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A Needs Assessment: The Barriers Preventing Students at a Large Midwestern University from Accessing the Dental Clinic on Campus for Preventative Care

By

Pamela Briese

A Thesis Submitted in Partial Fulfillment of the

Requirements for the Degree of

Master of Science

In

Community Health Education

Minnesota State University, Mankato

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A Needs Assessment: The Barriers Preventing students at a Large University
from Accessing the Dental Clinic for Preventative Care

Pamela Briese

This thesis has been examined and approved by the following members of the
student's committee.

Dr. Joseph Visker, Advisor

Dr. Autumn Hamilton, Committee Member

Dr. Angela Monson, Committee Member

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Abstract

Preventive maintenance and dental care for college students is just as important now as it was when they were living with their parents, but even though colleges have been offering campus-based medical care to their students for many years, oral health care has not been included in this health prevention effort. Because of the impact that oral health has on the overall health and well-being of college students, and in following the Healthy People 2020 Oral health goal to “Prevent and control oral and craniofacial diseases, conditions, and injuries, and improve access to preventive services and dental care” (HP2020), this study was undertaken to determine the barriers that are preventing the student population at a large midwestern university from accessing the dental clinic on campus for their preventative care. 369 students were invited to participate in this survey research study to answer questions regarding their knowledge of the dental clinic on campus, the value they put on preventative dental care, the barriers preventing them from accessing the dental clinic, and if demographics in this student population influenced their dental health. It was discovered that the majority of the students were aware of the dental clinic, but had not had an appointment there, the students definitely value preventative care, and the barriers preventing them from scheduling an appointment were lack of insurance, cost of treatment, and time. As far as demographics influencing their dental health, the study found that junior students had poorer dental health when compared to freshman, sophomores, and seniors.

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Chapter 1: Statement of the Problem

Introduction

Preventive maintenance and dental care for college students is just as important now as it was when they were living with their parents. College students often abandon healthy lifestyle habits when going off to college and this could include dental health habits (Dewald, 2016). The transition into young adulthood, is defined in the research literature as starting with the 18th birthday and ending with the 26th birthday, is an opportunity to establish oral health behaviors that will provide a foundation for the rest of their life (Devoe, Roberts, Davis, & Wallace-Brodeur, 2018). For nearly a century, college campuses have been concerned for the health of their college students and have been providing campus-based medical care, but rarely, has dental health been included in the health prevention and treatment services for these students (Dewald, 2016). According to the Surgeon General's report, Oral Health in America, oral health and general health are not separate entities (National Institute of Dental and Craniofacial Research [NIDCR], n.d.). Oral health is a critical component of health, it must be included in the provision of health care, and the design of community programs (NIDCR, n.d.).

Even though evidence continues to suggest that oral health is linked to overall health (St. Sauver et al. 2017), and dental care utilization may lead to health care cost savings (Nasseh, 2016), oral health is still regarded as optional in health policy for most of the United States population (Gupta, Vujicic, Yarbrough, & Harrison, 2018).

Statement of the Problem

Cavities. Dental caries, or more commonly known as cavities, are a common problem in the United States and are often left untreated, the percentage of adults age 20-34 years with untreated decay is 27.88 % (NIDCR, n.d.). Dental caries form through a complex interaction over time between acid-producing bacteria and fermentable carbohydrates, and many host factors including teeth and saliva (Selwitz, 2007). When cavities are left untreated, they can cause severe pain, an infection in the tooth which is called an abscess, cracked or broken teeth, or the eventual loss of teeth, which can lead to problems with chewing and misaligned teeth (Fleming & Afful, 2018). The good news is that tooth decay is preventable, with daily brushing and flossing, fluoridated drinking water, fluoridated toothpaste, and regular preventive dental care.

Dental caries, or more commonly known as cavities, are a common problem in the United States and are often left untreated, the percentage of adults age 20-34 years with untreated decay is 27.88 % (NIDCR, n.d.). Dental caries form through a complex interaction over time between acid-producing bacteria and fermentable carbohydrates, and many host factors including teeth and saliva (Selwitz, 2007). When cavities are left untreated, they can cause severe pain, an infection in the tooth which is called an abscess, cracked or broken teeth, or the eventual loss of teeth, which can lead to problems with chewing and misaligned teeth (Fleming & Afful, 2018). The good news is that tooth decay is preventable, with daily brushing and flossing, fluoridated drinking water, fluoridated toothpaste, and regular preventive dental care.

Gum disease. Periodontal disease, also called gum disease, is another prominent disease that affects 47% of adults in the United States, even young adults, and it is largely preventable with brushing, flossing, and regular dental visits (Center for Disease Control and Prevention [CDC], n.d.). It is a serious gum infection that affects the soft tissue around the tooth and destroys the bone that supports the teeth, which can lead to the eventual loss of the teeth. Some of the signs and symptoms of gum disease are gums that are red, swollen, tender, and bleed easily. Risky health behaviors of college students, such as the use of tobacco products is a recognized risk factor for periodontal disease, and cannabis smoking may contribute in a similar way (Hujoel, 2008). Even at an early age, tobacco consumption affects the periodontal health, so it is necessary to inform young adults of the risk of tobacco use regarding oral health (Machuca, 2000).

Oral Cancer. Thirty thousand new cases of oral cavity and oropharyngeal cancer are found annually (Journal of Health Disparities Research and Practice [JHDRP], 2016), and college students use of tobacco and alcohol along with the increase in oral sex and acquisition of HPV could contribute to future cases of oral cancer (Dewald, 2016). The oral cavity and oropharynx help you breathe, talk eat, chew, and swallow (American Cancer Society, n.d.). Oropharyngeal cancers are cancers that affect primarily the tonsils, tonsillar crypt, and the base of the tongue. 70% of oropharyngeal cancers in the United States, are caused by the Human Papilloma Virus (HPV) (CDC, n.d.), and every day about 12,000 people ages 15 to 24 are infected with HPV (CDC, n.d.). Symptoms of oropharyngeal cancer may include a long-lasting sore throat, earaches, hoarseness, swollen lymph nodes, pain when swallowing, and unexplained weight loss. Some people have no symptoms and the best way to screen for HPV related oral and oropharyngeal

cancer is through a visual and tactile exam given by a medical or dental professional. Some experts predict that HPV-caused mouth and throat cancers will become more common than cervical cancer by the year 2020 (Health Harvard, n.d.). The education of college students about oral health today, may prevent oral cancer in their futures.

Purpose of the Study

Along with prevention and good oral hygiene, a key driver of oral health is routine dental care (Institute of Medicine [IOM], 2012). The vision of the American College Health Association and the Healthy Campus 2020 initiative is to promote campus communities in which all members live long, healthy lives (American College Health Association [ACHA], n.d.). Dental caries, periodontal disease, and oral cancer are all preventable diseases with education, good home care, and regular dental visits. So why do students not access the university dental clinic for their routine dental care? Is there something we can do to help the students access the preventative care they need?

Significance of the Problem

Good oral health is key to good overall health, yet millions of Americans lack access to basic, affordable oral health care (Comlossy, 2013). Young adults are the most likely of any age group to face financial barriers to dental care and they account for most of the increase in emergency room visits for dental conditions (Vujicic & Yarbrough, 2014). The usual barriers based on the young adults' demography like race and ethnicity, income status, sex, and geography have been identified, but young adults also have difficulty accessing and utilizing health-care services because they are one of the highest uninsured groups in the country (DeVoe, et al, 2017). Twenty-seven percent of adults between the ages of 20-44 years old have untreated tooth decay (ACHA, 2016), and cost,

was the most significant factor keeping Americans from accessing needed dental care (Vujicic, 2016).

Research Questions

- 1) What is the extent of students' knowledge regarding the availability of a dental clinic on campus?
- 2) To what level do students' value preventative care regarding their oral health?
- 3) What are the barriers preventing the students from accessing the dental clinic?
- 4) How do demographics in our student population influence their dental health?

Limitations

- 1) The sample does not represent the general population
- 2) Self-reported data
- 3) Convenience sampling

Delimitations

- 1) Age of the respondents

Assumptions

- 1) Answered honestly
- 2) Students understand the question.

Definitions

Barriers to Care. Include anything that can limit or prevent people from receiving adequate health care (American Student Dental Association [ASDA], n.d.).

Human papilloma virus (HPV). Is the most common sexually transmitted infection. Some types of HPV can cause genital warts and cancer (CDC, n.d.).

Oral cancer. Oral cancer is divided into two categories – those that occur in the oral cavity (lips, cheeks, gums, tongue, floor of the mouth, and roof of the mouth), and

those that occur in the oropharynx (throat, tonsils, and base of the tongue) (American Dental Association [ADA], n.d.).

Oral cavity. Includes the lips, the inside lining of the lips and cheeks, the teeth, the gums, the front of the tongue, the floor of the mouth, and the roof of the mouth (American Cancer Society, n.d.).

Oral health. State of being free from chronic mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing (World Health Organization [WHO], n.d.).

Oral hygiene. "The degree to which the oral cavity is kept clean and free of soft and hard deposits by daily oral self-care or, when necessary, oral care provided by a caregiver" (Darby & Walsh, 2015, p. 282).

Oropharynx. Is the part of the throat just behind the mouth. It includes the base of the tongue, the soft palate, the tonsils, and the side and back walls of the throat (American Cancer Society, n.d.).

Periodontal (gum) disease. Is an infection of the tissues that hold your teeth in place. It is typically caused by poor brushing and flossing habits that allow plaque, a sticky film of bacteria to build up on the teeth and harden (NIDCR, n.d.). It can eventually lead to sore, bleeding gums and tooth loss.

Preventive dentistry. Focuses on the procedures and life practices that help prevent the beginning or progression of oral disease. It includes home care and dental care provided by a professional dentist or dental hygienist (Hilton & Newton, 2018).

Tooth decay/cavity. Also called dental caries, is an infectious, transmissible, and multifactorial disease with the primary factors being bacterial plaque and fermentable carbohydrates which leads to cavitation and possible tooth loss (Darby, 2015).

Chapter 2: Review of the Literature

Introduction

Colleges have been offering campus-based medical care to their students for many years, but oral health care has not been included in this health prevention effort (American College Health Association, n.d.). The importance of oral healthcare for students is indisputable, and for the first time, oral health and overall health was included in the Surgeon General's report. Healthy People 2020, includes the oral health goal to "Prevent and control oral and craniofacial diseases, conditions, and injuries, and improve access to preventive services and dental care." (Office of Disease Prevention and Health Promotion [ODPHP], n.d.). Sometimes however, the people that need it the most, are the least likely to receive it (Calamidas & Crowell, 2018). Dental hygienists are an integral part of the access to care solution and have a great opportunity to lead the call to action and fulfill the American Dental Hygienists' Association's mandate that oral health care is the right of all people (Bersell, 2017). The Surgeon General's Oral Health Report concluded that although common dental diseases are preventable, many people face barriers, sometimes insurmountable, that prevent their access to oral health care (Satcher & Nottingham, 2017). This study intends to discover the barriers that are preventing the student population from accessing the dental clinic located on campus.

Recommended Oral Health Practices. Oral diseases can be prevented by adopting proper oral health behavior (Taniguchi-Tabata et al., 2017). The general recommendations that are applicable to most people include, brushing your teeth twice a

day with a fluoride toothpaste. Cleaning between your teeth daily with dental floss. Eating a healthy diet that eliminates sugary beverages and snacks and see a dentist regularly for prevention and treatment of oral disease (American Dental Association, n.d.). College students may adopt unhealthy eating practices and poor oral hygiene habits for several reasons, and research shows that they also suffer most often from interproximal decay due to excessive consumption of fermentable carbohydrates (Mazza, 2008). Future health promotion with college students must use interventions that maximize self-efficacy and reduce barriers to adopting a healthy lifestyle (Ridner, Newton, Staten, Crawford, & Hall, 2016).

Common Oral Diseases. Dental caries, commonly called cavities, is a transmissible bacterial infection that is preventable and, in some cases, even reversible (Darby, 2015). Dental caries, or tooth decay, is the most common chronic disease in children and adults in the United States, and it is largely, if not entirely, preventable (Sullivan, 2017). Yet, millions of Americans—adults and children—lack access to preventive dental services and routine dental care (Sullivan, 2017).

Dental caries is caused by *streptococcus mutans* and *lactobacilli* that live in the plaque biofilm that attaches to the teeth, these bacteria thrive on fermentable carbohydrates, or sugars, to produce acid, which in turn attacks the tooth to begin the process called demineralization (Darby, 2015). Remineralization is the process of repairing the tooth, and it is aided by saliva which plays a key role when it neutralizes acids and provides minerals and proteins that protect the teeth (Darby, 2015).

Periodontal disease is an inflammatory condition affecting the gums and bone support, also called the periodontal tissues, around the tooth. It is the most common

cause of tooth loss in adults (Shariff, Ahluwalia, & Papapanou, 2017). The most common forms of periodontal disease are gingivitis, which is an inflammation of the gums surrounding the teeth, and periodontitis, which affects the bone and tissues around the tooth. In the United States, the percentage of adults, age 20-34 years of age with periodontal disease is 3.84% (National Institute of Dental and Craniofacial Research [NIDCR], 2018). However, there are several modifiable risk factors that can increase susceptibility for periodontal disease including, smoking, stress, and inadequate home care (AlJehani, 2014), and all these risk factors are common occurrences for college students.

Oral Cancer is one of the most serious conditions that can occur in the oral cavity, and more than 75% of head and neck cancers originate in the oral cavity (Darby, 2015). It is the seventh most common cancer among all American males and the fourth most common among Black males (Satcher, 2017). Oral cancer has a 5-year survival rate of only 50% and with all cancers, early detection increases the survival rates (ACHA, n.d.). Once thought of as a disease affecting older adults, oral cancer is now experiencing a rise in the cases among younger adults because of the human papilloma virus (HPV) (Corcoran & Whiston, 2000). There are more than 150 different types of HPV. Forty of these are transmitted through oral and genital sexual contact (CDC, 2014). College students' use of tobacco and alcohol along with the increase in oral sex and acquisition of HPV could contribute to future cases of oral cancer (Dewald, 2016).

Another form of oral cancer, Oral Squamous Cell Carcinoma (OSCC) accounts for 94% of all cancers of the oral cavity (Darby, 2015). In the United States, OSCC is associated strongly with certain risk factors, such as tobacco use, alcohol abuse, HPV

infection, and, for extraoral lesions such as on the lower lip, excessive sun exposure (Darby, 2015), which are all associated with risky behaviors of college students. However, the five-year survival rate when the lesions are detected early, is 90% (Darby, 2015) so routine preventative dental visits, where a thorough intra oral and extra oral examination of the head and neck are performed, are very important.

Barriers to Accessing Oral Health Care. Barriers to care consist of anything that limits a person's ability to receive dental services including, lack of dental insurance, language, culture, education, denial, fear, and socioeconomic factors, and many times it is a combination of factors (Nathe, 2017). The results of a study on health care for young adults in a rural setting established the barriers that prevented accessing preventive services were lack of healthcare coverage and income level (DeVoe, 2018). A study in rural Wisconsin interested in discovering more about the barriers that are preventing patients from accessing dental care, found that 58% of the respondents identified the cost of treatment, 44.9% stated limited insurance benefits, and 14.6% stated that their insurance did not cover the needed care as the primary reasons for not seeking treatment (Malecki, 2015). These findings clearly suggest that having dental benefits is becoming increasingly important in influencing utilization (Vujicic & Nasseh, 2013), and many young adults do not have the necessary insurance coverage for them to take the first step for access to care (NHANES, n.d.). In the United States, young adults are twice as likely to be uninsured than any other age segment of the population (NHANES, n.d.). The changes with the Affordable Care Act are improving access to many healthcare services, but it is not the same with dental services, and many people, especially adults, still face financial barriers to receiving dental care that can lead to unmet oral health needs

(Vujicic, 2016). Fifty-six percent of White college students reported having an annual dental exam and cleaning, while no other ethnicity even achieved 10% having an annual exam and cleaning (ACHA, n.d.). What needs to be further determined is if international students are receiving their annual dental exam in their home country or after arriving in the US to attend college. If their dental exam and cleaning was in their home country, then connecting international students with dentists in the immediate locale of the university is important (ACHA, n.d.).

Health literacy is another barrier to dental care, and it is vital at all stages of life, but promoting health literacy within the college student population sets them up for a lifetime of improved literacy for health and promoting health literacy also needs to include the promotion of oral health literacy (ACHA, n.d.). Oral health literacy was defined in Healthy People 2010 as, “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate oral health decisions” (ODPHP, n.d.). As public health educators, we must not forget dental health as an integral part of overall health in college students, and we must educate for dental health and the prevention of related dental health issues (ACHA, n.d.).

Oral Health and Systemic Health Link. Current health issues can be caused by poor oral health practices, but also future health issues are caused by current day poor oral health practices and it is now known that many health illnesses and diseases have their origins in the mouth and are due to poor dental hygiene by the patient (ACHA, n.d.). Research has linked oral health to systemic conditions including heart disease, pneumonia, osteoporosis and osteopenia, stroke, diabetes, both preterm births and low

birth weight babies, oral cancer, and human papilloma virus (HPV) (Glick, 2005). Addressing oral diseases is finally being recognized as a critical component to disease management, and it is being added to the curriculum of Pharmacy, Nursing, and Medical Schools worldwide (Hein, Schonwetter, & Iacopino, 2011). If those who work in dental care decrease the threat of systemic inflammation, specifically through treatment of periodontal disease, they have the potential to improve patient health outcomes in inflammation driven disease states such as cardiovascular disease and diabetes (Hein, et al 2011). This bidirectional relationship between oral and systemic health is integral to ensuring overall health and contributes to the state of physical, mental, emotional, and social well-being necessary for an individual to enjoy life's possibilities and to adapt to life's challenges (Hein et al., 2011).

Oral Healthcare and College Students. College students are at risk for oral health problems because they do not have their parents to remind them to brush or floss their teeth (Dewald, 2016), and the combination of busy schedules, risk taking, and lack of campus dental health care services is a dangerous triad both for the present and for the future (Dewald, 2016). Health behaviors such as poor nutrition, alcohol consumption, and use of tobacco products affect oral health and contribute to poor oral health (ACHA, n.d.). This, combined with lack of sleep and stress, can fuel the desire for foods high in sugar, caffeine or other harmful agents, and the research shows that college students suffer most often from interproximal decay resulting from excessive consumption of fermentable carbohydrates (Mazza, 2008).

Another contributing factor to poor dental and oral health is not behavior but economics. Economic factors impede acquiring and maintaining dental insurance, and

access to dental health services from a dental hygienist or a dentist (ACHA, n.d.). Yarbrough, Nasseh, and Vujicic (2014), found the top three reasons for 18-34-year old's not going to a dentist were: having a healthy mouth and not needing dental care (37.9%), cost (35.7%), and not having time to get to a dentist (28.4%). An economic concern in college students are those who are experiencing food insecurity and if they are struggling to purchase food, it is possible that they are also struggling to buy toothpaste, toothbrushes, and dental floss (Dewald, 2011). Educating college students about oral health and preventative services that are available during freshman orientation, will establish positive oral health habits and impact their long-term health and wellness (ACHA, n.d.). Many times, a void exists between healthcare professionals and their patients, this can also occur between college student health centers and the students that seek medical care there, this creates an opportunity to work in collaboration with these healthcare professionals by offering educational programs, so they feel comfortable about incorporating oral health care into their visits with students (Dewald, 2011).

Conclusion

Continuing to play a major role in the effort to eliminate oral health disparities and improve oral health for all, the Centers for Disease Control and Prevention, Division of Oral Health has made oral health an integral part of public health programs in the United States (Satcher et al., 2017). There are many resources available on our campus to help our students achieve optimum physical, mental, and spiritual health, to become the best person they can, and the goal of my study is to complete that circle of health by helping them achieve excellent oral health too. By identifying barriers, risks, and disparities in the student population that contribute to inadequate access to care and lack

of dental treatment, we can help discover solutions to bridge the gap and improve the overall health of individuals in our community.

Chapter 3: Methodology

Introduction

This chapter describes the research methods used to understand the perceived barriers to dental care access, so more effective steps can be taken to overcome these challenges. Students attending a university in Southern Minnesota will be recruited to participate utilizing a convenience sampling technique. This study will assess the student population's extent of knowledge regarding the availability of a dental clinic on campus. The value of preventive care regarding their oral health. The barriers preventing them from accessing the dental clinic, and do the demographics in our student population influence their access to care.

Description of Research Design

To identify barriers that are preventing the students from accessing preventative care at the university dental clinic, descriptive statistics will be collected and analyzed using a group administered convenience survey with a structured response format. To obtain a high response rate, the paper survey will be distributed to students enrolled in general education health classes with large enrollments and collected upon completion.

Research sample

Following Institutional Review board approval, see appendix C, a convenience sample from the university's student population of 15,000 (Minnesota State University, n.d.), will be selected by contacting professors teaching general education health classes

for permission to utilize some of their class time to distribute the paper survey to their students. Following the table provided by Krejcie and Morgan for determining sample size from a given population, see Appendix A, I plan to survey approximately 375 students for an appropriate sample size (Krejcie & Morgan, 1970).

Survey Instrument

The survey instrument will consist of 17 multiple choice questions regarding demographic information, perceived oral health care needs, and barriers to oral health care, see Appendix B. Permission was requested to use a questionnaire developed by Yaghoubi, Khajedaluae, and Mohammadi, they developed a comprehensive, valid and reliable instrument for assessing perceived oral health care needs, and barriers to oral health care access (Yaghoobi, Khajedaluae, & Mohammadi 2017).

Data Collection

Data will be collected from students enrolled in general education health classes at Minnesota State University, Mankato. The professors will be asked permission to take 15 minutes of their class time to have the students complete a survey. Students will receive a verbal explanation of the informed consent, instructions to complete the anonymous survey, and the choice to participate in the study. After completion, all the completed and uncompleted surveys will be collected and placed in an envelope which I will collect after the class is dismissed.

Data Processing and Analysis

To identify the barriers that are preventing college students from accessing the dental clinic, and the correlations between ethnicity, age, and sex, descriptive statistics

will be collected and analyzed using frequency data, percentages, and Statistical Package for the Social Sciences (SPSS).

Table 1

Table of Specifications

Research question	Survey items	Level of Data	Analysis
What is the extent of student knowledge regarding the availability of a dental clinic on campus?	Survey questions 8, 9, 9a, 9b, 10	Nominal	Frequency data Percentages
To what level do students value preventative care regarding their oral health?	Survey questions 1,2,3,4,7,11,12,13,14	Nominal	Frequency data Percentages
What are the barriers preventing the students from accessing the dental clinic?	Survey questions 5a, 5b, 6a, 6b,	Nominal Qualitative Ordinal	Frequency data Percentages
How do demographics in our student population influence their dental health?	Survey questions 15, 16, 17, 18	Ordinal Nominal	Frequency data ANOVA Tukey's B post hoc Percentages

Summary

Student participants from a large university in Minnesota will complete a short survey with questions that will assess the extent of their knowledge regarding the

availability of a dental clinic on campus, the value of preventive care regarding their oral health, the barriers preventing them from accessing the dental clinic, and lastly, do the demographics in our student population influence their access to care. Promotion of the health care system is an important task, and awareness of the population's health care needs is very important for planning and designing the delivery of health care services (Peterson, 2009).

Chapter 4: Findings of the Study

Introduction

This study was undertaken to determine the barriers that are preventing the students on the campus of Minnesota State University, Mankato from accessing the dental clinic for their preventative dental care. A survey tool that was used by Yaghoubi, Khajedaluae, & Mohammadi, (2017) was modified for this study. Participants, their demographics, and survey findings according to the research questions are described in this chapter.

Participants

Students were recruited to participate in this study by contacting professors of undergraduate classes to seek permission to administer the survey to their students. 369 students were invited (n=369), resulting in 283 completed surveys for a response rate of 77%.

Demographics and Background Information

In order to determine the demographics for the study, descriptive statistics, including frequencies were computed. The majority of the students surveyed were 19 years of age (n=111), with a cumulative percentage of 80.6% (n=224) of the students falling in the age range of 18-20 years old. 71.4% of the students identified as female

(n=202), and 27.6% identified as male (n=78). For year of study, 51.2% (n=145), were Freshman, 28.6% (n=81), were Sophomores, 13.1% (n=37) were Juniors, and 5.7% (n=16), were Seniors. The racial composition of the survey population was White, 74.6% (n=211), Black, 12.7% (n=36), Asian, 4.6% (n=13), and Other, 6.4% (n=18).

Demographic Information

Table 2

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18.00	48	17.0	17.2	17.2
	19.00	111	39.2	39.8	57.0
	20.00	66	23.3	23.7	80.6
	21.00	21	7.4	7.5	88.2
	22.00	16	5.7	5.7	93.9
	23.00	9	3.2	3.2	97.1
	24.00	5	1.8	1.8	98.9
	25.00	2	.7	.7	99.6
	27.00	1	.4	.4	100.00
	Total	279	98.6	100.0	
Missing	99.00	4	1.4		
Total		283	100.0		

Table 3

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	78	27.6	27.8	27.8
	Female	202	71.4	71.9	99.6
	Other	1	.4	.4	100.0
Missing	99.00	2	.7		
Total		283	100.0		

Table 4*Year of Study*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Freshman	146	51.6	52.1	52.1
	Sophomore	81	28.6	28.9	81.1
	Junior	37	13.1	13.2	94.3
	Senior	16	5.7	5.7	100.0
Missing	99.0	3	1.1		
Total		283	100.0		

Table 5*Race*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White	212	74.9	76.0	76.0
	Black	36	12.7	12.9	88.9
	Asian	13	4.6	4.7	93.5
	Other	18	6.4	6.5	100.0
Missing	99.00	4	100.0		
Total		283	100.0		

Research question 1. What is the extent of student knowledge regarding the availability of a dental clinic on campus?

To answer this research question, frequency data was computed for the survey question asking the same. 51.2% (n= 145) of the respondents claimed that they did know, and 48.1% (n=136) stated that they did not have knowledge of the dental clinic on

campus. When asked if they had ever had a dental appointment at the dental clinic located on campus, 88.7% (n=251) stated that they had not. The students were then asked how they would pay for dental treatment, 66.8% (n=189) stated that they would use dental insurance to pay for their services. When the students were asked what would be the best way to make you aware of the services available at the dental clinic on campus, 30.75% (N= 87) stated that they would prefer email, and 6.7% (n=57) equally stated that advertisements in the Centennial Student Union, Health Services, and Social Media, were how they would like to receive information about the dental clinic and its services.

Research question 2. To what level do students value preventative care regarding their oral health?

To assess this research question, the survey asked “How important is it to you to prevent oral health problems, and respondents were asked to give a number between 0-10, with 0 indicating not important. Mean and standard deviation scores were computed and it was found that M=8.85 (1.57) indicating that students felt very strongly about preventative oral health. In response to the question regarding the students last dental visit, 71.7% (n=203) of the respondents stated that it had been less than one year ago, and the majority of the students, 73.5% (n=208) received that dental care at a traditional dental office. Only 6.4% (n=18), of the students surveyed had not received any dental care. When students were asked to rate their dental fear from 0-10 with 0 being low, 42% (n=119) responded that they have no fear of going to the dentist. When the students were asked on a scale from 0-10, with 10 being very important, how important it is to them to prevent oral health problems, 50.9% (n=144) ranked their oral health a 10. As far as preventing potential oral problems, or treating problems as they occur, 45.6% (n=129)

felt that it was important to prevent oral problems. When the students were asked if they had missed school or work because of a toothache or other oral problem, only 11.3% (n=32), reported that they had. 18.7% (n=53), do suspect that they have untreated decay, and 42.4% (n=120), notice bleeding when they brush or floss their teeth.

Overwhelmingly, 75.3% (n=213) of the students surveyed would be more likely to visit the dental clinic on campus if the cost was covered by the student injury and sickness insurance plan.

Research question 3. What are the barriers preventing the students from accessing the dental clinic?

When students were asked if they every avoided dental treatment, 18.7% (n=53) stated that they had, then they were asked to complete a 4-point Likert scale (strongly agree – strongly disagree) regarding typical reasons for avoiding dental care. Cumulative frequencies were used for the strongly agree to agree categories to determine that 61.0% (n=47) of the students felt that cost of service was a factor for avoiding dental treatment. Only 39.7% (n=31) of the students stated that fear was preventing them from going to the dentist. As far as not having enough time to visit the dentist, 58.3% (n=46) gave this as a reason, and only 29.5% (n=23) of the students didn't feel the need to visit the dentist at all. 42.9% (n=33) of the students feel that the distance or location of their dental office was a reason for avoiding dental treatment. Qualitative data received from the survey found that not having insurance was another reason for not visiting the dentist.

Research question 4. How do demographics in our student population influence their dental health?

Dental health for the participants was computed using the following survey questions, have you missed school or work because of a toothache or other oral problem? Do you suspect you may have untreated cavities (decay)? Have you noticed any bleeding when you brush or floss your teeth? A dental health scale was computed, with a score of 3 indicating the poorest dental health and a score of 0 indicating no dental health problems. A 4x1 ANOVA was computed to determine if demographics influenced dental health, and significance was found for year of study simple main effects with $F=4.648$ $p=.004$. The Tukey's B post hoc test showed that Juniors have significantly poorer dental health when compared to Freshman, Sophomores, and Seniors.

Table 6

Dental Health

Tukey B

<i>Years of Study</i>	N	1	2
Freshman	146	.5822	
Sophomore	80	.6500	
Senior	16	.8125	
Junior	36		1.1944

Means for groups in homogeneous subsets are displayed. Based on observed means. The error term is Mean Square (Error) = .490

- a. Uses Harmonic Mean Sample Size = 36.487
- b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type 1 error levels are not guaranteed.
- c. Alpha = 0.05

In order to measure differences among age groups, the interval age variable was recoded with categories collapsed when fewer respondents were available. No significance was found.

Chapter 5: Summary, Conclusions, Recommendations

Introduction

Examining the barriers that are preventing the student population from accessing the dental clinic located on campus for their preventative care found that most of the students received dental care at a traditional dental office, with very few reporting that they have never had a dental visit. The data indicated that students' knowledge of a dental clinic on campus was positive, and that prevention of oral health problems was extremely important to them, however, very few of the students have had a preventative appointment in the dental clinic, and some of the students are reporting that they think they have dental decay, and almost half of the students reported that they notice bleeding when they brush or floss their teeth. Over half of the students reported cost of treatment as a barrier to receiving dental care, and overwhelmingly, three-fourths reported that if the Student Injury and Sickness Insurance Plan offered on campus included dental care, they would be more likely to visit the dental clinic. One statistically significant piece of data collected from this population showed us that for some reason, junior students have poorer oral health than any other age group.

Summary

Because of the impact that oral health has on the overall health and well-being of college students, and in following the Healthy People 2020 Oral health goal to "Prevent

and control oral and craniofacial diseases, conditions, and injuries, and improve access to preventive services and dental care” (HP2020), this study was undertaken to determine the barriers that are preventing the student population at a large midwestern university from accessing the dental clinic on campus for their preventative care. The participants in this study were recruited by contacting professors of undergraduate classes to ask permission to administer the survey to their students. This paper survey was presented to 369 students and resulted in a 77% response rate. The information received from this survey was very positive in the fact that 71.7% of the students reported having a dental visit within the last year, and with a mean score of 8.85, on a range from 0-10, these students felt very strongly about preventative oral health. According to Yarbrough, Nasseh, and Vujcic (2014), the top three reason that 18-24 year olds gave for not going to the dentist were, having a healthy mouth 37.9%, cost 35.7%, and time 28.4%, this study reported that 29.5% of the respondents didn’t feel the need to visit the dentist because of a healthy mouth, 61.0% listed cost as a factor, and 58.3% of these students stated that time was a barrier to receiving dental treatment. When investigating whether demographics played a role in this population’s dental health, it was discovered that Junior students have significantly poorer dental health than their counterparts. Much of this population consisted of students that were 19 years of age (n=111), and 71.4% identified as female (n=202). The racial composition of this group of students was 74.6% White, 12.7% Black, 4.6% Asian, and 6.4% as Other. Over half of the students surveyed were aware that there was a dental clinic on campus, but 88.7% stated that they have not had a preventative visit at the clinic. To develop dental health education interventions for these college students, they were asked how they would like to hear about the dental

clinic and its services, one-third of the students prefer to get their information through email correspondence, with advertisements in the Centennial Student Union, Health Services, and Social Media all equally chosen.

Conclusions

The student population at this University ranks the importance of prevention as very high, and the majority of these students have had a dental visit within the last year. Unfortunately, 18.7% of the students on this campus suspect that they have untreated decay which is consistent with research conducted by the Centers for Disease Control and Prevention (2014), stating that 17.5% of children ages 5-19 years of age and 27.4% of adults ages 20-44 have untreated dental decay. Because the demographics of this survey was overwhelmingly comprised of students that are White, female, and 19 years old, it would be suggested that to survey students from upper division courses would help to discover the reasons behind the results that showed that junior students have poorer oral health than any other age group. Another goal would be to survey the International student population at this University to make sure that these students are receiving their annual oral health exam in this new country, and to connect them with dental health professionals near the university.

Recommendations

This needs assessment confirmed that the numbers in this population were consistent with several other assessments done on this age group that listed cost of treatment and lack of insurance coverage as a common barrier experienced by these students. The National Center for Health Statistics found that many young adults do not

have the necessary insurance coverage for them to take the first step for access to care, and that these young adults are twice as likely to be uninsured than any other age segment of the population (NHANES, n.d.). The Health Policy Institute of the American Dental Association is committed to health policy reform and access to dental care issues, and in their Oral Health and Well Being report for Minnesota they found that 55% of the participants stated cost as a factor for not visiting the dentist (ADA, n.d.) which is comparable to 61% of respondents in this study. Because research has verified the link between oral health and other systemic conditions including heart disease, pneumonia, osteoporosis and osteopenia, stroke, diabetes, both preterm births and low birth weight babies, oral cancer, and human papilloma virus (HPV) (Glick, 2005), it is important for Institutions of Higher Education, whose students are defined as a “community”, to promote oral health within the student population and find ways to help them access the preventative care they need.

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Appendix B
Survey Informed Consent Form

Title: A Needs Assessment: The Barriers Preventing Students at a Large Midwestern University from Accessing the Dental Clinic on Campus for Preventative Care.

Faculty Advisor: Dr. Joseph D. Visker, Department of Health, Science, Minnesota State University, Mankato;

Student Investigator: Pamela Briese

IRBNet #: 1415716

What is the purpose of the study?

You are being invited to take part in a survey research study designed to assess the barriers that would prevent you from accessing the Minnesota State University, Mankato dental clinic on campus for preventative care.

What is the purpose of this form?

This consent form gives you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may ask any questions about the research, the possible risks and benefits, your rights as a volunteer, and anything else that is not clear. When all of your questions have been answered, you can decide if you want to be in this study or not.

Why am I being invited to participate?

You are being invited to take part in this study because you are a student at Minnesota State University, Mankato. Participation is voluntary. If you choose not to take the survey or are not eligible, you need not proceed through the survey. You may turn it in blank. Only individuals ages 18 years of age and above are permitted to take the survey.

What will happen during this study and how long will it take?

If you agree to take part in this study, your involvement will last for approximately 10 minutes. You are being asked to complete a survey that will assess your knowledge of the Minnesota State University, Mankato dental clinic. Your completion of the survey marks the end of participation in this study.

What are the risks of this study?

There are few reasonably foreseeable risks in completing the survey. However, while the risk is extremely low, when collecting demographic data (such as age and race) there is a minute probability of a breach in confidentiality/anonymity. You are free to skip ANY question you do not feel comfortable answering. Please also do not put your names or any other identifying marks on the survey. Your responses will remain anonymous.

What are the benefits of this study?

There are no benefits to you the participant for completing this study. However, it is hoped that the information gained from this study will allow the Minnesota State University, Mankato dental clinic to better understand the student's needs.

Who will see the information?

The information you provide during this research study will be kept confidential. To help protect your confidentiality, we will ensure that only the Principle Investigator and student investigator will have access to the completed surveys. No information that could be used to identify you is being collected. Surveys will be stored in a secure location and all surveys will be destroyed within 5 years of completion of this study. The study will be completed by November 1, 2019. We will take all reasonable steps to protect your identity. If the results of this project are published your identity will not be made public.

Do I have a choice to take part in this study?

If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering. You will not be treated differently if you decide to stop taking part in the study. The decision whether or not to participate will not affect your relationship with Minnesota State University, Mankato, and refusal to participate will involve no penalty or loss of benefits. If you have any questions about this research study, contact Dr. Joe Visker at 507-389-2757 or joseph.visker@mnsu.edu. If you have any questions about participants' rights and for research-related injuries, please contact the Administrator of the Institutional Review Board at (507) 389-1242.

All participants have the right to a copy of the consent form. You have been provided a copy for your records. Thank you for your time and if you have any questions or concerns, please free to contact the Minnesota State University, Mankato Institutional Review Board or Dr. Joseph Visker (Primary Investigator).

Handing in a survey with responses on it indicates that you are at least 18 years of age and consent to participate in the research.

Joseph D. Visker, PhD, MCHES®, FESG
Associate Professor
Department of Health Science
Minnesota State University, Mankato
Office: HCN 205
Phone Number: 507-389-2757
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Appendix C
Survey Instrument

Barriers to Dental Care

Instructions: Please answer each question. All responses will be kept anonymous and confidential.

- 1) Where do you go for dental care? (circle all that apply)
 - a. Traditional dental office (example: Oz Family Dental, North Mankato Family Dentistry)
 - a. Free clinic (example: Mission of Mercy, Give Kids a Smile)
 - b. Public health centers (example: Open Door Dental Clinic, Appletree Dental)
 - c. Educational clinics or universities
 - d. Corporate dental clinics (example: Park Dental, Aspen Dental, Health Partners)
 - e. Have not received dental care

- 2) When was your last dental visit?
 - a. Less than one year ago
 - b. 1-2 years ago
 - c. 3-5 years ago
 - d. I have never had a dental visit
 - e. I cannot remember

- 3) If you rate your dental fear from 0-10, what point do you give from 0 (no fear) to 10 (extreme fear)?

_____.

- 4) How important is it to you to prevent oral health problems? Please rate from 0-10 with 0 (not important at all) to 10 (being very important)?

_____.

- 5) Have you ever avoided dental treatment?
 - a. Yes – please **proceed to question number 5**
 - b. No – please **proceed to question number 6**

- 6) Why haven't you gone to the dentist to treat your problem? **Please circle your answer.**

Cost of service	Strongly agree	Agree	Disagree	Strongly disagree
Fear of the dentist	Strongly agree	Agree	Disagree	Strongly disagree
Not having enough time to go to the dentist	Strongly agree	Agree	Disagree	Strongly disagree

I don't feel the need to visit the dentist.	Strongly agree	Agree	Disagree	Strongly disagree
Distance/location of dentist	Strongly agree	Agree	Disagree	Strongly disagree
Fear of pain	Strongly agree	Agree	Disagree	Strongly disagree
Fear of stigma/judgment	Strongly agree	Agree	Disagree	Strongly disagree

b. Please list any other reasons for not visiting the dentist

7) Would you prefer to prevent potential oral problems or treat problems as they occur?

- a. Prevent
- b. Treat
- c. Combination of both

8) How would you/do you pay for dental treatment?

- a. Insurance
- b. Personal payment
- c. Both methods
- d. Other

9) Did you know that there is a dental clinic located on campus for your use?

- a. Yes
- b. No

a. If you answered **YES** to question #8, how did you hear about the dental clinic on campus?

b. If you answered **NO** to question #8, what would be the best way to make you aware of the services available at the dental clinic on campus?

- a. Email
- b. Advertisements in the CSU
- c. Health Services
- d. Organizations on campus
- e. Social media

10) Have you had a dental appointment at the dental clinic on campus?

- a. Yes
- b. No

- 11) In the past year, have you missed school or work because of a toothache or other oral problems?
- a. Yes
 - b. No
- 12) Do you suspect you may have untreated cavities (decay)?
- a. Yes
 - b. No
- 13) Have you noticed any bleeding when you brush or floss your teeth?
- a. Yes
 - b. No
- 14) Would you be more likely to visit the dental clinic on campus if the cost was covered by the Student Injury and Sickness Insurance Plan you purchase from MSU?
- a. Yes
 - b. No

Demographic Information: All information will be kept anonymous and confidential.

15) **What is your age?**

_____ Years

16) **What is your gender?**

_____ Male

_____ Female

_____ Other

17) **What is your year of study?**

_____ Freshman (1st year)

_____ Sophomore (2nd year)

_____ Junior (3rd year)

_____ Senior (4th year)

18) **Which of the following best describes your race? (Please check all that apply)**

White or Caucasian

Black or African American

American Indian, Native American, or Alaskan Native

Asian

Pacific Islander

Other

Thank you for your help, we greatly appreciate your contribution.

Survey adapted from: Z, Y. (2017). Introducing a Valid Questionnaire for Assessment of Perceived Oral Health Care Needs, Barriers to Accessing Oral Health Care Services and Its Utility. *International Journal of Dentistry and Oral Health*, 3(4). doi:10.16966/2378-7090.239