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ACCEPTANCE

This thesis, SURVEY OF THE KNOWLEDGE AND CONFIDENCE OF RESPIRATORY THERAPY STUDENTS REGARDING TOBACCO SMOKING AND RESPIRATORY DISEASES, by Delano S. DuCasse, BS, RRT, was prepared under the direction of the Master's Thesis Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the Master's of Science in the Byrdine F. Lewis School of Nursing and Health Professions, Georgia State University. The Master's Thesis Advisory Committee, as representatives of the faculty, certifies that this thesis has met all standards of excellence and scholarship as determined by the faculty.

Lawrence O. Bryant, PhD, MPH, RRT
Committee Chair

Lynda T. Goodfellow, Ed.D, RRT, FAARC
Committee Member

Robert Harwood, MS, RRT, MSA, RRT-NPS, FAARC
Committee Member

Date

AUTHOR'S STATEMENT

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All theses deposited in the Georgia State University Library must be used in accordance with the stipulations prescribed by the author in the preceding statement. The author of this thesis is:

Delano S. DuCasse, BS, RRT
3237 Northwoods Lake Court,
Duluth, Georgia 30096

The director of this thesis is:

Lawrence O. Bryant, PhD, MPH, RRT
Associate Professor
Division of Respiratory Therapy
Byrdine F. Lewis School of Nursing and Health Professions
Georgia State University
P.O. Box 4019
Atlanta, GA 30302-4019

VITA

Delano S. DuCasse

ADDRESS: 3237 Northwoods Lake Court
Duluth, GA, 30096

EDUCATION:

M.S. 2013 Georgia State University
Health Sciences

B.S. 2010 Georgia State University
Chemistry

PROFESSIONAL EXPERIENCE:

None

PROFESSIONAL SOCIETIES AND ORGANIZATIONS:

June 2004- May 2006 Phi Theta Kappa Honors Society

June 2008- Dec 2010 American Chemical Society

August 2011-Present American Association for Respiratory Care

PRESENTATIONS AND PUBLICATIONS:

None

ABSTRACT

SURVEY OF THE KNOWLEDGE AND CONFIDENCE OF RESPIRATORY THERAPY STUDENTS REGARDING TOBACCO SMOKING AND RESPIRATORY DISEASES

by
Delano S. DuCasse

INTRODUCTION: Tobacco abuse is the main cause of illness and avoidable death in the world (World Health Organization, 2010). Smoking-related diseases claim an estimated 443,000 American lives each year, including those affected indirectly, such as babies born prematurely due to prenatal maternal smoking and victims of "secondhand" exposure to tobacco's carcinogens (American Lung Association, 2011). Of all healthcare providers, respiratory therapists are most often in contact with patients that are diagnosed with smoking related diseases. Therefore, students entering into the field should be well equipped with the knowledge, skills and attitude to educate patients about the importance of smoking prevention and cessation. The purpose of this study was to evaluate students' knowledge and confidence regarding tobacco addiction and cessation following enrollment in a pulmonary disease course.

METHODS: Students enrolled in a bachelor's degree respiratory therapy program at a southeastern university were surveyed prior to and following a required pulmonary disease course. Participation was completely voluntary and no incentives to participate were offered. A total of 31 students participated in the pre-tobacco education survey on January 24, 2013 and 24 students participated in the post-tobacco survey on April 29, 2013.

DATA ANALYSIS: The data was analyzed using SPSS 19.0. Descriptive statistics to include frequencies and percentages were used to evaluate the RT student's responses to survey questions.

RESULTS: Majority of the students only had 1 to 2 hours of lecture that focused on tobacco smoking. The actual tobacco education they received was not a clear cut topic within the pulmonary disease course itself; the topic tobacco smoking was only mentioned under diseases processes such as, COPD and Lung Cancer. The RT students' confidence levels slightly improved after being enrolled in the pulmonary disease course. The pre surveyed RT students' average was 55.5%, and the post surveyed average was 69.8%.

CONCLUSIONS: Based on the results, the content of tobacco education within the school's curriculum is inadequate. With respiratory therapists mostly coming in contact with patients suffering from smoking related diseases, topics that include tobacco smoking and cessation should be included more in respiratory therapy school's curriculum.

SURVEY OF THE KNOWLEDGE AND
CONFIDENCE OF RESPIRATORY THERAPY STUDENTS REGARDING TOBACCO
SMOKING AND RESPIRATORY DISEASES

By

Delano S. DuCasse

A Thesis

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ABBREVIATIONS

RT	Respiratory therapist
CDC	Centers for Disease Control and Prevention
WHO	World Health Organization
IRB	Institutional Review Board
AARC	American Association for Respiratory Care
HCN	Hydrogen Cyanide
TSNA	Tobacco-Specific Nitroamines
COPD	Chronic Obstructive Pulmonary Disease
MMWR	Morbidity and Mortality Weekly Report
CVD	Cardiovascular Disease
SHS	Second Hand Smoke
THS	Third Hand Smoke
TB	Tuberculosis
SPSS	Statistical Product and Service Solution
RB-ILD	Respiratory Bronchiolitis-Interstitial Lung Disease
DIP	Desquamative Interstitial Pneumonia
PLCH	Pulmonary Langerhans' Cell Histiocytosis
ALA	American Lung Association

CHAPTER I

Introduction

Tobacco abuse is the main cause of illness and avoidable death in the world today (World Health Organization [WHO], 2010), yet increasing evidence shows that healthcare professionals are not adequately educated on how to help patients break the deadly cycle of tobacco dependence (Heath, Thomas, Kelley & Friedman, 2002). Tobacco abuse remains the leading preventable cause of death in the United States (Center for Disease Control [CDC], 2012). Tobacco use, primarily cigarette smoking, has caused more than 14 million premature deaths in the United States since 1964 (Giovino, 2007). Smoking-related diseases claim an estimated 443,000 American lives each year, including those affected indirectly, such as babies born prematurely due to prenatal maternal smoking and victims of "secondhand" exposure to tobacco's carcinogens (American Lung Association [ALA], 2011). Health care providers, specifically respiratory therapists, need to be directly involved in using evidence-based practices to help prevent and eliminate tobacco use (Jordan, Khubchandhi, Wiblishause, Glassman and Thomson, 2011). Of all healthcare providers, respiratory therapists are most often in contact with patients that are diagnosed with smoking related diseases. This proximity may represent a great opportunity for education and evidence based interventions.

Background

Tobacco Education in Respiratory Therapy

Respiratory therapists are healthcare professionals that assess and treat patients with cardiopulmonary disease processes. In addition, they possess the knowledge and confidence in order to educate and counsel patients about their disease processes. The American Association for Respiratory Care (AARC) recommends that "respiratory therapists be able to understand

tobacco addiction, how to effectively evaluate tobacco use, how to assess patients' readiness to change, and how to effectively treat tobacco addiction." In its latest position statement on tobacco abuse, the AARC (2008) stated that it is an advocate for smoking cessation and tobacco prevention programs. Nicotine addiction education and cessation are the most effective interventions to reduce smoking; thus, students should be adequately equipped with the knowledge and confidence to educate patients on smoking cessation and identify resources available for quitting.

Despite the escalating morbidity and mortality illnesses related to nicotine addiction and the AARC's position on the topic, tobacco control curriculum in respiratory therapy education similar to that of other healthcare professionals has been minimal.

Tobacco's Chemicals

Tobacco smoke contains more than 7,000 complex chemical substances, many of which are carcinogenic, mutagenic, irritating, or toxic. It contains gases such as carbon monoxide (CO), hydrogen cyanide (HCN), nitrogen oxides, formaldehyde, acrolein, benzene, and certain N-nitrosamines (American Cancer Society, 2012). Other chemicals such as nicotine, phenol, polyaromatic hydrocarbons (PAHs), and certain tobacco-specific nitrosamines (TSNAs), are contained in the submicron-sized solid particles that are suspended in cigarette smoke. This plethora of chemicals in tobacco smoke contributes to many different health problems. The effect on the respiratory system is of great concern since non-smokers are unwillingly subjected to the effects through second (SHS) and third hand smoke (THS). Since the 1970s, there is increasing evidence that not only is active smoking a risk factor for respiratory diseases, but also environmental tobacco smoke exposure in nonsmokers, especially in children. THS is a stealth toxin because it lingers on the surfaces in the homes, hotel rooms, casinos and cars used by

smokers where children, the elderly and other vulnerable people may be exposed to the toxicants without realizing the dangers (Rehan, Sakurai & Torday, 2011). Infants and young children are more likely to be at risk of THS exposure than adults because they typically spend more time indoors, engage in greater activity in areas where dust collects, and insert nonfood items in their mouths more frequently than do adults (United States Environmental Protection Agency, 2008).

Environmental Smoke

Active and passive smoking place a significant burden on public health, especially with regard to respiratory diseases. Present data suggest that the proportion of tobacco-associated diseases will increase in the coming decades with chronic obstructive pulmonary disease (COPD) and lung cancer becoming the most prevalent causes of death by the year 2020 (Gilmour, Jaakkola, London, Nel, & Rogers, 2006). Sullivan and Turner, (2012) reported that there is a growing prevalence of smoking among women with COPD compared to men (6.7% to 5.2%).

Purpose of Study

The purpose of this study was to evaluate students' knowledge and confidence regarding tobacco addiction and cessation following enrollment in a pulmonary disease course at a large southeastern university. This research addressed the following questions:

[1] What was the respiratory therapy (RT) student's level of knowledge regarding the effects of tobacco smoking as it relates to respiratory diseases?

[2] What was the RT student's level of confidence regarding the effects of tobacco smoking as it relates to respiratory diseases?

[3] Can a respiratory therapy program be evaluated based on the RT student's knowledge and confidence on tobacco cessation?

[4] What is the extent or depth of tobacco education (hours) covered in a bachelors and masters RT program?

Significance of study

Respiratory therapists play a pivotal role in health education and disease prevention, and as such, students entering into the field should be well equipped with the knowledge and skills educate patients about the importance of smoking prevention and cessation. This study is significant because it may enhance the awareness for the need to add more tobacco education to respiratory therapy schools' curriculum. By increasing emphasis on tobacco education, specifically smoking cessation and tobacco abuse, respiratory therapists would be more adequately prepared to impact patients and their families in preventing the initiation and promoting cessation of tobacco products.

CHAPTER II

REVIEW OF THE LITERATURE

The review of literature was conducted by searching PUBMED, MEDLINE, CINAHL and EBSCO using terms “tobacco education in respiratory therapy, first-hand smoking, second-hand smoking and third-hand smoking.” Two thousand two hundred and seventy three articles were found when “tobacco education in respiratory therapy” was entered. The search was refined to peer- reviewed journal articles for the last 10 years. After reviewing the abstracts of some of the articles, only 1 article was found that was considered relevant to tobacco education and respiratory students; however, many of the articles found were focused on tobacco education in other healthcare schools, such as dental, physician assistant and nursing schools. References in current scholarly journals and research articles were used as well. In addition, a few references were taken from the Center for Disease Control and Prevention, World Health Organization, and the United States Department of Health and Human Services. These websites provided additional surveillance and statistical data.

This review will examine the literature related to the effects of tobacco on the respiratory system, the impact of second and third hand smoking, and insights into other health professional schools’ view on the need for tobacco education.

Health Issues with Tobacco Smoking

Tobacco smoke is known to cause a number of pulmonary diseases; including asthma, chronic bronchitis, emphysema oral or head/neck and lung cancer, cardiac diseases and respiratory infections. It is also considered a main factor in the development of certain diffuse interstitial and bronchiolar lung diseases, such as respiratory bronchiolitis-interstitial lung disease (RB-ILD), desquamative interstitial pneumonia (DIP), and adult pulmonary Langerhans’

cell histiocytosis (PLCH) (Patel, Rhyu & Vassallo, 2008). The relationship between smoking and disease processes such as DIP, RB-ILD, and PLCH has been supported by several clinical, epidemiological, and laboratory studies that analyzed the role of cigarette smoking in the disease onset, progression, and recurrence (Carlos, Louis & Rodolfo, 2011). For example, Carlos, Louis & Rodolfo (2011) referred to a study done by Cottin et al. that revealed 86% of the patients that were smokers were diagnosed with RB-ILD. Consequently, from this, Carlos, Louis and Rodolfo (2011) declared that RB-ILD occurs predominantly in patients who had a history of tobacco exposure. In addition, Carlos, Louis and Rodolfo (2011) stated that tobacco smoke induces many inflammatory changes in the respiratory system, thus the peribronchial inflammation that occurs in RB-ILD, PLCH, and DIP could be secondary to the injury of small airways caused by the constituents of tobacco. Because of the correlation between tobacco smoke and RB-ILD, PLCH, and DIP, tobacco cessation must be considered very important in treating these disorders, especially DIP, since there are reports of regression of the diseases when patients stop smoking (Carlos, Louis & Rodolfo, 2011).

Tobacco use is a key factor in the development and progression of Chronic Obstructive Pulmonary Disease (COPD) in the United States (CDC, 2012). The deterioration in lung function associated with COPD is directly related to duration of smoking and the number of cigarettes smoked. Figure 1, reveals that COPD accounted for 92,900 deaths between 2000 to 2004. In addition, between 2000 to 2004, COPD accounted for the third highest death rate among smoking related diseases such as congestive heart disease, stroke, and other atherosclerotic diseases of the circulatory system between 2000 to 2004 (U.S. Department of Health and Human Services, 2010). An article by Kosacz et al., (2012) in the Morbidity and Mortality Weekly Report (MMWR) highlighted COPD as an important public health problem. In addition, they

identified a few trends related to COPD that is worth noting. Firstly, women reported higher rates of COPD than men (6.7% to 5.2%) and the prevalence of COPD jumped to more than 20% in individuals who also reported ever having been diagnosed with asthma. The most important trend noted was the impact that COPD has on individuals' quality of life. The report revealed that 64.2% of individuals complained that the shortness of breath they experienced because of COPD impaired their quality of life. The MMWR data shows that the overall prevalence of COPD and the decrease in quality of life make it a serious public health burden that needs to be addressed. In essence, this is where healthcare clinicians such as respiratory therapists' impact this population through education; moreover, respiratory therapists are on the front line in the treatment of COPD patients. Not only do respiratory therapists treat COPD, it is very important that they educate and counsel these patients about smoking cessation and possible ways of improving their quality of life.

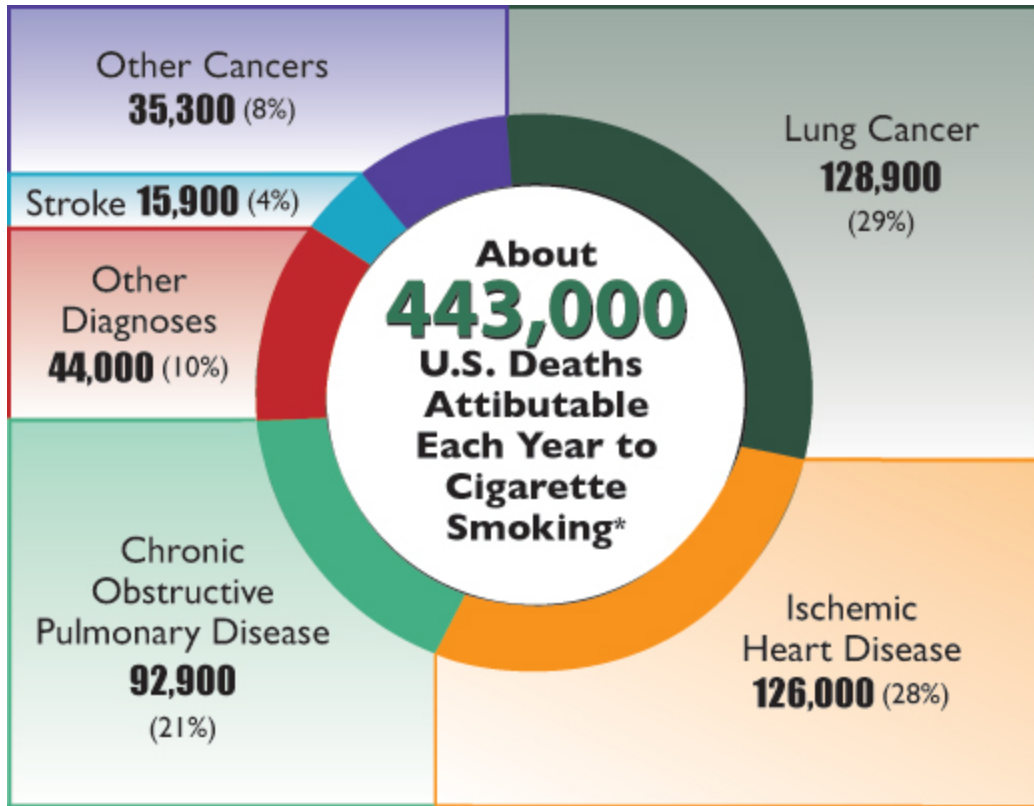


Figure 1. Annual Deaths Attributable to Cigarette Smoking—United States, 2000–2004 (CDC, 2012)

In addition to respiratory diseases, tobacco smoking is a major contributing factor to cardiovascular disease and stroke. Cardiovascular disease (CVD) or heart disease is the leading cause of death for both men and women (Kochanek, Xu, Murphy, Miniño, & Kung, 2011). The CDC report added that 600,000 people die of heart disease in the United States every year— or 1 in every 4 deaths. Cigarette smokers are 2 to 4 times more likely to develop coronary heart disease than nonsmokers (CDC, 2012). In fact, the CDC stresses that cigarette smoking approximately doubles a person's risk for stroke (2012).

The carbon monoxide inside tobacco has a higher affinity for hemoglobin, and thus, reduces the oxygen content inside the blood vessels. This reduction of oxygen inside the blood vessels results in a greater work load for the heart. In addition, smoking increases the amount of

plaque in the arteries, which may block flow to the brain and causes a stroke. The National Stroke Association (2013) pointed out that smoking induces strokes; therefore, the overall stroke risk can be greatly reduced by quitting smoking. If healthcare providers, specifically respiratory therapists are equipped with the knowledge and confidence to educate these patients about cessation, the prevalence of CVD and stroke may be reduced.

Not only does cigarette smoking increase the risk for CVD and stroke, it also increases the risk for many types of cancer, including cancers of the lip, oral cavity, pharynx, esophagus, pancreas, larynx, lung, uterine cervix, urinary bladder, and kidney (Figure 3). Burning tobacco produces more than 4000 harmful chemicals, some 60 of which cause cancer. Lung cancer is the number one disease that is caused by cigarette smoking. In addition, lung cancer is the main cancer caused by cigarette smoking (CDC, 2009). The risk of developing lung cancer is about 23 times higher among men who smoke cigarettes and about 13 times higher among women who smoke cigarettes compared with never smokers (CDC, 2012). Lung cancer is usually categorized into two groups: small-cell lung cancer and non-small cell lung cancer. Small cell cancer has the stronger correlation with cigarette smoking and is associated with the worse prognosis of the two (Des Jardins & Burton, 2011). In addition, Des Jardins and Burton (2011) stated that the mean survival time for untreated small cell lung cancer is about 1 to 3 months and when treated, about 10% of the patients survive 2 years after completing treatment.

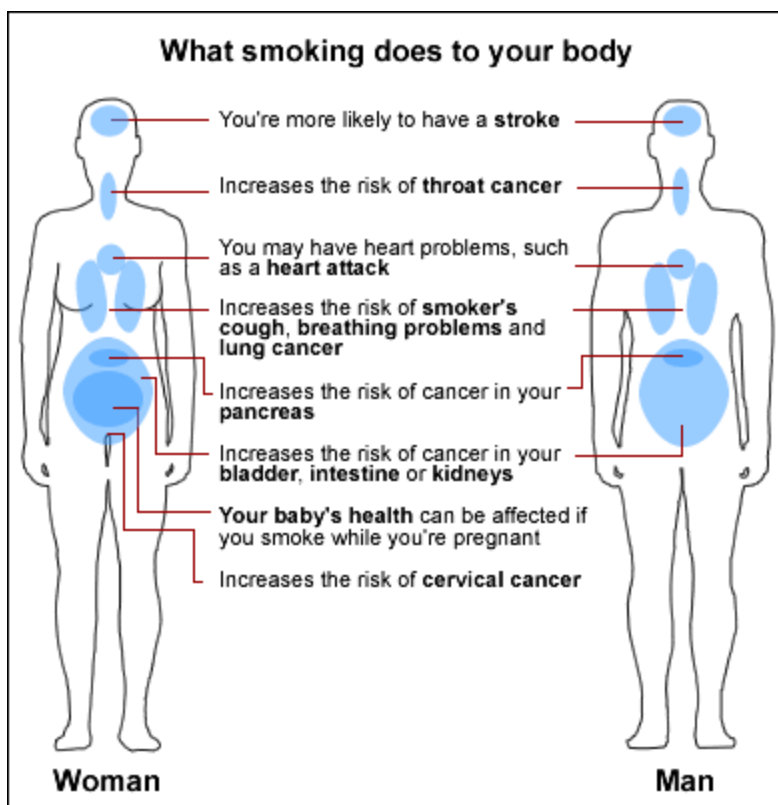


Figure 2. How Smoking Damages Your Body (BMJ Group, 2012)

Second-hand Smoke

Second-hand Smoke (SHS), also called environmental tobacco smoke is formed from the burning of cigarettes and other tobacco products and from smoke exhaled by the smoker (Oberg, Jaakkola, Woodward, Peruga & Pruss-Ustun, 2011). Most SHS exposure occurs in work places and in homes. Even though every non-smoker is at risk of exposure to SHS, most researchers focus on its effects on children. Children are at particular risk for exposure to SHS: Over fifty three percent of young children (aged 3 to 11 years) were exposed to SHS in 2007 to 2008 (CDC, 2011).

Another study conducted by Alwan, Siddiqi, Thomson, and Cameron (2010) described how the exposure of children to SHS lead to increased risk of health and social problems. They pointed out that children exposed to SHS have an increased risk of asthma, acute lower

respiratory tract infections, middle ear infections, meningococcal disease, and increased frequency of hospital visits. They targeted a sample population in a small community in Leeds, England and found that a large proportion of households (54% 95% confidence interval (C.I.) 49-60) included in their survey had at least one smoker. The survey results revealed that out of the sample, 42% (95% C.I. 35-50) answered that there was at least one person in the household who smoked. This showed that the prevalence of children exposed to SHS is relatively high despite recent awareness and campaigns regarding SHS. This study was limited in that the findings from this survey may not be valid for other settings as it was conducted in a very deprived inner-city population. Therefore, the validity of the research may be questionable. Another limitation was that the questions about smoking were answered by parents and caregivers and not specifically by children on their own exposures. This research reinforces that more smoking restrictions are needed in homes. Parents and guardians need to become more educated about the effects of tobacco exposure.

Third hand smoke

Third hand smoke (THS) is the residue of nicotine from tobacco smoke that lingers in the hair, clothes furniture and other materials in contact with a smoker, long after the cigarette has been extinguished (Escoffery et al., 2013). Researchers have found that nicotine vapor is absorbed into indoor surfaces and can persist for days, weeks, or months. The residue reacts with ambient nitrous acid and forms carcinogenic tobacco-specific nitrosamines (TSNAs). The researchers found that carcinogens were 10 times higher following exposure to tobacco smoke for three hours at a concentration of nitrous acid of 60 parts per billion by volume (Sleiman et al. (2010). Although there has been recent research on the subject, THS seems to be a relatively new phenomenon to people. Research conducted by Winichoff et al. (2009) investigated the beliefs

about the health effects of THS. They discovered that there was an independent association between the health beliefs that THS harms children. This study was the first to examine third hand smoke and its associations with health beliefs and home smoking policies. It is evident here that THS and its effects are relatively new and as such, they suggested the concept of THS could easily be incorporated into current and future tobacco counseling messages, tobacco control programs, policy initiatives, and guidelines. In essence, the researcher saw that THS education is a useful tool that should be added to campaigns to make families more aware. Limitations of the study include that the data come from a cross-sectional survey and possible causal relationships cannot be assumed; however, the researchers were able to open up a forum for more research to be done on THS. Consequently, taking concerns about THS one step further, Berkeley Lab scientists performed testing in the cab of a heavy smoker's truck to see if the residue left by tobacco could potentially affect other occupants. The results revealed carcinogenic, tobacco-specific nitrosamines (TSNAs) including 1-(N-methyl-N-nitrosamines)-1-, 4-(N-nitrosomethylamino)-1-(3-pyridinyl)-1-butanone (NNK) and N-nitrosonornicotine (NNN). These substances have been classified by the International Agency for Research on Cancer as human carcinogens (Environmental Health Perspectives, 2009). Although it is evident that further research is needed, this study revealed the possible health risks from exposure to THS. Both articles provide quantitative insights into THS; however, the methodologies differ slightly. Winichoff et al. used surveys in their research to collect information about the awareness of THS, while the Berkeley lab team performed lab testing on the compounds they found left by tobacco.

Other Healthcare Clinicians

According to Kelly, Davis and DiCocco (2011) tobacco-related morbidity and mortality continue to be an immense burden in this nation and worldwide. Moreover, education including tobacco dependency in all health promotion and disease-prevention training is lacking. Previous research indicated that many healthcare providers do not educate their patients on how to stop smoking. Even though respiratory therapists come in contact with patients suffering from tobacco related diseases, there is limited research to improve the knowledge and confidence level of respiratory therapy students on tobacco cessation before they graduate. Jordan, Khubchandani, Wiblishauser, Glassman, and Thompson (2011) reviewed the training and education on tobacco cessation that respiratory students during post-secondary training programs. They carried out a cross sectional study and surveyed all directors of respiratory therapy programs in the United States. Based on the study, they found out that the majority of programs (>90%) spent no time teaching students about the socio-political aspects of smoking cessation. Moreover, they pointed out that 41% of programs did not formally evaluate students' competence in providing smoking cessation counseling to patients. Overall, they concluded that tobacco education in respiratory therapy education is minimal and smoking cessation is usually mentioned when it is linked with diseases; however, tobacco use cessation counseling is almost a nonexistent topic.

Other healthcare providers also see the need for more tobacco education. Ginn, Coff and Heath (2008) reported that if 100,000 healthcare providers were to effectively counsel 10% of their patients to stop smoking, the number of smokers would decrease by an additional 2 million per year. Sarna, Bialous, Rice and Wewers (2009) highlighted that tobacco cessation interventions based on the *Guidelines* of the 5 As (Ask about tobacco use, Advise users to quit, Assess readiness to quit, Assist with a quit plan and Arrange follow up) have been found to be

the most cost-effective means to improve the health of adults, yet only a small percentage of smokers receive them. In their review, Sarna, Bialous, Rice and Wewers (2009) found that most nurses, the single largest group of health-care professionals have not received the content and/or skills necessary to provide effective smoking cessation interventions. In addition, they stated that, not only is tobacco control content lacking in nursing schools, it is scarce throughout all healthcare professional schools. Lancaster and Fowler, (2008) added that when nurses are knowledgeable about smoking cessation, they are more likely to provide information on smoking. Aust (2012) added that if nurses are equipped with smoking cessation knowledge, they would be able to transmit the knowledge to patients, and thus improve patients' knowledge and health. Similarly, Gordon, Albert, Crews and Fried (2009) added that anti- tobacco education is necessary in dental school programs because there is emerging literature that indicates a strong relationship between oral health and overall systemic health. Dentists are not confident in their ability to provide tobacco cessation counseling and infrequently provide tobacco cessation interventions for their patients. Lack of training and financial incentives are most often cited to explain the reluctance of dentists to provide tobacco cessation interventions (Gordon, Albert, Crews & Fried, 2009). In order for dentists and dental hygienists to improve their patients' oral and overall health, they should assist them in quitting smoking and using smokeless tobacco products; furthermore, major changes must be made to the way in which treatment of tobacco dependence is taught at the undergraduate and post-graduate levels. Another study was carried out by Kelly, Davis and DiCocco (2011) assessing the current status of tobacco dependence education curricula in US physician assistant programs. The researchers used an established tobacco dependence curriculum survey which was modified and mailed them to 141 accredited PA programs in the United States during the 2008–2009 academic years. They received a 56%

response rate and found that throughout the curriculum, on average only 42 minutes were spent on cessation counseling and an average of 13 minutes was spent on integrating tobacco-cessation into clinical practice. This indicates that tobacco education, specifically in counseling about cessation, is necessary in all healthcare schools.

In summary, it is evident that there is a lack of published peer reviewed articles that evaluates respiratory therapy students' knowledge and confidence regarding tobacco smoking. In addition, it was easier to find articles regarding smoking cessation's content in other healthcare clinicians' curriculums than in respiratory schools. Respiratory therapists mostly come in contact with patients that are diagnosed with smoking related diseases. Although the studies used different methods, they all share the same conclusion that the education that healthcare providers received during their post secondary years was inadequate in terms of nicotine addiction, smoking cessation and education.

CHAPTER III

METHODOLOGY

This chapter outlines the methods used to answer the following research questions.

[1] What was the RT student's level of knowledge regarding the effects of tobacco smoking as it relates to respiratory diseases?

[2] What was the RT student's level of confidence regarding the effects of tobacco smoking as it relates to respiratory diseases?

[3] Can a respiratory therapy program be evaluated based on the RT student's knowledge and confidence on tobacco cessation?

[4] What is the extent or depth of tobacco education (hours) covered in a bachelors and masters RT program?

The study performed was a quantitative study using data collected from an undergraduate respiratory disease course.

Study Participants

The subjects were students in a bachelor's degree respiratory therapy program at a southeastern urban university. The research was done prior to and following a required pulmonary disease class. A total of 31 participants were recruited for this study. The inclusion criteria were as follows: respiratory therapy students that were enrolled in the pulmonary disease course (RT 3027). The pulmonary disease course focuses on the pathophysiology, clinical signs and symptoms, diagnosis, management and prognosis of acute and chronic pulmonary diseases.

Instruments

Pre and post surveys with a total of 30 questions were used. These questions were designed to test the students' knowledge on tobacco and respiratory diseases before and after the disease course. Some of the questions used in the questionnaire were drafted from previously published research. This published study was carried out to test students' knowledge and confidence level on Tuberculosis (Hinski, Goodfellow, Zimmerman & Bryant, 2011). The survey for this study was developed by the student researcher and was emailed to experts with expertise in respiratory therapy and tobacco smoking education to test for content and face validity. After approval from tobacco research experts regarding the questionnaire, the research proposal was sent to the institutional review board (IRB). The IRB approved the research proposal on December 13, 2012.

Survey Administration

After IRB's approval, the survey was emailed to the instructor of the pulmonary disease course and requested consent to administer the questionnaires. The researcher introduced himself to the participants at the beginning of the spring semester 2013 and asked them if they wanted to participate. Two students from the senior class volunteered to participate and took on the task of issuing out the pre-tests and consent forms on January 23, 2013. The same volunteers issued the post test and consent forms on April 29, 2013. Both data from the pre and post tests were collected by the student researcher and stored in a locked filed cabinet. Survey answer sheets were coded with a number to maintain participant confidentiality, used to score the surveys and delineate between pre- tobacco smoking education surveys and post-tobacco smoking education surveys.

In conclusion, the methods utilized for the study allowed for a descriptive analysis of the survey results. Due to the small sample size and feasibility, a Student's t-test was not done.

Data Analysis

The data was analyzed using SPSS 19.0. Descriptive statistics to include frequencies and percentages were analyzed to evaluate the RT student's responses to the survey questions. The information possibly could be examined to draw conclusions on the program's effectiveness in educating its RT students on tobacco use and respiratory diseases. For both pre and post surveys, not all the questions were answered by the participants. The unanswered questions were seen as missed questions and were taken into consideration when the data was being interpreted. Another aspect of the data that was taken into consideration was when the data was analyzed, the change in the sample size from thirty one students that participated in the pre survey to twenty four students that participate in the post survey. Both aspects made it more difficult to analyze the data.

CHAPTER IV

RESULTS

This chapter presents the results of the surveys administered prior to and after the pulmonary disease course. The researcher administered identical surveys to a first year class of RT students at a southern university. Thirty one students completed the pre-tobacco use education survey and twenty four students completed the post-tobacco use education survey. The data from these surveys were separated into six sections: general information, general beliefs about tobacco education and its importance in their chosen career, general questions about tobacco, confidence assessment regarding tobacco use and questions specifically for RT students regarding tobacco use knowledge.

Table 1 represents general questions about tobacco smoking education. Prior to the program regarding tobacco education, only two students out of the thirty one (7%) attended at least one lecture where tobacco smoking was a primary focus. After the students completed the respiratory disease course, only eight out of twenty four students felt that they (33%) attended at least one tobacco education lecture.

Table 1: General Information Regarding Tobacco Education

Question Number	Pre Survey (31)			Post Survey (24)		
	Responses	Frequency	Percent (%)	Responses	Frequency	Percent (%)
1. During your academic program to date, have you attended at least one lecture where tobacco smoking was a primary focus?	Yes	2	7	Yes	8	33.3
	No	29	93	No	16	66.7
2. Approximately how many hours of lecture/instruction on tobacco smoking have you attended?	None	16	51.6	None	8	33.3
	1-2 hours	10	32.3	1-2 hours	12	50
	More than 2 hours	1	3.2	More than 2 hours	4	16.7
	Did not answer	4	12.9	Did not answer	0	

Questions 3 through 7 dealt with the students' general beliefs about tobacco education and its importance in their careers (Table 2). The pre- tobacco education survey revealed that 64.5% (20/31) of the students, compared to 70.8% (17/24) of the post-tobacco education surveyed students, strongly disagreed that there is only minimal need for more education on tobacco because it is not likely that it will be needed in their chosen career.

Table 2: General Beliefs about Tobacco Education and its Importance

1=Strongly Agree 2= Agree 3= Disagree 4= Strongly Disagree

Question Number	Pre Survey (31)			Post Survey (24)		
	Responses	Frequency	Percent (%)	Responses	Frequency	Percent (%)
3 There is only minimal need for more education on tobacco smoking because it is likely it will not be needed in my chosen career.	1	3	9.7	1	1	4.2
	2	1	3.2	2	4	16.7
	3	7	22.6	3	2	8.3
	4	20	64.5	4	17	70.8
4 Tobacco smoking education is very important to my academic program.	1	21	67.7	1	19	79.2
	2	5	16.1	2	2	8.3
	3	0	0	3	1	4.2
	4	2	6.5	4	2	8.3
	Did not answer	3	9.7			
5 The current emphasis on tobacco smoking in my academic program is adequate.	1	1	3.2	1	2	8.3
	2	9	29	2	11	45.8
	3	16	51.6	3	9	37.5
	4	2	6.5	4	2	8.3
	Did not answer	3	9.7			
6 The career path that I have chosen will not require me to know much about the use and effects of tobacco smoking.	1	1	3.2	1	1	4.2
	2	0		2	2	8.3
	3	5	16.1	3	2	8.3
	4	22	71	4	19	79.2
	Did not answer	3	9.7			
7 In my future plans as a health professional I am confident that the level of tobacco use knowledge I have attained is adequate to prepare me for my needs.	1	1	3.2	1	4	16.7
	2	10	32.3	2	8	33.3
	3	10	32.3	3	8	33.3
	4	7	22.6	4	4	16.7
	Did not answer	3	9.7			

Questions 8 through to 10 questioned the participants about their general beliefs about the harmful effects of smoking on non-smokers. Approximately 55% of the pre tobacco survey respondents and about 58% of the post tobacco education survey respondents strongly agreed that inhaling smoke from a smoker's cigarette can cause lung cancer in non-smokers.

Table 3: General Beliefs about harmful Effects of Smoking on Non-Smokers

1=Strongly Agree 2= Agree 3= Disagree 4= Strongly Disagree

Question Number	Pre Survey (31)			Post Survey (24)		
	Responses	Frequency	Percent (%)	Responses	Frequency	Percent (%)
8 Inhaling smoke from other people's cigarettes causes heart diseases in adults.	1	9	29	1	8	33.3
	2	15	48.4	2	11	45.8
	3	4	12.9	3	4	16.7
	4	0	0	4	1	4.2
	Did not answer	3	9.7			
9 Inhaling smoke from a smoker's cigarette can cause lung cancer in non-smokers.	1	17	54.8	1	14	58.3
	2	9	29	2	9	37.5
	3	2	6.5	3	0	0
	4	0	0	4	1	4.2
	Did not answer	3	9.7			
10 Inhaling smoke from someone else's cigarette can harm the health of babies and children.	1	24	77.4	1	16	66.7
	2	4	12.9	2	7	29.2
	3	0	0	3	0	0
	4	0	0	4	1	4.2
	Did not answer	3	9.7			

Table 4 represents questions 11 and 12 focused on the confidence in educating and communicating effectively with patients who smoke and their families. Based on the overall results, there was an improvement in the confidence level between the pre and post surveyed students.

Table 4: Confidence in Educating and Communicating Effectively with Patients who Smoke and their Families.

1=No Confidence 2=Low Confidence 3= High Confidence

Question Number	Pre Survey (31)			Post Survey (24)		
	Responses	Frequency	Percent (%)	Responses	Frequency	Percent (%)
11 How confident are you in obtaining a relevant history from a patient with regarding tobacco use?	1	3	9.7	1	2	8.3
	2	15	48.4	2	8	33.3
	3	10	32.3	3	14	58.3
	Did not answer	3	9.7			
12 How confident are you in educating patients and families about issues related to nicotine addiction using language that is understandable and reflects cultural awareness?	1	5	16.1	1	1	4.2
	2	16	51.6	2	13	54.2
	3	7	22.6	3	10	41.7
	Did not answer	3	9.7			

Questions 13 through to 14 (Table 5) focused on Lung Cancer. The pre tobacco education survey revealed at least 90% of the respondents felt that it was likely or somewhat likely that the average smoker will develop Lung Cancer in his/her lifetime. On the other hand, the post tobacco education survey revealed about 75% of the respondents felt that it was likely or somewhat likely that the average smoker will develop Lung Cancer in his/her lifetime.

Table 5: Questions on Lung Cancer and its Incidence

1=Very Likely 2=Somewhat Likely 3=Somewhat Unlikely 4=Unlikely

Question Number	Pre Survey (31)			Post Survey (24)		
	Responses	Frequency	Percent (%)	Responses	Frequency	Percent (%)
13. How likely do you think it is that the average smoker will develop lung cancer in his/her lifetime?	1	14	45.1	1	10	41.7
	2	14	45.1	2	8	33.3
	3	0	0	3	5	20.8
	4	0	0	4	1	4.2
	Did not answer	3	9.7			
14 How likely do you think it is that the average non-smoker will develop lung cancer in his/her lifetime?	1	1	3.2	1	4	16.7
	2	10	32.3	2	5	20.8
	3	13	41.9	3	10	41.7
	4	4	12.9	4	5	20.8
	Did not answer	3	9.7			

Table 6 represents questions that assessed the RT students' knowledge on nicotine addiction. Three students from the pre survey did not answer questions in this section; their omissions were counted as incorrect answers. Twenty seven out of thirty one (87%) pre tobacco education surveyed answered the question regarding the defining the term third hand smoke. Similarly, 100% of the post surveyed students answered this question correctly. The question that seemed to be the most difficult was 'what smoking cessation programs entail.' Only 29% of the pre tobacco education respondents answered this question correctly. The post tobacco education survey revealed a slight improved with only 42% of the respondents answered this question correctly. Overall, the pre-tobacco education surveyed student's average grade was 55.5%. The post-tobacco education surveyed students demonstrated improvement with an average score of 69.8%.

Table 6: General Knowledge Questions about Nicotine Addiction and Assessing RT Students' Knowledge on the Subject

15. Which of the following bests defines the phenomenon third hand smoke?	27/31 correct 4/31 incorrect	87% 13%	24/24 correct 0/24 incorrect	100% 0%
16. What are some of the signs and symptoms you will see when you enter a patients room with COPD?	22/31 correct 9/31 incorrect	71% 19%	16/24 correct 8/24 incorrect	66.7% 33.3%
17. The single most important etiologic factor in Emphysema is?	28/31 correct 3/31 incorrect	90% 10%	24/24 correct 0/24 incorrect	100% 0%
18 The management of chronic obstructive pulmonary disease (COPD) includes	15/31 correct 16/31 incorrect	48% 52%	16/24 correct 8/24 incorrect	66.7% 33.3%
19. How does smoking affect the heart?	23/31 correct 8/31 incorrect	74% 26%	15/24 correct 9/24 incorrect	62.5% 38.5%
20. Chest x-ray done on a COPD patient is expected to appear with which features?	7/31 correct 24/31 incorrect	23% 77%	16/24 correct 8/24 incorrect	66.7% 33.3%
21. How does cigarette smoking contribute to Chronic Bronchitis?	8/31 correct 23/31 incorrect	26% 74%	16/24 correct 8/24 incorrect	66.7% 33.3%
22. Nicotine replacement therapy?	17/31 correct 14/31 incorrect	55% 45%	18/24 correct 6/24 incorrect	75% 25%
23. Smoking cessation programs entail	9/31 correct 22/31 incorrect	29% 71%	10/24 correct 14/24 incorrect	42% 58%
24. Forms of nicotine replacement therapy include	11/31 correct 20/31 incorrect	36% 64%	23/24 correct 1/24 incorrect	96% 4%
25. What is the best way to assess someone's true smoking status?	22/31 correct 9/31 incorrect	71% 29%	22/24 correct 2/24 incorrect	92% 8%

Demographics

Participant demographical information was also collected in order to provide a description of the population. Questions 26 through 30 focused on the participant's age, gender, employment status, ethnicity, and smoking status. Majority of the participants (42%) were between the ages of 18 through 25 years old. Gender distribution was uneven, 74% of the participants were females compared to 26% males. Most of the participants (64.5%) were unemployed. Race/ethnicity was a factor that was widely distributed among the population studied. The majority of the population was African Americans (42%). Lastly, 45% of the

participants considered themselves non-smokers and 29% considered themselves to be non-smokers, but exposed to second hand smoke. One of the participants stated that he/she is a current smoker, and 3 participants stated they were former smokers.

CHAPTER V

DISCUSSION

The study was done to answer the following research questions:

[1]What was the RT student's level of knowledge regarding tobacco smoking as it relates to respiratory diseases?

[2]What was the RT student's level of confidence regarding tobacco smoking as it relates to respiratory diseases?

[3]Can a respiratory therapy program be evaluated based on the RT student's knowledge and confidence on tobacco cessation?

[4]What is the extent or depth of tobacco education (hours) covered in the RT program?

Major Findings

An analysis of the results was done and some observations were noted. The results revealed that a majority of the students only had 1 to 2 hours of lecture that focused on tobacco smoking. The actual tobacco education they received within the pulmonary disease course was not specific to tobacco control or related social/political issues; the topic tobacco smoking was only mentioned under disease processes such as COPD and Lung Cancer. The RT students' confidence levels regarding smoking cessation slightly improved after being enrolled in the pulmonary disease course. This improved confidence may have occurred from the students gaining knowledge after the 1 to 2 hours of lecture that focused on tobacco smoking and through clinical experience. The pre surveyed RT students' average was 55.5%, and the post surveyed average was 69.8%. Both pre and post average percentages are considered low, and thus suggests that the content of tobacco education within the school's curriculum is inadequate. In addition, even though the results revealed a 14.3% improvement, it was noticed that the question

that asked about ‘what smoking cessation entails’ was answered poorly after the administration of both pre and post surveys. In fact, 71% of the pre surveyed respondents and 58% of the post surveyed answered this question incorrectly. This slightly high incorrect rate for this question may have occurred because the topic ‘smoking cessation’ may have been rarely mentioned or was not mentioned at all during the pulmonary disease course.

Limitations

The study had some limitations. Firstly, the results of the study were limited because of the small sample size chosen- a junior level RT class of a southeastern university. If a larger sample size was used, it would have been more generalizable. In addition, the sample size was reduced from 31 pre-surveyed to 26 post surveyed. As a result, this made it more difficult to compare the pre and post surveys. Thirdly, both pre and post surveys administered were anonymous; thus, this made it impossible to track and compare a particular student’s true performance level. Lastly, it was hard to compare this study’s results to other studies relating to respiratory therapy because of limited research conducted in this area.

Relating Findings to Similar Studies

Several other healthcare clinicians carried out studies on the need for more tobacco education for their respective graduates, and they all drew the same conclusion that tobacco education in healthcare schools is minimal. Khubchandani et al. study is similar to this study in that it was carried out quantitatively using questionnaires. However, they differ in the participants used. For example, Khubchandani et al used respiratory therapy program directors, while this study utilized respiratory therapy students. This study focused on actual students’ knowledge, confidence levels, and their learning outcomes regarding tobacco education, while Khubchandani et al’s study focused on what directors believe RT students should know

regarding tobacco education. Even though the studies done were slightly different, they both concluded that tobacco education in respiratory education is minimally taught and smoking is usually mentioned when it is linked with disease. Despite sharing the same conclusion about the issue, in order for any changes to be implemented, a few barriers would have to be broken. For example, time constraint and lack of teaching would have to be taken in consideration for this change to take place. In addition, Khubchandani et al. (2011) reported based on his respondents' answers from the questionnaires some of the faculty members believe that more emphasis on tobacco education was not required for certification/licensure, and as such it was not viewed as an issue.

Implications for Respiratory Care

The findings from this study imply that if a more effective and structured education in smoking cessation is added, future respiratory therapists can translate this education into the clinical setting. In addition, if respiratory therapists are equipped with this knowledge and confidence to educate patients about tobacco cessation and their respective respiratory diseases such as COPD, they should help prevent those patients from returning to the hospital. In effect, this helps to reduce recidivism which is mentioned in the Affordable Care Act as an ongoing concern. Overall, this study increases the awareness of the standard hazards of tobacco abuse on a wider scale.

Recommendations for Further Research

This research was done using a small sample size- a pulmonary disease class of thirty one students for the pre survey and then twenty four students for the post survey. This small sample size made it more difficult to analyze the data. Consequently, further research in this subject area should include a larger sample size, such as all the respiratory schools within the United States of

America; a large sample size will make it easier to draw conclusions from the data collected. In addition, further study on the topic should include a higher level of analysis of the data. For example, Student's t-test or a Chi Square test could be used to provide more statistical analysis of the data. Further research on this topic should also include a qualitative approach. This could be done by carrying out a panel interview with experts with expertise in respiratory therapy and tobacco education.

The causal relationship between tobacco abuse and respiratory disease processes continues to grow worldwide. This is a relationship that needs further research; thus, it is imperative healthcare providers, especially respiratory therapists intervene and equip themselves with the knowledge and confidence to break the cycle.

Conclusion

Because of the increase in the diseases and deaths related to smoking and the significant cost to society, healthcare providers need to take a more aggressive approach to prevent tobacco dependence (Heath et al, 2002). Consequently, Fiore, Baily, Cohen, et al. (1996) stated that seventy percent of persons in the United States who smoke said that they would like to quit, yet half of these tobacco dependent persons report that they have never been advised to quit smoking or been provided specifics about successful quitting. Respiratory therapists are most often in contact with patients that are diagnosed with smoking related diseases; therefore, they should be well equipped and knowledgeable about the topic because they will come across teachable moments during which they can provide tobacco-related education and counseling to patients and their families. Respiratory therapists need a structural comprehensive curriculum in which tobacco education is central. Tobacco education should not be only mentioned under disease

process such as COPD and Lung Cancer in respiratory therapy schools' curriculum, it should be taught as a separate topic.

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Appendices

Appendix A



School of Health Profession
Division of Respiratory Therapy

**Survey of Knowledge and Confidence of Respiratory Therapy
Students Regarding Tobacco Smoking and Respiratory Diseases**

1. During your academic program to date, have you attended at least one lecture where tobacco smoking was the primary focus?

1. Yes
2. No

2. Approximately how many hours of lecture/instruction on tobacco smoking have you attended?

1. None
2. 1-2 hours
3. More than 2 hours

General Beliefs about Tobacco Smoking Education and its Importance

1= Strongly Agree 2=Agree 3=Disagree 4=Strongly Disagree

3. There is only a minimal need for more education on tobacco smoking because it is likely I will not need it in my chosen career.

1 2 3 4

4. Tobacco smoking education is very important to my academic program.

1 2 3 4

5. The current emphasis on tobacco smoking in my academic program is adequate.

1 2 3 4

6. The career path that I have chosen will not require me to know much about the use and effects of tobacco smoking.

1 2 3 4

7. In my future plans as a healthcare provider, I am confident that the level of tobacco knowledge I have attained is adequate to prepare me for my career needs.

1 2 3 4

General Beliefs about the harmful Effects of Smoking on Non-smokers

1= Strongly Agree 2=Agree 3=Disagree 4=Strongly Disagree

8. Inhaling smoke from other people's cigarettes causes heart diseases in adults.

1 2 3 4

9. Inhaling smoke from a smoker's cigarette can cause lung cancer in non-smokers.

1 2 3 4

10. Inhaling smoke from someone else's cigarettes can harm the health of babies and children.

1 2 3 4

Confidence in Educating and Communicating Effectively with Patients who Smoke and their families, specifically:

1=No Confidence 2= Low Confidence 3= High Confidence

11. How confident are you in obtaining a relevant history from a patient with regarding tobacco use.

1 2 3

12. How confident are in educating patients and families about issues related to nicotine addiction using language that is understandable and reflects cultural awareness.

1 2 3

Questions on Lung Cancer and its Incidence

1= Very Likely 2= Somewhat Likely 3=Somewhat Unlikely 4=Unlikely

13. How likely do you think it is that the average smoker will develop lung cancer in his/her lifetime?

1 2 3 4

14. How likely do you think it is that the average non smoker will develop lung cancer in his/her lifetime?

1 2 3 4

General Knowledge Questions about Nicotine Addiction and assessing RT students' Knowledge on the Subject

15. Which of the following best defines the phenomenon third hand smoke?
- Smoke inhaled by a smoker
 - Gases and particles left over after cigarette is extinguished that remains on surfaces such as clothes, furniture, floor etc
 - Smoke inhaled when someone smokes
 - Smoke inhaled from exhaust systems and combustion
16. What are some of the signs and symptoms you will see when you enter a patient's room with COPD?
- Increased work of breathing
 - Use of accessory muscles
 - Digital clubbing
 - Decreased anteroposterior chest diameter
 - 1,2,3
 - 1,2 only
 - 3,4 only
 - All of the above
17. The single most important etiologic factor in Emphysema is
- Infection
 - Sulfur Dioxide
 - Ozone
 - Cigarette Smoking
18. The management of chronic obstructive pulmonary disease (COPD) includes:
- Annual influenza immunization.
 - Bronchopulmonary hygiene procedures.
 - Lung volume-reduction surgery.
 - Smoking cessation.
 - 1, 2
 - 2, 3
 - 2, 3, 4
 - All of the above
19. How does smoking affect the heart?
- Inhibits adrenaline production and decrease HR and BP
 - Produce an increase in low density lipoprotein (LDL) and decrease in high density lipoprotein (HDL)
 - Produce a decrease in LDL and increase in HDL
 - Nicotine stimulates adrenaline production and increase HR and BP
 - 1,2

- b. 2,4
- c. 1,3
- d. 1,2,3

20. Which of the following radiological features would be consistent with COPD?

- 1. Translucent
- 2. Enlarged heart
- 3. Elevated hemidiaphragms
- 4. Fluffy infiltrates
 - a. 1 only
 - b. 1,2
 - c. 2,3
 - d. 1,2,3

21. How does cigarette smoking contribute to Chronic Bronchitis?

- 1. Bronchial inflammation
- 2. Destruction of bronchial activity
- 3. Enlarges bronchial airway
- 4. Excessive mucus production
 - a. 1 only
 - b. 2,3 only
 - c. 2,4 only
 - d. 1,2,3 only
 - e. 1,2,4 only

22. Nicotine replacement therapy

- 1. Contains lower doses of nicotine
- 2. Drugs that do not contain nicotine
- 3. Use of prescription drugs
- 4. Can be purchased over the counter
 - a. 1,3,4
 - b. 1,2 only
 - c. 2,4 only
 - d. 2,3,4

23. Smoking cessation program entails

- 1. Use of nicotine replacement therapy
- 2. Counseling from healthcare professionals
- 3. Self care
- 4. Socializing with other smokers to help fight the urge
 - a. 1,2 only
 - b. 1,2,3
 - c. 3,4

d. All of the above

24. Forms of nicotine replacement therapy include

1. Patch
2. Gum
3. Inhaler
4. Nasal spray

- a. 1,2 only
- b. 1,3,4
- c. 1,2,4
- d. All of the above

25. What is the best way to assess someone's true smoking status?

- a. Smell the person
- b. Use of a pulse oximeter
- c. Sputum sample
- d. Use of Carbon Monoxide Monitor

26. 1. What is your age?

1. 18 - 24 years old
2. 25 - 35 years old
3. 36 - 49 years old
4. 50 or more years old

27. What sex were you assigned at birth? (Check one)

1. Male
2. Female

28. Which of the following best describes your employment status? Please circle all that apply.

1. Working full-time (over 30 hours per week)
2. Working part-time (8 to 29 hours per week)
3. Unemployed
4. Student
5. Prefer not to answer

29. Race/Ethnicity (Select all that apply)

1. American Indian or Alaska Native
2. Asian
3. Black or African American
4. Latino/a or Hispanic
5. Native Hawaiian or Other Pacific Islander
6. White/Caucasian
7. I don't know

30. Which of the following best describes your status? (Please check all that apply)

1. Nonsmoker

2. Nonsmoker exposed to second hand smoke
3. Current smoker
4. Former smoker

Appendix B



School of Health Profession
Division of Respiratory Therapy

**Title: Survey of Knowledge and Confidence of Respiratory Therapy Students
Regarding Tobacco Smoking and Respiratory Diseases**

Principal Investigator: Lawrence Bryant, PhD, MPH, RRT
Student Principal Investigator: Delano DuCasse

I. Purpose

You are invited to be in a study. The purpose of this study is to assess the knowledge of students in a bachelor's degree respiratory therapy program. The study will test their knowledge on smoking and respiratory diseases. This will be done prior to and following an in class Respiratory Disease class. You are invited to participate because you will be enrolling in RT 3027 Respiratory Disease. A total of 45 participants will be recruited for this study. Participation will require answering 31 questions. Participation is completely on a volunteer basis.

II. Procedures:

You will answer two questionnaires each of which contain 31 questions. These questions will test your knowledge on tobacco and respiratory diseases before and after the disease course. Dr. Bryant will not be present during the study, and he will not know who does and does not participate. The participants will take a 20 minutes pre-test, and then a 20 minute post-test after the respiratory disease class.

III. Risks:

The study has no known risk than in a normal day of life.

IV. Benefits:

Being in this study may or may not benefit you. Overall, we hope to gain information about GSU's Respiratory Therapy Students' knowledge on tobacco smoking before and after enrolling in a disease course.

V. Voluntary Participation and Withdrawal:

Participation in research is voluntary. You do not have to be in this study. If you decide to be in the study and change your mind, you have the right to drop out at any time. You may skip

questions or stop at any time. Whatever you decide, you will not lose any benefits to which you are otherwise entitled.

VI. Confidentiality:

We will keep your records private to the extent allowed by law. The PI and research team will have access to the information you provide. Information may also be shared with those who make sure the study is done correctly GSU Institutional Review Board. We will use a number rather than your name to link the surveys. The information you provide will be stored in a locked file cabinet. Only the PI and research team will have access to your information. Your name and other facts that might point to you will not appear when we present this study or publish its results. The findings will be reported in written form. You will not be identified personally.

VII. Contact Persons:

Contact Lawrence Bryant at, oliver2387@gsu.edu and or Delano DuCasse dducasse1@student.gsu.edu if you have questions about this study. If you have questions or concerns about your rights as a participant in this research study, you may contact Susan Vogtner in the Office of Research Integrity at 404-413-3513 or svogtner1@gsu.edu.

VIII. Copy of Consent Form to Subject:

We will give you a copy of this consent form to keep.