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RETROSPECTIVE EVALUATION OF ORAL HEALTH SERVICES FOR UNDERSERVED CHILDREN IN CLARK COUNTY, NEVADA

By

Earl Taylor Spader

A thesis submitted in partial fulfillment
of the requirements for the

Master of Public Health

School of Community Health Sciences
University of Nevada, Las Vegas
The Graduate College

May 2012

THE GRADUATE COLLEGE

We recommend the thesis prepared under our supervision by

Earl Taylor Spader

entitled

Retrospective Evaluation of Oral Health Services for Underserved Children in Clark County, Nevada

be accepted in partial fulfillment of the requirements for the degree of

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School of Community Health Sciences

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May 2012

ABSTRACT

Retrospective Evaluation of Oral Health Services for Underserved Children in Clark County, Nevada

Disparities in utilization of oral health services have been shown to exist through epidemiological investigations and data analysis. Specifically, disparities exist for utilization of preventative dental care (PDC) and unmet dental need (UDN). The disparities in utilization of PDC and UDN are associated with demographic and insurance variables.

To address the oral health disparities, the University of Nevada, Las Vegas-School of Dental Medicine (UNLV-SDM) was created to improve the health of the citizens of Nevada through innovative programs of oral healthcare services to the community. More recently, UNLV-SDM opened a pediatric dental residency training program to provide care directly to the underserved children in Nevada. To date, however, there has been no comprehensive analysis of the UNLV-SDM pediatric population to determine if the school is providing care to the needy and underserved children of this community.

The purpose of this project is to determine if underserved children in Clark County, NV are utilizing the UNLV-SDM pediatric dental clinic. In order to facilitate the use of an existing database, containing pediatric patient demographic and insurance information, a UNLV Office of Research Integrity – Human Subjects Exemption (OPRS#1111-3975M - *Retrospective Investigation of Pediatric Patient Demographics at UNLV-SDM*) was filed and approved on December 6, 2011.

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CHAPTER 1

INTRODUCTION

Background and Significance

Health, as defined by the World Health Organization, "is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 2006). Therefore, to be healthy, one must also have oral health. Promoting disease prevention and early detection are methods Public Health Professionals (PHPs) can use in eliminating and minimizing the health consequences of disease. Understanding disparities associated with utilization of oral health services will assist PHPs and policy makers in delegating resources efficiently and effectively to promote disease prevention and early detection.

Disparities in utilization of oral health services have been shown to exist through epidemiological investigations. Specifically, disparities exist for utilization of preventative dental care (PDC) and unmet dental need (UDN). The disparities in utilization of PDC and UDN are associated with demographic and insurance variables.

Demographic variables associated with the utilization of PDC include: age, race/nativity, income, education, and geographic location. First, children who utilized PDC were 0.18 times as apt to be <6 years of age when compared to children ≥6 years of age (Lewis et al., 2007a). Second, children who failed to utilize PDC were 1.47 times as apt to be US born - black children; 2.25 times as apt to be foreign born - black children; and 1.51 times as apt to be foreign born - Hispanic children, when compared to US born - white children (Liu et al., 2007). Third, children who utilized PDC were 0.77 times as apt to come from

households whose income was <400% of the Federal Poverty Level (FPL) when compared to children who came from households whose income was ≥400% FPL (Martin et al., 2009). Fourth, children who utilized PDC were 0.69 times as apt come from households where the highest education < high school when compared to children who came from households where the highest educational level was ≥ high school (Martin et al., 2009). Fifth, children who utilized PDC were 1.18 times as apt to reside within the Northeastern US compared to Nevada (Lewis et al., 2007a). Demographic variables associated with decreased utilization of PDC are < 6 years of age, black - US born, black - foreign born, Hispanic - foreign born, household income <400% FPL, household education < high school, and residing in Nevada (Lewis et al., 2007a; Liu et al., 2007; Martin et al., 2009).

Controlling for demographic variables, utilization of PDC is also associated with insurance variables. Insurance coverage and type of coverage are associated with utilization of PDC. Children who failed to receive PDC were 2.17 times as apt to lack dental coverage compared to children with dental coverage (Liu et al., 2007). However, the proportion of children with private dental insurance, compared to public dental insurance, was not significantly different for children who utilized PDC (Lewis, 2007b). Children who failed to receive PDC were 1.67 times as apt to lack health insurance coverage compared to children with health insurance coverage. Although, children with PDC were just as likely to have private health insurance compared to public health insurance (Martin et al., 2009). Having insurance coverage, dental or health, is associated with increased utilization of PDC (Liu et al., 2007 & Martin et al., 2009).

However, insurance type, private or public, is not associated with increased utilization of PDC (Lewis 2007b & Martin et al., 2009).

In 2010, 11.2% of children age 2-17 years of age had not seen a dentist in five years (National Center for Health Statistics [NCHS], 2011). Without going to the dentist to receive PDC, a large percent of the population is likely to develop oral disease. Additionally, without regularly seeing a dentist early diagnosis and treatment for unmet dental need (UDN) is unlikely to occur. In 2010, 7% of children age 2-17 years of age had UDN because their families did not have financial resources for treatment (NCHS, 2011).

Demographic variables associated with UDN include: age, race, income, and geographic location. First, children with UDN were 1.52 times as apt to be ≥6 years of age when compared to children <6 years of age (Liu et al., 2007). Second, children with UDN were 1.27 times as apt to be US born - black children; 3.80 times as apt to be foreign born - black children, when compared to US born - white children (Liu et al., 2007). Third, children with UDN were more than 2 times as likely to come from homes with an income <400% FPL as opposed to homes with an income of ≥400% FPL (Liu et al., 2007). Fourth, children with UDN were 1.51 times as apt to reside in the Western US compared to Northeastern US (Liu et al., 2007). Demographic variables associated with children having UDN are ≥6 years of age, black - US born, black - foreign born, household income <400%FPL, and reside in the Western US (Liu et al., 2007).

Controlling for demographic variables, UDN is also associated with insurance variables. Insurance coverage and type are associated with UDN. Children with UDN were 2.66

times as apt to lack dental insurance coverage compared to children with dental insurance coverage (Liu et al., 2007). Children with UDN were 4.59 times as apt to lack health insurance coverage compared to children with Medicaid or other public health insurance coverage (NCHS, 2011). Additionally, children with UDN were 1.41 times as apt to have Medicaid or other public health insurance compared to children with private health insurance (NCHS, 2011). Having insurance coverage, dental or health, is associated with decreased UDN (Liu, et al., 2007 & NCHS, 2011). Private health insurance is also associated with decreased UDN (NCHS, 2011).

Since 1995, the percentage (81.3%) of children and young adults < 21 years of age with dental coverage has increased 10.1% (United States Department of Health and Human Services [DHHS], 2008). However, since 1995, the percentage of private dental coverage (50.9% - 2006) has decreased 2.3% and the percentage of public dental coverage (30.4% - 2006) has increased 12.4% (DHHS, 2008). A disproportionate number of children are enrolling in public dental insurance, opposed to private insurance (Lewis et al., 2007b). Dental insurance can increase access for oral healthcare services, but demand for the oral health professionals may limit utilization. The main barrier reported for Medicaid-eligible recipients in utilizing oral health services are the limited availability of dentists (Fisher & Mascarenhas, 2007). This problem is likely to compound given the projected decrease in the ratio of dentist to patients (Mertz & Mouradian, 2009).

Many Southern and Southwestern states, including Nevada, have disproportionately large percentages of low-income and minority families as well as disparities in both PDC and UDN (Lewis, 2007a; Liu et al., 2007; NCHS, 2011). Over two thirds of Nevada's

population (71.9%), and nearly three-quarters of all children aged five years or less (74.0%) reside within Clark County (United States Census Bureau [US Census Bureau], 2010). An evaluation of Clark County has revealed that approximately one-fifth (18%) of all homes were built prior to 1978. These older homes are disproportionately occupied by low-socioeconomic status (SES), minority families, and serve as residences for more than 40,000 residents (Clark County, 2004). It is in these low-income areas that lack of access to medical care and healthcare providers has been most pronounced.

To address these issues, the University of Nevada, Las Vegas-School of Dental Medicine (UNLV-SDM) was created to improve the health of the citizens of Nevada through innovative programs of oral healthcare services to the community. More recently, UNLV-SDM opened a pediatric dental residency training program to provide care directly to the underserved children in Nevada. To date, however, there has been no comprehensive analysis of the UNLV-SDM pediatric population to determine if the school is providing care to the needy and underserved children of this community.

Based upon this information, the primary goal of this project is to determine if underserved children in Clark County, NV are utilizing the UNLV-SDM pediatric dental clinic. Three primary research questions will help to establish this: (1) Determining whether the UNLV-SDM pediatric clinic treats a higher proportion of Medicaid and public insurance patients than would be expected given their prevalence in the local community; (2) Determining if there is a greater percentage of minority patients at UNLV-SDM pediatric clinic than would be expected given their proportion in the local community and; (3) Determining if a greater proportion of patients are derived from low-income neighborhoods than would be expected, given their distribution in the local

community. These data combined will provide a more comprehensive view of the specific role of the UNLV-SDM pediatric dental clinic to provide care to the needy and underserved low-income and minority children of Southern Nevada.

Methods

The purpose of this study was to determine if UNLV-SDM pediatric clinic is providing care to the needy and underserved children in the local community - Clark County, Nevada. The first step to fulfilling the study's purpose was to generate descriptive data of the pediatric patients at UNLV-SDM pediatric clinic. The second step compared the descriptive data generated from the pediatric population and compared it to the local community. By analyzing the pediatric population utilizing services provided by UNLV-SDM pediatric clinic, descriptive data was generated to further guide policy development that reflects the goals of UNLV-SDM pediatric clinic.

The following two sections: Research Questions and Hypotheses, and Study Design and Theoretical Framework discuss the research questions analyzed and techniques employed to provide statistical data.

Research Questions and Hypotheses

Research Question 1:

Does UNLV-SDM pediatric clinic treat a higher proportion of Medicaid and public insurance patients then would be expected given their prevalence in the local community?

Null hypothesis $H_0 1$:

There will be no differences in the proportion of Medicaid and public insurance patients then would be expected given their prevalence in the local community.

Alternative hypothesis H_A 1:

There will be differences in the proportion of Medicaid and public insurance patients then would be expected given their prevalence in the local community.

Research Question 2:

Does UNLV-SDM pediatric clinic treat a greater percentage of minority patients than would be expected given their proportion in the local community?

Null hypothesis $H_0$2:

There will be no differences in the percentage of minority patients than would be expected given their proportion in the local community.

Alternative hypothesis H_A2:

There will be differences in the percentage of minority patients than would be expected given their proportion in the local community.

Research Question 3:

Does UNLV-SDM pediatric clinic treat a greater proportion of patients derived from low-income neighborhoods than would be expected given their distribution in the local community?

Null hypothesis $H_0$3:

There will be no differences in the proportion of patients from low-income neighborhoods than mid- and high-income neighborhoods.

Alternative hypothesis H_A3:

There will be differences in the proportion of patients from low-income neighborhoods than mid- and high-income neighborhoods.

Study Design and Theoretical Framework

This study involved a retrospective-descriptive research design involving the analysis of data provided by UNLV-SDM Information Technology (IT) department and publically available US Census Bureau data. Descriptive statistics were generated for the state, zip codes, and UNLV-SDM pediatric patients. Chi-Square analysis provided comparative analytical results. Additionally, variables analyzed were graphed to determine distribution by zip code. All statistical calculations were generated using Microsoft Excel.

All patients who meet the inclusion and exclusion criteria were utilized in the analysis. Active patients, as of 9/15/2011, less than 18 years of age were included in the study. Additionally, the patient had to live in one of 46 zip codes found in the greater Las Vegas area. Patients older than 18 years of age and enrolled after 9/15/2011 were excluded from the study.

Variables of interest included: sex, age, race, dental coverage, distance, zip code, and family income. All variables, relative to hypotheses, will be collected at the patient, state and zip code level.

The risk to subjects in this research study originated from identifying information being provided with the data set used for analysis. No other risk was identified or associated with this study. All statistical calculations were conducted at UNLV-SDM.

Data generated from this research study can be used to guide policy development ensuring resources are delegated appropriately, efficiently, and effectively. Improved efficiency and effectiveness in serving the pediatric population can reduce cost and increase access to oral health services. Additionally, data generated can be used for evidence in support of policy change to eliminate health disparities in utilizing oral health services. Moreover, the information generated from this study can be used in support of future research associated with disparities in the utilization of oral health services provided by UNLV-SDM.

Results

To determine if underserved children in Clark County, NV are utilizing the UNLV-SDM pediatric dental clinic, demographic information was obtained for the local community and UNLV-SDM pediatric clinic. A comparison of demographic variables was made using Chi-square analysis.

The first research question was designed to determine if UNLV-SDM pediatric clinic treats a higher proportion of Medicaid and public insurance patients than would be expected given their prevalence in the local community. Of the patients at UNLV-SDM pediatric clinic, more than three-fourths (76.7%) of children were covered by Medicaid or CHIP, while less than one-fourth (23.3%) were covered by some form of non-public, employer-provided or self-pay insurance program (Table 1).

Table 1. Comparison of pediatric Medicaid and CHIP populations.

	Medicaid/CHIP/uninsured (%)	**Private/Self-insured (%)**
Nevada children (< 18)	n = 259,064 (36.4%)	n = 444,109 (62.4%)
UNLV-SDM patients (< 18)	n = 1,876 (76.7%)	n = 570 (23.3%)
		$\chi 2$ = 32.753, d.f. = 1
		$p < 0.001$

Using Chi-square analysis, it was determined that the proportion of Medicaid/CHIP insured children was significantly higher at UNLV-SDM than would be expected ($\chi 2$ = 32.753, d.f. = 1; $p < 0.001$). Thus, we are able to reject the null hypothesis in favor of the alternative. The data clearly demonstrates that a significant proportion of patients treated at UNLV-SDM pediatric clinic have Medicaid and public insurance.

The second research question was designed to determine if UNLV-SMD pediatric clinic treats a greater percentage of minority patients than would be expected given their proportion in the local community (Table 2). Of the patients at UNLV-SDM pediatric clinic, almost all patients were minorities (87.9%). Additionally, the majority of pediatric patients were Hispanic (68%).

Table 2. Demographic comparison and analysis of UNLV-SDM and state population.

	Nevada	**UNLV-SDM**	**Statistical analysis**
Race			
White	n = 462,605 (65%)	n = 85 (12.1%)	$\chi 2$ = 57.101, d.f. = 1
Non-White	n = 249,095 (35%)	n = 619 (87.9%)	$p < 0.0001$
Hispanic	n = 113,872 (16%)	n = 479 (68.0%)	
Black	n = 85,404 (12%)	n = 108 (15.3%)	
Other	n = 49, 819 (7%)	n = 32 (4.5%)	

Using Chi-square analysis, it was determined that the percentage of minority patients was significantly higher at UNLV-SDM than would be expected ($\chi 2$ = 57.101, d.f. = 1; $p < 0.0001$). Thus, we are able to reject the null hypothesis in favor of the alternative. The data clearly demonstrates that a significant proportion of patients treated at UNLV-SDM pediatric clinic are minorities.

The third research question was designed to determine if UNLV-SDM pediatric clinic treats a greater proportion of patients derived from low-income neighborhoods than would be expected given their distribution in the local community. Analysis of the third research question will be addressed in Chapter 2.

CHAPTER 2

This chapter has been prepared for submission to the peer-reviewed scientific journal *Journal of Public Health Dentistry* and is presented in the style of that journal.

The complete citation is:

Sabrina Jang, E. Taylor Spader, Matthew Thacker, Chris R Cochran, Tim J Bungum, Michelle Chino, Karl Kingsley.

Access to care for pediatric, Medicaid-insured patients in Clark County, Nevada.

Access to care for pediatric, Medicaid-insured patients in Clark County, Nevada.

Sabrina Jang, E. Taylor Spader, Matthew Thacker, Chris R Cochran, Tim J Bungum, Michelle Chino, Karl Kingsley.

Abstract

Background: Epidemiological investigations have demonstrated disparities in the utilization of oral health services, preventative dental care and treatment, are associated with demographic and insurance variables. Many Southern and Southwestern states have disproportionately large percentages of low-income and minority families and relative disparities in both preventative dental care and unmet dental need. In Nevada, the majority of children five years or less resides within Clark County. To decrease oral health disparities, the University of Nevada, Las Vegas-School of Dental Medicine (UNLV-SDM) recently opened a pediatric dental residency program. The goal of this study is to determine if UNLV-SDM pediatric clinic is providing care to the needy and underserved children of Clark County, Nevada.

Methods: Selected demographic information for all pediatric patients of record at UNLV-SDM was collected for analysis. Demographic and insurance information from Nevada was compared with the overall demographic profile of the UNLV-SDM pediatric patient pool (N = 2,446) using a chi-square ($\chi 2$) test, to determine if any characteristic (gender, race, age, Medicaid/CHIP status) was different than expected.

Results: Compared to Nevada, more than three-fourths (76.7%) of UNLV-SDM pediatric patients were covered by Medicaid or CHIP ($\chi 2 = 57.101$, d.f. = 1; $p < 0.0001$). Additionally, significant percentages (87.9%) of pediatric patients were minorities ($\chi 2 = 57.101$, d.f. = 1; $p < 0.0001$).

Conclusion: The results of this study provide conclusive evidence that underserved children in the Las Vegas area are accessing and utilizing dental healthcare services at UNLV-SDM. The data clearly demonstrates UNLV-SDM is crucial in maintaining and improving the oral health status of those who are increasingly dependent upon free or low-cost services.

Introduction

Many low-income and minority children in the US face barriers to accessing medical and dental care (Mouradian et al., 2000). These findings are supported by reviews and epidemiologic evidence, which have demonstrated that pediatric patient outcomes are poor for low-income and minority children. These undesirable outcomes are due to numerous factors, including lower overall neighborhood safety and increased risk of injury and poisoning, poorly maintained infrastructure, and most importantly, reduced access to medical care (Landrigan & Todd, 1994; Needleman, 1998; Gorospe & Gerstenberger, 2008). These data strongly suggest the need to improve health outcomes for minority and low-income children encompasses diverse areas of interest.

Many Southern and Southwestern states, including Nevada, have disproportionately large percentages of low-income and minority families, and disparities in the quantity and

quality of provided healthcare services to these population sub-groups have grown (Edelstein, 2000). Over two thirds of Nevada's population (71.9%), and nearly three-quarters of all children aged five years or less (74.0%), reside within Clark County (US Census Bureau, 2010). An evaluation of Clark County has revealed that approximately one-fifth (18%) of all homes were built prior to 1978. These older homes are disproportionately occupied by low-socioeconomic status (SES), minority families, and serve as residences for more than 40,000 residents (Clark County, 2004). It is in these low-income areas that lack of access to medical care and healthcare providers is most pronounced.

To address these issues, the University of Nevada, Las Vegas – School of Dental Medicine (UNLV-SDM) was created to improve the health of the citizens of Nevada through innovative programs of oral healthcare services. More recently, UNLV-SDM opened a pediatric dental residency training program to provide care directly to the underserved children in Nevada. To date, however, there has been no comprehensive evaluation of the UNLV-SDM pediatric population to determine if the school is providing care to the needy and underserved children of this community.

Based upon this information, the primary goal of this project is to determine whether underserved children in Clark County, NV are utilizing the UNLV-SDM pediatric dental clinic. Three primary research questions will help to establish this: (1) Determining whether the UNLV-SDM pediatric clinic treats a higher proportion of Medicaid and public insurance patients than would be expected given their prevalence in the local community; (2) Determining if there is a greater percentage of minority patients at UNLV-SDM than would be expected given their proportion in the local community and;

(3) Determining if a greater proportion of patients are derived from low-income neighborhoods than would be expected, given their distribution in the local community. These data combined will provide a more comprehensive view of the specific role of the UNLV-SDM pediatric dental clinic's ability to provide care to the needy and underserved low-income and minority children of Southern Nevada.

Methods

Human subjects

The protocol for this study titled "Retrospective investigation of pediatric patient demographics at UNLV-SDM" was filed, amended, and approved by the University of Nevada Las Vegas (UNLV) Office of Research Integrity – Human Subjects (OPRS#1111-3975M) on December 6, 2011.

Patient data

Selected demographic information, including age, race, gender, and insurance status, for all pediatric patients of record at UNLV-SDM < 18 years of age were provided to the study authors by the Information Technology department in summarized form with no patient identification numbers or other identifying information. Percentages were calculated from the total patient number on record.

Medicaid and CHIP data

Aggregate data for Medicaid and Children's Health Insurance Program (CHIP) in Nevada were accessed from the Georgetown University Health Policy Institute Center for

Children and Families (CCF) State Resource Center (CCR, 2011). Data included total number and percentage of insured, Medicaid, CHIP and uninsured children, which were originally compiled by the Health Management Associated from state Medicaid enrollment reports for the Kaiser Commission on Medicaid and the Uninsured and the Nevada Division of Health Care Financing and Policy's Medicaid and Nevada Check Up Fact Book, January 2011 (DHCFP, 2011).

Census and population data

Population data were obtained from the Census Bureau's State and County QuickFacts (US Census Bureau, 2011). Zip code data, including population and income, were obtained from Zip Code data and Melissa Data's Income Tax Data by Zip Code (Zip-Codes, 2011; Melissa Data, 2011).

Statistical analysis

Demographic and insurance information from Nevada was compared with the overall demographic profile of the UNLV-SDM pediatric patient pool (N = 2,446) using a chi-square ($\chi 2$) test, to determine if any characteristic (gender, race, age, Medicaid/CHIP status) was different than expected. Although data were available for gender, age and insurance status for all patients, only a subset (n=704/2446 or 28.7%) had complete demographic information including race. A probability level of alpha (α) ≤ 0.05 was used to determine statistical significance.

Results

To determine if the UNLV-SDM pediatric patient clinic is providing care to the needy and underserved populations in Southern Nevada, the overall number and percent of Medicaid/CHIP eligible children were obtained for comparison with the UNLV-SDM pediatric clinic (Table 1). This analysis revealed that slightly more than one-third or 36.4% of children in Nevada were covered by some form of Medicaid or were CHIP insured as of 2009/2010 (CCR, 2011; DHCFP, 2011), while the majority of children (62.4%) were covered by some form of employer-provided or self-insured type of private coverage. The analysis of the data from the UNLV-SDM pediatric clinic, however, revealed that more than three-fourths (76.7%) of children were covered by Medicaid or CHIP, while less than one-fourth (23.3%) were covered by some form of non-public, employer-provided or self-pay insurance program – revealing the proportion of Medicaid/CHIP insured children was significantly higher at UNLV-SDM than would be expected ($p < 0.001$).

Table 1. Comparison of pediatric Medicaid and CHIP populations.

	Medicaid/CHIP/uninsured (%)	**Private/Self-insured (%)**
Nevada children (< 18)	n = 259,064 (36.4%)	n = 444,109 (62.4%)
UNLV-SDM patients (< 18)	n = 1,876 (76.7%)	n = 570 (23.3%)
		$\chi 2 = 32.753$, d.f. = 1
		$p < 0.001$

To assess whether the UNLV-SDM pediatric patient clinic is providing care to underserved minority populations in Southern Nevada, demographic characteristics were obtained for comparison with the UNLV-SDM pediatric clinic (Table 2). This analysis revealed that although most children in Nevada were White (65%), the overwhelming majority of UNLV-SDM pediatric patients with race noted as part of their patient record were minorities (87.9%, $p < 0.0001$). More detailed analysis revealed the vast majority of pediatric patients were Hispanic (68%), with other minorities comprising much smaller percentages. The overall percentages of females and males in the UNLV-SDM pediatric clinic was not significantly different than their percentages in the overall population ($p = 0.8875$).

Table 2. Demographic comparison and analysis of UNLV-SDM and state population.

	Nevada	**UNLV-SDM**	**Statistical analysis**
Race			
White	n = 462,605 (65%)	n = 85 (12.1%)	$\chi 2 = 57.101$, d.f. = 1
Non-White	n = 249,095 (35%)	n = 619 (87.9%)	$p < 0.0001$
Hispanic	n = 113,872 (16%)	n = 479 (68.0%)	
Black	n = 85,404 (12%)	n = 108 (15.3%)	
Other	n = 49, 819 (7%)	n = 32 (4.5%)	
Gender			
Female	n = 35,339 (49.5%)	n = 1,182 (48.3%)	$\chi 2 = 0.020$, d.f. = 1
Male	n = 35,940 (50.5%)	n = 1,264 (51.7%)	$p = 0.8875$

To assess whether the UNLV-SDM pediatric patient clinic is providing care to patients from low-income neighborhoods, average adjusted gross income (AGI) from tax data were obtained for each of the 48 zip codes within the Las Vegas metropolitan area (Figure 1). These data demonstrated 17 zip codes had AGI in the high income category (> $65,000), 17 were middle income ($40,000-65,000), and 13 were low-income. Graphing the proportion of patients from each of these zip codes demonstrated that the overwhelming majority of patients reside in the low-income zip codes, with a smaller proportion residing in zip codes from the lower end of the middle-income zip codes.

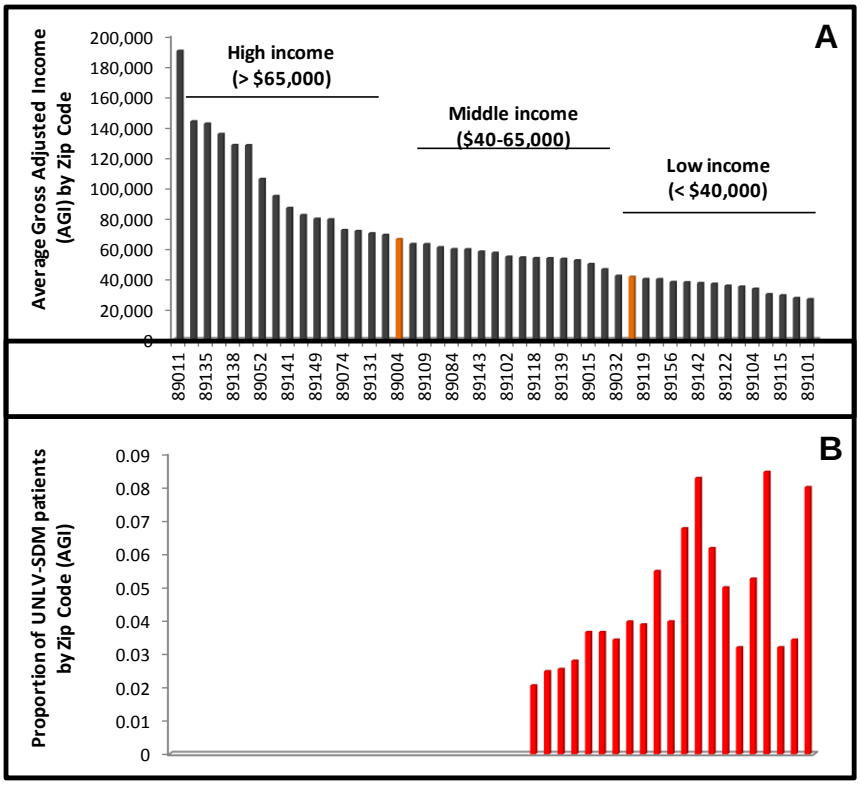

Figure 1. Graphical representation of UNLV-SDM patients by income. (A) Classification of zip codes by income category: low, middle, and high income. (B) Proportion of UNLV-SDM patients by zip code.

To assess whether the patients from the UNLV-SDM patient clinic are derived from disproportionately populated zip codes, population from each of the 48 zip codes within the Las Vegas metropolitan area were obtained (Figure 2). These data demonstrated that 21 zip codes had larger than average percentages of the overall population, and 26 zip codes have smaller than average percentages. An analysis of the proportion of UNLV-SDM patients from these zip codes revealed that a similar distribution, with the majority of patients residing in the zip codes with higher density and a smaller percentage of patients residing in zip codes with lower density.

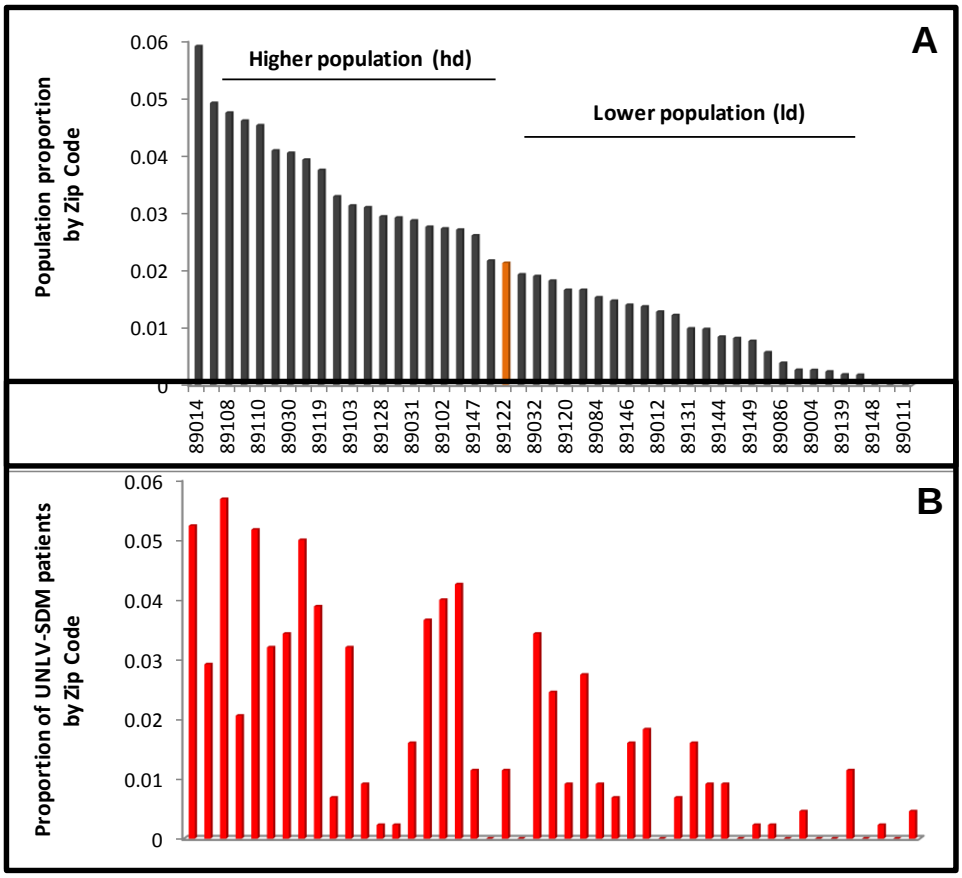

Figure 2. Graphical representation of UNLV-SDM patients by population density. (A) Classification of zip codes by population density categories: higher density (hd) and lower density (ld). (B) Proportion of UNLV-SDM patients by zip code.

To assess the accessibility of the UNLV-SDM pediatric patient clinic to the population, average distance from each zip code were obtained for all 48 zip codes within the Las Vegas metropolitan area (Figure 3). This analysis revealed distances ranging from 1.52 to 23.5 miles, with an average distance of 9.9 miles; ten zip codes had distances of less than five miles, 18 zip codes had an average distance between five and ten miles, 13 zip codes had distances between 10 – 15 miles and seven zip codes had distances greater than 15 miles. The largest proportion of patients resided in zip code with average distances of less than five miles. The average distance for UNLV-SDM patients is 6.813 miles, with a

range of 0.51 – 19.72 miles. Nearly half of UNLV-SDM patients live within five miles (40.9%) or between five and ten miles (41.3%), with smaller percentages residing 10 – 15 miles (13.5%) or more than 15 miles (3.2%).

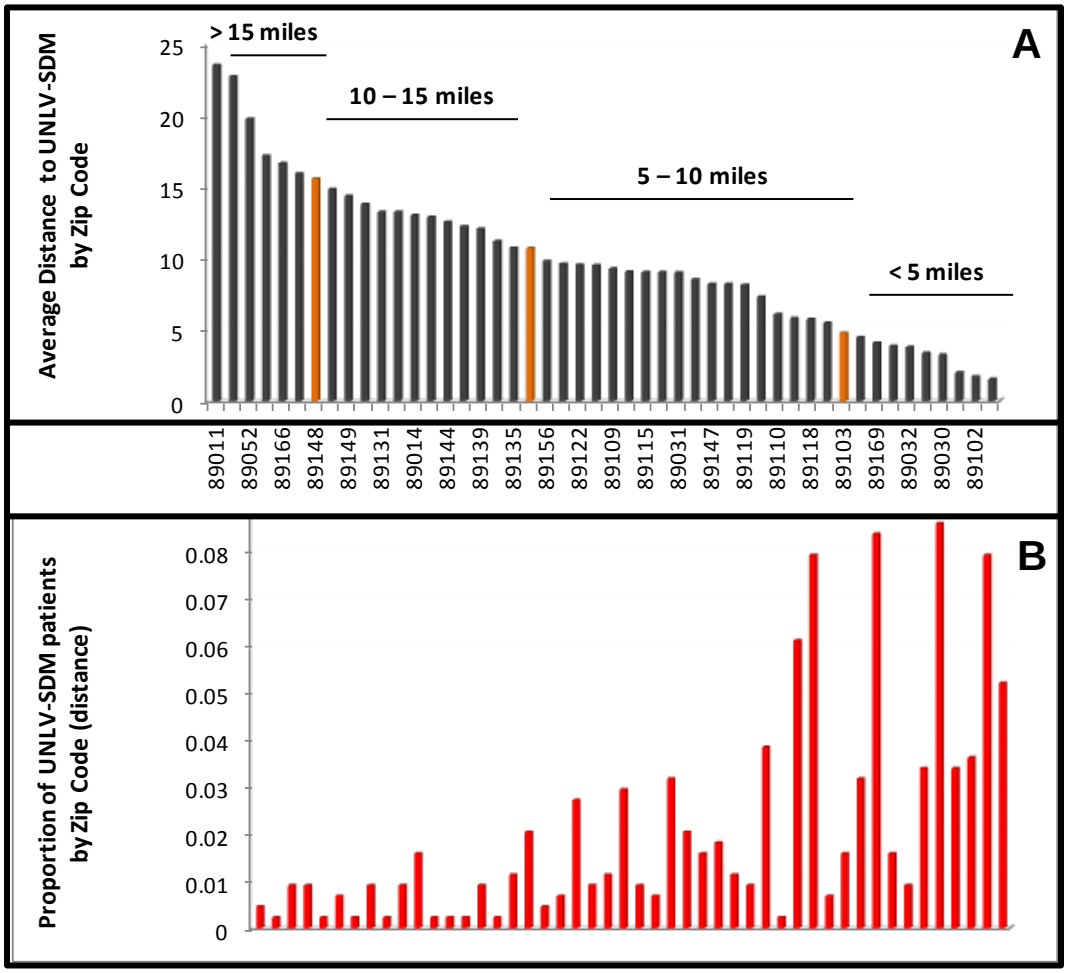

Figure 3. Graphical representation of UNLV-SDM patients by distance. (A) Classification of zip codes by distance to UNLV-SDM clinic: >15 miles, 10-15 miles, 5-10 miles, and <5 miles. (B) Proportion of UNLV-SDM patients by zip code.

Discussion

The primary goal of this project was to determine if the UNLV-SDM pediatric clinic is providing care to the medically underserved children in the Las Vegas metropolitan area by analyzing insurance status, minority percentages, as well as the geographic and income distributions of these patients. This study was the first to successfully analyze these data in order to elucidate the extent to which UNLV-SDM provides dental services for underserved children. Most significantly, this study revealed that the percentage of UNLV-SDM pediatric patients covered by public insurance programs, such as Medicaid or CHIP, is more than twice their percentage within the state population. These results, showing that more than three-fourths of the pediatric patients are covered by public insurance programs, are a strong indication that this clinic is meeting this part of its goal by facilitating utilization of oral healthcare services for a significant percentage of Medicaid and CHIP eligible pediatric patients in the area (Fisher & Mascarenhas, 2007).

In addition, this study also revealed that the overwhelming majority of UNLV-SDM pediatric patients are minorities. These data are important, as the epidemiological evidence has recently demonstrated oral health disparities and utilization gaps in oral healthcare for minorities in the US (Lewis et al., 2007; Liu et al., 2007). Moreover, although there are greater percentages of minorities in Nevada than in other US states, the percentage of UNLV-SDM pediatric patients who were minorities was almost two-and-a-half times greater than that of the local population – another strong indicator that the clinic is meeting its goal by providing oral healthcare services primarily to minority patients.

In fact, recent data also suggest that among minority groups, Hispanic children in Nevada had the highest levels of oral healthcare issues (BFHS, 2006). For example, Hispanic children had the highest levels of caries lesions (56.8%), untreated dental decay (38.9%), and early childhood caries (28.6%). The current study, therefore, provides new evidence that pediatric minority patients, Hispanics in particular, are accessing dental care at UNLV-SDM at rates that far exceed those of other minorities. As Hispanics represent more than two-thirds of the pediatric patient population, it becomes clear that the racial and ethnic groups most at risk for dental disease and poor oral health in Nevada have both increased access to care and higher rates of utilization than other groups.

Finally, this study revealed that UNLV-SDM pediatric patients resided in predominantly low-income zip codes. Although their geographic distribution was not significantly different from the overall population density, their economic distribution was clearly skewed towards low-income neighborhoods. Another barrier to dental and medical care, distance, was measured to determine how far patients are traveling and whether the school is optimally located to provide services to the underserved children in the area. These data demonstrated that the vast majority of patients resided within ten miles of the clinic, with the majority traveling less than five miles to access care. As the distance traveled to access healthcare services increases, so does the time and financial burden placed upon the patient and parent to reach these services. These data are the first to reveal that the location of the UNLV-SDM patient clinic and the distribution of patients in the local geographic area are well matched to reduce the time and distance traveled for the vast majority of their low-income, minority and publicly insured patients.

Although these data provide new information about access to care and utilization of services for minorities and low-income pediatric patients, this study also had some limitations. For example, we only examined the pediatric population at one point in time. Due to the recent economic downturn and other financial considerations, significant changes to the pediatric patient population may occur in the months and years ahead. Future studies may facilitate temporal analyses to determine the extent to which these percentages are static or dynamic. In addition, the analysis of some demographic variables was limited, due to the method of original data input into the electronic patient record. As a non-required patient intake demographic field, race or ethnicity is not always provided and therefore not available for future analyses. Provider and patient education regarding the importance of this information may help to increase the availability of this data for future studies and therefore should be considered a priority for the dental educators and dental students providing care.

In conclusion, the results of this study provide conclusive evidence that underserved children in the Las Vegas area are accessing and utilizing dental healthcare services at UNLV-SDM. These data revealed a patient population that is overwhelmingly minority, primarily Hispanic, and mainly accessing care using public insurance plans, including Medicaid and CHIP. Furthermore, these patients reside primarily in low-income neighborhoods that are geographically close to the facility, reducing a potential barrier of access to care. As the ratio of dentists-to-population decreases, as recently projected, dental clinics providing public access will be crucial to maintaining and improving the oral health status of those who are increasingly dependent upon free- or low-cost services provided by academic healthcare centers (Mertz & Mouradian, 2009).

Acknowledgements

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Conflicts of Interest

The authors report there are no conflicts of interest.

References

Clark County "Housing-Needs Assessment 2005-2009 Consolidated Plan" Clark County, Nevada Department of Finance, Community Resources Management Housing 24-25, (2004) http://www.co.clark.nv.us/finance/crm/conplandraft05to09.htm

Gorospe EC, Gerstenberger SL: Atypical sources of childhood lead poisoning in the United States: a systematic review from 1966-2006. Clin Toxicol (Phila) 2008 , 46(8):728-737.

Landrigan PJ, Todd AC: Lead poisoning. West J Med 1994, 161(2):153-159.

Needleman HL: Childhood lead poisoning: the promise and abandonment of primary prevention. Am J Public Health 1998, 88(12):1871-1877.

Center for Children and Families [CCF], Georgetown University Health Policy Institute. (2011). *Health coverage and the uninsured.* Retrieved November 14, 2011, from website: http://ccf.georgetown.edu/index/resource-center

Division of Health Care Financing and Policy [DHCFP], Nevada Department of Health and Human Services. (2011). *Medicaid and Nevada check up fact book*. Retrieved November 14, 2011, from http://dhcfp.state.nv.us

United States Census Bureau [US Census Bureau], State and County QuickFacts. (2011). Retrieved November 14, 2011, from www.census.gov

Zip-Codes. (2011). *Zip code data base*. Retrieved November 14, 2011, from

http://www.zip-codes.com

Melissa Data. (2011). *Income tax data by zip code*. Retrieved November 14, 2011, from https://w2.melissadata.com

Fisher, M. A., & Mascarenhas, A. K. (2007). Does Medicaid improve utilization of medical and dental services and health outcomes for Medicaid-eligible children in the United States. *Community Dentistry and Oral Epidemiology, 35(4)*, 263-271.

Lewis, C., Johnston, B. D., Linsenmeyar, K. A., Williams, A., & Mouradian, W. (2007). Preventive dental care for children in the Unites States: A national perspective. *Pediatrics, 119*, e544-e553. Retrieved September 14, 2011, from http://pediatrics.aappublications.org/content/119/3/e544.full.html

Liu, J., Probst, J. C., Martin, A. B., Wang, J., & Salinas, C. F. (2007). Disparities in dental insurance coverage and dental care among US children: The National Survey of Children's Health. *Pediatrics, 119; Supp 1* , S12-S21. Retrieved September 8, 2011, from http://pediatrics.aappublications.org/content/119/Supplement_1/S12.full.html

Bureau of Family Health Services [BFHS]. (2007). The burden of oral disease in Nevada-2006. Nevada State Health Division, Department of Health and Human Services.

Manski, R. J., & Brown, E. (2008). Dental coverage of children and young adults under age 21, United States, 1996 and 2006. *Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey*. Retrieved September 7, 2011, from www.meps.ahrg.gov/mepsweb/data_files/publications/st221/stat221.pdf

CHAPTER 3

General Discussion and Conclusion

The primary goal of this study was to determine if UNLV-SDM pediatric clinic is providing care to the needy and underserved children in the local community – Clark County, Nevada. This study was the first to analyze if, and to what extent, UNLV-SDM pediatric clinic treats the needy and underserved children. Statistical analysis of insurance status, minority percentages, and geographical distributions revealed that UNLV-SDM pediatric clinic is providing care to the needy and underserved children.

Given that children with UDN were 1.41 times as apt to have Medicaid or other public health insurance compared to children with private health insurance (NCHS, 2011), children with Medicaid are clearly in need of oral health services. Additionally, as the percentage of children covered by public dental insurance continues to increase (DHHS, 2008), the demand for oral health professionals serving this population will also increase.

UNLV-SDM pediatric clinic accepts patients with public insurance programs. Analysis of insurance coverage of patients utilizing oral health services revealed that more than three-fourths (76.7%) of children were covered by Medicaid or Children's Health Insurance Program (CHIP). The proportion of patients covered by Medicaid or CHIP at UNLV-SDM pediatric clinic was significantly different ($x2=32.753$, d.f.=1, $p<0.001$) from the proportion of those enrolled in Medicaid or CHIP within the state of Nevada. While having Medicaid may not improve utilization of dental services (Fisher & Mascarenhas, 2007), our results indicate that UNLV-SDM pediatric clinic facilitates

utilization of oral healthcare services for a significant percentage of Medicaid and CHIP eligible patients.

Epidemiological evidence shows disparities in oral health and utilization of oral healthcare serves for minorities (Lewis et al., 2007a; Liu et al., 2007). Analysis of the patient population revealed that 87.9% of the patients had identified themselves as being minorities. The percentage of minority patients was significantly different ($X2=57.101$, $d.f.=1$, $p<.0001$) from the percentage of minorities within Nevada. The Burden of Oral Disease in Nevada (2006) reports that Hispanic Head Start, a program designed for preschool children of low-income families, children had the highest caries experience (56.8%), untreated decay (38.9%), and early childhood caries (28.6%). Of the minorities treated at UNLV-SDM pediatric clinic an overwhelming majority were Hispanic (68%). The results indicate that UNLV-SDM pediatric clinic is treating racial and ethnic groups who are at increased risk for poor oral health.

Graphical distribution of patient frequency among the 48 zip codes within the Las Vegas metropolitan area was conducted to determine if the patients were coming from low-income neighborhoods, disproportionately populated areas, and to see if distance affected access to care. The results indicated that the majority of patients reside in low-income and high-density zip codes. Additionally, 82.2% of patients resided within 10 miles of the clinic. As the distance traveled to access oral healthcare services increases, so does the time and financial burden placed upon the patient. Future research could focus on possible transportation barriers including availability of public transportation, distance, and time traveled.

The results of this study are limited based upon the study design and availability of the patients' race. The retrospective study design limited the variables to data that had been previously collected. Therefore, the accuracy and reliability of the variables are limited by how the data was originally measured and recorded. Analysis of race was limited due to a reduced sample size, the direct result of patients not providing this data. The study clearly demonstrates the need to ensure patients, students, and staff is informed of the importance in properly completing and maintaining patient records. Additionally, future research could focus on methods to increase compliance with completing and maintaining patients' records. Improving data collection methods will insure that future policy development will be guided by accurate and reliable statistical analyses.

Our results indicate that underserved children in Clark County, NV are utilizing oral health services provided by UNLV-SDM pediatric clinic. As the ratio of dentist to the overall population is projected to decrease (Mertz & Mouradian, 2009) UNLV-SDM pediatric clinic will be crucial in maintaining the oral health of Nevadans. However, as public health professionals, the data clearly demonstrate the need to further study the incidence and prevalence of oral disease, and barriers enrolling in Medicaid/CHIP.

In the United States only 26% of children 6 to 8 years old have untreated decay, but among children 6 to 8 years old who live in Nevada 44% have untreated decay. Additionally, just over three-quarters of minority children, 6 to 8 years old, residing in Nevada have experienced caries and half have untreated decay (DHHS, 2006). To decrease oral health disparities in Nevada, further research is needed to establish barriers faced by the minority population in utilizing oral health services for the treatment of disease.

In Nevada 62.9 percent of kids who eligible for Medicaid/CHIP are enrolled. This numbers is significantly lower than the participation rate, 84.8%, of the United States (DHHS, 2012). Children with health insurance are more likely to receive preventative dental care and have less unmet dental need (Liu et al., 2007). Therefore, it is imperative to study the barriers faced, by those who are eligible, in enrolling in Medicaid/Chip.

Prevention of disease is the main goal for any public health official. One method to prevent dental caries is by dental sealants. However, of Nevada's third grade students, minorities were 1.37 times as likely to lack dental sealants compared to White Non-Hispanics (DHHS, 2006). To decrease oral health disparities in Nevada, further research is needed to establish barriers faced by the minority population in utilizing preventative oral health services.

The UNLV-SDM pediatric clinic patient population accounts for about 1% of all children enrolled in Medicaid/CHIP and 0.6% of all children eligible for Medicaid/CHIP (DHHS, 2012). While the data clearly demonstrates the majority of patients at UNLV-SDM pediatric clinic are underserved children residing in Clark County, NV, additional resources are essential to secure the oral health of Nevadans.

APPENDIX

Institutional Review Board Approval

UNLV
UNIVERSITY OF NEVADA LAS VEGAS

Biomedical IRB – Exempt Review
Deemed Exempt

DATE: **December 6**, 2011

TO: **Dr. Karl Kingsley,** School of Dental Medicine

FROM: Office of Research Integrity – Human Subjects

RE: Notification of review by /Cindy Lee-Tataseo/Ms. Cindy Lee-Tataseo, BS, CIP, CIM
Protocol Title: **Retrospective Investigation of Pediatric Patient Demographics at UNLV-SDM**
Protocol # 1111-3975M

This memorandum is notification that the project referenced above has been reviewed as indicated in Federal regulatory statutes 45CFR46 and deemed exempt under 45 CFR 46.101(b)4.

Any changes to the application may cause this project to require a different level of IRB review. Should any changes need to be made, please submit a **Modification Form**. When the above-referenced project has been completed, please submit a **Continuing Review/Progress Completion report** to notify ORI – HS of its closure.

If you have questions or require any assistance, please contact the Office of Research Integrity - Human Subjects at IRB@unlv.edu or call 895-2794.

BIBLIOGRAPHY

Agency for Health Care Research and Quality. (2008, September). *Dental coverage of children and young adults under age 21, United States, 1996 and 2006* (Statistical Brief No. 221). Rockville, MD: Manski, R.J., & Brown, E.

Center for Children and Families [CCF], Georgetown University Health Policy Institute. (2011). *Health coverage and the uninsured*. Retrieved from http://ccf.georgetown.edu/index/resource-center

Clark County. (2004*). Housing-Needs assessment 2005-2009 consolidated plan*. Retrieved from http://www.co.clark.nv.us/finance/crm/conplandraft05to09.htm

Division of Health Care Financing and Policy [DHCFP], Nevada Department of Health and Human Services. (2011). *Medicaid and Nevada check up fact book*. Retrieved from http://dhcfp.state.nv.us

Fisher, M., & Mascarenhas, A. (2007). Does Medicaid improve utilization of medical and dental services and health outcomes for Medicaid-eligible children in the United States. *Community Dentistry and Oral Epidemiology*, 35(4), 263-271.

Gorospe, E., & Gerstenberger, S. (2008). Atypical sources of childhood lead poisoning in the United States: A systematic review from 1996-2006. Clinical Toxicology, 46(8), 728-737.

Landrigan, P., & Todd, A. (1994). Lead poisoning. *Western Journal of Medicine*, 161(2), 153-159.

Lewis, C., Johnston, B., Linsenmeyar, K., Williams, A., & Mouradin, W. (2007a). Preventive dental care for children in the United States: A national perspective. *Pediatrics*, 119(3), 544-553.

Lewis, C., Mouradian, W., Slayton, R., & Williams, A. (2007b). Dental insurance and its impact on preventive dental care visits for U.S. Children. *The Journal of the American Dental Association*, 138(8), 369-380.

Liu, J., Probst, J., Martin, A., Wang, J., & Salinas, C. (2007). Disparities in dental insurance coverage and dental care among US children: The national survey of children's health. *Pediatrics*, 119(Supplement), S12-S21.

Martin, A. B., Probst, J., & Hale, N. (2009). Effect of haing a personal healthcare provider on access to dental care among children. *Journal of Public Health Management Practice*, 15(3), 191-199.

Melissa Data. (2011). Income tax data by zip code. Retrieved from https://w2.melissadata.com

Mertz, E., & Mouradian, W. (2009). Addressing children's oral health in the new millennium: Trends in the dental workforce. *Academic Pediatrics*, 9(6), 433-439.

National Center for Health Statistics [NCHS]. (2011). *Summary health statistics for U.S. children: National health interview survey, 2010* (Series 10, Number 250). Washington, DC: Sondik, E.J., Madans, J.H., & Gentleman, J.F.

Needleman, H. L. (1998). Childhood lead poisoning: The promise and abandonment of primary prevention. *American Journal of Public Health*, 88(12), 1871-1877.

United States Census Bureau [US Census Bureau]. (2011). *State and county quickfacts*. Retrieved from www.census.gov

United States Department of Health and Human Services [DHHS], Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey. (2008). Dental Coverage of children and young adults under age 21, United States, 1996 and 2006. Retrieved from http://www.meps.ahrg.gov/mepsweb/data_files/publications/st221/stat221.pdf

United States Department of Health and Human Services [DHHS], Nevada State Health Division, Bureau of Family Health Services. (2007). *The burden of oral disease in Nevada-2006.* Retrieved from http://health.nv.gov/PDFs/OH/Burdenoforaldisease2006.pdf

United States Department of Health and Human Services [DHHS]. (2012). *Medicaid/CHIP participation rates*. Retrieved from http://www.insurekidsnow.gov/professionals/reports/index.html

World Health Organization [WHO]. (2006). Constitution of the World Health Organization. *Basic Documents*, 45(Supplement), S1-S18.

Zip-Codes. (2011). *Zip code data base*. Retrieved from http://www.zip-codes.com

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