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Angelito dela Cruz

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Evaluation of a Smoke and Tobacco-Free Initiative in a Student Wellness Center

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ABSTRACT

Background

Tobacco use remains a leading cause of preventable disease and death in the U.S. Nearly all tobacco users begin using tobacco by 26 years of age. In a Southwest university, 9% of students smoke tobacco. This project evaluated a university-wide tobacco-free initiative by reviewing students' use of tobacco cessation services following a tobacco-free policy implementation. This project also reviewed students' tobacco use following campus tobacco cessation counseling.

Methods

A smoke and tobacco-free campus policy was implemented in August 2015. The Student Wellness Center provided free tobacco cessation services to all students. Each tobacco cessation counseling session lasted a minimum of 30 minutes. Records of students who used the tobacco cessation services 5 months before and after the tobacco-free policy implementation were reviewed.

Results

Students did not use the campus tobacco cessation counseling services prior to the tobacco-free policy implementation. Following the policy implementation, 7 students used the services. Among these students, 6 had a decrease in their tobacco use after using the campus tobacco cessation services.

Conclusion

The number of students using the campus tobacco cessation services increased after the implementation of a tobacco-free campus policy. Tobacco cessation counseling, with or without pharmacotherapy, is effective overall in helping students decrease or quit their tobacco use. Student wellness centers are important source of student assistance in tobacco cessation.

INTRODUCTION

Tobacco smoke contains more than 7,000 chemicals, some of which contribute to tobacco dependence.[1] However, nicotine is the major chemical component in tobacco that is responsible for addiction.[2] Nicotine can be readily absorbed through the mucosa of the mouth, nose, and lungs. It can also be readily absorbed through the skin.[2] With tobacco smoking, nicotine reaches the brain in 10 seconds.[1] Once in the brain, nicotine stimulates the release of the neurotransmitter dopamine, which is primarily responsible for the positive reinforcing aspects of nicotine addiction.[2] The effects of nicotine exposure on the brain give rise to dependence and withdrawal responses.[1] Nicotine addiction is the fundamental reason that individuals persist in using tobacco products, and this persistent use contributes to many diseases.[2]

Tobacco use affects nearly every organ of the body.[3] Tobacco smoke contains at least 70 chemical carcinogens that can cause damage to a cell's deoxyribonucleic acid leading to gene mutations and cancer.[1] Tobacco use can cause the following cancers: bladder cancer, cervical cancer, colorectal cancer, esophageal cancer, renal cancer, laryngeal cancer, acute myeloid leukemia, hepatocellular carcinoma, lung cancer, oropharyngeal cancer, pancreatic cancer, and stomach cancer.[3] Exposure to tobacco smoke leads to an increase in endothelial dysfunction and inflammation causing cardiovascular diseases, such as coronary heart disease, abdominal aortic aneurysm, peripheral vascular disease, and cerebrovascular disease.[1] Chronic exposure to tobacco smoke also leads to airway inflammation, impaired mucociliary clearance, and increased bronchial hyperresponsiveness causing respiratory diseases, such as asthma and chronic obstructive pulmonary disease.[3]

Evidence for problem

Tobacco use remains a leading cause of preventable disease and death in the United States (U.S.).[1] Approximately 480,000 people in the U.S. die from tobacco-related diseases each year. Additionally, more than 16 million people in the U.S. live with a tobacco-related disease.[3] Tobacco smoking costs the U.S. \$193 billion in health care costs and lost productivity each year.[4] In the U.S., 18.7% of adults aged 18 to 24 smoke cigarettes.[5] In California, 13.3% of adults aged 18 to 24 smoke cigarettes.[6] Nearly all tobacco users begin using tobacco by 26 years of age.[3] Therefore, college and university campuses can be a critical target for tobacco use prevention and cessation efforts. The American College Health Association has adopted a tobacco-free policy and encourages colleges and universities to become tobacco-free learning environments.[7]

Based on a student survey conducted in a Southwest university, 9% of students smoke tobacco. This university has more than 8,000 undergraduate and graduate students. The Student Wellness Department, which includes the Student Wellness Center, Student Health Center, and Counseling Center, provides a comprehensive and integrated range of wellness services to students on campus. The university did not have a campus tobacco-free policy in place. Moreover, the tobacco policy prohibiting members of the university community from using any tobacco products within 20 feet of any openings to university buildings was not enforced. As a result, students were using tobacco near building openings, exposing others to secondhand smoke.

This project evaluated a university-wide smoke and tobacco-free initiative in a student wellness center by reviewing students' use of campus tobacco cessation counseling services after the implementation of a smoke and tobacco-free campus policy.

This project also reviewed students' tobacco use after using the campus tobacco cessation counseling services. The goal was to increase the number of students using the campus tobacco cessation services and increase the number of students who quit tobacco use.

Evidence-based intervention

The smoke and tobacco-free campus initiative promoted the implementation of a smoke and tobacco-free policy and tobacco cessation programs in a Southwest university. The smoke and tobacco-free policy prohibited the use, sale, distribution, and promotion of any smoking and tobacco products anywhere on campus property at all times. In conjunction to the tobacco-free policy implementation, campus tobacco cessation services including individual counseling and pharmacotherapy interventions were offered to students to assist them in quitting tobacco use.

Studies have shown the effects of smoke and tobacco-free policies on the prevalence of smoking and tobacco use on campus. University smoke-free policies significantly decreased student smoking prevalence from 16.5% to 12.8% after 1 year and from 9.5% to 7% after 3 years.[8,9] Moreover, totally smoke-free workplaces were associated with reductions in prevalence of smoking of 3.8% and 3.1 fewer cigarettes smoked per day per continuing smoker.[10]

Studies have also shown the effects of tobacco cessation interventions on individuals who use tobacco. Individual counselling from a healthcare personnel resulted in a relative risk for tobacco cessation of 1.39.[11] Individual counseling, pharmacotherapy, and multiple intervention programs aimed at tobacco cessation increased cessation rates with odds ratios for tobacco cessation of 1.96, 1.98, and 1.55

respectively.[12] Furthermore, combination pharmacotherapy and behavioral support resulted in a relative risk for tobacco cessation of 1.82.[13]

METHODS

The Smoking and Tobacco-free Steering Committee, composed of university students and employees, was formed to plan and implement the smoke and tobacco-free campus initiative in a Southwest university. The Education and Smoking Cessation Subcommittee was responsible for educating the campus community and enhancing the campus cessation resources. The Communication Subcommittee was responsible for the marketing and communication of the initiative. The Environmental Management and Enforcement Subcommittee was responsible for enforcement strategies.

In preparation for the implementation of the smoke and tobacco-free campus policy, the university started disseminating information via campus events in October 2014. The university also disseminated information about the tobacco-free initiative to all university students and employees via e-mail announcements. “Breathe Easy” signs were posted throughout campus and on the university website. A smoking and tobacco-free website was created to educate the campus community about the risks associated with tobacco use. In addition to educational information, the website provided information about the free smoking and tobacco cessation resources available to students and employees. The Student Wellness Center (SWC) on campus provided free smoking and tobacco cessation services to all students. Students scheduled appointments in person, by phone, or online for individualized tobacco cessation counseling. There was no limitation to the number of counseling sessions each student received. Each tobacco cessation counseling session lasted a minimum of 30 minutes. Students who were also interested in

pharmacotherapy for tobacco cessation were referred to the Student Health Center.

In August 2015, the smoke and tobacco-free campus policy was implemented. In January 2016, data collection was done. Data on the number of students who received smoking and tobacco cessation counseling, including the number of counseling sessions each student received, 5 months before and after the tobacco-free policy implementation were reviewed. Student level, referral source, tobacco use, and nicotine dependence were collected at the initial counseling visit. Tobacco use and other methods used by students to quit tobacco use were collected at the last counseling visit. This project received a written approval from the university's Institutional Review Board.

The Fagerstrom Tolerance Questionnaire (FTQ) was used to measure students' nicotine dependence. FTQ is a validated tool that correlates with measures of nicotine dependence such as nicotine, carbon monoxide, and cotinine levels.[14] Scores on this tool range from 0 to 11, with lower scores suggesting low dependence and higher scores suggesting high dependence. Individuals with a score of 7 or higher are considered highly dependent on nicotine.[15]

RESULTS

Students did not use the campus tobacco cessation counseling services prior to the tobacco-free policy implementation. Over a 5-month period following the tobacco-free policy implementation, seven students used the campus tobacco cessation counseling services. Table 1 shows the characteristics of students who used the campus tobacco cessation services. All students, except for the fourth student, were at the graduate level. Six students used cigarettes and one student used tobacco dip. Students were either self-referred or referred from the other campus centers to SWC. The second and sixth students

had the highest nicotine dependence based on their FTQ score. The seventh student had the lowest FTQ score. Students' counseling visits ranged from two to nine visits with the first student having the most number of visits to SWC for tobacco cessation counseling.

Table 1. Student characteristics

Student	Level	Referral source	Tobacco products	FTQ score	Counseling visits
1	Graduate	Self-referral	Cigarettes	3	9
2	Graduate	SHC	Cigarettes	7	2
3	Graduate	SHC	Cigarettes	5	2
4	Undergraduate	Self-referral	Cigarettes	5	4
5	Graduate	SHC	Cigarettes	2	3
6	Graduate	SHC	Cigarettes	7	3
7	Graduate	Counseling Center	Dip	0	6

SHC, Student Health Center; FTQ, Fagerstrom Tolerance Questionnaire

Figure 1 shows students' cigarette use before and after receiving tobacco cessation counseling in SWC. Both the second and sixth students had the highest daily cigarette use before using the counseling services. All students, except for the second student, had a decrease in their cigarette use after using the counseling services.

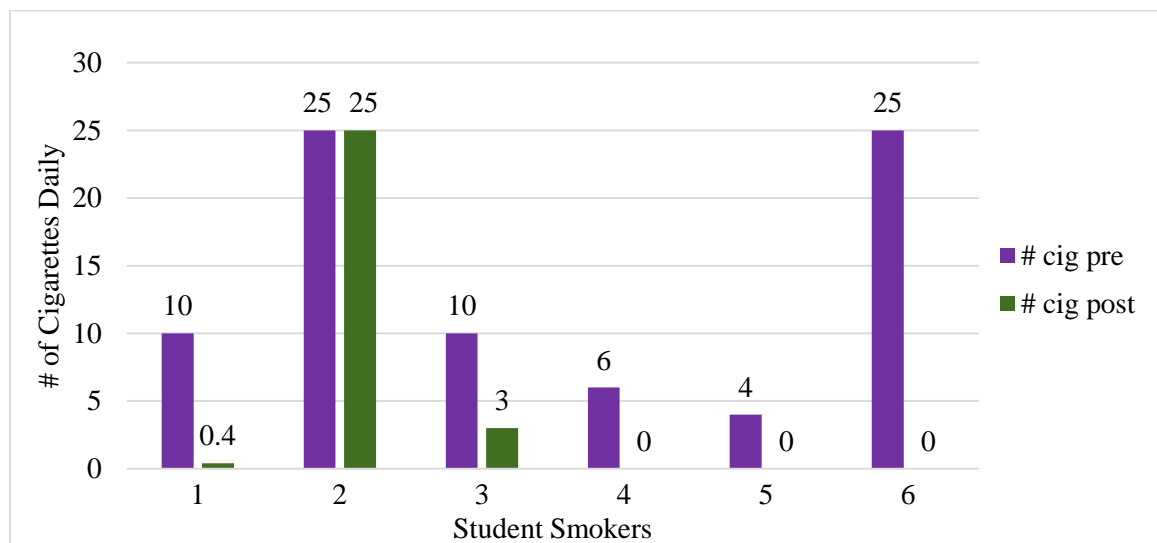


Figure 1. Student cigarette use pre and post tobacco cessation counseling in Student Wellness Center.

Figure 2 shows students' percent reduction in cigarette use following their use of the campus tobacco cessation counseling services. The second student had no change in cigarette use after counseling, resulting in a 0% reduction. The fourth, fifth, and sixth students stopped using cigarettes after counseling, resulting in a 100% reduction in their cigarette use. Only four students used pharmacotherapy, including bupropion and nicotine replacement therapy (NRT).

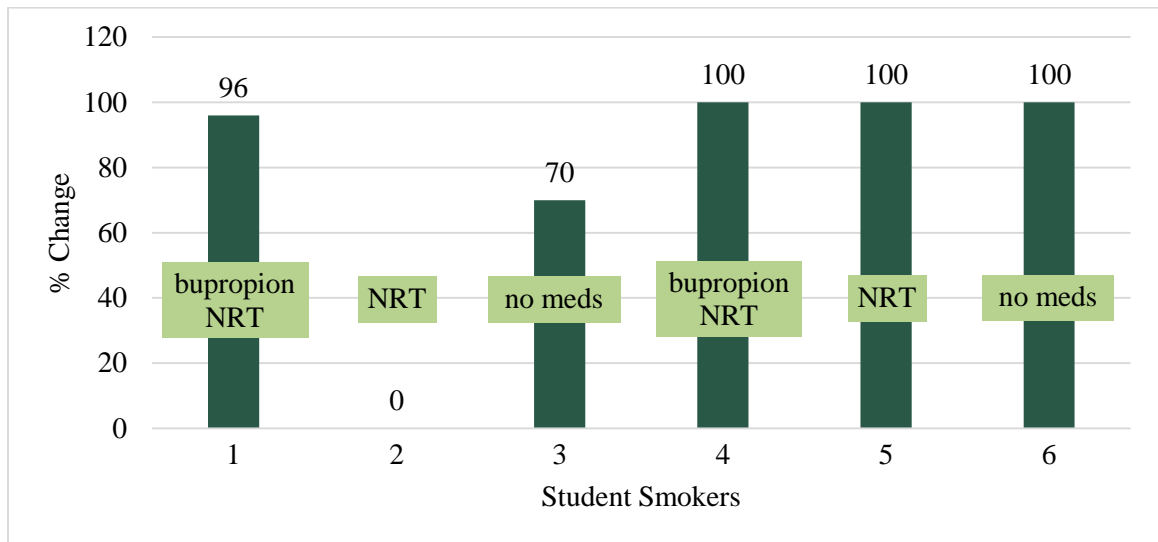


Figure 2. Percent reduction in student cigarette use following tobacco cessation counseling.

The seventh student who used one tin of tobacco dip daily prior to receiving tobacco cessation counseling stopped using tobacco dip after receiving counseling. This student had a 100% reduction in tobacco use. This student did not use pharmacotherapy.

DISCUSSION

The implementation of a smoke and tobacco-free initiative in a Southwest university resulted in seven students using the campus tobacco cessation counseling services over a 5-month period. This result is similar to other university reports showing little student demand for existing tobacco cessation programs. Among universities with

tobacco cessation programs, 88% had no waiting list for the programs they offered. Furthermore, 6.2% had discontinued their smoking cessation programs because of a lack of student demand.[16] This is possibly due to university students in the precontemplation or contemplation stage of change who are refractory to tobacco cessation programs.[17] However, half of student smokers had attempted to quit smoking in the past year.[16] In spite of their interest in quitting smoking, students do not appear to be using existing campus resources.

The seventh student scored 0 on FTQ. This score suggests that this student had no nicotine dependence. However, this student score is most likely inaccurate. To assess for nicotine dependence, FTQ primarily asks about an individual's cigarette use and smoking habit. The student who scored 0 on FTQ used tobacco dip which is a smokeless tobacco product. A different validated tool could better assess the nicotine dependence of individuals who use tobacco products other than cigarettes.

Among the seven university students who received tobacco cessation counseling, 86% had a decrease in tobacco use and 43% reported quitting tobacco use after counseling. The effectiveness of tobacco cessation counseling increases with longer or more treatment sessions.[18] The recommendation is to offer four or more counseling sessions if possible. Furthermore, pharmacotherapy adds to the effectiveness of counseling.[18] The first, fourth, and seventh students all had at least four counseling sessions. Among these three students, only the first and fourth students used pharmacotherapy. These three students had a significant decrease in tobacco use, with the fourth and seventh students having a 100% reduction. The second student with no change in tobacco use had the least number of tobacco cessation counseling visit. This student

used nicotine replacement therapy but also had a high level of nicotine dependence.

Students' nicotine dependence and motivation to quit tobacco use are important factors to be considered when providing individualized tobacco cessation assistance to students.

The economic benefits of providing campus tobacco cessation counseling services to students include the savings in medical expenditures attributable to smoking. Tobacco use accounts for \$2,056 in excess medical expenditures per smoker per year. Moreover, the smoking-attributable medical expenditures of former smokers are about 70% lower than current smokers.[19]

CONCLUSION

The number of students using the campus tobacco cessation services increased after the implementation of a smoke and tobacco-free campus policy. Campus tobacco cessation counseling, with or without pharmacotherapy, is effective overall in helping students decrease or quit their tobacco use. The university years are a critical period in the development of long-term tobacco use by students. Because of this, university campuses should be targeted for tobacco use prevention and cessation efforts to promote student health by implementing a smoke and tobacco-free campus initiative. The tobacco-free initiative can decrease the prevalence of tobacco use and protect nonsmokers from exposure to secondhand smoke on campus by discouraging tobacco use initiation and encouraging tobacco users to quit. Student wellness centers are important source of student assistance in tobacco cessation, not just by providing tobacco cessation programs but also by motivating students to take advantage of the programs. Student wellness centers need to further motivate students who use tobacco to utilize campus tobacco cessation services.

There are some limitations to this project. Data were only collected over 5 months after the tobacco-free policy implementation. Student smoking prevalence after the tobacco-free policy implementation was also not measured. Collecting data over a longer period of time and monitoring student smoking prevalence are recommended to truly understand the impact of a smoke and tobacco-free campus initiative.

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What is already known on this subject?

University tobacco-free policies can decrease student smoking prevalence.[8,9] Tobacco cessation interventions, including individual counseling, pharmacotherapy, and combination pharmacotherapy and behavioral support, can increase cessation rates among individuals who use tobacco.[11-13] Data are still sparse on the effects of implementing a tobacco-free campus policy on students' use of campus tobacco cessation services.

What this study adds?

This project supported the effectiveness of evidence-based tobacco cessation interventions in increasing tobacco cessation rates. The implementation of a tobacco-free campus policy increased students' use of campus tobacco cessation services.

Policy implications

As seen in this project, implementing a tobacco-free campus policy can promote student health by increasing students' use of campus tobacco cessation services and decreasing students' tobacco use. Tobacco-free campus policies can decrease the prevalence of tobacco use and protect nonsmokers from exposure to secondhand smoke on university campuses.

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