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Tobacco Use on College Campuses: Should Smoking Be Banned?

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By:

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Abstract

Millions of people continue to use tobacco products, despite the well-known adverse health effects that they cause to the human body. According to the Centers for Disease Control and Prevention, more deaths are caused each year by tobacco use than by all deaths from HIV, illegal drug use, alcohol use, motor vehicle injuries, suicides, and murders combined. The trend in tobacco and smoke-free college campuses is a step towards decreasing the use of these dangerous, habit forming products. Research also shows that there are no safe levels of secondhand smoke, therefore, preventing exposure is a key component to a healthy campus community. Although there are many different reasons for these programs, and many different approaches to implementing these programs, it is important to understand the highlights and the difficulties of these policies on college campuses. This thesis works to explore and explain the positive and negative aspects of college campus tobacco-free policies in the United States while working to highlight and reiterate the dangers of smoking and its effect on the surrounding community via secondhand smoke.

Despite the commonly known adverse health effects, smoking and tobacco use continues to be a major public health concern. The effects that these products have on the human body are well known, and information on the topic is readily available to the public. However, many people continue to use these dangerous, habit-forming products. Smoking causes numerous types of cancer, cardiovascular disease, and respiratory diseases. Smoking remains the single most important factor underlying preventable death and disease in the United States (Cierierski, et. al, 2011). This public health concern has turned many heads, prompting a trend of tobacco-free campuses, and many other public places. Numerous programs have been installed in order to ease cessation for the public, as well as prevent the start of such habits. Tobacco habits are very destructive to the body, and some feel that these addictions need to be taken on with vigorous action. According to the Centers for Disease Control and Prevention, cigarette smoking is the leading cause of preventable morbidity in the United States, contributing to 440,000 deaths annually. With the knowledge of public health risks that smoking creates, many universities have enacted smoke-free policies on campus to create a healthier environment for students, faculty, and visitors.

Many people are misinformed on the dangers of smoking and tobacco-related products, despite the copious amounts of facts and information

describing the hazardous side-effects brought on by the chemicals in these products. It is important to not only explore the adverse effects of nicotine and tobacco, but also understand how college campuses have adapted smoke-free and tobacco-free policies. In order to fully comprehend the process of how these programs have been adopted on college campuses, one must inspect the parts of the programs and policies that have worked well, as well as the reasons for and discontent among the affected parties. It is also essential to take into consideration other forms of tobacco products, such as chewing tobacco or the newly trending electronic cigarettes, as they may come into question when the policies are set in place. It is also important to inspect the reasons why a campus or a group of people would decide to put such a ban on something that is legal for those over the age of 18, and the consequences that have been faced in implementing such bans.

Dangerous effects of cigarette smoking are somewhat of common knowledge in today's society. The general public is better informed on the dangerous effects of cigarette smoking than their ancestors were a mere fifty years ago. Many people understand that cigarette smoking is harmful to your body, and can cause unwanted conditions and diseases. Unfortunately, the depth of understanding that surrounds the risks of cigarette smoking is less than what it should be, especially when considering how many people continue to ingest the

toxic chemicals in tobacco products. More deaths are caused each year by tobacco use than by all deaths from human immunodeficiency virus (HIV), illegal drug use, alcohol use, motor vehicle injuries, suicides and murders combined. (C.D.C., 2012). Smoking also causes coronary heart disease, which is the leading cause of death in the United States. According to the Centers for Disease Control and Prevention, there is a direct correlation between smoking cigarettes and eleven different kinds of cancer; these types of cancer include: Acute myeloid leukemia, bladder cancer, cervical cancer, cancer of the esophagus, kidney cancer, cancer of the pharynx, and stomach cancer. Smoking does many negative things to the body, however, many of these things are tossed aside and ignored by cigarette smokers. The reason for this could be the addiction that comes along with cigarette smoking.

One of the most concerning ingredients in cigarettes and other tobacco products is nicotine. Nicotine is a highly addictive substance that is contained in many tobacco products. Nicotine is a chemical that, when in the blood stream can make a person's mood boost, and may even relieve minor depression (Hahn, et al. 2011). Many people will feel a sense of well-being while nicotine is in their body, leading further to some thoughts that nicotine-containing products cannot be bad for them. Sadly, nicotine leads to many adverse side effects, such as an increase in heart rate by 10 to 20 beats per minute, or an increase in blood

pressure by 5 to 10 millimeters of mercury (Medline Plus, 2014). This means that nicotine has an immediate effect on the heart and the cardiopulmonary system, and long term use can lead to damage if used and ingested on a regular basis. Nicotine also has a way of stimulating a person's memory and alertness. Nicotine is the chemical in tobacco. Nicotine is technically the alkaloid, and is a stimulant. People who use tobacco products often depend on it to help them accomplish certain tasks and perform well. This is one of the many reasons contributing to its use on college campuses.

The other main substance of concern in cigarettes is tobacco. Tobacco and nicotine both can be addictive like alcohol, cocaine, and morphine. Tobacco is a plant grown for its leaves, which are smoked, chewed, or sniffed for a variety of effects. It is a plant within the genus Nicotiana of the nightshade family. While there are more than 70 species of tobacco, the chief commercial crop is N. tabacum. Dried tobacco leaves are mainly smoked in cigarettes, cigars, pipe tobacco and flavored shisha tobacco. They can also be consumed as snuff as well as chewing tobacco and dipping tobacco.

Tobacco plants are also subsidized by the federal government. An agricultural subsidy is a governmental subsidy paid to farmers and agribusinesses to supplement their income, manage the supply of agricultural commodities, and influence the cost and supply of such commodities. Subsidies can be very

controversial due to their political origins, which include heavy lobbying from political groups that represent the interest of the business. It was believed in 2004 that tobacco crops were no longer being subsidized after the famous tobacco buy-out. However, between 1995 and 2011, taxpayers gave tobacco farmers another $276 million in crop insurance subsidies (Faber, 2013). This means that the government is making it easier and cheaper for big corporation farmers to yield tobacco, leaving the government well tied in to the business of making cigarettes and other tobacco products. The tobacco products that are made from these subsidies are also highly taxed.

Tobacco products are highly addictive, so it is important to understand what addiction is, and how it affects the body. Addiction is a complex brain disease involving compulsive behaviors, including the pathological use of nicotine, alcohol, illicit drugs, controlled prescription drugs, or a combination of these. Many people manifest different risk factors of addiction, neurological effects, and consequences. It has been found that if the prevention or treatment of addiction is too tightly focused on one substance or behavior, relapse or a different expression of the disease may emerge. According to Linda Richter and Susan Foster, authors of *The Exclusion of Nicotine: Closing the Gap in Addiction Policy and Practice*, public policies and health care practices are not up to date with the science. For a complex set of reasons, including that the consequences

of tobacco use are primarily confined to adverse health outcomes, as opposed to the broader range of societal costs associated with alcohol and other drugs, primary prevention approaches address tobacco use as a separate condition from other substance use in spite of the fact that early use of any addictive substance increases addiction involving other substances. Addiction treatment programs focus on alcohol and other drugs, generally to the exclusion of nicotine, even though nicotine itself is highly addictive (Richter & Foster, 2013). Treatment programs and prevention programs do not consider nicotine to be grouped with other substances such as alcohol and other drugs.

One of the hardest things for a smoker to face is quitting smoking. However, smokers do have many important reasons to quit. A recent review by McCaul et al. (2006) found the top three reasons ex-smokers gave for quitting and current smokers gave for wanting to quit were health, social concerns, and cost. Coincidentally, these happen to be some of the main reasons that the rest of the public would wish for smokers to not be present on campus around them, or for cigarettes to be present in the campus. Some may be concerned about their own health, and being exposed to the ever dangerous second-hand smoke. Social concerns for smokers may be that in this current day and age, smoking is somewhat frowned upon due to the fact that the adverse health effects for not only the smokers, but the surrounding people as well are very serious.

Many universities throughout the country have made the decision to adopt a tobacco free policy. The reasons for adopting such policies are vast. Many universities are recognizing the efforts that many healthy professional companies have made, such as Providence Health Services. Companies have also adopted smoke-free policies on jobsites in order to provide a healthier environment for all employees. They have also made these changes with thought in mind that since many companies provide insurance for their employees, healthier employees may cost them less money in the long run if they do not have addictions to smoking or other tobacco products. Smoking also causes offensive odors to those around the smokers, making for an uncomfortable work environment. These ideas are some that have stemmed the trend for the tobacco and smoke ban on college campuses. These are just a few of the many reasons for the initiation of these policies.

One of the biggest reasons that many campuses around the United States have initiated a smoking or a tobacco ban on their campuses is for the health of those who do not choose to smoke, but are being exposed. Secondhand smoke, also known as passive smoking, is not something that has much choice behind it. Secondhand smoke is a very serious aspect to consider when thinking of the overall health of the campus community, not just those who are interested in using cigarettes or not. Some would say that people should only be exposed to

harm if they understand the risks and choose to accept them, and that a complete ban on smoking in public areas is needed to protect people from passive smoking. According to the American Lung Association, smoke emitted from tobacco contains about 4,000 toxic chemicals (Piasecki et al. 2007). Of the 4,000 toxic chemicals that are released from a cigarette, forty of them are known to be linked to cancer. The American Lung Association also estimates that secondhand smoke is responsible for nearly 50,000 deaths each year.

Passersby are exposed to the cigarette smoke emitted from a cigarette by someone walking by, or standing by them, and they have no choice but to breathe in this contaminated air, or physically move to a different area that is not affected. Being exposed to secondhand smoke is a very common thing among college students who attend a school that has not adopted a smoke free policy. In a survey of North Carolina college students, 83% reported recent exposure to secondhand smoke (Seo, Macy, Torabi, & Middelstadt, 2011). This means that only 17% of students had not reported that they had recently been exposed to secondhand smoke. It is not only the direct cigarette exposure to the smoker that is dangerous, it is also the passive smoke emitted from the cigarette and the smoker that can harm others around them in the community of a campus.

Exposure to secondhand smoke is a known serious cause of preventable disease and premature death, including coronary heart disease, lung cancer,

myocardial infarction, and respiratory complications such as emphysema and chronic bronchitis.

> Within 5 minutes of exposure, secondhand smoke makes it harder for the heart to pump blood. In about 25 minutes, fat and blood clots build up in the arteries, increasing the chance of a heart attack and stroke. After only 2 hours of exposure to secondhand smoke, the heart rate speeds up and leads to abnormal heart rhythms (which can be fatal). Even outdoor exposure to secondhand smoke presents health risks. (Hahn, et al. 2012)

There is technically no safe level of exposure to secondhand smoke. This adds to the many other important reasons why college officials and cohorts on campuses are starting tobacco-bans. Health and safety of the students is of utmost importance.

There are two different forms of smoke that come from burning tobacco that comprise secondhand smoke. Smoke that is emitted from the lighted end of a cigarette, pipe, or cigar is called Sidestream Smoke. The smoke that is exhaled by the smoker is called Mainstream Smoke. Although one may consider these the same, since they can both be considered a kind of secondhand smoke, they differ from each other. Sidestream Smoke has higher concentrations of carcinogens, which are cancer causing agents, and is more toxic than mainstream smoke. Sidestream smoke also has smaller particles than mainstream smoke, which

means that the particles are able to make their way into the lungs and the body's cells more easily.

Although secondhand smoke can be thought of as an easy thing to ignore or avoid, simply by walking away from the smoker or moving away from them in any manner, it is not as easy as it seems at times. When walking to class, students may encounter another student who is walking right in front of them, with a lit cigarette. In this case it is seemingly difficult to avoid this secondhand smoke exposure if the two students are going in the same direction, and a different route is unavoidable. Another unavoidable situation that a college student may encounter on campus is if there are a group of smokers in a condensed area, and their volume of smoke is so large that it is travelling farther than the student had originally expected. This still counts as passive smoking and being exposed to secondhand smoke. Some smokers may even smoke close to buildings and entryways of classrooms, causing the smoke to creep in to the building and affect those who are in class or in the offices of the buildings.

There are many situations in which a student or faculty member on a college campus may be exposed to cigarette smoke. Most of these situations are to no choice of their own, and are being dangerously exposed to the carcinogens in the smoke without consent. Secondhand smoke exposure is a very serious problem, and should be avoided at all costs. According to the American Cancer

Association, secondhand smoke can cause harm in many ways, and reports that each year in the United States alone, it is responsible for an estimated 42,000 deaths from heart disease in people who are current non-smokers. Secondhand smoke also causes 3,400 lung cancer deaths in non-smoking adults, and worsens asthma-related problems in up to 1 million asthmatic children each year. The American Cancer Society also estimates that in the United States, the costs of extra medical care, illness, and death caused by secondhand smoke are over $10 billion per year.

Since 1964, 34 separate US Surgeon General's reports have been written to make the public aware of the health issues linked to tobacco and secondhand smoke. The ongoing research used in these reports still supports the fact that tobacco and secondhand smoke are linked to serious health problems that could be prevented. Among many important facts about what exposure to cigarette smoke can do to a person, of the most important fact that is stated reads, "There is no safe level of exposure to secondhand smoke, any exposure is harmful". It is clear that cigarette smoke is not only dangerous to the smoker themselves, but all of those surrounding them who have the chance of being exposed to their smoke, as well.

Another reason that many universities may have considered the tobacco free policies is for the overall concern of beauty and aesthetics of the campus.

Although smoking is an unhealthy habit, many smokers also adopt habits such as leaving cigarettes around, not disposing of them in designated areas, and leaving it to other people to clean them up. Having to accommodate smokers by providing designated areas for them to smoke may prove to be costly. The maintenance involved in these areas, as well as funds for keeping these areas clean, could be seen as better spent in other areas such as community health awareness and the overall health of the student body. Currently, universities may have things such as designated smoking areas in which there are benches, or gazebo-like structures that are a gathering place for smokers. These are meant for keeping the smokers in one area together while they are smoking, in order to encourage them not to smoke in other areas throughout the campus. Unfortunately, many smokers are taking it upon themselves to smoke wherever they want throughout the campus, exposing other students and faculty to the toxic secondhand smoke that they are giving off. The designated smoking areas are a seemingly positive idea, however the feasibility of these structures and areas is very little if they are not used for what they are intended for.

Smoking behavior is common on college campuses. According to Piasecki and colleagues, authors of, *Self-Monitored Motives for Smoking Among College Students*, approximately 37% of full-time college students report using cigarettes in the past year, and 24% report smoking in the past 30 days. Most students who

smoke are light smokers, meaning that among students smoking in the past 30 days, approximately 70% of them smoked fewer than 10 cigarettes per day. Approximately 40% of college smokers smoke less than daily. This can be a dangerous habit, especially during this time in a person's life. College is a time in which people are making the decisions and creating the habits that will likely stick with them throughout their life. During this time, many students begin smoking, quit, or progress toward stable, dependent smoking (Piasecki et al. 2007). There are many reasons why people begin smoking. Society has a large influence on the smoker, according to the research of Shiffman and Paty during their 2006 research. Fledgling smokers are presumed to smoke in circumscribed settings to attain specific psychological benefits of smoking, such as social enhancement, anxiety reduction, and stimulation. With greater exposure, physiological adaptations to nicotine and associative learning mechanisms are presumed to erode stimulus control, leading to a dependent state in which smoking becomes routinized and self-reinforcing, with cues signaling nicotine deprivation sufficient to trigger smoking.

Those who do not smoke lead generally healthier overall lifestyles. Although few studies have examined associations between college students and stress and negative effects in terms of smoking initiation and relapse, Viktoriya Magid and colleagues, authors of, *Negative Affect, Stress, and Smoking in College*

Students: Unique Associations Independent of Alcohol and Marijuana Use, have studied the subject of stress in smoking college students. It has been reported that daily smokers compared to non-daily smokers were more likely to cite coping with negative affect as a reason for smoking. Smoking to alleviate distress is a common reason for many college smokers, as well as that smoking cigarettes was viewed as a nonverbal signal of stress, presumably with the goal of obtaining social support.

Unfortunately, college smoking often occurs in the context of other substance use (Magid, et al. 2009). This presents a challenge for studies of college smoking because use of other drugs, most commonly alcohol and marijuana, has been linked to negative affect and stress. Because of this, prior studies have not adequately addressed this issue, and thus, it is unclear if negative affect and stress are uniquely associated with college cigarette smoking above and beyond other substance abuse. In studies that have been controlled for alcohol and marijuana use, results have been consistent with previous research. Measures of depression, general emotional distress, general perceived stress, and subjective stress ratings were positively related to weekly cigarette use, with the strongest association between depression and smoking (Magid, et al. 2009). Objective stressful events, being both social as well as academic, were negatively related to cigarette use. This finding may appear counterintuitive at first, but it is important

to note that prior research suggests that smoking is primarily a social activity in college. It may be that students might withdraw when experiencing social or academic stress, meaning that they may have limited exposure to contexts where substance abuse normally occurs in college, such as parties. Cigarettes, alcohol, and marijuana all tend to be consumed during parties and social encounters in college, and the unique associations between negative affect and smoking may suggest that negative affect motivated smoking may occur in different contexts that do not involve other drug use.

Some may ask why it is so important that college-aged students be subjected to the new trend of smoking bans on campuses. There are many different reasons for the ban on college campuses. One of the reasons to consider is the average age of a college student. When beginning college most people are 18, which happens to be the legal age, in most states, at which you can purchase cigarettes. This is also a delicate time for many people as they are out living on their own for the first time without the supervision and reprimand of their parents. During the college years many people are developing their own lifestyle and deciding what kind of lives they would like to lead. This makes it an exceptionally vulnerable time for those experimenting with cigarettes or other tobacco products, especially taking into consideration the risk of being a lifetime user. Ellen J. Hahn and others suggest in the article, *Smoke-Free Laws and*

Smoking and Drinking Among College Students that "Because the college years often represent the first opportunity for real independence, they are a particularly important time in the development of healthy lifestyle behaviors." It is very important at this age that people set in place healthy habits in order to carry these habits on for the rest of their lives, similarly for adopting poor habits that will also stick with them. People who smoke in college are at risk for being long term users, which many believe could be prevented if they were to not begin smoking in their college years in the first place.

Although a general college campus is a wide-open space, it also represents "A setting where the importance of community health is emphasized," explains Ciecierski and colleagues in an article published in *Health Economics*. "Although tobacco use behaviors are often perceived as personal or individual issues, the college campus forms a specific environment that impacts not only the individual behaviors of students but also allows students to influence each other's behavioral choices, leading to shared health challenges and benefits for the entire campus." (Ciecierski, et al, 2011). Many students live on campus, and are around each other for most hours of the day. Among being at high risk for the initiation of a tobacco-related addiction, young adults attending college are also at risk for a challenging cessation route. "Recent research found that self-identified young adult social smokers may be a high-risk group with unique

challenges for cessation and may be less likely to quit smoking," (Butfler, Falling, & Ridner, 2012). Students have a high chance of influencing one another, especially those who live there together. College campuses are a place where many people are adopting new behaviors, and a new way of living as they are often now living on their own and without their parents for the first time.

Many people who are attending college are just now coming out of their comfort zone. Living with parents is something that most students have done for their previous 18 years, and they have had to abide by rules that were set in place for each household. Many students may have endured consequences if they had made the choice to start smoking while living under their parents' roof, but now, students are forced to set their own boundaries. This creates a vulnerable time for people in the aspect of decision making and experimentation. It has been found that long-term smoking behaviors are often established by young adults while in college (Caldeira, et al., 2012). Because students are more vulnerable to experimentation and trying new things, they may come across smoking cigarettes or using other tobacco products as something that they may want to try. Young adults attending college are at utmost risk for this addiction sticking with them for the rest of their lives.

With all of this talk of college campuses one may be concerned with how to initiate the policy and implement it in a public setting. Different places have

taken different approaches to the implementation of tobacco and smoke free policies. Different states also have suggestion strategies that they have open to the public to use in order to generate success with programs.

In a research article published by Ellen J. Hahn and her colleagues she points out three techniques for adopting tobacco free policies on college campuses. The university in focus for this article is University of Kentucky, located in Lexington, Kentucky. Oddly enough, Kentucky is a national leader in tobacco production. Due to the pro-tobacco climate the implementation of this policy at the University of Kentucky did not come quickly, nor did people adhere to the policy immediately. The main campus did not become tobacco-free until exactly one year after the academic medical center campus, which is adjacent to the main campus.

There was an approximately 12 month preparation phase prior to the initiation process in order to promote and develop a strong implementation plan using a 3-pronged 3-Ts approach. The three Ts of the plan were “tell, treat, and train”. The “tell” part of the plan was to integrate regular, consistent communications, because they are critical in creating an environment in which compliance was expected. It was also important in this plan that people’s addictions were treated and that help was available to all of those who were interested. “Given that policy change increases demand for treatment, providing

evidence-based tobacco treatment (treat) was an important hallmark of the policy strategy," (Hahn et al. 2011). The train aspect of the implementation process depended on well-trained administrators and faculty, as well as student leaders to remind violators of the policy, and to report them if it was necessary.

There was a 'task force' created in order to communicate and plan pieces of the implementation. "The Tobacco-free Campus Task Force, representing 28 sectors of the university community, including faculty, staff, and students, was appointed by the University President about 11 months before implementation of the campus-wide policy," (Hahn, et al. 2011). The task force involved at this school was rather large, involving over 200 people.

It is important to note that help was provided for people who were interested in quitting approximately 1-2 months before the policy was implemented. This is important because it is a vital key to success for people who currently smoke to have the tools in order to quit for the program to be successful. "Tobacco treatment services for employees and students were enhanced and available 30 to 60 days before the policy implementation date," (Hahn, et al. 2011). In order for people to be able to get used to the smoke free policy, it is best that there are tools for them to use to try and quit, or at least decrease their use and help to control their cravings.

Among the things involved in the 'tell' portion of the program were signs throughout campus that stated: "Welcome to our Tobacco Free Campus: A Healthy Place to Live, Work and Learn". The University of Kentucky faced problems throughout the program with the signs due to having to be evaluated and replaced due to vandalism. An email was also sent out to students and employees shortly before the policy went into effect from the University President. Employees were also invited to a 2-day program resource fair hosted by the College of Nursing's Tobacco Policy Research Program before the policy went into effect. In addition to other ways of the 'tell' part of their policy, in 2011, information about the tobacco-free policy and tobacco treatment services was added to the course content for UK 101, a class for incoming freshman that acquaints the student with campus during their first semester. Communication was a very important aspect for implementing this policy:

> Clear communication is particularly important when discussing policy boundaries. For example, the tobacco-free policy does not cover city-owned or state-owned sidewalks or streets, creating confusion when smokers congregate in areas that may seem to be on campus. The Task Force published the following statement related to these areas: "For those sidewalks adjacent to streets not controlled by the university, we ask that you respect the pedestrians and our efforts to provide a healthier

> environment by refraining from tobacco use on those sidewalks." This statement was integrated into the maps of policy boundaries. (Hahn et al. 2011)

It was important to be able to indicate where the boundaries lie, so that there are no arbitrary areas of campus or where the policy is implemented.

The second T aspect of the implementation strategy is to treat. In the research it has been stated that cessation strategies are most effective when there is a combination of medication, counseling, smoke-free policy, cigarette tax increases, and media education. The University of Kentucky followed the 2008 Update of the Clinical Practice Guidelines for Treating Tobacco Use and Dependence as a framework for enhancing and developing tobacco treatment programs for students and employees before and during implementation of the tobacco-free campus policy. It is also included that medications that were available for people participating in one of the cessation programs included nicotine replacement therapy, being in the form of patches plus gum or lozenges.

The third component to the implementation program is 'train'. Supervisors, faculty, administrators and student leaders needed to be educated on the policy and how to approach violators in order for the policy to be effective and remain effective on campus. "Given that compliance is everyone's business, employees or students were asked to politely but firmly remind the violator

about the policy and potential consequences, and ask them to extinguish or dispose of the tobacco product using the scripted messages," (Hahn et al. 2011). Consequences for the violator included being reported to the Dean of Students for violating the Student Code of Conduct, as well as disciplinary warning, reprimand or probation, social suspension, and disciplinary suspension or expulsion depending on the magnitude of the violation.

The outcomes and costs of the implementation of the tobacco-free program at the University of Kentucky were evaluated. Research suggests that quit attempts among students and employees increased after the campus-wide tobacco-free policy took effect. A total of 335 persons received tobacco dependence treatment during the 2-year period after the policy took effect, compared with only 33 in the year preceding the campus-wide policy (Hahn, et al. 2011). The study suggests that on average, about 3 tobacco users sought cessation services per month before the campus-wide policy, compared to 11 per month after policy implementation, reflecting a 4-fold increase in demand for tobacco treatment services.

Although Observed and reported smoking has declined since the policy took effect, evidence of cigarette butts is said to remain on campus. Early observations show promise in the effectiveness of the program, but evaluation data are not available yet.

With increased concern that smoking levels would still be above the 2010 Healthy Campus objective of 10.5% of the student population being smokers, the North Carolina Health and Wellness Trust Fund developed a multilevel intervention to accelerate the diffusion of tobacco-free policies on college campuses, including funding campus coordinators and coalitions to tailor activities to the campus environment at 64 colleges. To prevent tobacco initiation and improve quit rates, including among college students, the Centers for Disease Control and Prevention recommends that comprehensive tobacco control efforts that focus on the creation of tobacco-free spaces. During the time that this article was being researched and produced, in the year of 2006, comprehensive legislation to remove secondhand smoke exposure in bars, restaurants and workplaces had occurred in almost one-half of states. While the American College Health Association recommended the adoption of campus-wide tobacco-free policies that included outdoor areas, little data was available on the adoption of those policies, which is what this certain article ended up researching and discovering.

Joseph G Lee and his colleagues set out to research the adoption of 64 different college campuses that had developed a smoke free or tobacco-free policy between the years of 2006 and 2009. One of their first findings was that only a quarter of campuses prohibited smoking in all indoor areas. In 2002, less

than a third of large public universities had smoking restrictions in indoor areas and at building entrances.

In recognition of the higher prevalence of smoking and the marketing of tobacco products, the North Carolina Health and Wellness Trust Fund Commission funded the North Carolina Tobacco-Free Colleges Initiative. The HWTF receives tobacco settlement dollars, and a priority is improving health through the reduction and prevention of tobacco use. “The Tobacco-Free College Initiative’s four goals were (1) preventing tobacco initiation, (2) reducing exposure to secondhand smoke, (3) reducing health disparities and (4) promoting telephone cessation services (QuitlineNC)” (Lee, Goldstein, Kramer, Steiner, Ezzell, and Shah, 2010). The Tobacco-Free College Initiative received a total of $3 million in funding over 2 phases. This is something that may be of concern for other states, is the cost of the initiation of these programs, especially if extraneous funds are not present to supply the demand for the programs.

The approach that was taken in this case with North Carolina and the Tobacco-Free Campus Initiative was a multilevel intervention. The intervention was based on diffusion of innovation theory, which involves replacing confusing and uncertainty with information in order to accelerate the adoption of the policy. The five attributes of innovation that were used in this process were: (1) documenting advantages of the policy, (2) showing the compatibility of the policy

with existing campus environments, (3) providing examples to reduce the complexity of policy adoption and implementation, (4) allowing 'trialability' through examples from other campuses' experience and (5) illustrating the benefits by making effects observable to potential adopters (Lee, et al. 2010). This program recognized that diffusion of innovation theory shows how the innovation decision process is slowed or accelerated by knowledge, peer and expert persuasion, decisions by opinion leaders, implementation and confirmation.

26 health department or college/university programs were funded to promote comprehensive tobacco-free policies, policy compliance, telephone cessation services, and other cessation services. The 26 programs worked on or with 64 public and private colleges, universities and community colleges. The key outcome measure was a 100% tobacco-free policy, defined as a complete ban on tobacco use on all campus property or, for University of North Carolina System schools, the most protective policy allowed by law: a complete smoking ban within 100 feet of every building (Lee, et al. 2010). Complete bans on smoking were also included, even if it was just smoke-free policies rather than tobacco-free policies due to the health impact of smoking. The activities in the four different domains that were tracked included developing and strengthening campus coalitions, advocating for adoption of and compliance with campus

policies prohibiting tobacco use in on and off campus areas, the reach of the initiative to eight priority populations, and promoting the use of QuitlineNC.

Prior to the North Carolina Tobacco-Free Colleges Initiative, only 1 small college, with 687 students, had adopted a 100% tobacco-free policy. By the end of December 2009, 4 years into the Tobacco-Free Colleges Initiative, 33 North Carolina colleges and universities had 100% tobacco-free policies. The diffusion of policy adoption occurred more rapidly for campuses participating in both phases of the TFC Initiative compared to colleges that were only participating in one phase of the initiative, which had less rapid adoption of policies. “Non-funded campuses had the lowest levels of policy adoption,” (Lee, et al. 2010). Of those campuses that did not go 100% tobacco-free, programs reported that campuses adopted 27 designated non-smoking areas, 12 policies in off campus areas frequented by students, and 14 campus organization policies. Campuses also adopted 15 policies prohibiting tobacco industry sales/influence on campus, which were designed to limit college students’ exposure to tobacco industry marketing.

It is evident through this research that funding makes a large impact on the initiation and the success of programs in college and university campuses if there is funding involved. Many schools may not feel that they have the budget to run a program that would extensively and actively help those who smoke quit,

and to keep the program enforced. Although the research did not indicate their estimated cost to one program, and the cost per student that the programs affected, the overall budget being $3 million is quite abundant. However, spread across so many different schools, and taking into account the impact that the programs had on the health of the students some may see this as a very feasible option in the long run.

Attitude and behavior of the initiation of tobacco-free policies is an important thing to consider when implementing programs and policies. A study was conducted in Tennessee, the third largest tobacco producing state in the United States, after East Tennessee State University adopted a tobacco-free policy. The researchers felt that the university personnel were the most stable group on campus, therefore investigated their attitudes and behaviors towards the change. Although the university personnel only make up a portion of the campus population, their attitudes and feedback are still important because they will often be the force behind enforcing the program. However, it would still be important to reach out to the students on this campus to understand their attitudes as well, in order to get a comprehensive understanding of how all of campus is feeling towards the tobacco-free policy implementation.

The attitudes and behaviors of the university personnel were researched and recorded through an internet-based survey. All employees were invited to

participate in the survey, and 58% of those invited responded. It was found that 79% of the respondents favored the policy. It was also found that support for the policy was higher among females, administrators/professionals, faculty, and those affiliated with the College of Medicine (Mamudu, et al. 2012). While only 67 employees (5.6% of the sample) reported they have not complied with the policy, around 80% reported observing someone engaged in a non-compliance activity such as smoking or using chewing tobacco. This points to an obvious problem that some programs may run into, which is enforcing the policy and having ways of backing the policy up. If there are no ways to adequately reprimand the perpetrators, then the success of programs like this may be in danger. It was not stated in this study what kind of tactics were used to enforce the program, if there were any used at all.

The research from this study shows that the support for the tobacco-free campus policy was high across all categories of employees, including age, gender, race, employment status and school/college affiliation, but varied widely across smoking status. “While 61% of ever cigarette smokers and users of other tobacco products supported the policy, only 38% of current cigarette smokers and users of other tobacco products did,” (Mamudu, et al. 2012). The research indicated that the strongest support for the policy was among employees 60 years of age and older. 91% of people in this category were supporters of the new policy.

Moreover, the support for the policy was strongest among employees in the College of Nursing. 94% of those people who participated in this study who belonged to the College of Nursing supported the tobacco-free policy. These numbers point to a trend in that those who are involved on campus in health programs, or who are more versed in the subject of health and disease are more supportive of the tobacco-free policy. This could suggest that the more that a person knows about the adverse side effects of smoking and other tobacco use and its impact on a campus environment, the more supportive they may be of a tobacco ban.

In many studies, including those conducted by Ellen J. Hahn, Joseph L. Lee, and Hadii M. Mamudu, the most apparent determinant of opposition to a tobacco-free policy was smoking status. Current cigarette smokers were more likely to oppose the policy than those who have ever used any tobacco product even among educated populations. Additionally, it is the nonsmokers who generally support policies to establish smoke-free environments. Moreover, it is suggested that in such environments, implementing tobacco free policies and cessation programs concurrently could not only reduce tobacco use, incidence of smoking-attributable diseases, health care costs, and environmental problems such as littering, but also help to provide a strong foundation for eventual

development of smoke-free policies (Mamudu, et al. 2012).These studies show promising research for the future of tobacco-free policies on college campuses.

Although there are many positive aspects to the new trend of tobacco free policies on college campuses, there has also been negative feedback and backlash. One of the biggest complaints with not allowing tobacco products on these premises is that tobacco is indeed a legal substance for those who are of age. This age differs from state to state, being that Alabama, Alaska, New Jersey and Utah have a minimum age of 19 to purchase tobacco products, whereas the other 46 states have a legal age of 18 to purchase tobacco products. Whichever state a person is in, most college students are between the ages of 18-24, meaning that most college students are of the legal age to purchase and use tobacco products. College campuses and universities are getting around this by enforcing the ban as a policy that the school enforces, although it is still considered legal on public grounds. Many people have argued that the tobacco ban is taking away their rights, since they are not doing anything that is against the law.

Those who smoke would not only say that the policy is taking away their rights, but also that smoking is something that they require in their daily routine in order to function normally. This is another main concern in the process of initiating tobacco free policies. Those who smoke cigarettes or chew tobacco are

often addicted to appoint that they use them as coping mechanisms, or may even go through withdrawals that may cause anxiety if the person does not get their 'fix'. This is one of the main reasons that many schools have not only adopted smoke-free policies, in order to at least deter smokers from smoking all throughout the day, but also that they have enacted programs in order to help students and staff quit their habits. Schools are looking at this as a way to ease their transition into a smoke free or tobacco free lifestyle.

The central conflicting issue with smoke-free or tobacco-free policies thus far is compliance with the policy. Although in the study conducted by Mamudu and colleagues could not compare the employees' compliance with the policy and that of students, the results suggested that this issue is the main drawback of the policy. While employees' self-reports on non-compliance indicated that only a few have not complied with the policy, an overwhelming majority, across all categories, reported that they have observed others engaged in non-compliance. This is consistent with existing literature, suggesting the same problem in multiple campuses.

Similar to any other policy initiation, there will be grey areas that people will ask about. One of those grey areas that has recently made a large impact in the tobacco industry are electronic cigarettes. Electronic cigarettes mimic the style of original cigarettes, but produce a vapor, instead of smoke. "Electronic

cigarettes, or e-cigarettes, are electronic nicotine delivery devices that were developed to closely approximate the sensory experience of smoking conventional cigarettes." (Stufin, et al., 2013) There are different designs made between manufacturers, but most electronic cigarettes consist of the same basic components. They contain a battery, an airflow sensor, a vaporizer, and a nicotine cartridge, which are all contained within a cigarette-like tube. These tobacco products are growing in popularity, and have become somewhat of a novelty.

Tobacco companies have a big hand in electronic cigarette sales and marketing. *Blu Ecigs* were purchased by Lorillard, marking the first entry of a major tobacco company into the electronic cigarette market. It appears that as cigarette smoking has continued to decline, major tobacco companies are diversifying through the introduction of electronic cigarettes, among other novel products.

There is currently very little information on the health effects of electronic cigarettes in comparison to traditional cigarettes. Due to the fact that electronic cigarettes are a relatively recent phenomenon, there is no research present on the long-term health effects of their use and consumption. However, there has been research done on the short-term effects of electronic cigarettes. Research on the short-term effects (up to one day of use) suggests that smoking an e-

cigarette does not expose the smoker to detectable levels of respiratory carbon monoxide (Sutfin, et al., 2013). It was also found that following a 5 minute period of e-cigarette use, participants had increased, albeit small, lung flow resistance. Longer periods of use could be associated with greater deficiencies, but more research is still needed in order to verify this statement. While current evidence suggests electronic cigarettes pose fewer health risks than conventional cigarettes for the individual user, population-level effects must also be considered.

Because the population-level effects are not yet known, electronic cigarettes may be considered a grey area in tobacco-free policy governing. Since they are indeed a nicotine-containing product, they are a tobacco product. So for those policies that are strictly tobacco-free, they may be considered. However, if the policy simply states that it is smoke-free then some may ask where electronic cigarettes lie. They technically put off a vapor, instead of smoke. Since there is no smoke being emitted, then one may be led to thinking that there is no harm that can be done if others breathe in the vapor. However, that cannot be stated, since there is no long term research that has been done on electronic cigarettes and their effect on the community as a whole.

From a public health perspective, the extent to which e-cigarettes may serve as a starter product for nonusers of tobacco is also a concern. To hinder

marketing to children, the U.S. Food and Drug Administration recently banned characterizing flavors in cigarettes. By flavors, the F.D.A. means any distinguishable taste or aroma other than tobacco or menthol that may be attractive in any other way, making cigarettes more enticing. While the FDA is responsible for regulating e-cigarettes under the Family Smoking Prevention and Tobacco Control Act of 2009, rules for electronic cigarettes are not in place yet (Sutfin et al. 2013). This means that they can, and are, being sold in a variety of candy and fruit flavors. These flavors include strawberry, mint, and chocolate. There are also currently no laws or regulations on who can purchase these products, meaning that minors are allowed to purchase electronic cigarettes in some states without any adult supervision. Such flavors, combined with marketing campaigns that promote e-cigarettes as being green, or healthy, and a lack of tobacco taxation may particularly appeal to adolescents and young adults. However, few studies have assessed prevalence of electronic cigarette use and factors associated with use among young adults.

In terms of tobacco use, young adulthood is a critical period for smoking, often marked by escalation or late-initiation (Sutfin et al. 2013). From an epidemiological standpoint it is noteworthy that college students are often drawn to novel products and have historically been at the forefront of societal changes in substance use that later materialize within the general population.

Therefore, college students may be drawn to e-cigarettes due, at least in part, to their novelty. Because the facts of e-cigarettes are not well-enough researched to reach a common ground of knowledge, it would be the safest route to include them in the ban of tobacco products.

Prevention is one of the most important aspects in retaining the gains that have happened through any of the smoking ban implementations. Prevention of the initial experimenting is very important in not creating the addictive habit in the first place, meaning that it is essential to keep the person healthy, as well as the campus overall when thinking in terms of public health. “Preventing or delaying the use of tobacco, alcohol, and illicit drugs and the misuse of controlled prescription drugs at least until the critical areas of the human brain associated with addiction are fully developed is an essential prevention strategy” (Richter & Foster, 2013). The human brain fully develops sometime in the middle of the third decade of life. This is well passed the stage of life that most people attend college (18-23 years), meaning that it is essential for people who are still in college to not create the addicting habits in order to prevent the brain damage. In their article on closing the gaps in comprehensive addiction care, Richter and Foster pose that another prevention strategy that may be useful would involve raising the legal age to purchase tobacco products to 21 years to conform to the legal age to purchase alcohol. Their thinking is that this change would send a

clear message that smoking by young people is harmful and would reduce their access to tobacco products during a critical period of brain development.

Research shows that comprehensive smoke-free laws in the surrounding community may reduce smoking rates among college students who live, work, and recreate there, particularly after the laws are well established (Hahn, et al. 2010). Smoke-free laws have shown to have positive results in the cessation of tobacco use, as well as a decreased risk for secondhand smoke exposure. "Smoke-free legislation is one of the most effective interventions to reduce cigarette consumption and promote quitting among adults," (Hahn et. Al, 2010). However it is unclear whether this statement is targeted for adults overall, or particularly for adults between the ages of 18 and 24. Studies do show, however that by being in a smoke-free environment people are less likely to smoke, or start smoking. The implementation process is still new, and although there is still somewhat little research out there for how the processes are going, they are showing positive results for the most part.

> Individuals who work in environments that are 100% smoke free have a lower smoking prevalence and lower daily consumption of cigarettes than do individuals who work in environments with minimal smoking restrictions or with no restrictions at all. Lower smoking rates are also reported by students living in college residence halls with no smoking

> policies than by their peers living in residence halls without such policies. (Loukas, Garcia, Gottileb, 2006).

Making campuses smoke-free or even tobacco free are a step towards a healthier direction in terms of addiction and substance abuse on amongst college students. Creating a tobacco free environment is not only working towards making the smokers themselves healthier, by encouraging them to use less, or even quit, but it also creates a much healthier environment for non-smokers as well.

The American Cancer Society suggests that the only way to fully protect non-smokers from exposure to secondhand smoke is to prevent all smoking in that facility, space, or grounds. Separating smokers from non-smokers by use of designated smoking areas, cleaning the air, and ventilating buildings cannot keep non-smokers from being exposed to secondhand smoke. If smoking is allowed in an area that non-smokers frequent, then it is likely that they would encounter a smoker. Occupational Safety and Health Administration (OSHA) also recognizes that there are no known safe levels of secondhand smoke, and recommend that exposures be reduced to the lowest possible levels. For the safest and healthiest environment, many college campuses have taken the initiative to become tobacco-free. The cause for restricting tobacco on campus is not only to benefit the non-smokers, it is also to benefit those who smoke, and to encourage them to use tobacco-products less often, or even quit. It would be to everyone's

benefit to be engorged in an environment that is free of toxins and chemicals. There are reasons for discontent, such as the legal right to smoke cigarettes being taken away, or that smokers may go through withdrawals. Implementing programs that help to alleviate these problems, such as including cessation aides, or counseling are fit to suit everyone, and maintain a neutral ground where health and learning are of utmost importance.

With the trend in tobacco-free college campuses comes problems and hiccups in the policy implementation process. However, with more campuses joining in on the healthy changes, more colleges will learn what works well, and what does not in order to keep the policies in place, and enforce them. Overall, the surge in a strive towards tobacco-free college campuses is a step in a healthier direction for all of those involved in the process, so long as the programs are well balanced, and well thought out.

Although many Americans continue to use tobacco products today, and continue to suffer the health consequences, stopping the addiction in its track and preventing new users from starting can be very efficient ways to decrease tobacco use. With research showing that those who are exposed to tobacco-free environments are less likely to use, tobacco-free campuses are a step towards a smoke and tobacco-free future.

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