SURVEY OF ORAL HEALTH PRACTICES AMONG ADULTS IN A NORTH CAROLINA HISPANIC POPULATION

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A thesis submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Masters of Science in Dental Hygiene Education in the department of Dental Ecology (School of Dentistry).

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ABSTRACT

Mariola Luciano: Survey of Oral Health Practices among Adults in a North Carolina Hispanic Population
(Under the direction of Vickie Overman)

New Hispanic growth in North Cariolina brought challenging healthcare issues, especially to rural areas of NC. The purpose of this study was to collect baseline data pertaining to the oral health of Hispanics residing in Siler City, NC, a microcosm of the flourishing Latino growth found especially in the southeastern United States. A convenience sample of 158 Hispanic adults was recruited. A 41-item Spanish language survey was utilized. Multiple choice questions and Likert-type scales addressed preventive oral health practices, oral health knowledge and beliefs, perceived needs, and demographic information. Analyses, using SAS 9, were conducted to find demographic characteristics, frequencies, and correlations. The following associations were found statistically significant ($p < .05$): (1) brushing frequency and belief that healthy gums bleed; (2) dental insurance and frequency of dental visits; (3) source of oral hygiene instruction and participant's reported brushing or flossing, and dental visit frequency.

ACKNOWLEDGEMENTS

This project would not have been possible without the support of many people. Many thanks to my advisor, Vickie Overman, who helped me create the vision of my research and provided me with the necessary information to carry this project out. I acknowledge the thesis committee who offered guidance and support. However, I extend my deepest thanks and appreciation to Dr. Pamela Frasier for her expertise, contribution, direction, and support in my endeavor. I would like to further acknowledge all the individuals from Immigrant Health Initiative that contributed their time and energy to making sure this project was implemented. Their hearts are truly in the right place. Also, great thanks to Dr. Ceib Phillips for help with the statistical analysis. The faculty and staff at the University of Texas Health Sciences Center at San Antonio were also very supportive in the implementation of this project. The assistance was greatly appreciated. Finally, thanks to my grandparents, parents, and numerous friends who endured this long process with me, always offering support and love.

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CHAPTER 1

INTRODUCTION

According to the U.S. Census Bureau, North Carolina is the leader in Hispanic population growth. Between 1990 and 2000, North Carolina experienced a 394% increase in its Hispanic population.[1] As an example, the small town of Siler City, North Carolina had a Hispanic population growth from 4% in 1990 to 39% in 2000.[2] The increased employment of immigrant workers by the city's poultry processing and textile industries contributed to this growth. Siler City's Hispanic population is mostly comprised of immigrants of Mexican origin. However, there are others from the Caribbean, Central America, or South America.[3]

The increase in the Hispanic population has led to an increase in oral health needs. However, there are only four licensed dentists practicing in Siler City. None are of Hispanic origin and none speak Spanish. A new clinic opened in 2005 with a bilingual (English to Spanish) interpreter, yet private pay patients are required to pay fees for all dental services at the time of the visit. The only other service for Hispanics is a dental bus, accessible 2 to 4 times each month, and sponsored by Chatham Hospital's Immigrant Health Initiative and the North Carolina Baptist Men's Association.

Due to limited access to dentists, oral care for this primarily immigrant Hispanic population is a significant challenge. In 2000, the U.S. Surgeon General reported

that oral health was essential to general health and well-being. He referred to oral diseases as the “silent epidemic” affecting the most vulnerable citizens, including members of racial and ethnic minority groups.[4]

Minimal data related to Hispanic oral health in Siler City is available. Studies are needed to identify the oral health needs of this population. Study findings provide information for planning and provision of oral health services to the Siler City Hispanic population. A greater understanding of preventive oral health practices and beliefs regarding oral health among Latinos is imperative in order to appropriately target prevention interventions that are to be developed. Once more knowledge is attained in relation to the oral health habits present in this population, public health initiatives can be taken in order to provide oral health education and preventive services that best fit the needs of this particular population.

CHAPTER 2

REVIEW OF THE LITERATURE

Demographics

The Latino population is the fastest growing minority group in the United States. In 2004 the United States Hispanic population was estimated at approximately 40 million people, comprising 14% of the total U.S. population.[5] As growth continues, the Pew Hispanic Center estimates that by the year 2020, the Latino population will reach about 60 million.[6] Not only have the number of Hispanic immigrants increased, but also, a younger Hispanic population is attracted to the United States; their mean age of 25 years.[6] Between 1990 and 2000, the strong economy and added job opportunities in the South stimulated strong migration (Figure 1). With the exception of Nevada in the south west, North Carolina, Arkansas, Georgia, Tennessee, South Carolina, and Alabama experienced the highest rate of growth. Because of the strong explosive migration, these six Southern states are deemed new Southern Hispanic settlement states.[1]

In particular, North Carolina experienced substantial growth. The Hispanic population in North Carolina grew from 76,726 in 1990 to 378,963 in 2000. This was an increase of 394%.[1] The majority (65%) of the North Carolina Hispanic population is of Mexican origin, but many others are from the Caribbean, Central America, or South America.[3] Over half (57%) of the Latinos in the new settlement of the South

are foreign born. More specifically, approximately 64% of North Carolina Hispanics are foreign born.[3] Evidence shows that foreign born Latinos earn the least of all workers in the labor force; one reason offered is their lower level of education. As a whole, 25% of Hispanics in the United States have less than a ninth grade education; 17% have between a ninth grade and twelfth grade education without a diploma; 28% are high school graduates; 19% have some college or an associate's degree, 9% have a bachelor's degree, and 3% have an advanced degree.[5]

Currently, 23% of the United States Latinos live below the poverty level.[6] Findings show the median weekly earnings for Latinos is approximately $375 for foreign born and $425 for native born.[6] Hispanic growth has had a major impact on specific areas of North Carolina. For example, Siler City, a town located within Chatham County in central North Carolina has a Latino population (2,740) that accounts for 39% of the total town's population.[2] New health care challenges, including oral health care challenges, have resulted.

The Use of Dental Services Among the Hispanic Population and Perceived Need

It has become increasingly important for oral health care providers to understand the factors, which affect the utilization and access to dental services by this growing Hispanic population. To begin to understand these factors affecting local access and utilization, one must understand the trends in the use of dental services and the perceived needs of Latinos in the United States. A study conducted by Woolfolk et al, with twenty Mexican-American mothers concluded that when Mexican migrant workers experienced oral health problems, they sought over the counter palliative treatments, or sought dental care for the sole purpose of extracting the

uncomfortable tooth.[7] Other studies have confirmed the Woolfolk et al finding that Hispanics are more likely to seek dental attention in response to pain rather than for purposes of prevention.[8-13]

In 1995 Watson and Brown gathered information on oral health from the 1985-1986 National Survey of Oral Health in U.S. Adults and Seniors conducted by the Institute of Dental Research. Watson and Brown concluded from this survey, that 60% of Hispanics reported perceived dental needs.[14] Though perceived dental needs were highest among this population, the rate of dental visits appeared to be lowest, with approximately 40% having visited the dentist during the previous year.[10, 14, 15] Their rate of dental visits was 20% less than that of whites.[14] In addition, data revealed that fewer Hispanics received oral examinations or cleanings while more received emergency care.[14] Ten percent of the dental care received by Latinos was due to emergencies; this rate is two to three percent higher than that of blacks and whites.[14] There were strong ethnic and racial differences in receipt of dental care with 7% of adult Hispanics never visiting a dentist compared to 1.7% blacks and 0.3% of white adults.[14]

Davidson and Andersen later affirmed the informal study performed by Woolfolk et al; Hispanics are more likely to seek dental care only in response to symptoms such as pain, not as a preventive measure.[10] In this same study dentate adults between the ages of 35 and 44 had a mean number of 0.6 to 0.9 dental visits per year. When compared to the 1.6 to 1.9 dental visits per year among the white population in the United States, Hispanic adults were significantly lower. The Davidson and Andersen study concluded that among the study population of San Antonio Hispanic adults,

mostly Mexican-American, dental visits increased only if the individuals were highly motivated, had a source of dental care, or experienced dental pain.[10]

A 2002 study examined the use of dental services among a Hispanic population of migrant farm workers in rural southern Illinois.[13] The study consisted of a 26-item survey of 119 patients from a local health clinic. About 51% had not sought oral health care in the previous year.[13] Once again confirming previous studies, the majority of migrant farm workers claimed that the lack of pain and discomfort was the reason for not seeking dental care. Other reasons included lack of time, costly fees, and lack of access to available facilities. Similar to the San Antonio study, 41% reported seeking oral care on a yearly basis, and 42% claimed to seek care only in cases of pain.[13] Among those receiving regular dental care, the primary services received were oral examinations, prophylaxes, and restorations. [4]

A similar study was performed in Wichita, Kansas using a convenience sample of seventy-five Hispanic adults.[8] Study participants were asked their reason for not having been to a dentist. Approximately 20% perceived no need for oral health care, and 23% reported the inability to find a dentist. About 44% stated that, unless pain was involved, they did not want to spend money on oral health care visits.[8] Of those having visited a dentist, 14% went for a regular exam, 14% went for a regular cleaning, 23% reported a toothache, 29% had a tooth extracted, 12% sought restorative services, and 7% went for esthetic purposes. Of all participants, regardless of visits to dentists, 66% indicated the need for oral health care.[8]

A more recent study conducted in 2003 by Doty and Weech-Maldonado further supported prior studies claiming that Mexican-Americans had the lowest proportion

of regular checkups than any other Hispanic subgroup or minority in the United States.[15] This study used the 1996 Household component of the Medical Expenditure Panel Survey in order to collect data sets. The analysis included 14,952 respondents with an over sampling of both African Americans and Hispanics. About 42% of Mexican Americans received regular dental care.[15] Mexican Americans differed from the other Hispanic subgroups including Puerto Ricans and Cubans who received dental care slightly more frequently at approximately 56%. In this same study it was concluded that only 44% of Hispanic adults made an annual visit to the dentist. Again, affirming prior studies, Doty and Weech-Maldonado reported that about 17% of Mexican Americans and approximately 13% of all other Hispanics claimed to have never received dental treatment compared to about 7% of African Americans and about 4% of whites.[15]

Data from the Hispanic Health and Nutrition Examination Survey of 1982-1984 has been the most valuable measure of oral health as it relates to Hispanics up to this day. Stewart et al further investigated factors related to oral health among Mexican-Americans, Cuban-Americans, and Puerto Ricans. They found that of all subgroups, Mexican-Americans had the highest prevalence of never having had their teeth cleaned and having experienced more than five years since their last dental care.[12]

Overall, utilization and perceived need in relation to oral health is low among Hispanics.[16] Though oral health disparities among Latinos should lead to increased utilization, this has not been the case.[15] The aforementioned studies provide supporting evidence that the percentage of adults having never sought dental care is

disproportionately higher among minorities, especially Mexican-Americans.[10-13, 15] Previous research also shows differences in perceived oral health among ethnic minorities, including Hispanics. Ethnic minorities are more likely to report a more negative oral health status.[17] This leads to concerns regarding the oral health status of Hispanics residing in the United States and their self-care oral health practices.

Oral Health Status and Practices

National Studies indicate Latinos have higher levels of both dental caries and periodontal disease.[14, 16] This review will concentrate primarily on oral health in relation to the gingiva and the surrounding supporting structures. Findings from the 1985-1986 National Survey of Oral Health in U.S. Adults and Seniors showed that Hispanics were twice as likely to have untreated periodontal disease as non-Hispanic whites. Further, Hispanic adults had a higher prevalence of calculus, gingivitis, attachment loss and periodontal pockets.[14]

The Lukes and Miller study surveying 119 migrant farm workers in Illinois found that though most individuals brushed at least daily, only 11% used floss daily, and over half had never used floss at all. Of those receiving care, 58% had received brushing instructions and 45% had received flossing instructions. Approximately 50% of those receiving care reported bleeding gingiva, 37% reported swollen or tender gingiva, and 49% reported tooth loss. Thus, the study concluded that nearly half might have periodontal disease.[13] Similarly, the Vazquez and Swan study using a convenience sample of 75 adult Hispanics found that 85% of respondents brushed their teeth at least once daily. Although 30% reported never flossing, another 38% reported using a toothpick for interdental cleansing.[8]

Data from the1982-84 Hispanic Health and Nutrition Examination Survey determined that about 46% of Mexican Americans had gingivitis in comparison to about 8% of the general population.[15] Findings revealed that over 75% of all Hispanic subgroups presented with gingivitis.[12] Self-reported condition of gums revealed that 35% of Mexican-Americans, 22% of Cuban-Americans, and 32% of Puerto Ricans reported having fair or poor gingival conditions. In relation to periodontal disease, 13% of Mexican-Americans, 12% of Puerto Ricans, and 9% of Cuban-Americans had at least one pocket with periodontal involvement.[12] About 10% of Mexican-Americans, 13% of Cuban-Americans, and 2% of Puerto Ricans did not have periodontal disease. In contrast to periodontal disease prevalence, once again reaffirming findings from the previous section, less than 4% of all subgroups reported periodontitis as the main reason for their last dental visit.[12] Additionally, more current data comparing the National Health and Nutrition Examination Survey III and National Health and Nutrition Examination Survey 1999-2000, characterized Mexican-Americans as exhibiting worse clinical periodontal conditions than non-Hispanic whites.[18]

Findings from Nakazono et al study reveals that increased oral hygiene practices result in lower unmet treatment needs. This demonstrates the importance of oral hygiene practices.[19] However, there are certain behavioral components related to preventive oral health practices that must also be examined. Health care providers must take other factors into consideration when addressing the oral health needs of the Hispanic population; knowledge, beliefs and barriers related to utilization of dental services and oral health practices.

Beliefs and Knowledge of Oral Health and Preventive Practices

Aside from understanding the rate of preventive visits and the oral health status of Hispanics in the United States, it is important to further evaluate why these trends exist. The Woolfolk et al study assessed oral health knowledge among a group of migrant worker mothers. Half of the mothers reported that their gums bled. However, few of these women knew what should or could be done about the condition. This same study found women lacking in knowledge about the relationship between oral hygiene and periodontal health.[7]

A study by Adair et al in 2004 examined oral health beliefs among diverse populations, it found that Hispanic adults expressed a more negative belief about the benefit of preventive oral health practices.[20] A similar study conducted on familial and cultural perceptions and beliefs of oral hygiene, examined the extent of parental attitudes of oral hygiene practices and the prediction of similar behaviors in their children. This study found that, although Mexican Americans were very positive about the value of tooth brushing, they were less likely to believe their ability in implementing tooth brushing behaviors.[21]

The Health Belief Model describes that individuals will perform preventive practices in order to deflect disease if they deem themselves susceptible to the condition, if they consider it to have potentially serious consequences, and if they believe that the preventive practice will be beneficial in reducing their susceptibility to or severity of the condition.[22] Most important, individuals must believe that the anticipated barriers to practicing these preventive practices are outweighed by the benefits.[22] However, there are demographic, psycho-social, and structural variables

that may influence these preventive health behaviors.[22] In order for behavioral change to succeed, individuals must believe that changing their current behavior will result in a valued outcome at an acceptable cost. Also, individuals must feel competent to overcome perceived barriers that may present themselves in order to take action.[22]

Barriers

The dental health status and the use of dental services are imperative factors that need to be taken into consideration when dealing with oral health among the Hispanic population. Barriers and attitudes affecting access to oral health care within minority populations include: educational level coupled with cultural values and beliefs, language, lack of access to service, low income, lack of dental insurance, lack of recognition of oral health care, acculturation, and inaccessibility to health professionals of the same ethnicity.[8] The most obvious barrier is assumed to be language. Despite the considerable growth of Hispanics in the U.S. population, very few health care providers speak Spanish.[8] This alone makes it very difficult for Hispanics to maneuver themselves through the U.S. healthcare system. Language barriers also make it impossible for individuals to establish ongoing health care relationships with their providers.

Acculturation is most often defined as the process of adapting to a new culture; this is most often measured as the changes produced in language.[23] In 1995 Watson and Brown made an observation on access to care based on acculturation from the 1982-84 Hispanic Health and Nutrition Examination Survey.[14] Watson and Brown found that Mexican Americans with low acculturation status in the United States had

minimal access to care regardless of their needs. They felt that this was due to the differences between the patients' and providers' culture and language. These two differences between the patient and provider are important contributing factors when dealing with the lack of preventive care among the Hispanic populace.[14]

A study by Vazquez and Swan found that 41% of Hispanics who spoke English fluently had dental insurance and 53% had a regular place for oral health care. These individuals also showed trends in less time since their last dental visit and dental examinations, and more frequent health care visits.[8]

Ismail and Szupunar conducted a study accounting for acculturation. The study concluded that Mexican Americans with low acculturation had notably higher mean plaque and calculus index scores.[9] For those individuals with a low acculturation status, the mean debris index was 1.06 and mean calculus index being 1.08 compared to those with a high acculturation status which had a mean debris index of 0.65 and a mean calculus index of 0.51. These low acculturated individuals also presented a higher prevalence of gingivitis. Results revealed that those with low acculturation status having a higher occurrence of both gingivitis and periodontal pocketing. The mean gingivitis score was 81.30 for those with low acculturation and 77.30 for those individuals with a high acculturation status. Based on periodontal pocketing, the mean score for low acculturated individuals was 15.10 and those with high acculturation was 8.20.[9] Ismail and Szupunar also concluded that those with low acculturation status (17%) were less likely to be covered by dental insurance than those with a higher acculturation status (44%). Farther, about 25% of the low acculturated individuals had never been to the dentist compared to about 6% of

those with a high acculturation status. Through further examination Ismail and Szupunar established that those with low acculturation sought dental care for toothaches and extractions more frequently rather than for preventive measures.[9]

Another study further confirmed that acculturation was an important predictor for the use of dental care among these populations. Highly acculturated Mexican-Americans were thirty percent more likely to have received dental care in the last five years than those with low acculturation. Highly acculturated Cuban-Americans were eighty percent more likely to have used dental care in the past two years than those lowly acculturated individuals. On the other hand, Puerto Ricans with a high acculturation status were twenty percent more likely to have used dental care in the past two years than those with low acculturation status.[10]

The cost of dental care alone is a great barrier to the Hispanic population.[8] National data shows Hispanics, most specifically Mexican-Americans, having low education and income levels.[14, 15] Thirty-eight percent of Hispanics were in the lowest annual income bracket of $12,499 or less and over half (52%) did not have dental insurance.[14] Another survey found that 41% of Mexican Americans were uninsured which makes them the highest proportion of uninsured persons in the United States. This investigation indicated that Hispanic adults are at high risk for lacking access to preventive care due to their elevated uninsured rate. However, findings reveal that privately insured Hispanics do not differ extensively in the utilization of preventive dental services. Publicly insured individuals were drastically less likely to use dental recalls.[15] Doty and Weech-Maldonado theorized that this was due to a combination of differential treatment and differential use of benefits.

Differential treatment may be received due to geographic differences in Medicaid benefits. In 2003, eight states did not cover adult dental services, and Medicaid benefits vary from state to state. Inadequate dentist participation in the Medicaid program may be a factor affecting treatment as a result of the low reimbursement rates.[15] Differential use of benefits may be due to the lack of acculturation and the increased language barrier present among the publicly insured Hispanic population. Another factor affecting differential use of service may include dissimilar beliefs about dental care, which in turn affects the pattern of use, and the value placed on preventive dental care among Latinos. Doty and Weech-Maldonado found that enabling resources are important in estimating preventive dental care utilization among minorities. They believe that by reducing discrepancies in insurance participation, access to preventive dental care can be enhanced.[15]

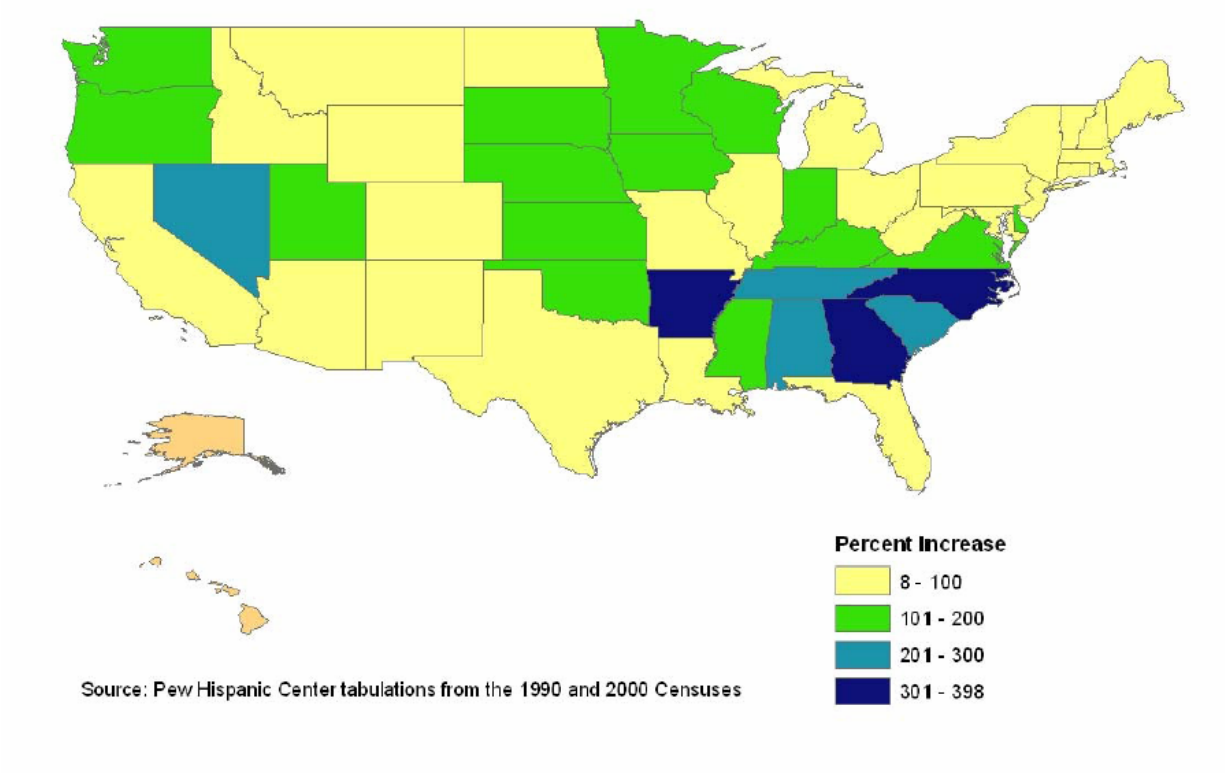
An aforementioned study conducted with a group of Hispanics in Kansas found that 75% of participants lacked dental insurance.[8] Overall, insured individuals averaged less time since their last dental visit and increased the amount of annual dental visits.[8] Confirming earlier findings, the presence or lack of dental insurance greatly affects utilization by the Hispanic community. This same study examined that education beyond high school predicted more dental visits, fewer months since the prior dental exam, and greater frequency of oral care. Those with a higher education level perceived their dental health status as superior, recognized greater oral health needs, and were less likely to delay seeking care.[8] Data shows that Mexican Americans with less than a high school education have a higher prevalence of

periodontal disease.[24] Overall, data has revealed education, dental insurance, and acculturation as the important predictors of dental care utilization.[12]

Research Agenda for Latino Oral Health

In 2004, the Hispanic Dental Association and the University of Puerto Rico met in order to develop an agenda for future Latino oral health research. Though national surveys provide important data about health issues among Hispanics, this data only provides a macro view of the Hispanic population within the United States.[23] The only published national survey to date focusing on Latino health issues was the 1982-1984 Hispanic Health and Nutrition Survey. Though this study provided an abundance of information about Latinos, the study was conducted when the number of Hispanics in the United States was dramatically lower.[23] This is why Ramos-Gomez et al suggest that more data is needed analyzing the United States Latino population. This study proposes population-based, social and behavioral sciences, and health promotion and communications studies as urgent priorities within Hispanic research.[23]

Figure 1: Hispanic Growth by State, 1999-2000



CHAPTER 3

BRIEF INTRODCTION AND REVIEW OF THE LITERATURE

The Latino population is the fastest growing minority group in the United States. In 2004 the United States Hispanic population was estimated at approximately 40 million people, comprising 14% of the total U.S. population.[5] As growth continues, the Pew Hispanic Center estimates that by the year 2020, the Latino population will reach about 60 million.[6] Not only have the number of Hispanic immigrants increased, but also, a younger Hispanic population is attracted to the United States; their mean age of 25 years.[6] Between 1990 and 2000, the strong economy and added job opportunities in the South stimulated strong migration. With the exception of Nevada in the south west, North Carolina, Arkansas, Georgia, Tennessee, South Carolina, and Alabama experienced the highest rate of growth. Because of the strong explosive migration, these six Southern states are deemed new Southern Hispanic settlement states.[1]

In particular, North Carolina experienced substantial growth. The Hispanic population in North Carolina grew from 76,726 in 1990 to 378,963 in 2000. This was an increase of 394%.[1] The majority (65%) of the North Carolina Hispanic population is of Mexican origin, but many others are from the Caribbean, Central America, or South America.[3] Over half (57%) of the Latinos in the new settlement of the South are foreign born. More specifically, approximately 64% of North Carolina Hispanics

are foreign born.[3] Evidence shows that foreign born Latinos earn the least of all workers in the labor force; one reason offered is their lower level of education.[25] As a whole, 42% of Hispanics in the United States have less than a high school education; 28% are high school graduates; 19% have some college or an associate's degree, 9% have a bachelor's degree, and 3% have an advanced degree.[5] Currently, 23% of the United States Latinos live below the poverty level.[6] Findings show the median weekly earnings for Latinos is approximately $375 for foreign born and $425 for native born.[6] Hispanic growth has had a major impact on specific areas of North Carolina. For example, Siler City, a town located within Chatham County in central North Carolina has a Latino population (2,740) that accounts for 39% of the total town's population.[2] New health care challenges, including oral health care challenges, have resulted.

Currently, there are only four licensed dentists practicing in Siler City. None are of Hispanic origin and none speak Spanish. A new clinic opened in 2005 with a bilingual (English to Spanish) interpreter, yet private pay patients are required to pay fees for all dental services at the time of the visit. The only other service for Hispanics is a dental bus, accessible 2 to 4 times each month, and sponsored by Chatham Hospital's Immigrant Health Initiative and the North Carolina Baptist Men's Association.

Due to limited access to dentists, oral care for this primarily immigrant Hispanic population is a significant challenge. In 2000, the U.S. Surgeon General reported that oral health was essential to general health and well-being. He referred to oral

diseases as the “silent epidemic” affecting the most vulnerable citizens, including members of racial and ethnic minority groups.[4]

National surveys show that Hispanics have the highest proportions of perceived needs than any other minority group.[14] Though perceived needs is shown to be highest among this population, the rate of dental visits is significantly lower.[10, 14, 15] Studies report that Hispanics are more likely to seek dental care in response to symptoms such as pain rather than as a preventive measure.[7, 8, 10, 13-15] National data also indicates that Hispanics have higher levels of dental caries, periodontal disease, calculus, gingivitis, attachment loss, and periodontal pocketing.[12] Dental health knowledge may influence the use of preventive practices. Studies show Hispanics as lacking knowledge about the relationship between oral hygiene and periodontal health and are less likely to believe in their ability to implement preventive behaviors such as tooth brushing.[7, 20, 21]

Minimal data related to Hispanic oral health in Siler City is available. Studies are needed to identify the oral health needs of this population. Study findings provide information for planning and provision of oral health services to the Siler City Hispanic population. A greater understanding of preventive oral health practices and beliefs regarding oral health among Latinos is imperative in order to appropriately target prevention interventions that are to be developed. Once more knowledge is attained in relation to the oral health habits present in this population, public health initiatives can be taken in order to provide oral health education and preventive services that best fit the needs of this particular population.

CHAPTER 4

MATERIALS AND METHODS

A descriptive questionnaire research design was utilized. The primary investigator, a native Spanish speaker, drafted the questionnaire in English, and translated it into Spanish. It was pre-tested using bilingual allied dental professionals from a local Hispanic dental practice. Allied dental professionals represented Mexico, Venezuela, and Colombia. The primary investigator incorporated suggested changes, adjusting for differences in dialects. The thesis committee reviewed the questionnaire and recommended final changes. The Institutional Review Board of the University of North Carolina reviewed and approved the survey instrument in August 2005.

In order to aid in the minimization of misinterpretation by study participants, a pilot questionnaire was administered. Five individuals, from the community where the questionnaire was ultimately carried out, were recruited from patients visiting a local dental bus. After completing the questionnaire, patients provided written feedback on the questionnaire length, the clarity of the questions, and the amount of time needed for questionnaire completion. No further changes to the 41-item questionnaire were suggested.

The questionnaire was divided into six sections: dental health care habits, dental visits, condition of gums, knowledge and beliefs about gum disease, concerns about teeth and gums, and demographic information. Sections pertaining to dental health

care habits, dental visits, and condition of gums included multiple choice questions (See Appendix A and B). In the section pertaining to dental visits, respondents were asked to choose all that applied for the reason of their last dental visit. Therefore, more than one response could have been chosen for this question. Similarly, participants were asked to select the common signs of gum disease; once again, participants were asked to circle all that applied. The questions related to the beliefs about gum disease utilized six likert-type scale questions. For example, “I should only visit a dentist if I am in pain.” Participants were asked to choose a response from a 5-point likert type scale: strongly agree, agree, not certain, disagree or strongly disagree (See Appendix A and B). The demographic information section included gender, age, income, education, country of origin, length of residence in the United States, and whether or not the respondents had dental insurance. The last section of the questionnaire asked participants to choose one perceived need for dental treatment from the following procedures: do not need dental treatment, tooth that hurts, dental check-up, cleaning, tooth pulled, treatment for gum disease, broken tooth, teeth straightened, sores, fill in gaps between teeth, all teeth pulled, gold removed, dentures, and other.

Prior to survey implementation, Lay Health Advisors from Chatham Hospital’s Immigrant Health Initiative and volunteers from Santa Julia Catholic Church were calibrated to the prescribed procedures for administering a questionnaire as it relates to human research issues. This was accomplished in Spanish by the principle investigator. This training was previously utilized by researchers at the University of North Carolina School Of Public Health with a similar group of lay

health advisors. All recruiters were required to obtain a score of eighty or better on the post test.

For the study, inclusion criteria included male or female Hispanic individuals between eighteen and sixty-four years of age. Exclusion criteria included those of non-Hispanic origins and individuals younger than eighteen years of age and older than sixty-four years of age. The convenience sample approached 5% of Siler City's total Hispanic population.

Questionnaires were completed following two Sunday worship services on September 25, 2005, at Santa Julia Catholic Church in Siler City, North Carolina. Individuals attending Sunday worship had equal opportunity to participate voluntarily in the study. Consent to participate was implied by the participant's completion of the 15 minute questionnaire. No identifying markers were included in the questionnaire; it was completely anonymous. The primary investigator was present during the questionnaire completion in order to ensure the integrity of the project.
The majority of individuals completed the questionnaire independently. Lay health advisors were available to assist those who asked for help and those requiring assistance reading the survey. After completion of the questionnaire, respondents were offered oral health literature, oral physiotherapy aids, and a telephone calling card.

Following data collection, questionnaires were numbered for ease in data entry. Data from the questionnaires were manually entered into a Microsoft Excel Spreadsheet. At the completion of data entry, all questionnaires were reviewed for

verification. Data was analyzed using SAS version 9. Frequencies and bivariate analyses were obtained from the data.

CHAPTER 5

RESULTS

A total of 158 questionnaires were collected. Five were excluded from analysis: four respondents did not meet the age criteria and one did not meet the criteria of Hispanic ethnicity. Therefore, a total of 153 questionnaires were analyzed.

Demographics

Slightly more than half (54%) of the respondents were female. The mean age was 33.8, with a range from 18 to 62 years of age. High proportions (84%) of respondents were of North American Hispanic origin (Mexican), with 15% having a Central American origin, and less than 1% having a South American origin (Figure 2). The mean time of residence in the United States was 106.8 months with a range from 2 to 492 months. Approximately 80% of the respondents reported their weekly income, with a majority of individuals reporting $201-$400 weekly (Figure 3). In addition, respondents were asked to record their highest level of school completed. Educational categories included none, primary, secondary, preparatory, and higher education. The majority of individuals responded to having either a primary, secondary or preparatory education (Figure 4). A minority (3%) of questionnaire participants had no educational background and a few (7%) had some type of higher education. Furthermore, a majority (71%) reported having no dental insurance. About 4% did not know their dental insurance status.

Dental Health Care Habits

As stated in the Methods section, three questions pertained to tooth brushing habits. The first question asked individuals how often they brushed their teeth. Table 1 indicates that about 66% reported brushing more than once daily, with about half brushing two times daily. When asked who taught them how to brush their teeth correctly, participants were required to choose only one response. Survey participant responses were divided into four categories: no one/myself; family member; professional (teacher, dentist, dental hygienist, dental worker); and other. The majority of individuals (46%) reported having been taught by a family member (Figure 5).

Five questions dealt with dental flossing. First, participants were asked whether or not they cleansed between their teeth. Approximately 125 participants (82%) responded “yes” to interdental cleansing (Table 1). Those responding “yes” were then asked to answer four additional questions about flossing (Table 1). When asked to indicate the number of times individuals flossed “yesterday”, the majority (46%) responded 1-2 times. Additionally, the questionnaire asked for the number of times individuals flossed “normally”. Once again, the majority (62%) responded 1-2 times daily (Table 1). Moreover, individuals were asked who taught them how to properly floss their teeth; 42% had never received flossing instruction (Figure 6).

Dental Visits

A total of three questions related to dental visits. Participants were first asked if they had ever had a professional cleaning conducted by a dental hygienist or a dentist. Approximately 87% reported “no” or “never” (Figure 7). Participants were

then asked to recall their last dental visit. Less than half (42%) responded that they had visited a dentist within the last year; about 19% responded at least two years since their last dental visit. Approximately 7% reported 3-4 years since their last dental visit; about 11% responded “greater than five years”, 11% responded “never”; and about 9% reported they “did not remember”. Finally, respondents were asked the reason for their last dental visit, 39% stated their last dental visit was for a cleaning (Figure 8).

Gum Condition

When participants were asked whether their gums bled when they brushed or flossed their teeth, more than half of the participants (52%) indicated bleeding (Figure 9).

Knowledge and Beliefs

Respondents were asked to identify the common sign of gums disease, choosing all that applied: swollen, inflamed, or bleeding gums; continual bad breath; loose teeth; gums that are pulling away from the tooth; other; and do not know. Most individuals (66%) responded that swollen, inflamed, or bleeding gums were common signs of gums disease. Furthermore, 25% reported bad breath, 14% reported loose teeth, 5% reported recession, and 1% reported other as common signs of gum disease (Figure 9).

Participants were asked to rank their beliefs about gum disease. About 65% strongly agreed that brushing their teeth could help prevent gum disease. However, less than half (45%) strongly agreed that flossing could also help prevent gum

disease. Moreover, more than half of the respondents (64%) stated that they strongly agreed that it was important to visit the dentist every six months. Most individuals either disagreed or strongly disagreed that one should only visit the dentist if in pain. Furthermore, approximately one third (37%) of individuals stated that they were not certain if healthy gums bled occasionally. In addition, large percentages (41%) were not certain if tooth loss was a normal part of aging (Table 2).

Perceived Needs

Respondents were asked to choose all of their perceived dental needs. A majority (72%) chose dental cleaning as a perceived need, followed by dental checkup (37%) and dental filling (32%) (Table 3).

Bivariate Analyses

Bivariate analyses were performed using Mantel-Haenszel correlation tests. Correlations revealed strong evidence of a statistically significant association between who taught individuals how to floss and their flossing frequency (p-value ≤ 0.05). In particular, those who were taught how to floss by a family member or a friend had the highest average flossing frequency. Those who were taught to floss by a professional had the second highest average, and those who were never taught or who were self-taught had the lowest average flossing frequency (Table 4). No evidence indicated statistically significant correlation between brushing frequency and who taught individuals to brush their teeth (Table 5).

Further, statistically significant correlations were found between who taught individuals how to floss and the rate of dental visits (p-value $\leq$ 0.05). Specifically, those who were taught how to floss by a professional had the highest average rate of dental visits. Those who were not taught, self-taught, or taught by a family member or friend had similar average dental visit rates, but lower than those taught by a professional (Table 6).

Furthermore, evidence revealed a statistically significant association between who taught individuals how to brush and their last dental visit (p-value $\leq$ 0.05). Those who were taught how to brush by a professional had the highest average dental visit rate. Those who were not taught, self-taught, or taught by a family member or friend had similar average dental visit rates, but lower than those taught by a professional (Table 7).

In addition, a statistically significant association existed between dental insurance and last dental visit (p-value $\leq$ 0.05). Those with dental insurance had a significantly higher rate of visiting a dentist (Table 8). Additionally, evidence of a statistically significant association between brushing frequency and the belief that healthy gums bleed was found (p-value $\leq$ 0.05). A Spearman correlation coefficient of -0.1745 indicates that higher brushing frequencies were associated with higher rates of disagreement that healthy gums bled (Table 9). There was no evidence of any statistically significant association between floss frequency and knowledge of gum disease (Table 10). Similarly, no evidence of statistically significant association was found between flossing frequency and familiarity with signs of gum disease (Table

11). Also, no association was found with flossing frequency and whether or not individual's gingiva bled upon brushing or flossing (Table 12).

Moreover, associations between last dental visit and self reported perceived needs were found (Table 13). Individuals reporting not needing a dental cleaning had a higher rate of visiting the dentist than those who responded needing a dental cleaning (p-value ≤ 0.05). No other associations were found.

Figure 2: Percentage of Respondents based on country of origin

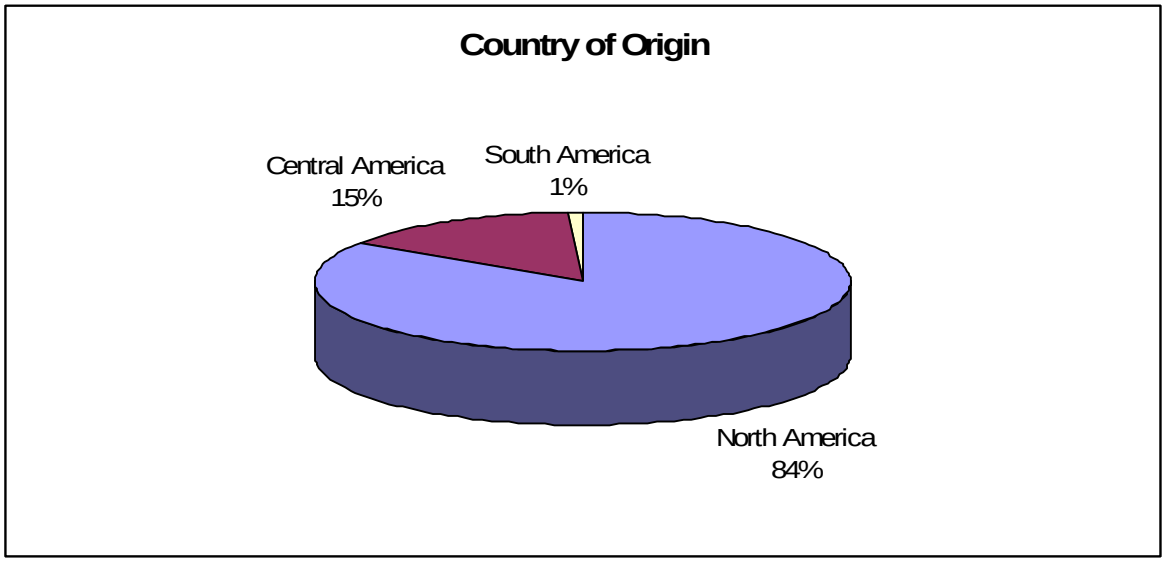


Figure 3: Self-Reported Weekly Income

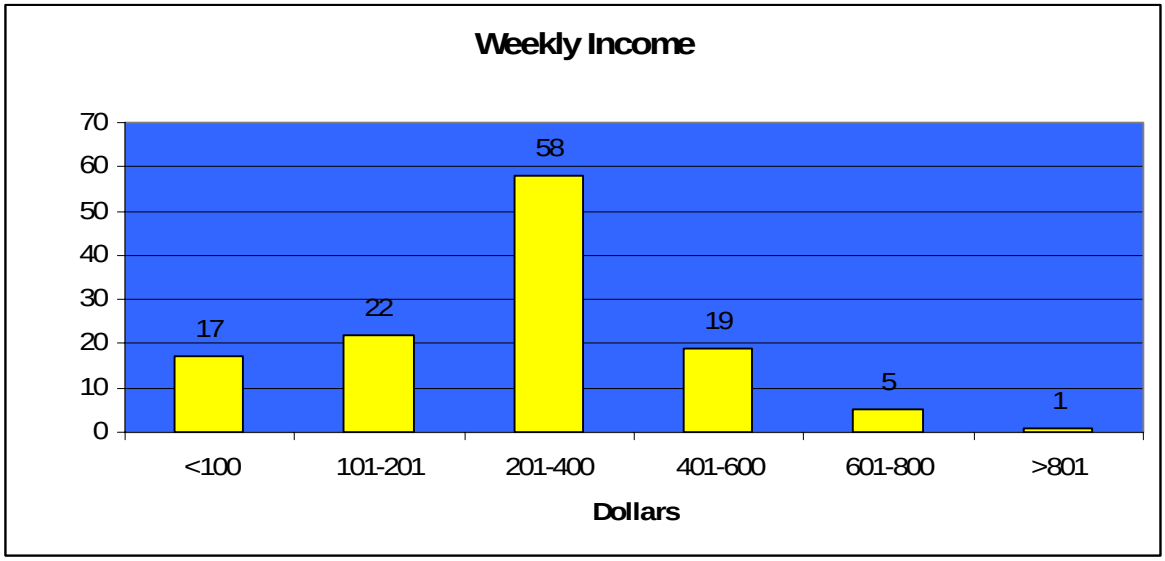


Figure 4: Level of Education

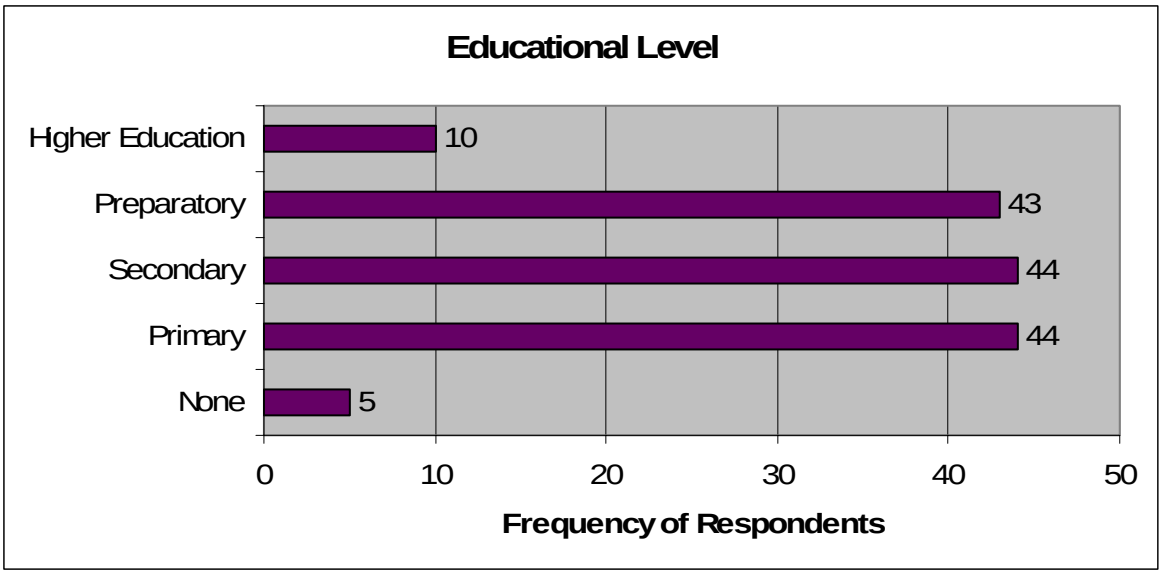


Figure 5: Source of tooth brushing instruction

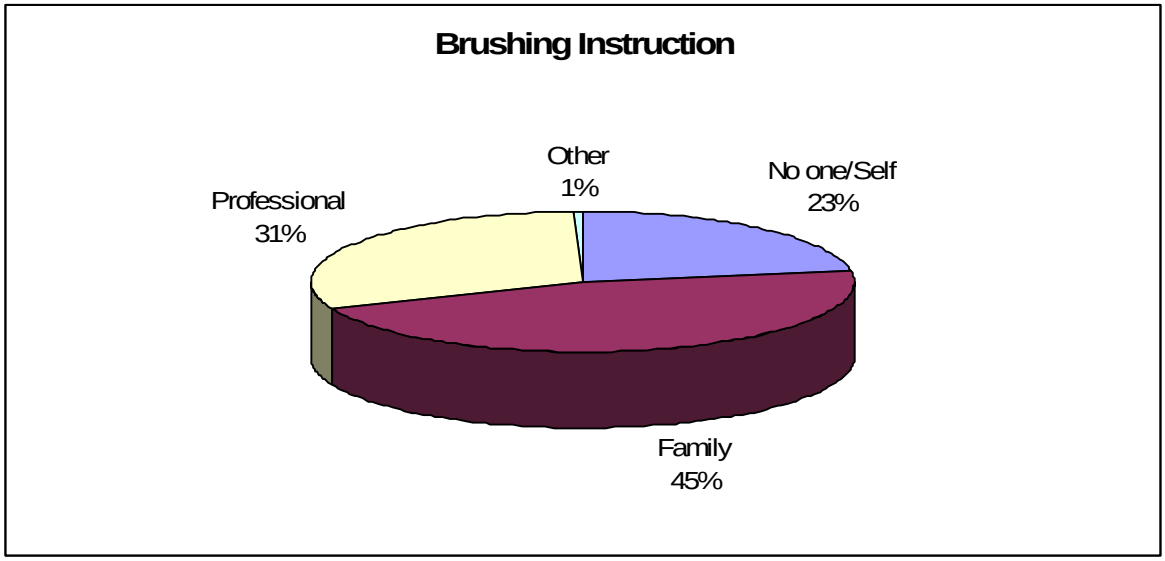


Figure 6: Source of flossing instruction

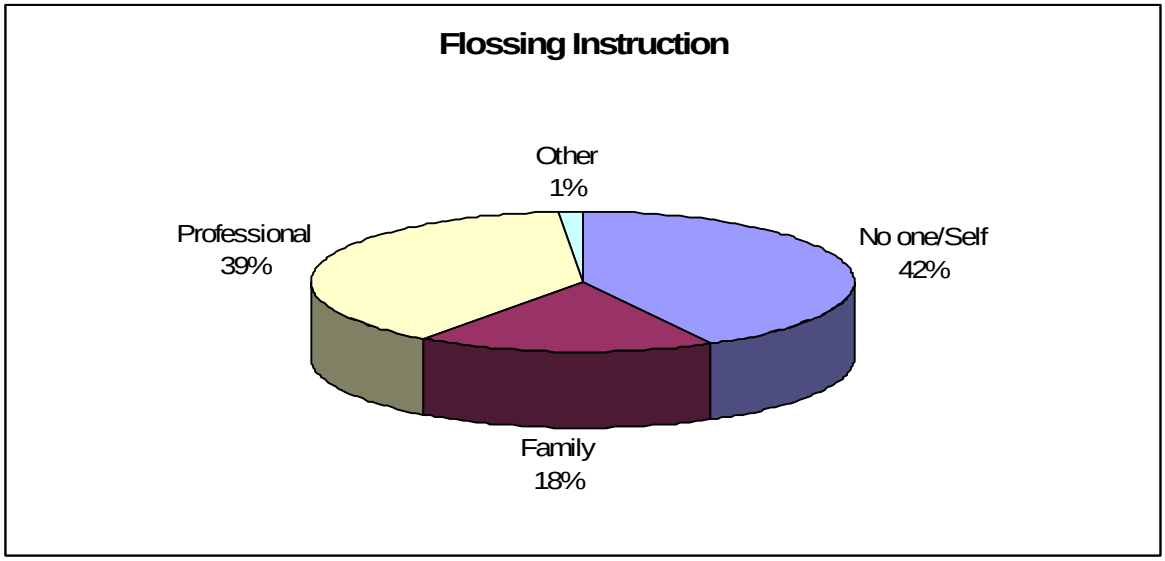


Figure 7: Frequency of individuals ever having a professional dental cleaning

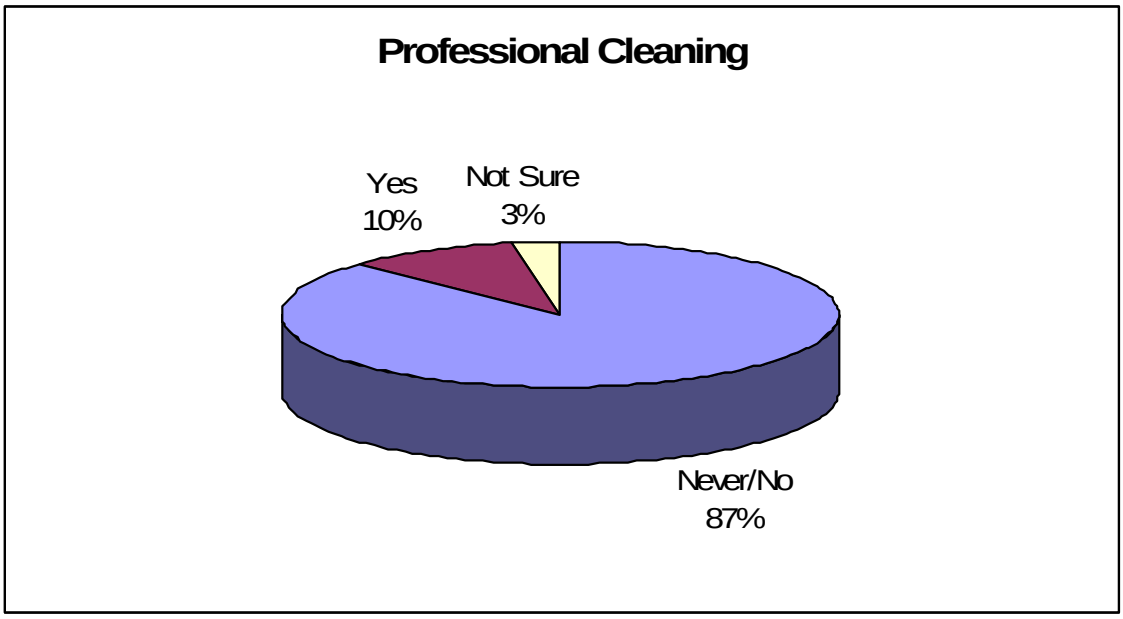


Figure 8: Reasons for last dental visit

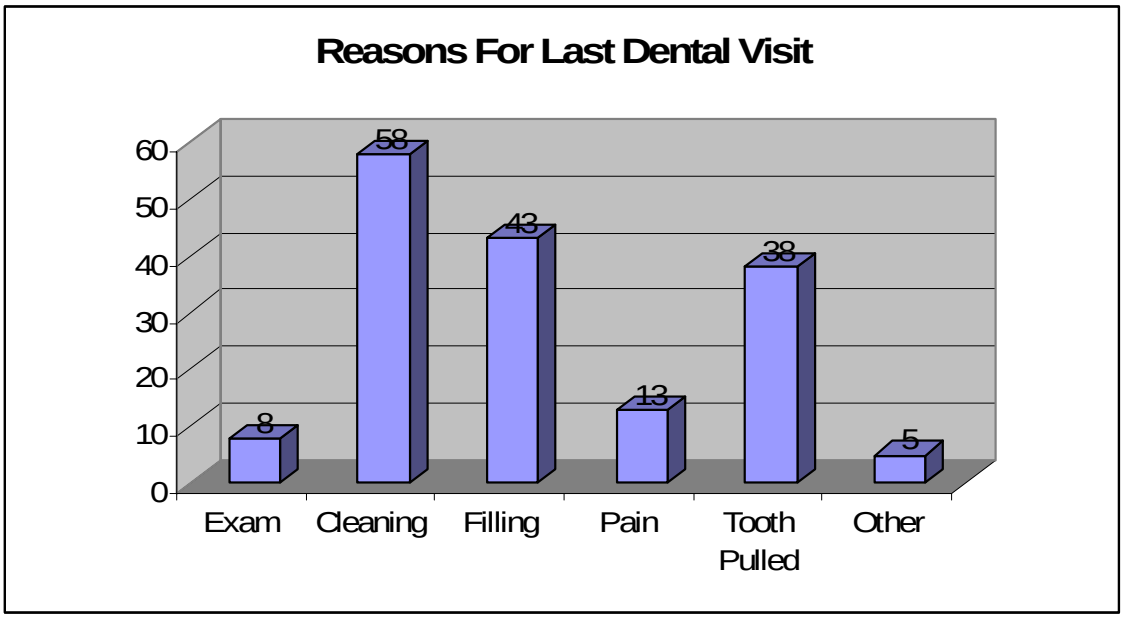


Figure 9: Gums that bleed during tooth brushing or flossing

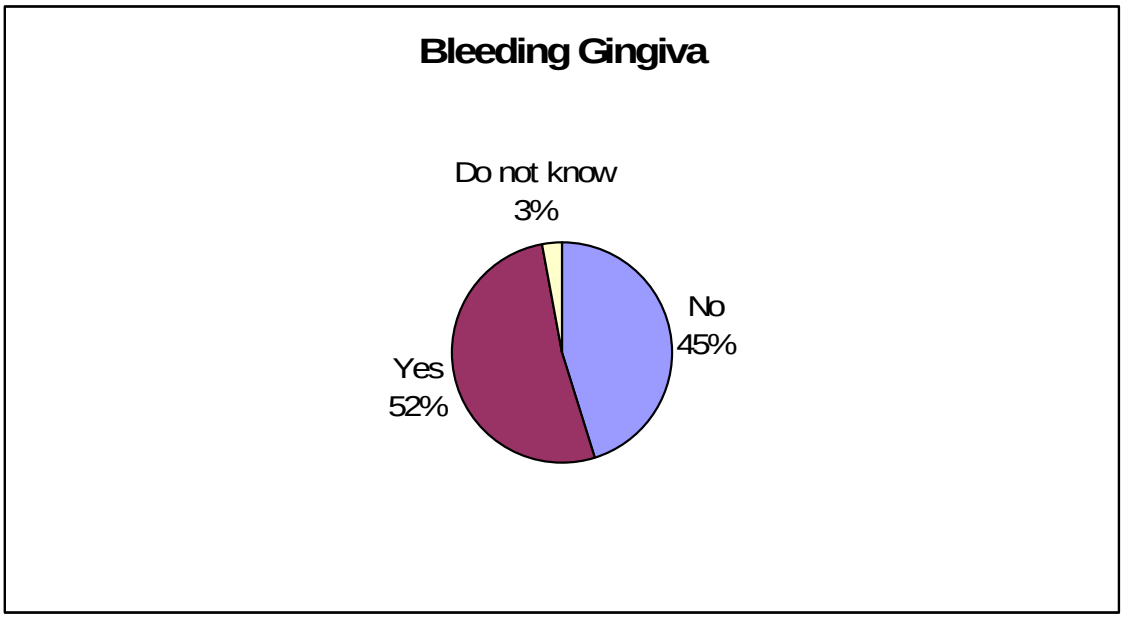


Figure 10: Participants responding "yes" to common signs of gum disease

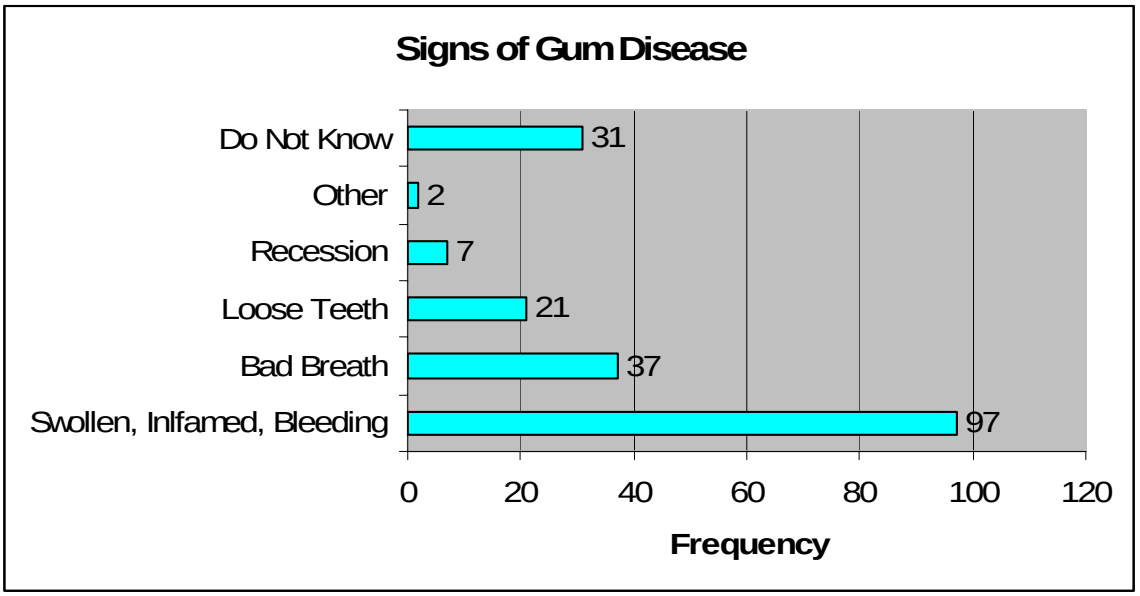


Table 1: Hispanic reports of brushing and flossing frequency by categorical response

Preventive Practices	Response	Raw Frequency	%
Brushing Frequency (N=152)	When I remember	2	1.3
	Every few Days	14	9.2
	Once daily	36	23.7
	More than once daily	100	65.8
Brushed Yesterday (N=153)	1 time	17	11.1
	2 times	78	51.0
	3+ times	58	37.9
Interdental Cleansing (N=152)	No	27	17.8
	Yes	125	82.2
Flossing Frequency (N=147)	Never	17	11.6
	When I remember	13	8.8
	Every few days	40	27.2
	Once daily	48	32.7
	More than once daily	26	17.7
	Do not know dental floss	3	2.0
Flossed Yesterday (N=138)	None	47	34.1
	1-2 times	63	45.7
	3-4 times	24	17.4
	5+ times	4	2.9
Flosses Normally (N=133)	None	20	15.0
	1-2 times	83	62.4
	3-4 times	27	20.3
	5+ times	3	2.3

-Percentages were rounded to one decimal place

Table 2: Percentage of responses related to beliefs about gum disease

	SA	A	NC	D	SD
Brushing my teeth can help prevent gum problems. (n=145)	64.8	24.8	9.7	0.0	0.7
Using dental floss helps prevent gum disease. (n=144)	45.1	37.5	16.0	0.7	0.7
Going to the dentist every six months is important. (n=142)	64.1	27.5	8.5	0.0	0.0
I should only visit a dentist if I am in pain. (n=136)	7.4	4.4	11.8	41.2	35.3
It is normal for healthy gums to bleed occasionally. (n=137)	8.0	11.7	36.5	23.4	20.4
I will lose my teeth as I get older. (n=140)	10.7	17.1	41.4	18.6	12.1

-SA- Strongly Agree; A- Agree; NC-Not Certain; D- Disagree; SD- Strongly Disagree

Table 3: Latinos' Perceived Dental Needs By Frequency of Response

(N=148)	Frequency	%
Dental cleaning	107	72
Check up	55	37
Fillings	47	32
Treatment for gum disease	35	24
Tooth that hurts	35	24
Broken tooth	34	23
Tooth extracted	26	18
Teeth straightened	25	17
Gaps filled	20	14
Other	20	14
No treatment needed	18	12
Mouth sores	15	10
Removal of all gold	8	5
Dentures	4	3
All teeth pulled	3	2

-Respondents reported all that applied

Table 4: Brushing practices and source of flossing instruction

Source of OH Instruction	Flossing Frequency n (%)				P-value
	0	***1-2***	***3-4***	***5+***	0.000*
No One	28 (20.7)	26 (19.3)	4 (3.0)	0 (0.0)	
Family	3 (2.2)	12 (8.9)	8 (5.9)	2 (1.5)	
Professional	15 (11.1)	24 (17.8)	12 (8.9)	1 (0.7)	

*Statistically Significant at the alpha = 0.05 level

Table 5: Brushing practices and source of brushing instruction

Source of OH Instruction	Brushing Frequency n (%)			P-value 0.431
	1	***2***	***3+***	
No One	3 (2.1)	23 (15.8)	8 (5.5)	
Family	7 (4.8)	33 (22.6)	27 (18.5)	
Professional	7 (4.8)	19 (13.0)	19 (13.0)	

*Statistically Significant at the alpha = 0.05 level

Table 6: Last dental visit and source of flossing instruction

Source of OH Instruction	Last Dental Visit n (%)				
	W/in 1 year	***2 years***	***3-4 years***	***Never, 5+ years, do not remember***	P-value 0.000*
No One	16 (11.7)	12 (8.8)	7 (5.1)	24 (17.5)	
Family	11 (8.0)	3 (2.2)	0 (0.0)	11 (8.0)	
Professional	32 (23.4)	12 (8.8)	2 (1.5)	7 (5.1)	

*Statistically Significant at the alpha = 0.05 level

Table 7: Last dental visit and source of brushing instruction

Source of OH Instruction	Last Dental Visit n (%)				
	Within the last year	***2 years***	***3-4 years***	***Never, 5+ years, do not remember***	P-value 0.032*
No One	10 (7.0)	8 (5.6)	2 (1.4)	12 (8.4)	
Family	26 (18.2)	11 (7.7)	5 (3.5)	25 (17.5)	
Professional	25 (17.5)	8 (5.6)	4 (2.8)	7 (4.9)	

*Statistically Significant at the alpha = 0.05 level

Table 8: Last dental visit and dental insurance status

Dental Insurance	Last Dental Visit n (%)				
	W/in 1 year	***2 years***	***3-4 years***	***Never, 5+ years, do not remember***	P-value 0.006*
Yes	21 (15.4)	8 (5.9)	2 (1.5)	5 (3.7)	
No	37 (27.2)	17 (12.5)	9 (6.6)	37 (27.2)	

*Statistically Significant at the alpha = 0.05 level

Table 9: Brushing practices with knowledge about gum disease

Knowledge		Brushing Frequency n (%)			P-Value
		1	*2*	*3*	
Brushing helps Prevent Gum Disease	***SA***	14 (9.7)	50 (34.5)	30 (20.7)	0.093
	A	1 (0.7)	16 (11.0)	19 (13.1)	
	NC	1 (0.7)	7 (4.8)	6 (4.1)	
	D				
	SD	0 (0.0)	1 (0.7)	0 (0.0)	
Flossing helps prevent gum disease	***SA***	10 (6.9)	33 (22.9)	22 (15.3)	0.377
	A	3 (2.1)	30 (20.8)	21 (14.6)	
	NC	3 (2.1)	9 (6.3)	11 (7.6)	
	D	0 (0.0)	1 (0.7)	0 (0.0)	
	SD	0 (0.0)	1 (0.7)	0 (0.0)	
It is important to visit the dentist every 6 months	***SA***	13 (9.2)	45 (31.7)	33 (23.2)	0.378
	A	3 (2.1)	20 (14.1)	16 (11.3)	
	NC	1 (0.7)	6 (4.2)	5 (3.5)	
	D				
	SD				
You should only visit the dentist if you are in pain	***SA***	2 (1.5)	3 (2.2)	5 (3.7)	0.361
	A	0 (0.0)	2 (1.5)	4 (2.9)	
	NC	1 (0.7)	7 (5.2)	8 (5.9)	
	D	7 (5.2)	34 (25.0)	15 (11.0)	
	SD	6 (4.4)	23 (16.9)	19 (14.0)	
Healthy gums bleed	***SA***	1 (0.7)	5 (3.7)	5 (3.7)	0.044*
	A	0 (0.0)	6 (4.4)	10 (7.3)	
	NC	5 (3.7)	27 (19.7)	18 (13.1)	
	D	4 (2.9)	19 (13.9)	9 (6.6)	
	SD	6 (4.4)	12 (8.8)	10 (7.3)	
Teeth are lost with age	***SA***	5 (3.6)	5 (3.6)	5 (3.6)	0.364
	A	4 (2.9)	12 (8.6)	8 (5.7)	
	NC	2 (1.4)	34 (24.3)	22 (15.7)	
	D	3 (2.1)	12 (8.6)	11 (7.9)	
	SD	3 (2.1)	8 (5.7)	6 (4.3)	

SA=Strongly Agree; A=Agree; NC=Not Certain; D=Disagree; SD=Strongly Disagree
*Statistically Significant at the alpha = 0.05 level

Table 10: Flossing practices with knowledge about gum disease

Knowledge		Flossing Frequency n (%)				P-Value
		0	***1-2***	***3-4***	***5+***	
Brushing helps Prevent Gum Disease	***SA***	34 (26.2)	34 (26.2)	12 (9.2)	4 (3.1)	0.878
	A	4 (3.1)	21 (16.2)	8 (6.2)	0 (0.0)	
	NC	6 (4.6)	5 (3.9)	1 (0.8)	0 (0.0)	
	D					
	SD	0 (0.0)	1 (0.8)	0 (0.0)	0 (0.0)	
Flossing helps prevent gum disease	***SA***	24 (18.6)	25 (19.4)	7 (5.4)	3 (2.3)	1.000
	A	10 (7.8)	28 (21.7)	11 (8.5)	1 (0.8)	
	NC	9 (7.0)	8 (6.2)	2 (1.6)	0 (0.0)	
	D	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
	SD	0 (0.0)	1 (0.8)	0 (0.0)	0 (0.0)	
It is important to visit the dentist every 6 months	***SA***	30 (23.6)	38 (29.9)	10 (7.9)	4 (3.2)	0.542
	A	11 (8.7)	15 (11.8)	8 (6.3)	0 (0.0)	
	NC	2 (1.6)	7 (5.5)	2 (1.6)	0 (0.0)	
	D					
	SD					
You should only visit the dentist if you are in pain	***SA***	3 (2.4)	6 (4.8)	0 (0.0)	0 (0.0)	$\geq$ 0.231
	A	1 (0.8)	5 (4.0)	0 (0.0)	0 (0.0)	
	NC	6 (4.8)	5 (4.0)	3 (2.4)	0 (0.0)	
	D	16 (12.8)	27 (21.6)	8 (6.4)	0 (0.0)	
	SD	17 (13.6)	16 (12.8)	8 (6.4)	4 (3.2)	
Healthy gums bleed	***SA***	2 (1.6)	6 (4.9)	0 (0.0)	1 (0.8)	$\geq$ 0.129
	A	3 (2.4)	9 (7.3)	4 (3.3)	0 (0.0)	
	NC	15 (12.2)	21 (17.1)	6 (4.9)	1 (0.8)	
	D	11 (8.9)	10 (8.1)	7 (5.7)	0 (0.0)	
	SD	14 (11.4)	10 (8.1)	1 (0.8)	2 (1.6)	
Teeth are lost with age	***SA***	3 (2.4)	8 (6.4)	1 (0.8)	0 (0.0)	$\geq$ 0.851
	A	7 (5.6)	9 (7.2)	6 (4.8)	0 (0.0)	
	NC	21 (16.8)	25 (20.0)	5 (4.0)	2 (1.6)	
	D	8 (6.4)	14 (11.2)	2 (1.6)	1 (0.8)	
	SD	5 (4.0)	4 (3.2)	3 (2.4)	1 (0.8)	

SA=Strongly Agree; A=Agree; NC=Not Certain; D=Disagree; SD=Strongly Disagree
*Statistically Significant at the alpha = 0.05 level

Table 11: Flossing practices and "yes" responses to signs of gum disease

Signs of Gum Disease	Floss Frequency n (%)				P-value
	0	***1-2***	***3-4***	***5+***	
Swollen, inflamed, bleeding gingiva	26 (19.9)	46 (35.1)	13 (9.9)	3 (2.3)	0.491
Bad breath	16 (12.2)	9 (6.9)	6 (4.6)	1 (0.8)	0.150
Loose teeth	6 (4.6)	10 (7.6)	3 (2.3)	0 (0.0)	0.891
Recession	4 (3.1)	1 (0.8)	1 (0.8)	0 (0.0)	0.173
Other	0 (0.0)	2 (1.5)	0 (0.0)	0 (0.0)	0.715
Do not know	14 (10.7)	10 (7.6)	3 (2.3)	1 (0.8)	0.065

*Statistically Significant at the alpha = 0.05 level

Table 12: Flossing practices and if participant's gingiva bleeds

Bleeding Gingiva	Flossing Frequency n (%)				P-value
	0	***1-2***	***3-4***	***5+***	
Yes	26 (20.0)	30 (23.1)	9 (6.9)	3 (2.3)	0.293
No	18 (13.9)	30 (23.1)	13 (10.0)	1 (0.8)	

*Statistically Significant at the alpha = 0.05 level

Table 13: “Yes” responses to perceived needs and last dental visit

Perceived Dental Needs	Last Dental Visit n (%)			
	W/in 1 year	***2 years***	***3-4 years***	***Never, 5+ years, do not remember***
No treatment needed (p-value 0.832)	8 (5.6)	4 (2.8)	0 (0.0)	6 (4.2)
Hurting tooth (p-value 0.804)	16 (11.1)	6 (4.2)	1 (0.7)	12 (8.3)
Check-up (p-value 0.598)	23 (16.0)	8 (5.6)	2 (1.4)	21 (14.6)
Cleaning* (p-value < 0.000)	32 (22.2)	20 (13.9)	9 (6.3)	43 (29.9)
Fillings (p-value 0.179)	16 (11.1)	8 (5.6)	6 (4.2)	17 (11.8)
Tooth Extracted (p-value 0.681)	11 (7.6)	3 (2.1)	2 (1.4)	10 (6.9)
Gum Disease (p-value 0.140)	11 (7.6)	6 (4.2)	3 (2.1)	14 (9.7)
Broken Tooth (p-value 0.671)	13 (9.0)	5 (3.5)	4 (2.8)	11 (7.6)
Teeth Straightened (p-value 0.387)	13 (9.0)	3 (2.1)	2 (1.4)	7 (4.9)
Sores (p-value 0.495)	4 (2.8)	2 (1.4)	3 (2.1)	4 (2.8)
Gaps between teeth (p-value 0.873)	9 (6.3)	4 (2.8)	0 (0.0)	7 (4.9)
All teeth pulled (p-value 0.409)	1 (0.7)	0 (0.0)	0 (0.0)	2 (1.4)
Removal of gold (p-value 0.663)	4 (2.8)	1 (0.7)	1 (0.7)	2 (1.4)
Denture (p-value 0.329)	1 (0.7)	0 (0.0)	1 (0.7)	2 (1.4)
Other (p-value 0.431)	11 (7.6)	0 (0.0)	2 (1.4)	6 (4.2)

*Statistically Significant at the alpha = 0.05 level

CHAPTER 6

DISCUSSION

The Hispanic population in Siler City, North Carolina is a microcosm of the Hispanic population in North Carolina, with a majority of Mexican decent, a mean age of about 34 years, low income, and lack of education. The average length of residence in the U.S. is approximately nine years. Having lived in the U.S. only nine years, these foreign born individuals may be less acculturated. Therefore, language, health care delivery system, and differing beliefs about prevention are a few of the barriers that get in the way of these individuals acquiring proper oral health care. It is important to mention that although other populations experience health disparities; there are differences in access to care among Hispanics because of ineligibility for Medicaid or other state funded insurance programs due to the legal status of these individuals.

Consistent with other findings, lack of dental insurance was a predictor for the use of dental services. Dental treatment was most often sought for palliative reasons rather than preventive reasons with a majority of respondents having never had a preventive dental prophylaxis. This could be due to the lack of knowledge about gum disease within this population. Though many individuals were aware of the cardinal signs of inflammation as being indicators of gingival disease, few were aware of other signs such as: bad breath, recession, or loose teeth. Also, the majority of

participants agreed that brushing and flossing could help prevent gum disease, and that going to the dentist every six months is important. However, individuals were less knowledgeable about whether healthy gums bled, or if tooth loss was a normal part of aging. Though over half of respondents reported having bleeding gingiva, providing evidence that these individuals have gingivitis or periodontitis, a large amount (87%) of respondents reported never having a professional dental cleaning.

Overall, findings from this study suggest that dental homecare was adequate among this population. About half reported brushing more than once daily and a majority reported interdental cleansing. This is not consistent with national surveys which reveal that only 40% of the overall United States population utilizes dental floss on a regular basis.[26] However, there are other modalities of interdental cleansing that could be used, such as toothpicks. It may be that respondents chose a response that was socially acceptable. This is one reason self-reported data should be interpreted cautiously.

Unique to this study, analysis reveled that the source of oral hygiene instruction had an effect on brushing and flossing frequencies, and last dental visit. More specific, individuals who were taught to floss by a dental professional were more likely to have higher frequencies of preventive practices. Also, individuals taught to floss and brush by a dental professional had higher rates of dental visits. This finding has not previously been noted. Furthermore, participants were asked to report their perceived dental needs. This was not a clinical evaluation by a dental professional, but rather self-reported by the individual participants. Therefore, actual treatment needs may differ extensively from the reported ones. However, almost three fourths

reported needing a dental cleaning. Though there is such a high demand for preventive professional cleanings, culturally sensitive services are lacking in Siler City, NC.

This exploratory study had several limitations; a small sample size, convenience sample, incomplete surveys, and self-reported data. Further investigations should be made using a much larger sample size. The convenient sample population reached only about 5% of the total Hispanic population of Siler City. Collecting data after Sunday worship services attracted a Hispanic population with mobility; many Hispanics have no transportation and may be isolated. Therefore, this population may have more access to care because they have transportation. Also, many of the respondents did not answer all of the questions, which reduced the effectiveness of the sample. A “gold standard” longitudinal study would provide more valuable data in relation to oral health status and utilization. Further investigations should seek to collect data on actual dental needs rather than self-reported perceived needs. Generalizations are limited to those individuals participating in the study. All data was self-reported, therefore this data should be interpreted carefully. Misinterpretations could have occurred during survey delivery. Though the primary investigator that translated the survey is a native Spanish speaker, participants of the study may have created differing interpretations to the questions. Lay health advisors aiding with the survey implementation were all fluent in Spanish and very familiar with the cultural attributes of the sample population. Lay health advisors only aided those that asked for assistance. However, there could have been variability in

the way lay health advisors delivered the survey, which could have lead to differing results.

CHAPTER 7

CONCLUSIONS

This exploratory study found that this population lacks knowledge related to oral health. An overwhelming need for preventive dental prophylaxis was reported by participants. Also, low income, low education, no dental insurance, and language are some of the barriers that interfere with individuals seeking dental care. Therefore, the following suggestions are made that may aid in eliminating dental health care disparities among this population. It is important to recruit and train oral health care providers that are culturally sensitive to this population and that can speak Spanish fluently. Dental terminology and oral health needs can be difficult for individuals to understand. Moreover, it makes it much more difficult when the patient and the health care provider speak a different language. Removing the language barrier alone can lead to further education about oral health and its connection to overall health; therefore, decreasing oral health disparities. Extensive oral health promotional programs are needed that are particularly sensitive to the Hispanics of Siler City. It is also important for dental hygiene programs in North Carolina to encourage their dental hygiene students to become more culturally sensitive to the needs of Hispanics in the state. Trends show that the Hispanic population is going to continue to grow extensively. Dental hygiene programs should expand their clinical rotations in order to provide cultural diversity in the curriculum and to serve the

underserved Hispanic population of North Carolina. Increasing programs that immerse students into different cultures and clinical practice experiences can motivate them to further seek these opportunities throughout their career.

North Carolina laws do not currently allow dental hygienist to work independently, or without the supervision of a dentist. Changes in these laws, particularly when dealing with underserved populations, could lead to more preventive services being provided and more dental health needs being met.

APPENDIX A

Dental Health Questionnaire

We are asking you to complete this questionnaire so that we can learn more about dental health concerns that are important to you. This questionnaire is anonymous which means that we do not know your name or want you to write your name anywhere on the questionnaire. Your answers will be collected with others in your community and summarized to help us know your dental health knowledge and dental health habits. Thank you for your participation. This research survey is completely voluntary. You may answer one question, some questions, or all questions if you wish. Because the questionnaire is voluntary, you may choose to cease answering at any moment. We hope that you will respond to all the questions, your responses are very important. Thank you for your help.

Dental Health Care Habits

1. How often do you brush your teeth?

0	1	2	3	4
Never	When I remember	Every few days	Once a day	More than once daily

2. How many times did you brush your teeth yesterday?

0	1	2	3
Not at All	1 Time	2 Times	3 or more Times

3. Who taught you brush your teeth *correctly*?

0	1	2	3	4	5	6	7	8	9	10
No One	Myself	Parent	Brother or Sister	Other Family Member	Friend	Teacher	Dentist	Dental Hygienist	Dental Worker	Other _____

4. Do you clean between your teeth?

1	2
Yes	No
If yes, what do you use to clean between your teeth?	

5. How often do you use dental floss?

9	0	1	2	3	4
I don't know what dental floss is Go to Q. 9	Never Go to Q. 8	When I remember	Every few days	Once a day	More than once a day

6. If you use dental floss, how many times did you use dental floss yesterday?

0	1	2	3
Not at All	1-2 Times	3-4 Times	5 or more Times

7. If you use dental floss, how many times per day do you *normally* use dental floss?

0	1	2	3
Not at All	1-2 Times	3-4 Times	5 or more Times

8. Who taught you to floss your teeth *correctly*?

0	1	2	3	4	5	6	7	8	9	10
No One	Myself	Parent	Brother or Sister	Other Family Member	Friend	Teacher	Dentist	Dental Hygienist	Dental Worker	Other _____

Dental Visits

9. Have you ever had your teeth cleaned by a dentist or a dental hygienist?

0	9	1	2
Never	Not Sure	Yes	No

10. When was the last time you visited a dentist?

0	1	2	3	4	9
Never GO TO Q. 12	Within the last year	About 2 years ago	About 3-4 years ago	About 5 or more years ago	I don't remember

11. If you visited a dentist, what was the reason for your last dental visit? (Mark all that apply)

1	2	3	4	5	9
Exam	Cleaning	Filling	Pain	Tooth Pulled	Other

Condition of Your Gums

12. Do your gums bleed when you brush or floss your teeth?

9	1	2
Don't Know	Yes	No

Your Knowledge and Beliefs about Gum Disease

13. What is a common sign of gum disease? (Circle All That Apply)

1	2	3	4	5	9
Swollen, red, inflamed, or bleeding gums	Bad breath constantly	Loose teeth	Gums that are pulling away from the tooth	Other_____	Do not Know

Circle the number that best describes your agreement or disagreement about the statements below

	Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
14. Brushing my teeth can help prevent gum problems.	1	2	3	4	5
15. Using dental floss helps prevent gum disease.	1	2	3	4	5
16. Going to the dentist every six months is important.	1	2	3	4	5
17. I should only visit a dentist if I am in pain.	1	2	3	4	5
18. It is normal for healthy gums to bleed occasionally.	1	2	3	4	5
19. I will lose my teeth as I get older.	1	2	3	4	5

Personal Information

Please circle the number that best describes you:

20.	**Are you:**	Female	**1**
		Male	**2**

21. What was your age at your last birthday? ____

22. What is your *weekly* take home income?

1	2	3	4	5	6
Below $100	$101-200	$201-400	$401-600	$601-800	>$801

23. What is the highest grade of school you completed?

0 None	1	2	3	4	5	6	7	8	9	10	11	12 or GED	13	14	15	16 or College	17+

24. Where were you born?

North America (Mexico, United States)	**1**
Central America (Costa Rica, El Salvador Guatemala, Honduras, Nicaragua, Panama)	**2**
South America (Argentina, Bolivia, Brazil, Chile, Columbia, Ecuador, Peru ,Venezuela,)	**3**
Carribbean Island (Cuba, Dominican Republic, Puerto Rico)	**4**
Other Country	**5**

25. If you were not born in the United States, how long have you lived in the United States

____Years ___Months

26. Do you have?

1	2	3	9
Dental Insurance	Medicaid	No Insurance	Don't Know

Your Concerns about Your Teeth and Gums

If you were to go to the dentist tomorrow, what would you want the dentist to do for you?

		Place an "**X**" beside each need that you have. Circle the need with most urgency.
27.	I do not need any dental treatment.	
28.	I need treatment for a tooth that hurts.	
29.	I need a checkup.	
30.	I need my teeth cleaned.	
31.	I need some new fillings.	
32.	I need a tooth pulled.	
33.	I need treatment for gum disease (pyorrhea).	
34.	I have a broken tooth that needs to be fixed.	
35.	I want my teeth straightened.	
36.	I need treatment for sores in my mouth.	
37.	I need to fill gaps in my teeth.	
38.	I need to have all my teeth pulled.	
39.	I want to have "gold" removed from my teeth for cosmetic purposes.	
40.	I want dentures.	
41.	Is there any other dental work that you think you need? List below _____	

Thank you for taking the time to fill out our survey. We want to know how to help improve dental care in our community.

APPENDIX B

Cuestionario de la Salud Oral

Le pedimos que completen este cuestionario para poder aprender más sobre sus preocupaciones de la salud oral. Este cuestionario es estrictamente confidencial. Esto quiere decir que no queremos que escriban su nombre en el cuestionario. Sus respuestas estarán recogidas con otras en la comunidad y resumidas para ayudarnos a saber sobre sus conocimientos de la salud oral y hábitos de su cuido de la boca. Este cuestionario de investigaciones es completamente voluntario. Usted puedo completar una pregunta, algunas preguntas, o todas las preguntas si desea. Porque el cuestionario es voluntario, puede dejar de responder en cualquier momento. Esperamos que respondan todas las preguntas porque sus respuestas son muy importantes. Gracias por su ayuda.

Salud Oral y Hábitos de Cuidado

1. ¿Con que frecuencia usted se cepilla los dientes?

0	1	2	3	4
Nunca	Cuando me recuerdo	Cada pocos días	Una vez al día	Mas de una vez al día

2. ¿Cuantas veces se cepillo los dientes ayer?

0	1	2	3
Ninguna	1 vez	2 veces	3 o mas veces

3. ¿Quien le enseño *a* cepillarse los dientes *correctamente*?

0	1	2	3	4	5	6	7	8	9	10
Nadie	Yo	Padre o Madre	Hermano o Hermana	Otro miembro de la familia	Amigo	Maestro	Dentista	Higienista Dental	Trabajador Dental	Otro _____

4. ¿Usted se limpia entre los dientes?

1	2
Si	No
¿Si marco si, que usa para limpiar entre sus dientes?	

5. ¿Con que frecuencia usa hilo dental?

9	0	1	2	3	4
No se lo que es el hilo dental **Vaya a P. 9**	Nunca **Vaya a P. 8**	Cuando Recuerdo	De ves en cuando	Una vez al día	Mas de una vez al día

6. ¿Si usa hilo dental, cuantas veces uso hilo dental ayer?

0	1	2	3
Ninguna	1-2 Veces	3-4 Veces	5 o mas veces

7. ¿Si usa hilo dental, cuantas veces al día lo usa *normalmente*?

0	1	2	3
Ninguna	1-2 Veces	3-4 Veces	5 o mas veces

8. ¿Quien le enseño *a* usar hilo dental *correctamente*?

0	1	2	3	4	5	6	7	8	9	10
Nadie	Yo	Padre o Madre	Hermano o Hermana	Otro miembro de la familia	Amigo	Maestro	Dentista	Higienista Dental	Trabajador Dental	Otro _____

Visitas Dentales

9. ¿Un dentista o una higienista dental le ha limpiado los dientes alguna ves?

0	9	1	2
Nunca	No se	Si	No

10. ¿Cuando fue la ultima vez que visito al dentista?

0	1	2	3	4	9
Nunca **Vaya P. 12**	Este año	Ase 2 años	Ase 3-4 años	5 años o mas	No recuerdo

11. ¿Si a visitado al dentista, cual fue la razón de su ultima visita? (marque todos que apliquen)

1	2	3	4	5	9
Examen	Limpieza	Relleno o Calza	Dolor	Sacar un diente	Otro

Condición de sus Encías

12. ¿Sus encías sangran cuando ce cepilla los dientes o usa hilo dental?

9	1	2
No se	Si	No

Su Conocimiento y Creencia Sobre la Enfermedad de las Encías

13. ¿Cuales son los síntomas comunes cuando las encías están mal? (Circule todos que apliquen)

1	2	3	4	5	9
Hinchado, rojo, inflamado, sangriento	Mal aliento	Dientes Flojos	Las encías se encojen	Otro_____	No Sabe

Circula el número que mejor describe si esta de acuerdo o desacuerdo sobre las declaraciones abajo:

	Fuertemente Apruebo	Apruebo	No Estoy Seguro	Desapruebo	Fuertemente Desapruebo
14. Cepillar mis dientes puede ayudar a prevenir problemas de las encías.	1	2	3	4	5
15. Usar hilo dental ayuda a prevenir enfermedades de las encías.	1	2	3	4	5
16. Ir al dentista cada seis meses es importante.	1	2	3	4	5
17. Solo debo visitar al dentista si tengo dolor.	1	2	3	4	5
18. Las encías saludables sangran a veces.	1	2	3	4	5
19. Voy a perder mis dientes cuando envejezca.	1	2	3	4	5

Información Personal

Por favor circule el número que mejor describa a usted:

20.	**Eres:**	Mujer	**1**
		Hombre	**2**

21. ¿Cual fue su edad en su ultimo cumpleaños? _____

22. ¿Cual es su salario *semanal*?

1	2	3	4	5	6
Bajo $100	$101-200	$201-400	$401-600	$601-800	>$801

23. ¿Cual es el nivel escolar mas alto que usted terminó?

0 Ninguno	1	2	3	4	5	6	7	8	9	10	11	12 o GED	13	14	15	16	17+
	Primaria						*Bachillerato*						*Universitario*				

24. ¿Donde usted nació?

Norteamérica (México, Estados Unidos)	**1**
América Central (Costa Rica, El Salvador Guatemala, Honduras, Nicaragua, Panamá)	**2**
Suramérica (Argentina, Bolivia, Brasil, Chile, Colombia, Ecuador, Perú ,Venezuela,)	**3**
Isla del Caribe (Cuba, Republica Dominicana, Puerto Rico)	**4**
Otro País	**5**

25. ¿Si no nació en los Estados Unidos, cuanto tiempo ha vivido en los Estados Unidos?

____Años ___Meses

26. ¿Usted tiene?	**1**	**2**	**3**	**9**
	Seguro dental	Medicaid	No tengo seguro dental	No Se

Sus Preocupaciones de su Boca y de sus Encías

¿Si usted iría al dentista mañana, que quisiera que el dentista hiciera para usted?

		Coloque una "X" al lado de cada necesidad que usted tenga. Circula la necesidad que tenga más urgencia.
27.	No necesito ningún tratamiento dental.	
28.	Necesito tratamiento en un diente que me duele.	
29.	Necesito un examen.	
30.	Necesito una limpieza.	
31.	Necesito nuevos rellenos (calzas).	
32.	Necesito que me saquen un diente.	
33.	Necesito tratamiento para enfermedad del las encías.	
34.	Tengo un diente roto que necesito arreglarme.	
35.	Quiero enderezarme los dientes.	
36.	Necesito tratamiento para ulceras o fuegos en la boca.	
37.	Necesita cerrar espacios entre mis dientes.	
38.	Necesito sacarme todos mis dientes.	
39.	Quiero sacarme todo el "oro" de mi boca para que mis dientes se vean mas atractivos.	
40.	Necesito cajas de dientes.	
41.	¿Hay otro trabajo dental que usted piensa que necesite? Descríbalo: _____	

Le agradecemos su participación. Esta información nos ayuda adquirir información para mejorar servicios dentales en su comunidad.

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