is possible that fundamental differences exist regarding individuals' beliefs surrounding the causes, symptoms, treatments, and general knowledge

about the disease depending on their level of SES; however, this relation has not previously been examined.

1.3 Cultural Consensus

It has been suggested that social factors and cultural beliefs affect the decision-making and health behaviors surrounding the management of chronic illnesses, from the detection of initial symptoms to the implementation of lifestyle changes (Leventhal et al., 2004). This is especially true in individuals with low income or who live in low-income areas. As noted above, individuals classified as low SES have the highest rates of Type II diabetes and receive the most treatment for the condition. Nevertheless, these individuals have the highest hospitalization rates, indicating that patients in the higher income areas are potentially getting more effective care in preventing hospitalizations, or their health behaviors are different from their low-income counterparts.

The present study focuses on expanding the research on how groups differ in their beliefs surrounding chronic illnesses, examining whether individuals in different SES groups evidence differences in their health beliefs and behaviors. Previous research has highlighted how belonging to a particular group reduces or increases the risk of developing a condition; however, much less is known about how groups think about these illnesses. Some recent literature has focused on elucidating the beliefs of minority cultures (Ratanasuwan et al., 2005; Smith, 2012; Weller et al., 1999), but it is possible that SES might be even more

important than race in explaining negative health outcomes. To date, no literature was found that has attempted to determine if there are distinct differences in beliefs about Type II diabetes for individuals with high versus low SES.

To address this gap in the research literature, the present study employed a technique commonly used to examine cultural beliefs about health outcomes. Cultural consensus analysis (CCA) is an ethnographic approach, primarily utilized in the field of medical anthropology, that helps researchers measure shared cultural beliefs. Not surprisingly, people's beliefs and behaviors are shaped by those around them. Therefore, it makes sense that people from similar cultures and backgrounds would share similar views in relation to their health. Cultural consensus analysis is an approach which assumes that there are culturally correct beliefs, and that we can measure how much an individual differs from the group consensus. This method enables the researcher to measure the level of agreement among individuals, and it gives each individual a weighted score based on the overall group's responses. This model differs from traditional medical approaches in that it disregards the "correctness" of the responses. This feature is particularly important because not all questions about health and illness have a single, "correct" answer. For example, hypertension is often described as a silent killer because it is typically asymptomatic. However, individuals with extremely high, unmanaged blood pressure can experience headaches and nosebleeds. This observation suggests that although hypertension is asymptomatic for most

individuals with the condition, this statistical generalization is not true for all individuals with high blood pressure. In light of this, researchers using the cultural consensus model do not necessarily care if the participants answer the questions correctly; instead, the focus is on the degree of consensus among the members of the group. Indeed, it is often the case that a large percentage of a population will believe something that is untrue (for example, the belief that going out in cold weather with wet hair will make you sick). Being able to identify and understand these shared beliefs, whether they are true or not, is important. It is also important to understand how these shared beliefs, or illness representations, potentially influence the ways in which individuals respond (i.e. in terms of their health behaviors).

It is important to note that this model refers to how culturally competent an individual is in relation to their groups beliefs. Each individual is given a competency score to show how much agreement they share about health beliefs, suggesting that there are culturally correct beliefs. In medical anthropology, the term competency is used to embody how strongly the individual aligns with the group, and thus identifying how successful the individual is in a group setting. Although this term suggests an individuals' ability to conform and flourish within the group, competency does not suggest that the knowledge/beliefs that the individual or group hold are correct. However, in the field of psychology the term competency innately holds some connotation with being correct, such that a

competent individual or group is one that has correct knowledge and beliefs. Because of this, the term consistency will be substituted for the more accepted term of competency. Consistency suggests that there is agreement between the individual and the group, without the ties to correctness. With the term consistency, it is not automatically assumed that the individual and the group are correct, merely that they hold the same beliefs.

1.4 Common-Sense Model of Self-Regulation

Supporting literature indicates that beliefs about chronic illness conditions can influence decision-making and health outcomes. A study by Frostholm and colleagues (2006) found that negative illness perceptions were associated with lower mental and physical health outcomes at all time points in a two-year follow-up. Therefore, it is vital that a theoretical approach to understanding illness beliefs incorporates cognitive components. Specifically, it would be useful to understand patients' beliefs about the symptoms, causes, perceived consequences, and origins of their diseases. The common-sense model of self-regulation (CSM) accomplishes this by providing a strong theoretical framework to help us understand how social/cultural and psychological factors determine health care decision-making and coping behaviors in response to a health threat (Leventhal, Leventhal, & Contrada, 1998). Leventhal's CSM conceptualizes illness events from the perspective of the patient, not the medical observer, recognizing that social/cultural factors influence patients' beliefs. This model divides illness

representations into five categories (identity, consequences, timeline, causes, and controllability), and incorporates the cognitive and affective components of each category. A patient's affective identity of an illness refers to their perception of their symptoms (i.e. blurred vision and numbed extremities), whereas their cognitive identity refers to an unbiased label of a condition (i.e., Type II diabetes). These representations, in turn, lead to health behaviors, such as checking glucose levels, exercising, and eating healthy (Leventhal, Diefenback, & Leventhal, 1992).

The common-sense model of self-regulation focuses on how people handle threats to their well-being, stating that cognitive and emotional representations drive coping behaviors (Hale, Treharne, & Kitas, 2007). The CSM is based on the belief that individuals play an active role in their own healthcare, by interpreting and responding to symptoms. As seen in Figure 1-1, this model is cyclical, allowing patients to hierarchically organize three main constructs, 1) their representation of their illness experience, 2) their coping responses, and 3) their appraisal (i.e. the monitoring of their efforts; Nerenz & Leventhal, 1983). In this model, individuals continue to re-evaluate their cognitive and emotional responses to symptoms after they have engaged in coping behaviors, allowing them to repeat the process until they reach an ideal state of well-being (Watkins, et al., 2000).

It has been suggested that cultural beliefs play an important role in the CSM, influencing all phases, from initial symptom detection/evaluation to engaging in/evaluating health behaviors. The CSM is therefore an appropriate theoretical framework to use in conjunction with cultural consensus analysis. Whereas the CSM highlights illness representations and states that culture is an influencing factor, the CCA focuses on a specific culture to determine which beliefs they hold as a collective group. Historically, the common-sense model has been used to gain a better understanding of a variety of illnesses, including diabetes (Watkins et al., 2000). Research using this model has primarily focused on the utilization of emergency medicine (i.e., hospitals and emergency clinics) as well as trait positive and negative affect.

Unlike previous research, the present study used the CSM to qualitatively explore older adults' cognitive representations of Type II diabetes and hypertension illness symptoms as well as how they managed their illness threat. Hence, it is important to understand individual's cognitions related to their illness and their behavioral reactions to illness symptoms, which was one goal of the current study. The qualitative portion of this study draws upon the CSM framework by asking participants to reflect on and explain their thoughts, feelings, and behaviors about the progression of their chronic disease since the time of their initial diagnosis. The CCA is incorporated by grouping the

participants into groups based on their condition, Type II diabetes or hypertension, and their socioeconomic status, high or low SES.

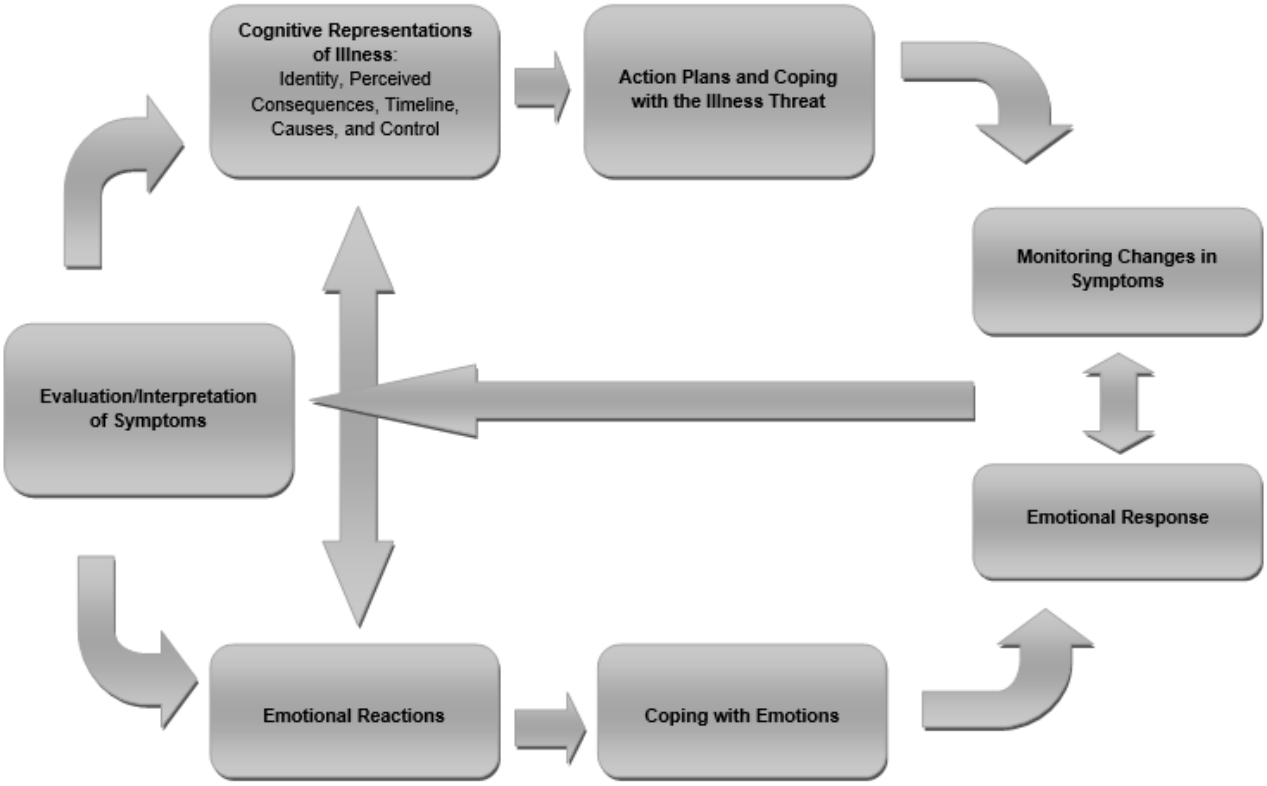

Figure 1-1 The Common-Sense Model of Self-Regulation

1.5 Overview of the Current Study

The current mixed-methods study was conducted with older adults. Participants (N = 77, mean age = 68.95 years) who were 45-93 years old and living in north Texas were interviewed. The purpose of the current study was fourfold. First, the study examined possible differences in the beliefs of high versus low SES individuals about the symptoms, causes, treatments,

complications, and general knowledge about Type II diabetes. It was expected that individuals identified as high SES would have more consensus about this illness than individuals with low SES. This prediction was based on previous research findings which indicated that low SES patients have higher rates of hospitalizations, regardless of care utilization. This outcome could mean that low SES patients hold different, less cohesive, beliefs from those held by their high SES counterparts.

Second, the present study examined the same relationships for high and low SES hypertensive participants. Again, it was hypothesized that older adults who identified as high SES would again have more consensus than individuals with low SES.

Third, the present study determined if there were differences between the participants who have Type II diabetes and those with hypertension. Because having hypertension is often a risk factor for developing diabetes, it was hypothesized that participants with diabetes would evidence more consensus that the hypertensive controls.

Fourth, the present study attempted to identify demographic factors that were associated with the degree of cultural consistency an individual had related to these chronic conditions. Although this study primarily focused on examining the relationship between SES and illness beliefs, it was possible that other factors (e.g. level of education, age) also influenced participant beliefs. This fourth

research question determined which additional demographic factors were influential, and are therefore important for future study.

Overall, this study attempted to identify common beliefs regarding the causes, symptoms, treatments, complications, and general knowledge about two chronic illnesses by differentiating high SES from low SES patients. It also attempted to identify these differences when comparing a more advanced chronic illness witha chronic illness that is a precursor to many other illnesses. Qualitative methods were used in conjunction with the cultural consensus analysis to explore/support the meanings behind the beliefs revealed and to highlight the ways these beliefs translate into healthcare decision-making and health behaviors. Qualitative research, although relatively uncommon in healthcare research, is used as a way of understanding why people hold particular thoughts and feelings regarding their health, and how this affects the ways they manage their health (Al-Busaidi, 2008; Austin & Sutton, 2014).

Chapter 2

Methods

2.1 Participants

Twenty-seven older adults with diabetes and 50 older adults with hypertension were recruited from a variety of locations in Arlington, Texas; including a free medical clinic, two senior centers, and a mobility clinic for older adults. Patients were divided into groups by condition (diabetes or hypertension), as well as socioeconomic status (high SES and low SES). The participants were recruited between 2010 and 2012. The mean age of the participants was 68.95 years (*SD* = 12.45; with a range from 45 to 93), and 63.6% of participants were 65 or older (for additional demographic information, see Table 2-1). Fifty-seven participants were female and roughly 41.6% of the participants were married. Only 26% of the participants believed their general health to be fair or poor, whereas the remaining 74% thought their health was good, very good or excellent. Potential participants were required to read/speak English or Spanish and be at least 45 years of age. Participants who were pregnant, a prisoner, had a severe hearing impairment, or had a severe cognitive impairment were excluded from the sample.

2.2 Sampling Procedure

Participants were recruited between 2010 and 2012 by undergraduate students, graduate students, and the principal investigator. The researchers

recruited the participants from four locations in Arlington, Texas: two senior centers, a free medical clinic, and an exercise group for older adults.

Upon the advice of the directors of the senior centers, the researchers were brought in to give a short explanation of the study and its eligibility criteria on select days when attendance was high. Seniors were given informative flyers (see Appendix A and B) and, if they were interested in the study, they could either approach the researchers after their speech or they could contact the researcher using the details given on their handout. Researchers were able to schedule the participants for an interview at the initial point of contact. The participants were interviewed either at the senior center or at the University of Texas at Arlington.

The free medical clinic from which the participants were recruited operates on a first come, first serve basis. Therefore, the researchers recruited from the clinic multiple mornings each week throughout the duration of the study. During recruitment, the researchers made announcements in the waiting room of the clinic, explaining the nature of the study and the eligibility criteria. The patients were given handouts with a description of the study and the details for contacting the researchers (see Appendix A and B). If any of the patients were interested in completing the study while waiting to be seen by the physician, they were able to do so. The patients were also able to schedule interviews for a future date at the clinic or at the university.

The individuals recruited from the exercise group were part of an 11-week intensive exercise intervention for the Center for Healthy Living and Longevity which met at the University of Texas at Arlington. For this group, the researchers came to one of their sessions at the start of each university semester. Potential participants were all given a synopsis of the research and the eligibility requirements. They were then given a flyer with the details for contacting the research team (see Appendix A and B), and they were able to indicate then if they were interested in participating in the study. The participants were able to schedule times to meet with the researchers to complete the study at this time, or they were able to take the contact details home with them and decide to contact the researchers later if they were interested. The participants were able to schedule interviews with the researchers at the university.

Overall, 88 individuals indicated their interest in the study; however, only seventy-nine completed the interview. Nine individuals either decided that they were no longer interested in the study or were unreachable. An additional two participants completed the interview and the questionnaire about hypertension; however, they also had a diagnosis of diabetes. This made them ineligible for the hypertensive control group, and they were therefore excluded.

Table 2.1 Descriptive Statistics for Diabetic and Hypertensive Older Adults (N = 77)

Variable	Valid N[1]	Diabetes (N = 27)	Hypertension (N= 50)	F/ χ^2 value	Significance
Gender, n (% female)	77	20 (74.07)	37 (74.00)	0.202	0.904
Age, mean (SD)	77	62.96 (12.77)	72.18 (11.12)	3.294	0.002
Race, n (%)	77			9.337	0.025
White		12 (44.4)	37 (74.0)		
Black		7 (25.9)	5 (10.0)		
Latino/a		8 (29.6)	6 (12.0)		
Other		0 (0.0)	2 (4.0)		
Difficulty Paying Bills, n (%)	77			4.659	0.199
Very		9 (33.3)	9 (18.0)		
Somewhat		7 (25.9)	12 (24.0)		
Not Very		7 (25.9)	11 (22.0)		
Not at All		4 (14.8)	18 (36.0)		
Perceived Health, n (%)	76			12.885	0.024
Poor		4 (14.8)	1 (2.0)		
Fair		8 (29.6)	7 (14.0)		
Good		6 (22.2)	20 (40.0)		
Very Good		7 (25.9)	13 (26.0)		
Excellent		1 (3.7)	9 (18.0)		

Note. 1 = valid N represents the number of participants used to complete the analysis.

This study was approved by the institutional review board at The University of Texas at Arlington. Minimal harm was foreseen in this project, with its only likelihood resulting from some discomfort in subjects talking about their symptoms and/or illnesses. Participation in this study was voluntary and the participants were compensated with a $20 gift certificate to Walmart.

2.3 Materials and Measures

2.3.1 Demographic Information

Demographic and socioeconomic outcome data were collected during the face-to-face interview. The demographic information that was collected included age, gender, race, marital status, level of education, and perceived general health.

2.3.2 Socioeconomic Status

Socioeconomic status is commonly measured with some composite of education, income, and occupation (Winkleby et al., 1992). However, recent research examining the relationship between health outcomes and SES have indicated that a one-size-fits-all approach to SES is limiting and should be reconsidered (Braveman et al., 2005). Additionally, research has shown that individual socioeconomic disadvantage, or economic hardship/financial difficulties, can be measured with simple questions, such as whether or not an individual can afford to pay their bills (Block et al., 2009; Gutman, McLoyd, & Tokoyawa, 2005; Ross & Mirowsky, 2008; Skapinakis et al., 2006). In this study, a single item measuring financial difficulties, “How difficult is it for you (and

your family) to pay your monthly bills?", was used as a proxy for the participant's socioeconomic status. This item was rated on a four-point Likert scale (1 = very difficult to 4 = not at all difficult). Individuals who selected 1 or 2 were regarded as low SES, whereas those who selected 3 or 4 were regarded as high SES.

2.3.3 Health Conditions

The participants were asked to indicate (yes/no) if a doctor had ever told them that they had any of the following health conditions, or if they were taking medications for any of the following: diabetes, cancer, kidney problems, heart disease, and/or high blood pressure.

2.3.4 Cultural Consensus Items – Type II Diabetes

The Cultural Consensus about Type II Diabetes questionnaire (Appendix C) was designed to examine the question of whether the participants shared cultural beliefs about Type II diabetes. Only the participants in the diabetes condition (n = 27) completed this questionnaire. The questionnaire was designed using information provided by the American Diabetes Association about Type II diabetes (American Diabetes Association, 2015). The questionnaire had 50 items, which were broken down into five subsections. Eleven questions asked about symptoms, nine asked about causes, 10 asked about treatments, 14 were general knowledge questions, and the final six focused on complications and co-morbid conditions. Participants we asked to indicate if they agreed (1 = yes) or disagreed (0 = no) with the content expressed in the questions about diabetes, and they were

assured that there were no right or wrong answers. The responses were entered and analyzed in SPSS 22 and ANTHROPAC 4.98. ANTHROPAC is a program that analyzes structured qualitative and quantitative data using techniques commonly associated with anthropology; for this study, it was used for the cultural consensus analyses.

2.3.5 Cultural Consensus Items - Hypertension

The Cultural Consensus about Hypertension questionnaire (Appendix D) was designed to see if participants share cultural beliefs about hypertension. Only the participants in the hypertension condition (n = 50) completed this questionnaire. This was a modified version of the diabetes questionnaire, which in this case was tailored to participants with hypertension. Information from the American Heart Association was used to ensure that the questions asked were appropriate for the condition (American Heart Association, 2014). This questionnaire also had 50 items, which were broken down into the same five subsections. Eleven questions asked about symptoms, nine asked about causes, 10 asked about treatments, 14 were general knowledge questions, and the final six focused on complications and co-morbid conditions. Participants we asked to indicate if they agreed (1 = yes) or disagreed (0 = no) with the questions about hypertension, and they were assured that there were no right or wrong answers. The responses to this questionnaire were also entered and analyzed in SPSS and ANTHROPAC.

2.3.6 Semi-Structured Interviews

The semi-structured interviews were designed to obtain qualitative information about the participant's illness history and their management of chronic diseases. These interviews were conducted individually, and the participants were asked about their reactions to the diagnosis, the medical advice they received, changes in their diet and physical activity after diagnosis, the ways in which they coped, barriers to managing their condition, and the ways in which various thoughts, feeling, and behaviors had evolved since their diagnosis (see Appendix E). These interviews were conducted at the senior centers, medical clinic, and university, and they lasted a maximum of one and a half hours. The interviews were audio recorded so they could be transcribed and later analyzed. Only four participants refused to be audio recorded; detailed notes were taken of their responses, and the participants approved the notes before the conclusion of the interviews.

2.4 Procedure

Prior to collecting data, the members of the research team were trained by the primary investigator or the research coordinator. This training enhanced the quality of the measurements taken. Researchers were briefed on the nature of the study and on ways to interact appropriately with the participants. They were also encouraged to conduct mock interviews to familiarize themselves with the content and structure of the interview.

Each interview was conducted by either a trained undergraduate student, a graduate student, or the principal investigator. Once the participants were recruited, the researchers either conducted the interview immediately (at the time of recruitment), or contacted the participant to determine a time and place to conduct the interview, or the participants contacted the researcher to schedule a meeting. All participants were called the day before the interview as a reminder.

On the day of the interview, the researchers met the participant at their preferred time and place (the senior centers, medical clinic, or the Maverick Activity Center at the University of Texas at Arlington). The investigator in charge of each interview emphasized to the participants: (a) that their participation was entirely voluntary and had no effect on their health care and/or community status; and (b) that all personal identifying information would be removed from their documents. Before the interview commenced, the investigators explained the study in detail and addressed any questions before giving the participants the opportunity to provide their informed consent.

The semi-structured interview allowed the participants to elaborate on the history of their disease, from the moment they were first diagnosed to the present day. Each interview lasted roughly 60 minutes. The participants were asked to answer the questions and recall information as honestly and accurately as they could. Demographic and cultural consensus items were asked at the end of the interview, and the interviewer transferred the participants' responses to the

questionnaires. Upon completion of the interview, the researcher transferred the questionnaire data into SPSS. The audio files were then transcribed, and, if needed, translated into English. Each file was then coded and entered into SPSS. All of the data were stored in secure locations.

2.5 Coding and Inter-rater Reliability

All questionnaire data were double-coded, such that they were entered into two separate SPSS files, once by the researcher who conducted the interview and again by an undergraduate research assistant. The two files were then compared and any discrepancies in data entry were addressed. This process continued until there were no mismatches between files.

The qualitative data were also double-coded. The researcher and a research assistant systematically read through each interview and, using NVivo software, highlighted the components that emphasized each of the four themes. This first level of coding was guided by the major themes that were used in the creation of the cultural consensus items and semi-structured interviews, which asked participants about their symptoms, causes, treatments, and complications of their disease. Each theme was associated with its own particular highlight color. The two coders compared their first several files to ensure they were highlighting similar text associated with the major themes before coding the rest of the interviews. Once the coders had justified and discussed their text selection choices and reached an agreement on the texts, they moved on to complete the rest of the

coding. The kappa statistic was used to determine inter-rater reliability for each theme between the two coders. According to Cohen's (1960) guidelines, there was substantial agreement between the two raters' judgements on complications and comorbid conditions (κ =.706) and causes (κ = .782), as well as almost perfect agreement on symptoms (κ = .818) and treatment (κ = .855). Then, for each theme, associated categories were identified (for example, a major theme was causes of Type II diabetes, and its associated categories were behavioral, biological and environmental causes). Next, select passages were extracted and the text was compiled; these final themes and associated categories can be seen in Table 3-7. Finally, the most representative quotes were selected to complement the quantitative data and highlight the participants' beliefs regarding their disease.

2.6 Power

The final sample size for this study was restricted by the resources available; however, sufficient power was achieved. As with similar studies (Smith, 2012), the level of cultural consensus participants had within their designated groups was not known before this study. Therefore, a conservative estimate of agreement (cultural consistency = .50) with a 99% confidence interval was used. According to Weller (2007), a sample size of 23 would be needed to correctly classify 95% of the answers. The current study included quantitative data for 24 diabetic and 50 hypertensive patients, therefore exceeding the minimum requirements to identify a single response pattern.

Determining sample size for qualitative data is more subjective, and this approach lacks the concrete rules that are applicable to quantitative research. However, it has been suggested that for ethnographic investigations, which study people and cultures through narratives, a sample of 30-50 different interviews are appropriate (Bernard, 2000; Morse, 1994). The present study included 27 diabetic and 50 hypertensive interviews/interview notes, numbers that are reasonably consistent with the recommended ones.

Chapter 3

Results

3.1 Data Analysis

Before the analyses were conducted, each of the variables was examined using various SPSS programs to assess missing values. Univariate descriptive statistics were examined to identify patterns in missing data, out of range values, and outliers. In addition to the analyses conducted to address and support the hypotheses, descriptive ancillary analyses were conducted and the results of these analyses can be found in Appendix H. These analyses looked at the cultural consensus items as if they were from a knowledge questionnaire instead of a beliefs questionnaire. Because the CCA items were not originally constructed for this purpose, all items were rated as being correct ("yes"), incorrect ("no"), conditionally true ("maybe"), or "inconclusive" if there was no literature to support or deny the statement. These analyses attempted to determine if participants had differing amounts of correct knowledge regarding their conditions based on SES or disease type (the data analyses and results can be found in Appendix H). This way of looking at the data is different from that pertaining to the main hypotheses, as seen below, which examined participant's cultural beliefs.

3.1.1 Cultural Consensus Analysis: Hypotheses 1 and 2

Cultural consensus analysis was used to evaluate the data relevant to the first and second hypotheses, which examined how much agreement occurred between subjects regarding their beliefs about their symptoms, causes, treatments, and general knowledge about their condition. The cultural consensus model is both an analysis technique and a theory. The theory contends that each person in a culture has some knowledge regarding cultural domains, and that this knowledge can be adequately assessed by asking a series of questions (Weller, 2007). This analysis technique is a type of factor analysis that loads scores onto the first factor. A goodness-of-fit index is estimated with eigenvalues to determine if there is a single set of beliefs among respondents. The cultural consensus analysis measures the degree to which these beliefs are shared among the study population, and it assigns each individual a cultural consistency score based on the groups consensus. The consistency scores appear as factor loadings on the first factor, and because they should represent a single pattern of responses, they should only have a single factor. This is why the ratio of the first to second eigenvalues are examined. In CCA, a single pattern of belief among the group is identified if the first to second eigenvalue ratio is greater than three to one. This general rule, described by Weller (2007), indicates that responses are homogenous across respondents. The individual consistency scores are calculated to determine the extent to which each participant has the same belief as the group. Consistency

scores range from 0 to 1, and scores closer to 1 indicate a greater consensus within the group.

The CCA uses two different methods, the match coefficient method and the covariance method, when analyzing dichotomous data (true/false, yes/no; Weller, 2007). The match coefficient method assumes there is no response bias when participants respond to the surveys (i.e., if unsure, the participants do not always choose to answer true or yes). If a response bias does exist, it can inflate consensus due to the bias increasing the level of agreement among the population. Unlike the match coefficient method, the covariance method is not susceptible to response bias; however, it is sensitive to the proportion of true/yes answers in the question set. Ideally, each series of questions should have the proportion of true answers that vary between 30% and 70% to ensure there is not a highly skewed answer key, which would result in the consensus model failing to fit the data (Weller, 2007). In the present study, both the match coefficient and covariance models were examined to address the first and second hypotheses, and because the findings were the same and the covariance method is not susceptible to response bias, the results of it are reported here.

As well as choosing the appropriate method of analysis, it was also important to ensure that the participants' data were sufficient to provide accurate results. All of the hypertensive participants' data were included in the analyses; however, three participants with Type II diabetes had their data removed from the

CCA due to incomplete surveys. Although participants were encouraged to guess if they did not know a response to a question, several participants chose to skip questions. Weller (2007) recommended that no more than 10% of data be missing from each participant, and three participants exceeded this recommended criterion. In the case of <10% missing data from other participants, responses were randomly assigned to the respondent by flipping a coin, as suggested by Weller (2007).

Once cases to be excluded were identified and missing data were addressed, the CCA was performed, and then t-tests were used to determine if there were differences in the beliefs of high versus low SES diabetic patients, as well as high versus low SES hypertension patients. This section only reports the data analyses, actual findings are reported in sections 3.2 and 3.3.

3.1.2 Cultural Consensus Analysis by Diagnosis: Hypothesis 3

To test the third hypothesis, because there were no differences between the high and low SES participants, the values from the first and second hypotheses were standardized so the differences between diabetes and hypertension could be compared. T-tests were used to test for any differences between the two diagnosed groups regarding their beliefs about their diseases. This section reported the data analysis, results are presented in section 3.4.

3.1.3 Analysis of Factors Associated with Cultural Consensus: Hypothesis 4

Finally, in regard to the last hypothesis, individual consistency scores were correlated with the demographic variables to determine if any of these factors were associated with the degrees of cultural consistency related to Type II diabetes and hypertension. Pearson correlations were used for the interval data and t-tests/ANOVAs were used with the categorical data. These tests were performed to determine if there were other factors, besides SES, which could have influenced the participants' beliefs (results are found in section 3.5).

3.1.4 Analysis of Cultural Belief Themes: Support for Hypotheses 1-4

After the completion of the quantitative analyses, the qualitative material was examined to help explain why the relations uncovered exist. According to Creswell and colleagues (2011), qualitative research should be both systematic and rigorous, using data collection methods such as in-depth interviews. The qualitative data available in the present study were rich in information surrounding the lived experience of having a chronic disease (Type II diabetes or hypertension), specifically in relation to the symptoms, causes, treatments, and complications related to the disease. These four themes were prospectively chosen as focal points for both the cultural consensus items and the semi-structured interviews. These were areas that were highlighted by the American Diabetes Association and the American Heart Association as being crucial information for patients with Type II diabetes and hypertension. Although this information is

readily available, little research has explored how groups view this information and if SES could have an impact on a groups' beliefs. To accomplish this, the data relevant to each of these four themes were used to provide additional support for the quantitative findings. The way that these semi-structured, in-depth interviews were conducted and analyzed emphasized their systematic and rigorous nature. All interviews followed the same pattern and structure of questions, and they all ensured participants had the opportunity to expand on their recollections associated with their chronic illnesses. Upon completion of the interviews, they were then transcribed. Each interview was systematically double coded to identify participants' dialogue about the four themes. Associated subcategories for each theme were then identified and supportive text from the interviews were extracted to assist in analyzing the participants' stories. This section only reported the data analysis, actual findings can be found below in sections 3.6 and 3.7.

3.2 Hypothesis 1: Cultural Consensus Analysis for Type II Diabetes

The cultural consensus analysis showed that the 24 study participants diagnosed with Type II diabetes shared a single cultural belief model about the causes, symptoms, complications, treatment, and general knowledge of the disease. The ratio of the first to second eigenvalue of the factors was 6.250 to 1, which was greater than the three to one ratio needed to meet consensus models goodness of fit criteria (Weller, 1987). The first eigenvalue was 9.589, the second eigenvalue was 1.534, and the third eigenvalue was 1.177. There was no response

bias as the match coefficient and covariance methods resulted in almost the exact same eigenvalues. The first factor explained 78% of the variation of the study participants' cultural beliefs about Type II diabetes. The shared cultural beliefs of participants was .620 (*SD* = .125). In other words, homogeneous cultural beliefs about Type II diabetes were shared by 62% of the study participants.

To determine if the socioeconomic status of study participants resulted in differing cultural belief models, the cultural consensus analysis was run separately forthe low SES participants and the high SES participants. Fifteen (62.5%) of the 24 Type II diabetes participants identified as having difficulty paying their bills, and were thus classified as lower socioeconomic status. The cultural consensus analysis found that both the high and low socioeconomic status participants shared a single belief model about Type II diabetes.

The ratio of the first eigenvalue to the second eigenvalue was greater than three to one for both groups. The ratio of the first to second eigenvalue for the study participants with low socioeconomic status was lower, 5.678 to 1, than the ratio for study participants with high socioeconomic status, 5.776 to 1. For participants with low socioeconomic status, the first factor explained 76% of the variation of cultural beliefs about Type II diabetes. For participants with high socioeconomic status, the first factor explained 76.6% of the variation of cultural beliefs about Type II diabetes. The slightly higher variance was to be expected since the sample was smaller, therefore, it had a higher level of agreement.

The mean cultural beliefs of the study participants with high and low socioeconomic status were also similar, .667 (*SD* = .110) and .591 (*SD* = .131), respectively. The t-test met all of the assumptions and revealed that there was no statistically significant difference between the means of the individual cultural consistency scores of participants with high (*M* = .679, *SD* = .118) and low (*M* = .593, *SD* = .135) socioeconomic status, $t(22) = -1.583$, $p = .128$, d = .68. The results of the cultural consensus analysis are presented in Table 3-1.

3.2.1 Group Differences for High and Low SES Type II Diabetic Participants

Although the CCA revealed that there was one belief model in each group (high and low SES), it unfortunately does not mean that the groups held the same beliefs. Because this study was exploratory in nature, the researcher was able to use a multivariate analysis of variance (MANOVA) to determine if there were any group differences between high and low SES diabetic participants regarding the causes, symptoms, treatments, complications, and general knowledge regarding Type II diabetes. This same approach was then used to explore potential group differences on these same concepts with high and low SES hypertensive participants. Because the literature on group beliefs about these concepts is scarce, it was important to identify where high and low SES participants differ regarding their specific condition.

A MANOVA was conducted to test whether there were differences between the high and low SES diabetic participants on the CCA items. A

significant multivariate main effect of group was not found, F_{mult} (1, 22) = .021, p = .964, partial η^2 = .816. Although there was not a multivariate main effect, the univariate tests indicated that low SES diabetic participants believed a Type II diabetic should rest more compared to high SES participants. Low SES diabetics were also more likely to believe that Type II diabetes can keep a person from doing all of the things they used to do prior to the condition, and that it leads to weight loss and other diseases, compared to high SES participants (see Table 3-2).

Table 3-1 Results of Cultural Consensus Analysis for Type II Diabetes

	Factor	Eigenvalue	Ratio between eigenvalues	Variance explained % by factors	Mean cultural beliefs (*SD*)
24 Diabetic Participants	1.	9.589	6.250	78.0	.620 (.125)
	2.	1.534	1.304	12.5	
	3.	1.177		9.6	
15 Low SES Diabetic Participants	1.	5.502	5.678	76.0	.591 (.131)
	2.	0.969	1.259	13.4	
	3.	0.770		10.6	
9 High SES Diabetic Participants	1.	4.239	5.766	76.6	.677 (.110)
	2.	0.735	1.315	13.3	
	3.	0.559		10.1	

Table 3-2 Means, Standard Deviations, and Analysis of Variance for the Effects of High and Low SES Diabetic Participants on Significant CCA Items

	High SES (n = 9)		Low SES (n = 15)				
Variable	*M*	*SE*	*M*	*SE*	$F(1,24)$	*p*	Partial η^2
Rest more	.333	.149	.800	.115	6.125	.022	.218
Keep someone from doing things they did	.667	.101	1.00	.078	6.875	.016	.238
Weight loss	.222	.151	.733	.117	7.202	.014	.247
Other diseases	.556	.126	.933	.098	5.597	.027	.203

3.3 Hypothesis 2: Cultural Consensus Analysis for Hypertension

After examining group differences among the diabetic participants, the cultural consensus analysis was conducted on the hypertensive participants. The results of this analysis showed that the 52 study participants diagnosed with hypertension shared a single cultural belief model about the causes, symptoms, complications, treatment, and general knowledge of the disease. The ratio of the first to second eigenvalue of the factors was 8.534 to 1; the first eigenvalue was 24.186, the second eigenvalue was 2.834, and the third was 2.191. There was no response bias as the match and covariance methods resulted in almost the exact same eigenvalues. The first factor explained 82.8% of the variation of the study participants' cultural beliefs about hypertension. The index of the shared cultural beliefs of participants was .67 (*SD* = .127). In other words, homogeneous cultural beliefs about hypertension were shared by 67% of the study participants.

To determine if the socioeconomic status of study participants resulted in differing cultural belief models, the cultural consensus analysis was run separately for the low socioeconomic status participants and for the high socioeconomic status participants. Twenty-two (42.3%) of the 52 hypertensive participants identified as having difficulty paying their bills, and were thus classified as lower socioeconomic status. The cultural consensus analysis found that both the high and low socioeconomic status participants shared a single belief model about hypertension.

The ratio of the first eigenvalue to the second eigenvalue was greater than three to one for both groups. The ratio of the first to second eigenvalue for the study participants with low socioeconomic status was lower, 6.511 to 1, than the ratio for study participants with high socioeconomic status, 10.124 to 1. For participants with low socioeconomic status, the first factor explained 80.0% of the variation of cultural beliefs about hypertension. For participants with high socioeconomic status, the first factor explained 84.1 percent of the variation of cultural beliefs about hypertension. The mean cultural beliefs of the study participants with high and low socioeconomic status were similar .685 (*SD* = .142) and .657 (*SD* = .122), respectively. The t-test met all of the assumptions and revealed that there was no statistically significant difference between the means of the individual cultural consistency scores of participants with high (*M* = .686, *SD* = .145) and low (*M* = .657, *SD* = .125) socioeconomic status, $t(50) = -.749$, $p = .458$, d = -.212. The results of the cultural consensus analysis are presented in Table 3-3.

3.3.1 Group Differences for High and Low SES Hypertensive Participants

A MANOVA was also conducted to determine if there would be differences between high and low SES hypertensive participants on the CCA items. This analysis was performed to determine whether beliefs may have differed between high and low SES hypertensive participants. A multivariate main effect of group was not found, $F_{mult}(6,45) = .337$, $p = .984$, partial $\eta^2 = .717$.

Although there was not a significant multivariate main effect, univariate tests revealed that high SES hypertensive participants were more likely to believe that the condition was the result of being passed down or caused by discrimination, compared to the low SES hypertensive participants (see Table 3-4).

Table 3-3 Results of Cultural Consensus Analysis for Hypertension

	Factor	Eigenvalue	Ratio between eigenvalues	Variance explained % by factors	Mean cultural beliefs (*SD*)
52 Hypertensive Participants	1.	24.186	8.534	82.8	.670 (.127)
	2.	2.834	1.293	9.7	
	3.	2.191		7.5	
22 Low SES Hypertensive Participants	1.	9.831	6.511	80.0	.657 (.122)
	2.	1.510	1.582	12.3	
	3.	0.954		7.8	
30 High SES Hypertensive Participants	1.	14.691	10.124	84.1	.685 (.142)
	2.	1.451	1.098	8.3	
	3.	1.322		7.6	

Table 3-4 Means, Standard Deviations, and Analysis of Variance for the Effects of High and Low SES Hypertensive Participants on Significant CCA Items

	High SES (n =30)		Low SES (n =22)				
Variable	*M*	*SE*	*M*	*SE*	$F(1,50)$	*p*	Partial η^2
Passed down from a parent	.867	.077	.455	.090	12.082	.001	.195
Discriminated against	.500	.087	.227	.102	4.154	.047	.077

3.4 Hypothesis 3: Comparing Cultural Beliefs by Disease Type

Because there were no significant differences for Type II diabetes or hypertension by SES, an independent samples t-test was used to determine if there were any differences in cultural beliefs based on disease type. To ensure that both groups (Type II diabetes and hypertension) were compared on the same scale, the participants' cultural competencies were standardized. The t-test met all of the assumptions and revealed that there was no statistically significant difference between the means of the individual cultural consistency scores of participants with Type II diabetes (M = -.266, SD = .990) and hypertension (M = .123, SD = .990), $t(74) = -1.593$, $p = .115$, d = -.393.

Because prior literature had found that level of education was a good predictor of cultural beliefs, the researcher chose to explore this relationship further by running a between subjects' analysis of covariance (ANCOVA) on cultural beliefs with level of educational attainment (no degree/grade school, high school/GED, some college/college, and post graduate education) as the covariate. Diagnosis (Type II diabetes and hypertension) was the independent variable. Results of evaluation of the assumptions were satisfactory. The ANCOVA revealed that, after adjustment by the covariate, cultural beliefs did not vary significantly with diagnosis, $F(1, 73) = 1.868$, $p = .176$, partial $\eta^2 = .025$. The results indicated that participants with Type II diabetes did not have more, or less,

cultural consistency (*M*= -.213, *SE* = .188, 95% CI [-.588, .162]) than hypertensive participants (*M*= .098, *SE* = .128, 95% CI [-.156, .352]).

3.5 Hypothesis 4: Demographic Factors Associated with Cultural Consensus

3.5.1 Type II Diabetes

Because of the exploratory nature of this study, additional analyses were performed to determine if factors other than SES were related to the participants' beliefs. Independent samples t-tests were conducted to determine if there were significant differences in cultural consistency about Type II diabetes based on gender, and whether the individual respondents had a history of cancer, kidney problems, or heart disease. However, because too few participants indicated that they had a history of the aforementioned diseases ($n < 5$), these analyses will not be reported. Additionally, there were no differences found between males and females on cultural beliefs (see Table 3-5).

Analysis of variance (ANOVAs) were used to determine if race, education level, work status, ability to pay bills, or self-assessed health were related to an individuals' cultural beliefs. Education was the only variable with a significant effect, indicating that participants with less than a high school degree/GED had less agreement, or cultural consistency, about Type II diabetes than participants with a high school, college, or post-graduate degree. However, only two participants had less than a high school degree, and these results should be treated

cautiously. Lastly, a Pearson's correlation revealed no association between the participant's age and his or her cultural beliefs (see Table 3-5).

Table 3-5 Factors Associated with Individual Cultural Consistency Regarding Type II Diabetes in Diabetic Older Adults (N = 24)

Variable	n (%)	Cultural Consistency Mean (*SD*/*SE*)	*F*/ *t*/ *r* value	Significance
Age		62.21 (11.85)	0.159	.458
Gender			1.087	.289
Female	17 (70.83)	0.603 (.146)		
Male	7 (29.17)	0.663 (.079)		
Race			0.861	.437
White	10 (41.67)	0.643 (.035)		
Black	6 (25.00)	0.645 (.047)		
Latino/a	8 (33.33)	0.570 (.055)		
Difficulty Paying Bills			1.454	.257
Very	8 (33.33)	0.548 (.049)		
Somewhat	7 (29.17)	0.631 (.051)		
Not Very	6 (25.00)	0.673 (.039)		
Not at All	3 (12.50)	0.670 (.060)		
Work			0.693	.567
Not working/retired	14 (58.33)	0.639 (.040)		
Working part-time/full time	6 (25.00)	0.610 (.033)		
Disabled/sick leave	3 (12.50)	0.600 (.051)		
Homemaker	1 (4.17)	0.450 (----)		

Table 3-5 – Continued

Education			5.719	.005
No degree/grade school only	2 (8.33)	0.350 (.100)		
High school diploma/GED	8 (33.33)	0.626 (.035)		
Some college/college degree	10 (41.67)	0.672 (.034)		
Post-graduate education	4 (16.67)	0.605 (.029)		
Perceived Health			0.893	.489
Poor	3 (13.04)	0.600 (.051)		
Fair	7 (30.43)	0.590 (.073)		
Good	5 (21.74)	0.668 (.037)		
Very Good	7 (30.43)	0.600 (.032)		
Excellent	1 (4.35)	0.820 (----)		

3.5.2 Hypertension

The same demographic factors that were examined to determine which were associated with cultural consistency for Type II diabetics were examined again with the hypertensive patients. Independent samples t-tests were conducted to determine if there were significant differences in cultural beliefs about hypertension based on gender, and whether the individual respondents had a history of cancer, kidney problems, or heart disease. There were no differences found between males and females on cultural consistency, nor were there differences between having (or not having) a history of cancer, kidney, or heart problems (see Table 3-6).

Separate ANOVAs were then used to determine if race, education level, work status, ability to pay bills, or self-assessed health were related to an individuals' cultural beliefs. Education was the only variable that was found to have a significant effect. Post hoc tests revealed this effect was driven by the marginally significant result that participants with less than a high school degree/GED (M = .570, SE = .039) evidenced less agreement, or cultural consistency, about hypertension than participants with a post-graduate degree (M = .744, SE = .024). No other differences were detected between the sample means (see Table 3-6). Finally, a Pearson's correlation revealed no association between the participants' ages and their cultural beliefs about their illness condition (see Table 3-6).

Table 3-6 Factors Associated with Individual Cultural Consistency Regarding Hypertension in Hypertensive Older Adults (N = 52)

Variable	n (%)	Cultural Consistency Mean (*SD*/*SE*)	*F*/ *t*/ *r* value	Significance
Age		62.21 (11.85)	-0.152	.283
Gender			1.087	.289
Female	38 (73.08)	0.655 (.144)		
Male	14 (26.92)	0.709 (.056)		
History of Cancer			-0.956	.343
No	41 (78.85)	0.660 (.128)		
Yes	11 (21.15)	0.702 (.128)		
Kidney Problems			0.706	.484
No	45 (90.00)	0.674 (.123)		
Yes	7 (13.46)	0.637 (.166)		
Heart Disease			-0.180	.858
No	39 (75.00)	0.667 (.140)		
Yes	13 (25.00)	0.675 (.087)		
Race			0.317	.813
White	39 (75.00)	0.677 (.021)		
Black	5 (9.62)	0.656 (.042)		
Latino/a	6 (11.54)	0.623 (.055)		
Other	2 (3.85)	0.669 (.110)		
Difficulty Paying Bills			0.646	.590
Very	9 (17.31)	0.667 (.031)		
Somewhat	13 (25.00)	0.640 (.039)		
Not Very	11 (21.15)	0.713 (.036)		
Not at All	19 (36.54)	0.665 (.032)		

Table 3-6 – Continued

Work			0.145	.932
Not working/retired	38 (73.08)	0.673 (.020)		
Working part-time/full time	11 (21.15)	0.658 (.037)		
Disabled/sick leave	1 (1.92)	0.720 (----)		
Homemaker	2 (3.85)	0.630 (.240)		
Education			3.050	.037
No degree/grade school only	5 (9.62)	0.570 (.039)		
High school diploma/GED	10 (19.23)	0.628 (.052)		
Some college/college degree	25 (48.08)	0.669 (.024)		
Post-graduate education	12 (23.08)	0.744 (.026)		
Perceived Health			0.400	.807
Poor	1 (1.92)	0.790 (----)		
Fair	9 (17.31)	0.693 (.023)		
Good	20 (38.46)	0.654 (.027)		
Very Good	13 (25.00)	0.677 (.040)		
Excellent	9 (17.31)	0.653 (.058)		

3.6 Support for Hypotheses: Qualitative Analysis for Type II Diabetes

To elaborate on the results found in Hypotheses 1-4, qualitative data taken from the semi-structured interviews were examined and analyzed. Because no differences were found between high and low SES diabetic participants, or between high and low SES hypertensive participants, regarding their cultural beliefs, these qualitative analyses were only broken down by disease type. These analyses identify more specific aspects of participant's beliefs in relation to the causes, complications, symptoms, and treatments for their diseases. These four themes were chosen because they were used in the creation, and as a focal point for, the CCA questionnaires and semi-structured interviews.

3.6.1 Causes

Causes were the least frequently referred to theme in the participant interviews, being referred to merely 53 times. The focus on causes most emphasized: (a) biological, (b) behavioral, and, less so, (c) environmental causes (see Table 3-7). Diabetics' language reflected their assumptions about the causes of disease from personal experience and from knowledge they had gained through medical practitioners. The participants overwhelmingly believed that Type II diabetes was hereditary. However, most participants also believed that their condition could have been delayed or prevented had they changed their behavioral patterns. Participants cited poor diet (including alcohol use), lack or exercise, high stress levels, and poor oral hygiene as contributing factors to their Type II

diabetes. A 57-year-old female stated, “It just runs in my family -- my mama, my grandfather died from diabetes.” However, she primarily blamed her condition on her alcohol use, stating “If I know what I know now, I'd had never took that drink. Alcohol turn into pure sugar. I didn't know that. That's how I got to be diabetic.” Similarly, a 64-year-old woman stated, “It runs in our family.” She further detailed an encounter with her dentist, in which the dentist told her “If you would have taken better care of your teeth and brushed more often and got rid of all that sugar that you were eating, you might have been able to delay your diabetes, because it has a tendency of going through your teeth and through your gums and into your system.” Fewer participants indicated that they believed environmental factors such as pollution or discrimination were primary causes of Type II diabetes, and those who did, did not elaborate on those beliefs.

3.6.2 Complications and Comorbid Conditions

Complications were more commonly referred to in the interviews than causes. Participants often noted extreme complications that friends and family experienced, and used this knowledge to identify their own complications. The associated categories for complications and comorbid conditions included: (a) physical complaints associated with the condition, (b) mental complaints associated with the condition, (c) changes associated with medications, and (d) complaints associated with adhering to medical advice (see Table 3-7).

In regards to physical complaints, participants commonly believed that diabetes could lead to heart disease, stroke, and kidney problems. The participants also specifically mentioned changes in vision and amputations as complications they had either experienced or were worried about. A 68-year-old female indicated this when she stated, “I think that diabetes may be affecting my memory and sight, because if you look I am now using glasses and a year ago, no before, about two years ago, I switched glasses and now it seems to me that I must change again.” Although changes in vision can commonly occur in Type II diabetic patients, amputations were the complications most frequently identified by participants. A 57-year-old man revealed “My mama had both her legs, and my grandfather had both his legs cut off.”

Furthermore, participants often connected their mental concerns, such as fear, with potential physical complications. For example, a 52-year-old man stated, “When I first got diagnosed I think I probably went a week without eating anything, because I thought something would happen to me if I ate something. That I might lose a leg or something. So I didn't eat. And then I went to the doctor and the doctor got onto me for not eating. I was afraid that if I ate something I might automatically lose my foot or something.” Other participants indicated that their complications, both mental and physical, were the result of negative side effects from the medications they were prescribed. One physical complaint came from a 75-year-old man, who revealed “And this Metformin, I couldn’t. I tried it.

It gave me complete diarrhea, and I couldn't control the diarrhea. So I had to give up Metformin. And then they prescribed a different one for me." A 57-year-old woman recounted different physical complaints, "I was eating, and then I took the medicine, and I got deathly sick. I cannot take this. Don't give me no more of this. This stuff is aggravating me. It's making my stomach sick and hurting. I don't want it." These complications were corroborated by other participants. For example, one 80-year-old woman said, "The medicines make me feel tired, and give me headaches along with stomach discomfort." Fewer participants indicated that their medications resulted in depression or fear, like one 47-year-old woman who stated, "Yes, I'm on pills. I'm not sure what it was but the doctor gave it to me. I'm scared to take pills. I'm scared to use needles. It's chemical. I'm a believer of natural stuff. When you take Tylenol every day, you'll get addicted. That's how insulin is."

Several participants, like those mentioned above, indicated that their medications were affecting them physical or mentally. However, even more participants discussed problems they had regarding following medical advice about lifestyle changes not associated with medications. Making dietary changes, specifically to what to eat and how to eat, were common complaints. For example, a 57-year-old female mentioned "They tell you to eat small meals. I can't eat like that, because I'm not used to eating like that. And since I've been having diabetes, sometimes I forget to eat until it's almost too late and the sugar drops and I get

sick and then I sit down and eat." Cutting out sweet foods and sodas were also mentioned frequently. One 72-year-old man stated, "If I eat a piece of cake and ice cream, in the morning my reading goes way up. It might be 50 to 60 points higher than the day before so you know you did something wrong." In addition to dietary changes, participants mentioned the time that it takes them to monitor their blood glucose levels. A 74-year-old female was upset that her doctor required so much self-monitoring, "He wanted me to run my blood sugar before every meal!", and another 72-year-old female agreed, stating "I need to do them [finger pricks] every day, but I don't. I mind, and it's just once a day, not after every meal." The various types of complications that participants identified often lead them to discussing the symptoms that they associated with Type II diabetes.

3.6.3 Symptoms

Participants frequently referred to symptoms that they had experienced before, and after, they were diagnosed with Type II diabetes. Symptoms were commonly distinguished as relating to (a) hypoglycemia, or (b) hyperglycemia, and the associated categories were defined as such. When discussing low blood sugar levels, participants often stated that they felt weak, tired, shaky, irritable, and experienced headaches and blurred vision. An 83-year-old female stated, "I had some hypoglycemia, but that was the only thing. I would get hungry when I didn't eat, and pretty quick I would get the shakes, but that happened a number of times in the past even before I was diagnosed." Another 57-year-old female

reported different symptoms, “I woke up and my sugar was 69 and it used to be 100 and something. I know something was wrong because my head start to hurt. When my head hurt, I can’t see. Because my head hurt so bad I can’t see those numbers on the needle.” In addition to reporting these physical symptoms, the same participant also stated that she felt irritable. “I'd be irritable. I hate stupid stuff. I really do. And it seems like since I've been a diabetic everything gets on my nerves. Everything. Anything and everything. Like them kids out there today, ooh lord!”

With regard to high blood sugar levels, participants indicated that they felt flushed and experienced frequent thirst and urination. A 49-year-old male revealed, “I've had all kinds of situations come up. There's a lot of things that can happen. Drinking a lot of water, that's a sign. Constantly being thirsty.” And a 48-year-old female added, “I feel hot, and I know something's not right.” Few participants reported that they experienced tingling or numbness in their extremities. Most went on to explain that their medical treatment addressed these symptoms.

3.6.4 Treatments

Treatment was the dominant theme most frequently referred to in participant interviews (a total of 277 times), and for the diabetic group included anything that the participant did in an attempt to control their blood glucose levels. The diabetic participants discussed a variety of treatments that fell into

four associated categories: (a) medications, (b) diet, (c) exercise, and (d) complementary and alternative medicine. Medications, diet, and exercise were usually recommended by the participant's medical practitioner, whereas alternatives were the result of suggestions from friends and family. Almost every participant mentioned the prescription medication they were taking to control their condition. Very few participants mentioned using insulin, and only one stated that they were able to manage their condition with diet and exercise alone. Several participants indicated that taking the right medications resulted in positive outcomes, such as fewer symptoms. For example, a 64-year-old woman stated, "I noticed that this week because I started taking my medication, and I've had it now for a week-and-a-half, and I see a difference. I see a difference. I see a big difference in me. I have more energy."

In addition to medications, most participants also noted that they needed to alter and/or monitor their diet and exercise habits.However, not all participants were compliant with these treatments. As a 72-year-old male participant expressed, "Diet and exercise is the two main things I try to work on to help control my diabetes besides the medication. Diet and exercise is one of the hardest things to do." When addressing dietary issues, participants discussed both the types of foods that they should eat/avoid and portion sizes. Several participants listed the types of foods that they should eat, as well as those that they should avoid, like this 64-year-old female, "Keep away from anything that's white, eat

more vegetables, stay away from red meat, if possible. As little as possible, no flour tortillas, anything like that. I have to limit myself, my take on that." However, as this woman later revealed, sticking to this strict regime can be difficult: "I do have a problem. My big problem is that you want to eat a lot of sweets, and that's my downfall. I crave sweets. I've craved sweets all my life. I'll pass a meal up for a piece of cake or pie or whatever." Some participants, such as this 57-year-old male, indicated that they had changed their diets for a time, but that they did not continue to do so, "He [the doctor] told me I needed to watch what I was eating. So I started eating a lot of just grilled food instead of fried foods. Of course, that's kind of gone by the wayside nowadays." In contrast, other participants were entirely noncompliant after their diagnosis. For example, a 49-year-old man stated, "Actually, I started eating more of them [sweets]. I hadn't been eating a lot of sweets for years, and then now I started and that's a bad habit. I just can't get away from them."

Participants found it just as difficult to change and monitor their portion sizes as they did to modify the foods that they ate. A 52-year-old male stated, "I eat what I want. Well, I mean, you know it's all about portion control and my portions are bigger than what they want, so I did not listen to them." And an 83-year-old woman corroborated, "I tried to eat more vegetables and salads, and not as much, because she told me a piece of meat the size of a stack of cards is what I'm supposed to eat, and half a cup of the different vegetables, and cereals. I used

to go back for seconds, I try not to do that. I've kind of fallen off the wagon lately, because we've had so many family and school reunions."

The participants were less specific with regard to exercising; they knew that they needed to exercise, but little information about the types, duration, or intensity of the exercises they engaged in were revealed. The most common exercise mentioned was walking. Although many participants, like this 64-year-old female, understood the importance of exercise, "You must exercise. You have to walk even if it's just twenty minutes a day. You really should walk", most participants struggled to do so. A 48-year-old female stated, "I needed to exercise, but I kept telling her [the doctor] 'it's cold outside'. She told me I needed to do rigorous exercise." Like this participant, some participants struggled to exercise at all; however, others found that they were just not exercising enough. A 72-year-old man stated, "Even though I was walking a lot on my job I was not getting the proper exercise. I think a combination of things got my levels elevated."

On top of medications, diet, and exercise, alternative treatments were engaged in by participants. A few participants indicated that they tried a number of different options, such as vitamins, green tea, cinnamon capsules, bitter melon tea, bird's food, cactus, garlic, cider vinegar, and flax seed. When explicitly asked if they believed that their condition could be helped with herbs, teas, or vitamins, half of the participants agreed.

Table 3-7 Qualitative Themes and Subcategories for Type II Diabetes Participants

Major Themes (frequency)	Associated Categories
Causes (53)	Behavioral, Biological, Environmental
Complications (97)	Physical, Mental, Side-effects of Medication, Adherence to Medical Advice
Symptoms (115)	Hypoglycemia, Hyperglycemia
Treatments (277)	Medications, Diet, Exercise, Complementary and Alternative Medications

3.7 Support for Hypotheses: Qualitative Analysis for Hypertension

3.7.1 Causes

Similar to the qualitative analyses for Type II diabetes, causes were the least-frequently-referred-to theme in the hypertensive participant interviews; they were only referred to 145 times (see to Table 3-8). The focus on causes most often emphasized: (a) biological and (b) behavioral causes. According to the cultural consensus items, roughly 69% of participants believed that hypertension was hereditary; however, very few participants discussed this in the semi-structured interviews. A 64-year-old woman recounted a discussion with her physician, “my mother had it, so they said it was hereditary.” Another participant, a 77-year-old man, stated, “I was getting tired a lot so I went to the doctor to get checked up and

found out that I had high blood pressure. I wasn't surprised because it runs in my family."

Overwhelmingly, the participants believed that, more than biological factors, their condition was most strongly affected by behavioral factors such as their levels of stress and being overweight. A 56-year-old woman highlighted this belief when she stated, "Sometimes your blood pressure wants to go up regardless, I mean for other reasons that we don't even know. I mean it could be your diet, stress, or something like that." Similarly, two other participants, 53- and 60-year old men, respectively, stated "I do notice that when things come at me from many sides that I am not doing as well. And I do know that I got to just calm, slow things down." and "If there's something is bugging me and I feel like that is what's causing my blood pressure to go up then I get away from negative people, that and just sit and relax and try to get my blood pressure back down. And I check it to make sure it has gone back down. If it has, I'm fine." Stress was mentioned the most frequently in the interviews as the cause of hypertension; however, the most participants endorsed the item "being overweight" as a cause according to the cultural consensus items. With regard to being overweight, a 64-year-old woman stated, "If I was overweight, losing weight might help. And I've heard some people do lose weight and it doesn't help them at all, but for me I go to exercise classes three times a week and I feel that that helps." Unlike the Type

II diabetes participants, hypertensive participants did not mention environmental factors as causes of their condition.

3.7.2 Complications and Comorbid Conditions

During their interviews, the hypertensive participants referred to complications more often than causes. They often noted warnings of complications that were stated by their health care providers, and they used their own experiences to identify additional problems. The associated categories for complications and comorbid conditions included: (a) physical complications, (b) mental complications, and (c) changes associated with medications (see Table 3-8). With regard to physical complaints, all of the participants believed that hypertension could lead to a heart disease or stroke, and 90% believed it could cause kidney problems. Most participants, like this 50-year-old woman, had heard from physicians some of the consequences of having hypertension, “The doctor has told me that if my blood pressure goes too high it can give me a heart attack or a stroke.” This perception was reiterated by a 64-year-old woman who stated, “In the past six years, I've had five heart attacks and two open heart surgeries. I still exercise and I try to keep healthy because I have to. It's like a life or death thing. But I'm alright.” Physical complaints as a result of their medications were also commonly revealed. These complaints covered topics such as fatigue, coughing, decreased sex drive, and kidney problems. A 50-year-old female stated that her medication required constant monitoring, “Well, the medicine affects the

kidneys. That is why we get checked every 3 months or 6 months, they check the kidney, liver, to see if the medication is having an effect on them." Other participants reported on how they felt different when taking their medications. A 90-year-old woman recalled, "Well, when I went to the EMT, he told me that the coughing and the phlegm and the hoarseness was caused by whatever the medication was." Other physical complaints were also highlighted; a 71-year-old female revealed, "Well, I've tried other medicines and tried the generics and got very dizzy and sick. It just didn't work." Furthermore, several men, like this 64-year-old male, stated that their medications affected their sex drive, "Before if I saw a woman forget about it, I would pursue her 5 times, and I think that has diminished, it is only 3 or 2 times now. The energy no longer exists; it doesn't exist at least with me. There probably is a Superman that doesn't feel it, but I have noticed that."

To a lesser extent, participants also discussed their fears regarding their condition, and how their condition has affected their mood. Several respondents indicated that they worry about the consequences of forgetting their medications, like this 60-year-old male, "I'm a fanatic about taking my medication. If I forget, I go into a blind panic, so I make sure that I take everything that I need to be taking." Other participants have stated that their condition affects their mood; a 65-year-old female revealed, "When my blood pressure rises I get irritated, I get mad out of nowhere and I know it's because of my blood pressure." When

discussing the various complications that can, and have, arisen from their hypertension, participants often also noted the various symptoms they believed were a result of the condition.

3.7.3 Symptoms

The participants frequently referred to symptoms that they had personally experienced or that they heard about from friends and family; rarely did they state that their physician associated certain symptoms with hypertension. The hypertensive participants did not distinguish between high and low blood pressure, like their counterparts did in the Type II diabetes group. Therefore, the associated categories were broken down by either (a) no symptoms, or (b) the type of symptom (e.g. headaches, fatigue, irritability; see Table 3-8). Multiple participants indicated that they did not experience any symptoms of hypertension either before or after their diagnosis. However, these same individuals indicated that there are several symptoms, such as headaches, which are associated with hypertension. A 56-year-old male stated, "I know people that say they've had conditions. Like lightheadedness or headaches or that sort of thing but my personal experience is that I've never experienced any of them." This perception was supported by a 50-year-old female, who revealed "I would speak with people and they would tell me their symptoms and I didn't feel any of those things so I said that I don't have that." Of the participants who experienced symptoms themselves, headaches and irritability were common. A 48-year-old male stated,

“The headaches were getting worse and I wasn't feeling very good, I feel like I was tired more.” and a 65-year-old female noted, “Also, when my blood pressure rises I get irritated, I get mad out of nowhere and I know it’s because of my blood pressure.”

3.7.4 Treatments

Similar to the diabetic participants, the treatment theme was most frequently referred to in hypertensive participant interviews (referenced 580 times), and included any action that the participants engaged in to control their blood pressure levels. The hypertensive participants discussed a variety of treatments that fell into the same four associated categories as the diabetic participants: (a) medications, (b) diet, (c) exercise, and (d) complementary and alternative medicine. Almost every participant mentioned the specific prescription medication they were taking to control their condition, as well as any adjustments they have undergone in relation to their medication regime. In addition to stating their medication brands and dosages, subjects discussed lifestyle changes, such as diet and exercise, that were recommended by their physicians.

Several participants indicated that they had been advised to minimize their fat, salt, and sugar intake as a way to lower their blood pressure. A 77-year-old female stated, “He [the doctor] just told me to cut down on salts and fats, and watch your diet, and your dessert.” And another 76-year-old female agreed, “He [the doctor] just said to eat more healthy, which I try to do. He told me just to,

you know, uhh, try not to eat a lot of fats and stuff like that." In regards to exercising, most participants indicated that they were currently exercising regularly or that they had intentions to exercise. A 60-year-old man stated, "Exercise helps to lower my blood pressure. So I exercise. I come here [the gym] three times a week to exercise and it helps the blood pressure to go down." Another respondent, a 73-year-old woman recalled, "He [the doctor] said exercise is real important. Well, I didn't really think I needed to because of my job. I'm a busy body, and I'm on the go all the time."

In addition to medications, diet, and exercise, alternative treatments were also engaged in by participants. A few participants indicated that they tried a number of different options, such as vitamins, green tea, celestial tea, cinnamon tablets, garlic, grapefruit juice, cucumber, dandelion, potassium, aloe vera, and meditation. When asked if they believed that their condition could be helped with herbs, teas, or vitamins, 54% of the participants said yes.

Table 3-8 Qualitative Themes and Subcategories for Hypertensive Participants

Major Themes (frequency)	Associated Categories
Causes (145)	Behavioral, Biological
Complications (269)	Physical, Mental, Side-effects of Medication
Symptoms (195)	None, Headaches, Nosebleeds, Fatigue, Dizziness, Nausea, Heart Palpitations, Irritability
Treatments (580)	Medications, Diet, Exercise, Complementary and Alternative Medications

Chapter 4

Discussion

The current study was designed to investigate how groups view the causes, complications, symptoms, and treatments of chronic illnesses, and to determine if SES influenced these beliefs. Previous work has focused on explaining the beliefs of minority cultures, such as Latinos and Afro-Caribbean women (Smith, 2012; Weller, et al, 1999); however, the ways in which SES plays a role in the cultural beliefs has remained unclear. This study focused on the participants' beliefs by using questionnaires about illness conditions to determine responses based on their perception of the causes, complications, symptoms, and treatments associated with their conditions.

Unfortunately, these results did not support most of the hypotheses. Although participants shared a single cultural belief regarding their chronic illness, there were no differences in cohesive beliefs between the members of different socioeconomic statuses within each illness condition, or between the two conditions. Additionally, education was the only factor identified that may influence cultural beliefs among participants. Lastly, qualitative data highlighted aspects of the lived experience of having a chronic disease, such as the treatments, complications, and symptoms associated with Type II diabetes and hypertension.

The first hypothesis was not supported. All Type II diabetes participants shared a single cultural belief model about the causes, complications, symptoms,

treatments, and general knowledge of the disease. This finding was supported by past research which showed that both Afro-Caribbean women (Smith, 2012) and Latinos (Weller et al., 1999) with Type II diabetes all shared a single belief model. These results are consistent with Romney's Cultural Consensus Model (Romney et al., 1986), which suggests that each person in a culture has cultural specific beliefs, which can be applied to health beliefs. In this specific instance, the culture of the group was the chronic condition, Type II diabetes, which resulted in all of the participants sharing a single belief model.

Unexpectedly, and contrary to previous literature, there were no differences between subjects with high and low SES. The slightly higher levels of agreement among high SES study participants could be due to the SES of the participants, but it is also possible that the higher level of agreement is the result of using such a small sample size, nine participants. The similar mean cultural consensus scores for the three groups (all Type II diabetes participants, high SES, and low SES) suggest that the participants share their cultural beliefs despite their SES. This could be due to the way in which SES was conceptualized in this study. The current study used a single item examining financial difficulties as a proxy for SES, whereas previous studies that looked at differences in health behaviors by SES used validated measures of the concept. Additionally, previous studies focusing on differences in health behaviors among these groups have used objective measures of concepts like treatment, such as number of visits to the

doctor or hospital admission data. In contrast, the present study relied solely on self-report measures due to its focus on participant beliefs instead of participant knowledge. Less likely is the possibility that having a chronic condition like Type II diabetes is so impactful that other aspects of the participants' lives, such as SES, are not as influential in regards to how they conceptualize their health beliefs. This view could possibly explain similar results found by Smith (2012), who showed that Afro-Caribbean women with Type II diabetes shared a single cultural belief model about their condition; however, there were no differences between women with and without medical training.

It was surprising that neither SES nor a history of medical training seemed to affect the cultural beliefs of individuals with Type II diabetes. Considering this outcome, and in an effort to further explain the belief models for high and low SES, the researcher conducted additional analyses which revealed some differences between the groups. Not surprisingly, low SES participants believed their Type II diabetes could lead to more complications (i.e. weight loss, other diseases apart from heart disease, strokes, kidney problems or poor wound healing, and that it could keep someone from doing all of the things they did prior to having the disease) than did their high SES counterparts. This finding is consistent with previous research which has shown that low SES individuals have higher rates of treatment and hospitalizations for their Type II diabetes than high SES individuals. Additionally, low SES participants' conditions are more severe

upon hospitalization. Considering this, it is understandable that low SES participants would believe that more complications could arise from having Type II diabetes compared to high SES subjects. This outcome is also consistent with Leventhal's Common-Sense Model of Self-Regulation (Leventhal et al., 1998), which suggested that both culture and personal experiences influence the ways that individuals interpret their symptoms and complications. In this instance, groups (i.e. low SES) that have been shown to have more severe conditions and hospital utilization would perceive more complications associated with their chronic illness. Given these results, future research is warranted to further investigate this construct and the factors that may affect it (i.e. health beliefs).

Although past research indicated that SES influences health behaviors and beliefs (Wardle & Steptoe, 2003), the second hypothesis was not supported. Like the Type II diabetes participants, all hypertension participants shared a single cultural belief model about the causes, complications, symptoms, treatments, and general knowledge of the disease. These results lend support to Romney's Cultural Consensus Model (Romney et al., 1986), because all participants in the hypertension group shared a single belief model. According to this model, there are culturally specific and pervasive beliefs, which are held in common by the entire group, in this instance hypertensive participants.

Contrary to expectations, there were no differences between hypertensive subjects with high and low SES. As with Hypothesis 1, the slightly higher levels

of agreement among high SES study participants could be due to the SES of the participants or to using a sample size less than 24, only 22 participants. The similar mean cultural consensus scores for the three groups (all hypertension participants, high SES, and low SES) suggest that the participants share their cultural beliefs despite their SES. These findings may potentially be attributed to the same factors associated with the nonsignificant findings related to the Type II diabetes subjects, such as the single item which was used to measure SES or the possibility that having a diagnosis of high blood pressure was more prominent than other factors, like SES.

As with the diabetes participants, high and low SES hypertensive subjects shared a single cultural belief model; however, additional analyses were conducted to determine if these groups shared identical beliefs. These tests revealed that high and low SES participants differed in their beliefs regarding the causes of their condition. High SES participants were more likely to believe hypertension was due to genetics or discrimination, compared to low SES subjects. These differences are not surprising considering a recent review which found that higher SES groups may have more awareness of hypertension prevention and control, and better accessibility and adherence to medical treatment (Grotto, Huerta, & Sharabi, 2008). Although high SES individuals may have less personal experience related to the consequences of hypertension, they may have more knowledge of the causes of the condition.

The third hypothesis was not supported; there were no differences in cultural beliefs based on disease type. Because having hypertension is a risk factor for Type II diabetes, it was believed that diabetics would have more consensus than hypertensive subjects. These results were contrary to both the Cultural Consensus Model and the Common-Sense Model. The Cultural Consensus Model could theoretically assume that the cultural group was being diagnosed with a chronic illness, and that the type of illness was irrelevant. However, the additional analyses conducted for Hypothesis 1 and 2 revealed differences in which items were endorsed based on disease; Type II diabetes was associated with differences in complications whereas hypertension was associated with differences in causes.

Additionally, as discussed below, the qualitative data revealed differences in the participants' beliefs depending on their disease type, making the explanation of an irrelevant disease type unlikely. Furthermore, the Common-Sense Model assumes that culture and personal experience influence each persons' beliefs regarding their symptoms and health behaviors. In this instance, there were differences in the types of symptoms a participant experienced based on whether they had Type II diabetes or hypertension. This factor alone should have resulted in different types of consensus between the two groups. Future studies would benefit from exploring if disease type or disease severity affects

consensus or disease knowledge among participants with various chronic conditions.

Hypothesis 4 was partially supported. Education was the only demographic variable identified as affecting cultural beliefs in both Type II diabetes and hypertension. In both instances, participants with less than a high school degree had less cultural agreement than individuals with higher level degrees. This outcome is consistent with the findings of previous studies, which show that education is a good predictor of health behaviors (Cowell, 2006). Additionally, education is often an integral part of determining SES, which has been shown to influence health beliefs and health outcomes.

Because occupation and salary are also often used to determine SES, it was surprising that neither work status nor difficulty paying bills were associated with cultural consistency. This unexpected outcome could be explained by the way these questions were worded; for example, the answer choices for work were often combined, such that not working and retired were grouped together. Additionally, small sample sizes in each group could have influenced the results. Lastly, previous literature has shown that an individual's self-assessed health is related to health behaviors and health outcomes (Mackenbach et al., 2002; Segovia et al., 1988), and it was therefore unexpected that it was not associated with cultural consistency. Because education was identified as a factor that influenced cultural beliefs, it should be examined in future studies as a way of

elucidating how individuals of various education levels view their chronic illness conditions.

Qualitative data were used to complement the findings revealed in Hypotheses 1-4. Because no differences in cultural beliefs were found based on SES, the qualitative data were broken down only by disease type, Type II diabetes and hypertension. These data revealed more differences in participant beliefs than were revealed in the CCA. With regard to the causes of Type II diabetes and hypertension, diabetic participants focused on behavioral (i.e. diet, lack of exercise, and stress) and biological (i.e. hereditary) causes, although they also indicated some environmental factors, such as pollution and discrimination). On the other hand, hypertensive participants primarily blamed behavioral reasons for their condition; biological causes were rarely mentioned and environmental causes were ignored. These differences were not apparent in Hypothesis 3, which indicated that there were no group differences in cultural beliefs for the two disease types.

The participants in each group also spoke about the complications of their condition in slightly different ways. Both groups mentioned physical and mental complaints, as well as side-effects from the medications they were prescribed. For the hypertensive patients, the physical complications mentioned were often explained as complications that other people had experienced, whereas the diabetic patients recalled physical symptoms they experienced themselves.

Additionally, the diabetic patients complained about their ability to adhere to medical advice, often stating that it was difficult for them to make changes related to their diet and exercise habits. In contrast, the hypertensive patients often referred to how they were currently attempting to manage their diet and exercise, or the steps that they planned to initiate over and above their current practices. Again, these differences did not follow from Hypothesis 3, and would have been overlooked without the addition of the qualitative data.

The qualitative data also revealed differences in the way the participants described their symptoms. The hypertensive patients commonly stated that they did not experience symptoms themselves, but that a variety of symptoms (i.e. headaches, nosebleeds, dizziness, nausea, irritability) were associated with the condition. Diabetic participants, however, were more likely to talk about their personal experiences with symptoms related to high and low blood sugar levels. The symptoms participants noted differed depending on whether they experienced hypo- or hyperglycemia. Individuals who experienced low blood sugar were more likely to say they experienced shakes, irritability, and headaches, whereas those with high blood sugar recalled feeling flushed, frequent urination, and frequent thirst. Although most hypertensive participants stated a lack of symptoms, diabetic patients often reported an entire list of problems they experienced because of their condition.

Unlike the previous three themes (causes, complication, and symptoms), participants in both groups spoke about their treatments in a similar manner. Both groups broke their treatments down by the medications they were taking, their diet and exercise, and complementary and alternative medicines. In addition to the diabetic group taking more medications for their conditions, the types of complementary and alternative medicines also differed by group. The hypertensive group referred to medication and relaxation techniques in addition to vitamins, teas, plants, and herbs, whereas the diabetic subjects did not focus on medication or relaxation, and instead listed vitamins, teas, and various types of seeds.

Taken together, these findings suggest that individuals with high and low SES may differ in their beliefs regarding the causes or treatments of their condition depending on which chronic illness they suffer from. Additionally, education was identified as another factor that could potentially influence cultural beliefs regarding chronic illnesses. The qualitative data helped to explain differences between the Type II diabetes and hypertensive patients that were not uncovered by the quantitative analyses.

It is important to caution, however, that this study was limited by several factors. First, the single item measure of SES that was employed in the current study was limited in its ability to measure the various aspects of this phenomenon, instead relying only on financial stability as a proxy measure. It is possible that

this item did not give an accurate, or complete picture, of SES, and that, in fact, this construct cannot be captured with a single item. This could have contributed to the lack of significant findings relevant to SES. Future studies would benefit from using multiple indicators of SES, such as education and occupation, as well as perceived social class. It is possible that education[1] and/or perceived social class might be a better representation of culture than the single item (financial stability) used in the present study. Additionally, objective measures, like income, are recommended, although participants recruited from settings like free medical clinics may be hesitant to disclose their income accurately. It is also possible that reliable and valid knowledge questionnaires for Type II diabetes and hypertension would give the researchers a better understanding of the amount of true knowledge the participants held in addition to their cultural beliefs, as opposed to the created scales seen in Appendix F. Future studies would benefit from using predeveloped scales to measure SES and disease knowledge that are both reliable and valid.

Second, the researcher was unable to run analyses on several variables relevant to Hypothesis 4 because of insufficient cell sizes. Because so few Type II diabetes participants indicated that they had a history of other conditions, such as

[1] The CCA analysis was conducted with education and findings were not significant. This could have been due to the small sample sizes in each education group.

cancer, kidney problems, or heart disease, it was impossible to determine whether these conditions may affect their beliefs about Type II diabetes.

Third, the CCA items that were used in this study were compiled from information given by the American Diabetes Association and the American Heart Association. Although these organizations are up-to-date with the leading research on Type II diabetes and hypertension, the questions that were included in the CCA questionnaires were not generated by, or tested on, a sample of individuals who were similar to those included in the study. Using a similar test sample is a common practice in questionnaire development, and incorporating it could have revealed questions that the participants found confusing, or ones that they answered in multiple ways (Weller, 2007). For example, the participants were asked if they believed that, as a treatment method, they should get more rest. Some individuals interpreted rest as sleep whereas others thought it meant sedentary behavior. By using a semi-structured interview, free list data, or small focus groups, instances of confusion among participants, as well as any additional areas that participants thought should be included, could have been identified. Future studies should use additional questionnaire development techniques to ensure that the CCA questionnaires are easily understood by participants, and that the questions are comparable in their level of difficulty.

Fourth, and finally, although the CCA questionnaires and the semi-structured interviews focused on the causes, complications, symptoms, and

treatments for chronic illnesses, the participant interviews often highlighted the concept of adherence to medical advice. This is an area of major importance to both patients and medical providers and one that should be further examined in the future.

In closing, it is important to note that the current study contributes to the larger body of research examining the impact that chronic illnesses and SES have on health beliefs. Past research has focused primarily on descriptive characteristics that influence health behaviors, specifically identifying risk factors for developing conditions and ways to treat them. The current study was able to look at chronic illnesses from the perspective of the patient, and focus on the ways that the members of different groups view the causes, complications, symptoms, and treatments of the disease. Unlike previous studies, the current study was able to highlight the beliefs about chronic illness conditions and identify aspects of the lived experience that were common for all participants. Nevertheless, it is essential to further study patients with chronic illnesses and explore the ways in which cultural beliefs affect a person's health behaviors. This research may lead to advances in the ways medical care is presented to specific elderly populations, thereby potentially enhancing the lives of individuals on multiple levels.

Appendix A

Recruitment Flyer in English

A Project by the
Department of Psychology
at the University of Texas at Arlington

BELIEFS ABOUT ILLNESS CONDITIONS STUDY

Compensation ----- $20.00 gift card for a local Grocery Store

Invitation to Participate in a Study

We would like to invite you to participate in a research study conducted by the Psychology Department at the University of Texas at Arlington. We are interested in learning about the ways people think about their illnesses. Participation is voluntary and completely confidential.

How can I help?

We are looking for adults 45+ years of age who have been diagnosed with diabetes and/or hypertension to participate in a study that will last for about 1-1.5 hours. You will be asked to answer questions about your illness and its treatment. As a sign of our appreciation for your time, participants will receive a $20.00 gift card.

If you are interested, please call Dr. Pablo Mora.
Telephone: 817-272-0790
Email: pmora@uta.edu or email: LSHBB.UTA@gmail.com.

Appendix B

Recruitment Flyer in Spanish

Un proyecto del
Departamento de Psicología de la Universidad de Texas en Arlington

ESTUDIO ACERCA DE LAS CREENCIAS DE ENFERMEDAD

Compensación ----- Una tarjeta de regalo con un valor de $20.00 para un supermercado local

Invitación para participar en un estudio

Queremos invitarle a participar en una investigación realizada por el Departamento de Psicología de la Universidad de Texas en Arlington. Estamos interesados en aprender más sobre las maneras en las que las personas piensan sobre sus enfermedades. Su participación es voluntaria y absolutamente confidencial.

¿Cómo puedo ayudar?

Estamos buscando adultos de 45 años o mayores que han sido diagnosticados con diabetes y/o hipertensión para participar en un estudio que durará entre 1 y 1 hora y media. Para este estudio le pediremos que responda preguntas sobre su enfermedad y el tratamiento. Como forma de agradecerle por el tiempo dedicado a este estudio usted recibirá un regalo.

Si está interesado(a) en participar, por favor contacte al Dr. Pablo Mora (Teléfono: 817-272-0790 o correo electrónico: pmora@uta.edu) o email: LSHBB.UTA@gmail.com.

Appendix C

Cultural Consensus Items for the Diabetic Participants

	RESPONSE	
SYMPTOMS		
Do you think diabetes can cause:		
• Headaches?	YES	NO
• Dizziness?	YES	NO
• Blurry vision?	YES	NO
• The feeling of being tired and run down?	YES	NO
• The feeling of being tense and nervous?	YES	NO
• Shortness of breath?	YES	NO
• Frequent thirst?	YES	NO
• A tingling sensation in the mouth?	YES	NO
• Irritability?	YES	NO
• Frequent urination?	YES	NO
• Weight loss?	YES	NO
GENERAL KNOWLEDGE		
Do you think that a diabetic:		
• Can tell when their blood sugar is rising?	YES	NO
• Would enjoy life more if they didn't follow their medical treatment?	YES	NO
• Can have diabetes and not know it?	YES	NO
• Has more sugar flowing in their blood?	YES	NO
• Only has diabetes when they have symptoms?	YES	NO
• Will have diabetes for the rest of their life?	YES	NO
• Can have normal blood sugar levels if they do not eat sweets?	YES	NO
• Would have fewer complications if they didn't take their medications?	YES	NO
Do you think that diabetes can:		
• Affect someone later on in life, even if they were born with the condition?	YES	NO
• Be cured?	YES	NO
• Kill someone?	YES	NO
• Keep someone from doing all the things they used to do before they had the condition?	YES	NO
• Get worse if not treated with pills?	YES	NO
• Go away by itself?	YES	NO
CAUSES		
Do you think that diabetes:		

• Can be caused by too much stress?	YES	NO
• Can be caused by being overweight?	YES	NO
• Can be caused by drinking too much alcohol?	YES	NO
• Can be caused by eating foods high in salt content?	YES	NO
• Can be caused by the pollution in the world today?	YES	NO
• Can be passed down to a child if a parent has it?	YES	NO
• Can be caused by being discriminated against?	YES	NO
• Can be caused by eating of drinking foods with a lot of sugar in them?	YES	NO
• Can only happen to older people?	YES	NO
TREATMENT		
Do you think that if someone has diabetes they:		
• Should take a pill right away if they feel their blood sugar rising, to lower it?	YES	NO
• Should get more exercise?	YES	NO
• Need to take pills for the rest of their life to control it?	YES	NO
• Should get more rest?	YES	NO
• Need to check their blood sugar regularly?	YES	NO
• Need to take pills every day?	YES	NO
• Should lose extra weight?	YES	NO
• Should avoid sweet foods?	YES	NO
• Should pray more?	YES	NO
• Can be helped by certain herbs, teas, and/or vitamins?	YES	NO
COMPLICATIONS/COMORBID CONDITIONS		
Do you think that diabetes can lead to:		
• Heart problems?	YES	NO
• A stroke?	YES	NO
• Weight loss?	YES	NO
• Kidney problems?	YES	NO
• Poor/slow wound healing?	YES	NO
• Other diseases?	YES	NO

Appendix D

Cultural Consensus Items for the Hypertensive Participants

	RESPONSE	
SYMPTOMS		
Do you think high blood pressure can cause:		
• Headaches?	YES	NO
• Dizziness?	YES	NO
• Blurry vision?	YES	NO
• The feeling of being tired and run down?	YES	NO
• The feeling of being tense and nervous?	YES	NO
• Shortness of breath?	YES	NO
• Frequent thirst?	YES	NO
• A tingling sensation in the hands and feet?	YES	NO
• Irritability?	YES	NO
• Frequent urination?	YES	NO
• Weight loss?	YES	NO
GENERAL KNOWLEDGE		
Do you think that someone with high blood pressure:		
• Can tell when their blood pressure is rising?	YES	NO
• Would enjoy life more if they didn't follow their medical treatment?	YES	NO
• Can have high blood pressure and not know it?	YES	NO
• Has more blood flowing in their veins and arteries?	YES	NO
• Only has high blood pressure when they have symptoms?	YES	NO
• Will have high blood pressure for the rest of their life?	YES	NO
• Can have normal blood pressure if they rest more?	YES	NO
• Would have fewer complications if they didn't take their medications?	YES	NO
Do you think that high blood pressure can:		
• Affect someone later on in life, even if they were born with the condition?	YES	NO
• Be cured?	YES	NO
• Kill someone?	YES	NO
• Keep someone from doing all the things they used to do before they had the condition?	YES	NO
• Get worse if not treated with pills?	YES	NO
• Can go away by itself?	YES	NO
CAUSES		
Do you think that high blood pressure:		
• Can be caused by too much stress?	YES	NO
• Can be caused by being overweight?	YES	NO

• Can be caused by drinking too much alcohol?	YES	NO
• Can be caused by eating foods high in salt content?	YES	NO
• Can be caused by the pollution in the world today?	YES	NO
• Can be passed down to a child if a parent has it?	YES	NO
• Can be caused by being discriminated against?	YES	NO
• Can be caused by eating of drinking foods with a lot of sugar in them?	YES	NO
• Can only happen to older people?	YES	NO
TREATMENT		
Do you think that if someone has high blood pressure they:		
• Should take a pill right away if they feel their blood pressure rising, to lower it?	YES	NO
• Should get more exercise?	YES	NO
• Need to take pills for the rest of their life to control it?	YES	NO
• Should get more rest?	YES	NO
• Need to check their blood pressure regularly?	YES	NO
• Need to take pills every day?	YES	NO
• Should lose extra weight?	YES	NO
• Should avoid salty foods?	YES	NO
• Should pray more?	YES	NO
• Can be helped by certain herbs, teas, and/or vitamins?	YES	NO
COMPLICATIONS/COMORBID CONDITIONS		
Do you think that high blood pressure can lead to:		
• Heart problems?	YES	NO
• A stroke?	YES	NO
• Weight loss?	YES	NO
• Kidney problems?	YES	NO
• Poor/slow wound healing?	YES	NO
• Other diseases?	YES	NO

Appendix E

Semi-Structured Interview Guide

The individual interview will allow the informants to describe their illness and its treatment in terms of personal meaning and experience. We are interested in exploring two major topics: (1) thoughts and feelings people had about their disease when they were first told they had it and thoughts and feelings they have now, and (2) the actions they have taken to manage their condition.
It is important to use the initial questions to help people focus on the moment when they first learned they had their illness. This should also help them develop a chronological timeline for telling their story.
The interview will be divided into two phases: (1) Onset and initial management, and (2) Current beliefs and management.

1) *Onset of chronic condition*

Participants will be asked to recall the moment when they were diagnosed with the illness condition. To contextualize their recalling, they will be asked to tell how old they were, the occupation they had and where they were living at that time. After this, they will be asked to narrate how they found out they had the condition, what they thought, and how they felt about it.

i) To the patient: I would like to start by asking you questions about the first time you learned that you had diabetes (hypertension). I know it may have been a long time ago but, I would like you to try to remember a few things.

ii) Initial Questions:

- Do you remember how old you were when you first learned you had diabetes (hypertension)?
  - Prompts:
    - Was it recently?
    - If not, was it ___years ago (2, 5, 10)?
- Do you remember where were you living?
  - Prompts:
    - Were you living in Texas? In what city were you living? If not in the US, In what country were you living?
- What were you doing for a living?
  - Prompts:
    - Were you working or retired?
    - If working, where were you working?

iii) Diagnosis questions:

- How did you find out you had diabetes?
  - Prompts:

- Did the Dr. tell you that you had diabetes (hypertension)?
- Had you gone to visit the Dr. because you weren't feeling well or did you go for a regular check-up?

- If they went to the Dr. because they didn't feel well ask: Do you remember the symptoms you had?
  - Prompts:
    - Did you feel headaches? Blurry vision? Fatigue? Something else?
- Do you remember what the Dr. said when s/he told you that you had diabetes (hypertension)?
  - Prompts:
    - Did s/he tell you what your body was going to feel like as a result of having diabetes (hypertension)? Did s/he mention symptoms that you might experience as a result of your diabetes (hypertension)?
- Did you find out by yourself what symptoms your condition can cause?
  - Prompts
    - How did you do so? Did you ask friends?
    - Did you read something about it?
- Do you remember what you felt when you found out you had this condition?
  - Prompts:
    - Did you feel worried? If so, what made you worried (consequences, medication)?
    - Did you feel sad?

iv) Treatment and self-management after diagnosis

After participants narrate their memories about the moment when they were diagnosed, we will ask them to recall points about the treatment they were prescribed after diagnosis and any other non-prescribed remedy they used or activity they did. Then, they will be asked to recall how they integrated the treatments into their routines.

a) Medical Treatment

- Do you remember what the physician prescribed?
  - Prompts:
    - Did s/he tell you to take pills (use

injections)?
    - Did s/he ask you to make changes in your daily routine (diet or losing weight)?
    - Can you tell me what changes you made in your life order to follow the doctor's recommendations?
- Did you talk to friends or relatives, who have the condition or know somebody with it, about what to do to deal with your condition?
    - Did they tell you about other types of treatments that could help your condition?
    - Did they tell you about other types of activities that could help your condition?
    - Did you search for information somewhere else (e.g., internet)? What did you learn?

2) <u>Illness representation and self-management in the present</u>

After recalling circumstances around the time when they were diagnosed, participants will be asked about the status of their condition in the present and what they have been doing to manage it. Finally, participants will be asked to tell how, in a given day and/or week, they take care of their condition.

i) <u>Illness condition and illness management in the present:</u> To switch the conversation and situate the patient in the current moment, ask about his/her current life/health:

a) <u>Current health status</u>
- Tell me about your health now, Is your condition causing you any problem?
    - Prompts:
        - Are you having problems doing things you need or like to do because of your condition?

b) <u>Self-management</u>
- What do you do to deal with these problems?
    - Prompts:
        - What types of things do you do that may improve your condition?
        - What types of things do you do that may worsen your condition?
- Tell me more about the things you do, what has your doctor recommended you to do?
    - Prompts:
        - Are you using the same treatment recommended

when you were first diagnosed? Are you taking pills? Something else?
        - Do you use the medications prescribed by the doctor when having symptoms or all the time?
        - How are you able to tell whether or not this treatment is helping you handle your problem? Do you feel changes in your body?
        - What symptoms or problems, if any, are important to monitor to make sure that what you do is working?
        - How do you know when your treatment is not working? Prompt: Do you feel changes in your body?
        - Do you feel any changes/problems with things you like or need to do because of the treatment? Do you feel any changes/problems with things you like or need to do when not taking medications?
        - Do you feel better when taking prescribed medications? Can you explain to me what you feel like? How long does it take you to feel anything?
- Do you do other things in addition to what your doctor recommended?
    - Prompts:
        - Do you take vitamins? Over the counter medications? Herbal teas? Something else?
        - When do you use these treatments, when having symptoms or all the time?
        - How are you able to tell whether or not this treatment is helping you handle your problem? Do you feel changes in your body?
        - What symptoms or problems, if any, are important to monitor to make sure that what you do is working?
        - How do you know when your treatment is not working? Prompt: Do you feel changes in your body?
        - Do you feel any changes/problems with things you like or need to do because of this vitamin/OTC med, etc? Do you feel any changes/problems with things you like or need to do when not taking this vitamin?OTC med, etc?
        - Do you feel better when taking these? Can you

explain to me what you feel like? How long does it take you to feel anything?

- If they use complementary/natural remedies ask whether they could replace the prescribed pills with these remedies.
- Have you made any changes in what you do that help with your condition?
    - Prompts:
        - Have you changed your diet?
        - Have you changed your activities?
        - Do you try to relax more?
- In a given day during the work week, tell me what you do to take care of your condition.
    - Prompts:
        - Do you do anything in the morning?
        - What about the afternoon?
        - What about the weekend?

ii) I would like to ask you one more question about your diabetes (hypertension):

- If you had to explain your problem to a friend who was recently diagnosed with it, what would you tell him/her?
    - Prompts:
        - What symptoms would you tell him/her diabetes (hypertension) would cause?
        - What limitations, if any, would s/he experience?
        - What changes in his/her life would s/he have to make to deal with this condition?
        - What do medicines do to the condition?

3) <u>Feedback</u>

Before we end our conversation I would like to ask you:

- Do you have any questions about our interview today?
- Do you have any comments?
- Are there any other questions you think should have been asked during our discussion?
- Are there any questions you think should not have been asked during our discussion?

Appendix F

Ancillary Analyses

Data Analysis

These ancillary analyses took cultural consensus belief items and repurposed them so that they could be looked at as a knowledge questionnaire. This is important to understanding if differences exist between participants in differing socioeconomic status', or disease types, in regards to the amount of correct knowledge they have about their conditions. Because the CCA items were not originally constructed for this purpose, all items were rated as being correct ("yes"), incorrect ("no"), indirectly true ("maybe"), or "inconclusive" if there was no literature to support or deny the statement (see Tables F-1 and F-2). These analyses attempted to determine if participants had differing amount of correct knowledge regarding their conditions based on SES or disease type. Analyses were run twice; the first time only the questions with a definite correct ("yes" or "no") response were used. This was important because all of these questions contained definite correct choices, regardless of past experience with the condition. The second time the analyses were run the items which were indirectly true ("maybe") were also included. These "maybe" answers are more subjective and often are linked to personal experiences with the diseases. For example, hypertension is typically considered asymptomatic; however, an individual with unmanaged hypertension can experience symptoms such as headaches or shortness of breath. Although it is less likely that participants would have experienced these symptoms, they can occur in rare instances, and not all of the

participants would have personal knowledge of them. Inconclusive statements were excluded from all of the ancillary analyses; these statements were usually evaluating a participant's opinions, but they also included statements that lacked conclusive support.

For these analyses, mean scores for each of the five subsections of the cultural consensus questionnaires were created. Analysis of variance (ANOVAs) were used to determine if there were differences among high and low SES Type II diabetes participants. Then an ANOVA was used to look at these same differences, high and low SES, among hypertensive participants. Lastly, an ANOVA was used to look at differences in Type II diabetic patients and hypertensive patients on their knowledge regarding their diseases.

Table F-1 Support for the Cultural Consensus Items to be used as Knowledge Questions for the Diabetic Participants				
	SUPPORT			
SYMPTOMS	**YES**	**NO**	**MAYBE**	**INCONCLUSIVE**
Do you think diabetes can cause:				
Headaches?			ADA (2015e)	
Dizziness?			ADA (2015e)	
Blurry vision?	ADA (2015d)			
The feeling of being tired and run down?	ADA (2015d)			
The feeling of being tense and nervous?			Diabetes New Zealand (2014)	
Shortness of breath?			ADA (2014b) NHLBI (2011)	
Frequent thirst?	ADA (2015d)			
A tingling sensation in the mouth?			ADA (2015e)	
Irritability?			Grootenhuis, Snoek, Heine & Bouter (2009)	
Frequent urination?	ADA (2015d)			

Weight loss?	Diabetes Community United Kingdom (2016)			
GENERAL	**YES**	**NO**	**MAYBE**	**INCONCLUSIVE**
Do you think that a				
Can tell when their blood sugar is rising?			ADA (2015d)	
Would enjoy life more if they didn't follow their medical treatment?				----------
Can have diabetes and not know it?	Cowie et al (2009)			
Has more sugar flowing in their blood?			ADA (2014b)	
Only has diabetes when they have symptoms?		ADA (2015d)		
Will have diabetes for the rest of their life?	ADA (2016c)			
Can have normal blood sugar levels if they do not eat sweets?			ADA (2015c)	
Would have fewer complications if they didn't take their medications?		NIH (2012)		

Do you think that diabetes can:				
Affect someone later on in life, even if they were born with the condition?		ADA (2014a) NIDDK (2014b)		
Be cured?		ADA (2016d)		
Kill someone?	ADA (2016e)			
Keep someone from doing all the things they used to do before they had the condition?				----------
Get worse if not treated with pills?			ADA (2015a)	
Can go away by itself?		ADA (2016d)		
CAUSES	**YES**	**NO**	**MAYBE**	**INCONCLUSIVE**
Do you think that				
Can be caused by too much stress?	ADA (2013) NIDDK (2014a)			
Can be caused by being overweight?	ADA (2014c) NIDDK (2014a)			
Can be caused by drinking too much alcohol?			Carlsson, Hammer, Grill & Kaprio (2003)	

Can be caused by eating foods high in salt content?		ADA (2015b)		
Can be caused by the pollution in the world today?	Brook et al (2008) Krämer et al (2010)			
Can be passed down to a child if a parent has it?			ADA (2014a)	
Can be caused by being discriminated against?				----------
Can be caused by eating of drinking foods with a lot of sugar in them?			ADA (2015c)	
Can only happen to older people?		NIDDK (2014b)		
TREATMENT	**YES**	**NO**	**MAYBE**	**INCONCLUSIVE**
Do you think that if someone has diabetes they:				
Should take a pill right away if they feel their blood sugar rising, to lower it?				----------
Should get more exercise?	ADA (2015g)			

Need to take pills for the rest of their life to control it?			ADA (2015a)	
Should get more rest?		ADA (2015g)		
Need to check their blood sugar regularly?	ADA (2016a)			
Need to take pills every day?			ADA (2015a)	
Should lose extra weight?	ADA (2014c)			
Should avoid sweet foods?			ADA (2015c)	
Should pray more?				----------
Can be helped by certain herbs, teas, and/or vitamins?	Dhamm, Shah, Hirsch & Banerji (2006) Nahas & Moher (2009)			
COMPLICATIONS / COMORBID	**YES**	**NO**	**MAYBE**	**INCONCLUSIVE**
Do you think that diabetes can lead to:				
Heart problems?	Grundy et al (1999)			

A stroke?	Grundy et al (1999)			
Weight loss?	Diabetes Community United Kingdom (2016)			
Kidney problems?	ADA (2016b) Grundy et al (1999)			
Poor/slow wound healing?	ADA (2015d)			
Other diseases?	ADA (2016b)			

Table F-2 Support for the Cultural Consensus Items to be used as Knowledge Questions for the Hypertensive Participants				
	SUPPORT			
SYMPTOMS	**YES**	**NO**	**MAYBE**	**INCONCLUSIV**
Do you think high blood pressure can cause:				
Headaches?			AHA (2014i)	
Dizziness?		AHA (2014i)		
Blurry vision?		AHA (2014i)		
The feeling of being tired and run down?		AHA (2014i)		
The feeling of being tense and nervous?			AHA (2014i)	
Shortness of breath?			AHA (2014i)	
Frequent thirst?		AHA (2014i)		
A tingling sensation in the hands and feet?		AHA (2014i)		
Irritability?				AHA (2014i) Buchholz et al (1999)
Frequent urination?		AHA (2014i)		
Weight loss?		AHA (2014i)		
GENERAL KNOWLEDGE	**YES**	**NO**	**MAYBE**	**INCONCLUSIV**

Do you think that someone with high blood pressure:				
Can tell when their blood pressure is rising?			AHA (2014i)	
Would enjoy life more if they didn't follow their medical treatment?				----------
Can have blood pressure and not know it?	AHA (2014f) CDC (2016)			
Has more blood flowing in their veins and arteries?		AHA (2014j)		
Only has high blood pressure when they have symptoms?		AHA (2014i)		
Will have high blood pressure for the rest of their life?	AHA (2014f)			
Can have normal blood pressure levels if they rest more?				----------
Would have fewer complications if they didn't take their medications?		AHA (2014l)		
Do you think that high blood pressure can:				

Affect someone later on in life, even if they were born with the condition?		AHA (2014h)		
Be cured?		AHA (2014f)		
Kill someone?	AHA (2014k)			
Keep someone from doing all the things they used to do before they had the condition?				----------
Get worse if not treated with pills?			AHA (2014c)	
Can go away by itself?			High Blood Pressure Research Council of Australia (2016) Blood Pressure United Kingdom (2008)	
CAUSES	**YES**	**NO**	**MAYBE**	**INCONCLUSIV**
Do you think that high blood pressure:				
Can be caused by too much stress?	AHA (2014h) AHA (2014b)			
Can be caused by being overweight?	AHA (2014d)			

Can be caused by drinking too much alcohol?	AHA (2014h)			
Can be caused by eating foods high in salt content?	AHA (2014h)			
Can be caused by the pollution in the world today?	Coogan et al (2012) Guo et al (2010)			
Can be passed down to a child if a parent has it?			AHA (2014h)	
Can be caused by being discriminated against?	Krieger (1990) Roberts, Vines, Kaufman, & James (2008) Sims et al (2012)			
Can be caused by eating of drinking foods with a lot of sugar in them?			AHA (2014h)	
Can only happen to older people?		AHA (2014h)		
TREATMENT	**YES**	**NO**	**MAYBE**	**INCONCLUSIV**
Do you think that if someone has high blood pressure they:				

Should take a pill right away if they feel their blood pressure rising, to lower it?				----------
Should get more exercise?	AHA (2014e)			
Need to take pills for the rest of their life to control it?			AHA (2014c)	
Should get more rest?		AHA (2014e)		
Need to check their blood pressure regularly?	AHA (2014g)			
Need to take pills every day?			AHA (2014c)	
Should lose extra weight?	AHA (2014d)			
Should avoid salty foods?			AHA (2014h)	
Should pray more?				----------
Can be helped by certain herbs, teas, and/or vitamins?				Edwards, Colquist & Maradiegue (2005) Ernst (2005)
COMPLICATIONS / COMORBID CONDITIONS	**YES**	**NO**	**MAYBE**	**INCONCLUSIVE**
Do you think that high blood pressure can lead to:				
Heart problems?	AHA (2014k)			

A stroke?	AHA (2014k)			
Weight loss?				----------
Kidney problems?	AHA (2014k)			
Poor/slow wound healing?				----------
Other diseases?	AHA (2014k)			

Group Differences for High and Low SES Type II Diabetic Participants on Diabetes Knowledge

A multivariate analysis of variance was conducted to test whether there would be differences between high and low SES diabetic participants on the CCA items which were deemed to have a "correct" (yes/no) response. A multivariate main effect was found, F_{mult} (5,18) = 3.007, p = .038, partial η^2 = .455. Additionally, the univariate tests indicated that low SES diabetic participants had more knowledge about the causes and complications of diabetes compared to high SES participants. However, high SES diabetic had more knowledge regarding the treatment of the disease compared to low SES participants (see Table F-3).

Another multivariate analysis of variance was conducted to test whether there would be differences between high and low SES diabetic participants on the CCA items which were deemed to have a "correct" response, including those responses that could be looked at indirectly (maybe classifications). The multivariate main effect approached significance, F_{mult} (5,18) = 2.730, p = .053, partial η^2 = .431. Although there was a multivariate trend, the univariate tests revealed that low SES diabetic participants had more knowledge about the causes and complications of diabetes compared to high SES participants (see Table F-4).

Table F-3 Means, Standard Deviations, and Analysis of Variance for the Effects of High and Low SES Diabetic Participants on Knowledge Items (Yes/No Responses)

	High SES (n = 9)		Low SES (n = 15)				
Variable	*M*	*SE*	*M*	*SE*	*F*(1,22)	*p*	Partial η^2
Symptoms	.756	.065	.867	.050	1.828	.190	.077
General Knowledge	.694	.039	.658	.030	.539	.471	.024
Causes	.556	.047	.680	.037	4.295	.050	.163
Treatment	.822	.042	.707	.032	4.791	.040	.179
Complications/Comorbid Conditions	.778	.041	.922	.031	7.922	.010	.265

Table F-4 Means, Standard Deviations, and Analysis of Variance for the Effects of High and Low SES Diabetic Participants on Knowledge Items (Yes/No/Maybe Responses)

	High SES (n = 9)		Low SES (n = 15)				
Variable	*M*	*SE*	*M*	*SE*	*F*(1,22)	*p*	Partial η^2
Symptoms	.657	.072	.782	.056	1.877	.185	.079
General Knowledge	.758	.032	.727	.025	.573	.457	.025
Causes	.625	.040	.750	.031	6.188	.021	.220
Treatment	.819	.030	.792	.023	.529	.475	.023
Complications/Comorbid Conditions	.778	.041	.922	.031	7.922	.010	.265

Group Differences for High and Low SES Type II Hypertensive Participants on Hypertension Knowledge

A multivariate analysis of variance was conducted to test whether there would be differences between high and low SES hypertensive participants on the CCA items which were deemed to have a "correct" (yes/no) response. A multivariate main effect was not found, F_{mult} (5,46) = 1.589, p = .182, partial η^2 = .147. The univariate tests indicated that there were no differences between low and high SES hypertensive participants regarding their knowledge about the symptoms, general knowledge, causes, treatments, or complications surrounding hypertension (see Table F-5).

Another multivariate analysis of variance was conducted to test whether there would be differences between high and low SES hypertensive participants on the CCA items which were deemed to have a "correct" response, including those responses that could be looked at indirectly (maybe classifications). A multivariate main effect was not found, F_{mult} (5,46) = 1.582, p = .184, partial η^2 = .147. Although there was not a multivariate main effect, the univariate tests revealed that high SES hypertensive participants had more knowledge about the causes of hypertension compared to low SES participants (see Table F-6).

Table F-5 Means, Standard Deviations, and Analysis of Variance for the Effects of High and Low SES Hypertensive Participants on Knowledge Items (Yes/No Responses)

	High SES (n = 30)		Low SES (n = 22)				
Variable	*M*	*SE*	*M*	*SE*	*F*(1,50)	*p*	Partial η^2
Symptoms	.410	.042	.370	.049	.369	.546	.007
General Knowledge	.733	.029	.697	.034	.669	.417	.013
Causes	.824	.027	.753	.032	2.882	.096	.054
Treatment	.817	.026	.773	.030	1.250	.269	.024
Complications/Comorbid Conditions	.958	.025	.898	.030	2.409	.127	.046

Table F-6 Means, Standard Deviations, and Analysis of Variance for the Effects of High and Low SES Hypertensive Participants on Knowledge Items (Yes/No/Maybe Responses)

	High SES (n = 30)		Low SES (n = 22)				
Variable	*M*	*SE*	*M*	*SE*	$F(1,50)$	*p*	Partial η^2
Symptoms	.510	.024	.505	.028	.022	.884	.000
General Knowledge	.678	.022	.674	.026	.011	.918	.000
Causes	.781	.027	.692	.032	4.642	.036	.085
Treatment	.857	.020	.812	.023	2.233	.141	.043
Complications/Comorbid Conditions	.958	.025	.898	.030	2.409	.127	.046

Group Differences for Disease Type on Knowledge Correctness

A multivariate analysis of variance was conducted to test whether there would be differences between diabetic and hypertensive participants on the CCA items which were deemed to have a "correct" (yes/no) response. A multivariate main effect was found, F_{mult} (5,70) = 14.346, $p < .001$, partial $\eta^2 = .506$. Additionally, the univariate tests indicated that diabetic participants had more knowledge about the symptoms of their condition compared to hypertensive participants. However, hypertensive participants had more knowledge regarding the causes of their disease compared to diabetics (see Table F-7).

Another multivariate analysis of variance was conducted to test whether there would be differences between diabetic and hypertensive participants on the CCA items which were deemed to have a "correct" response, including those responses that could be looked at indirectly (maybe classifications). The multivariate main effect was significant, F_{mult} (5,70) = 9.075, $p < .001$, partial $\eta^2 = .393$. Furthermore, the univariate tests revealed that diabetic participants had more knowledge about the symptoms and general knowledge of their disease compared to hypertensive participants (see Table F-8).

Table F-7 Means, Standard Deviations, and Analysis of Variance for the Effects of Disease Type on Knowledge Items (Yes/No Responses)

	Type II Diabetes (n = 24)		Hypertension (n = 52)				
Variable	*M*	*SE*	*M*	*SE*	*F*(1,74)	*p*	Partial η^2
Symptoms	.825	.045	.393	.031	63.145	.000	.460
General Knowledge	.672	.030	.718	.020	1.635	.205	.022
Causes	.633	.031	.794	.021	18.517	.000	.200
Treatment	.750	.028	.798	.019	1.971	.164	.026
Complications/Comorbid Conditions	.868	.029	.933	.019	3.483	.066	.045

Table F-8 Means, Standard Deviations, and Analysis of Variance for the Effects of Disease Type on Knowledge Items (Yes/No/Maybe Responses)

	Type II Diabetes (n = 24)		Hypertension (n = 52)				
Variable	*M*	*SE*	*M*	*SE*	*F*(1,74)	*p*	Partial η^2
Symptoms	.735	.034	.508	.023	31.359	.000	.298
General Knowledge	.739	.023	.676	.016	4.980	.029	.063
Causes	.703	.030	.744	.020	1.244	.268	.017
Treatment	.802	.021	.838	.014	1.954	.166	.026
Complications/Comorbid Conditions	.868	.029	.933	.019	3.483	.066	.045

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Biographical Information

Hollie Pellosmaa received her Bachelor of Arts in Psychology and English from Albion College in May 2006, her Master of Human Services in Rehabilitation Counselling from Griffith University in December 2007, and her Master of Science in Psychology from The University of Texas at Arlington August 2013. She is currently seeking a Doctorate in Psychology at The University of Texas at Arlington. Her research interests include examining the psychological factors that affect non-adherence and quality of life in chronic disease populations, as well as the impact psychological factors have on medication effectiveness.

Hollie has previously worked on research examining older populations with a variety of chronic disease ailments, such as Type II diabetes, hypertension, congestive heart failure, and prostate cancer. She has also worked on research that examines the effects of depression, anxiety, and stress on adherence and health outcomes in patients with high cholesterol. Future plans include continuing her research in the field of Health Psychology.