

EFFECTS OF A SMOKING CESSATION PROGRAM ADMINISTERED TO
STUDENT DENTAL HYGIENISTS

By

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Abstract

Tobacco is the leading cause of preventable morbidity and mortality in North America. Healthy People 2010 and the Surgeon General have requested the inclusion of dental professionals in tobacco cessation counseling. Dental professionals report being unprepared and lacking educational tools to implement cessation counseling. The purpose of this study was to identify changes in the student dental hygienists' delivery of tobacco cessation counseling following the inclusion of a comprehensive curriculum module. Participants included first and second year dental hygienist students (N=48) from Youngstown State University. The National Cancer Institutes 5A's (ask, advise, assess, assist and arrange) were the foundation for the program. Educational materials (tool box) were given to participants to assist in implementing the program. The hypotheses tested were: 1. There will be an effect of the tobacco cessation curriculum on participants versus participants not given tobacco cessation curriculum. 2. There will be an effect of the tobacco cessation curriculum on participants with a "never smoked" smoking status versus students who smoke or smoked previously. 3. There will be an effect of the tobacco cessation curriculum on participants twenty-five years and older versus participants twenty-four years and younger. 4. There will be an effect of the tobacco cessation curriculum on participants reported preparation level versus participants not given tobacco cessation curriculum. 5. There will be an effect of the tobacco cessation curriculum on participants Level II versus participants Level I. Method: A fourteen item questionnaire was developed to ascertain clinical practice habits and socio-demographic data. Informed consent was obtained from the Human Subjects Committee at Youngstown State University before administering the

questionnaire. The pre-test was administered prior to the comprehensive tobacco presentation. The same questionnaire (post-test) was administered sixteen weeks following.

A total of forty-eight pre and post-test questionnaires were distributed and returned for a response rate of 100 percent. Data analyzed by a t test using SPSS version 12 for Hypotheses II, III, IV, V and a mean was utilized to analyze Hypothesis I. The analyses revealed no statistical significance between age groups or smoking status of student hygienists. Hypothesis I had a higher mean in the post-test results for asking clients tobacco status, level of preparation to delivery counseling and increased time engaged in counseling clients. The results supported hypothesis V, year two students implemented the 5 A's more frequently except for implementing the first A (ask).

The information from the study may be of value in developing dental hygienist curriculum and tobacco cessation counseling programs. The information may provide direction for the dental hygienist associations to find ways of incorporating tobacco cessation programs and professional standards in providing continuing cessation education for hygienist who are unprepared.

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TABLE OF CONTENTS

Signature page	ii
Abstract	iii
Acknowledgement	v
Table of contents	vi
CHAPTER I INTRODUCTION	1
Statement of Research Problem	2
Significance and Justification	2
Statement of Purpose	3
Hypothesis	3
Delimitations	4
Limitations of the Study	4
Assumptions of the Study	5
Operational Definitions	6
Summary	9
CHAPTER II LITURATURE REVIEW.....	10
History of Tobacco.....	10
Types of Tobacco.....	11
Justification for Tobacco Use.....	11
Tobacco Addiction.....	11
Prevalence and Demographics.....	12
Consequences.....	12
Cost of Tobacco to our Economy.....	13
Legislation Impact.....	14
Cessation Intervention Strategies.....	15
Dental Hygienist Role.....	16

Potential Obstacles to Tobacco Cessation.....	17
Role of Dental Hygiene Education.....	20
Summary.....	21
CHAPTER III METHODOLOGY.....	23
Setting.....	23
Subjects	23
Instrument.....	24
Pilot Study.....	24
Procedure.....	25
Data Analysis.....	26
Summary.....	26
CHAPTER IV RESULTS	28
Description of Subjects	28
Data Analysis Hypothesis I.....	30
Data Analysis Hypothesis II.....	31
Data Analysis Hypothesis III.....	33
Data Analysis Hypothesis IV	33
Data Analysis Hypothesis V	34
Summary	40
CHAPTER V SUMMARY CONCLUSION AND RECOMMENDATION.....	42
Summary.....	42
Conclusion.....	43
Implications.....	44
Research Recommendations	45
APPENDIX A Testing Instrument.....	46
APPENDIX B Educational Materials	48

APPENDIX C National Cancer Institutes 5 A's.....	50
APPENDIX D Transtheoretical Model.....	52
APPENDIX E Informed Consent	54
APPENDIX F IRB Approval	56
REFERENCES	58

LIST OF TABLES

Table I Demographic Data for Student Dental Hygienist.....	29
Table II Comparison of Pre and Post-Test Means.....	31
Table III Before 5A's Training.....	32
Table IV After 5A's Training.....	32
Table V Hypothesis V Distribution ASK.....	35
Table VI Hypothesis V Distribution ADVISE.....	36
Table VII Hypothesis V Distribution ASSESS.....	37
Table VIII Hypothesis V Distribution ASSIST.....	38
Table IX Hypothesis V Distribution ARRANGE.....	39

CHAPTER 1

INTRODUCTION

Tobacco use is recognized as a leading preventable cause of disease (Monson, Engeswick, 2005). Despite this knowledge and the concerted preventative efforts on both the national and local level tobacco still threatens the health and well being of many individuals and those individuals exposed to a smoking environment. Current estimates of adult cigarette smoking are estimated at 20.9% of all adults (45.1 million people) and 23% of high school students (CDC, 2006). Researchers have clearly indicated that comprehensive multifaceted approaches to smoking cessation are most effective (Lemelin, Hogg, Bakerville, 2001). Health professionals are considered credible resources for tobacco cessation advice (Secker-Walker, Dana, Solomon, Flynn, Geller, 2000). Dental hygienists, however, often state that they are not prepared to deliver tobacco cessation counseling and lack information regarding assisting clients (Block, Hutton, Johnson, 2000).

Assessing a client's social history for tobacco usage is the initial step in implementing tobacco cessation counseling. Recognition of tobacco use ensures a consistent form of counseling by the entire dental staff. The National Cancer Institute's 5A's are considered the foundation for tobacco cessation (Monson, Engeswick, 2005). Asking clients also provides the opportunity to assess the client's stage for "quitting". This provides the professional with an opportunity to initiate the necessary counseling of advising and assisting. The knowledge of a client's tobacco habit alerts the professional to potential health risks that the client may present. Dental hygienists having knowledge of their client's potential health risks permit for a well developed and individualized healthcare assessment and plan for care.

Statement of Research Problem

The dental hygienist students' lack of knowledge and supportive materials to implement tobacco cessation is the focus of this research. A comprehensive program inclusive of The National Cancer Institutes 5 A's will have a positive effect in the student dental hygienist delivering tobacco cessation counseling (Appendix A). Educational materials (tool box) will provide support materials to assist the student and client with cessation counseling (Appendix B). The academic environment provides a unique opportunity to have a supportive environment that will further assist the development of counseling skills necessary to assist the student.

Significance and Justification

The significant barrier to tobacco cessation counseling by the dental professional team remains a lack of curriculum based tobacco cessation training. The significant barrier to tobacco cessation counseling by the dental professionals remains lack of counseling education (Davis, Stockdale, Cropper, 2005). Adding a comprehensive tobacco cessation counseling module to the curriculum will ensure the development of skills necessary to implement and provide counseling.

No longer is it optional for the dental professional to implement tobacco education. It has become a priority of health professionals. Much tobacco related policies and position statements on both the national and local level strongly suggest the inclusion of the dental hygienist (Jones, 2000). The "teachable moment" in the dental clinic and the client's tobacco status can not be ignored in the 21st Century. The hygienist must become a primary player in moving dental care to a wider focus that includes tobacco counseling.

Statement of Purpose

The purpose of the study was to evaluate whether implementing a comprehensive counseling module into the hygienist curriculum would result in an increase in the delivery of counseling. The focus of this study was the lack of knowledge regarding tobacco cessation counseling among dental hygienist. Tobacco products present a leading cause of preventable illness and death. Multifaceted approaches to tobacco cessation by the health professionals have higher “quit” rates. Dental hygienists have a key role as an inter-disciplinary team member to prevent and eliminate tobacco use.

Hypotheses

The hypotheses to be tested are as follows:

1. There will be an effect of the tobacco cessation curriculum on participants versus participants not given tobacco cessation curriculum.
2. There will be an effect of the tobacco cessation curriculum on participants with a “never smoked” smoking status versus students who smoke or smoked previously.
3. There will be an effect of the tobacco cessation curriculum on participants twenty-five years and older versus participants twenty-four years and younger.
4. There will be an effect of the tobacco cessation curriculum on participants reported preparation level versus participants not given tobacco cessation curriculum.

5. There will be an effect of the tobacco cessation curriculum on participants Level II versus participants Level I.

Delimitations of Study

The study was delimited as follows: (1) 65% of the participants were 24 years of age and under, 35% of the participants were 25 years to 47 years of age, (2) equal number of first and second year students participated (24 first and 24 second year), (3) more non-smokers participated 75%, 17% previous smokers and 8% smokers, (4) students were limited to the clinical experiences at Youngstown State University's Dental Clinic.

Limitations of the Study

1. The analysis was based on student dental hygienists self-reporting of tobacco cessation counseling which may have been overstated rates. Literature supports the finding that the professional's perceptions of counseling behavior differ from client's perception. Students were not observed or evaluated by faculty on the delivery of tobacco counseling.
2. It is possible that Youngstown State University's student dental hygienist population and client base are not representative of other academic environments. Additional research not limited to small Midwestern population may differ in tobacco consumption and opportunities for counseling.
3. The survey also did not define National Cancer Institute's 5 A's; therefore, the student may have misinterpreted the terms.

4. Participation was voluntary but students may have been reluctant to acknowledge their acceptance of tobacco use. Social behaviors are considered a personal choice and smoking is considered an acceptable behavior by many people. Students who are accepting of tobacco use may not agree with cessation counseling thus impacting their delivery of tobacco cessation counseling.
5. The curriculum permitted first year students eight weeks to utilize their counseling skills in the clinical area. Second year student's curriculum permitted sixteen weeks of clinical experience to develop their counseling techniques. First year students given half the clinical experience time may not have self assessed their counseling as positively.
6. First year students in the clinical area for the first time may have focused on primary dental skills exclusively and not incorporated tobacco cessation counseling.
7. Student roles in the clinical setting have expected student performance outcomes. The role of the student is one of compliance and performance driven behaviors. They unconsciously in the self-evaluation process may have over stated performance outcomes to meet clinical curriculum behaviors.

Assumptions of Study

Relative to this proposed study, the following assumptions are made:

- 1) All tobacco forms may cause addiction and result in detrimental health effects.
- 2) The majority of the general public expects healthcare professionals to incorporate tobacco cessation in delivery of care.

- 3) Dental hygienists have a responsibility to deliver cessation services as a routine component of dental care.
- 4) Dental hygienist counseling provides significant positive impact on quit rates.
- 5) Dental hygienist will complete the survey reasonably complete and honest.
- 6) Survey will reveal the level of tobacco cessation delivered to clients.

Operational Definitions

Addiction - Involvement, for a variety of reasons, in one of several forms of repetitive behavior. The term is best reserved to indicate dependence (Tabors, 1997).

Alveolar (process) - Part of the mandible and maxilla containing the tooth sockets (Tabors, 1997).

Bidies - A hand rolled “poor man’s cigarette” is made from flake and dust of dark tobacco leaves and is flavored.

Cancer - Malignant neoplasm, marked by uncontrolled growth and the spread of abnormal cells. They may be lethal by invading adjacent normal tissue (Tabors, 1997).

Carcinogens - Any substance or agent that produces cancer or increases the risk of developing cancer in humans or lower animals (Tabors, 1997).

Caries - gradual decay and disintegration of soft or bony tissue or of a tooth (Tabors, 1997).

Cleft Palate - A congenital fissure in the roof of the mouth forming a communicating passage between mouth and nasal cavity. It may be unilateral or bilateral and complete or incomplete (Tabors, 1997).

Chronic Obstructive Pulmonary Disease (COPD) - Decreases the ability of the lungs to perform ventilation. Diseases that cause this condition are: chronic bronchitis, pulmonary emphysema, chronic asthma and chronic bronchiolitis (Tabors, 1997).

Dentist - Authorized practitioner of the branch of medicine dealing with the care of teeth and associated studies of oral cavity (Tabors, 1997).

Dental Hygienist - A licensed allied health professional that by training and practice is skilled in performing preventive dental services and promoting dental health (Tabors, 1997).

Gout - A hereditary metabolic disease caused by hyperuricemia that is a form of acute arthritis and marked by joint inflammation (Tabors, 1997).

Krete - Cigarette made in Indonesia that contains 60% tobacco and 40% clove spice (Walter Reed Army Medical Center, 1998).

Leukoplakia - Formation of white spots or patches on the mucous membrane of the tongue or cheek. The spots are smooth and irregular in size and shape. Lesions may become malignant (Tabors, 1997).

Periodontal Disease - Disease of supporting structures of the teeth, the periodontium, including alveolar bone which anchors teeth (Tabors 1997).

National Cancer Institutes 5 A's -

- Ask – questions regarding all types of tobacco use and length of time utilized.
- Advise – discuss “stopping” the use of tobacco.
- Assess – client’s willingness to make an attempt to “quit”.
- Assist – client to “stop” smoking – Give information (pamphlets) regarding tobacco cessation.

- Arrange – for a “follow-up” discussion (phone call) or potential professional counselors to assist them.

(Monson, Engeswick, 2005)

Nicotine - A poisonous alkaloid found in all parts of the tobacco plant, but especially in leaves. Cigarette tobacco contains varying amounts of nicotine per cigarette. Nicotine is one of the most toxic and addictive of all poisons (Tabors 1997).

Oral Cancer - Cancer concerning mouth cavity and tongue (Tabors 1997).

Orthodontia - Dentistry dealing with prevention and correction of abnormally positioned teeth (Tabors 1997).

Orthodontist - Dentist who is a specialist in orthodontia (Tabors 1997).

Pharynx - The passage way for air from the nasal cavity to the larynx and for food from the mouth to the esophagus (Tabors, 1997).

Transtheoretical Model of Change -

- Precontemplation – not planning to take action within six months. Characteristics include avoidance, resistance to change and lack of motivation.
- Contemplation – intend to change within six months. Struggle with balance of costs and benefits associated with changing behavior.
- Preparation for Action – intend to change with month.
- Action – made deliberate lifestyle change sufficient to reduce risks for disease within six months
- Maintenance – maintain lifestyle change in range of six months to five years.

Less tempted to relapse and have increased confidence permanence of change.

(Monson, Engeswick, 2005)

Termination - Maintain lifestyle change with zero temptation and 100% self-efficacy. No longer distinguished from those who never acquired the habit

Summary

Tobacco use is a chief cause of morbidity and mortality in the United States. The delivery of two/three minutes of tobacco cessation counseling can achieve substantially higher quit rates. The dental hygienist lack of knowledge and supportive educational materials is a barrier to delivering counseling. Curriculum modules that have a comprehensive tobacco cessation component become a powerful motivator for the hygienist to deliver counseling. This knowledge will translate into more cessation counseling and a healthier client population.

The remainder of this thesis is comprised of the following four chapters with their respective content described. Chapter II will be a review of the literature and discussion of research studies related to tobacco cessation. Chapter III will present the study design, the sample and the tools used to measure cessation counseling delivered to clients. Chapter IV reveals the results of the data analysis in addition to a discussion of the relationship between the participant's score, smoking status, age, student's level in program and level of preparedness. Chapter V discusses the summary of the study, the findings, limitations and implications. Recommendations for future research are detailed in this chapter.

CHAPTER II

LITERATURE REVIEW

The purpose of this study was to investigate the relationship between the inclusion of a comprehensive tobacco cessation counseling curriculum component with supportive implementation tools in the student hygienist curriculum and the delivery of tobacco cessation counseling. In a review of the literature, extensive research has been conducted on tobacco use and related effects on the human body. Recently prominence and support for tobacco cessation has become a focus for the medical community. Emphasis on the inclusion of the dental community to utilize the National Cancer Institutes 5A's in the "teachable moment" of the clinical setting provides the theoretical framework for the research. This chapter will review the history of tobacco use and the effects of tobacco on the human body and the combined efforts by health professionals to deliver prevention and cessation education.

History of Tobacco

The introduction of tobacco in the Western Culture began with both habitual and ceremonial activities of the American Indian Culture. During the 1950's the moderate use of tobacco was considered a non-prescription treatment for lung infections, stress, gout and cancer. Cigarettes were included in battlefield ration and viewed as a calming agent of choice (Walter Reed Army Medical Center, Patient Education, 1998).

Types of Tobacco

Cigarettes are the choice of the female population however, they are not the single use of tobacco; pipes, cigars, krete, bidies and chewing tobacco are also principal elements of the tobacco menu. Smokeless and spit tobaccos are often the choice of young males attempting to emulate their mentor sports hero (Jacobson, Wasserman, Anderson, 1997).

Justification for Tobacco Use

Men and women young and old have multiple reasons for indulging in the use of tobacco products. Tobacco use is often justified because people believe it has calming effects, controls mood swings and body weight. The positive body image that commercial ads portray of the tobacco user often becomes the enhancement element for people to begin smoking. The emulation of the baseball hero, movie actor or the desire to be the sensual female figure on the cigarette package can be powerful messages sent to the public (Davis, 2005).

Tobacco Addiction

Two links exist in the addiction to tobacco, both a physical and psychological dependence (Christen, 2001). Nicotine increases levels of the neurotransmitter dopamine which affects the brain's pathways for both control rewards and pleasure (National Institute

of Drug Abuse, 2000). The psychological dependence and socio-cultural factors are interconnected with the element of nicotine addiction.

Prevalence and Demographics

Everyday in the United States, four thousand (4,000) youths who are younger than eighteen (18) years try their first cigarette. Half of these youth will become regular smokers. The impact of tobacco education can be noted in the steady decline in smoking rates of 8th, 10th and 12th graders seen at peak in 1996 (Center for Disease Control, 1998). Smoking has seen a decline in smoking by all ages, however, the indulgence remain above Healthy People 2010 goal. The prevalence of smoking is seen in both sexes and by all social-economic incomes. The Adult U.S. Department of Health and Human Services reported in 1998, one fourth of U.S. adults smoked cigarettes (U.S. Department of Health and Human Services, 2000).

Consequences

Vast information is available regarding the damaging effects of tobacco. All tobacco products contain carcinogens and additives that have negative impact on multiple body systems. It remains the most common cause of preventable disease in the United States (Monson, Engeswick, 2005). The United States Surgeon General has linked a relationship between smoking and diseases that affect the smoker, unborn fetus and non-smoking individuals exposed to tobacco smoke. One in five deaths is the result of smoking (Hilger,

Kinane, 2004). Mortality statistics from 1995 to 1999 confirmed a male adult smoker; compared to a male non-smoker, lost an average of 13.2 years of life, while female adult smokers, compared to non-adult lost an average of 14.5 years (Monson, Engeswick, 2005).

The average annual number of deaths attributable to cigarette smoking from 1990 – 1994 from the Center of Disease Control and Prevention put a clear perspective on the magnitude of tobacco risks. The average annual number of lung cancer diseases 123,000, chronic lung diseases 72,000, coronary heart disease 98,000 stroke 24,000, other cancers 32,000 and other diagnoses related 81,000 (Jones, 2000).

The oral effects of tobacco have shown a 2 to 3 fold increase risk for the development of periodontal disease (Campbell, Simpson, Petty, Jennett, 2001). Leukoplakia, roots surface caries, coronal dental caries cancer of oral cavity and pharynx, periodontal disease, alveolar bone loss and delayed tissue healing are all associated with tobacco use (Canadian Dental Hygienists Association, 2004). Maternal tobacco use during pregnancy is associated with intrauterine growth retardation harmful to fetus and child's oral and dental development. Oral anomalies are inclusive of cleft palate, dental asymmetry and morphologic variants (Canadian Dental Hygienists Association, 2004).

Cost of Tobacco to our Economy

Tobacco remains the leading cause of preventable death in the country. Smokers lose a combined 100,000 years of potential life. The cost of caring for clients with tobacco related diseases surpasses two (2) billion dollars a year (Johnson, 2002). The World

Health Organization has projected that by the year 2030 10 million people will die each year from tobacco use (Johnson, 2004). It is estimated that more twenty year old smokers will die from smoking than automobile accidents and murders (Johnson, 2004). The lost productivity coupled with rising medical expenditures impact tobacco users and society. The economic cost to be a smoker continues to increase each year. (Monson, Engeswick, 2005).

Legislation Impact

In 1964 the Surgeon General's report on smoking began to turn the tide on tobacco use. The report cited the negative health consequences of tobacco and became the government's bases to begin anti-tobacco legislature. U.S. Surgeon General C. Everett Koop, M.D. utilized the power of his office to educate the people regarding tobacco's risks. The message was strong and initiated a dialogue regarding addiction to nicotine and the link to many forms of cancer (Jones, 2002).

The milestones in tobacco legislation began in 1966 with a "health warning" on cigarette packages. Cigarette ads were removed from television and radio in 1971. The impact of women and smoking was published by the Surgeon General in 1979. During the 1980's the tide began to change and smoking was then perceived as politically incorrect. In 1985 the number one killer of women was lung cancer associated with the use of tobacco. The country began to see smoking banned from commercial flights in 1987. More recently smoking has been banned from all public facilities (Jacobson et al, 1997).

The legislation that has banned smoking from public facilities has created a greater public need for cessation programs and the integration of tobacco education in our communities. An integrated approach has been initiated to incorporate not only physicians but all health professionals. The National Cancer Institute (NCI) furthered the cause with the organization of a National Dental Tobacco-Free Steering Committee in 1990. Dr. Mecklenburg (dentist) joined NCI as the chairperson of the committee and the focus of the dental professionals as active team members in tobacco cessation was initiated (Jones, 2002).

Cessation Intervention Strategies

Intervention activities regarding smoking in past years focused on prevention. However, this did not address the 25% of Americans who do in fact smoke (Lichtenstein, Hollis, Severson, Stevens, Vogut, Glasgow, Andrews, 1996). That population may also be pregnant resulting in devastating effects on their unborn child and create a second-hand smoking environment that consequently affects more than 26% of the population. The smoker was not being effectively addressed. Health professionals reviewed strategies and began to put emphasis on cessation. Today with seventeen (17) million of the fifty (50) million smokers attempting to quit each year, cessation programs are central to their success (Croghan, O'Hare, Schroeder, Patten, Croghan, Hays, Dale, Bowen, Kottke, Hurt, 2001).

Cessation has become a multifaceted team approach. Federal, state and county governments in conjunction with health professionals have reviewed numerous approaches and developed intervention strategies that may be implemented. The National Cancer

Institute and Clinical Practice Guidelines list steps for implementing tobacco cessation counseling. This step strategy of asking, advising, assessing, assisting and arranging follow up are known as the 5A's (Appendix C).

Dental Hygienist Role

“Healthy People 2010” was the first national objective that capitalized on all health professionals’ participation in the delivery of TCC. Objective 3:16 reads, “Increase to at least seventy-five (75) percent the proportion of primary care and oral healthcare providers who routinely advise cessation and provide assistance and follow-up for all their tobacco using patients” (Jones, 2000). The national dental hygiene research agenda of 2001 addressed these concerns by requesting the inclusion of the National Cancer Institutes 5A’s in client care. Dr. C. Everett Koop confirmed their unique role stating “Dental clinicians have a unique opportunity to speak to their patients about tobacco use. Unique because providers in other fields have less time to spend with patients because of the influence of managed care” (Jones, 2000). The dental clinic provides direct communication, a person-to-person contact. On the average, sixty (60) percent visit their dentist each year (Haywood et al., 1993).

In a recent study of six types of health professionals in the upper Midwest significant differences were found between providers (Block Hutton, Johnson 2000). A thirty-one item survey was mailed to assess the knowledge, assessment and intervention practices and barriers of TCC delivery. Summed scores were utilized to analyze data. The results revealed that the dental office was less likely to assess, intervene and support cessation.

Significant differences toward attitudes of intervention were noted, less than fifty-three percent of dentists felt strongly in support of tobacco intervention while physicians agreed over ninety-three percent. Less than thirty-eight percent of dentist had educational materials available compared to seventy-one percent of public health nurses.

The need to have health professionals facilitate consistent smoking cessation advice was noted in a community study in Vermont and New Hampshire (Secker-Walker, Dana, Solomon, Flynn, Geller, 2000). The intervention program was a multi-component program to help women quit smoking. Participating health professionals were trained in smoking cessation protocol. Participants completed a survey pre and post. Five healthcare professionals' groups participated. Intervention counties were compared with non-intervention communities. Participant's responses were obtained at five and seven years. A repeated-measure ANOVA of five year baseline showed participants having significant higher referral rates to stop smoking groups and higher levels in cessation activity. Overall, the major impact of the intervention program resulted in increased referrals to quit smoking groups, support groups and setting quit dates with clients. The perceptions of how well prepared they were to deliver TCC was increased. It was concluded that an important aspect of facilitating consistent TCC in the future will require a broad range of regularly available and knowledge healthcare professionals.

Potential Obstacles to Tobacco Cessation

Many potential obstacles exist to providing tobacco cessation intervention. The number one challenge remains the lack of cessation counseling knowledge healthcare

professionals possess and the lack of supportive educational resources to assist the professionals implementing counseling (Goldstein, 1998). The survey confirms this, forty-four percent (44%) of hygienist believed they were not knowledgeable enough to deliver tobacco cessation (Cohen, Stookey, Katz, Drook, Christen, 1989). Support modules, clinic forms, reference pamphlets and films are the necessary “tool box” materials required to initiate cessation intervention. The American Dental Hygienist Association (ADHA) is addressing this need. The national dental hygiene research agenda of 2001 listed it as one of the top three priorities. (Monson, Engeswick, 2005). Lack of time, counseling training, client resistance and financial incentive are also frequently cited as barriers (Albert, Ward, Ahluwalia, Sadowsky, 2002).

In a recent study providers differed in both the assessment and treatment of tobacco use (Block, Hutton, Johnson). Lack of counseling skills and cessation knowledge were sited as potential reasons. The upper mid-west healthcare providers completed a thirty-one item questionnaire providing information regarding practices in assessment, intervention, skills, knowledge and barriers. Summed scores were utilized for analysis. Significant differences between providers counseling skills and knowledge were noted. Two thirds of providers were aware of tobacco cessation resources in their community. The dentists held less supportive attitudes toward TCC and were more likely to lack skills/knowledge for TCC.

Lack of time is also noted in the literature as a barrier to tobacco intervention. Three of ten providers indicated they did not counsel clients due to a lack of time. (Block, Hutton, Johnson, 2000). The delivery time factor is seen as working inefficiently and decreasing billable hours. However, cessation services are estimated to not take more than three to five minutes. The Tobacco Reduction and Cancer Control (TRACC) Program research assessed

the feasibility and effectiveness of out patient intervention programs (Hollis, Vogt, Stevens, Bigran, Steverson, Lichtenstein 1991). Randomized clinical trial of two large Kaiser Permanente medical offices participated. Clients were assigned randomly to one of four treatments (advice only, self-quit, group treatments and combined). The combined treatment included three to five minutes of counseling. Outcomes at a three month follow-up revealed clients receiving not only physicians advice to quit but counseling assistants had higher quit rates. It was concluded that three to five minutes of counseling is an effective intervention.

Lack of reimbursement for counseling activities was considered a concern for over twenty-three percent (23%) of dentists (Block, Hutton, Johnson, 2000). The dental community must act as an agent of change for their clients, advocating insurance policy changes. Insurance companies presented with a well developed educational program that will decrease acute or chronic conditions that are a result of tobacco will gain their attention. Prevention is always a less expensive form of healthcare. Studies addressing tobacco and managed care acknowledge that dentist have a strong incentive to maintain clients' dental health. Tobacco use results in related oral disease and frequent dental visits often producing no additional compensation for the dentist (Albert, Ward, Ahluwalia, Sadowsky, 2002).

Perceived patient resistance and alienation has been identified by over sixty-one percent (61%) of the dental community. However, fifty-nine percent (59%) of clients stated their routine care should be inclusive of tobacco cessation education (Campbell, Simpson, Petty, Jennett, 2001).

Dental professional's attitudes toward offering tobacco cessation counseling and patient attitudes toward receiving counseling was the foundation for a research study in rural towns of Alberta, Canada (C. Campbell, Sletten and Petty). A three year randomized study was designed to test the effectiveness of disseminated tobacco cessation counseling and clients' attitudes. Self-administered questionnaires were sent to all participating dental offices. A five-point Likert Scale was utilized to identify the professional's resistances to tobacco cessation counseling. Random samples of clients seen by participating dental offices were telephoned one month following their appointment. A standard telephone interview was utilized to record data. Both data sets used frequencies to examine distribution of responses. Over fifty-eight percent of clients surveyed believed the dental office should provide tobacco cessation counseling. Support was equal for both smokers and non-smokers. Male and younger clients were more likely to believe the dental professionals should provide tobacco cessation counseling. However, over sixty-one percent of dentists did not feel clients expected such services. Clients resistance was perceived as a barrier by dentists over ninety-four percent and fifty-three percent were concerned about clients leaving their practice. The study revealed a wide discrepancy between the professional and the client's views.

Role of Dental Hygiene Education

The need for inclusion of comprehensive tobacco cessation counseling curriculum continues to be stressed in publications addressing risks of tobacco. Recently, the Canadian Dental Hygienist Association's position paper stated the educational institutions should

integrate tobacco cessation counseling from the inception of the student's education (Canadian Dental Hygienist Association, 2004). Encouraging students to integrate screening prevention for the 5 A's and increased continuing education services related to tobacco cessation counseling for graduate hygienists were also noted. Although most dental hygiene faculty considers tobacco cessation counseling very important, only sixteen to thirty-five percent reported the inclusion of tobacco cessation counseling in their curriculum (Davis, Stockdale, Cropper, 2005).

The University of Manitoba research evaluated the implementation of a comprehensive tobacco cessation counseling program in the dental and dental hygiene curriculum (Gelskey, 2002). Two years following the implementation of the program a follow-up evaluation of clinical services was conducted by telephone interview. Chi-square analyses determined differences in proportions receiving tobacco cessation counseling. A significantly deeper proportions of clients received tobacco cessation counseling following the integration of the program. An improvement of 11.7 percent for consequences and 23 percent were advised to quit.

Chapter II Summary

The effects of tobacco clearly have negative impact on one's health and the economic costs are staggering. The tide of tobacco use is declining and legislation supports cessation. Increasing numbers of individuals want to quit and the healthcare professionals must be prepared for the challenge to assist their clients. A dental hygienist school-based tobacco cessation program will increase students' knowledge, create rich and supportive

clinical environments to learn and exercise their skills. The future dental professionals will then be prepared to become a member of the inter-disciplinary team of healthcare professionals addressing tobacco use.

The remainder of this thesis is comprised of the following three chapters with their respective content described. Chapter III will present the study design, the sample and the tools used to measure cessation counseling delivered to clients. Chapter IV reveals the results of the data analysis in addition to a discussion of the relationship between the participant's score, smoking status, age, student's level in program and level of preparedness. Chapter V discusses the summary of the study, the findings, limitations and implications. Recommendations for future research are detailed in this chapter.

CHAPTER III

METHODOLOGY

Chapter III describes the methodology used in this study to assess the student dental hygienist delivery of tobacco cessation counseling following a comprehensive tobacco cessation counseling presentation. An explanation of the design tool used to measure the delivery of tobacco counseling and the statistical method used are discussed. The questionnaire was distributed to first and second year students at Youngstown State University Dental Hygiene Program. The questionnaire was designed to obtain information regarding the prevalence and delivery of tobacco cessation counseling by the student hygienist. Base line data was obtained in the pre-test questionnaire. Following the inclusion of the comprehensive curriculum component for tobacco cessation counseling and clinical opportunities to implement the counseling strategies a post-test questionnaire was administered. The pre and post-test scores provided a comparison to evaluate the significance of the program intervention.

Setting

This study was conducted at Youngstown State University's Dental Hygiene Clinic. First and second year students participated in the research during the Spring Term of 2007.

Subjects

The sample consisted of 48 student dental hygienist: 24 first year students and 24 second year students. Participants ranged in age from 19 years to 47years. The population

consisted of 47 females and one male. Thirty-six of the participants were non-smokers, eight previous smokers and four smokers. All participants were eighteen years of age or older. All participants were from the population of student dental hygienist, from Youngstown State University. All participation was on a voluntary basis.

Instrument

A questionnaire (Appendix A) was developed reflecting The National Cancer Institute's 5 A's (Ask, Advise, Assess, Assist and Arrange). The design included fifteen (15) questions on one page divided into four sections: practice characteristics, objective knowledge, practice habits and demographics. Four socio-demographic questions provided analysis of the relationship to selected variables.

Assessment; of practice characteristics were measured with five (5) questions which rated frequency of practice on a 3 point scale, from "Never to Always". Objective knowledge was measured with one question on a five (5) point scale from "Poor to Excellent". Practice habits were measured in three structured fill-in the blank questions. Demographic information included five (5) questions regarding age, gender, smoking status and status in program. A comment area was provided for participants to express questions or concerns.

Pilot Study

A questionnaire on student dental hygienist delivery of tobacco cessation counseling was not found after a literature search and contacts with other researchers. Consequently, a carefully developed questionnaire was designed to provide reliability in evaluating the

student hygienist delivery of tobacco cessation counseling. Randomly ten dentist offices were selected to have their staff dental hygienist participate in the pilot study. It was reviewed by fourteen practicing dental hygienists for content validity. No items were revised

Procedure

Youngstown State University's Dental Student Hygienist's, who were 18yrs of age or older and who were in the first or second level of the dental hygienist program educated patients about the National Cancer Institute's 5 A's (Appendix C). This study offered routine dental care education to dental patients using the National Cancer Institute's 5 A's (ask, advise, assess, assist and arrange).

A questionnaire was distributed to the student dental hygienist's who were asked voluntarily to participate in this confidential study (Appendix A). The questionnaire took approximately 5 minutes. This study was designed to evaluate the dental hygienist student's implementation of the 5 A's protocol in the clinical setting. Access to the data were restricted to the principal and co-investigator; however, aggregate data has been made available for public review.

A one hour comprehensive tobacco cessation counseling program was presented at separate intervals to both first and second year students. Educational materials (tool box) were distributed followed by a question and answer period (Appendix B). The school administration was given educational videos for students and dental clients to view and provide educational materials for clients. A total of forty-eight pre-test questionnaires were distributed by the investigator. Students were instructed not to place their name or any

personal identifiers on the questionnaire. All forty-eight questionnaires were completed. The investigator instructed the participants to notify the dental school administration, faculty, Dr. Mikanowicz, or the investigator should they have questions or concerns.

The investigator administered the same survey post-test at the end of Spring Term 2007 at two separate intervals to first and second year students. All forty-eight questionnaires were completed.

Data Analysis

The data were analyzed in The Statistical Package for the Social Sciences (SPSS) Version 12.0 for Windows and a mean score for Hypothesis I. The main outcome variable (variable of interest) was the delivery of tobacco cessation counseling (5 A's) measured on the survey instrument (Appendix A). Statistical significance was established at $p < 0.05$. The hypotheses were evaluated by an independent t test.

Summary

Chapter III identified the research methodology used to determine the effects of the smoking cessation program on the students' delivery of cessation counseling. A detailed description of the testing instrument and student survey was provided. The procedure for data collection was also outlined. The statistical methods described in this chapter will be comprehensively reviewed in Chapter IV.

The remainder of this thesis is comprised of the following two chapters with their respective content described. Chapter IV reveals the results of the data analysis in addition to a discussion of the relationship between the participant's score, smoking status, age,

student's level in program and level of preparedness. Chapter V discusses the summary of the study, the findings, limitations and implications. Recommendations for future research are detailed in this chapter.

CHAPTER IV

RESULTS

The purpose of this study was to assess the student dental hygienist delivery of tobacco cessation counseling using a comprehensive tobacco cessation counseling presentation. The study determined if a correlation existed between implementing a comprehensive tobacco cessation curriculum module and the delivery of cessation counseling. This chapter reveals the results of the data analysis in addition to a discussion of the relationship between the participant's score, smoking status, age, student's level in program and level of preparedness.

Description of Subjects

A total of forty-eight (48) student hygienist from Youngstown State University participated. They included twenty-four (24) first year students and twenty-four (24) second year students. Participation was voluntary with a 100% response rate. The personal socio-demographic data reflected the participant's age range from 24 years of age and under or over 25 years of age. Sixty-five percent were under 24 years of age and 35% of the respondents were over 25 years of age. Non-smoking participants were 75% of the population while 17% were previous smokers and 8% were smokers. The ratio of men to women participants was 98% (forty-seven) female to 2% (one) male.

Table I

Demographic Data for Student Dental Hygienists

	Variable	n	Percent (%)
Age	Group I (24 years of age and under)	31	65
	Group II (25 years of age and older)	17	35
Gender	Male	1	2
	Female	47	98
Smoking	Never Smoked	36	75
	Previous Smoker	8	17
	Smoker	4	8

Hypothesis I

There will be an effect of the tobacco cessation curriculum on participants versus participants not given tobacco cessation curriculum.

Participants were not personally identified on the pre and post survey; therefore, individual's responses were not compared. Pre and post-test data collected for the 5 A's were analyzed by reviewing the mean of each category (Table II). Students in the post survey reported asking clients more frequently (0.07), although it may be clinically significant it is less than a 3% increase. Students stated they felt better prepared to counsel clients (0.07). This increase of over 7% has clinical significance. Students reported spending increased time engaged in counseling clients in cessation (0.89); over a 29% increase. This has clinical significance and demonstrates the significant effect of the program on student's implementation of counseling. Advising, assessing and assisting did not have an increase in the post-survey mean. Although the numbers were not significant there was a decrease reported in the post-survey for advising, assessing and assisting clients. The data were self reported by participants and it is therefore difficult to address the decrease means in the post-survey data.

Table II

Comparison of Pre and Post-Test Means

	Ask	Advise	Assess	Assist	Arrange	Preparation	Time
Pre-Test Mean	0.277778	0.510417	0.607639	0.611979	0.583333	0.899306	2.989583
Post-Test Mean	0.284722	0.40625	0.528646	0.565104	0.534722	0.967014	3.875000
Difference	0.006944	0.104167	0.078993	0.046875	0.048611	0.067708	0.885417

Hypotheses II, III and IV were analyzed using SPSS (Statistical Package for the Social Sciences Version 12.0 for Windows) program. The socio-demographic variables were student hygienist smoking status, age and reported preparation level to deliver counseling. These variables acted as the groups being compared and they were compared on their means for the variables comprising the 5 A's.

Hypothesis II

There will be an effect of the tobacco cessation curriculum on participants with a “never smoked” smoking status versus students who smoke or smoked previously.

An independent t test was conducted to evaluate the hypothesis that dental hygienists who have never smoked are more likely to engage in counseling their patients who do smoke than their counterparts who have or currently smoke themselves. The subjects were asked the 5 same questions, each question corresponding to one of the A's in the 5A's, before and after the training. There were no significant differences between the never smokers and former/current smokers before or after receiving 5A's training and on reporting the frequency with which they counsel their patients. The post-survey revealed the following results: Ask $p=.89$, Advise $p=.17$, Assess $p=.28$, Assist $p=.95$ and Arrange $p=.60$ (Table III and IV).

Table III
Before 5A's Training

	t	df	Sig. (2-tailed)
Ask	-.883	46	.382
Advise	-.765	46	.448
Assess	-.605	46	.548
Assist	-.315	46	.754
Arrange	1.103	46	.276

Table IV
After 5A's Training

	T	df	Sig. (2-tailed)
Ask	.132	46	.896
Advise	-1.389	46	.172
Assess	-1.075	46	.288
Assist	-.056	46	.956
Arrange	-.520	46	.605

Hypothesis III

There will be an effect of the tobacco cessation curriculum on participants twenty-five years and older versus participants twenty-four years and younger.

A t test was conducted to evaluate the hypothesis that the older the dental hygienist student was, the more likely she or he would engage in counseling their patients concerning tobacco use. Age was divided into two categories 18-24 years and 25 years or older. The subjects were asked the 5 same questions, each question corresponding to one of the A's in the 5A's, before and after the training. There were no significant differences between the two age groups before or after receiving 5A's training on reporting the frequency with which they counsel their patients. The post survey revealed the following results: Ask $p=.41$, Advise $p=.33$, Assess $p=.46$, Assist $p=.64$ and Arrange $p=.12$.

Hypothesis IV

There will be an effect of the tobacco cessation curriculum on participants reported preparation level versus participants not given tobacco cessation curriculum.

A t test was conducted to test the hypothesis that year two dental hygienist students reported that they felt better prepared to give tobacco cessation counseling than their year one counterparts. The test was not significant, $p=.095$. However, the mean score was higher for year two students than their year one counterparts.

Hypothesis V

There will be an effect of the tobacco cessation curriculum on participants Level II versus participants Level I.

A t test was used to evaluate differences in the 5As training between first and second year dental hygienist students. The results supported hypothesis V except for implementing the first A, Ask. Year two students reported implementing all 5A's except for Ask more often than their year 1 counterparts. This difference was not statistically significant (Table V). Of the remaining four A's, three were statistically significant: Advise $p=.041$, Assist $p=.040$, and Arrange $p=.013$. Table V, VI, VII, VIII, IX shows distributions for the two groups for each A.

Table V
Hypothesis V Distribution ASK

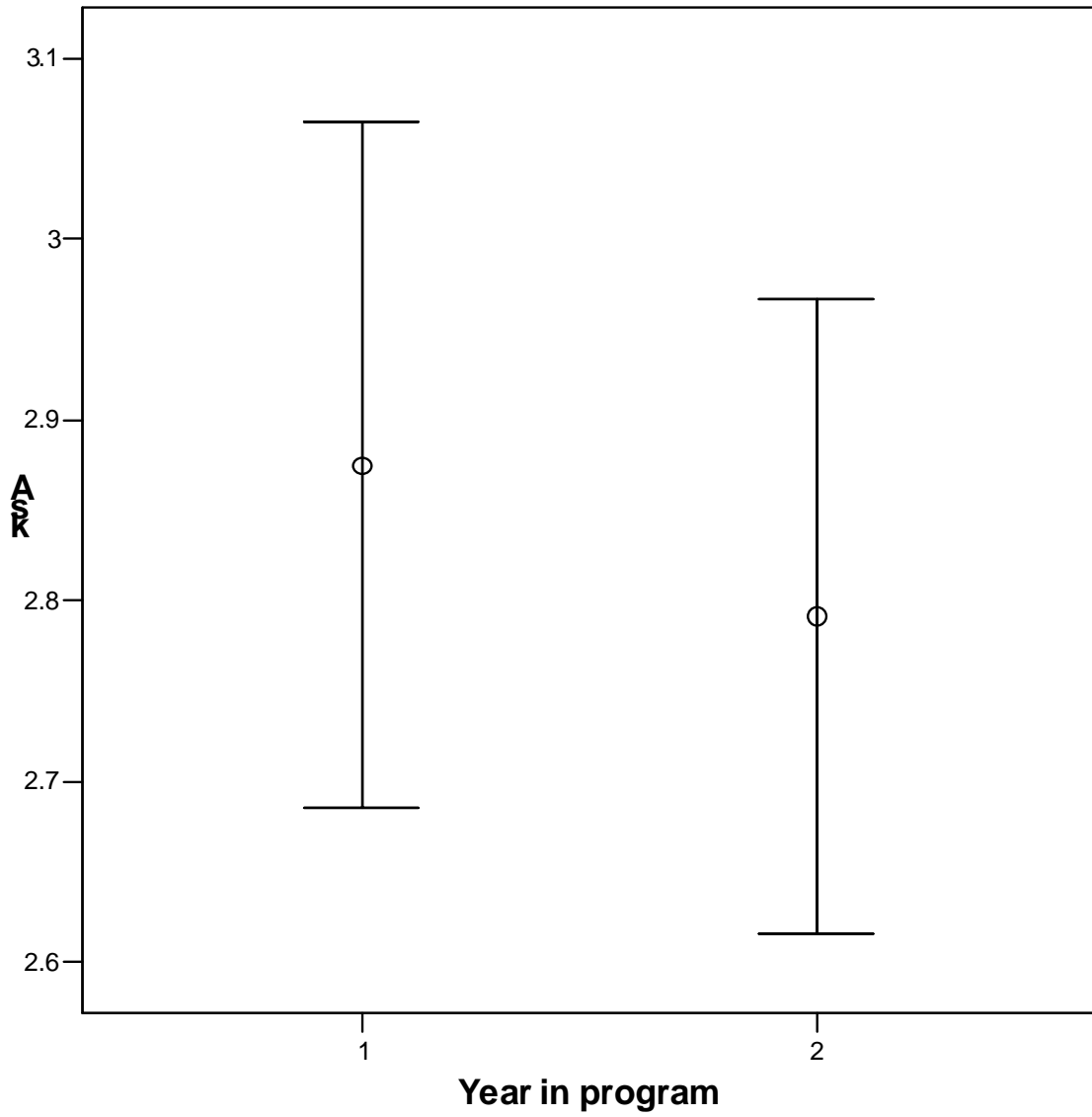


Table VI
Hypothesis V Distribution ADVISE

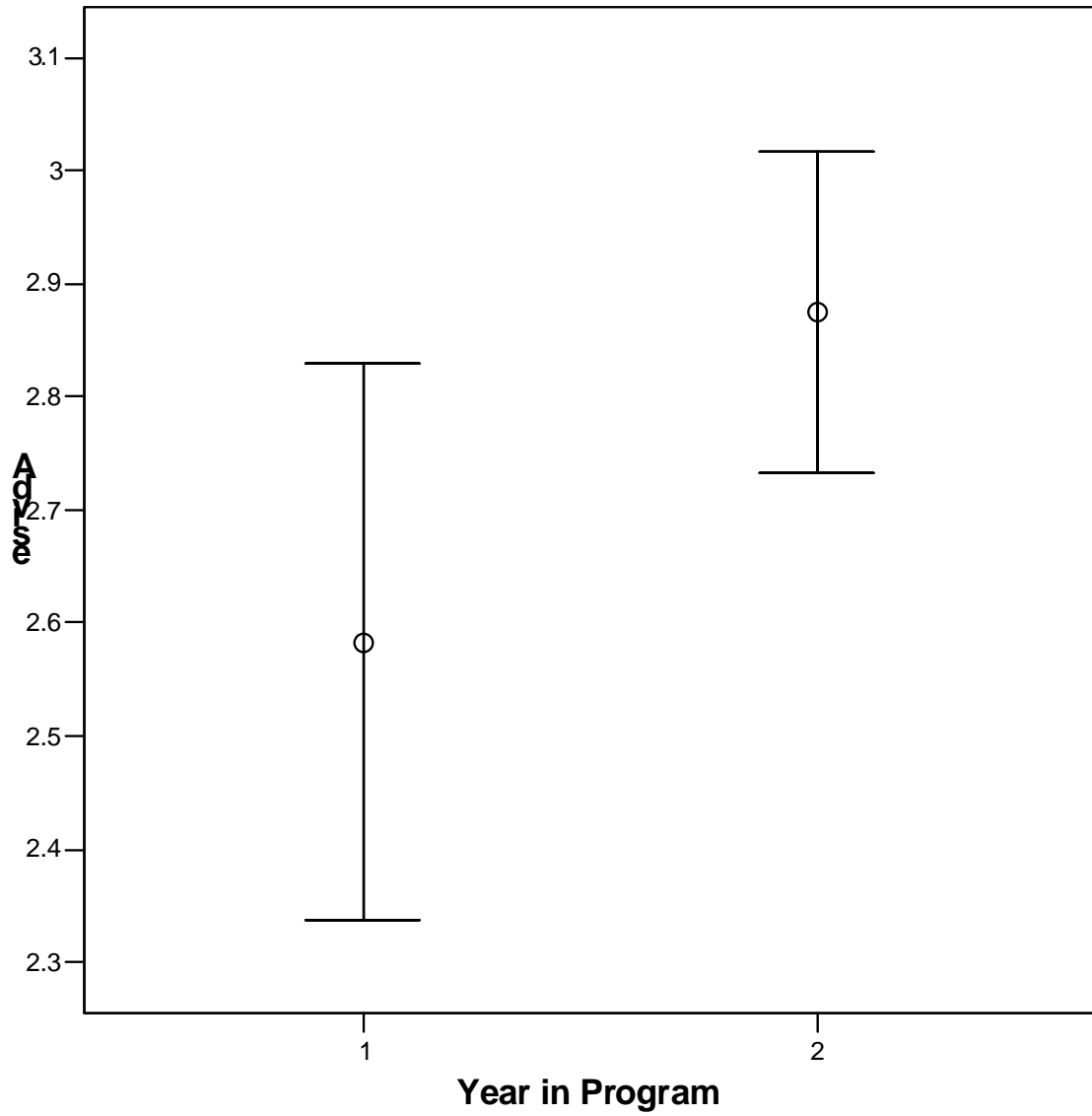


Table VII
Hypothesis V Distribution ASSESS

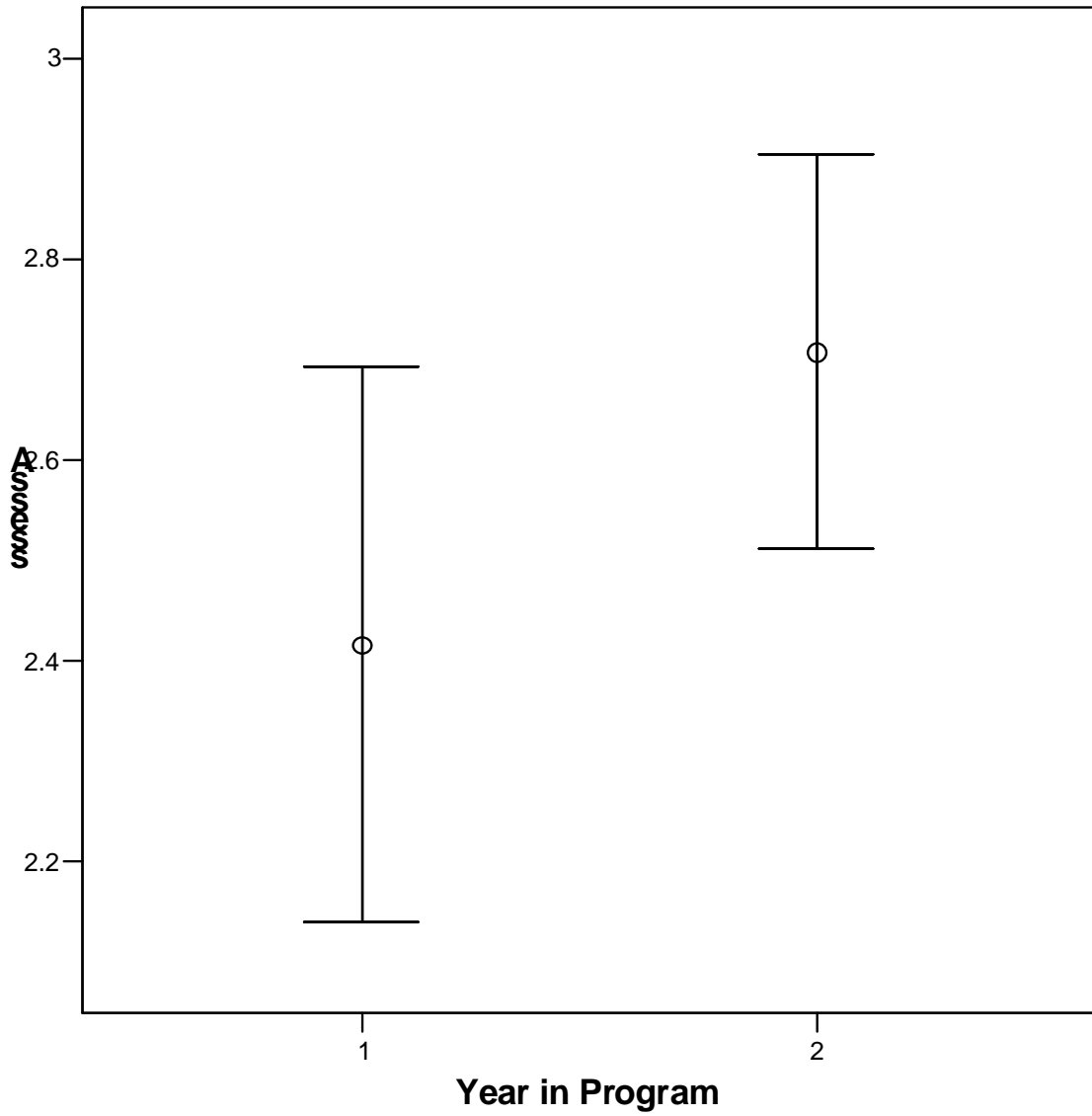


Table VIII
Hypothesis V Distribution ASSIST

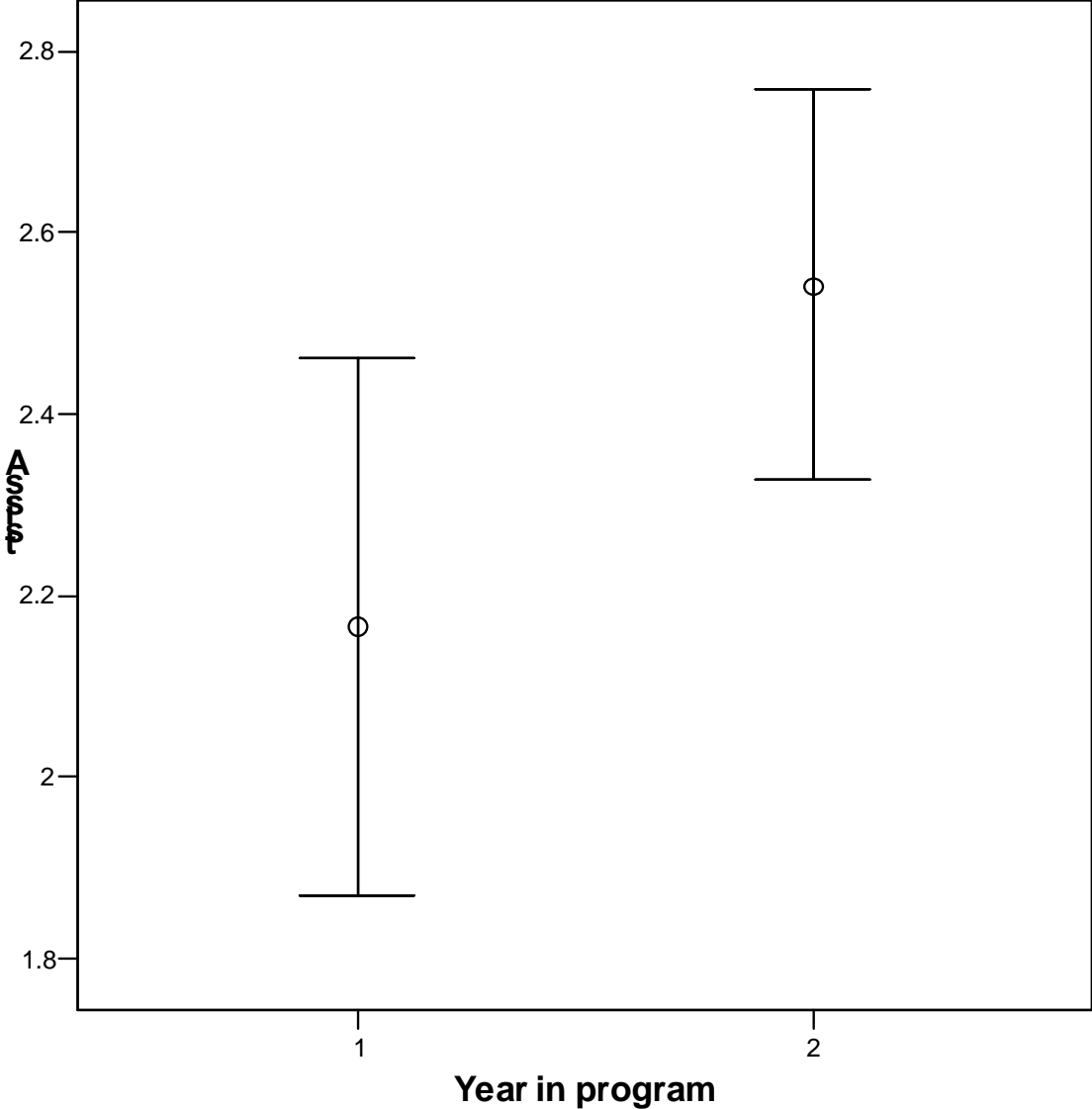
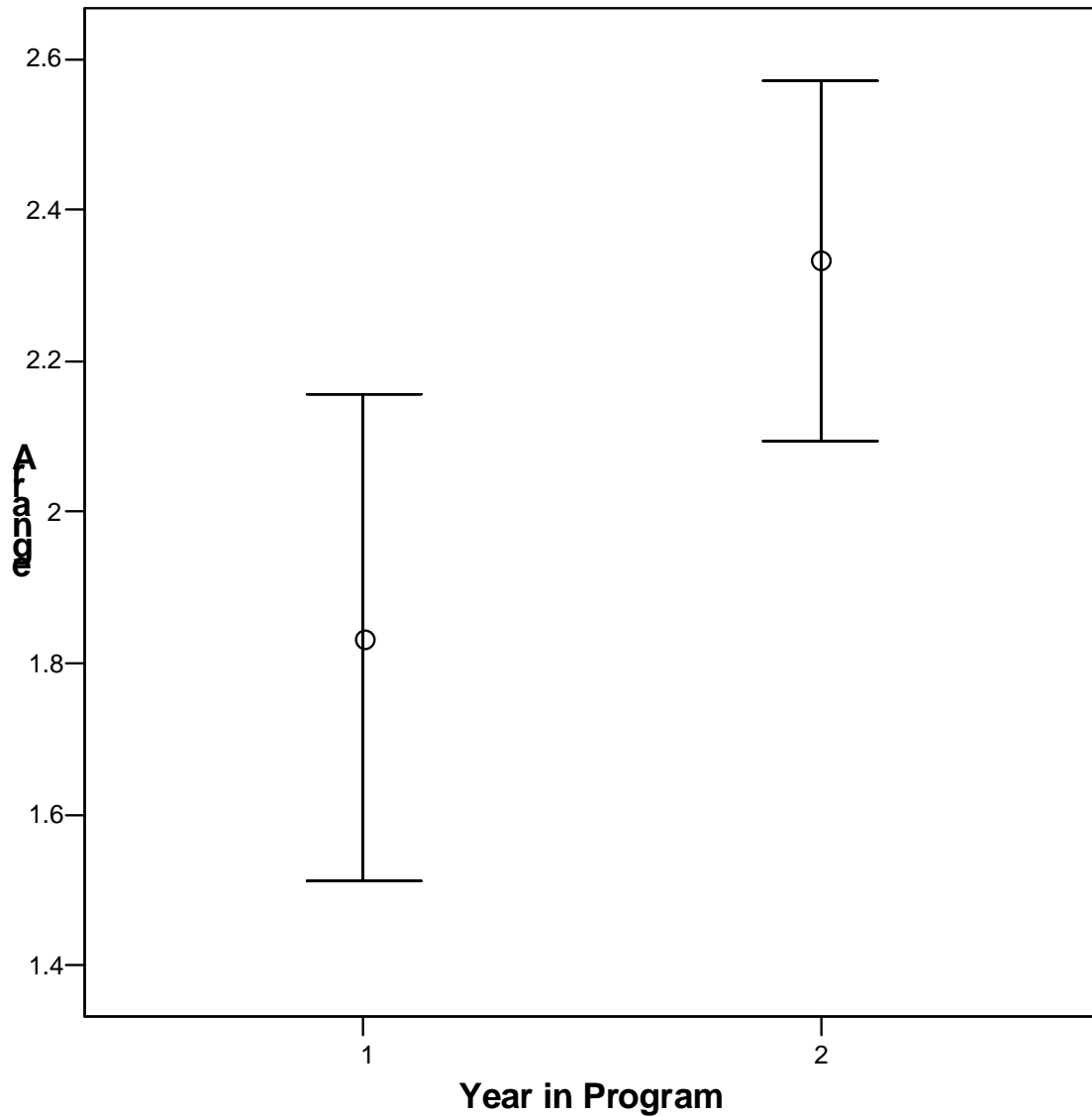


Table IX
Hypothesis V Distribution ARRANGE



Discussion

Students reported increases in asking, feeling prepared to deliver counseling and time engaged in counseling clients in the post survey following a comprehensive curriculum

module. However, decreases were noted in advising, assessing and assisting clients with cessation counseling.

Summary

Student hygienist did not report a smoking status that reflects the national average of between 20-25% of the population. However, the student population of 48 students had four smokers and eight previous smokers. Students working in the health care field may be more aware of tobacco health risks resulting in fewer smokers than the general population. The smoking status of the student hygienists did not have statistical significance.

The student dental hygienist age did not have statistical significance on the delivery of tobacco cessation counseling. This non-traditional population of students had many mature adults that may have responded differently to tobacco use and counseling. An adult is less likely to participate in health risk behaviors that would jeopardize their family responsibilities.

The student dental hygienist level of preparation did not have statistical significance. However, the level II students had a higher mean average. More consistency was noted in their responses. It may have been a reflection of their two years of clinical experience and familiarity with client education practices. Level II students also had sixteen weeks to implement the cessation strategies.

Student delivery of 5 A's for the second year students provided more intense intervention in the clinical setting. It may have been a reflection of the first year student's limited exposure in the clinical area and a focus directed on dental procedures rather than tobacco counseling

The remainder of this thesis is comprised of the following chapter with the respective content described. Chapter V discusses the summary of the study, the findings, limitations and implications. Recommendations for future research are detailed in this chapter.

CHAPTER V

SUMMARY CONCLUSION AND RECOMMENDATIONS

The purpose of this study was to assess the student dental hygienist delivery of tobacco cessation counseling using a comprehensive tobacco cessation counseling presentation. The twenty-four first year and twenty-four second year dental hygienist students for Youngstown State University reported on the post survey asking more frequently and being better prepared to deliver cessation counseling following the curriculum module. However, the increase was not statistically significant. Student's smoking status and age was not a reported variable that had effect on their delivery of cessation counseling. Level II students reported a statistical significant increase in their delivery of advising, assisting and arranging cessation counseling following the presentation.

Summary

Youngstown State University's dental hygiene students, twenty-four first year students and twenty-four second year students participated in the study. The goal of this study was to review the effects of a comprehensive smoking cessation curriculum module in the delivery of cessation counseling. A survey pre/post questionnaire was utilized to obtain data. The National Cancer Institutes 5 A's were the foundation for the study.

Although this study did not demonstrate statistical significance for all hypotheses, these intervention modalities deserve further considerations. The institution participating did not mirror the literature. Youngstown State University's progressive curriculum had previously implemented cessation strategies. Student hygienists' clinical experience enforced the documentation and counseling strategies. However, the literature reports that less than thirty percent of dental schools and dental hygiene schools implement cessation curriculum. These findings may not be representative of all student hygienist clinical practices.

Smoking remains a serious threat to public health and a major challenge for all healthcare professionals. It is essential that dental hygienist promote and implement cessation strategies. Dental hygiene school based tobacco cessation curriculum will increase student's knowledge and create a rich and supportive clinical environment for students to learn and exercise these important skills. These future dental professionals will then be better prepared to address clients' tobacco use. Clinical significance of cessation intervention begins one client at a time.

Conclusions

Information obtained from the study revealed the following:

- A total of 48 student dental hygienist participated. Twenty-four first and second year student dental hygienist from Youngstown State University Dental Hygiene School participated yielding a 100% response rate.
- Age and smoking status of the student hygienist did not have statistical significance. The smoking status of the students did not reflect the literature. The literature states

one in four Americans smoke, however, the student population had fewer smokers and previous smokers. The student's knowledge of tobacco risks may have affected their decision to use tobacco products. The student hygienist population is not a typical college age group. Ages varied from 19 years to 47 years which may reflect a more mature population less likely to indulge in risk habits.

- Statistical significance was found in level II students' delivery of advising, assessing, assisting and arranging. Level II students familiar with the clinical environment and procedures may have more expertise in the delivery of advising, assessing, assisting and arranging.
- Participants responded on the post survey asking tobacco status and filling better prepared to counsel clients. Increased time engaged counseling clients was also noted.

Implication

The research provided a comprehensive look at the student hygienists' practices and attitudes. The information may assist the faculty in curriculum placement and design of the theory concerning Tobacco Cessation Counseling. Achieving optimal curriculum content placement permits the student to develop skills and techniques at the most appropriate clinical time.

The implementation of the National Cancer Institutes 5A's to assess and document tobacco use will result in increased rates of intervention (U.S. Department of Health and Human Services, 2000). Considering that fifty percent of Americans visit their dentist

yearly this could have a substantial impact on prevalence of tobacco use (Hilger, Kinane, 2004).

The well prepared graduate dental hygienist in Tobacco Cessation Counseling provided with sources for educational materials can implement programs in the professional dental practice. Frequently, hygienist state barriers to counseling are lack of counseling knowledge and familiarity with available community referral agencies.

Recommendations for Further Research

Further research to determine the impact of the Tobacco Cessation Program had on the practice patterns of the graduate hygienist one year following graduation. This will provide an opportunity to evaluate the independent counseling delivery of the graduate hygienist.

Further research to assess the potential disconnect between the first 2 A's and the last 3 A's. Researchers suggest that healthcare professionals frequently do not assist the client with arranging for cessation activities. Success rates are higher for clients who have support in the arranging stage (Gelskey, 2002).

Replication of the study utilizing a larger sample in a different geographic location would verify the findings. Literature documents different tobacco practices and consumptions in different states (CDC, 2000).

Future research to determine client's perception of Tobacco Cessation Counseling delivered. Studies suggest differences in the professionals and clients perception of frequency delivery of Tobacco Cessation Counseling (Campbell et al, 1999).

Studying client's motivational factors underlying their use of tobacco and addiction would be effective in the design of treatment.

Further research in which the student hygienists' implementation of cessation practices will be observed by the research investigator.

APPENDIX A
Testing Instrument

Student Dental Hygienist Counseling Survey for Tobacco Cessation (quitting)

Instructions: This is a questionnaire concerning your clinical practice as a student dental hygienist. Please circle or complete YOUR response as accurately as possible for each statement.

<p><u>In the clinical area as a Student Dental Hygienist I :</u></p> <p>1) <u>Ask</u> Ask my clients what is their tobacco status. Never Sometimes Always</p> <p>2) <u>Advise</u> Advise my clients to "quit" smoking and chewing tobacco products. Never Sometimes Always</p> <p>3) <u>Assess</u> Assess my clients interest in quitting tobacco use. Never Sometimes Always</p> <p>4) <u>Assist</u> Assist my clients by offering educational materials and counseling patients about the risks of tobacco use. Never Sometimes Always</p> <p>5) <u>Arrange</u> Direct clients to cessation counseling (Mahoning County Health Department quit phone number, primary care physician). Never Sometimes Always</p> <p>6) How well prepared do you feel to counsel clients interested in stopping smoking? ___ Poor ___ Fair ___ Good ___ Very Good ___ Excellent</p>	<p>7) On average how much time do you spend with clients when you are trying to assist them to stop smoking? ___ Minutes (___ Do not try)</p> <p>8) During an average week, how many clients do you see? ___ Clients</p> <p>9) What percentage of your clients are smokers? ___ Percent</p> <p>10) <u>Your Age:</u> ___ Years</p> <p>11) <u>Your Gender</u> ___ Male ___ Female</p> <p>12) <u>Your Smoking Status</u> Current Smoker Ex-smoker Never Smoker</p> <p>13) If you smoked or have smoked, how long did you smoke? ___ Years</p> <p>14) Presently my status in the program is a: First Year Student Second Year Student</p> <p>15) Comments: _____ _____</p>
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APPENDIX B

Educational Materials (Tool Box) and Videos

Educational Materials (Tool Box) and Videos

A. The following pamphlets and videos were provided by Mahoning Chapter of American Cancer Society. They were distributed to participants and clients.

Pamphlets

- 1) The Decision Is Yours (2002, American Cancer Society, Inc. No. 2959 Rev. 08/04).
- 2) The Cold Hard Facts About Dip (1998, American Cancer Society, Inc. No. 2643).
- 3) When Smokers Quit (2003, American Cancer Society, Inc. No. 5602.00-Rev. 07/03).
- 4) Set Your Self Free (1999, American Cancer Society, Inc. No. 2054.00-Rev. 08/05).

Videos

Two tobacco related videos concerning smoking and spit tobacco products.

B. Mahoning County Health Department assisted by providing:

- 1) A list of community agencies to provide further cessation counseling techniques for clients.
- 2) A list of community agencies that provide educational materials to health professionals

APPENDIX C

National Cancer Institutes 5 A's

National Cancer Institutes 5 A's

ASK:	clients smoking status
ADVISE:	clients to quit
ASSESS:	identify current stage on the trans-theoretical model
ASSIST:	talk with smoking clients about tobacco risks, provide educational materials, refer to support group/ community counseling agency
ARRANGE:	consider referral to a cessation clinic /phone call / future visit

Appendix : adapted from National Cancer Institute (2006)

APPENDIX D

Transtheoretical Model

TRANSTHEORETICAL MODEL

PRECONTEMPLATION:	not aware that tobacco habit is a health risk / no intention to quit
CONTEMPLATION:	aware that tobacco is a health risk / expresses an intention to quit
PREPARATION:	client intends to stop habit in less than a month
ACTION:	client stops habit and maintains early abstinence
MAINTENANCE:	client has stopped habit for six months

Appendix: adapted from National Cancer Institute (2006)

APPENDIX E

Informed Consent

Informed Consent

Dear student:

We are conducting a study to determine student hygienist implementation of tobacco cessation during routine dental visits. In this study, you will be asked to complete a pretest, post-test and attend an orientation. Your participation should take about one and one half (1 ½) hours.

There are no risks to you. All information will be handled in a strictly confidential manner, so that no one will be able to identify you when the results are recorded/reported. Your participation in this study is totally voluntary and you may withdraw at any time without negative consequences. If you wish to withdraw at any time during the study, simply notify the investigator (Dr. Carol Mikanowicz).

Please feel free to contact Dr. Carol Mikanowicz, principal investigator, at (330-941-3658) if you have any questions about the study. Or, for other questions, contact the Director of Grants and Sponsored Programs at YSU (330-941-2377).

I understand the study described above and have been given a copy of the description as outlined above. I am 18 years of age or older and I agree to participate.

Signature of Participant

Date

APPENDIX F

Human Subjects Protection

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