THE EFFECTS OF HEALTH BELIEFS, ACCULTURATION, AND A CULTURALLY APPROPRIATE TEACHING INTERVENTION ON PARENTS' KNOWLEDGE OF AND COMPLIANCE WITH TUBERCULOSIS TREATMENT IN A MEXICAN-AMERICAN POPULATION: A PRELIMINARY ANALYSIS

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By
Renée Parnell McLeod
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Title of Dissertation: The Effects of Health Beliefs, Acculturation, and a Culturally Appropriate Teaching Intervention on Parents' Knowledge of and Compliance with Tuberculosis Treatment in a Mexican-American Population: A Preliminary Analysis

Author: Renee Parnell McLeod

Approved by: Dr. Lois R. Allen, chair
Dr. Margaret Miller
Dr. Marguerite Jackson
Dr. Elizabeth Dickason
Dr. Doris Young

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Submitted in partial fulfillment of the requirements for the Degree of Doctor of Nursing Science.
DEDICATION

To my children, Erin and Logan, the real accomplishment in my life.
ACKNOWLEDGEMENTS

HEALING AND HEALTH (PHYSICAL, MENTAL, SPIRITUAL),
ARE NOT A WISH THAT CAN BE GRANTED BY SOMEONE ELSE,
IT IS A WELL DEEP WITHIN US THAT WE ALONE CAN TAP.
OTHERS CAN PROVIDE MOTIVATION, ENCOURAGEMENT, AND
SUPPORT, BUT IT IS A DESIRE THAT WE ALLOW FOR,
IN OUR OWN TIME, BY OUR OWN CHOOSING.

A philosophy of caring and practice By Renée P. McLeod
adapted from Molly Fumia

It is nearly impossible to express in words the appreciation I have for the
friends and especially, my family, who have supported me through this long arduous
process of education and writing. My husband, life partner, and best friend, Eric was
always there to give me support, encouragement, provide joy, wisdom, challenge, and
to correct my grammar. My children, Erin and Logan continued to provide support
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professional organization. The experience of leading my national professional nurse
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ABSTRACT

The primary purpose of this research study, using a correlational and comparative descriptive design, was to examine the effects of health beliefs, acculturation, and a culturally appropriate Spanish-language audiotaped novella on knowledge of Tuberculosis (TB), and compliance with treatment and medications in Mexican-American parents’ of a child with TB infection. A second purpose of the study was to compare the effectiveness of the current standard educational approach provided in a clinic setting with the audiotaped teaching intervention on parents’ knowledge of TB and treatment compliance. Due to the limited number of subjects obtained (N = 31), the research data and analyses are presented as preliminary findings since meaningful hypothesis testing would be premature at this time.

Medication compliance in children who need to receive long-term medication therapy is a complex problem for health care providers. One of the key factors for successful completion of treatment is education (Buck, 1997). Parental education regarding TB infection in children is time consuming. Current educational efforts involving Mexican-American parents are often ineffective because of language barriers, literacy levels, and sociocultural barriers (Chackes & Christ, 1996; Iannotti & Bush, 1993). Compliance in the pediatric population is dependent on the family’s health belief system which includes their beliefs in the susceptibility of the disease, their perception of the seriousness of the illness, and the risks and benefits of the treatment (Litt, & Cuskey, 1980; Matsui, 1997).
These health beliefs arise from a family's culture and ethnicity (Korbin, Brinkley, Reebals, & Singh, 1997; Moss, 1994). How strongly culture and ethnicity affect health beliefs may be related to the level of acculturation of the immigrant family.

The theoretical model that served as the basis for this study was the Children's Health Belief Model (CHBM) (Iannotti & Bush, 1993), which is an adaptation of the Health Belief Model (HBM) (Becker, 1974). The CHBM uses a developmental approach central to examining compliance behaviors in children. Application of the model to the proposed study involved minor adaptations to include the role and acculturation of an immigrant family.

Three instruments were used to measure the research variables: the Acculturation Rating Scale for Mexican Americans II (ARSMA-II) developed by Cuéllar, Arnold, and Maldonado (1995), the Tuberculosis Health Belief Questionnaire for Parents, and the Knowledge of TB pre and post-test Questionnaires. The Tuberculosis Health Belief Questionnaire for Parents, and the Knowledge of TB pre and post-test Questionnaires, were developed and previously pilot tested by the researcher.

Data analyses included descriptive statistics, Pearson correlations, Chi square, and paired t-tests. Generally, the subjects were found to have a strong Mexican orientation and to have low total acculturation scores. Moderately high TB health belief pre-test and post-test scores indicated subjects had strong beliefs about TB susceptibility and seriousness of the illness. Knowledge of TB was related to total acculturation scores.
Subjects TB Knowledge scores did not improve significantly after receiving the standard educational approach used in the clinic.

Findings are discussed relative to current literature and the Children’s Health Belief Model. Methodological issues are discussed and suggestions for use of the findings to guide continuing research and parent education policies are offered.
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CHAPTER 1

Introduction

Background Information

The degree to which a patient follows health care advice is of increasing concern to health care providers. The trend in health care is to promote more outpatient therapy and to give greater responsibility to patients for their own health outcomes. While patient compliance, or the degree of adherence to health-related advice, has been well studied in adults over the past several decades, it was not until the 1980’s that compliance research expanded its focus to examine this complex issue in children (Krasnegor, Epstein, Johnson, & Yaffe, 1993).

One of the main problems that health care providers encounter is the complex issue of medication compliance in the pediatric population. Medication compliance in children involves not only the child, but also the parents and other adult care providers. Compliance in the pediatric population is dependent on the family’s health belief system which includes their beliefs in the susceptibility of the disease, their perception of the seriousness of the illness, and the risks and benefits of the treatment (Litt & Cuskey, 1980; Matsui, 1997). These health beliefs arise from a family’s culture and ethnicity (Korbin, Brinkley, Reebals, & Singh, 1997; Moss, 1994). How strongly culture and ethnicity affect health beliefs may be related to how acculturated a recent immigrant family may be. “Cultural differences... have implications for the meaning of compliance within a culture, normative expectations regarding compliance, and the likelihood that
members of that culture will comply” (Iannotti & Bush, 1993, p. 69.) Acculturation is a complex phenomenon addressing intercultural interactions through which a person does or does not change any or all of six areas of psychological functioning: language use, cognitive style, personality identity, attitudes, stress, and customs of a majority culture, and the degree to which the person retains norms held by their culture of origin (Cuéllar, Arnold, & Maldonado, 1995; Mendoza, 1984; Padilla, 1980). As members of a family become acculturated, one of the aspects that might change is the meaning and desire to be compliant with treatment and medications.

Children who need to receive long term medication therapy pose a particular problem for health care providers. While estimates of compliance vary greatly in the literature it is believed that children taking long term medication therapy have a compliance rate of approximately 70% (Matsui, 1997). This is a difficult statistic to measure because long-term compliance is rarely static, but fluctuates over time, varying from day to day depending on variables such as stressors in the family, support, and severity of symptoms.

There are many factors which influence compliance with taking medications. One of the key factors for successful treatment is education (Buck, 1997). Families must understand the need for treatment, the method of administration, duration of the therapy, and the follow-up required. Health care providers must be willing to ask for and then listen to the reasons why patients and families may have problems with the prescribed regimen of treatment. These reasons may include particular cultural, religious, personal, or social practices (Iannotti & Bush, 1993). Language is often a barrier to proper
education of families. The Federal Drug Administration (FDA) has recognized the importance of patient education as a means to improve patient compliance by setting a goal that by the year 2000, 75% of patients will receive written information on how to take their medication and possible adverse effects (Farley, 1995). This goal, while worthy, assumes that written information materials will be readily available in the patient's primary language and that the patient and family members can read and understand the materials provided.

Tuberculosis (TB) infection in children represents one chronic disease that requires long term medication therapy. If untreated it can lead to disability and death (McLeod, 1998; Starke, 1998). Furthermore, TB infection represents future active cases which ultimately perpetuate the cycle of transmission. TB occurs more frequently in culturally diverse populations such as Mexican-Americans (Jackson & McLeod, 1998; Ussery, Valway, McKenna, et al. 1996). TB infection is characterized by a positive purified protein derivative (PPD) skin test without clinical, radiologic, or laboratory evidence of TB. Active TB disease is characterized by a positive PPD and clinical, radiologic, and/or laboratory evidence of the disease. In order to reduce the risk of TB infection from progressing to active TB disease, compliance with nine months of daily medication is recommended. However, this is often difficult for families to understand and adhere to since infected children are asymptomatic.

The role of the Nurse Practitioner (NP) and other primary care providers of children in providing effective patient education is critical to increasing medication and treatment compliance by increasing the parents' knowledge regarding their child's health,
illness, and treatment regimes. Unfortunately, current methods for teaching parents in the clinical setting are time consuming and often ineffective, especially when caring for an immigrant population. Other factors which affect teaching in the clinical setting include time constraints of the office visit imposed by managed care, lack of translators, low literacy levels of patients, and socioeconomic barriers (Chackes & Christ, 1996; Iannotti & Bush, 1993).

**Purposes of Study**

The primary purpose of the proposed study was to examine the effects of health beliefs, acculturation, and a culturally appropriate teaching intervention on knowledge of TB, and compliance with treatment and medications in Mexican-American parents' of a child with TB infection. A second purpose of the proposed study was to compare the effectiveness of the current standard educational approach provided in a clinic setting with the audiotaped teaching intervention on parents' knowledge of TB and treatment compliance.
Problem Statement

Medication compliance in children who need to receive long-term medication therapy is a complex problem for health care providers. One of the key factors for successful completion of treatment is education (Buck, 1997). Parental education regarding TB infection in children is time consuming. Current educational efforts involving Mexican-American parents are often ineffective because of language barriers, literacy levels, and sociocultural barriers (Chackes & Christ, 1996; Iannotti & Bush, 1993). Therefore, the problem statement for the proposed study was: The effect of health beliefs, acculturation, and a culturally appropriate teaching intervention on knowledge of TB and compliance with treatment and medications in Mexican-American parents of a child with TB infection has not been demonstrated.

Research Questions

1. What are the relationships among pre-test health beliefs, acculturation, and teaching method on post-test knowledge of TB in parents of children with TB infection?

2. Do pre-test health beliefs, acculturation, and teaching method predict compliance with treatment in parents of children with TB infection?

3. What are the relationships among pre-test health beliefs, acculturation, and teaching method on compliance with medications in parents of children with TB infection?
4. Are there differences in parent’s knowledge of TB before and after patient education using an audiotaped novella?

5. Are there differences in parents’ knowledge of TB before and after patient education using the standard educational approach in the clinic?

6. Do parents who received patient education from an audiotaped novella differ from parents who received only the standard educational approach in their post-test knowledge of TB?

7. Do parents of children with TB infection who received patient education from an audiotaped novella differ from parents who received only the standard educational approach in their compliance with treatment?

8. Do parents of children with TB infection who received patient education from an audiotaped novella differ from parents who received only the standard educational approach in their compliance with medication?

Hypotheses

Directional hypotheses for the study were proposed. However, the sample size reached was not adequate to allow for meaningful comparative analysis of the treatment and control group. Instead the analysis will concentrate on descriptive analysis of the variables.

1. The combination of pre-test health beliefs, acculturation, and teaching method predict post-test knowledge of TB better than any variable alone.
2. The combination of pre-test health beliefs, acculturation, and teaching method predict compliance with treatment better than any variable alone.

3. The combination of pre-test health beliefs, acculturation, and teaching method predict compliance with medications better than any variable alone.

4. The parents who received education using the audiotaped novella will have higher post-test knowledge scores than pre-test knowledge scores.

5. The parents who received education using the standard educational approach will have higher post-test knowledge scores than pre-test knowledge scores.

6. The parents who received education using the audiotaped novella will have higher post-test knowledge scores than the parents who received education using the standard educational approach.

7. The parents who received education using the audiotaped novella will have better compliance with treatment scores than the parents who received education using the standard educational approach.

8. The parents who received education using the audiotaped novella will have better compliance with medication scores than the parents who received education using the standard educational approach.
Definitions of Terms

**Acculturation** is a complex phenomenon addressing intercultural interactions through which a person does or does not change any or all of six areas of psychological functioning: language use, cognitive style, personality identity, attitudes, stress, and customs of a majority culture, and the degree to which the person retains norms held by their culture of origin, as measured by total scores on the Acculturation Rating Scale for Mexican Americans II (ARSMS-II) (Cuellar, Arnold, & Maldonado, 1995; Mendoza, 1984).

**Child** is a male or female under the age of 12 years who is of Mexican-American descent as identified by a parent. This child must have a diagnosis of TB infection. This age was selected because it is assumed that the parents would still be primarily responsible for giving medications regardless of the culture.

**Compliance** is the degree to which parents' follow the prescribed interventions for the child. This included compliance with treatment and compliance with medications.

1) **Compliance With Medications** is the degree to which a parent follows directions for giving daily Isoniazid (INH) medication. The percentage of compliance was demonstrated by bringing the medications and having a correct pill count at the one-month clinic visit.

2) **Compliance With Treatment** is whether or not the parent returns to the clinic with the child for the one-month clinic visit the day of the scheduled appointment, needs additional prompting after failing to keep their clinic appointment, or never returns for the expected appointment.
Health Belief is a parent's perceptions about susceptibility to a disease, the seriousness of the illness, and the risks and benefits of treatment as it is applied to the health of their child and as measured by total scores on the Tuberculosis Health Belief Questionnaire.

Knowledge of Tuberculosis Disease and Treatment is a parent's understanding of the disease process and its treatment as measured by pre-and post-test scores on the Knowledge Questionnaire.

Parent is the custodian adult responsible for the administration of Tuberculosis medications and follow-up clinic visits who self-identifies as Mexican-American, whose primary language is Spanish, and who had a child with a diagnosis of TB infection.

Teaching Intervention in this study is what was provided to the parents in each group to educate them about TB. There were two teaching interventions that were used:

1) Audiotaped Novella is a 30-minute social-content soap opera in which two Mexican-American neighbors are discussing TB infection, disease and treatment regimens for children infected with TB. The script for this audiotape was written by the researcher.

2) Standard Educational Approach is the usual procedure for informing the child’s parents about the diagnosis and management of the disease tuberculosis. In some clinics this was verbal information by the health care provider, in other clinics this was a written handout, or even a separate appointment with a health educator, or any combination of the above. This information may or may not have been given in the appropriate language, and may have been with or without a translator.
TB Infection is a positive PPD as measured by the personnel of the participating clinic and a negative chest x-ray as read by a qualified health care provider in the participating clinic.

Assumptions

This study was based on the following assumptions:

1. “There is an assumption that there is a relationship in people between strong identities- either with one’s heritage or the level at which one is acculturated into the American culture- and their beliefs and practices” (Spector, 1996, p. 66).

2. There is an assumption in the US, and therefore for this study, that it takes three generations to become fully acculturated into American society, thus the adult grandchild of an immigrant is considered fully Americanized (Spector, 1996).

3. “There is an assumption by health care providers that all immigrants are in the process of acculturation and assimilation and that the world view that we share as health care providers is commonly shared by our clients” (Spector, 1996, p. 67). Therefore it is assumed that the health care providers in this study are functioning in this manner and had organized the standard educational approach in the clinic around the Western view of medicine.

4. Parents who come to the clinic and report that they have given the medicine correctly to their children were assumed to be telling the truth. There was no directly observed therapy by the researcher in this study, only a pill count, which did not verify that medication had really been given correctly or even given at all.
5. The socioeconomic status of the subjects was similar because they attended one of the designated community or public health clinics. These clinics all qualified their patients for financial eligibility using the criteria for federal poverty levels and Medicaid.

6. Parents were motivated to learn information relevant to the health of their children (Moss, 1994). This assumption includes all educational information imparted to patients and their parents during clinic visits by health care providers.

7. Translations of materials into Spanish were equivalent because back translation and decentering were used to translate the tools and they were then pilot tested and corrected for understanding.

8. It is assumed that by conducting this research study in the real life world environment of a clinic the study results would be more generalizable.

**Theoretical Framework**

**Introduction**

Bush and Iannotti’s (1990) Children’s Health Belief Model (CHBM) which is an adaptation of Becker’s (1974) Health Belief Model (HBM) is categorized as a rational belief theory and served as the foundation for this study. This model was adapted to specifically examine medication compliance in children.
Compliance is a multi-dimensional construct influenced by cultural, environmental, and personal processes. Compliance is an aspect of human behavior. Leventhall and Cameron (1987) reviewed five major theoretical approaches guiding most compliance theory and research. These orientations were: the biomedical model, operant behavior and social learning theory, communication approach, self-regulation theory, and the rational belief theories. These approaches differ in that they give varying degrees of attention to appraisal processes, risk perception, illness cognition, motivation to comply, and selection and acquisition of coping behaviors. An overview of the theoretical models is presented in Chapter Two.

**Health Belief Model**

The HBM is based on the theories of Kurt Lewin (1935) who proposed a phenomenological orientation, “that it is the world of the perceiver that determines what he will do and not the physical environment, except as the physical environment comes to be represented in the mind of the behaving individual” (Rosenstock, 1974, p. 2). The worldview or paradigm as Lewin proposed it is composed of “regions”, some which have negative areas, some positive areas, and some neutral areas. Diseases are perceived as being a negative force that would motivate the person to move away from a “region” while preventive behaviors are seen as the strategies that would help the person avoid disease and illness. These “regions” were developed into the “dimensions” of the HBM; perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and later cues to action. Early researchers using this model worked collaboratively and built
on each other's work making adaptations to the model. Becker (1974) adapted the HBM to add "dimensions" that center on the individual's perception of disease, modifying factors related to oneself or the perceived threat, and cues to action which ultimately result in the likelihood of preventive health actions (Becker, 1974; Rosenstock, 1974; Spector, 1996; see Figure 1 for The Health Belief Model as adapted by Becker). Becker's adapted version of the HBM is the one used most often today.

An individual's perception of infection and disease is determined by the constructs of perceived susceptibility and perceived seriousness of disease (Becker, 1974; Maiman & Becker, 1974; Rosenstock, 1974). Perceived susceptibility is the individual's or family's belief that they will encounter a disease. Estimation of susceptibility by the family is considered to be somewhere on a continuum from low to high and directly relates to the personal degree of risk assigned for developing any disease (Becker, 1974; Maiman & Becker, 1974). Perceived seriousness or severity of contracting a disease are the difficulties individuals, as well as families, would expect to occur if a disease were present. Difficulties include not only effects upon health, but also the impact upon the family's life, work status, social relationships and commitments. Perceived susceptibility and perceived seriousness determine the family's perceived threat of contracting a disease.

Modifying factors affecting the likelihood of taking action against a disease include demographic, socioeconomic, and structural variables as well as cues to action (Becker, 1974; Maiman & Becker, 1974). Demographic variables include age, sex, race and ethnicity. Socioeconomic variables center on personality, social class, peer and
Figure 1. The Health Belief Model.

INDIVIDUAL PERCEPTIONS

- Perceived Susceptibility to disease X
- Perceived Severity (Severity) of disease X

MODIFYING FACTORS

- Demographic Variables (age, sex, race, ethnicity, etc.)
- Socioeconomic Variables (personality, social class, peer and reference-group pressure, etc.)
- Structural Variables (knowledge about the disease, prior contact with the disease, etc.)

LIKELIHOOD OF ACTION

- Perceived benefits of preventive action
  - Means
  - Perceived barriers to preventive action

Cues to action:
- Mass media campaigns
- Advice from others
- Reminder postcards from dentist or physician
- Illness of family member or friend
- Newspaper or magazine article

reference group pressures. Structural variables include knowledge and prior contact with a disease like TB infection.

The HBM was revised in 1974 by Becker to include additional dimensions influencing the predictability of an individual’s or family’s involvement in a recommended health behavior. These additional dimensions included cues to action which are transient and include advice from others, media campaigns, reminders from healthcare providers and the illness of other family members and friends (Becker, 1974). These dimensions also included environmental stimuli (e.g. fliers, pamphlets, radio/television informational spots, and posters). Today, these cues to action would include communications such as telephone reminder systems and voice mail. Implicit in knowledge attainment from cues to action, however, are the norms and pressures of one’s cultural orientation (Iannotti & Bush, 1993; Rubel & Garro, 1992). In addition, considerations regarding the impact of modifying factors such as prior experiences, social support and demographic variables (ethnicity, sex, and age) were added to the HBM (Becker, Drachman, & Kirscht, 1974).

Likelihood of action against a disease is determined by the perceived benefits of preventive action minus perceived barriers (Becker, 1974). Effectiveness of preventive actions, as well as perceived chances of recovery has an impact on perceived benefits of action. Barriers to care include cost, inconvenience, unpleasantness, pain and degree of life change. These perceived or real barriers may have an impact on the family’s willingness to engage in preventive actions associated with a disease (Rubel & Garro, 1992).
Children’s Health Belief Model

The Children’s Health Belief Model (CHBM) is Bush and Iannotti’s (1990) adaptation of the HBM (Becker, 1974) to include developmental processes central to compliance in children. “Developmental processes that influence compliance include memory, perception of time, understanding of causality and consequences, and the social and physiological changes that accompany stages of development, particularly adolescence. Age, or developmental stage, is a crude measure of processes that change throughout the life span” (Iannotti & Bush, 1993, p.60). The CHBM places children’s health behavior within its personal and social context, and allows for the individual’s age and developmental level to be considered in the model. “A good developmental model reflects changing personal, social, and environmental influences and is applicable across the life span” (Iannotti & Bush, 1993, p. 70; see Figure 2 for The Children’s Health Belief Model).

The CHBM supports the proposed research in several ways. This model was developed specifically to examine compliance with medication use in children, which was the focus of this proposed study. This model includes modifying factors such as the demographic characteristics of age, sex, and socioeconomic status. The CHBM also emphasizes the importance of cognitive processes of both parents and child as critical to compliance success. “Essential to compliance behavior is whether the patient, regardless of age, remembers to perform the prescribed behavior” (Iannotti & Bush, 1993, p. 70). Many children skip their dose of medicine because they forget or their parents have forgotten to give the medicine. The factors recognized in the model as affecting
Figure 2. The Children's Health Belief Model as applied to medicine use.

MODIFYING FACTOR

READINESS FACTORS

BEHAVIOR FACTORS

Cognitive/Affective
Health Locus of Control
Self-Esteem
Health Risk-Taking
Medicine Knowledge

Motivations
Illness concern
Perceived Illness Threat
Perceived Vulnerability
Perceived Severity
Perceived Benefit of Medicines
Perceived Medicine Benefit
Perceived Non-medicine Benefit

Expected Medicine Use

Actual Medicine Use

Demographic
Age
SES
Sex

Enabling
MD Visits
Illness Frequency
Autonomy

Environmental
Caregiver's
Motivations for Child
Perceived Child's Illness Threat
Perceived Benefit of Medicines
Expected Child's Medicine Use

cognitive processes include the health locus of control which can be the parent, the child, or both; self-esteem, health risk taking behavior which again may apply to the child, the parent, or both, and finally medicine knowledge. It is not uncommon for pediatric patients and their parents to misunderstand their prescription or treatment plan and fail to ask the primary care provider questions that would clear up the misunderstandings (Iannotti & Bush, 1993).

Enabling factors in the CHBM include the frequency of healthcare visits, illness frequency, and autonomy. One of the problems with TB infection in children is the fact that children are asymptomatic, therefore, many clinics dealing with these children have them return frequently for re-check visits. Environmental factors that have not been included in the HBM model were added to the CHBM. These factors include the primary caretaker's motivations for the child, perceived threat of illness, perceived benefit of the medicine for the child, and expected child's medicine use. Knowledge of TB infection, disease, and treatment regimens assists the family to judge perceived susceptibility and severity of TB infection (Rubel & Garro, 1992).

Application of CHBM to this study

This research study introduced a cultural and language appropriate audiotape using a novella format to educate parents in an attempt to positively influence the essential component of compliance behavior. The audiotape was directed to the parents because the age and cultural background of the children in the study presumed that the main health locus of control would be with the primary caretaker.
Cultural relevance of the script of the Spanish-language novella reflects the CHBM’s readiness factors of motivations, perceived illness threat and perceived benefit of medicines by discussing the consequences of being infected with TB. By measuring compliance with treatment and medicine use, the effectiveness of the culturally appropriate teaching intervention on expected actions in Mexican-American parents might be demonstrated. Figure 3 presents an application of the Children’s Health Belief Model to the current research study.

In this application of the CHBM to the current research, acculturation is the main component under environmental factors that modify behavior. The degree of acculturation and how it might affect compliance was explored. Caretakers’ knowledge of medication and treatment are elements in the cognitive/affective area of the model. Motivations, the perceived illness threat, which includes perceived vulnerability and perceived severity of the disease for the child and the family, and the perceived benefits of the medicines, are all components of a family’s health beliefs. The behavior outcomes in this study, consistent with the CHBM, are actual compliance with treatment and actual medicine use as a behavior factor of the CHBM.

**Significance**

**Nursing Practice**

TB in a child is a sentinel event within a community. Children who are infected with TB are asymptomatic, therefore it is difficult for parents to understand why there is a need to treat children, especially for such a long time. Providing culturally appropriate parental education regarding TB infection and treatment regimens for Mexican-American...
Figure 3. The Children's Health Belief Model as applied to compliance with treatment and medicine use.

MODIFYING FACTOR

READINESS FACTORS

BEHAVIOR FACTORS

children are time consuming for the NP or other primary care provider in the clinic or office setting. However, parental understanding and compliance with treatment principles are crucial if disseminated TB is going to be prevented by having the child take nine months of medicine (McLeod, 1998). An additional benefit of treatment compliance is the interruption of the perpetuating cycle of TB, and increased incidences of drug resistant TB within the community as a whole (Ailinger & Dear, 1998).

Patient education is one of the most important aspects of the care provided by nurses (Moss, 1994; Padberg & Padberg, 1990). A significant portion of the NP's practice is spent educating patients regarding disease prevention and medication compliance (Mason, Cohen, O’Donnell, Baxter & Chase, 1997; Smithing & Wiley, 1996). This is especially true in attempting to educate parents about the importance of nine months of medication for a child with asymptomatic TB infection (Jackson & McLeod, 1998). In addition, the time constraints that managed care has imposed on patient encounters have required NPs to find cost-effective patient educational tools (Chachkes & Christ, 1996; Mason, Cohen, O’Donnell, Baxter, & Chase, 1997).

Numerous barriers to patient education and compliance with treatment regimens exist in culturally diverse populations (CDC, 1994; Chackes & Christ, 1996; Iannotti & Bush, 1993). The most obvious barrier for most Mexican-American families is language (Spector, 1996). Often, oral instructions, that may not be linguistically accurate, are given through a translator (McLeod, 1996). Concerns regarding issues associated with daily living, such as transportation and ability to obtain medication refills, often interfere with chronic disease management. Furthermore, the low literacy level among many of the
clinics’ Mexican-American population significantly interferes with educational efforts provided in writing (Barnes, 1992).

Culture and ethnicity are important influences upon how families perceive health and illness (Korbin, Brinkley, Reebals, & Singh, 1997; Moss, 1994). They have an impact on the measures families will take when needing to maintain or undergo actions with which to restore health (Allison, 1997). Cultural beliefs and practices need to be incorporated into health education materials in order to enhance factors associated with patient and family compliance with treatment regimens (CDC, 1994; Chackes & Christ, 1996; Rubel & Garro, 1992).

Therefore, this study was proposed to measure the effects of health beliefs, acculturation and a culturally appropriate, Spanish-language, audiotaped novella for Mexican-American parents of a child with TB infection on knowledge of TB disease and treatment. Efficacy of the Spanish language audiotaped novella on compliance with treatment and medications were also to be explored. Due to the small sample size and lack of data for the experimental group it was not possible to measure the effects of health beliefs, acculturation, and a culturally appropriate Spanish language audiotaped novella on knowledge of TB or compliance with treatment and medications. Data collection will continue in the future until an adequate sample size is reached for statistical analysis. In the future if this audiotape is found to be effective as a tool to teach patients and improve compliance, then it has the potential to greatly affect nursing practice in today’s health care environment where inexpensive, fast, and effective tools are sought by organizations and managed care companies.
Nursing Education

Any research that changes nursing practice will have an affect on nursing education. Nursing education is about teaching the practice of nursing. "Nursing curricula are built for the express purpose of educating people who can promote optimal health and are therefore organized around central health problems and goals" (Bevis, 1989, p. 56). It is the responsibility of nurse educators to stay up-to-date with the latest research findings and to assist student and novice nurses to apply nursing research to the practice setting. This is especially important for educators of advanced practice nurses.

This research study may have an impact on nursing education in several ways. Nurse educators in the academic setting will have additional nursing knowledge to impart about the affects of acculturation and health beliefs on knowledge. They will also be able to discuss alternative teaching tools to use in today's culturally diverse world. This information may also be applicable to the way nursing students from other cultures learn. Nurse educators in the practice setting will have additional information about alternative methods to teach patients from Mexico.

Nursing Science

"Nursing has always been viewed as a practice discipline. Perhaps its greatest achievement in the past three decades is the beginning acceptance of the idea that its practice is based primarily on its own unique body of knowledge that is scientifically derived" (Leddy & Pepper, 1989, p. 115). Nursing depends on the specific knowledge of human behavior in health and illness. This research study examined the human behaviors around compliance with medication and treatment in families with children who have TB.
infection and who are Mexican-American. The information from this study will expand nursing knowledge and will therefore be significant for nursing science and nursing research.

**Nursing Research**

Nursing theory is born from nursing practice. Nursing practice is relevant to theory and both are critical to nursing research. Nurses need to conduct practice oriented, outcome based nursing research so as to provide validation for the clinical effectiveness of nursing practice. This study was one such outcome based nursing research study. It evolved from clinical observations and problems posed by patients in this researcher’s clinical practice. The findings from this study will expand the knowledge of nursing, validate nursing practice, and stimulate further research.
CHAPTER TWO

Literature Review

Introduction

Medication and treatment compliance are complex issues in the pediatric population. They involve not only the patient, but also parents and other care providers. Compliance is dependent on the family's health belief system: their beliefs in susceptibility to disease, their perception of disease severity, and their understanding of the benefits of treatment. The type of illness being treated also plays a role in determining compliance in children. Issues to be addressed when children are taking medications over a long period of time, as is the case when a child is being treated for TB infection, are quite different from the issues that need to be addressed in a child taking short-term therapy. Therefore, the focus of this literature review will be compliance models including the CHBM, acculturation, instructional methods to teach parents about TB, Tuberculosis, and back translation theory for developing tools in other languages.

Compliance Models

A review of the literature revealed five major theoretical approaches guiding most compliance theory and research involving adults and children. These approaches include: the biomedical model, operant behavior and social learning theory, communication approach, self-regulation system theory, and the rational belief theory which was chosen for this research study.
Biomedical Perspective

The biomedical perspective is described as the cultural perspective of illness in Western society. This paradigm explains disease as resulting from biomedical malfunctions caused by a natural breakdown of the body’s process, genetic factors, or the invasion of foreign agents such as viruses and bacteria.

The patient in this paradigm is an adult who is viewed as the recipient of treatment plans that are to be followed. Failure to comply with treatment is understood in terms of personality or behavior problems of the patient. There is little or no emphasis given to the patient’s understanding of the treatment plan. Leventhal and Cameron (1987) reported that, although there have been many contributions to the compliance literature that use this model, it has severe limitations. First, it ignores psychological processes underlying a patient’s compliance for different types of medical problems. Second, it assumes that non-compliance is always the fault of the patient. Finally, this model does not address issues such as access to care, and the influence of patient/provider interactions and how they might affect compliance.

Operant and Social Learning Models

Behavior models addressing compliance research shift from a focus on the individual characteristics of the patient to the behaviors needed for compliance. Attention to stimuli or cues that elicit behavior, rewards which reinforce the behavior, and the gradual shaping or patterning of behavior are the basic dimensions of these
models. The concepts of self-efficacy, modeling, and vicarious learning were borrowed from Bandura’s Social Learning Theory (Bandura, 1971, 1977) and applied to compliance research.

The patient in this model or paradigm is an adult who is seen as in control of the behaviors needed for compliance. The main flaw in these theories is the narrow view and the failure of the patient to maintain long term changes associated with the use of behavior techniques to increase compliance. Once the reinforcers are removed, high relapse rates occur. This has been found to be true with many of the problems addressed with these theories including smoking cessation, alcohol use, and weight loss.

**Communication Models**

Communication models conceptualize health behaviors primarily in terms of a patient seeking advice and treatment from an expert. The expert generates the information on specific goals and develops a treatment plan as a way to reach these goals. The patient’s belief in the message and level of comprehension of the treatment plan influence compliance. The clarity and specificity of the treatment plan is as important as the information used in describing the health threat (Leventhal & Cameron, 1987).

The patient in this model is an adult individual who first recognizes that there is a problem and then goes to seek advice. Many patients avoid seeking advice when they are afraid of the diagnosis. Another flaw in these models is the effect of culture, religion, literacy, and primary language on the communication between the expert and the patient and how this might influence compliance.
Self-Regulation System Theory

Compliance behavior according to these models depends on an individual’s cognitive understanding of current health status and of the goal state, plans for changing the current state, and the techniques or rules for appraising processes. In a self-regulative model, Leventhal and Cameron (1987) identify three stages of adaptation to a health condition. They are 1) cognitive representation of a health threat which include possible causes, symptoms, and perceptions regarding the progression of the illness, 2) the coping stage during which the individual formulates a plan of health actions, and 3) the appraisal stage during which the individual utilizes specific criteria to measure the success of his/her own coping actions (p. 127). Communication failures during any of the three stages of representation, coping, or appraisal between the patient and the health care provider can lead to non-compliance.

Patients in these models are adults who have the ability and are willing to self-regulate their behavior in order to maintain or obtain a healthy state. One of the problems with this model is that the patient and provider must share the same view of the illness, and therefore communication is key. One of the contributions of this model has been to establish the fact that symptoms play a powerful role in generating responses or actions which direct health and illness behaviors. In addition, beliefs about symptoms and/or other illness attributes can lead to responses or actions leading to different coping strategies in individuals from different cultures.
The principal criticism of self-regulative models centers on the relatively little research available using these models. They are difficult to use due to their complex character and the lack of standardized instruments (Leventhal & Cameron, 1987).

**Rational Belief Theory and Models**

Rational belief models assume that an objective, logical thought process determines human behavior. They view the patient as an adult who is capable of making decisions to refuse specific recommendations or treatment plans based on a cost-benefit computation. Individuals, according to this model, will modify their behavior to preserve their health once they are given the appropriate information on consequences of various health risks and the benefits of recommended health behaviors. Insufficient knowledge regarding potential hazards of not engaging in, or the benefits from engaging in health behaviors results in non-compliance.

One example of the rational belief approach is the Theory of Reasoned Action developed by Fishbein and Ajzen (1975). These authors argued that perceived social norms also play a role in determining motivation for behavior. The weakness in this model is that it focuses only on the norms regarding the acceptability of performing an action, such as a health behavior, while ignoring the role of social beliefs regarding health threat.

There are two better known examples of models that use rational belief theory to examine compliance behaviors. The first is Pender's Health Promotion Model which has been used as the theoretical basis for many nursing research studies that examine compliance with health promotion behaviors (Pender, 1987). The second and most
widely used of the rational belief models is the Health Belief Model (HBM), whose development began in the early 1950's by Rosenstock, Hochbaum, Leventhal and Kegeles, a group of social psychologists who were looking for a way to explain why some people take actions to avoid illness, while others fail to take protective actions to prevent illness (Hochbaum, 1958). These researchers attempted to explain why people did not seek care to prevent illness even when the care was free or offered for only a nominal fee. These services at the time included screening for TB, Pap smears, and other services offered by the public health department. The early researchers developing the HBM worked cooperatively to develop theory that would include a heavy component of motivation and the perceptual world of the behaving individual (Rosenstock, 1974).

The Health Belief Model has been widely used as the theoretical model in research studies and has been adapted over the years as these research findings have modified the theory. The HBM was adapted by Becker (1974) to explain why patients followed or failed to follow prescribed medical regimens. Bush and Ianotti (1990) extended Becker's (1974) work to explain children’s expected medicine use for five common health problems. The Children's Health Belief Model (CHBM), serves as the theoretical basis for this proposed research study.

Prevention, or health protecting behavior, is the focus of this research study. When exploring theoretical frameworks it is important to understand the differences between health promotion and illness prevention. These terms are often used interchangeably, but there are differences in the motivational mechanisms and goals between these two concepts. Pender (1987) whose focus is on health promotion, states
that health promotion is not disease or health-problem-specific; whereas illness prevention is disease specific. Second, health promotion is ‘approach’ behavior, while illness prevention is ‘avoidance’ behavior. Third, health promotion seeks to expand positive potential for health, while illness prevention or health protection seeks to thwart the occurrence of pathogenic insults to health and well-being (p.5). “Prevention is a defensive posture or set of actions that ward off specific illness conditions or their sequelae that threaten the quality of life or longevity” (Pender, 1987, p. 38). There are three levels of prevention.

Primary prevention (appropriate in the stage of susceptibility) is prevention of disease by altering susceptibility or reducing exposure for susceptible individuals; secondary prevention (applied in early disease, i.e. pre-clinical and clinical stages) is the early detection and treatment of disease; tertiary prevention (appropriate in the stage of advanced disease or disability) is the alleviation of disability resulting from disease and attempts to restore effective functioning (Mausner & Bahn, 1974, p.9).

This research study is examining the effects of an educational tool on the motivational behaviors of Mexican-American parents of children who are already infected with TB. The focus of this study is not only prevention or health protection but also secondary prevention. Therefore, Bush and Iannotti’s CHBM (1990) which focuses on illness prevention in children, is more appropriate for this proposed study than Pender’s (1987) Model, which concerns health promotion.
Secondary prevention represents the first line of defense against active disease and has been recognized by the medical community as the principal way to combat the future TB epidemic facing the U.S. “On a community basis, early treatment of persons with possible infectious diseases may protect others from acquiring infection and thus provides at once secondary prevention for the infected individual and primary prevention for any potential contacts” (Mausner & Bahn, 1974, p.10). Secondary prevention often focuses on the individual, but it is important that such efforts be extended to families and children. Over the last several decades, behavior oriented scientists, including nurses, have investigated the reasons why people engage in preventative or health protecting behavior. The Health Belief Model has been the dominant paradigm used to describe why people engage in these behaviors (Dunbar-Jacob, Dunning, & Dwyer, 1993). Therefore, it is appropriate for the proposed study to use an adapted version of the HBM, the CHBM, as the theoretical model since the focus of the proposed study deals with secondary prevention.

Health Belief Model

The Health Belief Model (HBM) is the most widely used of the rational belief models. The HBM evolved in the 1950’s from a desire by a group of investigators in the Public Health Service to understand why patients were noncompliant with their medical regimens. Some of the early research focused on understanding why patients were not compliant with tuberculosis (TB) illness prevention health behaviors such as chest radiographs. “The theory and the development of the model grew simultaneously with the solution of practical problems” (Rosenstock, 1974, p. 1).
The HBM centers on the individual’s perception of disease, modifying factors related to oneself or the perceived threat and cues to action which ultimately leads to preventive health actions (Becker, 1974). In order to perceive susceptibility to any particular disease, one must have knowledge (Richards, 1997). In order to gain knowledge, educational methods must be tailored to meet the needs of the learner (Moss, 1994; Padberg & Padberg, 1990). Including cultural health beliefs in educational programs will contribute to the understanding of the material by the adult learner and may assist in increasing compliance with treatment regimens (Anderson, 1995; CDC, 1994; Ormrod, 1995).

The patient in the HBM is usually an adult, although the model has been applied to research with children. While the HBM has been found to have predictive value for some preventative and short-term health actions, several methodological problems have appeared consistently in the research literature. These problems include: operational definitions that vary greatly from one study to another, and the use of only one or two variables to measure one of the concepts like modifying factors. The concepts themselves have often been operationalized at a very basic level so the use of complex statistical analysis has been minimal in many of the studies.

Lastly, instruments utilized for data collection in past research have not always been tested for validity and reliability (Champion, 1984). Another criticism of the HBM is the fact that it still fails to take into account adequately the central role of personal, family, community, and environmental factors and pressures. Lastly, rational belief models, including the HBM, are criticized because they fail to consider an individual’s
coping strategies in their calculation of health behavior. These models focus exclusively on conscious decisions, while ignoring many of the automatic and unconscious behaviors that people engage in every day (Leventhal & Cameron, 1987). More recent adaptations of the HBM (Becker, 1974) have attempted to answer some of these shortcomings. The model being used for the proposed research study, The Children's Health Belief Model, has taken into account the central role of personal, family, community, and environmental factors and pressures, and uses a developmental approach.

The Children's Health Belief Model

The Children's Health Belief Model (CHBM) was adapted from the Health Belief Model by Bush and Iannotti (1985, 1988, 1990; Iannotti & Bush, 1993) as a way to look at the developmental processes central to compliance when children are the patients. Compliance with treatment in children must include the family and other primary adult caretakers. It must take into account the developmental level of the child. Environmental factors that included the family or caretaker's motivations for the child, perceived illness threat for the child, perceived benefit of taking the medicines prescribed, and how difficult it would be to give the medicines to the child were included as modifying factors in this new model. Other modifying factors included are health locus of control (the child, the parent, both, or none), the self-esteem of the parent and the child, health risk taking behaviors, and knowledge of the treatment and medicine needed to be compliant. Also added were factors that might be seen as enabling. These include visits to the health care provider, the illness frequency, and autonomy of the child.
The CHBM was originally hypothesized and evaluated to increase understanding of how children acquire health beliefs, and to identify personal and environmental factors that predispose children to expect treatment for common health problems (Bush & Iannotti, 1990). This model was designed to reflect the need for a developmental perspective and to recognize the influence of the child’s primary caretaker.

The CHBM was initially developed on the sample of 420 elementary school-children. The children were individually interviewed to assess modifying, readiness, and behavior factors including health beliefs and attitudes, previous illness experiences, and expectations to take action in response to minor health problems (Iannotti & Bush, 1993, p. 70).

The model was expanded to include additional modifying factors such as parental influences and was then retested.

“Two hypotheses were posed: 1) CHBM variables predict children’s expectations to take medicines and 2) Caretaker health beliefs and expectations increase the ability of the CHBM to explain children’s states of readiness and expectations to take medicines” (Bush & Iannotti, 1990, p. 71). The hypotheses were tested in two steps. All of the variables in the hypothesized CHBM except for the caretaker variables were subjected to regression analysis to predict children’s expected medicine use. This was repeated with the caretaker variables, and the equations were compared. Causal pathways were hypothesized in the CHBM and the model was subjected to path analysis and tested for goodness of fit.
A total sample of 300 elementary school children and 270 of their primary caretakers (93% mothers) was used to select a stratified sample on the basis of grade, sex, and socioeconomic status (SES), the latter determined by the average household income in the child's elementary school census tract. The average age of the children was 10.7 years, and the range was 8.0 to 14.7 years (Bush & Iannotti, 1990). Each student was then interviewed privately by trained interviewers of the same race. No earlier than two weeks following the child's interview, the child's primary caretaker, as identified by the child, was interviewed by telephone. A 10% random sample of coded questionnaires stratified by the interviewers was recoded and intercoder reliability over both instruments was 94.6% (Bush & Iannotti, 1990).

Both hypotheses were confirmed upon statistical analysis. The results of this study indicated that the CHBM has utility for predicting children’s expectations of treatment for common childhood health problems (Bush & Iannotti, 1990). Suggestions for further research included studies to determine whether the model is applicable to other expected illness behaviors of children, whether the model generalizes to injury or other health problems, and whether expected medication use predicts actual use in childhood or in later years (Bush & Iannotti, 1990). An extensive review of the literature and a query of the developer of the CHBM did not reveal any additional published research using the model (R.J. Iannotti, e-mail communication, July 19, 1999). The proposed research study was an application of this model to a specific health problem and examined compliance with treatment and medications.
Compliance

Background

For more than 20 years, the term compliance has been used to describe the extent to which a patient’s behavior coincides with prescribed treatment regimens (Sacket, 1974). Use of the term compliance has met with semantic controversy because of the implied passive role of the patient in an authoritarian relationship with a healthcare provider (Karoly, 1993; Liptak, 1996). The term adherence is often preferred because it implies a patient-provider partnership and shared responsibility for treatment outcomes (CDC, 1994). Nevertheless, in order to understand the literature regarding compliance one must first understand the construct.

Research has shown compliance to be a complex behavior with many determinants (CDC, 1994; Haynes, Wang, & Gomes, 1987). These determinants include factors related to patient demographics, the disease, the therapeutic regimen, the patient-provider interaction and sociobehavioral issues (Liptak, 1996). Determinants specific to the pediatric population include the developmental stage of the child, the child-parent dyad, and the family context including their cultural health beliefs (Anderson & Coyne, 1993; Dunbar, Dunning & Dwyer, 1993; Iannotti & Bush, 1993).

Measurement of Compliance

Measurement of compliance is accomplished by direct and indirect measures. Direct measures include biologic assays for drugs or metabolites in urine or blood and directly observed therapy (DOT). DOT involves the direct observation of a patient taking each dose of their TB medication by public health personnel for at least two months of
the prescribed treatment regimen (Ginsberg, 1998). Whereas biologic assays for drugs are more appropriate for the clinical research setting, DOT is only used in California for patients with active TB disease (Gostin, 1993). Indirect measures include response to therapy, interviews, appointment keeping, refilling of prescriptions, pill counts, medication monitors and judgment of the provider (CDC, 1994). All of the indirect measures have weaknesses. However, the pill count is considered moderately reliable despite a tendency for overestimation of compliance (Creer, 1993; Haynes, 1974; Rodewald & Pichichero, 1993).

Despite the difficulties associated with its estimation, compliance has been used as an outcome measure for a variety of research and health education programs for more than 25 years (DiMatteo, 1994; Richards, 1997). A meta-analysis of the compliance research in the pediatric population between 1970 and 1989 revealed over 90 published studies in which compliance was measured by indirect and direct methods (Dunbar, Dunning & Dwyer, 1993). Trends in the focus of pediatric compliance research evolved from an interest in treatment regimens associated with acute illness to that of chronic illness. During the 1970s most studies focused on adherence to antibiotics in association with an acute illness such as otitis media. Other acute illness studies included pharyngitis, dental problems and outpatient surgery. During the 1980s, close to 70 % of the studies centered on compliance in chronic illness with the following diseases being studied in descending order: diabetes, asthma, epilepsy, and lastly, juvenile arthritis. The few studies regarding prevention behaviors research, done in the late 1970s and again in the late 1980s, centered on immunizations, use of contraception, and prevention of colds,
sexually transmitted diseases and gastrointestinal infections. The meta-analysis demonstrated a positive relationship between interventions involving either the child or parent and their outcome effect on child health behaviors. No studies regarding TB treatment compliance were used in the meta-analysis (Dunbar, Dunning & Dwyer, 1993).

Compliance with medications prescribed over a long period of time is the goal of TB educational efforts. However, studies have shown treatment noncompliance rates for both adults and children with a variety of medical conditions range from 38% for short-term treatments to 43% for long-term regimens (DiMatteo, 1994; Fishman, 1995; Horwitz & Horwitz, 1993; Liptak, 1996). Other studies, both classic and more recent, have shown up to 50% of families do not adequately adhere to medical regimens prescribed for a wide variety of pediatric problems (Hefer, et al., 1997; Mattar, Markello & Yaffe, 1975).

Reasons for poor compliance with TB treatment regimens varied among the different populations studied. Foreign born immigrants and refugees feared the infection may result in legal action, such as deportation, against them when they picked up medication refills (CDC, 1994). Some moved out of the area and some often returned to their country of origin before being adequately treated for their infection (Cummings, Mohle-Boetani, Royce, & Chin, 1998; McLeod, 1998). Many believed they were immune to TB because of prior BCG (Bacille Calmette Guerin) vaccination as a child in Mexico (Poss, 1998). Vulnerable persons may have assessed the risk of developing disseminated TB as a very low priority when compared to the demands of day-to-day existence (Kitazawa, 1995). Some feared possible loss of job because of the amount of time off
work needed for follow up clinic visits. Patients from diverse cultures may feel
discriminated against. Others may believe having TB carries with it a social stigma or
they may have cultural health beliefs about health and treatment of disease that interferes
with TB treatment regimens (Rubel & Garro, 1992).

Research Findings

A descriptive survey by Ailinger and Dear (1998) examined the relationship
between medication adherence and appointment keeping with demographic, medication
side effects, and self-assessed health status of adult Hispanic patients with TB. A
convenience sample of 65 subjects was utilized. Data collection methods, including
retrospective chart reviews and personal interviews were appropriate for the study’s
design the purpose of which was to examine the relationships between variables and the
differences between groups.

Ailinger and Dear (1998) found medication adherence dropped from 89 % the
first month of treatment to 65 % the sixth month. However, no significant differences in
adherence by gender ($t (62) = -1.19, p = .238$) of respondents was found. No significant
relationship between age ($r = .07, p = .588$) or education ($r = .22, p = .126$) and adherence
was identified. Nor was a relationship regarding the presence or absence of social support
[$t = (52) = 0.33, p = .741$], medication side effects [$t = (62) = -1.45, p = .151$], or self-
assessed good health [$t = (56) = 0.00, p = .999$] and adherence found. However, analysis
of demographic factors showed a significant relationship between education and
medication adherence ($r = .307, p = .034$). Follow up appointment keeping by subjects
with healthcare providers dropped from 81% at the initial appointment to 60% at the end of 6 months.

While the study was interesting with respect to the determinants selected by researchers, several issues were identified which preclude its generalizability. Limitations include the restricted sample (adults with TB), the small sample size (n = 65), and lack of power analysis, the measurements of self-reported medication adherence, and the failure to address threats to internal and external validity of the study.

Of special interest are the recommendations made by this study. A teaching program that is culturally appropriate and that involves the family members is recommended. A review of the motivating factors including fear of the disease, contagiousness of the disease, and priority setting need to be included.

Cohen's (1997) review of worldwide TB adherence research found numerous studies regarding the relationship among determinants such as patient characteristics, family context, motivation, education and combination strategies. No specific determinant was identified as being consistently better than another in assuring compliance with TB treatment regimens. However, education involving the use of incentives, enablers such as social support and cultural health beliefs were found to contribute to moderate improvement in adherence. Unfortunately, Hainsworth (1997) found an equal number of studies have shown increased knowledge does not necessarily equal action.

According to the HBM, compliance is partially determined by the patient's beliefs regarding the perceived level of threat of TB. Perceptions regarding the severity of TB
and their own vulnerability are also factors. Positive motivators include the elimination of disease, and better health in the future. If cues to action in an asymptomatic disease such as the case of TB infection are to be meaningful, instructional methods must be tailored to meet the needs of culturally diverse patients (Liptak, 1996).

Acculturation

**Background**

Acculturation is a complex phenomenon addressing intercultural interactions through which a person does or does not change any or all of six areas of psychological functioning: language use, cognitive style, personality identity, attitudes, stress, and customs of a majority culture, and the degree to which the person retains the norms held by their culture of origin (Cuéllar, Arnold, & Maldonado, 1995; Mendoza, 1984). For many years this phenomenon was viewed as a one-way process or uni-level adjustment process whereby, as a result of sociocultural interactions a person acquired or was assimilated into a new culture (Mendoza, 1984). It was assumed that as a person acquired a new culture they “lost” their old culture. It was also assumed that by measuring a single variable such as language acquisition one would know the level of acculturation. More recent research has demonstrated that acculturation is actually a multi-dimensional process where individuals might take on different aspects of the new culture such as language and foods while keeping cultural preferences in the areas of friendship, values, marriage partner preferences, and health beliefs (Cuéllar, Arnold, & Maldonado, 1995; Mendoza, 1984; Padilla, 1980). Understanding how a person is
proceeding through the process of acculturation might assist health care providers provide more appropriate information regarding diseases and treatments, and assist in understanding why patients are non-compliant with treatment and medications. The literature on acculturation was narrowed to research that specifically dealt with Mexican Americans and their culture, and/or the disease TB which is specifically being examined in the proposed study.

Influence of Acculturation on Health Beliefs

Cultural values, health beliefs, and behaviors are variables which can have a positive, negative or mixed impact on patient education (Gordon, 1994; Kitchie, 1997; Rivera & Rogers-Adkinson, 1997). The cultural origins of Hispanics in the US are Mexico, Puerto Rico, Dominican Republic, Cuba, Central and other Latin American countries (Marin & Marin, 1991; Nickens, 1997). Of the 28 million persons of Hispanic origin estimated by the US Census Bureau for 1996, 63% were from Mexico (1998). “The term ‘Hispanic’ is used by the US Census Bureau as an ethnic label and not to denote a race because Hispanics belong to all human races (White as well as Black, Asian, and indigenous Native American)” (Marin & Marin, 1991, p. 2). The term Hispanic is not used consistently in the literature and other labels that can be found include Latino, Raza, Spanish-speaking, and Chicano. This researcher has utilized the terminology adopted by the authors when discussing the available research in the literature. This proposal uses the term “Hispanic”. When conducting research on a particular ethnic group it is important to identify those characteristics that should be considered to define group membership.
These characteristics can be shared language, surnames, type of ancestors, national origin, or religious traditions and practices. National origin or ancestry seems to be a better criterion to establish group membership when identifying Hispanics because other criteria are not inclusive enough: Not all Hispanics speak Spanish; Spanish surnames are often shared by the Portuguese, French, Filipinos, and Italians; not all Hispanics descend from one identical ancestral tradition, be it European or Native American; and not all Hispanics are Roman Catholics or were raised as Roman Catholics. Given these possible criteria for defining ethnicity, it seems safe to argue that national origin (either personal or ancestral) is the element that best defines Hispanics in the United States (Marín & Marín, 1991, p. 19).

This research study will be examining Hispanics who identify themselves as having come from Mexico or who have ancestors who came from Mexico. This ethnic group often considers themselves as Mexican-American depending on how acculturated they are into American society.

Cultural values and health beliefs are richly woven into the lives of Hispanics (Adams, Briones, & Rentfro, 1992; Rivera & Rogers-Adkinson, 1997). Most importantly is the belief in the oneness of the physical, mental and spiritual being. This belief further infuses the strong family ties, loyalty and reciprocity with members of the larger extended family. Social orientation is collective in nature with a marked interdependence between family members. There is also an emphasis on conformity and cooperation.
rather than competition. The structure of the family is patriarchal. Personal relationships, politeness and respect are also important. Deference to authority figures is known to have an impact on communication: verbal expressions are limited and avoidance of eye contact may be seen. The concept of time is relaxed with an emphasis on the present. Punctuality is not important and goals are immediate and short term.

Hispanic cultural health and illness beliefs are rooted in the sixteenth century Spanish medical or humoral knowledge as well as American Indian beliefs (Yee & Weaver, 1994). The health culture of patients is their understanding of the nature of health and illness, its cause and what that means to those individuals (Rubel & Garro, 1992). Illness is frequently attributed to non-biomedical etiologies. Causes of illnesses are believed to be result of the body’s imbalance, dislocation of parts of the body, magical or supernatural causes outside of the body, strong emotional states or envy (Spector, 1996). Folk healers and magicoreligious practices are commonly used in order to rid oneself of an illness including symptoms of TB. Treatment strategies include herbs, teas, spiritual cleansing and religious rituals (Gordon, 1994). Prevention strategies are accomplished through spiritual means or herbal remedies. Some of these beliefs and practices were found in two recent qualitative studies regarding Hispanics and their explanatory models of TB.

Research Findings

Ailinger and Dear (1997), in a qualitative study elucidated the meaning of TB infection for 65 adult Latino immigrants being treated for TB infection in a large health department. Interview methods were completely described and appropriate for the
qualitative design of the study. Data analysis of responses included coding and identification of three themes: beliefs about cause of TB infection, fears about infection, and treatment expectations. Half of the subjects did not know the cause of their infection, 27% related it to a contagion such as breathing air or from drinking from the same container of an infected person. The remainder attributed it to lack of self-care, poor conditions in their country of origin, failure to obtain BCG vaccination, particular blood types, or an imbalance of hot and cold. Several subjects reported a positive PPD was indicative of a skin infection. Fears regarding having TB infection ranged from no fears at all to fears of the potential development of active TB disease, impaired ability to work, to infecting others especially children and family members, fears of dying, and restrictions of work schedule. However, the most important finding to researchers was the expectation that treatment would stop the progression of TB infection and would prevent others from contracting TB.

Poss’ (1998) qualitative study resulted in a slightly different explanatory model for TB in Mexican migrant farm workers. Data collection methods consisted of detailed interviews with 26 migrant farm workers in western New York using open-ended questions. Detailed explanations regarding consent, interview format, and schedules were provided. Adequate data analysis resulted in nine well-defined and saturated categories: TB etiology and transmission, sources of information, seriousness, susceptibility, symptoms, PPD significance, social significance of TB, BCG vaccination, and finally, treatment.
Findings regarding explanations for the nine categories were well described (Poss, 1998). Many of the subjects identified the etiology of TB as a tiny organism, bacteria, virus or a little animal. Transmission of TB was thought to occur as a result of drinking contaminated milk, sharing utensils, sexual relationships, or being susceptible as a result of a weakened condition such as anemia. Acknowledgment of similarities between some subject’s beliefs and the biomedical model of TB was ascribed to prior attendance at a TB educational program. Other sources of information about TB included other workers, family members, friends, and healthcare providers. Many of the subjects knew someone with TB, being treated for TB or someone who had died of disseminated disease. As a result, many believed TB to be a serious infection and the importance of early treatment. Whereas most subjects felt they were susceptible to TB, two felt they were immune because they did not smoke cigarettes. Prevention methods were described as caring for oneself, having a clean house, and avoiding chemicals. Several felt there was nothing that could be done. Symptoms of TB disease was for the most part correctly identified as weight loss, cough, fever and fatigue. The significance of PPD was attributed to a variety of explanations with several accurate interpretations. Over two thirds of the subjects agreed that if diagnosed with TB they would seek treatment by a healthcare provider. Understanding regarding duration of treatment regimens varied from one or two months to the rest of their lives. Subjects however, were mixed as to the social significance of TB: some felt comfortable discussing TB with family or friends while others would not. Interesting misconceptions regarding BCG vaccination were also revealed. Most subjects knew whether or not they had received the vaccine. However, some believed it provided
lifelong immunity against TB while others thought it would protect them against other
diseases such as infantile paralysis, chicken pox, small pox, and bronchitis.

Griffith and Villavicencio (1985) looked at the relationships among acculturation,
sociodemographic characteristics and social supports in Mexican American adults. A
sample of 259 (N=259) Mexican American adults living in Southern California were
selected using multi-stage, random-digit telephone sampling method. A survey
questionnaire was used which was part of a larger research investigation. This instrument
had four sections that were used for this study: screening/introduction;
demographic/acculturation; psychological distress; and social supports. Reliability of the
research instrument had been established by two large epidemiologic surveys conducted
in earlier. Cronbach’s alpha coefficients for the scales were similar to data obtained from
the earlier studies and were reported as Anxiety Scale, .77; Psychosocial Dysfunction
Scale, .91, and Depression Scales, .85. The internal consistency of the Anxiety and
Depression scales within the Spanish speaking only sub-group were similar to the
English-speaking-only subgroup at .80 and .84 respectively (Griffith & Villavicencio,
1985, p.79). These scores indicate the tool was reliable. The items on the scales are
reported as having been taken from valid and reliable measures of psychiatric impairment
but no other information about the validity was shared.

The researchers do report that research instruments that were not already
translated into Spanish were translated and back translated by two bilingual/bicultural
Ph.D. psychologists. They compared the two questionnaires item by item and corrected
any discrepancies. While a specific method for translating the tool was not mentioned it

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is a strength of this study that the method for translating the research instruments was mentioned at all.

The study found that acculturation and several sociodemographic characteristics bore significant relationships with social support variables. To ascertain the amount of variance acculturation and specific sociodemographic factors uniquely contributed to the network variables, hierarchical multiple regressions were performed in which the network variables served as the criterion variables, and sociodemographic variables served as predictors (Griffith & Villavicencio, 1985, p.85). The results of the regressions were reported in a table. Income added a significant proportion of variance to network size (\( R_{\text{Added}} = .028, F(1,200) = 5.72, p < .05 \)). Respondents of lower income and who had reported marital problems were less likely to call on the extended family for help (respectively, \( b = .205, F(1,200) = 5.84, p < .05 \) and \( b = -.175, F(1,200) = 5.02, p < .05 \)).

More educated respondents more often depended on friends and neighbors for support than the less educated (Griffith & Villavicencio, 1985, p.87).

The last aspect of the study was the assessment of the relationship between personal distress and reliance on specific support provided for subgroups of Mexican Americans who differed in acculturation. Additional hierarchical multiple regressions were conducted. Main effects of sociodemographic and network characteristics were first entered to predict personal distress, and then, interactions between acculturation and the number of primary kin, extended kin, and friends and neighbors named as support providers. The only significant interaction reported was interview-taken-in-Spanish and the number of friends and neighbors named as support providers (\( b = .176, F(1,207) = \)).
5.20, p < .05). This data seems to suggest that although acculturation shows significant relationship to social networking, these relationships result from the covariation of acculturation and sociodemographic characteristics. The hypothesis that as Mexican Americans become more acculturated, the support groups will more resemble those of Anglo-Americans was supported. The researchers state that although the results seem to indicate that less acculturated Mexican Americans undergo psychological distress they seek out more support from friends and relatives. This finding is different from what other studies have demonstrated and an alternative explanation is given. Griffith & Villavicencio (1985) state that it is possible that the results demonstrated the increased importance of friends and neighbors providing social support for more acculturated Mexican Americans.

This research study supports the importance of acculturation as a variable in research studies that are examining how Mexican Americans seek support for problems, including health problems. This research also emphasizes the importance of considering the significant role friends and family play in the life of Mexican Americans, and how this might affect any research conducted on this population. A weakness of this study is the lack of an explanation of how acculturation was measured and if this was measured using a single variable like language or multiple variables.

**Instructional Methods**

In order to perceive susceptibility to TB, one must possess knowledge of the disease. Information is essential for acquisition of knowledge. Historically, parental
education has consisted of oral and written instructions. Unfortunately, there is often a large discrepancy between the information provided and the comprehension level of patients (Liptak, 1996). Reasons for discrepancy in patient understanding are related to a variety of factors. These factors include the readability of written materials for patients with low literacy, the instructional method or manner of presentation, the learning style and motivation of the patient, as well as the cultural relevance of the materials to patients beliefs (Anderson, 1995; Bastable, 1997; Dollahite, Thompson & McNew, 1996; Kitchie, 1997; Richards, 1997). The six assumptions of androgogy provide a framework in which to design instructional materials for adult learners, which include Mexican-American parents (Hanson & Fisher, 1998; Moss, 1994; Padberg & Padberg, 1990). As outlined by Knowles (1990. p. 57-63) they are:

1. Before undertaking learning, adults need to know why the subject is important.

2. Adults’ self-concept revolves around being responsible for their own lives and subsequent decisions.

3. Adults enter into educational activities with a greater volume and different quality of experiences than children.

4. Adults are ready to learn things they need to know in order to cope effectively with real-life situations.

5. Adults are task- or problem-centered in their orientation to learning.

6. The most potent motivators for adults are internal pressures like job
satisfaction, self-esteem, and quality of life, and these motivators can be blocked by such barriers as negative self-concept, time constraints, and programs that violate the principles of adult learning.

Audio Taped Instruction

Audio technology as a means of providing patient education in a culturally diverse population is becoming a preferred format for a variety of reasons (Hainsworth, 1997). Audio technology refers to the use of audiotapes, videotapes, radio, television, and computers for patient education. Groups, who are hearing, visual, or linguistically challenged, including patients with low literacy levels, have benefited from the use of audio technology. It has also been found to be an excellent medium for providing instruction in psychomotor skills. Audio technology, as with any medium, has its disadvantages such as static content, accessibility to required equipment, and the expense of some types of audiotapes. Nevertheless, once produced, use of audiotapes has been found to be a cost-effective means of providing health information (Mishra & Conner, 1996).

The direct affect of parents on children's compliance with medical treatment is well accepted (Iannotti & Bush, 1992, 1993). The audiotaped novella empowers parents by respecting the learner's previous experiences while providing new information using a methodology that enhances prospective memory, and accounts for the importance of social context (Iannotti & Bush, 1993). Furthermore, it allows listeners to control the time in which the tape is played which allows listeners to be ready to learn. This is especially
important when their lives are full of stressors associated with activities of daily living. However, for the audiotaped novella to be successful, cultural health beliefs must be incorporated if truly meaningful patient education is going to occur (Chachkes & Christ, 1996; Ormrod, 1995). Using a story or novella format for the audiotape allows factual information to be imparted in a more informal, interesting and culturally appropriate way. The novella format also provides a vehicle for providing instructions regarding medications and treatment regimens using concrete language that both parents and children can understand. It allows for questions to be answered, misunderstandings to be cleared up at the next visit, and can be played over and over when the parent or child is not so anxious so memory is improved. "Age and intelligence do not systematically relate to recall, and the use of reinforcement, memory aids, and rehearsal that has provided some success for increased compliance in adults may work in children as well" (Iannotti & Bush, 1993, p. 61).

Research Findings

Freire (1970) noted that learning often occurs in dialogue. Novellas, while frequently used in other countries to convey health education messages, are just being recognized in the US as an effective educational tool in low-literacy, culturally diverse populations (Wang & Burris, 1994). Two recent studies in the public health literature illustrate the effective use of novellas in the Hispanic population. Mishra and Conner (1996) successfully used two formats to affect HIV-related attitudes, knowledge and behaviors in a migrant-camp population. Lalonde, Rabinowitz, Shefsky, and Washienko
(1997) used three novella formats to affect Hispanic youth attitudes, behavioral intentions, and parent-youth communication regarding alcohol use.

The study by Mishra and Conner (1996) utilized an educational novella produced in two formats: a photo story book and a radio show. The primary focus of the program was to affect behaviors associated with HIV prevention, such as condom use, with some reference to sexual abstinence and needle sharing. Descriptions of the novella formats and themes were provided. The design of the study was quasi-experimental with random assignment of matched and paired study sites. The data collection method, based on quota sampling, was adequate. The study began with 150 eligible subjects but ended with a cohort of 89 due to factors related to the migratory nature of the population. Subjects were paid to participate.

Complete data was available from 52 subjects in the experimental group and from 37 subjects in the control group (Mishra & Conner, 1996). Data collection methods consisted of surveys administered by trained interviewers. A pilot test of the data collection method found the format to be effective in subjects with low-literacy but able to understand spoken words and selected icons.

Prior to implementation of the novella intervention, a pretest measuring HIV-related attitudes, knowledge and behavioral items was administered to both groups. After administering the pretest, the photo novella was distributed to the experimental group. Radios and broadcast information was also distributed in order to eliminate the barrier of not being able to listen to the radio novella which ran over a three week-period (Mishra & Conner, 1996).
A post-test regarding HIV-related attitudes, knowledge and behavioral items was administered to both groups one month after the pre-test. Most of the participants did not hear all of the broadcasts on the radio. Therefore the study results are from participants who saw only the photo novella. After completion of the post-test, subjects in a structured focus group disclosed feelings about the photo novella format. They found it easy to relate to the photo novellas format, the story to be engaging, and to have understood the HIV transmission and prevention strategies presented. The results demonstrated a modest increase in knowledge (Mishra & Conner, 1996).

Protection of subjects was demonstrated by acknowledgment of Institutional Review Board approval for the research protocol. Significance levels of the data were reported at the p < .05 and p < .001 level. The photo novella intervention was found to be an effective means to change HIV-related knowledge, attitudes and behaviors. Knowledge scores about the transmission, severity and external signs of HIV increased significantly in the experimental group. During the study period, significantly more subjects in the intervention group reported condom use: 51% compared to 24.3% in the control group. It was also found that 100% of the subjects who changed their behavior in comparison to 66.7% of those who did not, believed they could prevent HIV infection with condom use (Mishra & Conner, 1996).

Findings regarding amount of exposure to the educational program were significant. A large majority, 81 and 68% of the subjects reported reviewing the photo novella. Validation measures of readability and comprehension of the photo novella revealed 68% of the experimental group correctly identified all three out of three
messages with an additional 26% correctly identifying two of the three frames tested (Mishra & Conner, 1996). The radio novella met with the barrier of inconvenient broadcast times. Despite having had radios supplied to the experimental group, their work patterns precluded the ability to listen to the broadcasts at the same time every day. Only 8% of the subjects were able to listen to the 15 broadcasts therefore the study reflected only the photo novella as an instructional tool.

Lalonde, Rabinowitz, Shefsky and Washienko's (1997) descriptive study involved the development, implementation and evaluation of a television novella, radio novella, and photo novella on Hispanic youth attitudes and parent-youth communication regarding alcohol. Extensive involvement of Hispanic community leaders, police, church and school officials in the development of the novella was described. In comparison to Mishra and Conner's (1996) small sample size, a significantly larger, more stable population was utilized. The study population was the Hispanic community of a city in the state of Washington.

Implementation of the novella consisted of blanketing the community with extensive advertising including television, radio, posters, T-shirts, and baseball caps. An official kick-off coincided with a much-celebrated cultural event, Cinco de Mayo. Data collection methods consisted of random street interviews, radio listener comments, self-reported surveys, and group meetings within the community. Unfortunately, no control group was utilized because of the extensive publicity of the intervention within the community. Weakness associated with the validity of the data from the random street interviews, radio listener comments and the group meetings regarding the effectiveness of
the novella were addressed. However, valid data from a total of 642 Hispanic middle and high school students was obtained in order to evaluate the different novella formats (Lalonde, Rabinowitz, Shefsky & Washienko, 1997).

Findings from the random street interviews attempted to gauge the number of citizens who viewed the television novella or heard the radio novella. Of those who saw or heard the novellas, 99% felt they would be effective but did not specify how. Evaluation of the novellas on a six-point scale demonstrated a 56% approval rating; 34% rated it between a 4 and a 5 (Lalonde, Rabinowitz, Shefsky & Washienko, 1997).

A significant, but small, improvement in the Hispanic youth attitudes and behavioral intentions related to alcohol was found by means of the student surveys (Lalonde, Rabinowitz, Shefsky & Washienko, 1997). Even with limited exposure, the novellas positively affected youth alcohol attitudes among females and the behavioral intentions regarding alcohol use of both female and male students. However, willingness to talk to a family member was not changed if a previous problem with alcohol existed. Findings from the student surveys were reported at a p = .04 level.

Despite the identified weaknesses of these novella studies, their contribution to the growing body of literature supporting the effective use of novellas among the Hispanic population is groundbreaking. An extensive search of nursing, public health and medical literature revealed no previous studies regarding the use of an audiotaped novella to affect compliance of TB treatment regimens. By incorporating cultural health beliefs into the theme of the proposed TB audiotaped novella, it may be more effective in
changing the compliance behaviors of the Mexican-American parents who have a child with TB infection.

Tuberculosis

Prevalence

Tuberculosis, an ancient disease, kills more people than any other infectious disease throughout the world (McDonald & Reichman, 1998). The World Health Organization (WHO) estimated that there would be 90 million new cases of tuberculosis worldwide in the 1990s with 30 million deaths (Raviglione, Snider, & Kochi, 1995). Presently, one in three persons worldwide is infected with TB. There are approximately three million deaths reported annually, and seven to eight million new cases of active TB diagnosed each year (Ginsberg, 1998; Nakajima, H., 1993). These facts seem incomprehensible given the ability to prevent and cure most TB disease with the currently available, inexpensive, and relatively nontoxic drugs at our disposal (American Academy of Pediatrics [AAP], 1997; see Table 1 for Commonly Used Drugs for the Treatment of TB in Infants, Children, and Adolescents).
<table>
<thead>
<tr>
<th>Drugs</th>
<th>Dosage/form</th>
<th>Daily dose, mg/kg/day</th>
<th>Twice/week dose</th>
<th>Maximum mg/kg/dose</th>
<th>Adverse reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isoniazid (INH)</td>
<td>Scored tabs-100 &amp; 300 mg</td>
<td>10-15</td>
<td>20-30</td>
<td>Daily, 2x/week, 900 mg</td>
<td>Mild hepatic enzyme elevation, &quot;hepatitis, peripheral neuritis, Hypersensitivity</td>
</tr>
<tr>
<td>Ethambutol</td>
<td>100 &amp; 400 mg Tabs</td>
<td>15-25</td>
<td>50</td>
<td>2.5 g</td>
<td>Optic neuritis (usually reversible), decreased visual acuity, decreased red-green color discrimination, GI disturbances, hypersensitivity</td>
</tr>
<tr>
<td>Pyrazinamide</td>
<td>500 mg Scored Tabs</td>
<td>20-40</td>
<td>50</td>
<td>2 g</td>
<td>Hepatotoxicity, hyperuricemia</td>
</tr>
<tr>
<td>Rifampin</td>
<td>Capsules-150 &amp; 300, mg., Syrup-formulated from caps</td>
<td>10-20</td>
<td>10-20</td>
<td>600 mg</td>
<td>Orange discoloration of secretions/urine staining contact lenses, vomiting, hepatitis, flu-like reaction &amp; thrombocytopenia; may render birth control pills inactive</td>
</tr>
<tr>
<td>Streptomycin Vials- 1 &amp; 4</td>
<td>20-40</td>
<td>20 - 40</td>
<td>1 g</td>
<td>Auditory &amp; vestibular toxicity, nephrotoxicity, rash</td>
<td></td>
</tr>
</tbody>
</table>

**Note** When INH in a dosage exceeding 10mg/kg/day is used in combination with Rifampin, the incidence of hepatotoxicity may be increased. Rifamate is a capsule containing 150 mg INH and 300mg Rifampin. Two capsules provide the usual adult dose (>50 kg body weight) daily doses of each drug. Rifater is a capsule containing 50 mg INH, 120 mg Rifampin, and 300 mg. Pyrazinamide.
The last 10 years have seen a dramatic rise in the incidence of TB in both adults and children in the United States (US) (Ginsberg, 1998). This reemergence is attributed to the increased prevalence of human immunodeficiency virus (HIV), the rising number of medically-underserved populations, as well as foreign-born and older persons who were infected when they were young (Center for Disease Control [CDC], 1998; Inselman, 1996). TB is a disease not evenly distributed; more than two-thirds of reported cases occur in nonwhite racial and ethnic groups. Mexican-Americans are the ethnic minority at greatest risk (Alinger & Dear, 1998). Between 1985 and 1992, the number of TB cases in children increased substantially, with a 40% rise compared to a 20% rise in cases overall in the United States (Starke, 1998, Starke, Jacobs, & Jereb, 1992). Since 1985, the largest increase in children with TB has been mainly in children under 9 years (American Thoracic Society [ATS], 1992). California has the highest incidence of TB in children and adolescents, with approximately 30% of the cases nationwide (Lobato, Cummings, Will, & Royce, 1998).

**Tuberculosis in Children**

A pediatric diagnosis of TB infection or disease is a sentinel event within a community (AAP, 1997). It represents a recent airborne transmission of *Mycobacterium tuberculosis* (*M. tb*) from an adult or adolescent with infectious disease to the child (McDonald & Reichman, 1998). Once inhaled, an immunologic response occurs which results in *M. tuberculosis* intracellular incorporation within the lungs and associated
lymphoid tissues (Inselman, 1996; Starke, 1998). Adults infected with TB are able to mount a cell-mediated immune response which oftentimes limits the dissemination of the disease. This is not the case with neonates, young children and those entering adolescence. Children in these groups are at greater risk to develop widespread disease within 2 years of exposure because of the inability of their immature cellular, humoral, and local lung immune systems to mount a response to the TB infection (McLeod, 1998; Starke, 1998).

Clinically, TB disease presents very differently in children than in it does in adults. Oftentimes, children with TB are asymptomatic. Newborns may present with poor suck, inadequate weight gain, vomiting, diarrhea, apnea and seizures (Inselman, 1996, McLeod, 1998, Starke, 1998). Symptoms such as unexplained fever, cough, wheezing, dyspnea, abdominal or bone pain, anorexia, diarrhea, failure to thrive or lethargy may initially be missed because of their concurrence with other common pediatric illnesses (Inselman, 1996). Diagnosis is made with the Mantoux tuberculin skin test using purified protein derivative (PPD) injected intradermally (AAP, 1997) see Appendix A for Interpretation of Positive PPD Skin Test Reactions in Children). TB infection is characterized by a positive PPD skin test without clinical, radiologic, or laboratory evidence of TB. TB disease is characterized by a positive PPD and clinical, radiologic, and/or laboratory evidence of the disease.

Treatment of TB

Treatment of TB is lengthy and based on a classification devised by the ATS (1992; see Appendix B for TB Classifications). Treatment of infection consists of six to
nine months of Isoniazid therapy. Failure to initiate appropriate treatment, as well as noncompliance with recommended treatment regimens, has led to the disturbing trend of drug resistant TB (Alinger & Dear, 1998). Therefore, appropriate diagnosis, treatment, and follow-up by nurse practitioners (NPs) and other health care professionals caring for these children is crucial in order to ensure their future health as well as interrupting the cycle of TB infection within the community (CDC, 1998; Halverson, Mays, Miller, Kaluzny, & Richards, 1997).

Currently, all states mandate funding for the identification and management of active TB disease through county public health departments. The duty to pay for and provide services varies widely from state to state, with many statutes on the books since the turn of the century (Gostin, 1993). Identification of TB infection and subsequent follow-up may or may not be a requirement of the state or county public health department. However, newly diagnosed cases of TB infected children are reported to county public health departments simply as a means to identify the source of their infection (Jackson & McLeod, 1998). Different states also provide different ways to treat these children with some states provided directly observed therapy by the school nurse when children are school aged. In the state where the proposed research study will be conducted, few schools have full time nurses. It is the responsibility of the primary care provider to be sure that children with TB infection are adequately treated. It is for this reason that detection of infection and subsequent treatment has become a priority of care provided by NPs and other health professionals caring for children at the primary care level throughout the U.S.
Translation Theory

Behavior oriented health scientists, including nurses, interested in cross-cultural research often need to translate their research materials including instructions, consent forms, and questionnaires from one language to another. The researcher must be reasonably assured that the translation of an English language measure is accurate. While on the surface this may seem like a simple academic task, one cannot assume that a simple direct translation will have any meaning to a non-English speaker. Items that affect validity of these tools include the use of idiomatic expressions, jargon, and colloquial phrases. The growing interest in international and cross-cultural research in nursing is reflected in the current nursing literature, but there has been very little published in the nursing literature about classic translation theory.

The body of literature on translation techniques in linguistics can be found in several different disciplines. Harris (1975), Richards (1953), and Simpson (1978) have written about translation theory. Brislin (1970) and Bracken and Fouad (1987) have discussed the importance of translation technique when conducting psychological research. Chapman and Carter (1979) discussed translation procedures for the use of measurement instruments to conduct research in education. Hansen and Fouad (1984) discussed translation and validation of a specific tool into Spanish for research purposes. McDermott and Palchanes (1994) conducted a review of the nursing literature and found only a single cross-cultural study (Jones, 1987) that used a tested methodology for translation of a quantitative measure.
To understand translation theory several key terms need to be defined. "Source language" (SL) refers to the original language of the measure or the researcher. "Target language" (TL) refers to the language into which the translation is made. "Back translation" is when the tool is translated from the TL back to the SL (Brislin, 1970).

"Blind back translation" is used when one back translates without having knowledge of the original version. This occurs when one bilingual person translates a document from the SL to the TL. A second bilingual person then takes the translated TL version and blindly back translates it back to the SL. The researcher now has two versions of the original tool for comparison. If both versions are identical in language and meaning then it is assumed that the two versions are equivalent. This assumption, while logical, may not assure the quality of conceptual equivalence that is necessary for scientific inquiry (Werner & Campbell, 1970). "‘Decentering’ refers to a translation process in which the SL and TL versions are equally important during the translation procedure” (Brislin, 1970, p. 186). This technique works well with newly developed instruments and texts, but may not be used when a researcher is translating an instrument that has well established reliability and validity and the content cannot be altered.

Decisions about translation technique and whether to make changes in the SL to accommodate accuracy in the TL depend on the research goals. Cross-cultural research goals usually fit into one of two categories: operational or comparative (Irvine & Carroll, 1980). Operational goals examine differences between cultural groups. Translation of materials is asymmetrical because the TL version of the SL original must remain loyal to the original and therefore may seem unnatural. This is often the case when one is
translating an established tool. Comparative goals examine a construct across cultures, thus the SL and the TL versions of the tool must be equally familiar and colloquial in content and contain items that are familiar in both cultures (Chapman & Carter, 1979). Translation of materials with a comparative goal is therefore symmetrical and decentering is a technique that helps with this process.

Brislin conducted a study to investigate “factors that affect translation quality and how equivalence between source and target versions can be evaluated. The variables of language, content, and difficulty were studied through an analysis of variance design” (1970, p. 185). At the end of his study he concluded that the question remains, “How good does a translation have to be before it is usable, or before a translator is judged adequate” (1970, p. 214). Brislin stated that no standards for the acceptable number of errors in a translation exists, but concluded with a seven-step procedure likely to provide adequate translation from English to other languages for research purposes. This process is an extension of the original four step process which was simply: a) develop the original SL measure; b) translate it to the TL; c) check the TL version for grammar, ease of understanding for monolingual native speakers; and d) back translate from the corrected TL version to the original.

Brislin’s seven step back translation method includes:

1. Write an English form that uses simple sentences, low literacy levels, and puts things into context when presenting ideas that may be questionable. Avoid detailed descriptions.
2. Use competent bilingual translators who are familiar with the content in the source language material when possible.

3. After practice, have one translator to translate from the original SL to the TL and another to blindly back translate from the TL to the SL.

4. Have several raters examine the original SL, the TL and back translation versions for errors that may lead to differences in meaning, with some raters examining only one version. If errors are found, repeat step 3, changing the original English when necessary ("decentering") when not concerned with exact translations in already validated tools. Change translators when possible if they are making too many errors.

5. When no meaning errors are found, then pretest the TL version on target language speaking people. Revise the translation and/or original English if the pretest demonstrates problems in comprehension. Ask a bilingual to critically examine the translation.

6. Administer the materials to bilingual subjects, some who get the English version and some who get the translation, and some who see both versions. Responses should be similar across both groups with adequacy demonstrated by means, standard deviations, and correlation coefficients.

7. Check whether meaning errors and a pretest were as predictable for translation equivalence as the more lengthy process outlined in step 6 (Brislin, 1970, p. 214, 215.)
McDermott and Palchanes (1994), who conducted a review of the nursing literature, concluded her article on the critical elements in translation theory by stating that research proposals should demonstrate a credible, theoretically sound approach to translation. Documentation of access to bilingual experts for translation and error finding in addition to a pilot study with correction of the tools is important. She emphasizes that time and financial support for translation should be built into a study because it can be so costly and time consuming.

Summary

The literature has documented poor adherence to long term treatment regimens. NPs and other primary care providers must find new and innovative ways to educate Mexican-American parents to give the medications to their TB-infected children the way it was prescribed until the medication regimen is completed (CDC, 1994). The audiotaped novella format which incorporates cultural health beliefs has been found to be effective in changing attitudes and behaviors in Mexican-American patients (Lalonde, Rabinowitz, Shefsky & Washienko, 1997, Mishra & Conner, 1996; Wang & Burris, 1994). However, to date there have been no studies using the audiotaped novella format to educate parents regarding TB infection, disease and treatment regimens. By incorporating cultural values into educational tools, they become more meaningful to a parent who is in the process of becoming acculturated. With an increase in knowledge, which has been provided in a culturally sensitive manner, parents may be empowered with information which influences their health beliefs about TB infection. The

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understanding of a parent's health beliefs, level of acculturation, and the providers ability to provide a tool that enhances a parents knowledge about TB, is hypothesized in this study to influence a parents compliance with treatment and medications.
CHAPTER THREE

Methodology

Research Design

Original Proposal

The proposed purpose of the study was twofold. First, the study was to examine the effects of health beliefs, acculturation, and a culturally appropriate teaching intervention on knowledge of TB and compliance with treatment and medications in Mexican-American parents of a child with TB infection. Second, the study was to compare the effectiveness of the current standard educational approach provided in a clinic setting with the audiotaped teaching intervention on parents' knowledge of TB, and treatment compliance.

This study was to use a mixed design. The first was a quasi-experimental pre-test, post-test nonequivalent control group design. Burns and Grove (1993) stated that the three essential elements of an experimental research design include (1) random sampling; (2) researcher-controlled manipulation of the independent variable; and (3) researcher control of the experimental situation, which includes a control or comparison group (p. 316.). This study had two of the essential elements. The sample was a self selected convenience sample of parents of children whose primary language was Spanish, and who had a child who had a diagnosis of TB infection at one of the clinics participating in the research study. The clinics were designated either as a control clinic or an
experimental clinic. The subjects from the control clinic who chose to participate were to receive a set of questionnaires at the time of diagnosis and the same set of questionnaires at the one month return clinic visit. The educational intervention they received in the clinic the day of diagnosis was the standard educational approach for children with this diagnosis. The parents of children who chose to participate from a designated experimental clinic were to receive the questionnaires and were also to receive a culturally appropriate, Spanish language audiotaped novella in addition to the standard educational approach. The parents were to answer the same set of questionnaires at the next clinical visit with the exception that the TB Knowledge post-test had an expanded version that included questions about the audiotape so as to assist the researcher in validating that they actually listened to the tape. Both groups were required to bring their medications to the return visit in one month.

This study examined human characteristics and behaviors that did not lend themselves to experimental manipulation and randomization. This study was also conducted in the real world clinical setting and not in a laboratory so as to increase the generalizability of the research findings, but which also created problems with attainment of adequate subjects for the research. The convenience sampling and necessity of assigning an entire clinic to be a comparison or an experimental group did not allow for randomization of the subjects. Therefore, this research study proposed to use a quasi-experimental design.
Use of a control group and separate pre- and post-test measures were proposed to strengthen the external validity of the study’s findings (Burns & Grove, 1993). Pre-testing would allow the researcher to determine if the groups were initially similar and would strengthen the validity of attributing any post-test differences to the experimental treatment, which in this study was to be the Spanish language audiotaped novella used for teaching. However, the study was limited because only a small number of subjects were successfully recruited (N = 31) and the majority of these were in the control group (n = 25). The small sample size, especially in the experimental group, did not allow the researcher to use two group comparison statistics. Control of the subjects or situations was not possible, therefore threats to internal validity associated with this design may have occurred. They include possible internal threats of history, selection bias, volunteer bias, maturation, and mortality (Polit & Hungler, 1997).

Reduction of the internal threats to validity of history, selection bias, and volunteer bias in this study was attempted by using a pre-test to determine if the groups were similar before the intervention was introduced. It was assumed that if the pre-test scores were similar then the groups would be similar and would be influenced by similar extraneous variables. To reduce the effect of maturation the subjects were to be tested again after only one month. The time parameters used in this study also caused its own limitations.

Controlling external factors is difficult in a research study that is not conducted in a laboratory. This study imposed the following restrictions in an effort to achieve constancy of conditions. The first was that the study was conducted in clinics that serve
patients who meet the federal poverty guidelines. The researcher also trained the assistants at each one of the clinics where data were being collected to ensure constancy of communication to the subjects in the study. A written research protocol explaining how to collect the data was left at each clinic, and the researcher was available at all times by pager if there were any questions. The last method that was to be used to control extraneous variables was to be statistical techniques such as analysis of covariance to examine the data. This was not possible with the limited number of subjects.

The second part of the study was proposed to use an exploratory descriptive correlational design. The relationships among the variables as measured by scores on the Tuberculosis Health Belief Questionnaire for Parents (TBHBQ), the Acculturation Rating Scale For Mexican-Americans (ARSMA-II), the Knowledge of TB Test, and compliance with TB regimens were to be examined. This exploration was done within the limits imposed by the small amount of data collected.

Changes In Research Design

Substantial revisions to research design were necessary due to problems recruiting subjects into the study, particularly in the experimental group. Sample size was not adequate to allow for meaningful comparative analysis of treatment and control groups. Therefore, the focus of data analysis was on descriptive analysis of the variables.

Difficulty recruiting subjects occurred early in the data collection phase and caused the researcher to assess the situation and to make changes in an effort to increase the number of subjects. The first change occurred in the number of clinics that were used
for data collection. Originally, four clinics were to be used for data collection. After the first month of data collection only one subject had been recruited due to the high number of failed appointments and a characteristic of the subjects that was not known to the researcher when the study was proposed. The researcher had originally examined the appointment schedules at the health department clinics as a means to determine feasibility of the study. Each of the six health department sites that conducted TB chemoprophylaxis clinics had an average of 24 appointments a day of all age patients. There were usually at least six patients who met the study criteria. Based on these data it appeared that there would be sufficient potential subjects to conduct this study in a reasonable time frame using only two clinics. However, at data collection, while there would often be six or seven appointments on the books, all of the children belonged to the same family. This was not immediately obvious because the children had different surnames. Therefore, for data collection purposes there was only one parent who could be asked to participate in the research. Another problem that arose was that the data collection period extended over the Christmas holiday. Many Mexican-Americans went back to Mexico to visit family for a month during the Christmas holiday season. This meant that many of the parents who initially enrolled in the study left for Mexico, stayed for more than one month, and therefore did not return for follow-up appointments or to take the post-test. Two of the subjects moved back to Mexico permanently, or were unable to re-cross the border to return to their lives here in the United States and were lost to follow-up. This problem is discussed in detail in Chapter Five.
To compensate for this loss of subjects, the researcher contacted the health department and received permission from the medical director, the clinic managers, and the public health nurses at the clinics to increase the data collection to all six sites where TB chemoprophylaxis clinics were held. The researcher also increased the number of experimental clinics to seven community clinics. The clinics were matched by location and all the clinics used the federal poverty guidelines and saw similar patients from the surrounding neighborhoods. Frequently patients moved freely between the clinics, or the community clinics referred patients without insurance to the neighborhood health department clinics for treatment. This too resulted in subject attrition.

The community clinics, which were the experimental sites, had additional problems that limited the study sample size. This had to do with the way patients had to be recruited at the community clinic sites. Unlike the health department clinics, the community clinics did not have one day where only TB patients were seen. Recruitment of subjects into the experimental group was dependent on the parent bringing the child into the clinic for a PPD, which occurred when the child came for a routine physical exam or well child visit. The times when most children get physicals are before two years of age and for school entry. Therefore, there are two main times after the first two years of life when a child would get a routine physical exam; first, when the child started school, as required by law, and second, for a routine sports or camp physical.

There were also several challenges to adequate recruitment of subjects into the experimental group that had to do with parent compliance. The parent first had to return to the clinic with the child to have the PPD read. Then the parent had to take the child to
another site for a chest x-ray, and finally return to the clinic for an appointment where the child would be started on medication after parental education about the diagnosis. This return clinic visit was when the parents would be recruited into the research study. There were problems with parents’ compliance at each of these steps. Some parents and children never returned for the PPD reading. Of those who did return for the PPD reading, some did not go for the chest x-ray. If they had the chest x-ray they often failed to return for the clinic visit to begin the medications. While this created many problems with recruitment of subjects, it was very important information to obtain, and is critical to making changes in the way health care providers treat children and adults who are infected with Tuberculosis. The implications of these findings are discussed further in Chapter Five.

The next change that occurred had to do with the format of the research questionnaires. They were originally printed in color coded booklet form which required somewhat small print. The first subjects who refused to complete the questionnaires stated that they were not able to see the print and did not have reading glasses or “left them at home”. The researcher suspected that many of these parents actually refused to complete the questionnaires because they were not able to read. The reading level of the questionnaires was tested at a grade school level, but many of the subjects were apparently poor readers even in Spanish. Despite the poor reading skills, some of the parents who were approached to participate in the study were willing to participate, signed the consent, completed the first page of questions then sealed the questionnaires in the envelope and handed it to the researcher. The researcher suspected this was the
parents way of being respectful to the authority figure making the request, which is very important to this culture but left the researcher with insufficient completed data for analysis.

The problems with incomplete and missing data when conducting research with a Mexican-American population have been discussed in the literature. Aday, Chiu, and Anderson (1980) found that Hispanics who spoke primarily Spanish failed to answer a significant proportion the research. Zusman and Olson (1977) found that an average of 8% of questions went unanswered in their study of Hispanic migrant workers. Marín and Marín (1991) stated that while there was not enough data to determine the reasons, or even the extent of the problem, this difficulty should be acknowledged when analyzing data from a Mexican-American population. It was the experience of this researcher that large blocks of questions were not completed. Possible reasons for this problem are discussed in Chapter Five.

In an attempt to resolve the barrier to obtaining an adequate sample, several changes were made to the booklet of questionnaires as the study progressed. All of the questionnaires were reprinted in large print on one side of the page. The pre-test questions were rearranged so the TB knowledge test followed the demographic questionnaire so if only some of the questions were answered, these were most likely to be answered. The researcher also discovered, as she attempted to help the parents complete the questionnaires, that parents were having difficulty understanding the Likert scale used in the TB Health Belief Questionnaire and the ARMSA-II acculturation scale. Likert type questions that used a scale from not at all to almost always was easier to
understand than a scale that used a range where the subject needed to answer strongly disagree to strongly agree. The health belief questionnaire used the latter form of scale and presented the most problems for the parents. The experience of this researcher was that when confronted with this type of question the parents skipped them or stopped answering the questions and sealed the questionnaires in the envelope. Any questions that followed this format were likely to be skipped. Detailed verbal explanations were often needed for the parent to be able to successfully complete all of the questions that used a Likert format. This problem was not anticipated by the researcher since it had not been an issue during pilot testing of the instruments.

Various authors (Hui & Triandis, 1989; Marin, Gamba, & Marín, 1991) have discussed the problems that Hispanics have with Likert style questions. “The results of these studies have shown that Hispanic respondents are less likely to use the middle response categories whenever presented with response scales that allow for moderating the answer to a question such as is the case in a 5-point Likert-type scale” (Marín & Marín, 1991, p. 101). This response style can cause problems with interpretation of the data since group variances and score correlations can be affected by these extreme responses. Using larger than a 5-point scale may help to alleviate the problems. The articles that discussed the use of extreme scales did not discuss the causes, which could be related to lack of experience with this type of question or difficulty understanding the concept in general. The TB Health Belief Questionnaire in this study used a 6-point scale, but the participants still seemed to have problems understanding how to answer, with many subjects answering to the extremes.
In response to the problems that were occurring during the data collection phase the post-test booklets were reduced to the knowledge questionnaire and the health belief questionnaire. The researcher returned to all the clinic sites and changed all of the test envelopes so that only the two post-tests were in the envelope and they were printed in large format on only one side of the page. This reduced the number of questions to be answered to 31 on the post-test without the educational audiotape and 37 questions for the parents completing the post-test with the audiotape.

Sample Selection and Size

The sample for this study was a self-selected convenience sample consisting of Mexican-American parents of children with TB infection who attended one of the participating clinics. Criteria for eligibility to participate included having: 1) a child from a self identified Mexican-American family whose primary language was Spanish, 2) a child under the age of 12 with a diagnosis of TB infection, and 3) an audiocassette player for the parents in the experimental group. The parent and child did not have to be legal residents of the United States to participate in this study, therefore residency status was not addressed.

To minimize a type I error an alpha level of .05 was chosen. This is the level of significance routinely used for nursing research (Burns & Grove, 1993). To minimize making a type II error a statistical power analysis was conducted using the SPSS computer program module SamplePower 1.0 (Borenstein, Rothstein, & Cohen, 1997) to assist with selection of sample size. A power level of .80 was chosen. A power of .80
yields a type II error risk of not more than .20. This was considered an acceptable risk for this type of study. A moderate effect size (ES = .50) was deemed appropriate for the proposed study based on moderate correlation between the variables of health beliefs and compliance and the strong theoretical foundations for the study. Light, Singer, and Willit (1990) stated that there are four factors that influence the sample size needed to attain the level of statistical power for a study: “1) the minimum effect size you want to have a good chance of finding; 2) the statistical analyses you will use; 3) the precision of your measures; and 4) how many subjects will drop out after the sample has been selected” (p. 192).

Sample size was calculated based on the statistics that were to be used to analyze the data and answer the research questions. The statistic requiring the most subjects to achieve the effect chosen was used to determine the total number of subjects required. Therefore it was proposed that there would be a minimum of 51 subjects in the control group and 51 subjects in the experimental group for a total of 102 subjects at the completion of the study.

Due to the problems with recruiting subjects, the actual sample size at the end of the data collection period was 31. There were 25 subjects in the control group and 6 in the experimental group, and only 10 subjects had matching pre-test and post-test data. One subject was eliminated from data analysis because she was from Honduras, and only partially completed the questionnaires. Another subject from Guatemala was retained in the study data, but acculturation data from the ARMSA-II was deleted since it was only
standardized on Mexican-Americans. In one instance, the mother completed the pre-test data questionnaires, but the father completed the post-test questionnaires. These data were used but not matched (see Table 2).

Table 2

<table>
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<tr>
<th>Completion Type</th>
<th>Control (n = 25)</th>
<th>Experimental (n = 6)</th>
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</thead>
<tbody>
<tr>
<td>Pre-test Only</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>Post-test Only</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Pre- and Post-test</td>
<td>9</td>
<td>1</td>
</tr>
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</table>

The majority of subjects (61%) were from one clinic. There were six clinic sites (two control and four experimental) where no subjects were recruited. There was one grandfather who completed the questionnaires, otherwise 68% were mothers of the children and 29% were fathers. Generally, the subjects were married (83%), Catholic (93%), spoke only or primarily Spanish (90%), and had completed only elementary school (37%) in Mexico. The age of the subjects ranged from 21 to 70 years old with the majority being in their late twenties and early thirties. They had been in the United States from as little as one month to as long as 32 years. There were seven subjects who had been in the United States for under a year. The average length of stay in the U.S. for subjects was 12 years. The majority of the subjects (57%) returned to Mexico for a visit at least a few times a year. Nine subjects (29%) reported that they never went back to
Mexico, which may be a reflection of the legal status of the subjects. If they are not legal residents of the United States or do not have green visa cards they are unable to travel freely across the border. Scribner (1996) stated that Mexican-Americans are the second largest ethnic group in the southwest US with 50% born in Mexico. He states that this population of Mexican-Americans "are poorer, less educated, and medically underserved compared with non-Hispanic whites (p.303). This research study found similar demographics. For complete details of the descriptive statistics of the demographic data see Table 3.

Table 3

Frequencies of Demographic Data

<table>
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<tr>
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<td>(%)</td>
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<td>Male</td>
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<td>30</td>
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<tr>
<td>Female</td>
<td>21</td>
<td>70</td>
</tr>
<tr>
<td>Child's Sex</td>
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<td></td>
</tr>
<tr>
<td>Male</td>
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<td>48</td>
</tr>
<tr>
<td>Female</td>
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<td>52</td>
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<td>Marital Status</td>
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<tr>
<td>Religion</td>
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<tr>
<td>Catholic</td>
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<td>93</td>
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<td>Christian</td>
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<th></th>
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<th>Percent (%)</th>
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</thead>
<tbody>
<tr>
<td><strong>Language Spoken at Home</strong></td>
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<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>27</td>
<td>90</td>
</tr>
<tr>
<td>English and Spanish</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td><strong>Language Spoken by Children</strong></td>
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<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>22</td>
<td>76</td>
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<tr>
<td>English and Spanish</td>
<td>7</td>
<td>24</td>
</tr>
<tr>
<td><strong>Country Where Child Born</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>18</td>
<td>62</td>
</tr>
<tr>
<td>USA</td>
<td>11</td>
<td>38</td>
</tr>
<tr>
<td><strong>Visits to Mexico by Parent</strong></td>
<td></td>
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</tr>
<tr>
<td>Never</td>
<td>9</td>
<td>32</td>
</tr>
<tr>
<td>A Few Times A Year</td>
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<td>57</td>
</tr>
<tr>
<td>Once a Month</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2 or 3 Times/Month</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Once a Week/ More</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td><strong>Grade Parent Completed</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary - 6</td>
<td>10</td>
<td>37</td>
</tr>
<tr>
<td>7 - 8 Grade</td>
<td>5</td>
<td>19</td>
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<tr>
<td>9 - 12</td>
<td>10</td>
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<tr>
<td>College or Higher</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td><strong>Where Educated</strong></td>
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<td></td>
</tr>
<tr>
<td>Mexico</td>
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<td>96</td>
</tr>
<tr>
<td>Mexico and USA</td>
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<td>4</td>
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</table>
Research Procedures

Permission to conduct the study was obtained from the Research Committee of Widener University School of Nursing after review for Protection of Human Rights (see Appendix C). The study was conducted at 13 facilities in a large Southern California county. This included six public health department clinics and seven community clinics spread throughout the entire county in both urban and suburban settings. Permission to enroll research subjects was obtained from the appropriate person in charge in each facility. No facilities indicated a need for a separate Human Subjects review. A copy of the Research Committee approval by Widener University School of Nursing was provided to each clinic.

Each clinic had a designated bilingual staff member who was in charge of assisting with data collection. This was usually the registered nurse or medical assistant in the clinic. The principal investigator of the study held a training session for each of these staff members prior to data collection. The researcher was also available to collect data at each site, but as the number of clinics expanded she was not able to be at every clinic, and depended on the trained staff to assist with the data collection. Both pre- and post-test questionnaires were originally in booklet form in individual envelopes with labels identifying the clinic and research subject by number. The booklets were later changed to a large print format on one side of the paper. Completed questionnaires were placed in the data collection envelopes and sealed by the subjects and then handed to the data collector. The completed data collection envelopes remained in a locked file box supplied by the researcher at each clinic until collected within two days by the principal
investigator. All collected data were stored in a locked file cabinet in the home office of the investigator. Identification numbers on the envelopes were only used for matching subjects pre- and post-test data. At the completion of this study all identifying information numbers will be destroyed.

Custodial parents who identified themselves as Mexican-American who brought a child to one of the clinics for a PPD reading, and the child had a positive PPD and a negative chest x-ray, were asked if they would like to participate in the study. A signed informed consent was obtained, and a copy was given to each parent participant (see Appendixes D, E, F, & G). The parent was told that he or she must be the parent to return with the child to the one-month visit because the same parent had to complete both sets of questionnaires. Parents then completed the research questionnaires, which were in Spanish. After completing the questionnaires, the parents in the experimental group were given an audiotaped novella to take home with an explanation of what the audiotape contained. The parent also received the standard verbal or written explanations the providers in that clinic normally gave to parents of children with this diagnosis and the prescriptions for the medications that were to be taken, or the medications, if they were usually provided. The community clinics did not usually have a health educator and this education was usually given by the health care provider examining the child. Parents in both groups were told to bring the medicines to their return visit and were reminded that they would need to complete the research questionnaires again at that time. The information on the front of the pre-test data collection envelope (see Appendix G) was recorded on a post-test data collection envelope and left in a locked file box in the clinic.
until the return visit. The sealed pre-test data collection envelope was placed in a locked file box in each clinic until the investigator collected it within two days of completion.

When the parent and child returned for the one-month follow-up visit the same parent completed the research questionnaires, sealed them in the post-test data collection envelope, and handed them to the data collector. Any questions parents had were answered after they completed the research questionnaires. The medicine in the vials was measured at that time by the data collector and recorded on the front of the post-test data collection envelope (see Appendix H). The sealed post-test data collection envelope was placed in a locked file box in the clinic until the investigator collected it within two days of completion.

The procedure was the same for the comparison group except that they were not given an audiocassette. The education they received regarding TB was whatever was the standard educational approach used in that clinic. In most of the health department clinics, the standard educational approach involved education about TB by a health educator. Any questions the parents had at the one-month visit were answered after they completed the research questionnaires. One interesting occurrence that was noted by the principal investigator was that the parents who took the pre-test and then received the health education about TB from the health educator started asking questions. The parents who were not in the study did not ask questions of the health educator, but for the most part sat silently and listened to the education being presented. The dynamic that occurred was that the questions influenced the health educator to change the education provided.
for the parents. The implications of this are discussed in Chapter Five in the limitation of
the findings.

The data collector noted on the post-test data collection envelope any parents who
did not return for their visit as scheduled (see Appendix H). A reminder call and/or
postcard was sent by the clinic to reschedule the appointment. This was documented on
the front of the data collection envelope. When the parents returned for their next visit
they were asked to complete the questionnaires per the research protocol. The medicines
were measured and calculated based on the length of time since the last clinic visit. The
percent of medication compliance was recorded on the front of the post-test data
collection envelope. The data collector recorded the date the patient returned for the visit
on the envelope. If the parents never returned for the visit this information was also
recorded on the front of the post-test data collection envelope and considered as part of
the compliance data. In several instances information was left off the data collection
envelope, and the principal investigator tried to recover this information by reviewing the
chart. Occasionally a chart review did not provide the information needed, such as
whether or not the parent brought the medication. The only information provided in the
chart was how much medication was dispensed at that visit. In some instances, there was
no way to recover these lost data.

The research questionnaires were stored in the individual envelopes at the home
of the principal investigator in a locked file cabinet until the research was completed. As
soon as the envelopes were collected the data were transferred to the statistical analysis
program SPSS for Windows and a record number was assigned. The bottom half of the
informed consent, with subject’s identifying, was removed and kept in a separate locked file. The information on the consent form was the only place where the parent and child were identified by name and record number and could be tied to a particular set of questionnaires or a specific record number once the questionnaires were removed from the pre- and post-test data collection envelopes. As soon as this information was separated, the parents and the child could no longer be identified, and confidentiality and anonymity of the data were secured. All research questionnaires will be destroyed when the research study is completed. The top half of the informed consents will be kept on file at the researchers home for a period of seven years.

**Instrumentation**

**Introduction**

This study used four research instruments to measure the variables being investigated. The research instruments were sequentially numbered and placed in booklet form for ease of completion by the subjects. This was later revised to a larger print, single sided page handout.

**Spanish Translation**

All of the test instruments except the Acculturation Rating Scale for Mexican-Americans-II (ARSMA-II) were translated from English, which was the source language, into Spanish, which was the target language, using the back translation techniques outlined by Brislin (1970). The ARSMA-II did not need to be translated because it had been previously tested and validity and reliability were established for the Spanish
version. Two different bicultural, bilingual Mexican-American professional translators, whose primary language was Spanish, at the San Diego City School District office, translated the original instruments and script into Spanish. Two different bi-cultural, bilingual Mexican-American translators, whose primary language was English, using decentering technique, then back translated the translated copies. Back translation theory has demonstrated that if the back translated copies are the same as the original then the translation is accurate (Brislin, 1970).

The instruments were pilot tested by the author and then adjusted using decentering technique. The final corrections and adjustments to the translated instruments, consent forms, and script were made using a professional bilingual American translator whose primary language was English.

**Demographic Questionnaire**

The first instrument was a demographic questionnaire (Appendices I, J) which was developed by the principal investigator to collect information about each subject. It included the demographic questions from the ARMSA-II. The demographic questionnaire consisted of 17 questions to obtain information about the child and the custodial parent completing the form. The following information from the ARMSA-II was collected as part of the Demographic Questionnaire: age and sex of the child, age, sex, marital status, and religion of the parent. A total of 7 of the 17 questions in the demographic questionnaire were from the ARSMA-II. Additional questions from the
ARMSA-II concerned the language spoken in the home, where the parent was educated, what generation of Mexican-American they were, how long they had resided in the United States, and where their child was born. The remainder of the questions were about whether or not the child had ever had a BCG or a PPD and if the parent knew the results of the PPD. These last questions were created by the principal investigator to explore whether understanding what a PPD is and why it is given was related to compliance. The implications are discussed in Chapter Four.

**Tuberculosis Health Belief Questionnaire for Parents**

**Description and Development**

The Tuberculosis Health Belief Questionnaire for Parents (Appendixes K, L) was developed by the principal investigator. This tool was originally adapted from the Mexican American Tuberculosis Health Belief Questionnaire that was developed by Rodriguez-Reimann (1996).

The original instrument consisted of 61 questions divided among the subscales identified by the Health Belief Model of perceived susceptibility of TB, perceived seriousness of TB, perceived threat of TB, perceived benefits of taking action, perceived barriers to taking action, cues to action, and willingness to engage in health behavior. The original instrument was designed for individuals to answer questions about their health beliefs. The 19 most reliable questions from the instrument (item to total correlation of .65 or better), divided among the 6 subscales, were adapted by this researcher for parents to answer about their child.
Validity

The questions on these instruments were reviewed by two experts for content validity. The copies of the instruments reviewed were in English. The experts were the physician epidemiologist who heads the TB unit at the Public Health Department, and the pediatrician who runs the outpatient TB Clinic at a large teaching hospital, and who also co-chairs the county pediatric TB task force. These two experts worked independently in judging the questions and placing them into the subscales. Their answers were compared to the subscales of the original questions. There was 100% agreement between the two experts about question placement on the subscales. However, there was one question that both experts placed on a different subscale than the original instrument. This degree of difference was considered acceptable. Expert judging was done to ensure that the changes made to the questions to reflect the fact that the parent would be answering the question concerning their child instead of parents answering about themselves had not changed the validity of the questions.

Reliability

The questions were pilot tested and a reliability analysis calculating Cronbach’s alpha was conducted. The item to total correlations ranged from -.02 to .61. No single item, if deleted from the instrument, significantly changed the instrument reliability. The alpha was .78 which was considered sufficient to demonstrate internal consistency of the instrument.
The reliability of the instrument in the current study was calculated at .77 for pre-test and .82 for post-test using Cronbach’s alpha. The pre-test Tuberculosis Health Belief Questionnaire for parents had an item to total correlation range from -.68 to .64. If question 18 were removed it would increase the alpha from .77 to .82. The post-test had an alpha of .82 when question 18 was reverse scored.

Scoring

The TB Health Belief Questionnaire for Parents used a 6-point Likert scale for the respondents to report the degree to which they strongly agree (6) or strongly disagree (1) with the question or statement. “Typically, the responses are scored in such a way that agreement with positively worded statements and disagreement with negatively worded statements are assigned a higher score” (Polit & Hungler, 1997, p. 260). The only question on the revised TB Health Belief Questionnaire that needed reverse scoring was question 18 which concerned how TB would affect the person’s marriage or relationship. This question was included in the original health belief questionnaire by Rodriguez-Reimann, (1996) because the literature stated that many Hispanics and other nationalities have demonstrated fear the diagnosis of TB would cause a divorce because such a serious illness was “in the family”. Therefore, it is an important issue to include. A total health belief score was calculated by summing the responses to the 19 individual questions. The possible total range of scores was 19 to 114.
Description

The Acculturation Rating Scale for Mexican-Americans (ARSMA) was published by Cuéllar, Harris and Jasso in 1980 as one of the first research instruments to measure acculturation in Mexican-Americans. During the next 15 years the ARSMA became the most widely used measure in research addressing acculturation in Mexican-Americans. Consisting of 20 items scored on a 5-point Likert scale with answers ranging from extremely often or almost always (5) to not at all (1). The instrument used a linear format to place respondents into five categories.

This linear orientation to acculturation assumed that as one progressed along this line and became acculturated in a new culture one lost a corresponding amount of the original culture. "The major criticism of this linear model is that the two poles are not independently measured; as a consequence, it does not yield measures for those biculturals who score high or low in both cultures" (Cuéllar, Arnold, & Maldonado, 1995, p. 276).
In response to such criticism, Cuéllar, Arnold, and Maldonado (1995) revised the instrument (ARSMA-II) (Appendixes M, N). The revised instrument, which was used in this study, measured components of acculturation separately for each culture through the use of a 30 item self-rating scale composed of two subscales. The subscales were a 17-item (Items 1, 3, 5, 6, 8, 11, 12, 14, 17, 18, 20, 21, 22, 24, 26, 28, 29) Mexican Orientation Scale (MOS) and a 13 item (Items 2, 4, 7, 9, 10, 13, 15, 16, 19, 23, 25, 27, 30) Anglo Orientation Scale (AOS). Factors included in the scales are language, ethnic identity, and ethnic interaction or distance. The revised instrument also used a 5-point Likert scale with answers ranging from extremely often or almost always (5) to not at all (1).

**Scoring**

Full scale scores were derived for each scale separately by summing items and deriving the mean. The resulting format allows for classification into High Integrated Biculturals (high Anglo and Mexican orientations), Mexican Oriented Biculturals (low Anglo and high Mexican orientations), Low Integrated Biculturals (low Anglo and low Mexican orientations) and Assimilated Biculturals (high Anglo and low Mexican orientations). In addition, a total score was generated by subtracting the MOS mean from the AOS mean to obtain a linear acculturation score that represented an individual's score along a continuum from very Mexican oriented to very Anglo oriented. This total score, which could range from 1 to 5, was computed and used for data analysis in this study.
Another criticism of the original instrument is that it was specific to Mexican-Americans and is not applicable to other Hispanic groups. The revised tool is still culture specific to Mexican-Americans and therefore was applicable to the proposed study population.

Validity

Concurrent validity, measured by a Pearson product moment correlation coefficient between ARSMA and linear ARSMA-II scores, was reported by the instrument’s authors as .89 (Cuéllar, Arnold, & Maldonado, 1995). This is a high degree of validity and made this an acceptable instrument to use in this research study.

Reliability

Test-retest reliability (one week interval) ARMSA-II’s MOS and AOS scales were reported as .94 for the AOS and .96 for the MOS with coefficient alpha levels of .83 and .88 respectively (Cuéllar, Arnold, & Maldonado, 1995). This is a high degree of reliability and therefore is an accurate reflection of acculturation in Mexican-Americans. Test-re-test reliability was not conducted in the current research study. The published reliabilities were deemed acceptable for the current study.

In the current study, the internal consistency reliability calculated using Cronbach’s alpha was .86 for the AOS subscale and .58 for the MOS subscale.
Tuberculosis Knowledge Pretest and Post-test Questionnaires

Description

Two versions of the TB knowledge questionnaire were developed by the principal investigator (Appendices O, P, Q, R, S, T). One questionnaire was a pre-test consisting of 10 questions about the disease and treatment of Tuberculosis. The pre-test for both groups also included 2 questions about the format of the health education material for a total of 12 questions. The post-test for the comparison group contained the same 10 questions about the disease and treatment of Tuberculosis, but omitted one question about the audiotape format for health education material for a total of 11 questions. The post-test for the experimental group included the same 10 questions as the pre-test. In addition the post-test for the experimental group contained 8 questions concerning the people who were on the tape and the format of the information for a total of 18 questions. This additional information was added to validate that the parents actually listened to the tape and to explore if they preferred health education materials in the audiocassette format after having received information this way.

Validity

The questions on these instruments were reviewed by two experts for content validity. The copies of the instruments reviewed were in English. The experts were the physician epidemiologist who heads the Tuberculosis unit at the Public Health Department, and the pediatrician who runs the outpatient Tuberculosis Clinic at a large teaching hospital, and who also co-chairs the county pediatric Tuberculosis task force. They had a 95% agreement on the validity of the content. A pilot test was conducted on
the Spanish version of these tools to be sure they were clearly worded, free from major
biases and were soliciting the information needed. Editorial changes were made to the
test instruments based on comments by the two reviewers and the results of the pilot test.

Reliability

A pilot test was conducted to estimate the reliability of the instruments. When the
pilot testing was conducted the questions on the research instruments were not in the
same order on the pre-test and the post-test. Cronbach’s alpha reliabilities were computed
for the instruments. The item to total correlations ranged from -.12 to .55 on the pre-test
with an alpha of .64. The post-test item to total correlations ranged from -.17 to .30 with
an alpha of .26.

One item, question 3, had negative item to total correlations on both the pre-test
and the post-test. One item, question 6, had a negative item to total correlation on the
post-test only. These two items were revised for clarity. The research instruments in the
final version present the questions in the same order on the pre-test and the post-test.

Based on the pilot test findings, the pre-test reliability coefficient was considered
moderately acceptable for the proposed study. The researcher recognized the low
reliability of the post-test. Two factors that may have influence internal consistency
reliability were the number of items on the test and the variance in test scores. The pre-
test mean TB knowledge score was 3.9 with a variance of 4.51. The subjects then
listened to the audiotape intervention. The post-test mean was 6.5 with a variance of
2.16. The fact that the post-test variance is only half of the pre-test variance indicated
that as the subjects learned, they became more homogeneous in their scores. The
decrease in test variance is one plausible explanation for the low reliability on the post-test.

Cronbach's alpha reliabilities were computed for the knowledge questionnaires in the current study. The pre-test instrument had an alpha of .80 with item to total correlations that ranged from a -.03 to .63. The pre-test mean TB knowledge score was 5.1 with a variance of 7.7. The post-test instrument had an alpha of .48. with item to total correlations that ranged from -.18 to .58. The post-test mean TB Knowledge score was 6.6 with a variance of 3.0. It was anticipated that with the large sample size in the proposed research, variance in scores would be maximized and would result in greater instrument reliability. However, in the current research the post-test (n = 10) was completed by less than half the sample of the pre-test sample (n = 26), and both were very small samples. As occurred in the pilot study, the variance in post-test scores was less than half that of the pre-test scores, indicating more homogeneity of subjects’ scores on the TB knowledge post-test.

A summary of the number of items, possible scores and reliabilities of the research instruments are presented in Table 4.
Table 4

Research Instruments Reliability

<table>
<thead>
<tr>
<th>Instrument</th>
<th>N</th>
<th>Published Reliability</th>
<th>Reliability In Current Study</th>
</tr>
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<tbody>
<tr>
<td>ARMSA-II:</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MOS</td>
<td>17</td>
<td>.94 to .96</td>
<td>.58</td>
</tr>
<tr>
<td>AOS</td>
<td>13</td>
<td>.83 to .88</td>
<td>.86</td>
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<tr>
<td>TB Health Belief Questionnaire</td>
<td>19</td>
<td>.78</td>
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<td></td>
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<td>Post .83</td>
</tr>
<tr>
<td>TB Knowledge- (Pre)</td>
<td>10</td>
<td>.64</td>
<td>.80</td>
</tr>
<tr>
<td>TB Knowledge- (Post)</td>
<td>10</td>
<td>.26</td>
<td>.48</td>
</tr>
</tbody>
</table>

Scoring

The pre-test and post-test tuberculosis knowledge questionnaires were structured self-administered multiple-choice tests. Each question had only one correct answer. Correctly answered questions were scored one. Incorrectly answered questions were scored zero. The subjects were asked to respond to exactly the same set of questions in exactly the same order with a fixed-choice response. “The purpose of using questions with such a high degree of structure is to ensure comparability and to facilitate analysis” (Polit & Hungler, 1997, p. 256). The total TB Knowledge score was computed by summing the individual item scores. The total scores could range from 0 to 10.
Compliance With Treatment

Description

Compliance with treatment was determined by whether or not the parent followed the instructions and returned to the clinic for the next appointment. A parent could be in full compliance by appearing for the appointment on the scheduled date and time. The parent could be in partial compliance by missing the appointment as scheduled but by rescheduling and returning for another appointment after additional prompts such as a reminder phone call or postcard. The parent could also be totally non-compliant by failing all appointments and being lost to follow-up. This information was recorded on the front of each subject's post-test data collection envelope.

Scoring

Scoring was coded by category of compliance with treatment. The categories were yes = return on time for a score of 2, partial = return late for a score of 1, and no = did not return and lost to follow-up for a score of 0.

Compliance with Medication

Description

Compliance with medications was measured by using a pill count. The length of time for the pills to be taken was recorded and the number of pills that should have been taken was also recorded on the post-test data collection envelope. The actual number of pills taken was also recorded.

Scoring

The scoring was a percentage of compliance with medications based on the pill
count. The number of pills initially dispensed (a) was noted. The number of days in the pill count period (b), which equals the number of pills the patient should have taken, was noted. The number of pills left in the pill container (c) was noted. The difference between (a) and (c) was the number of pills administered to the child. The ratio between the number of pills taken (d) and the number of pills that should have been taken (b) yielded the percent of pills taken correctly (e). This compliance score could range from 0% to 100%. An example of the calculation follows:

\[ (a) = 100 \text{ pills dispensed} \]
\[ (b) = 30 \text{ pills should have taken} \]
\[ (c) = 80 \text{ pills still in the container} \]
\[ (d = a - c) = 20 \text{ pills taken} \]
\[ (e = d / b) = .666 = 66.6\% \text{ compliance} \]

Culturally Appropriate Audiotape

Description and Development

The information on the audiocassette was developed by the principal investigator directly from questions raised and experiences with Mexican-American parents of children with positive PPD's and negative chest x-rays while working in three different clinics in Southern California. The same problems and questions arose repeatedly despite handouts and information being provided to parents about the diagnosis. The researcher's experience led to a review of the materials available to the public and being used to provide information to parents of children with a diagnosis of TB.
After contacting all of the community clinics, the county public health department, and the county Chapter of the American Lung Association, 11 publications were found to be available in English and Spanish. These materials ranged from a free booklet in a cartoon format, *This is Mr. TB Germ*, published by the American Lung Association (1991) to a TB instruction booklet, *How Did Your Child Get Infected With TB?* (1995), published by the county public health department, to a booklet published by Channing L. Bete Co., Inc. titled, *TB-What You Should Know* (1993). Some of the materials are free and some are published and available for a fee. This review led to the preliminary writing of a script for a culturally appropriate audiotaped novella containing information that addressed parents' concerns and questions (Appendices T, U). The script was translated and then back translated by the Mexican American translators to insure an accurate translation.

**Pilot Test**

Content validity of the audiotape, the pre and post-test Knowledge of TB questionnaires, and the Tuberculosis Health Belief Questionnaire was established by a pilot test. The purpose of the pilot test was to assure the acceptability, appropriateness, cultural sensitivity, and clarity of the audiotape and the tools developed by the principal investigator. A consent form was developed and translated into Spanish using back translation and the professional bicultural, bi-lingual Mexican-American translators. The Hospital Clinic Director and IRB committee of a large urban teaching hospital and clinic in a Southern California city where the principal investigator worked approved administering the instruments. The sample (N = 25) was recruited from clinic visitors and
patients who identified themselves as Mexican-American, had a cassette player, were willing to answer the questionnaires, listen to the tape, and return to the clinic to retake the test instruments. Each person who completed both sets of questionnaires was paid $5.00 by the researcher as an incentive to return to complete the questionnaires. The subjects of this pilot were Mexican-American men and women over the age of 18 who expressed willingness to participate. The goal was to have this completed over a two-week period while the investigator had the help of a Family Nurse Practitioner (FNP) graduate student who spoke Spanish to assist with data collection. To complete the sample in a timely fashion friends and neighbors of clinic staff who identified themselves as Mexican-American and who spoke Spanish also volunteered to complete the instruments. All subjects took the tests in Spanish and listened to the Spanish audiocassette. Subjects comments about the instruments and the audiotape were collected by the graduate student by informal interviews with the parents as they returned to complete the post-tests.

Findings of the Pilot Test

A reliability analysis calculating Cronbach’s alpha for each of the test instruments was conducted. The TB Health Belief Questionnaire had a mean of 93.65 with a standard deviation of 13.63 with a Cronbach’s alpha of .78. The TB Knowledge Pre-test had a mean of 3.97 with a standard deviation of 2.12 and an alpha of .64. The TB Knowledge Post-test had a mean of 6.50, a standard deviation of 1.47 and an alpha of .26. Based on the statistical findings and the comments from the participants the weakest or most confusing items of the test were removed or re-worded.
Data Analysis

Introduction

The data from the research instruments were analyzed using a variety of statistical methods. Descriptive statistics including frequencies, measures of central tendency, and measures of dispersion, were used for all continuous data. This included all interval and ratio level variables such as age. Nominal and ordinal level variables, such as gender and educational level, were categorical data analyzed using frequencies and percentages. The appropriate statistical analysis depended on the research questions being answered.

Analysis of demographic data consisted of organizing the data and examining it using the four basic characteristics of a distribution: central tendency, variability, skewness, and kurtosis (Lo-Biondo-Wood & Haber, 1994). The demographic data consisted of both nominal and ordinal data. Variables such as gender, marital status, country of origin, and existence of underlying illnesses were measured on a nominal scale. Socioeconomic status and educational level of attainment in country of origin were measured on an ordinal scale. Demographic data comparisons between the experimental and control groups were not computed because of the limited number of subjects in the experimental group. Therefore it is not known if the two groups were equivalent on the demographic characteristics.

Hypotheses

Due to the limited sample size, statistical analyses for hypothesis testing were not feasible. However, the original research proposal suggested the following statistical analyses.
1. The combination of pre-test health beliefs, acculturation, and teaching method would predict post-test knowledge of TB disease and treatment better than either variable alone.

The statistical analysis to address this hypothesis was to be a multiple regression. "Multiple regression is possible when there is a measurable multiple correlation between a group of predictor variables and one dependent variable" (Munro, 1997, p. 254). The scores on these instruments yielded interval level data generated from a Likert scale. The total scores of the TB Health Belief Questionnaires and the ARSMA-II were to be used for predicting post-test knowledge of TB. However, there were insufficient data for computing a multiple regression analysis, therefore, relationships between variables were explored using Pearson correlations. The teaching method was not analyzed because there was insufficient data.

2. The combination of pre-test health beliefs, acculturation, and teaching method predict compliance with treatment better than either variable alone.

The statistical analysis to examine the data to answer this hypothesis was to be discriminant function analysis for three groups. Discriminant analysis is used to identify which factors are most related and how well they can predict group membership (Munro, 1997, p. 288). In this type of analysis all of the variables may be entered at one time or they may be used in a stepwise procedure to select the most discriminating variables. The current study did not have sufficient data to support examining this hypothesis.
3. The combination of pre-test health beliefs, acculturation, and teaching method would predict compliance with medications better than any variable alone. The statistical analysis that was most appropriate to answer this hypothesis was a multiple regression. Due to the limited sample and lack of data for the experimental group this hypothesis was not tested.

4. The parents who received education using the audiotaped novella would have higher post-test knowledge scores than pre-test knowledge scores. The statistical analysis to answer this hypothesis was to be a paired t-test. Due to the limited sample and lack of data for the experimental group this hypothesis was not tested.

5. The parents who received education using the standard educational approach would have higher post-test knowledge scores than pre-test knowledge scores. The statistical analysis to answer this hypothesis was a paired t-test. The data that were analyzed were continuous interval level data with pre- and post-test scores which were compared for the same group of subjects before standard education about TB and after one month.

6. The parents who received education using the audiotaped novella will have higher post-test knowledge scores than the parents who receive education using the standard educational approach.
The statistical analysis to answer this hypothesis was to be an independent t-test. The data that were to be analyzed were continuous data with pre- and post-test scores for two different groups. Due to the limited sample and lack of data for the experimental group this hypothesis was not tested.

7. The parents who received education using the audiotaped novella would have better compliance with treatment scores than the parents who received education using the standard educational approach.

8. The parents who receive education using the audiotaped novella will have better compliance with medication scores than the parents who receive education using the standard educational approach.

These two hypotheses were to be analyzed using a Chi-square analysis. A Chi-square can be used with one or more groups and is the most common reported nonparametric statistic in research studies (Munro, 1997). The last two research questions used nominal data and consisted of two groups that fit into three possible categories. These three categories were complete compliance with treatment or medications, partial compliance with treatment or medications, and noncompliance with treatment or medications before and after a specific teaching method. Due to the limited sample and lack of data for the experimental group these two hypotheses were not tested.
CHAPTER FOUR

Findings/Results

Introduction

Due to the limited number of subjects obtained (N = 31), the research data and analyses are presented as preliminary findings since meaningful hypothesis testing would be premature at this time. In addition, the small number of subjects in the experimental group did not allow for testing of the culturally appropriate audiotaped teaching intervention at this time. Despite a limited sample size the data results are rich with implications for clinical practice. This chapter presents descriptive analyses of the variables, and analyses of the data in reference to the research questions.

Findings Concerning the Research Questions

1. What are the relationships among pre-test health beliefs, acculturation, and teaching method on post-test knowledge of TB in parents of children with TB infection?

Pearson correlation's were computed to explore the relationships among the variables of pre-test health beliefs, Mexican orientation scale (MOS), Anglo orientation scale (AOS), total acculturation and pretest knowledge scores. These were also computed with post-test health beliefs, MOS, AOS, total acculturation scores, and post-test knowledge scores. A significant relationship was found between acculturation and pre-test knowledge of TB (see Tables 5 and 6). Higher acculturation scores, indicating more
Anglo orientation, were associated with higher pre-test knowledge of TB. However, this was not true on the post-test. In addition, there were no significant relationships between pre-test health beliefs and post-test knowledge scores ($r = .58, p = .177, n = 7$). Due to the lack of data from the experimental group the teaching method was not considered in this analysis.

Table 5

<table>
<thead>
<tr>
<th></th>
<th>MOS</th>
<th>AOS</th>
<th>Acculturation</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test Health Beliefs</td>
<td>.29</td>
<td>.40</td>
<td>.25</td>
<td>.26</td>
</tr>
<tr>
<td>(n = 18)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOS</td>
<td>.07</td>
<td>-.41*</td>
<td>-.30</td>
<td></td>
</tr>
<tr>
<td>(n = 21)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOS</td>
<td>.88***</td>
<td>.69**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n = 21)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test Knowledge</td>
<td>.78***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n = 18)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* $p = .03$

**$p = .001$

***$p = <.001$
Table 6

**Correlations Between Post-Test Health Beliefs, MOS, AOS, Acculturation and TB Knowledge**

<table>
<thead>
<tr>
<th></th>
<th>MOS</th>
<th>AOS</th>
<th>Acculturation</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-test Health Beliefs</td>
<td>.70</td>
<td>-.64</td>
<td>-.72</td>
<td>-.30</td>
</tr>
<tr>
<td>(n = 4)</td>
<td></td>
<td></td>
<td>(n = 4)</td>
<td>(n = 11)</td>
</tr>
<tr>
<td>MOS</td>
<td>.07</td>
<td>-.41*</td>
<td>-.70</td>
<td></td>
</tr>
<tr>
<td>(n = 21)</td>
<td></td>
<td></td>
<td>(n = 21)</td>
<td>(n = 4)</td>
</tr>
<tr>
<td>AOS</td>
<td>.88**</td>
<td></td>
<td>-.68</td>
<td></td>
</tr>
<tr>
<td>(n = 21)</td>
<td></td>
<td></td>
<td></td>
<td>(n = 4)</td>
</tr>
<tr>
<td>Post-test Knowledge</td>
<td>- .58</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n = 4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p = .03

** p = <.001

2. Do pre-test health beliefs, acculturation, and teaching method predict compliance with treatment in parents of children with TB infection?

Of the 25 subjects in the control group, 17 returned on time for a one-month appointment. 2 parents returned with prompting, and 6 did not return. Two of the parents who did not return moved back to Mexico. This is a 68% show rate, a 24% no
show rate and a rate of 8% who were lost to follow-up. Therefore in the control group there was a 68% compliance with treatment as defined in this study.

In the experimental group only one subject should have and did return for a 100% show rate, however, this figure is not meaningfully interpretable since it represents only one subject. Data collection was halted before the other five in the experimental group were scheduled to return to the clinic. The effect of pre-test health beliefs, acculturation, and teaching method on compliance with treatment was not statistically analyzed due to the limited data available.

3. What are the relationships among pre-test health beliefs, acculturation, and teaching method on compliance with medications in parents of children with TB infection?

Of the 25 subjects in the control group, 19 returned for a clinic visit. Of the 19 who returned for a visit, 4 were 100% compliant with medication, one subject was 83% compliant. 14 were coded as 0 % compliant because they did not bring their medication to the clinic therefore it was not possible to verify medication by pill count. The six subjects who did not return in this group were also coded as 0 % compliant. All subjects were required to their medications to the clinic. Subjects were told to do so verbally and on the signed consent form.

There was only one subject in the experimental group who was scheduled to return for a visit before data collection was stopped. This subject returned for the visit but failed to bring back the medication. These findings suggest, that for all subjects
19.2% demonstrated some degree of compliance with medication taking, while 80.8% failed to comply.

4. Are there differences in parent’s knowledge of TB before and after patient education using an audiotaped novella?

Due to the limited number of subjects in the experimental group that completed testing after using the audiotaped novella (n = 1) this research question was not examined.

5. Are there differences in parents’ knowledge of TB before and after patient education using the standard educational approach in the clinic?

The total TB knowledge score was computed by summing the individual item scores. For those subjects with matched pre- and post-test data (n = 8), the mean of the TB knowledge pre-test was 5.1 with a SD of 3.8, and the mean of the TB knowledge scores on the post-test was 6.8 with a SD of 1.9. A paired t-test was computed and revealed no significant difference between the pre-test and post-test knowledge scores (t = 1.14, df = 7, p = .29). This indicated that the subjects in this study did not increase their knowledge of TB between the pre-test and post-test even though they were being educated in the clinic about TB using the standard educational approach. All but one of the subjects were in the control group and were being taught by a health educator who presented a standardized education program.

6. Do parents who received patient education from an audiotaped novella differ from parents who received only the standard educational approach in their post-test knowledge of TB?
Due to limited data in the experimental group it was premature to conduct this comparative analysis.

7. Do parents of children with TB infection who received patient education from an audiotaped novella differ from parents who received only the standard educational approach in their compliance with treatment?

8. Do parents of children with TB infection who received patient education from an audiotaped novella differ from parents who received only the standard educational approach in their compliance with medication?

Due to the limited number of subjects in the experimental group who completed testing after using the audiotaped novella (n = 1), and the limited data for comparative analysis the last two research questions were not tested.

Descriptive Statistics of Health Beliefs, Acculturation and Knowledge of TB Scores

Table 7 presents the mean, standard deviation, range of scores from the minimum to maximum and possible range of scores for the major variables of health beliefs, acculturation, and knowledge of TB scores for the total sample (N = 31).
Table 7

Descriptive Statistics of Health Beliefs, Acculturation, and Knowledge of TB Scores

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>S.D.</th>
<th>Range</th>
<th>Possible Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBHBQ Pre</td>
<td>72</td>
<td>16.3</td>
<td>31 to 108</td>
<td>19 to 114</td>
</tr>
<tr>
<td>TBHBQ Post</td>
<td>70</td>
<td>20.2</td>
<td>34 to 89</td>
<td>19 to 114</td>
</tr>
<tr>
<td>AOS</td>
<td>2.2</td>
<td>.62</td>
<td>1.2 to 3.5</td>
<td>1.0 to 5.0</td>
</tr>
<tr>
<td>MOS</td>
<td>4.2</td>
<td>.32</td>
<td>3.7 to 4.8</td>
<td>1.0 to 5.0</td>
</tr>
<tr>
<td>Acculturation</td>
<td>-2.0</td>
<td>.68</td>
<td>-3.0 to -.23</td>
<td>-.4.0 to 4.0</td>
</tr>
<tr>
<td>Knowledge Pre</td>
<td>5.1</td>
<td>2.8</td>
<td>1 to 10</td>
<td>0 to 10</td>
</tr>
<tr>
<td>Knowledge post</td>
<td>6.6</td>
<td>1.7</td>
<td>3 to 10</td>
<td>0 to 10</td>
</tr>
</tbody>
</table>

Tuberculosis Health Belief Questionnaire for Parents

The TBHBQ used a 6-point Likert scale for respondents to report the degree to which they strongly agreed or disagreed with the health belief statement presented. The responses were scored in such a way that positively worded statements and disagreement with negatively worded statements were assigned a higher score. The possible total range of scores was 19 to 114 with a mid-point of 66.5. The mean of the pretest TBHBQ was 72 with a range from 31 to 108. The mean of the post-test TBHBQ was 70 with a range from 34 to 89.

ARMSA-II

The total acculturation scale score was generated by subtracting the MOS mean from the AOS mean to obtain a linear acculturation score that represented an individual’s
score along a continuum from very Mexican oriented to very Anglo oriented. A highly acculturated individual would have a high positive score and a high Anglo orientation. A negative score indicated very low acculturation and a high Mexican orientation. The possible range was from −4.0 to +4.0 with a mid-point of 0. The mean for the subjects in this study was −2.0 with a SD of .68.

**Additional Analyses**

A Pearson correlation was computed to examine the relationship between length of time in the United States and acculturation. The positive correlation between length of time in the U.S.A. and acculturation \((r = .55)\) was moderately strong and statistically significant. Thirty percent of the variance in acculturation was explained by length of time in the United States (see Table 8).

Subjects’ responses to demographic questions concerning their knowledge of their child having had a previous BCG or PPD were explored in relation to compliance variables. Chi-square analyses revealed no significant associations between any of these variables.
Table 8

Correlation Between Time in USA and Level of Acculturation

<table>
<thead>
<tr>
<th></th>
<th>AOS</th>
<th>MOS</th>
<th>Acculturation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time in USA</td>
<td>.38</td>
<td>-.42</td>
<td>.55 *</td>
</tr>
</tbody>
</table>

* p = .015

Summary

Due to the limited number of subjects obtained, the research data and analyses are presented as preliminary findings. The preliminary analyses revealed a statistically significant relationship between acculturation and pre-test knowledge scores. No statistically significant difference was found between pre-test and post-test knowledge of TB scores. A compliance with treatment rate of 68% was found in this study, and only 19% of the subjects demonstrated compliance with medication treatment. The importance of these findings are discussed in Chapter Five.
CHAPTER FIVE
Discussion, Limitations, Recommendations and Conclusions

Introduction

This chapter presents discussion of the findings of the data analyses. The limitations of this preliminary analysis, conclusions, and recommendations for future practice, education, and research are presented. Care must be taken anytime data is being analyzed by a researcher who is not bi-cultural or bi-lingual. Marín and Marín (1991) discussed the fact “that care needs to be taken when analyzing and interpreting Hispanic data because of concerns that Hispanics may often provide inaccurate and socially desirable responses, may produce large proportions of missing data, may prefer extreme and acquiescent responses, and may show low self-disclosure to strangers” (p. 101). While the extent of many of these problems has not been well documented in the literature, many of these issues surfaced in the current research study.

Discussion

Health Beliefs

Health beliefs as defined in this study, were the parent’s perceptions about susceptibility to a disease, the seriousness of the illness, and the risks and benefits of treatment of TB as it was applied to the health of their children. These beliefs were measured by the Tuberculosis Health Belief Questionnaire for Parents (TBHBQ) before starting therapy and at the one-month visit. Preliminary analysis of the data provided
support for the belief that one-month was not long enough to see a change in health beliefs as scores did not change significantly.

One issue that has been raised in the literature but was not adequately addressed in this study due to low sample size was the effect of culture and acculturation on health beliefs. “All cultures and ethnic groups have a system of health beliefs, a way of explaining how illness occurs, and how it can be cured or treated and who should be involved in doing this” (Chachkes, & Christ, 1996, p.16). Acculturation was only weakly ($r = .25$) related to pre-test health belief scores. A stronger Anglo orientation was more related to health beliefs ($r = .40$) than was a Mexican orientation ($r = .29$). However, none of these correlations were statistically significant. Whether or not acculturation is predictive of health beliefs scores in larger samples needs to be further explored.

Discussion of the meaning of the preliminary analysis is provided with the understanding that there is limited data. How a parent’s health beliefs affected compliance with treatment has not been established. However, the high TBHBQ mean scores of the subjects in this study both pre- and post-test indicated that the subjects felt strongly about TB. Responses to questions indicated that parents felt that there was a stigma and fear associated with the diagnosis of TB, and that a diagnosis of TB in themselves or their child would endanger their marriage and family relationships. This diagnosis would create barriers to care and it would be difficult to treat. Therefore, the subjects felt that their children were susceptible to TB and it was a serious illness. The subjects also felt that cues to action like TV or radio ads would activate them to get their
child tested for TB. Giving their child TB medications would decrease their anxiety about TB.

There was no significant relationship found between health beliefs and knowledge of TB. The data indicated that parents are coming to the clinic with many preconceived negative ideas and opinions about TB. One explanation may be that the fear and stigma that they associate with a diagnosis of this disease may be preventing them from hearing what the provider is teaching them about the treatment for this disease. For many parents telling them that their child has TB was like telling them their child was going to die from a horrible chronic illness. This belief may interfere with effective learning and may be one of the reasons that parents did not absorb the information about TB that is being presented at the office visit, and may explain the finding that no significant learning occurred between pre- and post-testing of TB knowledge.

The implication for clinical practice is that health care providers need to understand that for Mexican-American patients this diagnosis is full of meaning. Education about the disease may need to occur at each visit, and the first few visits may need to be scheduled in a week or less to allow the parent to absorb the diagnosis and rally support from family and friends. Education about the disease and treatment may need to begin with a discussion about the health beliefs of the parent so that fears, misinformation, and barriers to treatment can be identified and discussed. “A two-way conversation is much more effective at changing health attitudes and behaviors than a lecture” (London, 1999, p. 88).
Acculturation

Acculturation is a complex phenomenon addressing inter-cultural interactions through which a person does or does not change any or all of the six areas of psychological functioning: language use, cognitive style, personality identity, attitudes, stress, customs of a majority culture, and the degree to which the person retains norms held by their culture of origin. Acculturation was measured by total scores on the Acculturation Rating Scale for Mexican-Americans II (Cuéllar, Arnold, & Maldonado, 1995; Mendoza, 1984). Preliminary analysis of the data revealed that in this population parents overall had low acculturation scores and maintained a high Mexican orientation. Scores for Mexican orientation were all in the moderately high range, whereas, Anglo orientation scores were all low to moderately low. Rueschenberg and Buriel (1989) noted that Mexican-American families adapt to U. S. social systems while still retaining many of their original cultural values. Legal residents freely move across the border to visit friends and family. Spanish language television, books, and movies are easily accessible. Even education in the school system here in the U. S. is conducted in Spanish.

Length of stay in the U. S. was significantly positively associated with higher acculturation scores. The fact that exposure to another culture over time increases acculturation has been well documented in the literature (Marín & Marín, 1991; Padilla, 1980; Rueschenberg & Buriel, 1989).

The fact that Mexican-American patients who came to the clinic for treatment of TB maintained a high Mexican orientation is clinically significant. It means that, in addition to having a translator in the clinic, health care providers need to have a good...
understanding of this culture. Providing culturally sensitive care might increase the number of patients who are compliant with treatment. While the limited data prevented this analysis, research needs to continue in this area.

A higher total acculturation score was also significantly associated with higher knowledge of TB indicating that those parents who had a higher Anglo orientation were more likely to know more about TB disease and its treatment. Further research is suggested to examine the relationship between years of education, acculturation, and knowledge of TB. It would also be useful to examine acculturation and health beliefs, knowledge of TB, and compliance with treatment from a family system perspective.

Knowledge of TB

Knowledge of TB disease and treatment was a parent’s understanding of the disease process and its treatment as measured by pre- and post-test scores on the Knowledge of TB Questionnaire. The data revealed that in general parents did not know the name of the medication used to treat TB infection, how many times a day it was to be taken, or for how long. The parents did not know what to do if they forgot to give the medication. The data also revealed that parents did not know what a PPD was or if their child should ever have another one, and did not understand the difference between TB infection and being contagious.

There was no significant knowledge gain between the pre- and post-test scores overall. On a few questions, there was improvement in knowledge. For instance, 26% of the parents knew what TB was on the pre-test and 68% knew on the post-test. It was
interesting to note that the subjects did not learn even though the education given was somewhat dynamic, since anecdotal evidence revealed that the subjects who took the pre-test before the education asked more questions of the health educator. The health educator then changed the standard educational approach provided based on the questions being asked.

**Compliance With TB Treatment**

Compliance with treatment in this study was measured by whether or not the parent returned to the clinic with the child for the one-month clinic visit. Partial compliance was acknowledged for those parents who returned late after receiving a prompt such as a telephone call or a letter. The data revealed an overall compliance rate of 68% and a no show or attrition rate of 32%. This rate of compliance is slightly lower than the 75% of patients who keep scheduled appointments in community clinics.

Knowledge of the seriousness and susceptibility of the illness, in this case TB, increases the likelihood that the parent will overcome the barriers and bring their child in for treatment (Iannotti & Bush, 1993). Low knowledge of TB may have contributed to the low return to clinic rate. However, confirmation of this hypothesis awaits further data collection from a larger sample.

Problems with the recruitment of patients into this study identified additional areas where problems with treatment compliance occurred. The parents in this study brought their children to the clinic for a well child visit. The PPD was placed when the vaccinations were given. Rarely was an explanation given to the parents about why a PPD was being placed other than to state that it was to see if the child had TB.
Compliance with medications was the degree to which a parent followed directions for giving daily INH medication. The percentage of compliance was calculated by a pill count. In a review of two decades of research that examined compliance in the pediatric and adolescent population, Dunbar-Jacob, Dunning, and Dwyer (1993) found that 10.3% of the studies used a pill count to measure compliance with medications. They found that a substantial number of the studies did not report compliance rates. They reported that the compliance rates reported in the studies conducted in the 1970's ranged from 25% to 58% with a median of approximately 50%. During the 1980's the ranges were from 50% to 83% with a median of 55% and 65%. Research conducted in the 1990's reported similar ranges with a median or 54% to 62%. This would indicate that the median level of compliance remains around 50%, and that the recommendations to improve compliance proposed by these studies either have not been adopted into clinical practice, or if adopted, have not been effective.

The current study revealed a compliance with medication rate of only 19%. Because of the public health risks involved this represents an unacceptably low compliance and high rate of treatment failure. The clinical implications are critical because children who are not treated or are only partially treated run a high risk of later activation of their TB. Partially treated TB may be drug resistant because of the high rate of non-compliance and the implications that the child may have therapy re-started several times in an attempt by the provider to have the child complete treatment. The current study relied on pill count to determine medication compliance, however, it was not possible to really know how many children correctly took their medications. Most parents
in the current study did not bring back the pill bottle to the clinic at the one month visit, and, since medication taking was not observed by the researcher, an empty pill bottle was accepted as evidence that the medication had been given to the child as prescribed. Children who were given a 30 day supply of pills and then missed their clinic appointment would be non-compliant with medications since the supply of pills would have been exhausted.

Providing the child’s medications to the parent could overcome one of the barriers to compliance with medications that is cited most frequently in the literature. These barriers include medications not being covered on the insurance, not being able to get to a pharmacy, and wrong medication or amount dispensed.

Providing the medications means that money needs to be allocated by the State or Federal Government, and a commitment needs to be made to treat every infected individual. This recommendation is an appropriate one. Currently in California the resources are mostly being directed to the 0.1% of people with active disease. This is the tip of the iceberg and represents tertiary prevention and treatment. Secondary prevention of the 3.4 million people with TB infection should be the focus of health care dollars with primary prevention of this problem as the ultimate goal.

The Child Health Belief Model

The CHBM was an appropriate theoretical framework for this study. This model was developed specifically to examine compliance with medication use in children, and takes a developmental approach that includes the caretaker of the child, and the
importance of cognitive processes as critical to compliance. The preliminary analysis of
the data confirmed the importance of cognitive processes, such as remembering to bring
medications to the appointment. The data also supported the model’s recognition of
acculturation level, medicine knowledge and knowledge of treatment as critical
modifying factors to predict successful compliance with treatment and medications.

The high health belief scores indicated a perception of TB as a serious illness.
According to the CHBM this should have prompted a high degree of compliance with
treatment and medications. However, in this study, compliance was low. One possible
explanation for this contrary finding is that the low knowledge of TB scores contributed
to low motivation and created a barrier to parents’ readiness to comply with treatment.
Further testing of the model to explore relationships among variables is needed.

Additional Analyses

The study population was not acculturated into American culture and, in fact, was
found to be highly Mexican in orientation. In Mexico, children are vaccinated against TB
at birth with a BCG. The majority of parents (58%) indicated on the questionnaires that
they did not know if their child had had a BCG. The parent whose child was born in
Mexico was more likely to know what BCG was and if their child had had a PPD (62% of
the children were born in Mexico). Parents (62%) also did not know what a PPD was or
why their children were receiving one. This is clinically significant because the parents
had children who appeared perfectly healthy, who were in the clinic to receive a “well
child” physical and to be vaccinated for school. If the parent was not educated at that point
about what a PPD is and why it is placed, the parent did not understand why it was
important to return in two days to have it read. If the parent did return to have it read, they had to be educated of the importance of getting the chest x-ray if it was needed. Without this critical education at the very beginning it was not likely that the parents would be compliant.

Limitations of the Study

The main limitation to this study was the small sample size, particularly the limited number of subjects in the experimental group. The small sample size did not allow for statistical comparison of the two groups to explore whether or not the groups differed on study variables.

One of the explanations for the difficulty acquiring subject and data may be related to “Simpatía”. This is a cultural practice of Hispanics that has to do with the need for behaviors that promote smooth and pleasant social relationships. In addition, a person with Simpatía (“Simpático”) behaves with dignity and respect toward others, especially authority figures (Marin & Marin, 1991). Simpatía would help explain the ease of obtaining consents from the Mexican-American parents to participate in the current research, but the lack of completed data materials found in the envelope. Another explanation has to do with the role of women in Mexican culture. “Much has been written about Hispanic men and the assumed cultural expectation for being strong, in control, and providers for their families” (Marin & Marín, 1991, p. 16). The women, who were approached to participate in this study, may have been reluctant to answer questions and participate without first getting approval from their husbands. Asking mothers to
participate when they are in the clinic only with their children may have caused a conflict between the cultural values of Simpatía and respect for their husbands.

Homogeneity of the groups was difficult to establish. When studying human subjects there are many factors that can not be controlled and may influence research findings. In this study, these include the length of time each family has been in the U.S., family support including influences of grandparents who may not be acculturated, and other relatives living in the home. Legal immigration status could also have affected willingness to seek and follow through with treatment. Marín and Marín (1991) stated that one factor that may affect the quality of the data collected among Mexican-Americans is the level of self-disclosure these subjects are willing to give a stranger. This may be particularly true if the Mexican-American is not a legal resident and is concerned about the consequences of any answers. These issues were not being examined in this study and their influence is unknown. Other factors that may have influenced the results of this study included number of children in the family, whether the parents were biologic parents or not, and employment status of family members.

There were also limitations related to the clinic setting. There were differences in the ways the various clinics provided care for patients. For example, translators may have been professional staff in one clinic and family members in another. These differences occurred within the same clinic with different healthcare providers and this was not controlled by this researcher. There were differences in the way children with TB infection were handled in the different clinics. In the health department clinics, the patients returned each month for a brief visit with a nurse practitioner and to pick up their
medications. In the community clinics these visits varied tremendously, for example, one clinic only had parents return to the pharmacy to pick up medications after the first visit. Return visits to the clinic that required an appointment with a health care provider, rather than simply stopping by to refill the prescription, were viewed as an additional barrier to compliance. In another community clinic the patients were not even given an appointment to start on medications until after they had received a chest x-ray, which involved a trip to another facility. This usually meant a delay of several weeks or months before treatment was started and often these patients were lost to follow-up before they had even started therapy. These variations between clinics were viewed as normal routine variances. The goal of the study was to conduct research in the real world environment with the assumption it would contribute to the generalizability of the findings.

Some subjects took a booklet of questionnaires, signed a consent, but completed only some or none of the questionnaires. Therefore, many of the questionnaires had missing data and were unusable for data analysis.

**Recommendations for Nursing Practice**

The preliminary analysis of the data has provided many suggestions for change in clinical practice. In 1998 there were 3,855 active cases of TB in California (0.1%), and 3.4 million persons infected with TB (State of California, Department of TB Control Branch, 2000). These 3.4 million people represent a potential future TB epidemic that will have a significant impact on public health, and create a drain on health care
resources. Identification, follow-up, and treatment of these people today is critical if a future TB epidemic is to be prevented.

The current research findings have identified that compliance with treatment and medications is a serious problem. Currently there are no standards or protocols for treatment of people, especially children infected with Tuberculosis. The findings of this research study suggested that current methods of identifying, tracking, and treating persons infected with Tuberculosis are not working effectively or efficiently. The findings also suggested that the current standard educational approach provided in the clinics, as a method to teach parents about Tuberculosis, is probably not effective. The following is a list of recommendations for change.

- A standard procedure for identification, management and follow-up of all children infected with Tuberculosis should be implemented. This should include specific ages for children when a PPD is placed, and according to the American Academy of Pediatrics (1997), in high-risk areas this should be annually.

- PPD placement should be tracked and follow-up implemented when parents do not return with their children for a PPD reading. Tracking can be accomplished by using a simple paper file or a computerized file. Telephone follow-up, when possible, or mailed post card should be initiated as soon as possible after a missed appointment.

- Novel ways to educate parents about TB infection and treatment, such as the proposed audiotaped novella, should be implemented. All patients should be informed about Tuberculosis at the time the PPD is placed and it should be emphasized that the PPD is not a vaccine.
• Education provided should be culturally sensitive and in the parent’s primary language. Low literacy levels and poor acculturation should be taken into account by providing materials that do not have to be read. Short-term evaluation of learning should be documented to demonstrate that the information was transferred. Methods to evaluate long-term learning should be implemented, and health outcomes such as compliance with treatment and medication should be documented each month.

• Return appointments should be made at the time of the positive PPD reading so that parents who do not return with their children after getting a chest x-ray are identified and follow-up is initiated in a timely fashion.

• The child and parent should be treated as a dyad with both making a commitment to treatment when the child is old enough to make the commitment. A child as young as three or four may be able to understand information about the treatment being recommended. This means that explanations about medications including, name, form, and daily dosage should be explained to the parents and the child. The length of time for treatment and any lab tests that will be needed should be explained in detail.

• Education about TB, medications, side effects, and what to do if medication is forgotten or the child is sick should be provided in a culturally sensitive manner in the primary language of the parents and reinforced at each visit.

• Incentives such as calendars and stickers should be provided, when available.
• The parent and, if possible, the child should sign a treatment contract that outlines the above information. The parent and child should be given a copy and one copy should be placed in the chart.

• Monthly follow-up by a primary health care provider throughout the course of treatment is recommended to monitor compliance.

**Recommendations for Nursing Education**

Tuberculosis is a serious disease that can lead to death. The preliminary findings of this study suggested that changes need to be made in the way parents are educated about this disease. Preliminary findings also suggest that changes should be made in nursing practice. Nurse educators are responsible for assisting nursing students to take this new knowledge and apply it to their future clinical practice. Current emphasis in nursing education, or culturally appropriate are needs to include the importance of exploring acculturation and health beliefs of minorities such as Mexican-Americans. Nursing students must be taught to provide, or arrange for provision of, culturally appropriate educational materials in the patients primary language.

With world wide immigration and migration, the need for transcultural nursing knowledge has become increasingly imperative. The nurse interacts with immigrants, refugees, and other peoples from almost every point of the globe who hold world views and health values very different from her or his own. No longer can advanced practice nurses either rely on learned medical ethnocentrism or continue practicing cultural imposition and give high quality, effective health care (Cooper, 1996, p. 1).
Recommendations for Nursing Research

Conducting outcome based research in a clinical setting is a challenging undertaking. Conducting research with people from other cultures can be difficult and time consuming. Nurse researchers today are highly educated, generally white, and upper middle class. Many of our patients may be poorly educated, from other cultures, and socioeconomically deprived. Nursing practice should be research based and reflect the needs of the population served. Research tools in other languages need to be standardized. Problems with conducting research with immigrant patient populations need to documented.

Questions raised by the current research that needs to be explored include the influences of the parent’s health beliefs on the child, how and when health beliefs are established in children, and how a child’s health beliefs affect compliance with medications and treatment. These issues have been raised in the literature, but have not been adequately addressed in any research studies (Dunbar-Jacob, Dunning, & Dwyer, 1993; Iannotti & Bush, 1993).

Specific recommendations for research based on the findings of this study include:

- Expand the study to include more subjects, incorporating additional areas of the United States where Mexican-American’s live.
- Expand the current study to explore compliance in other populations and cultures besides Mexican-American.
• Examine the meaning of health (individual, child, and family) for Mexican-American parents in a qualitative manner. A study of this nature might identify additional reasons for non-compliance with medications and treatment.

• Test additional aspects of the Child Health Belief Model such as different enabling factors like frequency of visits and autonomy.

• Develop and test additional educational methods as a way to improve compliance with treatment and medications.

• Expand and test the audiotaped novella format for education of patients with other chronic illnesses.

Conclusions

TB infection in a child is a sentinel event within a community. Not only does it indicate the presence of an infectious case of TB disease within a community, but it is a problem which has an impact on the daily lives of families. Since children with TB infection are asymptomatic, understanding the importance of treatment principles is critical to the child’s health as well as the family’s. In addition, understanding how a parent’s health beliefs, acculturation, and knowledge of TB affect compliance is needed to determine the best ways to approach these patients in the clinical setting. Failure to complete treatment regimens for TB in children can have devastating effects: disseminated disease, drug-resistant TB, long term chronic illness, and even death (Cummings, Mohle-Boetani, Royce & Chin, 1998; McLeod, 1998).

In this study, the effectiveness of a culturally appropriate, Spanish-language audiotaped novella upon parental knowledge of TB as well as compliance with treatment
regimens by Mexican-American parents of a child with TB infection was proposed. The limited number of subjects provided for a preliminary analysis of the data where the variables were explored in a descriptive manner. Problems with subject recruitment and retention, data collection, and research design, were identified. Appropriate changes were made to the data collection instruments, and subject recruitment is ongoing. When completed, the results of the final study will provide recommendations for change in the way Mexican-American parents of children with TB infection are treated in the primary care setting. The results may also lead to changes in policy regarding funding for TB control, and management of TB infection. The final analysis may lead to the development of additional culturally and linguistically appropriate novellas as an educational approach for Mexican-American parents of children with other chronic disease entities within the primary care setting.
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Appendix A

Interpretation of Positive PPD Skin Test Reactions in Children

Positive Mantoux skin tests with PPD should be read at 48 to 72 hours after placement. Due to immunodeficient conditions such as HIV infection upon an individual's ability to respond to the skin test, the following definitions of a positive Mantoux were developed:

Induration $\geq 5$ mm
- Children in close contact with known or suspected infectious cases of TB
- Children suspected to have TB
- Children receiving immunosuppressive therapy or with immunosuppressive conditions, including HIV infection

Induration $\geq 10$ mm
- Children at increased risk of disseminated disease, including children $< 4$ years of age, or with other medical risk factors
- Children with increased environmental exposure to TB, either due to birth in or to Parents born in high-prevalence regions of the world, or frequently exposed to adults who are at high risk, or travel and exposure to high prevalence regions of the world

Induration $\geq 15$ mm
- Children $\geq 4$ years of age without any risk factors

Appendix B

Classification of TB

Class 0: No tuberculosis exposure, not infected.
No history of exposure and negative PPD.

Class 1: Tuberculosis exposure, no evidence of disease.
History of exposure, negative PPD.
Treatment: Depends on how recent the exposure is and degree of exposure.
Close exposure within 3 months requires follow-up.
Preventative therapy considered.

Class 2: Tuberculosis infection, no disease.
Positive PPD, negative chest x-ray, and no clinical signs of disease.
Treatment: Children should be chemoprophylaxed with minimum of 6
months of Isoniazid (INH) or Rifampin therapy based on susceptibility

Class 3: Tuberculosis: clinically active.
Clinically active disease, diagnostic procedures complete. There must be
either clinical and/or radiologic evidence of disease. Diagnostic
procedures include either bacteriologic isolation of M. Tb or positive
PPD. Classification further defined by location of disease. Patients
remain Class 3 until treatment for current episode complete.
Treatment: Children are placed on three drug regimens (INH, Rifampin, and
pyrazinamide) for 6 to 9 months based on susceptibility

Class 4: Tuberculosis, not clinically active.
History of previous episode(s) of TB or abnormal stable radiographic findings
TO: Renée McLeod, MSN, RN, CS, CPNP  
FROM: Lois Ryan Allen, PhD, RN  
Chairperson, Nursing Research Committee (NRC)  
DATE: October 19, 1999  
RE: Protection of Rights of Human Subjects Review

This letter serves to inform you that your research, "The effects of health beliefs, acculturation, and a culturally appropriate teaching intervention on parents' knowledge of and compliance with Tuberculosis treatment in a Mexican-American population", has been reviewed and approved by the NRC for the protection of rights of human subjects. You may begin data collection as proposed in your application to the NRC.

If, for any reason, the approved research data collection method changes significantly, you are required to inform the NRC, in writing, of such changes. If you have any questions please call Dr. Lois Ryan Allen at [redacted].

The members of the NRC extend their best wishes for your successful completion of this research project.

Lois Ryan Allen, PhD, RN

Appendix C

Widener University
One University Place • Chester, PA 19013-5792
3700 University Way • P.O. Box 6992 • Harrisburg, PA 17106-6992

NURSING RESEARCH COMMITTEE

Cheser, Pennsylvania
(610) 499-4200
Fax (610) 499-4216

Harrisburg, Pennsylvania
(717) 541-1952
Fax (717) 541-1977
Appendix D
TB RESEARCH STUDY
CONSENT FORM

You are invited to participate in a research study that will look at different ways people learn about the disease Tuberculosis. You will also help nurses learn more about your health beliefs and your culture. This study will tell what method helps people learn about the disease Tuberculosis.

If you decide to participate, you will be asked to answer some questions to be completed in two visits. You will answer the first questions today. It might take you as long as 30 minutes to answer all of the questions in the booklet. When you finish answering the questions you will seal the booklet of questions in an envelope and return them to the data collector. When you come to the clinic for your child’s recheck visit in one month, you need to bring your child’s pills, and you will be asked to answer another booklet of questions. These questions might also take you as long as 30 minutes to answer. You will again be asked to seal the booklet of questions in an envelope and return them to the data collector. You will then be able to ask any questions you might still have about the disease Tuberculosis and how it is treated. There are no costs to you other than your normal clinic visit and the extra time it will take to answer the questions.

Any information that says who you are will be destroyed when the study is completed. None of the participant’s names will be used in reporting the results of the study. If you would like a copy of the summary results of this study when it is completed please let the data collector know today.

Your decision to participate in this study is entirely voluntary. You may decide to stop participating at any time without any bad consequences. If you decide not to participate in this study, you will still be able to continue to get care for your child without any changes or problems.

If you have any questions about the research study, please contact the researcher: Renee P. McLeod MSN, RN, CPNP.

YOU ARE MAKING A DECISION WHETHER OR NOT TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE SAYS THAT YOU HAVE DECIDED TO PARTICIPATE AFTER HAVING READ THE ABOVE INFORMATION.

Date __________________________ Name of Person Completing the Questions (Please Print)

Signature of Data Collector __________________________ Signature of Person Answering the Questions

Name of Child __________________________ DOB: ______/_____/_____
(please print) (month/day/year)

MR# __________________________ Subject # __________________________

Wants summary results of the study? ______ Yes ______ NO
Appendix E

ESTUDIO DE INVESTIGACIÓN DE LA TUBERCULOSIS
FORMULARIO DE CONSENTIMIENTO

Lo invitamos a ayudarnos con este estudio de investigación que analizará las maneras diferentes a través de que la gente aprende sobre la enfermedad llamada Tuberculosis. Al ayudarnos, usted nos permitirá saber más sobre las creencias que tiene la gente sobre esta enfermedad así como sobre su cultura. Este estudio nos dirá cuánto más las personas pueden aprender sobre la Tuberculosis desde métodos diferentes de enseñar.

Si usted decide participar, le pediremos que responda a algunas preguntas lo cual usted podrá hacer en dos visitas. Las primeras preguntas las puede contestar hoy. Es posible que se tarde 30 minutos para responder a todas las preguntas en la libreta. Cuando termine contestando las preguntas cerrará la libreta de preguntas en un sobre y las devolverá al cajador de datos. Cuando usted venga a la clínica para chequear a su niño dentro de un año, necesita traer la medicina de su niño y le haremos otras preguntas. A usted se le preguntará otra vez a cerrar la libreta de preguntas en un sobre y devolverlas al cajador de datos. Entonces usted también va a tener la oportunidad de preguntar más en persona acerca de la enfermedad tuberculosis y cómo curarla. Usted no tiene que pagar nada extra de lo que normalmente paga en sus visitas a la clínica por el tiempo adicional que le toma en responder a las preguntas.

Cualquier parte de este cuestionario en donde aparezca su nombre se destruirá una vez que se lleve a cabo el estudio. Ninguno de los nombres de los participantes se usará para informar sobre los resultados del estudio. Si quisiera una copia de los resultados, cuando esté terminada la investigación, por favor avise el cajador de datos hoy mismo.

Su decisión de participar en este estudio es enteramente voluntaria. Usted podrá dejar de participar en cualquier momento que usted desee sin ninguna mala consecuencia. A la clínica no le importará dónde recibe atención médica su hijo/hija el día de hoy si usted nos ayuda con este estudio. Si usted decide no participar en este estudio, aún puede continuar obteniendo atención médica para sus hijos sin ningún cambio y sin problemas.

Si tiene alguna pregunta sobre este estudio de investigación, por favor póngase en contacto conmigo: Renee P. McLeod MSN, RN, CPNP

USTED DEBE TOMAR SU DECISIÓN SOBRE SI AYUDARNOS CON ESTE ESTUDIO DE INVESTIGACIÓN O NO. SU FIRMA DIRÁ QUE SE HA DECIDIDO A AYUDARNOS DESPUÉS DE HABER LEÍDO LA INFORMACIÓN DE LA PARTE SUPERIOR.

Fecha ____________________________ Nombre de la Persona que Responderá a las Preguntas (Por favor use letra de molde)

Firma del Investigador ____________________________ Firma de la Persona que Responderá a las Preguntas ____________________________

Name of Child ____________________________ DOB: __________ / __________ / __________ (month/day/year)

MR # ____________________________ Subject # ____________________________

¿Quiere un resumen de los resultados? ________ Sí ________ No

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Appendix F

TB RESEARCH STUDY
CONSENT FORM FOR AUDIOTAPE

You are invited to participate in a research study that will look at different ways people learn about the disease Tuberculosis. You will also help nurses learn more about your health beliefs and your culture. This study will tell what method helps people learn about the disease Tuberculosis.

If you decide to participate, you will be asked to answer some questions to be completed in two visits. You will answer the first questions today. It might take you as long as 30 minutes to answer all of the questions in the booklet. When you finish answering the questions you will seal the booklet of questions in an envelope and return them to the data collector. You will be given a 30 minute audiotaape to listen to over the next month. When you come to the clinic for your child’s recheck visit in one month, you need to bring your child’s pills, and you will be asked to answer another booklet of questions. These questions might also take you as long as 30 minutes to answer. You will again be asked to seal the booklet of questions in an envelope and return them to the data collector. You will then be able to ask any questions you might still have about the disease Tuberculosis and how it is treated. There are no costs to you other than your normal clinic visit and the extra time it will take to answer the questions.

Any information that says who you are will be destroyed when the study is completed. None of the participant’s names will be used in reporting the results of the study. If you would like a copy of the summary results of this study when it is completed please let the data collector know today.

Your decision to participate in this study is entirely voluntary. You may decide to stop participating at any time without any bad consequences. If you decide not to participate in this study, you will still be able to continue to get care for your child without any changes or problems.

If you have any questions about the research study, please contact the researcher: Renee P. McLeod MSN, RN, CPNP at

YOU ARE MAKING A DECISION WHETHER OR NOT TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE SAYS THAT YOU HAVE DECIDED TO PARTICIPATE AFTER HAVING READ THE ABOVE INFORMATION.

___________________________ __________________________
Date Name of Person Completing the Questions
(Please Print)

___________________________ __________________________
Signature of Data Collector Signature of Person Answering the Questions

___________________________ __________________________
Name of Child DOB: _______/_______/_____
(please print) (month/day/year)

___________________________ __________________________
MR# Subject #

Wants summary results of the study? ________ Yes ________ NO
Appendix G

ESTUDIO DE INVESTIGACIÓN DE LA TUBERCULOSIS

FORMULARIO DE CONSENTIMIENTO

(AUDIO)

Lo invitamos a participar con este estudio de investigación que analizará el uso de una cinta grabada como medio para aprender sobre la enfermedad llamada Tuberculosis. Al ayudarnos, usted nos permitirá saber más sobre las creencias que tiene la gente sobre esta enfermedad así como sobre su cultura. Este estudio nos dirá si al escuchar una cinta grabada las personas pueden aprender más sobre la Tuberculosis.

Si usted decide participar, le pediremos que responda a algunas preguntas lo cual usted podrá hacer en dos visitas. Las primeras preguntas las puede contestar hoy. Es posible que se tarde 30 minutos para responder a todas las preguntas en la libreta. Cuando termine contestando la libreta de preguntas ocurrirá la libreta de preguntas en un sobre y los devolveré al cobrador de datos. Va a recibir un cassette de 30 minutos, de lo cual puede escuchar durante el siguiente mes. Este cassette contará cualquier pregunta que puede tener acerca de la enfermedad tuberculosa. Cuando usted venga a la clínica para chequear a su niño dentro de un mes, necesitará traer la medicina de su niño y le harémos otras preguntas. Estas preguntas pueden durar posiblemente 30 minutos en contestar. A usted se le preguntará otra vez a cerrar la libreta de preguntas en un sobre y devolverlas al cobrador de datos. Entonces usted también va a tener la oportunidad de preguntar más en persona acerca de la enfermedad tuberculosa y como curará. Usted no tiene que pagar nada extra de lo que normalmente paga en sus visitas a la clínica por el tiempo adicional que le tome en responder a las preguntas.

Cualquier parte de este cuestionario en donde aparezca su nombre se destruirá una vez que se lleve a cabo el estudio. Ninguno de los nombres de los participantes se usará para informar sobre los resultados del estudio. Si quisiera una copia de los resultados, cuando esté terminada la investigación, por favor avise el cobrador de datos hoy mismo.

Su decisión de participar en este estudio es enteramente voluntaria. Usted podrá dejar de participar en cualquier momento que usted desee sin ninguna malas consecuencias. Si usted decide no participar en este estudio, aún puede continuar obteniendo atención médica para sus hijos sin ningún cambio y sin problemas.

Si tiene alguna pregunta sobre este estudio de investigación, por favor póngase en contacto conmigo: Renee P. McLeod MSN, RN, CPN

USTED ESTÁ TOMANDO UNA DECISIÓN SOBRE SI QUIEREN PARTICIPAR EN ESTE ESTUDIO DE INVESTIGACIÓN O NO. SU FIRMA DIRÁ QUE SE HA DECIDIDO A PARTICIPAR DESPUÉS DE HABER LEÍDO LA INFORMACIÓN DE LA PARTE SUPERIOR.

______________________________  _______________________________
Fecha                       Nombre de la Persona que Responderá a las Preguntas

(Por favor use letra de molde)

______________________________  _______________________________
Firma del Investigador          Firma de la Persona que Responderá a las Preguntas

______________________________
Name of Child____________________

DOB:_________________________/
(month/day/year)

MR #__________________________

Subject #_____________________

¿ Quiere un resumen de los resultados? ________Sí    ______________________No
Appendix H

Data Collection Information For Front of Questionnaire Envelopes

For investigator to complete:

Name of Person who MUST complete the Post Test: __________________________

Name of the Child: __________________________

Subject # ______________________ MR# ______________________

Site __________________________

MR#: __________________________

Tuberculosis Pill Count for the Period:

__________________________ to ______________________

(Date) (Date)

Did Parent:

1. return for one month visit? NO YES a) # of pills dispensed = _______

2. bring medication? NO YES b) # of pills should have taken = _______

3. give medication correctly? NO YES c) # of pills still in bottle = _______

4. Reminder postcard sent if parent missed visit? NO YES d) a – c = _______

Date parent made it to follow-up visit:

_____ / _____ / _____

e) d/b = % compliance = _______
Appendix I

Location: ___________________________ Record #: __________
Date: ______________________________

TB RESEARCH STUDY
DEMOGRAPHIC QUESTIONS

1. What is your child’s date of birth (month/day/year)? ______/_____/_______
2. What is your child’s sex? Male: _______ Female: __________
3. What is your date of birth (month/day/year) _______/_____/_______
4. What is your sex? Male: _______ Female: ______________
5. What is your marital status? Married_________ Single_________ Divorced_______
6. What is your religion? Catholic_______ Protestant______ Other_______
7. What language is spoken most at home? English_____ Spanish_____ Both equally____
8. What language does your child know? English_____ Spanish_____ Both equally____
9. Last grade you completed in school:
   ______ a. Elementary - 6
   ______ b. 7 - 8
   ______ c. 9 - 12
   ______ d. 1 - 2 years of college
   ______ e. 3 - 4 years of college
   ______ f. College graduate or higher
10. In what country did you go to school? Mexico_______ USA_______ Other_______
11. Circle the generation that best applies to you. (Circle only one)

1. First generation = You were born in Mexico or other country.

2. Second generation = You were born in USA; either parent born in Mexico or other country.

3. Third generation = You were born in USA, both parents born in USA and all grandparents born in Mexico or other country.

4. Fourth generation = You and your parents born in USA and at least one grandparent born in Mexico or other country with remainder born in the USA.

5. Fifth generation = You and your parents born in the USA and all grandparents born in the USA.

12. What year did you move to the United States?__________

13. Where was your child born? USA_______ Mexico_______ Other_______

14. How many times a year do you go to Mexico to visit friends or family?

   ______ Never
   ______ A Few Times a Year
   ______ Once a Month
   ______ 2 or 3 Times a Month
   ______ Once a Week or More

15. Has your child ever had a BCG? (Check one) Yes ____ No ____ Don’t Know ___

16. If yes, when? (month, year, if known) ________/_________

17. When was your child’s last PPD before today (month, year) ________/_________

   Don’t Know ________ Never had a PPD before today ________

18. What was the result of that PPD? (check one)

   Negative _____ Positive _____ Don’t Know ________
Appendix J

Fecha: _________________

PREGUNTAS DEMOGRAFICAS
DEL ESTUDIO DE INVESTIGACIÓN
SOBRE LA TUBERCULOSIS

1. ¿Cuál es la fecha de nacimiento de su hijo/hija (mes/día/año)? ___/___/____

2. Por favor díganos si tiene... Un Hijo: ______ ó Una Hija: ______

3. ¿En qué fecha nació usted (mes/día/año)? ______/______/_______

4. ¿Es usted... Hombre: ______ ó Mujer________?

5. ¿Es usted ... Soltero(a) ________ Casado(a)______
     Divorciado(a)__________ ?

6. ¿Cuál es su religión?   Catolicismo_____ Protestantismo_____ Otra _____

7. ¿Qué idioma se habla en casa?  Inglés____ Español___ Ambos por igual____

8. ¿Qué idioma habla su hijo/hija? Inglés____ Español___ Ambos por igual____

9. ¿Cuál fue el último grado que usted cursó en la escuela?:

____ a. Primaria - 6
_____ b. 7 - 8 (Secundaria)
_____ c. 9 - 12 (Preparatoria)
_____ d. 1 - 2 años de educación universitaria
_____ e. 3 - 4 años de educación universitaria
_____ f. Posgrado o superior

10. ¿En qué país asistió la escuela?

    México______ los Estados Unidos (EE.UU)._______ Otra______

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11. Encierre en un círculo la generación a la que **usted** corresponda (Indique sólo uno.)

1. Primera generación = Usted nació en México u otro país.

2. Segunda generación = Usted nació en los EE.UU., pero cualquiera de sus padres nació en México u otro país.

3. Tercera generación = Usted nació en los EE.UU., sus dos padres nacieron también en los EE.UU. y todos sus abuelos nacieron en México u otro país.

4. Cuarta generación = Usted y sus padres nacieron en los EE.UU. y por lo menos uno de sus abuelos nació en México u otro país, pero los demás nacieron en los EE.UU.

5. Quinta generación= Usted y sus padres nacieron en los EE.UU. y todos sus abuelos también nacieron en los EE.UU.

12. ¿En qué año llegó usted a los Estados Unidos? (mes/día/año)? _____/_____/______

13. ¿Dónde nació su hijo/hija? Estados Unidos____ México____ Otro:_____

14. ¿Cuántas veces en un año se va a México para visitar amigos o familia?

   _____ Nunca _____ Pocas veces _____ Una vez al mes
   _____ 2 o 3 veces al mes ______ Una vez a la semana o más

15. ¿Alguna vez le han puesto a su hijo la vacuna BCG? Sí____ No____ No sé____

16. Si su respuesta anterior fue sí, ¿en qué fecha lo vacunaron? (mes/día/año)?

17. ¿Cuándo le hicieron a su niño la última prueba PPD antes de hoy?

   (mes/año)? _____/_____ _____No sé
   Nunca antes le han puesto la prueba PPD______

18. ¿Cuál fue el resultado de esa prueba PPD? ____negativa ____positiva____No sé
Appendix K

TUBERCULOSIS HEALTH BELIEF QUESTIONNAIRE FOR PARENTS

I would like to learn more about your attitudes and behavior regarding Tuberculosis. There are no "right" or "wrong" answers. I need your honest response. Your answers will be kept strictly confidential. Please read and answer each item carefully. Circle the ONE best response.

1. In order to get a Tuberculosis skin test (PPD) I have to give up quite a bit.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Moderately Disagree</td>
<td>Strongly Agree</td>
<td>Moderately Agree</td>
<td>Slightly Agree</td>
<td>Slightly Agree</td>
<td>Moderately Agree</td>
<td>Strongly Agree</td>
</tr>
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<td>Slightly Agree</td>
<td>Agree</td>
<td>Agree</td>
<td>Agree</td>
<td>Agree</td>
<td>Agree</td>
</tr>
<tr>
<td>Slightly Agree</td>
<td>Agree</td>
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2. Taking preventative medications for Tuberculosis can be time consuming.

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3. I will recommend a friend get Tuberculosis skin tests for her children.

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4. It is embarrassing for me to give my child preventative medications for Tuberculosis.

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5. If a family lives in a neighborhood that has poor sanitation, a child is more at risk of catching Tuberculosis.

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6. Tuberculosis is a hopeless disease.

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7. I have a lot to gain by having a Tuberculosis skin test.

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8. The effort of getting a Tuberculosis skin test (PPD) interferes with my activities.

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9. My child’s physical health makes it more likely that he/she will contract Tuberculosis.

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10. My child’s chances of contracting Tuberculosis are great.

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11. The effort of giving my child medications for Tuberculosis interferes with my activities.

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12. When I think of Tuberculosis I feel nauseous.

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13. If my child got Tuberculosis he/she might die.

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14. If I were watching television, or listening to the radio, and a program about Tuberculosis came on, I would watch or listen to the whole program.

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15. My child has a lot to gain by taking medications for Tuberculosis.

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16. I would not be so anxious about Tuberculosis if my child took preventative medications for Tuberculosis.

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17. I intend to get a medical check-up within the next 6 months.

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18. Tuberculosis would endanger my marriage or significant relationship.

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19. I would read a brochure on Tuberculosis.

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Appendix L

CUESTIONARIO DE CREENCIAS E IDEAS SOBRE LA TUBERCULOSIS

Nos gustaría saber más sobre sus actitudes y conducta respecto a la Tuberculosis. No hay respuestas "correctas" o "equivocadas". Necesitamos que ustedes respondan sinceramente, y les aseguramos que sus respuestas serán estrictamente confidenciales. Por favor lean y respondan cuidadosamente a cada uno de los siguientes puntos.

1. **Hacerse una prueba de piel para la Tuberculosis (PPD) yo tengo que sacrificar bastante.**

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2. **Tomar medicamentos para prevenir la Tuberculosis puede tomar un mucho tiempo.**

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3. **Le recomendaré a un amigo que les hagan a sus hijos la prueba de la Tuberculosis.**

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4. **Es vergonzoso para mí, tener que dar a mi hijo/hija medicamentos para prevenir la Tuberculosis.**

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5. **Si una familia vive en una zona poco sanitaria, su hijo/hija corre más riesgo de contagiarse de Tuberculosis.**

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6. **La Tuberculosis es una enfermedad desesperanzadora.**

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7. **Tengo mucho que ganar al hacerme una prueba de piel para la Tuberculosis.**

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8. **El esfuerzo de hacerme una prueba de Tuberculosis (PPD) interfere con mis actividades.**

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9. **La salud física de mi hijo/hija contribuye a que contraiga la Tuberculosis.**

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10. **Mi hijo/hija tiene muchas probabilidades de contagiar a de Tuberculosis.**

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11. **El esfuerzo de dar a mi hijo/hija medicinas para la tuberculosis interfere con mis actividades.**

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12. **Cuando piensas en la tuberculosis me sientes asustado.**

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13. **Si mi hijo/hija contrae Tuberculosis podría morir.**

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14. **Si yo estuviera viendo la televisión o escuchando la radio, y pasaran un programa sobre la Tuberculosis, lo vería o escucharía del principio al final.**

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15. **Mi hijo/hija tiene mucho que ganar al tomar medicinas para la Tuberculosis.**

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16. No estaría tan ansioso/a sobre la Tuberculosis si mi hijo/a tomará medicinas preventivas para la Tuberculosis.

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17. Tengo la intención de tener un examen médico para mi hijo/a durante los próximos 6 meses.

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18. La Tuberculosis pondría en peligro mi matrimonio o la relación importante que tengo.

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19. Yo sí leería un folleto sobre la Tuberculosis.

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Appendix M

**Acculturation Rating Scale-II (ARSMA-II)**

Circle a number between 1 – 5 that best applies

1. **I speak Spanish**
   - 1 Not at all
   - 2 Very little or Not Very Often
   - 3 Moderately
   - 4 Much or Very Often
   - 5 Extremely Often or Almost Always

2. **I speak English**
   - 1 Not at all
   - 2 Very little or Not Very Often
   - 3 Moderately
   - 4 Much or Very Often
   - 5 Extremely Often or Almost Always

3. **I enjoy speaking Spanish**
   - 1 Not at all
   - 2 Very little or Not Very Often
   - 3 Moderately
   - 4 Much or Very Often
   - 5 Extremely Often or Almost Always

4. **I associate with Anglos**
   - 1 Not at all
   - 2 Very little or Not Very Often
   - 3 Moderately
   - 4 Much or Very Often
   - 5 Extremely Often or Almost Always

5. **I associate with Mexicans and/or Mexican-Americans**
   - 1 Not at all
   - 2 Very little or Not Very Often
   - 3 Moderately
   - 4 Much or Very Often
   - 5 Extremely Often or Almost Always

6. **I enjoy listening to Spanish language music**
   - 1 Not at all
   - 2 Very little or Not Very Often
   - 3 Moderately
   - 4 Much or Very Often
   - 5 Extremely Often or Almost Always
7. I enjoy listening to English language music

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8. I enjoy Spanish language TV

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9. I enjoy English language TV

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10. I enjoy English language movies

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11. I enjoy Spanish language movies

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12. I enjoy reading books in Spanish

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13. I enjoy reading books in English

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14. I write letters in Spanish

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15. I write letters in English

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16. My thinking is done in the English language

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18. My contact with Mexico has been

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19. My contact with the USA has been

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20. My father identifies or identified himself as “Mexicano”

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21. My mother identifies or identified herself as “Mexicana”

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22. My friends, while I was growing up, were of Mexican origin

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23. My friends, while I was growing up, were of Anglo origin

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24. My family cooks Mexican foods

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25. My friends now are of Anglo origin

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26. My friends now are of Mexican origin

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27. I like to identify myself as an Anglo American

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28. I like to identify myself as a Mexican-American

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29. I like to identify myself as Mexican

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30. I like to identify myself as an American

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SCALE 2

1. I have difficulty accepting some ideas held by Anglos.

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2. I have difficulty accepting certain attitudes held by Anglos.

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3. I have difficulty accepting some behaviors exhibited by Anglos.

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4. I have difficulty accepting some values held by some Anglos.

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5. I have difficulty accepting certain practices and customs commonly found in some Anglos.

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6. I have or think I would have, difficulty accepting Anglos as close personal friends.

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7. I have difficulty accepting ideas held by some Mexicans.

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8. I have difficulty accepting certain attitudes held by Mexicans.

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9. I have difficulty accepting some behaviors exhibited by Mexicans.

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10. I have difficulty accepting some values held by some Mexicans.

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11. I have difficulty accepting certain practices and customs commonly found in some Mexicans.

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12. I have or think I would have, difficulty accepting Mexicans as close personal friends.

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13. I have difficulty accepting ideas held by some Mexican-Americans.

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14. I have difficulty accepting certain attitudes held by Mexican-Americans.

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15. I have difficulty accepting some behaviors exhibited by Mexican-Americans.

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16. I have difficulty accepting some values held by Mexican-Americans.

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17. I have difficulty accepting certain practices and customs commonly found in some Mexican-Americans.

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18. I have or think I would have, difficulty accepting Mexican-Americans as close personal friends.

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Appendix N

Acculturation Rating Scale-II (ARSMA-II)

Marque con un círculo el número entre 1 y 5 a la respuesta que sea más adecuada para usted.

1. **Yo hablo Español**

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2. **Yo hablo Inglés**

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3. **Me gustar hablar en Español**

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4. **Me asocio con Anglos**

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<td>A veces</td>
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5. **Yo me asocio con Mexicanos o con Norte Americanos**

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6. **Me gusta la música Mexicana (música en idioma Español)**

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</table>
7. Me gusta la música de idioma Inglés

<table>
<thead>
<tr>
<th>Nada</th>
<th>Un poquito o</th>
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</table>

8. Me gusta ver programas en la televisión que sean en Español

<table>
<thead>
<tr>
<th>Nada</th>
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9. Me gusta ver programas en la televisión que sean en Inglés

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10. Me gusta ver películas en Inglés

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<tr>
<th>Nada</th>
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12. Me gusta leer (e.g. libros en Español)

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13. Me gusta leer (e.g. libros en Inglés)

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14. Escribo (e.g. cartas en Español)

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16. Mis piensamientos ocurren en el idioma Inglés

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<tr>
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18. Mi contacto con México ha sido

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19. Mi contacto con los Estados Unidos Americanos ha sido

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20. Mi padre se identifica (o se identificaba) como Mexicano

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22. Mis amigo(as) de mi niñez eran de origen Mexicano

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23. Mis amigo(as) de mi niñez eran de origen Anglo Americano

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24. Mi familia cocina comidas mexicanas

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### 25. Mis amigos recientes son Anglo Americanos

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### 26. Mis amigos recientes son Mexicanos

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### 27. Me gusta identificarme como Anglo Americano

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### 28. Me gusta identificarme como Norte Americano (México-Americano)

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### 29. Me gusta identificarme como Mexicano

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### 30. Me gusta identificarme como un(a) Americano(a)

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**SCALE 2**

1. **Tengo dificultad aceptando ideas de algunos Anglo Americanos.**

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2. **Tengo dificultad aceptando ciertas actitudes de los Anglo Americanos.**

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3. **Tengo dificultad aceptando algunos comportamientos de los Anglo Americanos.**

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4. **Tengo dificultad aceptando algunos valores que tienen los Anglo Americanos.**

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5. **Tengo dificultad aceptando ciertas costumbres entre algunos Anglo Americanos.**

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6. **Tengo o creo que si tuviera, dificultad aceptando Anglo Americanos como buenos amigos.**

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7. **Tengo dificultad aceptando ideas de algunos Mexicanos.**

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10. **Tengo dificultad aceptando algunos valores que tienen los Mexicanos.**

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11. **Tengo dificultad aceptando ciertas costumbres entre algunos Mexicanos.**

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12. **Tengo o creo que si tuviera, dificultad aceptando Mexicanos como buenos amigos.**

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13. Tengo dificultad aceptando ideas de algunos Mexicanos-Americanos (Estadounidenses de origen Mexicano)

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16. Tengo dificultad aceptando algunos valores que tienen los Mexicanos-Americanos.

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17. Tengo dificultad aceptando ciertas costumbres entre algunos Mexicanos-Americanos.

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18. Tengo o creo que si tuviera, dificultad aceptando Mexicanos-Americanos como buenos amigos.

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Appendix O

TUBERCULOSIS
PRE-TEST

Subject #:________ Date:______________

Please read and answer each question carefully. Circle the one best answer.

1. Tuberculosis is
   a) an infection of the ear
   b) a bacteria that can affect any part of the body after starting in the lungs
   c) a virus that goes away with treatment
   d) an illness for which there is no treatment and which causes death
   e) I don’t know

2. How would your child come in contact with Tuberculosis germs?
   a) from touching a person infected with Tuberculosis
   b) by eating from utensils that a person infected with Tuberculosis has used
   c) by breathing air from an adult with Tuberculosis and who is contagious and who coughed or sneezed
   d) by casual contact with someone who has a positive (+) PPD
   e) I don’t know

3. What is a PPD?
   a) initials of the President
   b) an X-ray of the lungs
   c) medicine given to treat TB
   d) a skin test to determine whether someone has been infected with TB
   e) I don’t know

4. How do you know that a person is NOT contagious after they have a positive PPD?
   a) they are not sick
   b) an X-ray shows that there is no bacteria in the lungs
   c) a blood test shows that they are not contagious
   d) everyone with a positive PPD is contagious
   e) I don’t know
5. What is the name of the medication used to treat TB infection?
   a) INH
   b) Amoxicillin
   c) BCG
   d) Tylenol
   e) I don’t know

6. How often is TB medication given and for how long?
   a) everyday for 2 weeks
   b) once a week for a year
   c) 3 times a day for 9 months
   d) once a day for 9 months
   e) I don’t know

7. What should you do if you forget to give your child the medicine?
   a) give 2 pills the next day
   b) call the clinic for advice
   c) forget the whole thing, it’s too much trouble
   d) continue taking the medicine at the normal dose and let the clinic know you
      forgot to give some of the medicine at the next visit
   e) I don’t know

8. What should you do if your child is sick?
   a) give the medicine anyway unless your child is vomiting
   b) call the clinic for advice
   c) keep giving the medicine when the child feels better, keeping track of how
      many pills were missed.
   d) tell your neighbor
   e) I don’t know

9. Why does your child have to take the medicine when he/she is not feeling sick?
   a) to prevent the bacteria from breaking out of the wall of the lung and making
      the child contagious in the future
   b) because your friends will get sick if your child does not take it
   c) because you should always do what your neighbor tells you to do for your child
   d) because your child may pass TB to others who live in the house with you
   e) I don’t know
10. Which way would you prefer to receive health information about your child’s illness or diagnosis?

a) A written handout in Spanish to take home and read
b) An audiocassette in Spanish to take home and keep
c) A video tape in Spanish to take home and view on your TV
d) A video tape in Spanish to view in a group at the clinic
f) A group class in Spanish at the clinic
f) Verbal instructions in Spanish in the exam room

Answer the following questions by marking a yes or no

11. Should your child continue to have Tuberculin skin tests (PPD) after a positive test?

________ Yes  __________ No

12. Have you ever received health information by listening to an audio tape?

________ Yes  __________ No
Appendix P

TUBERCULOSIS (TB)

PRUEBA PRELIMINAR

Subject #___________ Fecha __________

Por favor lea y responda a cada pregunta. Encierre en un círculo la mejor respuesta:

1. La tuberculosis es
   a) una infección del oído
   b) una bacteria que puede afectar cualquier parte del cuerpo después de comenzar en los pulmones
   c) un virus que se va por sí solo, sin tratamiento
   d) una enfermedad para la cual no hay tratamiento y que ocasiona la muerte
   e) no sé

2. ¿De qué manera podría tener su hijo contacto con los génermenes de la tuberculosis?
   a) tocando a una persona que padece de tuberculosis
   b) comiendo con los utensilios que una persona que tiene tuberculosis haya usado
   c) cuando la persona infectada y contagiosa tose o se estornuda y esparce los génermenes en el aire
   d) por medio del contacto casual con alguien que tiene un resultado positivo (+) en la prueba PPD
   e) no sé

3. ¿Qué representan las letras PPD?
   a) las iniciales del Presidente
   b) una radiografía de los pulmones
   c) medicina que se da para tratar la tuberculosis (TB)
   d) una prueba subcutánea (bajo la piel) que determina si una persona está infectada de tuberculosis.
   e) no sé
4. ¿Cómo sabe usted que una persona NO puede contagiar a nadie después de tener un resultado positivo en la prueba PPD?
   a) cuando esa persona no está enferma
   b) cuando una radiografía muestra que no hay bacteria en los pulmones
   c) cuando la prueba de sangre muestra que no están enfermos (contagiosos)
   d) todas las personas con un resultado positivo en la prueba PPD pueden contagiar a los demás
   e) no sé

5. ¿Cuál es el nombre del medicamento que se usa para tratar la infección de tuberculosis (TB)?
   a) INH
   b) Amoxicillin
   c) BCG
   d) Tylenol
   e) no sé

6. ¿Con qué frecuencia se da el medicamento y por cuánto tiempo?
   a) todos los días durante 2 semanas
   b) una vez a la semana durante un año
   c) 3 veces al día durante 9 meses
   d) una vez al día durante 9 meses
   e) no sé

7. ¿Qué hace usted si se le olvida dar al niño la medicina?
   a) dar 2 píldoras al día siguiente
   b) llamar a la clínica para que le aconsejen qué hacer
   c) olvidar el asunto porque causa mucho problema
   d) continuar tomando la medicina con la dosis normal e informar a la clínica en su próxima visita que se olvidó dar la medicina a su niño
   e) no sé
8. ¿Qué hace usted si su niño se enferma?
   a) darle la medicina de cualquier forma aunque esté vomitando
   b) llamar a la clínica para que le aconsejen qué hacer
   c) continuar la medicina cuando el niño se sienta mejor, y llevar cuenta de las pastillas que no dio al niño.
   d) decirle a su vecino
   e) no sé

9. ¿Por qué tiene que tomar la medicina su hijo cuando no se siente enfermo?
   a) para prevenir que la bacteria salga de la pared del pulmón y ocasione que pueda contagiar a los demás en el futuro
   b) porque sus amigos se enfermarán si su hijo no la toma
   c) porque siempre debe hacer lo que el médico le diga que haga con su hijo
   d) porque su hijo podría contagiar la tuberculosis a otras personas que viven en su hogar con usted
   e) no sé

10. ¿De qué manera preferiría usted recibir información sobre la salud?
    a) por medio de un folleto para llevar a casa y leerlo
    b) por medio de una cinta grabada para llevar a casa y quedarse con ella
    c) por medio de un video y verlo a casa
    d) por medio de un video que puede ver con un grupo de personas en la clínica
    e) por medio de una clase con un grupo de personas en la clínica

Responda a las siguientes preguntas indicando sí o no

11. ¿Debe una persona continuar haciéndose pruebas subcutáneas de Tuberculina (PPD) después de tener un resultado positivo de esta prueba?
    _______ sí  _______ no

12. ¿Alguna vez ha recibido información sobre la salud por medio de una cinta grabada?
    _______ sí  _______ no
Appendix Q

TUBERCULOSIS
POST-TEST

Record #: __________ Date: ________________

Please read and answer each question carefully. Circle the one best answer.

1. Tuberculosis is

a) an infection of the ear
b) a bacteria that can affect any part of the body after starting in the lungs
c) a virus that goes away with treatment
d) an illness for which there is no treatment and which causes death
e) I don't know

2. How would your child come in contact with Tuberculosis germs?

a) from touching a person infected with Tuberculosis
b) by eating from utensils that a person infected with Tuberculosis has used
c) when the germ is coughed or sneezed into the air by an adult
   with Tuberculosis and who is contagious
d) by casual contact with someone who has a positive (+) PPD
e) I don't know

3. What is a PPD?

a) initials of the President
b) an X-ray of the lungs
c) medicine given to treat TB
d) a skin test to determine whether someone has been infected with TB
e) I don't know

4. How do you know that a person is NOT contagious after they have a positive PPD?

a) they are not sick
b) an X-ray shows that there is no bacteria in the lungs
c) a blood test shows that they are not contagious
d) everyone with a positive PPD is contagious
e) I don't know
5. What is the name of the medication used to treat TB infection?
   a) INH
   b) Amoxicillin
   c) BCG
   d) Tylenol
   e) I don’t know

6. How often is TB medication given and for how long?
   a) every day for 2 weeks
   b) once a week for a year
   c) 3 times a day for 9 months
   d) once a day for 9 months
   e) I don’t know

7. What should you do if you forget to give your child the medicine?
   a) give 2 pills the next day
   b) call the clinic for advice
   c) forget the whole thing, its too much trouble
   d) continue taking the medicine at the normal dose and let the clinic know you forgot to give some of the medicine at the next visit
   e) I don’t know

8. What should you do if your child is sick?
   a) give the medicine anyway unless your child is vomiting
   b) call the clinic for advice
   c) keep giving the medicine when the child feels better, keeping track of how many pills were missed.
   d) tell your neighbor
   e) I don’t know

9. Why does your child have to take the medicine when he/she is not feeling sick?
   a) to prevent the bacteria from breaking out of the wall of the lung and making them contagious in the future
   b) because your friends will get sick if your child does not take it
   c) because you should always do what your neighbor tells you to do for your child
   d) because your child may pass TB to others who live in the house with you
10. Which way would you prefer to receive health information?
   a) A written handout in Spanish to take home and read
   b) An audiocassette in Spanish to take home and keep
   c) A video tape in Spanish to take home and view on your TV
   d) A video tape in Spanish to view in a group at the clinic
   e) A group class in Spanish at the clinic
   f) Verbal instructions in Spanish in the exam room

Answer the following questions by marking a yes or no

11. Should your child continue to have Tuberculin skin tests (PPD) after a positive test?

    _________ Yes    _________ No    _________ Don’t Know
Appendix R

Tuberculosis (TB)
PRUEBA POSTERIOR

Subject #:___________________  Fecha
___________________

Por favor lea y responda a cada pregunta con cuidado. Encierre en un círculo la mejor respuesta:

1. La tuberculosis es
   a) una infección del oído
   b) una bacteria que puede afectar cualquier parte del cuerpo después de comenzar en los pulmones
   c) un virus que se va si la persona recibe tratamiento
   d) una enfermedad para la cual no hay tratamiento y que ocasiona la muerte
   e) no sé

2. ¿De qué manera podría su hijo tener contacto con los gérmenes de la tuberculosis?
   a) tocando a una persona que padece de tuberculosis
   b) comiendo con los utensilios que una persona que tiene tuberculosis haya usado
   c) cuando la persona infectada y contagiosa tose o se estornuda y esparce los gérmenes en el aire
   d) por medio del contacto casual con alguien que tiene un resultado positivo (+) en la prueba PPD
   e) no sé

3. ¿Qué representan las letras PPD?
   a) las iniciales del Presidente
   b) una radiografía de los pulmones
   c) medicina que se da para tratar la tuberculosis (TB)
   d) una prueba subcutánea (bajo la piel) que determina si una persona está infectada de tuberculosis.
   e) no sé
4. ¿Cómo sabe usted que una persona NO puede contagiar a nadie después de tener un resultado positivo en la prueba PPD?
   a) cuando esa persona no está enferma
   b) cuando una radiografía muestra que no hay bacteria en los pulmones
   c) cuando una prueba de sangre muestra que no están enfermos (contagiosos)
   d) todas las personas con un resultado positivo en la prueba PPD pueden contagiar a los demás
   e) no sé

5. ¿Cuál es el nombre del medicamento que se usa para tratar la infección de tuberculosis (TB)?
   a) INH
   b) Amoxicillin
   c) BCG
   d) Tylenol
   e) no sé

6. ¿Conqué frecuencia se da el medicamento y por cuánto tiempo?
   a) todos los días durante 2 semanas
   b) una vez a la semana durante un año
   c) 3 veces al día durante 9 meses
   d) una vez al día durante 9 meses
   e) no sé

7. ¿Qué hace usted si se le olvida dar al niño la medicina?
   a) dar 2 píldoras al día siguiente
   b) llamar a la clínica para que le aconsejen qué hacer
   c) olvidar el asunto porque causa mucho problema
   d) continuar tomando la medicina con la dosis normal e informar la clínica en su próxima visita que se olvidó dar la medicina a su niño

8. ¿Qué hace usted si su niño se enferma?
   a) darle la medicina de cualquier forma aunque esté vomitando
   b) llamar a la clínica para que le aconsejen qué hacer
   c) continuar la medicina cuando el niño se sienta mejor, y llevar cuenta de las pastillas que no dio al niño.
   d) decirle a su vecino
   e) no sé
9. ¿Por qué tiene que tomar la medicina su hijo cuando no se siente enfermo?
   a) para prevenir que la bacteria salga de la pared del pulmón y ocasione que pueda contagiar a los demás en el futuro
   b) porque sus amigos se enfermarán si su hijo no la toma
   c) porque siempre debe hacer lo que el médico le diga que haga con su hijo
   d) porque su hijo podría contagiar la tuberculosis a otras personas que viven en su hogar con usted
   e) no sé

10. ¿De qué manera preferiría usted recibir información sobre la salud, si la podría recibir en español?
    a) por medio de un folleto para llevar a casa y leerlo
    b) por medio de una cinta grabada para llevar a casa y quedarse con ella
    c) por medio de un video y verlo a casa
    d) por medio de un video que puede ver con un grupo de personas en la clínica
    e) por medio de una clase con un grupo de personas en la clínica

Responda a las siguientes preguntas indicando si o no

11. ¿Debe su hijo continuar haciéndose pruebas subcutáneas de Tuberculina (PPD) después de tener un resultado positivo de esta prueba?
    ________ sí          ________ no
Appendix S

TUBERCULOSIS
POST-TEST WITH AUDIOTAPE

Record #: ________ Date: _______________

Please read and answer each question carefully. Circle the one best answer.

1. Tuberculosis is
   a) an infection of the ear
   b) a bacteria that can affect any part of the body after starting in the lungs
   c) a virus that goes away with treatment
   d) an illness for which there is no treatment and which causes death
   e) I don’t know

2. How would your child come in contact with Tuberculosis germs?
   a) from touching a person infected with Tuberculosis
   b) by eating from utensils that a person infected with Tuberculosis has used
   c) when the germ is coughed or sneezed into the air by an adult
      with Tuberculosis and who is contagious and your child breathes the air
   d) by casual contact with someone who has a positive (+) PPD
   e) I don’t know

3. What is a PPD?
   a) initials of the President
   b) an X-ray of the lungs
   c) medicine given to treat TB
   d) a skin test to determine whether someone has been infected with TB
   e) I don’t know

4. How do you know that a person is NOT contagious after they have a positive PPD?
   a) they are not sick
   b) an X-ray shows that there is no bacteria in the lungs
   c) a blood test shows that they are not contagious
   d) everyone with a positive PPD is contagious
   e) I don’t know
5. What is the name of the medication used to treat TB infection?
   a) INH
   b) Amoxicillin
   c) BCG
   d) Tylenol
   e) I don’t know

6. How often is TB medication given and for how long?
   a) every day for 2 weeks
   b) once a week for a year
   c) 3 times a day for 9 months
   d) once a day for 9 months
   e) I don’t know

7. What should you do if you forget to give your child the medicine?
   a) give 2 pills the next day
   b) call the clinic for advice
   c) forget the whole thing, it’s too much trouble
   d) continue taking the medicine at the normal dose and let the clinic know you forgot to give some of the medicine at the next visit
   e) I don’t know

8. What should you do if your child is sick?
   a) give the medicine anyway unless your child is vomiting
   b) call the clinic for advice
   c) keep giving the medicine when the child feels better, keeping track of how many pills were missed.
   d) tell your neighbor
   e) I don’t know

9. Why does your child have to take the medicine when he/she is not feeling sick?
   a) to prevent the bacteria from breaking out of the wall of the lung and making them contagious in the future
   b) because your friends will get sick if your child does not take it
   c) because you should always do what your neighbor tells you to do for your child
   d) because your child may pass TB to others who live in the house with you
10. Which way would you prefer to receive health information?
   a) A written handout in Spanish to take home and read
   b) An audiocassette in Spanish to take home and keep
   c) A video tape in Spanish to take home and view on your TV
   d) A video tape in Spanish to view in a group at the clinic
   e) A group class in Spanish at the clinic
   f) Verbal instructions in Spanish in the exam room

11. What are the names of the two women on the tape?
   a) Maria and Rosa
   b) Esperanza and Soledad
   c) Maria and Sarah
   d) Sarah and Josephina
   e) I don’t know

12. Who was being treated for Tuberculosis?
   a) the mother
   b) Miguel
   c) Miguel and Roberto
   d) Miguel’s grandparents
   e) I don’t know

Answer the following questions by marking a yes or no

13. Should your child continue to have Tuberculin skin tests (PPD) after a positive test?

   ________ Yes  ________ No  ________ Don’t Know

14. Would you like to receive health information by listening to an audio tape?

   ________ Yes  ________ No

15. Did you like the music on the tape?

   ________ Yes  ________ No
16. Did you like the story format of the tape?

_________Yes   _________No

17. How many times did you listen to the tape? ____________________

18. Did you share the tape with anyone else?

___________Yes   _____________No

Thank you for participating in this project about Tuberculosis infection.
Appendix T

Cinta de Audio sobre la Tuberculosis (TB)
PRUEBA POSTERIOR

Subject #: ___________________ Fecha ________________

Por favor lea y responda a cada pregunta con cuidado. Encierre en un círculo la mejor respuesta:

1. La tuberculosis es

a) una infección del oído
b) una bacteria que puede afectar cualquier parte del cuerpo después de comenzar en los pulmones
c) un virus que se va si la persona recibe tratamiento
d) una enfermedad para la cual no hay tratamiento y que ocasiona la muerte
e) no sé

2. ¿De qué manera podría su hijo tener contacto con los gérmenes de la tuberculosis?

a) tocando a una persona que padece de tuberculosis
b) comiendo con los utensilios que una persona que tiene tuberculosis haya usado
c) cuando la persona infectada y contagiosa tose o se estornuda y esparce los gérmenes en el aire
d) por medio del contacto casual con alguien que tiene un resultado positivo (+) en la prueba PPD
e) no sé

3. ¿Qué representan las letras PPD?

a) las iniciales del Presidente
b) una radiografía de los pulmones
c) medicina que se da para tratar la tuberculosis (TB)
d) una prueba subcutánea (bajo la piel) que determina si una persona está infectada de tuberculosis.
e) no sé
4. ¿Cómo sabe usted que una persona NO puede contagiar a nadie después de tener un resultado positivo en la prueba PPD?

a) cuando esa persona no está enferma
b) cuando una radiografía muestra que no hay bacteria en los pulmones
c) cuando una prueba de sangre muestra que no están enfermos (contagiosos)
d) todas las personas con un resultado positivo en la prueba PPD pueden contagiar a los demás

e) no sé

5. ¿Cuál es el nombre del medicamento que se usa para tratar la infección de tuberculosis (TB)?

a) INH
b) Amoxicillin
c) BCG
d) Tylenol
e) no sé

6. ¿Con qué frecuencia se da el medicamento y por cuánto tiempo?

a) todos los días durante 2 semanas
b) una vez a la semana durante un año
c) 3 veces al día durante 9 meses
d) una vez al día durante 9 meses
e) no sé

7. ¿Qué hace usted si se le olvida dar al niño la medicina?

a) dar 2 píldoras al día siguiente
b) llamar a la clínica para que le aconsejen qué hacer
c) olvidar el asunto porque causa mucho problema
d) continuar tomando la medicina con la dosis normal e informar la clínica en su próxima visita que se olvidó dar la medicina a su niño

8. ¿Qué hace usted si su niño se enferma?

a) darle la medicina de cualquier forma aunque esté vomitando
b) llamar a la clínica para que le aconsejen qué hacer
c) continuar la medicina cuando el niño se sienta mejor, y llevar cuenta de las pastillas que no dio al niño.
d) decirle a su vecino
e) no sé
9. ¿Por qué tiene que tomar la medicina su hijo cuando no se siente enfermo?
   a) para prevenir que la bacteria saiga de la pared del pulmón y ocasione que pueda contagiar a los demás en el futuro
   b) porque sus amigos se enfermarán si su hijo no la toma
   c) porque siempre debe hacer lo que el médico le diga que haga con su hijo
   d) porque su hijo podría contagiar la tuberculosis a otras personas que viven en su hogar con usted
   e) no sé

10. ¿De qué manera preferiría usted recibir información sobre la salud, si la podría recibir en español?
    a) por medio de un folleto para llevar a casa y leerlo
    b) por medio de una cinta grabada para llevar a casa y quedarse con ella
    c) por medio de un video y verlo a casa
    d) por medio de un video que puede ver con un grupo de personas en la clínica
    e) por medio de una clase con un grupo de personas en la clínica

11. ¿Cómo se llaman las dos mujeres de la grabación?
    a) María y Rosa
    b) Esperanza y Soledad
    c) María y Sara
    d) Sara y Josefina
    e) no sé

12. ¿Quién estaba recibiendo tratamiento para la tuberculosis?
    a) la madre
    b) Miguel
    c) Miguel y Roberto
    d) los abuelos de Miguel
    e) no sé

Responda a las siguientes preguntas indicando si, no, o no sé

13. ¿Debe su hijo continuar haciendo pruebas subcutáneas de Tuberculina (PPD) después de tener un resultado positivo de esta prueba?
    _______ sí    _______ no    _______ no sé
14. ¿Quisiera continuar recibiendo información sobre la salud por medio de una cinta grabada?
   _______ sí     _______ no

15. ¿Le gustó la música de la cinta?
   _______ sí     _______ no

16. ¿Le gustó escuchar la información en forma de contar una historia?
   _______ sí     _______ no

17. ¿Cuántas veces escuchó la grabación? _____________

18. ¿Compartió la grabación con alguna otra persona?
   _______ sí     _______ no

Agradecemos su participación en este proyecto sobre la infección de la tuberculosis.
Appendix U

TB AUDIO TAPE SCRIPT

Introduction: Today you were given a prescription for Tuberculosis medicine for your child because his skin test was positive. You were told that your child has TB but is not contagious and that he or she must take medicine for 9 months.

This may be confusing and you may have many questions about your child’s treatment. That is why we decided to make this tape. It is about a mother and her son who have been told the same thing today. Listen to the tape. If you still have any questions that are not answered by the story on the tape, we will be glad to answer them at your next clinic visit.

You may want to play the tape again to review why your child is on medicine, or you may want to share it with family members or friends.

Sarah: Hi Maria, Hi Miguel! Where have you been?

Maria: We just got back from the Pediatric clinic.

Miguel: I went to the clinic and I got a picture made of my chest and they gave me a sticker!

Sarah: Oh, is something wrong with you Miguel?

Miguel: Uh huh!

Maria: Yes, he went in for a physical on Monday and today we went in to have his skin test for Tuberculosis read. The nurse called the skin test a PPD. It was positive and I had to wait and get a chest x-ray. Now he has to take medicine for 9 months.

Sarah: Miguel has Tuberculosis? How horrible! Shouldn’t he be inside the house and far away from other people? Is he going to die?

Maria: Oh no, no. The nurse explained that only his Tuberculin skin test was positive and for that reason he needed to have an x-ray of his lungs to see if he might have Tuberculosis in his lungs and be contagious, but his x-ray was negative. So, he has been infected with TB, but it is not contagious because it is not in his lungs.

Sarah: I don’t understand. How did he catch it?
Maria: They told me that TB is spread in the air. The germs are not spread in food, not by contact with blood, not by clothes or by anything your child might come in contact with.

Sarah: I am so glad. I was worried that my children who eat after Miguel might have caught it from him.

Maria: Oh no. They told me that some adult we know, or maybe even Jose or I has contagious TB. The adult has TB in their lungs and they are contagious and every time they cough, sneeze, or even talk they are releasing the TB germs into the air. My little Miguel then breathed them in. They told me that the TB germs can then spread all over Miguel's body after starting in the lungs even to his bones and brain. That is why it is so important to take medicine for 9 months to get rid of the TB.

Sarah: But Miguel does not look sick, he doesn’t even have a cough!

Maria: I know. He is not sick or contagious right now, but if he is not treated he could get very sick in the future and give Tuberculosis to other people.

Sarah: Well, my little Joseph had a BCG vaccination in Mexico, so he can’t get TB.

Maria: I asked the nurse about BCG vaccination because I was ready to take Miguel down to Mexico to get a BCG vaccination if that would make him well. She said that BCG does NOT protect a child or adult from getting Tuberculosis and it is not a treatment, that is why it is not given here in the United States. She also said that even if you had a BCG vaccination, if your PPD is positive it means you have probably been infected with the Tuberculosis germs and need to be treated.

Sarah: Who do you think gave Miguel TB?

Maria: Well, remember when we went down to Mexico to visit my family at Christmas? My grandmother, who we stayed with, had a cough for months. She also had started losing weight and was always tired. We tried to get her to go to the doctor, but she would NOT go. Now I am very worried that she has TB, so I am going to call my mother.

Sarah: You stayed there a whole month. Do you think the rest of you might have caught Tuberculosis?

Maria: I don’t know. The nurse at the clinic told me that we all needed to be tested with a PPD and if any of us are positive we also needed a chest x-ray.
Sarah: What about your daughter? I thought she had a PPD last fall before she started school and she was negative.

Maria: Well, that was before we went to Mexico so she needs to be retested.

Sarah: My children are always playing at your house. Do you think I should take them to the clinic to be tested?

Maria: I was told that only the people who live with Miguel or any person that spends a lot of time with Miguel or who takes care of him, like my sister, should be tested. Since we think my grandmother is the person who gave Miguel TB your children probably do not need to be tested but you might want to call the clinic and ask them just to be sure.

Sarah: Poor Maria, you have to give medicine to Miguel for 9 months! That seems like such a long time! If he is not contagious, why does he have to take all that medicine? I can’t even remember to take my vitamins every day. How are you going to remember, and what if Miguel does not like the medicine?

Maria: I asked the same thing Sarah. I was told that the Tuberculosis germs live in the lungs. The germs like the lungs because they are dark, warm, and moist. It is a perfect place to grow and grow. But my Miguel is in good health, thank God, and his body built a wall around the TB germs and that is why he is not contagious. They told me it is like the germ is sleeping in his body, but in the future if his health became poor because of another illness like cancer, the germ would wake up and the wall around the germ could break down and the germ could spread through the entire body and that would be very bad. The only thing that will prevent that is to take the medicine every day for nine months. It is a very strong germ to need 9 months of medicine to get rid of it when it is sleeping!. They told me to take the medicine at the same hour every day if possible to establish a routine. I was also told to put it put it in a place where I can see it but the other children cannot get into it.

Sarah: What if you cannot swallow a pill Miguel?

Miguel: (whining) Do I have to swallow a pill Mom?

Maria: Oh, it comes in a pill I can crush and mix with a little presweetened Kool-Aid powder in a spoon, or the Pharmacist can give it to me in a liquid, but Miguel would have to take more of the medicine in the liquid form and he might not like the taste. You also have to keep the medicine in the cabinet and not in the refrigerator and you must shake it real good before you give it because it can cloud up and look like it has gone bad.
Sarah: Oh, my children love Kool-aid. That doesn't sound too hard. So Miguel only has to take one medicine?

Maria: Yes, only one. It is called INH. The information sheet the Pharmacist gave me said that foods like fish, tuna, or cheese and milk should not be given at the same time as the medicine because in some people it can cause the skin to turn red or Miguel could get a headache.

Sarah: Does that mean Miguel can not eat tuna or drink milk for 9 months?

Maria: (laughing) Oh! No! It only means I should not give the medicine with a bite of tuna fish sandwich or with a glass of milk.

Miguel: Yuck! Who wants to take medicine with a bite of tuna fish sandwich, gross Mom!

Sarah: Does Miguel have to stay in the house to rest?

Maria: Oh no Sarah. He has Tuberculosis, but he is not contagious. I was told he can go out to play with other children, and go to school.

Sarah: You know a lot about Tuberculosis and that will help Miguel, How great!

Maria: The nurse spent a lot of time with me and answered many of my questions. I was told at the clinic that a Public Health Nurse might also call or come by to be sure we all get tested and to look for the person who might have given Miguel Tuberculosis.

Sarah: Now that Miguel is taking medicine, do you return to the clinic to have a PPD skin test when he has finished taking the medicine?

Maria: No, we have to go every month for an exam. I take the bottle of medicine so they can see that I give the medicine every day. It is very important to give the medicine every day unless Miguel is vomiting or has a high fever. Then I should call the clinic and let them know he is sick. If I forget to give the medicine I should call the clinic and let them know so they can extend the treatment. I am not ever supposed to give 2 pills the next day when I forget because it might cause a stomachache. I just mark it on my calendar and tell the clinic at the next visit.

Sarah: Ay Maria. How are you going to remember to give the medicine every day? I know I could never remember.
Maria: They gave me an idea at the clinic. I am going to put an X on the calendar when I give the pill, or maybe we can get some stickers to use on the calendar. What do you think Miguel?

Miguel: I am going to help you remember. I really want to put a sticker on the calendar every day!

Sarah: That seems like a great idea, even your mother in law can remember that!

Maria: That is why I am grateful for the idea because my mother in law will be watching the children next week while we are in Las Vegas celebrating our anniversary. I think with Miguel's help she will be able to remember to give the medicine.

Sarah: So, now that Miguel is positive, what does he do when he needs another PPD for school?

Maria: NO! He won't need to have another skin test for the rest of his life. The test will always be positive even after he has been treated and no longer has Tuberculosis. In fact, some people will have a bigger and redder reaction each time they get another PPD. So, I was told I should always take Miguel’s immunization record and TB record to every doctor visit. Even when he goes to school or later gets a job he will have to take his papers that show his skin test was positive and that he has been treated with 9 months of INH.

Sarah: Then he will never have another skin test?

Maria: Not if I don’t lose his records. If he gets sick with a cough or fever that won’t go away in the future, he will just get an x-ray of his lungs to look for the cause of his illness and to be sure he does not have tuberculosis again.

Sarah: I am going to tell my husband that we should all have a PPD skin test.

Maria: I don’t know where you go for care, but the Public health department gives skin tests and chest x-rays. I can call my clinic for a recommendation for you or to get you the address of the health department clinic closest to us where you can be tested.

Sarah: Thanks for the information Maria. I have to go home now and cook dinner.

Maria: Me too. I haven’t been home all day! I know my family wonders what we are doing!

Sarah: Goodbye Maria, Goodbye Miquel!

Maria: See you later!
Miquel: Bye!

Narrator: We hope this story answered most of your questions. We would like to go over a few points:

1. If the medicine for your child is liquid instead of pills, don’t put the medicine in the refrigerator. Put the medicine in the cabinet at night. It should not get cold because when it does it gets cloudy and looks like it has gone bad. Before giving the medicine shake it well. If you think the medicine has gone bad call the clinic before throwing it away.

2. If your child is taking pills or liquid medicine and you are having trouble getting your child to take the medicine, please call the clinic. We can give you some tricks and ideas that might help you give your child the medicine.

3. Remember your child should not need to ever have another skin test. If anyone tells you they are going to give your child a PPD, tell them that your child has had a positive reaction and took medicine for 9 months. Be sure to tell the doctors who see your child if you ever go to the Emergency room or if your child is admitted to the hospital that he is still taking INH or has finished his medicine after 9 months. This is very important. Be sure and give them a copy of the paper that shows your child’s results and treatment.

4. Please be sure that everyone who has been living in your home or who visits everyday, like a babysitter should have a PPD skin test. Please call the clinic if you have any questions about who should be tested.

5. Thank you for listening to this tape. Please feel free to share it with your friends and family. This shows you want the best for your child.

Revised 4/21/98, 8/8/99
Appendix V

GUION DE LA CINTA GRABADA SOBRE LA TUBERCULOSIS (TB)

Introducción: Hoy usted recibió una receta de la medicina contra la tuberculosis para su niño porque su prueba subcutánea resultó positiva. Le dijeron que su niño tiene tuberculosis pero que no puede contagiarla y que debe tomar la medicina durante 9 meses.

Esto tal vez podría parecerle confuso y es probable que tenga muchas preguntas sobre el tratamiento de su hijo. Por eso hemos decidido hacer esta grabación. En ella usted escuchará a una madre y a su hijo a quienes les dijeron lo mismo que a usted. Escuche la cinta. Si después de escucharla aún tiene preguntas a las que la cinta no haya respondido, nosotros con gusto se las responderemos en su próxima visita a la clínica.

Si usted desea, pude tocar la cinta una vez más para volver a escuchar por qué su hijo necesita tomar el medicamento, o tal vez quiera compartir esta información con, los miembros de su familia o sus amigos.

Sara: ¡Hola María, hola Miguel! ¿Qué andan haciendo?

María: Acabamos de regresar de la clínica de pediatría.

Miguel: Fui a la clínica, me tomaron una radiografía del pecho y me regalaron una calcomanía.

Sara: ¡Ay! ¿Tienes algo malo, Miguel?

Miguel: Aja.

María: Si, el lunes fuimos a la clínica para que le hicieran un examen físico y hoy fuimos para que vieran su reacción a la prueba de la tuberculosis que le hicieron. La enfermera la llama la prueba PPD, y fue positiva. Tuve que esperar a que me dieran el resultado de la radiografía y me dijeron que Miguelito tiene que tomar la medicina durante 9 meses.

Sara: ¿Miguel tiene Tuberculosis? ¡Que terrible! ¿No crees que debería quedarse en casa y estar apartado de los demás? ¿Se va a morir?

María: ¡Ay no, no, no! La enfermera me explicó que sólo su prueba subcutánea fue positiva y por eso es que tuvieron que sacarle una radiografía de los pulmones.
para ver si tenía Tuberculosis en los pulmones y para ver si podía contagiar a otros, pero su radiografía fue negativa. Así que tiene la infección de la Tuberculosis, pero no puede contagiar a nadie porque no la tiene en los pulmones.

Sara: No entiendo. ¿Cómo se le contagió?

María: Me dijeron que la Tuberculosis se esparce en el aire. Los gérmenes no se esparcen en la comida, ni en el contacto con la sangre, ni por la ropa, ni nada con lo que el niño haya estado en contacto.

Sara: ¡Ay, que bueno! Ya estaba preocupada de que mis hijos coman con Miguel, y a veces toman del mismo vaso, no fuera a ser que se les contagiara.

María: No, no. Me dijeron que tal vez algún adulto al que conocemos, o incluso José o yo tenemos Tuberculosis contagiosa. La persona que se la contagió tiene Tuberculosis en los pulmones y cada vez que tose, estornuda, o hasta al hablar, saca los gérmenes de la Tuberculosis al aire y mi Miguelito los ha respirado. Me dijeron también que los gérmenes de la Tuberculosis se pueden esparcir por todo su cuerpo después de comenzar en los pulmones y hasta en los huesos y el cerebro. Por eso es tan importante que tome la medicina durante 9 meses para deshacerse de ese peligro.

Sara: Pero Miguel no se ve enfermo, ¡ni siquiera tose!

María: Yo sé. Ahora no está enfermo, ni puede contagiar a nadie, pero si no sigue el tratamiento, podría enfermarse y en el futuro contagiar de Tuberculosis a otras personas.

Sara: Bueno, a mi Pepito le pusieron la vacuna BCG en México, así que no le puede dar tuberculosis.

María: Yo le preguntó a la enfermera sobre la vacuna BCG porque ya estaba lista para llevarme a Miguel a México para que lo vacunaran, pero me dijo que la BCG NO protege ni a los niños ni a los adultos de la Tuberculosis y que no es un tratamiento, por eso no la ponen aquí en los Estados Unidos. También me dijo que aunque te hayan vacunado de la BCG, si la prueba PPD sale positiva quiere decir que la persona ya ha sido infectada con los gérmenes de la Tuberculosis y necesita tratamiento.

Sara: ¿Y quién crees tú que contagió a Miguelito?
Bueno, ¿te acuerdas cuando fuimos a México a visitar a mi familia en Navidad? Nos quedamos con mi abuela, y ella ya tenía tos desde hacía mucho. También se adelgazó mucho y siempre estaba cansada. Tratamos de hacer que viera al médico pero NO quiso ir. Ahora estoy bien preocupada de que a lo mejor tiene Tuberculosis, así que voy a llamar a mi mamá.

Te quedaste todo un mes con tu abuela. ¿Tú crees que todos los demás también se hayan contagiado?

No sé. La enfermera de la clínica me dijo que todos necesitamos hacernos la prueba PPD y que si cualquiera de nosotros salimos positivos también necesitamos sacarnos una radiografía del pecho.

¿Oye, y tu hija? Yo tenía la impresión de que le habían hecho una prueba PPD el año pasado antes de entrar a la escuela y que había sido negativa.

Bueno, eso fue antes de irnos a México, así que ella también necesita otra prueba.

Mis hijos siempre juegan en tu casa. ¿Tú crees que deba llevarlos a la clínica para que les hagan la prueba?

Me dijeron que sólo las personas que viven con Miguel; o cualquier persona que pase mucho tiempo con él o lo cuide, como mi hermana, deben hacerse la prueba. Como pensamos que mi abuela es la persona que se la contagió a Miguel, tus niños probablemente no necesiten hacerse la prueba, pero tal vez quieras llamar a la clínica para asegurarte.

¡Pobre María, tienes que darle medicina a Miguel durante 9 meses! ¡Tanto tiempo! Bueno, pero si no puede contagiarse a nadie, ¿por qué tiene que tomar medicinas? Yo apenas me acuerdo de tomarme mis vitaminas en las mañanas. ¿Cómo te vas a acordar de darle la medicina, o qué tal si no le gusta tomarla?

Yo pregunté lo mismo, Sara. Me dijeron que los gérmenes de la Tuberculosis viven en los pulmones. A esos gérmenes les gustan los pulmones porque adentro está oscuro, caliente, y húmedo. Es un perfecto lugar para que crezcan y se desarrollen. Pero Miguelito está bien de salud, gracias a Dios, y su cuerpo construyó una barrera contra la Tuberculosis y por eso no es contagioso. Me dijeron que es como si el germen estuviera durmiendo en su cuerpo, pero en el futuro si no está bien de salud por otra enfermedad como el cáncer, el germen despierta y la barrera contra el germen puede romperse y entonces el germen puede esparcirse por todo su cuerpo. Eso desde luego sería muy malo. Lo único que previene esto es la medicina que tiene que
tomar 9 meses. ¡Debe ser un germen muy fuerte para necesitar de 9 meses de medicina para deshacerse de él mientras está dormido! Me dijeron que tomará la medicina a la misma hora todos los días, si es posible, para establecer una rutina. También me dijeron que la ponga en un lugar donde pueda verla pero donde los niños no puedan alcanzarla.

Sara: ¿Y qué tal si no puedes tragar la pastilla, Miguel?

Miguel: (quejándose) ¿Me tengo que tragar una pastilla, mami?

María: Si, es una pastilla pero yo la puedo machacar y mezclarla con un poquito de polvo de "Kúleid" en una cuchara, o el señor de la farmacia puede dármela en líquido, pero Miguel tendría que tomar una cantidad mayor si es en forma líquida y tal vez no le guste a lo que sabe. También tengo que guardar la medicina en el botiquín del baño y no en el refrigerador y tengo que agitar la botella muy bien antes de dársela porque puede verse turbia y como si se hubiera echado a perder.

Sara: ¡Ay, a mis hijos les encanta el "Kúleid". No se oye tan mal. Entonces, Miguelito sólo necesita tomar una medicina?

María: Sí sólo una. Se llama INH. La hoja informativa que me dio el señor de la farmacia dice que no debe darse comida como pescado, atún, o queso y leche al mismo tiempo que esta medicina porque a algunas gentes les puede dar una reacción en la que la piel se enrojece o podría también darle dolor de cabeza a Miguelito.

Sara: Entonces Miguel no puede comer atún, o tomar leche durante 9 meses?

María: (riendose) ¡Ay, No! Sólo quiere decir que no debo darle la medicina con un sándwich de atún o con un vaso de leche.

Miguel: ¡Qué asco! ¿Quién quiere tomar medicina con atún? Da asco, mami.

Sara: ¿Y Miguel tiene que quedarse a descansar en la casa?

María: No, Sara. Tiene tuberculosis, pero no puede contagiarse a nadie. Me dijeron que puede salir a jugar con otros niños, e ir a la escuela.

Sara: Sabes mucho de la Tuberculosis, y eso va ayudar mucho a Miguel. ¡Qué bien!
**María:** La enfermera pasó mucho tiempo conmigo y contestó todas mis preguntas. Me dijeron en la clínica que también es probable que venga o llame una Enfermera de Salud Pública para asegurarse de que todos nos hayamos hecho la prueba y para investigar quién fue la persona que pudo haber infectado a Miguel.

**Sara:** Ahora que Miguel tome su medicina, ¿tienes que volver a la clínica para que le hagan otra prueba PPD cuando termine de tomar la medicina?

**María:** No, tenemos que ir cada mes para que le hagan un examen. Tengo que llevar el frasco de la medicina para que vean que sí se la di todos los días. Es muy importante darle la medicina todos los días a menos que Miguel vomite o tenga fiebre. Si es así tengo que llamar a la clínica y avisarles que está enfermo. Si se me olvida darle la medicina tengo que llamar y avisarles para que me puedan extender el tratamiento. Nunca debo darle 2 pastillas al día siguiente cuando se me olvide dársela porque le puede causar dolor de estómago. Simplemente lo anoto en el calendario y les digo en la clínica cuando le toque visita.

**Sara:** ¡Ay, María! ¿Y cómo te vas a acordar de darle la medicina todos los días? Yo sé que a mí se me olvidaría.

**María:** Me dieron una buena idea en la clínica. Voy a poner una X en el calendario cada vez que le dé la pastilla, o tal vez podamos usar calcomanías. ¿Qué piensas tú, Miguel?

**Miguel:** Yo te voy a ayudar a acordarte. ¡Me gustaría más poner calcomanías en el calendario todos los días!

**Sara:** Eso me parece muy bien. ¡Así, hasta tu suegra puede acordarse!

**María:** Por eso me gustó la idea del calendario porque la semana próxima mi suegra va a cuidarlos mientras nos vamos a Las Vegas para celebrar nuestro aniversario. Yo creo que con la ayuda de Miguel, ella se va a acordar de darle la medicina.

**Sara:** Entonces, ahora que sabemos que la prueba de Miguel fue positiva, ¿qué hay que hacer cuando necesite otra prueba PPD para la escuela? Necesita hacerse más pruebas todos los años para asegurarse que salga negativa?

**María:** ¡NO! Ya nunca necesita hacerse otra prueba. La prueba siempre va a salir positiva aunque haya seguido el tratamiento y ya no tenga el germen de la
Tuberculosis. Es más, algunas personas tienen una reacción más grande y más enrojecida y más dolorosa cada vez que se hacen una prueba. Así que me dijeron que cuando vaya al médico tengo que llevar el registro de vacunas de Miguel al médico. Aún cuando vaya a la escuela o después cuando va empiece a trabajar va a tener que llevar sus papeles que comprueben que su prueba subcutánea fue positiva y que tomó medicamento durante 9 meses.

Sara: ¿Entonces ya nunca más le van a hacer una prueba subcutánea?

María: No, a menos que pierda su registro de vacunas. Si se enferma, le tienen que tomar una radiografía de los pulmones para buscar la causa de la enfermedad y asegurarse que no tenga Tuberculosis otra vez.

Sara: Le voy a decir a mi marido que todos deberíamos hacemos la prueba PPD.

María: No sé dónde recibas atención de salud, pero el Departamento de Salud Pública hace las pruebas y las radiografías. Yo puedo llamar a mi clínica para recomendarte o para darte la dirección de la Clínica del Departamento de Salud Pública más cercano a nosotros donde te pueden hacer la prueba PPD.

Sara: Gracias por la información, María. Tengo que irme a casa para hacer la cena.

María: Yo también. ¡No he estado en la casa en todo el día! Estoy segura que mi familia se está preguntando qué estamos haciendo!

Sara: ¡Adiós, María, hasta luego, Miguel!

María: ¡Nos vemos!

Miguel: ¡Adiós!
Narrador. Esperamos que esta historia responda a la mayoría de sus preguntas.
Ahora nos gustaría repasar algunos puntos.

1. Si la medicina de su hijo es líquida en vez de pastillas, no ponga la medicina en el refrigerador. Póngala en el botiquín del baño en la noche. No debe enfriarse porque cuando se enfría se pone turbia como si se hubiera echado a perder. Antes de dar la medicina agítela bien. Si usted piensa que la medicina se ha echado a perder llame a la clínica antes de tirarla.

2. Si su hijo o hija está tomando pastillas o medicina líquida y tiene problemas para lograr que el niño se tome la medicina, por favor hágale a la clínica. Nosotros podemos darle algunas sugerencias e ideas que podrían ayudarle a dar a su niño la medicina.

3. Recuerde que a su niño no debe hacérsela otra prueba subcutánea. Si alguien le dice que le van a hacer la prueba PPD a su niño, dígales que su hijo ha tenido reacción positiva y que tomó medicina durante 9 meses y muéstreles los papeles que comprueban que su hijo tomó la medicina. Asegúrese también de decírselo al médico que ve a su niño si alguna vez tiene que ir a la unidad de emergencias o si tiene que hospitalizarse. Es muy importante.

4. Por favor asegúrese de que todos los que han vivido en su casa o las personas que los visitan todos los días, como la niñera, se hagan una prueba de PPD. Por favor llame a la clínica si tiene cualquier pregunta sobre si usted debe hacerse la prueba.

5. Gracias por escuchar esta cinta. Por favor siéntase en libertad de compartirla con sus amigos y familia. Esto mostrará que quiere lo mejor para su niño.