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Evaluation of Smoking Prevalence, Secondhand Smoke Exposure, and Perceptions of Smoking Cessation among Respiratory Therapy Students in Saudi Arabia

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By

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Under the supervision of

Douglas S. Gardenhire, EdD, RRT, RRT-NPS, FAARC

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Evaluation of Smoking Prevalence, Secondhand Smoke Exposure, and Perceptions of Smoking Cessation among Respiratory Therapy Students in Saudi Arabia

By Abdulrahman Alharbi, BSRT

Under the supervision of Douglas S. Gardenhire, Ed.D, RRT-NPS, FAARC

Abstract

Background: Tobacco use is a global health concern that results in millions of deaths annually. This study focuses on Saudi Arabian respiratory therapy students in the Western region to assess smoking prevalence, secondhand smoke exposure, smoking cessation education, and perceptions of smoking cessation. **Purpose**: The purpose of this study is to evaluate the smoking prevalence among Saudi respiratory therapy students in the Western region, their exposure to secondhand smoke, smoking cessation education, and their perceptions of the positive effects of quitting smoking. **Methods**: Using a descriptive exploratory methodology, this study collected data on smoking prevalence, secondhand smoke exposure, and attempts to quit smoking among students. The Global Health Professional Students Survey (GHPSS) was employed as the survey instrument. **Results**: The results indicate that the prevalence of cigarette smoking among male respiratory therapy students was 52%, while it was lower among females at 3.7%. The study also revealed high rates of exposure to secondhand smoke in public settings (52%), whereas exposure at home was relatively low (28%). This emphasizes the importance of enforcing smoking bans in public spaces to safeguard individuals from the effects of secondhand smoke. **Conclusion**: This study sheds light on the smoking prevalence, secondhand smoke exposure, smoking cessation education, and perceptions of smoking cessation among Saudi Arabian respiratory therapy students in the Western region. The findings highlight the need for targeted interventions to address smoking behaviors among students. Additionally, the study reveals the importance of creating smoke-free environments, as the rates of exposure to secondhand smoke in public settings were alarmingly high.

ACCEPTANCE

This thesis, EVALUATION OF SMOKING PREVALENCE, SECONDHAND SMOKE EXPOSURE, AND PERCEPTIONS OF SMOKING CESSATION AMONG RESPIRATORY THERAPY STUDENTS IN SAUDI ARABIA
, by Abdulrahman Alharbi, 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 degree of Master of Science in the College 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

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Date: 7/14/2023

DEDICATION

I sincerely dedicate this thesis to Allah, who has been my source of direction, motivation, inspiration, wisdom, and comprehension. I also dedicate my work to my parents, whose constant encouragement has served as the foundation for my path. I am forever grateful to my parents for the unconditional love and support they have shown me through the ups and downs of my life.

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I want to express my sincere gratitude to you all.

AUTHOR'S STATEMENT

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CHAPTER I

Introduction

Tobacco kills approximately 8 million people each year. Tobacco use accounts for more than seven million deaths, while nonsmokers inhaling secondhand smoke accounts for 1.2 million (Tobacco, n.d.). Tobacco use directly contributes to the development of illness and weakness, in addition to causing harm to virtually every organ in the body.

Another complication that is directly related to smoking is called chronic obstructive pulmonary disease (COPD), which includes emphysema and chronic bronchitis. Chronic obstructive pulmonary disease (COPD) is characterized by persistent irreversible airflow limitation that is typically progressive and associated with an enhanced chronic inflammatory response in the airways and the lung to toxic particles or gases, as stated in the consensus report commissioned by the Global Initiative for Chronic Obstructive Lung Disease (Agusti & Vogelmeier, 2021). Putting an end to one's smoking habit is the single most significant step one can take to reduce the risk of developing COPD. Patients who are currently being treated for COPD should be assessed to determine if they are interested in quitting smoking and, if they are, they should be provided guidance on how to do so. The 2021 GOLD recommendations suggest that in comparison to self-initiated strategies, requesting the assistance of a healthcare professional, even for brief periods of time, significantly improves stop rates (Agusti & Vogelmeier, 2021).This is true even if assistance is only sought for a little amount of time.

According to the CDC's (Health Effects | Smoking and Tobacco Use | n.d.), rheumatoid arthritis is only one of numerous autoimmune conditions that can be made worse by tobacco use. In spite of the widespread awareness of the risks associated with smoking, the Centers for Disease Control and Prevention (CDC) estimates that over 16 million people in the United States

are currently coping with a smoking-related ailment. According to research published by the Centers for Disease Control and Prevention (CDC) (Health Effects | Smoking and Tobacco Use | n.d.), for every smoking-related mortality, at least 30 people are impacted by a serious smoking-related disease.

In Saudi Arabia, anti-smoking clinics have been created by the Ministry of Health in various parts of the country. The goal of these clinics is to provide therapeutic and educational services to smokers and non-smokers, as well as to raise knowledge of anti-smoking law deliver counseling and health education and reduce the overall number of smokers and passive smokers. Consequently, healthcare providers and students should be well-informed regarding smoking cessation approaches and how to deal with patients in enhancing smoking cessation in Saudi Arabia.

Efforts to quit smoking incorporate strategies, including brief professional counseling, medicine, and stop lines. There is a variety in the costs associated with the approaches, and the ways do not all produce the same results. It has been demonstrated that smoking cessation aids that have been approved or certified by the Food and Drug Administration of the United States can assist individuals in stopping smoking and even have the potential to double the likelihood of quitting successfully (FDA-Approved Cessation Products Can Help, 2022). Tobacco plants are the only known source of the chemical nicotine, which has a highly addictive quality. As a result of the nicotine that is present in cigarettes and other forms of tobacco, these products have the potential to produce severe addiction. Nicotine is the addictive component that causes people to continue using cigarettes even when they have the intention of quitting.

Nicotine replacement therapy, also known simply as NRT, is a method for assisting smokers in quitting the habit by gradually reducing the amount of nicotine they are exposed to

throughout the course of treatment (FDA-Approved Cessation Products Can Help, 2022). This method does not put risk of inhaling the dozens of harmful substances that are a part of tobacco use, in contrast to the risk that is posed by inhaling the smoke from cigarettes. It has been established that the success rate of quitting smoking can be increased by using nicotine replacement therapies (NRTs) in conjunction with behavioral treatment programs. NRTs are available over-the-counter at pharmacies and can be obtained online without a prescription. According to the law, nonprescription nicotine replacement therapies can be purchased by people above the age of 18 and do not require a doctor's prescription (FDA-Approved Cessation Products Can Help, 2022). When discussing the products that fall into this category, some examples that come to mind include skin patches, gum, and lozenges. Patients should also have access to nicotine replacement therapies such as patches, sprays, and inhalers from the medical experts who care for them. The Food and Drug Administration (FDA) has given the go-ahead for the use of bupropion hydrochloride and varenicline tartrate as part of smoking cessation programs. Both drugs lack the presence of nicotine as an ingredient.

The American Association for Respiratory Care (AARC) suggests that respiratory therapists can understand tobacco addiction, as well as how to effectively evaluate tobacco use, how to successfully treat nicotine dependence, how to shape an individual willing to change and how to effectively evaluate tobacco consumption (American Association for Respiratory Care - AARC, 2001). The American Association for Respiratory Care (AARC) has said, in its most recent policy statement on tobacco usage, that it supports smoking cessation and tobacco prevention initiatives (American Association for Respiratory Care - AARC, 2001). As a result, students should be appropriately prepared with the understanding and courage to educate patients upon smoking cessation and discover options accessible for stopping smoking.

Respiratory therapists (RTs) are healthcare professionals who diagnose and treat people suffering from cardiopulmonary clinical conditions. In addition, RTs interact with patients who smoke both in the outpatient clinic and during hospitalization, and those patients most likely are diagnosed with COPD. The quality of care could be improved by understanding smoking cessation recommendations and following them with each smoker. RTs roles in general wards and outpatient clinics are administering aerosol therapy and airway clearance to respiratory disease patients. RTs play a primary role in educating patients and families regarding their illnesses and how to use treatments to prevent relapses.

Statement of Purpose

Recent research revealed that the number of university students who smoke cigarettes seemed to be at an alarmingly high level in Arab nations, and that the number of college students who smoked in Saudi Arabia was greater than in most other countries in the area (Nasser, Geng, & Al-Wesabi, 2020). Also, recent research revealed that cigarette smoking among medical college students is at an unacceptably high level (Abd El Kader, 2018). Therefore, this study aims to assess the smoking prevalence, secondhand smoke exposure, smoking cessation education, and perception of smoking cessation among Saudi respiratory therapy students in the Western region.

Research Questions to be Addressed

The research questions that will support the guidance of the study include:

1- What is the prevalence of cigarette smoking among Saudi Arabian respiratory therapy students in the Western region?

2- What is the prevalence of exposure to environmental tobacco smoke among Saudi Arabian respiratory therapy students in the Western region?

3- What are the perceptions of Saudi Arabian respiratory therapy students regarding smoking cessation?

Significance of the Study

Despite the expectation that healthcare professionals and students will function as role models for their patients, current study has shown that cigarette smoking among medical college students is at an unacceptable high level, RTs were not included (Abd El Kader, 2018). One of the goals of a recent study was to determine the percentage of female students at the College of Applied Medical Sciences in Dammam who smoked cigarettes, regardless of the field in which they were majoring. Students at the respiratory therapy department had the highest smoking prevalence of any of the departments' students. Therefore, the purpose of this study is to determine the level of smoking that is prevalent among RT students in Saudi Arabia. Moreover, respiratory therapists must be well-trained in smoking cessation to establish effective treatment programs for all smokers, particularly COPD patients. Given the health benefits of smoking cessation, Saudi respiratory therapists should be educated in smoking cessation treatments and guidelines to aid patients in quitting. This study is also significant because it may raise awareness of the need to educate and offer specific data to instruct Saudi respiratory therapists about smoking cessation.

Limitation

1. There is a chance that participants will not feel comfortable answering questions on their tobacco use status.
2. Due to the fact that all of the data will be self-reported, the reliability of the responses cannot be guaranteed.

Delimitations

1. The results of this study cannot be applied to all RT because of several considerations.
2. Students currently enrolled in undergraduate programs in the Western region of Saudi Arabia were chosen as participants because they were easily accessible.

Assumptions

1. Every participant takes the necessary amount of time to read each question and react to it in an honest manner.
2. Everyone who took part in the survey should be able to read and write in English fluently and comprehend the questions exactly as they are stated on the questionnaire.

Definition of Words and Terms

AARC American Association for Respiratory Care

COPD Chronic obstructive pulmonary disease

RT Respiratory therapist

GOLD Global Initiative for Chronic Obstructive Lung Disease

CDC Centers for Disease Control and Prevention

KSA Kingdom of Saudi Arabia

GHPSS Global Health Professions Student Survey

TCC Smoking Cessation and Counseling

WHO World Health Organization

CPHA Canadian Public Health Association

SPSS Statistical Software

Respiratory therapists (RTs): healthcare professional with particular expertise in treating lungillness patients.

Smoking Cessation: to stop smoking

Chronic Obstructive Pulmonary Disease (COPD): is a long-lasting inflammatory lung conditionthat restricts airflow from the lungs.

CHAPTER II

Review of the Literature

The following literature reviews provide a comprehensive overview of the research that has been conducted by various scholars into the perceptions of smoking among respiratory therapy students and the prevalence of smoking in the field. The major objective of this literature evaluation is to help the researcher identify the knowledge gap and formulate a feasible plan for filling it.

The essential information and risk factors related to tobacco use, quitting smoking in Saudi Arabia, quitting smoking practice and education in healthcare, quitting smoking practice and education in respiratory therapy, and a summary are the five sections that make up this chapter. The chapter begins with a discussion of smoking's origins and the health problems that have plagued the culture throughout its history. Second, how has the Saudi Arabian government responded to the smoking problem? Third, the methods used to train and implement smoking cessation programs in hospitals and other medical centers. The fourth section provides an overview of the training and experience that respiratory therapists have in the area of smoking-cessation therapy. A summary of the research gap identified throughout the literature review and a final conclusion.

This review utilizes the databases PubMed, EBSCOhost, Google Scholar, and CINHALL. "smoking," "tobacco," "COPD," "tobacco and COPD," "tobacco use and COPD," "COPD management," "COPD prevention," "smoking cessation guidelines," "tobacco control guidelines," "RTs and COPD," "smoking cessation," "Tobacco control," "smoking cessation respiratory therapy", "Tobacco control among respiratory therapy", "smoking among RTs" The research resulted in a range of publications on smoking dangers,

COPD management and prevention, and smoking prevalence. Unfortunately, there are inadequate studies on the perception and prevalence of smoking among students of respiratory therapy.

Background and Risks of Tobacco Usage

Disease, weakness, and damage to practically every bodily organ are all direct results of smoking. Chronic obstructive pulmonary disease (COPD), which encompasses emphysema and chronic bronchitis, is another condition directly linked to smoking. Health Effects | Smoking and Tobacco Use | CDC, n.d.) note that rheumatoid arthritis is just one of several autoimmune disorders that can be exacerbated by tobacco use. Despite the widespread awareness of the dangers of smoking, the CDC reports that over 16 million Americans are currently dealing with a smoking-related illness. Health Effects | Smoking and Tobacco Use | CDC, n.d.) reports that for every smoking-related death, at least 30 persons are affected by a significant smoking-related illness.

The primary contributor to chronic obstructive pulmonary disease is tobacco use (Agusti & Vogelmeier, 2021). Chronic obstructive pulmonary disease (COPD) is characterized by persistent irreversible airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lung to noxious particles or gases, as stated in the 2017 consensus report by the Global Initiative for Chronic Obstructive Lung Disease (GOLD; referred to as the GOLD report). The best thing a person can do to delay the onset of COPD is to quit smoking (Agusti & Vogelmeier, 2021). Right now, people with COPD should be asked if they want help quitting smoking and provided information on how to do so if they do (Agusti & Vogelmeier, 2021). According to the 2021 GOLD standards, professional assistance, even for brief periods of time, significantly improves stop rates compared to self-initiated strategies. Withdrawal symptoms

from nicotine can be managed with nicotine replacement therapy (NRT) products as gum, inhalers, nasal spray, transdermal patches, sublingual tablets, and lozenges (Agusti & Vogelmeier, 2021). Alternative pharmacologic treatments, including varenicline, bupropion, and nortriptyline, have also been shown to increase the success rates of long-term smoking cessation. However, these should be used as part of a larger intervention strategy to assist smokers stop the habit (Agusti & Vogelmeier, 2021). There is an issue with secondhand smoke causing cardiovascular disease, lung cancer, and stroke in adults. The Centers for Disease Control and Prevention (Health Effects | Smoking and Tobacco Use | CDC, n.d.) estimates that 41,000 nonsmoking adult deaths and 400 infant deaths occur yearly due to exposure to secondhand smoke. Exposure to secondhand smoke increases the incidence of respiratory illnesses and disorders in children, such as asthma and bronchitis, and can impede the growth of the lungs (Health Effects | Smoking and Tobacco Use | CDC, n.d.).

Figure 1. Smoking Can Cause Cancer Almost Anywhere in your Body (CDC, 2020)

Smoking Cessation in Saudi Arabia

The extensive use of tobacco and the risks it brings to users and bystanders is one of the most pressing issues in public health in Saudi Arabia. Tobacco use must be reduced immediately because it is known to be fatal, with an estimated 70,000 Saudi citizens losing their lives annually to smoking-related ailments (Itumalla & Aldhmadi, 2020). The Saudi government has made it a priority in its Vision 2030 initiative to enhance the standard of both primary and secondary medical care in the kingdom (Al-Jalajel, 2021). For the purpose of bringing the kingdom into line with the rest of the world in terms of tobacco treatment, the Saudi Arabian Ministry of Health has built a network of anti-smoking clinics. To add to this, clinical guidelines for Tobacco Cessation Services have been developed to guarantee that the greatest number of persons who are ready to quit smoking have access to effective preventative and therapeutic services provided by properly educated experts. To curb tobacco use, Saudi Arabia passed a smoking ban in 2015, and its national anti-smoking committee continues to push for further regulations. Smoking is prohibited in the Islamic kingdom of Saudi Arabia (KSA) for reasons of both religious and cultural significance. In Saudi Arabia, numerous initiatives have been launched to discourage smoking. Currently, smoking is banned in all enclosed public buildings, including mosques, government offices, government-owned factories, public authorities, educational, health, sporting, cultural, and social institutions, workplaces, businesses and organizations, public transportation, food and beverage production and processing facilities, petroleum display, transportation, and distribution sites, and warehouses, elevators, and distribution centers.

Smoking Cessation Practice and Education in Healthcare

In 2018, researchers conducted a systematic review to estimate the impact of quitting smoking on the risk of developing periodontitis in comparison to the risk in never-smokers and to evaluate the impact of quitting smoking on the clinical outcomes of nonsurgical

periodontal treatment. Their goals were to estimate the impact of quitting smoking on the risk of periodontitis and to evaluate the impact of quitting smoking on the clinical outcomes. The researchers observed that giving up smoking improved the results of nonsurgical periodontal therapy and lowered the risk of periodontitis (Leite et al., 2019). Researchers set out to learn more about dentists' knowledge and comfort levels with providing tobacco cessation and counseling (TCC), as well as their perspectives on the difficulties they encounter when doing so (Alblowi, 2021). According to the author, most medical professionals were willing to offer smoking cessation and counseling (TCC), but the process was hindered by obstacles like inadequate training, a lack of resources, and resistance from patients (Alblowi, 2021). Furthermore, in order to reevaluate and improve the quality of smoking cessation counseling, interventional research that makes use of direct observation of practice is required. In 2018, a study was carried out in Saudi Arabia with the purpose of examining the levels of knowledge, attitudes, and behaviors of primary healthcare professionals (PHCPs) about smoking cessation counseling. Several primary health care practitioners (PHCPs) have voiced their excitement about the prospect of offering smoking cessation services; nonetheless, the authors contend that their expertise and skills in this field are far from ideal. In addition, the authors recommend that PHCPs take part in postgraduate programs, workshops, and other forms of training in order to acquire a deeper comprehension of the significance of their role in the effective implementation of SCC for patients, individuals, families, and the community as a whole (Al-Jdani et al., 2018).

The objective of these authors from Saudi Arabia is to ascertain the frequency of smoking habits among pharmacy students as well as their perspectives and attitudes regarding SC approaches (Alwhaibi et al., 2022). Even though it is encouraging that a high majority of pharmacy students do not smoke, the degree of information regarding smoking

cessation tactics and the usefulness of these approaches is insufficient (Alwhaibi et al., 2022). Because of this, the research makes it abundantly clear that there is a strong demand for introducing smoking cessation programs into their educational curricula in order to better prepare students for integration into healthcare profession. To the best of our knowledge, there is no published research that investigates the prevalence, beliefs, and attitude of respiratory therapy students on smoking habits and SC methods.

Kelly, Davis, and DiCocco (2011) carried out additional research to investigate the current state of education initiatives in the United States that are geared toward preventing tobacco dependence. Researchers used a survey on tobacco dependence curriculum that had been produced before and sent it out to 141 certified PA programs in the United States during the 2008-2009 school year. They determined that only 42 minutes were devoted to smoking cessation counseling, while only 13 minutes were spent on integrating smoking cessation into professional practice. The response rate for this survey was 56% (14 out of 25), therefore they were able to draw these conclusions. This demonstrates that there should be tobacco education included in all healthcare courses, particularly counseling for people who want to quit smoking. However, those working in the medical field have a responsibility to their patients to serve as a positive example and to possess a broad base of knowledge and abilities. As an illustration, respiratory therapists see many patients who suffer from respiratory and non-respiratory issues that are directly or indirectly related to smoking. In spite of this, researchers state that RTs still do not have sufficient training in the subject of quitting smoking (Hudmon et al., 2014).

In the year 2014, a study was carried out at the United States with the purpose of investigating the cigarette cessation education programs that are offered in schools that offer

respiratory care programs. A survey of 387 respiratory care programs in the United States was conducted in order to investigate whether or not tobacco education is included in required classes, the efficacy of the current levels of tobacco education included in curricula, and the barriers to the implementation of more comprehensive tobacco education. According to the authors, there is a need for increased instruction on how to quit smoking in programs that provide respiratory treatment (Hudmon et al., 2014). This is done so that by the time students graduate, they will have the resources necessary to treat tobacco use and dependency.

Smoking Cessation Practice and Education in Respiratory Therapy

Asthma, chronic obstructive pulmonary disease (COPD), and lung cancer are all strongly linked to smoking, and RTs work to improve cardiorespiratory health and treat patients with these conditions. Canadian respiratory therapists (RTs) were surveyed in a recent study to determine whether or not their counseling procedures for helping patients quit smoking and related psychosocial factors had improved between 2005 and 2010. The authors noted that between 2005 and 2010, there were negligible shifts in either the frequency or intensity of RTs cessation therapy or the psychosocial aspects of counseling that were addressed. Counselors with specific training in smoking cessation were found to have a higher success rate with both ready-to-quit and unready-to-quit patients. Also, in 2011, Jordan, Khubchandani, Wiblishauser, Glassman, and Thompson analyzed the training and education on tobacco cessation provided to respiratory students in postsecondary programs. The researchers used a cross-sectional design to poll all US respiratory therapy program heads. The survey indicated that over 90% of smoking-cessation programs did not address the political and social implications of the issue with their students. They further noted that 41% of programs did not explicitly evaluate students' ability in offering smoking

cessation therapy to patients. As a whole, they came to the conclusion that there is very little emphasis placed on tobacco education in respiratory therapy programs, and that the topic of quitting smoking is only brought up in the context of its relationship to various disorders.

Tobacco Use Prevalence among Healthcare Students

Despite years of research and several discussions, the high rate of tobacco use among medical students remains a major problem. Nonetheless, prior research has not examined the prevalence of cigarette use among respiratory therapy students and professionals. Research into effective smoking-cessation strategies for use by medical professionals and educators has been conducted extensively. This systematic review, with n=45,306 participants from 12 Arab countries, examined the prevalence of tobacco and waterpipe usage among college students (Nasser, Geng, & Al-Wesabi, 2020). To better understand the prevalence and patterns of tobacco use among university students in several Arab countries, researchers undertook a systematic assessment of the prior English-language research articles published on the topic between 2006 and 2019 (Nasser, Geng, & Al-Wesabi, 2020). All of these studies were descriptive in nature and used different methods to assess the prevalence of smoking among college students. Authors reported that among the countries surveyed, Egypt (46.7%), Kuwait (46%) and KSA (42.3%) had the highest rates of current student smoking (Nasser, Geng, & Al-Wesabi, 2020).

In addition, it is clear that a startlingly high percentage of university students in Arab countries smoke cigarettes and water pipes (Nasser, Geng, & Al-Wesabi, 2020). In 2019, researchers (Alotaibi et al.) published another systematic evaluation on the prevalence of smoking among Saudi university students from 2010-2018. Twenty-nine publications were included in the analysis, and they were all cross-sectional descriptive studies conducted

predominantly in government agencies. The authors claimed that the prevalence of smoking among Saudi university students was higher than in other neighboring countries (e.g. Iran). The smoking rate among Saudi male students was significantly greater than among Saudi female university students. Specifically, among students majoring in health sciences, 45% looked into the frequency with which they smoked tobacco. The systematic review's authors concluded that the debate regarding cigarette smoking's prevalence has been thoroughly examined. For comparison, the national Saudi and adjacent country smoking prevalence is lower than that of college students in the KSA.

Western Saudi students at King Abdulaziz University for the Applied Medical Sciences have been surveyed about their smoking habits (Abd El Kader, 2018). 494 students were surveyed using a GAST-based questionnaire that was distributed during class. Researchers at King Abdulaziz University in Jeddah, Saudi Arabia, found that smoking was significantly more common among male students than female students in the Faculty of Applied Medical Sciences. Departments of Medical Laboratory Science, Diagnostic Radiology, Physical Therapy, and Clinical Nutrition at King Abdulaziz University were included in the study (Abd El Kader, 2018). Therefore, the findings of this study highlight the importance of expanding access to smoking clinics and enhancing health college students' exposure to anti-smoking teaching. The Prevalence of Smoking and Its Associated Factors among Female Medical Students at King Abdulaziz University, KSA, Jeddah has been studied (Azhar & Alsayed, 2012) because of the vital role that medical students play in the community. This was a cross-sectional study in which 400 female medical students in their second to sixth year at King Abdul Aziz University were recruited to participate and asked to fill out a questionnaire of their own accord. Other studies came to the same conclusion, suggesting that an anti-smoking health education campaign be launched and

supported, with the campaign making use of multiple media outlets and focusing on multiple demographic groups. The widespread use of tobacco products among future medical professionals is another topic of study. Present-day medical health-school students have a major role to play in halting the growth of tobacco use. Students of respiratory therapy today play a vital role in addressing the health of patients who smoke. (Ansari K, Farooqi FA, n.d.) provides an estimate of the smoking prevalence among female students at the College of Applied Medical Sciences in Dammam who are majoring in different disciplines. In-depth data on youth smoking patterns and contributing variables were gathered with the help of the Global Youth Tobacco Survey, a modified version of the original survey. There was an 81% female student response rate, with 332 of 408 students filling out the survey. Interestingly, the department with the highest rate of smokers (25%) is Respiratory Care, while the department with the lowest rate of smokers (11.4%) is Clinical Nutrition.

Summary

In an essence, the widespread use of tobacco in Saudi Arabia and the risks that it brings to both users and bystanders is one of the most important problems in terms of the country's public health. Nevertheless, the Saudi government has committed itself to enhancing the quality of both preventative and curative health care services across the country as part of its Vision 2030 program. There is a dearth of peer-reviewed literature that assesses the attitudes of respiratory therapy students on smoking and quitting. There was a greater availability of papers about smoking cessation in the curricula of other types of healthcare practitioners than there was in respiratory science programs. Patients with smoking-related illnesses are the ones most commonly seen by respiratory therapists. Although the research all utilized slightly different approaches, they all came to the same conclusion: college students have a high prevalence of cigarette smoke and are inadequately

trained. Therefore, this study will focus on the majority of smoking, the exposure to secondhand smoke, and respiratory therapy students' beliefs regarding the possibility of quitting smoking in the Western region.

Chapter III
Methodology

This study is a convenience sample of RT students in Saudi Arabia. The data collected will be used to answer the preset research questions.

Research Questions

1- What is the prevalence of cigarette smoking among Saudi Arabian respiratory therapy students in the Western region?

2- What is the prevalence of exposure to environmental tobacco smoke among Saudi Arabian respiratory therapy students in the Western region?

3- What are the perceptions of Saudi Arabian respiratory therapy students regarding smoking cessation?

Sample

This study was a sample of undergraduate students in respiratory therapy programs at colleges and institutions in Western Region of Saudi Arabia. In order to conduct the study, the Global Health Professional Students Survey was sent out to undergraduate RT students in the Western Region of Saudi Arabia. The sample of this study consists of 159 respiratory therapy students from two universities in the Western region, and the procedure of recruiting the participants in the study will be discussed.

Also, to provide an accurate response to the questions provided by the research, students currently enrolled in respiratory therapy programs at Western-area universities were qualified as eligible participant. Non-RTs and non-Western Saudi RT students were ineligible to participate in the study.

Instruments

Following thorough research in the field of smoking cessation, that Global Health Professions Student Survey (GHPSS) was used to evaluate smoking cessation among students who are studying respiratory therapy. The questions that were asked in the survey were exactly the same, with the exception that the wording was modified slightly to better

reflect the subjects which is the respiratory therapy students. The World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC), and the Canadian Public Health Association (CPHA) collaborated in 2004 to develop the Global Health Professions Student Survey (GHPSS), which was designed to collect information on tobacco use and counseling for quitting smoking among students who intend to pursue careers in the medical field. Because of this, participants do not need authorization in order to take part in the survey.

In this study, the survey has six sections and 45 questions. Its purpose is to assess the respiratory therapy students' level of smoking and their ability to quit smoking. The first component, which consists of nine questions and was created to assess the prevalence of tobacco use among students pursuing degrees in the health professions, The second part of this survey consists of an evaluation of one's exposure to environmental tobacco smoke through the use of four questions. The third section of the questionnaire is comprised of 11 questions, and its purpose is to investigate the students' beliefs towards smoking and quitting. The fourth section is an assessment of the students' behavior during the cessation, and it consists of eight questions. The fifth part is titled curriculum and training, and it consists of seven questions that measure the educational material that students of respiratory therapy students get regarding quitting smoking. The final step of the survey is the sixth component, which is to investigate the demography, and it is comprised of six questions.

Research Design

In this study a descriptive exploratory methodology was employed, with participants providing their own reports. One frequent type of descriptive research is the survey, which asks participants to answer a series of questions (Brown, 2009). This survey was made to collect data from students about smoking rates, secondhand smoke exposure, and attempts to quit smoking. The survey's purpose was to collect data from a sample that is representative of the whole population for analytical purposes. One of the greatest benefits of conducting research via surveys is the opportunity to obtain data from a sizable sample size with a minimal amount of effort. The low price of such research is another perk, especially because the great majority of surveys are now being performed online with the expectation that a large number of people will participate (Portney & Watkins, 2008).

Protection of Human Subjects

All participants' rights will be protected as the research proposal is submitted to Georgia State University's Institutional Review Board (IRB). In this survey, your answers are completely voluntary, and your acceptance is assumed after we get your completed form. Furthermore, we shall not use any identifying information about individuals at any point during the data collection process. Furthermore, there are no risks associated with taking part in this study. One useful outcome of this research would be an understanding of the smoking rates, secondhand smoke exposure, and attitudes toward quitting among Western Saudi RT students. Smoking cessation programs in the field of respiratory therapy may also benefit from the findings of this study.

Procedure

After receiving approval from the IRB, the researcher distributed the survey to the participants through an internet platform. A list including confirmed emails was received from the educational institutions, and those emails were used to send invitations to participate in the study to the students. Two educational institutions in the Western region of Saudi Arabia provided the confirmed student email addresses. Georgia State Survey (Qualtrics), which is a web-based application, was the instrument that is used. The students received an email that explained the purpose of the study and guaranteed their complete confidentiality while participation. The invitation email included a hyperlink that can be accessed online. The survey was open for participation for a period of one month, and participants received two email reminders. In the beginning, the response rate was low after the survey had been active for ten days, another round of the survey was administered. After the initial survey distribution, prospective subjects had ten days to return completed surveys. However, a last mailing of the survey was sent out due to a poor response rate during this time. In order to reduce the number of people who entered more than once, each invitation could only be utilized once. In addition to the questionnaire itself, each survey packet included an explanation of the purpose of the research in the form of a cover letter.

Data Analysis

For the statistical analysis of this study, SPSS version 26 was employed. Descriptive statistics provided an overview of the characteristics and opinions of Saudi respiratory therapy (RT) students regarding smoking cessation. Utilizing a Chi-square test, it was determined whether there were any connections between RT students' smoking status, course year, and their gender. Insights about the subject were gained through the test's determination of whether there were statistically significant connections between these factors.

CHAPTER IV
FINDINGS

The purpose of this study is to determine the smoking prevalence among Saudi respiratory therapy students in the Western region, as well as their exposure to secondhand smoke, their level of education regarding how to quit smoking, and their perceptions of the benefits of quitting smoking. In this chapter, the outcomes of the statistical analysis and the demographic details of the samples are discussed. The statistical analysis for this study was carried out with the use of the Statistical Package for the Social Sciences version 25 (SPSS 25). Separate presentations of the findings will be made in relation to the research questions that are listed below.

Research Questions

1- What is the prevalence of cigarette smoking among Saudi Arabian respiratory therapy students in the Western region?

2- What is the prevalence of exposure to environmental tobacco smoke among Saudi Arabian respiratory therapy students in the Western region?

3- What are the perceptions of Saudi Arabian respiratory therapy students regarding smoking cessation?

Demographic Findings

A convenient sample of students majoring in respiratory therapy from two Saudi Arabian universities participated in the study. Students at all levels of a respiratory therapy program are represented in the sample, from first-year students through those in their internship year. A response rate of 71.8% was achieved by receiving 115 responses from a total of 160 participants that were sent by email. There were 115 responses total, and 50 of those responses were completed and met the criteria of the study, for an overall completion percentage of 31.25%. Students from areas of Saudi Arabia that are not

considered to be part of the Western region were not included in the study. The respondents were comprised of students in their third year (30%), fourth year (32%), and internship (3%). Both male and female students were represented in the study population, with male students accounting for 27 (54%) of the total and female students comprising (46%) of the total (See Table 1).

Table 1

Demographics

Baseline characteristic	Current Smoker		Non Smoker		Ever tried	
	n	*%*	*n*	*%*	*N*	*%*
Gender						
Male	12	52	11	47.82	17	73.9
Female	1	3.7	26	96.29	2	7.40
Living City						
Jeddah	9	18	12	24	11	22
Medina	4	8	26	52	8	16
Attending University						
A	9	18	12	24	11	22
B	4	8	26	52	8	16
Course Year						
Third Year	1	6.66	12	80	3	20
Fourth Year	5	31.25	9	56.25	7	43.75
Internship	6	31.57	13	68.42	9	47

Tobacco Use and Prevalence among Saudi Arabian Respiratory Therapy Students in the Western Region Findings

The first question of this study aimed to identify the prevalence of cigarette and other tobacco product use, such as hookah, among Saudi Arabian respiratory care students. The findings revealed that (52%) of male participants were current smokers, and a significant majority of them (73.9%) had tried cigarette smoking before. In contrast, almost all female participants were nonsmokers (96.29%; see Table 2). Among students studying respiratory care in their third year, there was a significantly lower prevalence of cigarette smoking, with (30%) being smokers and only one of them currently smoking (6.66%). Among fourth-year students, (31.25%) were current smokers, while (56.25%) did not smoke. Additionally, (43.75%) of fourth-year students had smoked cigarettes at some point in their lives. For internship students, (31.57%) were current smokers, while (68.42%) were nonsmokers. Notably, the internship students represented the largest category, comprising (47%) of the total participants (see Table 3).

Exposure to Environmental Tobacco Smoke Findings

The second objective of this research was to determine the rate of exposure to secondhand smoke in the surrounding environment that is experienced by students of respiratory therapy in the Western region of Saudi Arabia. When it came to exposure at home, there were 14 participants who were exposed to secondhand smoking. This represents 28 percent of the whole sample. While (72%), did not have any exposure. There were individuals who were exposed to tobacco smoke in public (48%). (See Table 5).

Additionally, the instrument that was used for this study examined whether or not there were school policies regarding building and clinics. The number of participants who

said that there is an official policy banning smoking in school buildings and clinics is (92%); however, only (84%) mentioned that the policies are actually enforced.

Table 2

Exposure to Environmental Tobacco Smoke during the Past Week

Variable	Exposed		Not Exposed	
	N	*%*	*N*	*%*
Home Exposure	14	28	36	72
Public Exposure	26	52	24	48

Respiratory Therapy Students Opinions Findings

The objective of this research section is to examine students' viewpoints on the utilization of cigarettes and approaches for quitting smoking in respiratory care. In this phase, students were surveyed using Yes/No questions. The respondents exhibited a diverse range of perspectives regarding cigarette smoking and smoking cessation. For example, among the respondents, (84%) expressed the belief that the sale of tobacco products to teenagers (defined as individuals under 18 years old) should be deemed illegal. Additionally, there was a unanimous agreement among the participants (92%) in favor of a complete prohibition on advertising tobacco products. Most importantly, (96%) of the respondents stressed the importance of respiratory therapists receiving specialized training on various approaches to assist individuals in quitting smoking. Simultaneously, (96%) of the participants agreed that respiratory therapists should actively encourage their patients to quit smoking. With that being said, (84%) of the respondents stated that the quit rate would increase if respiratory therapists recommended smoking cessation to their patients. Conversely, only (72%) of the respondents agreed with the statement that respiratory therapists should serve as role models for their patients and the public (See Table 3).

Table 3

Descriptive Statistics on the Opinions of RT Students Regarding Smoking Ban Policies; n=50

Question	Yes	No
Should tobacco sales to adolescents (persons younger than 18 years old) be banned?	42 (84%)	8 (16%)
Should there be a complete ban of the advertising of tobacco products?	46 (92%)	4 (8%)
Should smoking be banned in restaurants?	48 (96%)	2 (4%)
Should smoking be banned in festivals, concerts, and shows?	43 (86%)	7 (14%)
Should smoking in all enclosed public places be banned?	47 (94%)	3 (6%)
Should respiratory therapists get specific training on cessation techniques?	48 (96%)	2 (4%)
Do respiratory therapists serve as "role models" for their patients and the public?	36 (72%)	14 (28%)
Should respiratory therapists routinely advise their patients who smoke to quit smoking?	48 (96%)	2 (4%)
Should respiratory therapists routinely advise their patients who use other tobacco products to quit using these products?	48 (96%)	2 (4%)
Do respiratory therapists have a role in giving advice or information about smoking cessation to patients?	44 (88%)	6 (12%)
Are a patient's chances of quitting smoking increased if a respiratory therapists advises him or her to quit?	42 (84%)	8 (16%)

Respiratory Therapy Students Behavior toward Cessation of Smoking

In this study, participants' behavior regarding quitting smoking was evaluated using a set of eight questions (See Table 4). When you first wake up, how long do you wait before lighting up your first cigarette? that was the first question in this section. Furthermore, (68%) of participants had never smoked; however, those who took part in the study and are currently smokers fell into one of three categories. The first group consists of those people (4%) who light up during the first ten minutes after waking up. The second group, which makes up 2% of the total, lights up 10–30 minutes after waking up. The third group, which consists of four people and eight percent, smokes after sixty minutes. It has been shown that 7 out of 14 percent of the participants who are currently smokers have expressed a desire to quit smoking right away; nevertheless, only one person has been able to stay smoke-free for an entire year.

Table 4

Students Behavior Toward Smoking Cessation; n=50

Question	*N(%)*
How soon after you awake do you smoke your first cigarette?	
1. I have never smoked cigarettes	34(68%)
2. I do not currently smoke cigarettes	9(18%)
3. Less than 10 minutes	2(4%)
4. 10-30 minutes	1(2%)
5. 31-60 minutes	0
6. After 60 minutes	4(8%)
Do you want to stop smoking cigarettes now?	
1. I have never smoked cigarettes	32(64%)
2. I do not smoke now	10(20%)
3. Yes	7(14%)
4. No	1(2%)
During the past year, have you ever tried to stop smoking cigarettes?	
1. I have never smoked cigarettes	31(62%)
2. I did not smoke during the past year	3(16.6%)
3. Yes	14(28%)
4. No	2(4%)
How long ago did you stop smoking cigarettes?	
1. I have never smoked cigarettes	33(66%)
2. I have not stopped smoking cigarettes	1(2%)
3. Less than 1 month	5(10%)
4. 1-5 months	7(14%)

5. 6 – 11 months 2(4%)
6. One year 1(2%)
7. 2 years 1(2%)
8. 3 years or longer 0

Have you ever received help or advice to help you stop smoking cigarettes?

1. I have never smoked cigarettes 35(70%)
2. Yes 7(14%)
3. No 8(16%)

Do you want to stop using chewing tobacco, cigars, or hookah now?

1. I have never used chewing tobacco, cigars, or hookah 37(74%)
2. I do not use chewing tobacco, cigars, or hookah 2(4%)
3. Yes 9(18%)
4. No 2(4%)

Are respiratory therapists who smoke less likely to advise patients to stop smoking?

1. Yes 36(72%)
2. No 14(28%)

Are respiratory therapists who use other tobacco products (chewing tobacco, cigars, or hookah) less likely to advise patients to stopsmoking?

1. Yes 36(72%)
2. No 14(28%)

Respiratory Therapy Students Perception Toward Curriculum/ Training Findings

"What are the perceptions of smoking cessation among Saudi Arabian respiratory therapy students?" was the third study question that was addressed. The mean scores and standard deviations for the overall perceptions of smoking cessation curriculum and training held by respiratory therapy students are presented in Table 7. The tabulation of the data results was done based on the number of items in the survey. RT students reported that they were aware of the risks associated with smoking. The most important thing that the students mentioned that they learnt was that the smoking record is an essential component of general medical history.

Table 5

Students Perception Toward Curriculum/ Training Findings; n=50

Question	*Yes*	*No*
During your respiratory therapy school education, were you taught in any of your classes about the dangers of smoking?	49 (98)	1 (2%)
During your respiratory therapy school education, did you discuss in any of your classes the reasons why people smoke?	37 (74%)	13 (26%)
During your respiratory therapy school education, did you learn that it is important to record tobacco use history as part of a patient's general medical history?	50 (100%)	0 (0%)
During your respiratory therapy school education, have you ever received any formal training in smoking cessation approaches to use with patients?	15 (30%)	33 (70%)

During your respiratory therapy school education, did you learn that it is important to provide educational materials to support smoking cessation to patients who want to quit smoking?	33 (66%)	17 (34%)
Have you ever heard of using nicotine replacement therapies in tobacco cessation programs (such as nicotine patch or gum)?	44 (88%)	6 (12%)
Have you ever heard of using antidepressants in tobacco cessation programs (such as bupropion or Zyban)?	23 (46%)	27 (54%)

Relationship between Smoking Status and Gender

Table 6

*What is your gender? * Smoking Status Crosstabulation*

		Smoking Status		Total	p-value (Cramer's V)*
		Current Smoker	Non-Smoker		
What is your gender?	Female	1	26	27	<0.001 (0.551)
	Male	12	11	23	
Total		13	37	50	

**Performed Chi-square test, as the expected count less than 5 is 0%.*

Based on the data analysis, there is a significant relationship between the smoking status and gender of Saudi Arabian students. The chi-square test yielded a p-value less than 0.05, indicating that the observed differences in smoking status between male and female students are unlikely to have occurred by chance. Furthermore, the moderate association between smoking status and gender, as indicated by the value of Cramer's V, suggests that gender is a significant factor in determining smoking behavior among Saudi Arabian students. This finding has important implications for public health policies aimed at reducing smoking prevalence among young people in Saudi Arabia. It suggests that efforts to discourage smoking among male students may be more effective than those targeting female students. Future research should investigate the underlying reasons for the gender differences in smoking behavior among Saudi Arabian students, such as social norms and cultural attitudes towards smoking. Overall, this study contributes to a better understanding of the factors that influence smoking behavior among young people in Saudi Arabia and can inform the development of targeted interventions to reduce smoking prevalence in this population.

Relationship between Smoking Status and Respiratory Therapy Students Course Year

Table 7

*What is your course year in school? * Smoking Status Crosstabulation*

		Smoking Status		Total	p-value
		Current Smoker	Non-Smoker		(Cramer's V)*
What is your course year in school?	Second Year	0	1	1	0.202 (0.312)
	Third Year	1	14	15	
	Fourth Year	6	10	16	
	Internship	6	12	18	
Total		13	37	50	

**Performed Exact test, as the expected count less than 5 is 62.5%.*

The objective of this test was to determine whether there is a relationship between the smoking status of Saudi Arabian students and the course year they are studying in. The null hypothesis (H02) was that there is no significant relationship between these variables, while the alternative hypothesis (HA2) was that there is a significant relationship.

A statistical analysis was performed, and the p-value of the exact test was calculated to be greater than 0.05. This suggests that there is insufficient evidence to reject the null hypothesis (H02) at the 0.05 level of significance. Therefore, we can conclude that there is no significant relationship between the smoking status of Saudi Arabian students and the course year they are studying in. These findings have important implications for public health interventions in Saudi Arabia, as they suggest that smoking prevention and cessation efforts should be targeted at all students regardless of their course year. Overall, this study contributes to the growing body of knowledge on the prevalence of smoking among Saudi Arabian students and highlights the need for further research in this area.

Relationship between how Soon Smokers Smoke their First Cigarette after Waking up and their Willingness to Stop Smoking Cigarettes

Table 8

*How soon after you awake do you smoke your first cigarette? * Do you want to stop smoking cigarettes now? Crosstabulation*

		Do you want to stop smoking cigarettes now?					p-value
		I have never smoked cigarettes	I do not smoke now	Yes	No	Total	(Cramer's V)*
How soon after you awake do you smoke your first cigarette?	I have never smoked cigarettes	31	2	0	0	33	
	I do not currently smoke cigarettes	0	7	2	0	9	<0.001 (0.685)
	Less than 10 minutes	0	0	2	0	2	
	10-30 minutes	0	0	1	0	1	
	After 60 minutes	0	1	2	1	4	
Total		31	10	7	1	49	

**Performed Exact test, as the expected count less than 5 is 85%.*

Based on the statistical analysis conducted, the results suggest that there is a significant relationship between how soon Saudi Arabian students smoke their first cigarette after waking up and their willingness to stop smoking cigarettes now. The null hypothesis (H04) was that there is no significant relationship between these variables, while the alternative hypothesis (HA4) was that there is a significant relationship.

The study included data from a sample of Saudi Arabian students who reported their smoking behavior, including how soon they smoked their first cigarette after waking up, and their willingness to quit smoking. The p-value of the exact test was found to be less than 0.05, indicating that there is sufficient evidence to reject the null hypothesis (H04) at the 0.05 level of significance. Therefore, it can be concluded that there is a significant relationship between these variables.

Additionally, the value of Cramer's V was calculated to be 0.685, suggesting a strong association between how soon students smoke their first cigarette after waking up and their willingness to quit smoking. This finding may have important implications for smoking cessation interventions in Saudi Arabia, as it highlights the need to consider individual smoking patterns when developing effective strategies to help students quit smoking. Overall, this study contributes to our understanding of smoking behavior among Saudi Arabian students and provides evidence of the importance of considering the time of day when students smoke their first cigarette in efforts to help them quit smoking.

Relationship between Smoking Status and Respiratory Therapists who Smoke are Less Likely to Advise Patients to Stop Smoking

Table 9

*Are respiratory therapists who smoke less likely to advise patients to stop smoking? * Smoking Status Crosstabulation*

		Smoking Status		Total	p-value (Cramer's V)*
		Current Smoker	Non-Smoker		
Are respiratory therapists who smoke less likely to advise patients to stop smoking?	Yes	7	28	35	0.152 (0.234)
	No	6	8	14	
Total		13	36	49	

The objective of this study was to investigate the relationship between the smoking status of Saudi Arabian students and the belief that respiratory therapists who smoke are less likely to advise patients to quit smoking. The null hypothesis (H05) was that there is no significant relationship between these variables, while the alternative hypothesis (HA5) was that there is a significant relationship.

The results showed that out of the 14 students who disagreed with the statement, 6 were current smokers, while out of the 35 students who agreed with the statement, 7 were current smokers. The p-value of the exact test was calculated to be greater than 0.05. This suggests that there is insufficient evidence to reject the null hypothesis (H05) at the 0.05 level of significance. Therefore, we can conclude that there is no significant relationship between the smoking status of Saudi Arabian students and the belief that respiratory therapists who smoke are less likely to advise patients to quit smoking. These findings have

important implications for smoking cessation interventions in Saudi Arabia, as they suggest that students' smoking status may not affect their perception of respiratory therapists who smoke and their ability to provide effective smoking cessation counseling. Overall, this study adds to the growing body of knowledge on smoking behavior among Saudi Arabian students and highlights the need for further research in this area to inform smoking cessation interventions in the region.

Summary

The number of respiratory therapy students in the Western part of Saudi Arabia who smoke cigarettes is relatively low, however the number of students who use other forms of tobacco, such as hookah, is significantly lower. The vast majority of respondents did not engage in the habit of smoking, and those who had done so had favorable impressions to share about the advantages of giving up the habit. On the other hand, just a small percentage of the students had gotten information or counseling on how to quit smoking. These findings call attention to the necessity of implementing specific interventions in order to raise smoking cessation education and awareness among students of respiratory therapy.

CHAPTER V
Discussion

In this chapter, the interpretations of the findings that were addressed in Chapter IV were presented and demonstrated. This chapter also provided recommendations for future research, study limitations, and implications for respiratory care education and practice, finally the conclusion. The following research questions were brought forward and discussed:

1- What is the prevalence of cigarette smoking among Saudi Arabian respiratory therapy students in the Western region?
2- What is the prevalence of exposure to environmental tobacco smoke among Saudi Arabian respiratory therapy students in the Western region?
3- What are the perceptions of Saudi Arabian respiratory therapy students regarding smoking cessation?

Findings Related to Research Question 1

The initial inquiry questioned as to the extent to which Saudi Arabian students of respiratory therapy in the Western region consume cigarettes. In point of fact, there have been no previous research that have evaluated the prevalence of cigarette smoking among students who are studying respiratory therapy. In our study, the prevalence of cigarette smoking among male student (52%) was higher than the prevalence of smoking among female student (3.7%), which is consistent with the findings of previous studies (Alotaibi et al.) and (Nasser, Geng, & Al-Wesabi, 2020) that show smoking is prevalent among healthcare students, particularly male students. (Abd El Kader, 2018) another study found similar findings, and this one was also congruent with ours. In this study, Western Saudi students at King Abdulaziz University for the Applied Medical Sciences were polled

regarding their smoking habits (Abd El Kader, 2018). A GAST-based questionnaire was handed out to all 494 students while they were in class, and those students were the ones who participated in the survey. The findings also demonstrated that the prevalence of smoking was much higher among male students in the Faculty of Applied Medical Sciences than it was among female students in that same faculty.

Findings Related to Research Question 2

The purpose of this research question was to investigate the level of exposure to passive smoking that is experienced by students majoring in respiratory therapy. The percentage of respiratory therapy students who participated in this study and reported being exposed to secondhand smoking in their homes during the course of the seven day period was quite low. A total of 14 participants, constituting 28% of the sample, reported being exposed to secondhand smoke. On the other hand, the percentage of respiratory therapy students who were exposed to secondhand smoke in public settings was much higher than 52%). This was consistent with the findings of Almutairi (2014), which showed that a relatively high prevalence of public exposer to secondhand smoking existed among Saudi Medical Students in Riyadh, Saudi Arabia. According to the CDC's report titled "Health Consequences | Smoking and Tobacco Use," published in the year 2012, "research suggests that 41,000 nonsmoking adult deaths and 400 baby deaths occur annually due to exposure to secondhand smoke." According to Health Effects | Smoking and Tobacco Use | CDC (n.d.), there is evidence to suggest that children who are exposed to secondhand smoke have a higher risk of developing respiratory illnesses and disorders, such as asthma and bronchitis, and that this risk may also inhibit the growth of their lungs. The dangers of prolonged exposure to secondhand smoke are well recognized in the Kingdom of Saudi Arabia; thus, the kingdom as a whole has implemented a ban on smoking as a direct response to this reality. At this

time, smoking is prohibited in all enclosed public buildings, such as mosques, government offices, government-owned factories, public authorities, educational, health, sporting, cultural, and social institutions, workplaces, businesses and organizations, public transportation, food and beverage production and processing facilities, petroleum display, transportation, and distribution sites, and warehouses, elevators, and distribution centers. This includes smoking in enclosed public buildings, such as mosques, government offices, government-owned factories, public authorities, educational, health, sporting, cultural, and social yet, the results of our study indicate that the number is still quite large and that a considerable amount of work need to be done.

Findings Related to Research Question 3

The third question of the study is regarding what respiratory therapy students at Western region of Saudi Arabia know about smoking cessation. Respiratory therapy students opinions regarding using smoking and smoking cessation seems to be positive. As it is explained before regarding secondhand smoking, the RT students in the Western regions seems to agree of Saudi polices in terms of banning smoking in public places. Smoking should be prohibited at restaurants, according to 96% of respondents, and festivals, concerts, and shows, according to 86% of participants. Also, 94% of the participants agree that smoking should be banned on all enclosed public places. When it comes to training of respiratory therapist regarding smoking cessation. Almost all of the participants (96%) agree that respiratory therapist should get specific training regarding smoking cessation. Also, most of the participants (96%) felt that RTs should routinely advise their patients who smoke to quit both cigarette and other tobacco products. And (72%) believed that respiratory therapist serves as a role model for the public and their patents. Additionally, (84%) thought that if a

respiratory therapist gives a patient advice to stop smoking, the likelihood of success in doing so grew higher.

When it comes to tobacco curriculum and training in respiratory therapy education among the participants, the results indicate a positive outcome regarding Tobacco education among Saudi students. It is clear that respiratory therapy students were taught the dangers of smoking. Also, all of the participants (100%) were taught that it is important to record tobacco use of their patients. Also, (70%) have not received formal training regarding smoking cessation.

However, only (74%) stated that they have not discussed reasons why people smoke. When it comes to pharmacological education regarding smoking cessation, it seems that RTs need to put more effort into knowing about smoking cessation pharmacology. Only (46%) of the participants heard of using antidepressants in tobacco cessation programs. And (88%) heard of nicotine replacement therapies in tobacco smoking programs. When it comes to Respiratory therapy students who currently smoke Male (24%) and Female (3.7%). When they were asked regarding stop smoking nearly half of the smokers want to quit smoking right now (14%). Participants who ever smoked male (73.9%) and female (7.40%), during the last year (n=14, 28%) stated they have tried stop smoking, and (10%) stop smoking less than 1 month, (14%) stopped smoking 1-5 months, (4%) quit form 6-11 months , and only (2%) completed one year. (72%) believed that respiratory therapist who smoke less is likely to advise patients to stop smoking.

Implications for Research

The results of this study provided insight on the prevalence, secondhand exposure, and perception of smoking cessation among Saudi Arabian respiratory therapists. This study contributes to the existing body of knowledge by presenting attitudes of smoking as well as the prevalence of smoking among respiratory therapy students who attend school in the Western part of Saudi Arabia. This study also includes information regarding the use of hookahs and secondhand exposure to hookahs among students who are interested in respiratory therapy.

Respiratory therapy students will deal with smoker patients in the future, and that necessitates the importance of addressing the smoking cessation curriculum in respiratory therapy programs. Students should receive tobacco prevention and cessation programs to limit the number of tobacco use.

Students who are going into respiratory therapy will eventually work with patients who smoke, and because of this, it is imperative that the curriculum in respiratory therapy schools include instruction on how to quit smoking. It is important that students have access to tobacco prevention and cessation programs in order to reduce the number of students who smoke.

Recommendation for Future Study

We should ensure the reproducibility of our study by doing more research among different universities of respiratory therapy with larger sample size. It is also recommended to involve, clinicians, and the educators in health field in order to have complete image about prevalence, secondhand exposure, towards smoking and smoking cessation among respiratory therapist in Saudi Arabia. Students should also receive some tobacco prevention and cessation programs to limit the number of tobacco use especially among the young

adults. Finally, tobacco assessment for respiratory therapy student should be performed in the universities to increase student's perception.

Conclusion

The study found that cigarette smoking was prevalent among male respiratory therapy students (24%) in the Western region of Saudi Arabia, while the prevalence among female students (3.7%) was lower. The prevalence of exposure to secondhand smoke in public settings was high (52%), while exposure to secondhand smoke at home was low (28%). The study also found that respiratory therapy students had positive perceptions regarding smoking cessation, and the majority agreed that respiratory therapists should receive specific training in smoking cessation and routinely advise their patients who smoke to quit. The study's findings have implications for respiratory care education and practice, suggesting a need for further training and education for respiratory therapy students and practitioners on smoking cessation and the dangers of smoking and secondhand smoke. Additionally, the study highlights the need for continued efforts to enforce and promote smoking bans in public spaces to protect individuals from the harmful effects of secondhand smoke.

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APPENDIX A: The Instrument of the Study

Section 1: Demographics (4 Questions)

1- **How old are you?**
2- **What is your gender?**

A. Female
B. Male

3- **Are there any smokers in your household?**

A. Yes
B. No

4- **What is your course year in school?**

A. Second year
B. Third year
C. Fourth year
D. Internship

5- **In what city do you live in Saudi Arabia?**
6- **In what university do you study?**

Section 2: Tobacco Use and prevalence among Saudi Arabian Respiratory Therapy students in the Western Region (9 Questions)

7- **Have you ever tried or experimented with cigarette smoking, even one or two puffs?**

A. Yes
B. No

8- **How old were you when you first tried a cigarette?**

_____ **years old**

9- **During the past 30 days (one month), on how many days did you smoke cigarettes?**

_____ **days**

10- **Have you smoked cigarettes on school premises/property during the past year?**

A. I have never smoked cigarettes
B. Yes
C. No

11- **Have you smoked cigarettes in school buildings during the past year?**

A. I have never smoked cigarettes
B. Yes
C. No

12- **Have you ever used chewing tobacco, cigars, or hookah?**

A. Yes

B. No

13- During the past 30 days (one month), on how many days did you use chewing tobacco, cigars, or hookah?

_____ days

14- Have you used chewing tobacco, cigars, or hookah on school premises/property during the past year?

A. I have never used chewing tobacco, cigars, or hookah
B. Yes
C. No

15- Have you used tobacco, chewing tobacco, cigars, or hookah in school buildings during the past year?

A. I have never used chewing tobacco, cigars, or hookah
B. Yes
C. No

Section 3: Exposure to environmental tobacco smoke (4 Questions)

16- During the past 7 days, on how many days have people smoked where you live, in your presence?

_____ days

17- During the past 7 days, on how many days have people smoked in your presence, in places other than where you live?

_____ day

18- Does your school have an official policy banning smoking in school buildings and clinics?

A. Yes, for school buildings only
B. Yes, for clinics only
C. Yes, for both school buildings and clinics
D. No official policy

19- Is your school's official smoking ban for school buildings and clinics enforced?

A. Yes, policy is enforced
B. No, policy is not enforced
C. School has no official policy

Section 4: Opinions (11 Questions)

20- Should tobacco sales to adolescents (persons younger than 18 years old) be banned?

A. Yes
B. No

21- Should there be a complete ban of the advertising of tobacco products?

A. Yes
B. No

22- Should smoking be banned in restaurants?

A. Yes
B. No

23- Should smoking be banned in festivals, concerts, and shows?

A. Yes
B. No

24- Should smoking in all enclosed public places be banned?

A. Yes
B. No

25- Should respiratory therapists get specific training on cessation techniques?

A. Yes
B. No

26- Do respiratory therapists serve as "role models" for their patients and the public?

A. Yes
B. No

27- Should respiratory therapists routinely advise their patients who smoke to quit smoking?

A. Yes
B. No

28- Should respiratory therapists routinely advise their patients who use other tobacco products to quit using these products?

A. Yes
B. No

29- Do respiratory therapists have a role in giving advice or information about smoking cessation to patients?

A. Yes
B. No

30- Are a patient's chances of quitting smoking increased if a respiratory therapists advises him or her to quit?

A. Yes
B. No

Section 5: Behavior/Cessation (8 Questions)

31- How soon after you awake do you smoke your first cigarette?

A. I have never smoked cigarettes
B. I do not currently smoke cigarettes
C. Less than 10 minutes
D. 10-30 minutes
E. 31-60 minutes
F. After 60 minutes

32- Do you want to stop smoking cigarettes now?

A. I have never smoked cigarettes
B. I do not smoke now
C. Yes
D. No

33- During the past year, have you ever tried to stop smoking cigarettes?

A. I have never smoked cigarettes
B. I did not smoke during the past year
C. Yes
D. No

34- How long ago did you stop smoking cigarettes?

A. I have never smoked cigarettes

B. I have not stopped smoking cigarettes
C. Less than 1 month
D. 1-5 months
E. 6 – 11 months
F. One year
G. 2 years
H. 3 years or longer

35- Have you ever received help or advice to help you stop smoking cigarettes?

A. I have never smoked cigarettes
B. Yes
C. No

36- Do you want to stop using chewing tobacco, cigars, or hookah now?

A. I have never used chewing tobacco, cigars, or hookah
B. I do not use chewing tobacco, cigars, or hookah
C. Yes
D. No

37- Are respiratory therapists who smoke less likely to advise patients to stop smoking?

A. Yes
B. No

38- Are respiratory therapists who use other tobacco products (chewing tobacco, cigars, or hookah) less likely to advise patients to stop smoking?

A. Yes
B. No

Section 6: Curriculum/Training (7 Questions)

39- During your respiratory therapy school education, were you taught in any of your classes about the dangers of smoking?

A. Yes
B. No

40- During your respiratory therapy school education, did you discuss in any of your classes the reasons why people smoke?

A. Yes
B. No

41- During your respiratory therapy school education, did you learn that it is important to record tobacco use history as part of a patient's general medical history?

A. Yes
B. No

42- During your respiratory therapy school education, have you ever received any formal training in smoking cessation approaches to use with patients?

A. Yes
B. No

43- During your respiratory therapy school education, did you learn that it is important to provide educational materials to support smoking cessation to patients who want to quit smoking?

A. Yes
B. No

44- Have you ever heard of using nicotine replacement therapies in tobacco cessation programs (such as nicotine patch or gum)?
Yes
No
45- Have you ever heard of using antidepressants in tobacco cessation programs (such as bupropion or Zyban)?

A. Yes
B. No

APPENDIX B: Cover Letter

Cover Letter

Students of Respiratory Therapy,

As an undergraduate student in a respiratory therapy program in one of the Western regions of Saudi Arabia, you have been selected to participate in a research project. The goal of this research is to learn more about how Western Saudi students of respiratory therapy see smoking and tobacco use, as well as the students' own experiences with and attitudes toward smoking cessation education and programs.

Abdulrahman Alharbi, a Master of Science in Respiratory Therapy candidate at Georgia State University, is conducting this study with the supervision of Dr. Doug Gardenhire, Chairman of the Department of Respiratory Therapy. Participation in this survey will not benefit you personally, but the data collected will be used to better understand how Western Saudi students of respiratory therapy view smoking and its effects, as well as how they are educated about and encouraged to quit.

We need your time to complete this survey, which should take no more than 10 minutes if you choose to participate. You are under no obligation to complete the survey, and if at any point you decide not to, you will incur no negative consequences or lose any privileges to which you are otherwise entitled.

Your participation is voluntary and your answers will be kept confidential and used exclusively for research. When we are finished with the survey, we will shred all of the responses. By submitting your survey responses, you are giving your agreement to take part in the study. Completed surveys would be greatly appreciated. However, you may discontinue participation at any time by either not completing the survey or submitting a blank form.

Results from this research might be shared with the academic community in the form of journal articles and conference presentations. Besides your time, you will incur no financial or other burdens as a result of taking part in this study.

None of the procedures in this study should be harmful or otherwise unpleasant for you. If you feel uneasy about filling out the survey, you can always submit an empty form.

Contact Abdulrahman Alharbi at aalharbi4@student.gsu.edu or Dr. Doug Gardenhire at dgardenhire@gsu.edu with any questions you may have concerning this study at any time.

You may find the department's mailing address at the end of this article. The Georgia State University IRB is another option and can be reached at irb@gsu.edu If you choose to submit this survey after reading the above information, it is assumed that you agree to take part in the study.

Sincerely,
Abdulrahman Alharbi

Dept. of Respiratory Therapy Georgia State University P.O. Box 4019
Atlanta, GA 30302

(404) 413-1225

APPENDIX C: IRB Approval

November 23, 2022

Principal Investigator: Douglas Gardenhire

Key Personnel: Alharbi, Abdulrahman; Gardenhire, Douglas

INSTITUTIONAL REVIEW BOARD

Mail: P.O. Box 3999 Atlanta, Georgia 30302-3999 Phone: 404/413-3500

In Person: 3rd Floor
58 Edgewood

FWA: 00000129

Study Department: Georgia State University, Respiratory Therapy, Respiratory Therapy

Study Title: Evaluation of Smoking Prevalence, Secondhand Smoke Exposure, and Perceptions of Smoking Cessation among Respiratory Therapy Students in Saudi Arabi

Submission Type: Exempt Protocol Category 2 IRB Number: H23277
Reference Number: 372736

Determination Date: 11/23/2022 Status Check Due By: 11/22/2025

The above-referenced study has been determined by the Institutional Review Board (IRB) to be exempt from federal regulations as defined in 45 CFR 46 and has evaluated for the following:

1. Determination that it falls within one or more of the eight exempt categories allowed by the institution; and

2. Determination that the research meets the organization’s ethical standards

If there is a change to your study, you should notify the IRB through an Amendment Application before the change is implemented. The IRB will determine whether your research continues to qualify for exemption or if a new submission of an expedited or full board application is required.

A Status Check must be submitted three years from the determination date indicated above. When the study is complete, a Study Closure Form must be submitted to the IRB.

This determination applies only to research activities engaged in by the personnel listed on this document.

It is the Principal Investigator's responsibility to ensure that the IRB's requirements as detailed in the Institutional Review Board Policies and Procedures For Faculty, Staff, and Student Researchers (available at gsu.edu/irb) are observed, and to ensure that relevant laws and regulations of any jurisdiction where the research takes place are observed in its conduct.

Any unanticipated problems resulting from this study must be reported immediately to the University Institutional Review Board. For more information, please visit our website at www.gsu.edu/irb.

Sincerely,

Jamie Zaikov, IRB Member