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ACCEPTANCE

This thesis, THE PERCEPTION OF ASTHMA MANAGEMENT AMONG HEALTHCARE STUDENT PROGRAMS AT AN URBAN UNIVERSITY, by Yazeed Felemban, BSRT, was prepared under the direction of the Master's Thesis Advisory Committee of the Respiratory Therapy Department at Georgia State University. It is accepted by the committee in partial fulfillment of requirements for the Master of Science degree in Respiratory Therapy at Byrdine F. Lewis School of Nursing and Health Professions, Georgia State University.

The Master's Thesis Advisory Committee, as representatives of the faculty, certifies that this thesis has met all standards of excellence and scholarship as determined by the faculty.



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DEDICATION

First and foremost, I would like to express my heartfelt gratitude to God (Allah) for providing me with strength, guidance, and perseverance throughout my research journey. Without His blessings, none of this would have been possible. My loving wife, your unwavering support, patience, and understanding have been my source of inspiration and motivation. Your belief in me never wavered, even during the most challenging times. I am forever grateful for your love and encouragement. My son, you have brought an exceptional sense of joy and purpose into our lives. Your arrival has inspired me to strive for excellence and to create a better future for our family. To my father, your wisdom, encouragement, and sacrifices have shaped me into the person I am today. Your belief in my abilities has pushed me forward, and I am deeply thankful for your continuous support. To my siblings, your support and encouragement have been a constant source of strength throughout this journey. Your belief in my abilities fueled my determination to overcome obstacles and achieve my goals. Thank you all for always being there for me. Together, you have been my strength, and I dedicate this thesis to each of you with deep gratitude and love.

With heartfelt appreciation,

Yazeed Felemban

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Yazeed Felemban

Spring, 2024

THE PERCEPTION OF ASTHMA MANAGEMENT AMONG HEALTHCARE STUDENT
PROGRAMS AT AN URBAN UNIVERSITY

By

Yazeed Felemban

A Thesis

Presented in Partial Fulfillment of Requirements for

The Degree of Master of Science in

Health Sciences

In

The Department of Respiratory Therapy

Under the supervision of Dr.

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

In

The Byrdine F. Lewis College of Nursing and Health Professions

Georgia State University

Atlanta, Georgia

2024

THE PERCEPTION OF ASTHMA MANAGEMENT AMONG HEALTHCARE STUDENT PROGRAMS AT AN URBAN UNIVERSITY

By

Yazeed Felemban

(Under the Supervision of Dr. Douglas S. Gardenhire)

Abstract:

Background: Asthma is a widespread chronic respiratory disease that affects a total of 339 million people of the global population in distinct countries reported by The Global Initiative for Asthma report. Asthma is one of the most common chronic diseases among children and is a noncommunicable disease (NCD) that affects both children and adults. It is necessary to evaluate healthcare students' perceptions to minimize asthma complications since they will play a significant role in diagnosing and controlling asthma in their future careers. **Purpose:** This study aims to evaluate and compare the perceptions of asthma management among healthcare students lacking clinical experiences including entry-level master's and bachelor's respiratory therapy, graduate physical therapy, graduate occupational therapy, and undergraduate nurses' programs at Byrdine F. Lewis College of Nursing and Health Professions, Georgia State University. **Methods:** A descriptive cross-sectional study was performed on participants from four healthcare programs. Data were collected through a self-administered survey to investigate the perceptions, attitudes, and beliefs held by students attending Respiratory Therapy and other healthcare professional programs. The survey consisted of 21 items, and the students' perceptions were measured using a seven-point Likert scale ranging from 1 to 7. The Statistical Package for the Social Sciences (SPSS) program, version 27 is used to analyze the data collected. **Results:** A total of 398 participants across four programs. Most participants were 338 female participants (84.9%) while 60 were male participants (15.1%). The majority of participants were Nursing students (n=145, 36.4%), followed by Respiratory Therapy (n=91, 22.9%), Occupational Therapy (n=82, 20.6%), and Physical Therapy (n=80, 20.1%). Furthermore, the study revealed that 80 participants (20.1%) self-reported having been diagnosed with asthma, while 318 participants (79.9%) indicated no history of asthma diagnosis. The main results of this study revealed that healthcare students had positive perceptions toward asthma management guidelines. In addition, students who self-reported having asthma rated their awareness of causes, signs, and symptoms and their understanding of asthma treatment significantly higher than non-asthmatic students. The findings from this research showed that there were significant differences in familiarity regarding asthma guidelines between respiratory therapy students and other healthcare students ($p < 0.001$). **Conclusion:** Healthcare students have positive perceptions regarding asthma management guidelines. Respiratory therapy students exhibited the highest confidence levels compared to other healthcare student programs. Followed by nursing students, occupational therapy students, and physical therapy students who showed the lowest confidence levels among all programs. Further, the current study's findings support the theory that students who self-reported having asthma showed higher levels of awareness toward causes, signs, and symptoms, and their understanding of asthma treatment was also higher than non-asthmatic students.

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Chapter I

Introduction

Asthma is a widespread chronic respiratory disease that affects a total of 262.41 million prevalent cases of the global population in distinct countries (Wang et al., 2023). Asthma is one of the most common chronic diseases among children and is a noncommunicable disease (NCD) that affects both children and adults (World Health Organization, 2023). Asthma is defined as chronic airway inflammation characterized by a history of respiratory symptoms that vary in time and intensity, such as wheezing, shortness of breath, chest tightness, and cough. Additionally, there is variable expiratory airflow limitation. However, depending on the existence of the triggers, these symptoms may be intermittent (Global Initiative for Asthma, 2023).

Asthma can affect individuals of any age, but it is more common in childhood (Qureshi et al., 2015). It can decrease the quality of life and increase hospitalization (Qureshi et al., 2015). There has been a significant increase in the number of individuals with asthma (Qureshi et al., 2015). Moreover, asthma is a challenging disease that requires continuous management and medication to keep symptoms under control and prevent exacerbations. Healthcare providers such as respiratory therapists and nurses play a significant role in the care of asthma patients, helping to establish and implement plans for treatment, providing medications, and monitoring symptoms. Despite their critical role, there is limited information about the perception of asthma management among healthcare students (Nursing Times, 2019). Understanding these perceptions is necessary for enhancing patient care and ensuring that healthcare providers have the resources to provide effective and high-quality treatment (Kallstrom & Myers, 2008).

The Global Initiative for Asthma report found that 339 million people have asthma (Global Initiative for Asthma, 2023). According to the International Study of Asthma and Allergies in

Childhood (ISAAC), 14% of children worldwide have had asthma symptoms. Asthma affects an estimated 5.4 million individuals in the United Kingdom, 30 million in Europe, and over 330 million worldwide. The annual number of deaths worldwide due to asthma is between 380,000 and 420,000 (James et al., 2018; Dahlén, 2019). According to the Global Initiative for Asthma (GINA), South Africa has approximately 3.9 million asthma individuals, with an annual mortality rate of 1.5%. South Africa has the world's fourth-highest asthma death rate among children aged 5 to 35. By 2030, chronic obstructive pulmonary disease (COPD) will be the third leading cause of mortality worldwide, surpassing HIV/AIDS in Africa (Global Initiative for Asthma, 2023).

It is necessary to evaluate healthcare students' perceptions to minimize asthma complications since they will play a significant role in diagnosing and controlling asthma in their future careers. Nonetheless, the degree of awareness is one of the most essential factors in managing asthma (Al-Anazi et al., 2014). Controlling bronchial asthma requires sufficient knowledge about the disease. Inadequate asthma management will lead to a high morbidity level and an increase in hospital visits (Engelkes et al., 2014). Healthcare students and providers should have a significant responsibility toward individuals with asthma, especially children. They must monitor them and make decisions regarding regular treatment and emergencies (Bevis & Taylor, 1990).

Asthma is currently one of the most common respiratory diseases in children. Collaboration among parents, healthcare providers, teachers, governmental organizations, and non-government institutions can overcome challenges to providing optimal pediatric asthma care in poor and developing countries (Sombans & Lohana, 2018). Parents in low-income countries often have a limited level of education, which could create challenges in identifying early signs of asthma in their children. Therefore, promoting educational campaigns that are easily comprehensible is

important (De Simoni et al., 2017). Parents play a crucial role in helping children with asthma adhere to inhaler treatment by addressing practical challenges and promoting the use of preventer inhalers, thereby eliminating the stigma associated with the condition (Sombans & Lohana, 2018; De Simoni et al., 2017).

Statement of The Problem

Even though respiratory therapists and other healthcare professionals play a significant role in asthma therapy. There is a gap in the literature regarding the understanding and perception of asthma management among healthcare student programs including entry-level master's and bachelor's respiratory therapy, graduate physical therapy, graduate occupational therapy, and undergraduate nurses' programs at Byrdine F. Lewis College of Nursing and Health Professions, Georgia State University. The lack of comprehensive research is a barrier to the advancement of effective treatment techniques. Understanding these perceptions is crucial for enhancing patient care and ensuring that healthcare students have the resources to provide effective treatment. Additionally, empowering healthcare students with the essential tools and knowledge enables them to provide the best care and make good decisions.

Purpose of The Study

This study aims to evaluate and compare the perceptions of asthma management among healthcare students lacking clinical experiences including entry-level master's and bachelor's respiratory therapy, graduate physical therapy, graduate occupational therapy, and undergraduate nurses' programs at Byrdine F. Lewis College of Nursing and Health Professions, Georgia State University. The present study seeks to examine the degree of understanding and preparedness of healthcare students in the areas of asthma diagnosis and control as they will be responsible for caring for asthma patients in their future careers. The current study recognizes that poor asthma

management can result in increased morbidity and hospital visits and emphasizes the importance of raising awareness and preparing healthcare students and professionals to manage asthma and decrease associated social problems. This research will also investigate the relationship of the perception of asthma management between experienced and inexperienced healthcare professional students.

Significance of The Study

The significance of this study is to examine healthcare students' perception and understanding of asthma management lacking prior medical experience. The current study provides insights into their comprehension of this chronic condition and asthma management education. Healthcare professional students are the future healthcare providers who will diagnose, treat, and manage asthma patients. It also compares the understanding and perception of asthma management among different healthcare professional students with an emphasis on respiratory therapy students compared to other healthcare professional students. This comparison can reveal differences in understanding and preparedness, suggesting areas where specific actions may be required.

Research questions:

The following are the research questions:

- 1- What are the perceptions of entry-level master's and bachelor's respiratory therapy, graduate physical therapy, graduate occupational therapy, and undergraduate nursing students about asthma management?
- 2- Are Respiratory Therapy students more confident regarding asthma management standards than other healthcare professionals?

Chapter II

Literature Review

This chapter presents a comprehensive literature review that evaluates the perception of asthma management among healthcare college students and providers. This review aims to understand healthcare college students' perceptions of asthma management and to identify specific aspects of their education that require improvement. Searches are performed on several online databases to conduct this review, including PubMed, Embase, EBSCOhost, and GSU library using the following keywords: Asthma perceptions, Asthma attitudes, Asthma understanding, Asthma knowledge, Asthma management, The perception of asthma management among healthcare professionals, The perception of asthma management among healthcare college students, Asthma treatment, Asthma guidelines, Global initiatives for asthma, The global asthma report, World Health Organization, and the National Asthma Education and Prevention Program. This chapter investigates the following concerns: An overview of Asthma, about asthma management, factors influencing the perception of asthma management, strategies for enhancing the perception of asthma management, the perception of asthma management among healthcare providers, and the perception of asthma management among healthcare college students.

An overview of Asthma:

Asthma is a chronic airway inflammation disease with varying respiratory symptoms, including cough, wheezing, chest tightness, shortness of breath, and variable expiratory airflow limitation that may become persistent over time (Global Initiative for Asthma, 2023). Asthma is an allergic condition in which allergens, or some exposures can cause airway restriction. However, continued exposure leads to airway inflammation and increased airway responsiveness. (Global Asthma Network, 2022).

In Santo Domingo, Mejias and Ramphul (2018) found that around 22.0% of children aged three to eleven years have asthma. The incidence of asthma is associated with factors such as age, birth order, family history of asthma and allergy, and household exposure to tobacco smoke. The increased incidence of 22.0% corresponds to the same range observed in previous research conducted in several Latin American nations (Mejias & Ramphul, 2018).

About asthma management:

Since the 1980s, new methods of thinking about asthma have developed (Global Asthma Network, 2022). The Global Strategy report for 2023 is updated with additional asthma management information and guidelines. The significant modifications involved clarifications regarding the terminology for asthma medications. The term "controller" has been replaced by "maintenance treatment" or "inhaled corticosteroids (ICS)-containing treatment," with the former referring to asthma treatment for every day or scheduled use. The term reliever inhaler is used for quick relief of asthma symptoms and can include short-acting β -agonists (SABAs), as well as ICS-formoterol and ICS-SABA. The term anti-inflammatory reliever (AIR) refers to a reliever inhaler that contains low-dose ICS and a rapid-acting bronchodilator such as budesonide-formoterol, beclometasone-formoterol, and ICS-salbutamol. Additionally, maintenance and reliever therapy (MART) is a treatment plan that includes the daily use of a combination ICS-formoterol inhaler for maintenance and as needed for symptom relief. This treatment approach only utilizes combination ICS-formoterol inhalers, such as budesonide-formoterol and beclomethasone-formoterol, and excludes ICS with other long-acting β -agonists (LABAs) or ICS-SABAs (Global Initiative for Asthma, 2023).

Asthma is a complicated chronic respiratory disease with several elements that contribute directly or indirectly to its complexity. In 2021, Coil conducted a study to evaluate the prevalence

of asthma education and medication usage related to asthma severity outcomes and any significant associations between sociodemographic and socioeconomic variables and asthma outcomes, medication use, asthma education, and general inquiries. The study findings showed that children with severe asthma had higher response rates upon medication use and asthma education. In addition, when comparing non-Hispanic white children (3.32% [1.74%, 4.90%]), non-Hispanic black children had a greater prevalence of severe asthma outcomes (8.27% [5.14%, 11.40%]) (Coil, 2021).

Different methods and strategies for asthma management have been studied and examined in the past years. In 2023, AL-awaisheh et al. conducted a single-blinded, randomized controlled study at the Jordan University Hospital (JUH) clinic. The researchers concluded that basic and essential intervention provided by a pharmacist to asthma patients at respiratory clinics and concentrating on the core principle of the accurate delivery method of inhaler technique was deemed practical for incorporation into routine practice. The intervention resulted in significant enhancements in the inhaler technique, management of asthma symptoms, and quality of life compared to patients who failed to receive the service. This outcome revealed the critical role of pharmacists in advising patients on their inhalers and proper technique administration (AL-awaisheh et al., 2023).

Sun et al. (2019), conducted a study to investigate the influence of the asthma-exclusive nursing scheme on the therapeutic outcome of individuals with asthma. One hundred and twenty patients underwent treatment with the combination of Montelukast and formoterol lyophilized powder. Further, the authors concluded that combining montelukast and formoterol could effectively and securely enhance pulmonary function indicators and inflammatory factor levels of

patients with asthma and improve their exercise capacity. This finding holds significant practical value when applied in clinical settings (Sun et al., 2021).

Patients with asthma exhibit a lack of perceptions and awareness concerning asthma management, consequently leading to health practices that contradict the evidence-based guidelines. Alzayer et al. (2020) conducted a study to assess Saudi participants' perception of their involvement with community pharmacists regarding asthma management. The results of the study showed that this was not a favored model since many if not all participants identified pharmacies simply as sources of medication and pharmaceutical supply. The authors suggest that enhancing the management of asthma in Saudi Arabia requires significant investments in various aspects, such as Improving asthma education, enhancing asthma service models, particularly in primary care, provider training, equipping healthcare providers with the necessary skills to empower patients, and establishing channels for patient advocacy (Alzayer et al., 2020).

Healthcare practitioners, parents, and children must have sufficient knowledge of asthma disease concepts and treatment plans. Therefore, educational materials and interventions are implemented to meet the child and family needs. To effectively promote behavioral change, asthma self-management education must be adopted and coordinated across all aspects of treatments, including clinics, hospitals, schools, pharmacies, and homes (Somple, 2014). Due to the complex nature of asthma, individuals suffering from this condition must possess sufficient knowledge about the disease, methods for assessing its management, fundamental treatment strategies, and essential self-management abilities to effectively control it (Boulet, 2015). Self-management asthma education is a crucial component of asthma management and is supported by the highest level of evidence (Boulet, 2015; Brown, 2015).

Reece et al. (2002) conducted a study on asthma's severity, impact, and quality of care in a sample of university students. The study took place in a medium-sized urban university located in the northeastern region of the United States. In this cross-sectional descriptive study, researchers used interviews and written questionnaires to evaluate asthma and its severity. The authors selected 215 college students with asthma to complete a 42-item survey. The participants were divided into three groups according to the severity of their asthma, with 23%, 59%, and 19% having severe, moderate, and mild asthma, respectively. The assessment of asthma management involved the usage of university healthcare services, asthma medications, monitoring, and flu vaccination. A significant percentage of participants (75%) were given guidance on inhaler usage, however, a relatively low percentage (38%) of severely asthmatic students were taught about asthma monitoring using a peak flow meter, and even fewer used the meter when experiencing symptoms, indicating a lack of awareness about monitoring asthma symptoms. The need for designing university asthma programs that are tailored to the requirements of young adults while adhering to national asthma guidelines is emphasized in this study (Reece et al., 2002).

Strategies for Enhancing the Perception of Asthma Management:

Several researchers have studied strategies that improve the perception of asthma management among different groups of individuals. In 2022, Lie et al. evaluated the effect of prior exposure to simulation-based training on medical students' performance in simulation-based training in asthma exacerbation. The study was performed in the Clinical Skills Training Center from September 2020 to January 2021 in Xiangya Hospital of Central South University. The sample was third-year medical students lacking any previous exposure to simulation education and assigned into two groups: pre-exposure and unexposed. Both groups encountered a four-hour simulation-based asthma exacerbation training, with the pre-exposure group receiving additional

prior training in myocardial infarction simulations. There was a further assessment of performance scores, task checklist completion, knowledge level, and student satisfaction. The results of this study found that there was an improvement in medical students' performance in subsequent simulations, particularly in communication skills, medical humanistic care, and checklist completion during asthma exacerbation scenarios, after exposing the medical students to simulation training (Liu et al., 2022).

In 2017, Drummond et al. found that delivering 30-minute simulation training on pediatric asthma exacerbations proved to be highly efficacious. These findings were based on comparing eighty-five medical students in their 3rd year between training students once on three different scenarios of pediatric asthma exacerbations versus training students three times on the same scenario of pediatric asthma exacerbations. Furthermore, for other students with limited prior knowledge of handling pediatric asthma exacerbations, changing or repeating the scenarios resulted in a similar performance on the transfer tests one week and four months following the training (Drummond et al., 2017).

Providing asthma education is crucial for individuals with limited access to healthcare facilities. Childhood prevalence of asthma is higher in low-income communities and among Hispanic populations in the United States. Previous research demonstrated that providing asthma education can enhance health and quality of life, particularly among susceptible individuals with limited healthcare access (Gill et al., 2022). In 2020, Carrillo et al. conducted research describing the Healthy South Texas Asthma Program (HSTAP). HSTAP is an evidence-based asthma education and environmental modification program in South Texas. Also, the authors assessed its associations with health-related outcomes among Hispanic children with asthma and their families. The findings of this study revealed a positive correlation between engagement in the HSTAP

program and enhanced health outcomes at the individual level, as well as a decrease in educational health discrepancies for children with asthma in low-income communities. Also, it indicates that establishing and expanding these education programs and environmental changes are required to improve asthma prevention, self-management, and quality of life for children with asthma living in low-income regions (Carrillo et al., 2021).

Another study performed by Policicchio et al. (2011) used a pre-post design to assess the nursing staff's perceived helpfulness and confidence in providing asthma services before and after the Nurse Asthma Care Education (NACE) program was delivered. The majority of the nursing staff were females above the age of 45. This study aims to assess the efficacy of this intervention. The study's most notable finding was that the NACE program enhanced nurses' perceptions and usefulness of implementing the National Asthma Education and Prevention Program (NAEPP) asthma guidelines. Nurses who work in community settings exhibited lower pre-NACE confidence ratings regarding the utilization of these guidelines as compared to their counterparts working in hospital or clinic settings. However, their post-NACE scores remained comparable. Clinical nurse specialist involvement in the continuous education of nurses may be an effective method for enhancing patient education and improving outcomes related to chronic diseases such as asthma (Policicchio et al., 2011).

A study conducted in 2022 about asthma awareness and its management among primary school teachers in Bagdad concluded that Baghdad school instructors tend to be generally self-confident when managing students with asthma. Training could potentially elevate the knowledge levels of educators, resulting in a possible increase in their ability to manage asthmatic children and enhance their confidence levels (Aqeel et al., 2015).

Norzila et al. (2000) measured the knowledge of childhood asthma among medical students and paramedics. The findings of this study stated that the third and last-year medical students exhibited a rise in their comprehension of childhood asthma after they completed the pediatric rotation. Furthermore, the results indicate that a brief intervention in asthma education can increase the paramedics' knowledge regarding childhood asthma. Third-year medical students performed lower scores than their senior students. Before and after intervention programs, the paramedics' performance was poor (Norzila et al., 2000).

Finally, simulation-based training programs conducted by Lie et al. (2020) demonstrate improvement in student performance regarding asthma exacerbation after implementing the simulation program. Overall, results from this literature could motivate healthcare students and healthcare practitioners to develop strategies and methods to enhance their perceptions and understanding regarding asthma management.

The knowledge of asthma management among healthcare providers:

Exploring healthcare providers' perceptions of asthma management is essential in comprehending the factors that affect the quality of care and patient outcomes in asthma management (Kassa et al., 2022). One of the studies in the United Kingdom examined the correlation between patients' and healthcare providers' (HCP) perceptions of asthma control and objective measurement of asthma control through the asthma control test (ACT) score. A small proportion of individuals believed their asthma was uncontrolled even though their ACT values indicated good levels. However, these individuals were at risk of adverse effects of excessive medication use due to the misperception of asthma control. Although HCPs classified poor asthma control more accurately than patients, they did not identify 100% of patients who required further

intervention to achieve optimal control. They overestimated asthma control in individuals with the highest risk of exacerbations and adverse outcomes (Menzies-Gow & Chiu, 2017).

Cvetkovski et al. investigated the perceptions and attitudes of general practitioners, pharmacists, and asthma patients in a rural community about asthma management in 2009. This study took place on the Mid-North Coast of New South Wales. The authors stated that general practitioners and pharmacists identified the patient as the most significant barrier to optimal care. According to the study findings, general practitioners and pharmacists believed that asthma management in their rural practice was not ideal, and this was verified by what their patients reported as normal behavior or acute care. Generally, both general practitioners and pharmacists stated that they required more insight into their patients' asthma control and management approaches. Unfortunately, they are unable to acquire this knowledge due to patient barriers. The author suggested that improved education regarding management and care increases awareness of optimal management, which leads to a shift in the demand for healthcare services from acute or crisis care to preventive care (Cvetkovski et al., 2009).

Plaza et al. (2007) conducted a study to ascertain Spanish healthcare professionals' knowledge, attitudes, and adherence to the Spanish Guidelines for Asthma Management (GEMA). The study aimed to evaluate the level of understanding of GEMA principles among Spanish healthcare practitioners. The questionnaire was distributed to respiratory medicine physicians, nurses, pediatric respiratory medicine, primary care practitioners, and the Spanish Society of Family and Community Medicine. Their results indicate that the adherence of Spanish healthcare professionals to GEMA guidelines is very low (Plaza et al., 2008).

In summary, exploring healthcare providers' perceptions of asthma management reveals some interesting insights, as these providers demonstrate better comprehension of asthma control

compared to others but encounter difficulties in identifying patients needing additional intervention. Healthcare providers sometimes overestimate asthma control in high-risk patients and often view the patient as a significant obstacle to receiving the best care. Overall, healthcare providers, despite their experience and knowledge, encounter challenges and opportunities for enhancement in delivering optimal asthma care.

The perception of asthma management among healthcare college students:

Research that has been thoroughly documented provides stronger evidence for the effectiveness of practical experience in managing Asthma compared to education. Understanding the knowledge, attitudes, and practices surrounding asthma care among healthcare college students is crucial for improving patient outcomes (Alobaidi, 2021). Alobaidi found that healthcare students had positive perspectives on evidence-based asthma methods for management. The findings from this study supported the theory that respiratory therapy students have no advantage over other healthcare students in terms of familiarity with asthma guidelines. This study confirmed that experience positively impacts knowledge and understanding of evidence-based practice for asthma management (Alobaidi, 2021).

In 2019, Maepa et al. examined the level of understanding among participants regarding the metered-dose inhaler (MDI) technique and their readiness to review and illustrate MDI use to patients prescribed inhaled medication. The research sample included medical practitioners, specifically physicians, nurses, and medical students in their last year from the Departments of Internal Medicine and Emergency Medicine at Helen Joseph Hospital and Chris Hani Baragwanath Academic Hospital. This study revealed that a majority of the participants, accounting for 57%, acknowledged not having observed the MDI technique of patients, while a significant 40% did not perform the task of demonstrating the MDI technique to patients. As a result, teaching patients

incorrect inhaler usage techniques resulted in high morbidity and mortality rates for those with underlying asthma or COPD. The findings of this study revealed a need for more comprehension of proper MDI techniques among HCPs and last-year medical students. The study also found that HCPs must comply with observing patients' inhaler techniques and demonstrating correct inhaler techniques to patients. The authors concluded that HCPs and last-year medical students showed poor knowledge of inhaler techniques and were unprepared to instruct their patients on the proper technique. Moreover, it is worrying that most of these professionals do not routinely exhibit or observe the inhaler techniques of their patients (Maepa et al., 2019). This study found that there is a lack of perception among last-year medical students (Maepa et al., 2019).

García-Marcos et al. were one of the first to assess and compare the first-year nursing students' knowledge of childhood asthma during the first week of their training in three European nations in 2004. The study findings revealed that Manchester students had significantly higher mean asthma knowledge scores than students at Cartagena and Cologne nursing schools. The results of the International Study of Asthma and Allergies (ISAAC) indicate that the United Kingdom has one of the highest prevalence rates of childhood asthma in the world. This could potentially account for the students' superior knowledge of asthma among in Manchester. This study found that personal experience of asthma was associated with higher asthma knowledge scores. The older age of nursing students in Manchester might have influenced their greater knowledge about asthma when compared to the nursing schools in Cartagena and Cologne. Students from Manchester who mentioned their own children's asthma experiences had higher asthma knowledge scores, indicating that this aspect may have influenced their performance. The possibility of greater exposure to public health education campaigns about asthma in Manchester is supported by the finding that students from Manchester regarded information from health

promotion publications as one of the two most important sources of information about the condition. This study revealed childhood asthma perception and beliefs among young, educated adults living in Spain, the United Kingdom, and Germany (García-Marcos et al., 2004).

In 2018, Urrutia-Pereira et al. conducted a study in Brazil to examine the knowledge of asthma, anaphylaxis, and food allergy among teachers, caregivers, and college students. The study comprises 577 participants randomly enrolled, including 299 college students with an average age of 30 years, divided into two groups: group 1 consisting of 181 students from medicine, nursing, and physiotherapy, and group 2 consisting of 118 students from pharmacy and physical education. The study findings indicated that while most college students were able to identify asthma symptoms and triggers, pharmacy, and physical education students exhibited a statistically higher level of knowledge regarding asthma triggers compared to the first group. Moreover, a significant proportion of students demonstrated misconceptions about the potential for addiction to short-acting beta agonist (SABA) usage and the impact of inhaled medications on systemic side effects. Additionally, many students believed that using a spacer with an MDI impeded the medication from reaching the lungs. However, there were no significant differences in pharmaceutical management knowledge between college student groups.

In 2020, Al-Obaidi et al. assessed the degree of awareness of rhinitis and asthma by using a Likert scale questionnaire consisting of 11 questions about symptoms, triggers, treatment, and general information about rhinitis and asthma diseases among 403 students from the Biotechnology Department of the College of Science at the University of Baghdad. The findings of this study revealed that college students have a moderate understanding of the symptoms and treatment of rhinitis and asthma. However, their knowledge of triggers and basic information regarding rhinitis and asthma is considerably low. In addition, it was observed that students were

able to identify the causes of irritation in asthmatic patients. The study results indicated that students had poor knowledge of the prevention and treatment of exercise-induced rhinitis and asthma. (Al-Obaidi et al., 2020).

To further examine the perception of asthma management among healthcare college students, Puerto and Cardona performed a descriptive cross-sectional observational study in 2020, which involved 1000 undergraduate medical students from 8 Colombian universities across various regions, aiming to assess their fundamental understanding of asthma and its management using a questionnaire. The study revealed statistically significant weaknesses in areas such as early detection, diagnosis, and medication management of asthma among college students ($p < 0.05$) (Fuentes & Cardona, 2020).

Conclusion

To conclude, the studies reviewed in this paragraph provide insight into the perception of asthma management among healthcare college students, revealing gaps in knowledge and understanding that can significantly impact patient outcomes. While healthcare students generally have positive attitudes towards evidence-based asthma management, there is a concerning lack of familiarity with asthma guidelines and proper inhaler techniques, which can result in incorrect usage and contribute to high morbidity and mortality rates for asthma patients. Overall, the literature findings highlight the necessity of standardized and comprehensive asthma management education for healthcare college students to provide optimal care for asthma patients.

Chapter III

Methodology

The researcher conducted a descriptive study of cross-sectional research design. The research design allows for collecting data at a specific time point, providing a snapshot of the participants' perspectives on the topic to examine the perceptions of asthma management among healthcare students at Georgia State University. The researcher employed a self-administered survey to investigate the perceptions, attitudes, and beliefs held by students studying Respiratory Therapy and other healthcare professional programs.

Research questions

The following are the research questions:

- 1- What are the perceptions of entry-level master's and bachelor's respiratory therapy, graduate physical therapy, graduate occupational therapy, and undergraduate nurses' students about asthma management?
- 2- Are Respiratory Therapy students more confident regarding asthma management standards than other healthcare professionals?

Instrumentation

The survey, consisting of 21 items, was distributed to the participants in a self-administered format. The survey was developed based on preliminary research by Dr. Douglas Gardenhire from Georgia State University in Atlanta, Georgia. The survey has previously been utilized in existing literature to evaluate the perceptions of respiratory therapy and other healthcare program students (Alobaidi, 2021). The survey comprises two sections: Section I examines students' perceptions and adherence to national asthma standards, while Section II collects demographic information, asthma diagnosis details, and years of experience in treating asthma patients. The first section of the survey

includes fifteen questions designed to assess students' perceptions of asthma management and adherence to national guidelines. The students' perceptions were measured using a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). These questions reveal information on students' knowledge, attitudes, and beliefs about asthma management. Section II of the survey comprises a set of six questions designed to collect demographic data, which includes factors such as age, gender, and educational background.

Research Design

A cross-sectional study was performed on participants from various healthcare programs, including students from entry-level master's and bachelor's respiratory therapy, graduate physical therapy, graduate occupational therapy, and undergraduate nursing students. The study will start after obtaining approval from the ethics committee and Institutional Review Board (IRB) at Georgia State University.

Sample

Convenience sampling is used to approach the participants. Participants were selected based on their availability. The population of interest comprises students from entry-level master's and bachelor's respiratory therapy, graduate physical therapy, graduate occupational therapy, and undergraduate nurses' programs within the Byrdine F. Lewis College of Nursing and Health Professions at Georgia State University. The criteria for exclusion in this study consist of individuals who are not actively enrolled in Georgia State University during the time frame of the research.

Protection of Human Subjects

The initiation of data collection will begin upon the acquisition of ethical approval from the IRB of Georgia State University. Participants will receive informed consent documents that describe the study goal, their rights as participants, and the voluntary nature of their involvement. Participants' confidentiality and identity will be protected, as will their personal information.

Data Analysis

The Statistical Package for the Social Sciences (SPSS) program, version 27 is used to analyze the data collected. The researcher will utilize descriptive statistics including mean, frequency, percentage, and standard deviation to provide an overview of healthcare students' perception of asthma management. An analysis of variance (ANOVA) test will be employed to investigate the differences in knowledge of asthma guidelines between respiratory therapy students and other healthcare students. These statistical analyses reveal possible differences in healthcare students' perceptions of asthma guidelines and experience in treating asthma patients.

Chapter IV

Findings

In this chapter, the results of a study conducted within the Healthcare Student Programs at the Byrdine F. Lewis College of Nursing and Health Professions, Georgia State University, are presented. The study aimed to evaluate healthcare students' perceptions of asthma management and differentiate the levels of knowledge among students based on their majors. Survey data were collected and analyzed using the Statistical Package for the Social Sciences (SPSS v.28.0) to address the research questions. The chapter offers a thorough overview of the study's objectives and methodology, presenting results through descriptive statistics, tables, and graphs.

Research Questions

- 1- What are the perceptions of entry-level master's and bachelor's respiratory therapy, graduate physical therapy, graduate occupational therapy, and undergraduate nursing students about asthma management?
- 2- Are Respiratory Therapy students more confident regarding asthma management standards than other healthcare professionals?

Demographic Findings

The study conducted at Georgia State University involved a convenience sample of both undergraduate and graduate healthcare students, comprising 398 participants across four programs: Nursing, Respiratory Therapy, Physical Therapy, and Occupational Therapy. The gender distribution included 338 female participants (84.9%) and 60 male participants (15.1%). In terms of age, 316 participants were under 25, 73 were between 25 and 35, 7 were between 36 and 45, and 2 were above 45. Furthermore, the study revealed that 80 participants (20.1%) self-reported having been diagnosed with asthma, while 318 participants (79.9%) indicated no history of asthma.

diagnosis. The largest representation was from Nursing students (n=145, 36.4%), followed by Respiratory Therapy (n=91, 22.9%), Occupational Therapy (n=82, 20.6%), and Physical Therapy (n=80, 20.1%). The majority held undergraduate (baccalaureate) degrees (n=220, 55.3%), followed by a clinical doctorate (n=162, 40.7%), and graduate (master) degrees (n=16, 4%). Regarding program progression, 217 participants were in their first year (54.5%), and 181 were in their second year (45.5%). A comprehensive summary of the demographic characteristics of all participants is presented in Table 1.

Table 1. Frequencies of all participants' demographic characteristics (n=398).

		N	N%
Gender	Male	60	15.1%
	Female	338	84.9%
Age	Under 25	316	
	25 - 35	73	
	36 - 45	7	
	Above 45	2	
Diagnosed with Asthma	Yes	80	20.1%
	No	318	79.9%
Major	Nursing	145	36.4%
	Physical Therapy	80	20.1
	Respiratory Therapy	91	22.9%
	Occupational Therapy	82	20.6%
Level of education	Undergraduate	220	55.3%
	Graduate (master)	16	4%
	Clinical doctorate	162	40.7%
Level of program	First-year	217	54.5%
	Second year	181	45.5%

Findings Related to Question 1

The primary objective of this research was to evaluate healthcare students' perceptions regarding asthma management. The data obtained were organized and presented in Table 2, outlining item numbers from the survey, survey statements, mean scores, and standard deviations, including perceptions across all healthcare students involved in the study. Moreover, the table outlines the perceptions of nursing, physical therapy, respiratory therapy, and occupational therapy students regarding asthma management. The findings in Table 2 are ranked based on healthcare students' perceptions, ranging from the highest to the lowest total mean scores. (see Table 2).

In general, healthcare students showed the highest level of agreement regarding the statement " It is important for me to recognize common signs and symptoms of asthma as a healthcare student " evidenced by a mean score of 6.72 with a standard deviation of (± 0.404). Conversely, the statement " I utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student " revealed the lowest level of agreement among participants, for a mean score of 3.9 with a standard deviation of (± 2.156). (See Table 2).

Likewise, the findings show that nursing students have positive perceptions toward asthma management, and their highest agreement was with the statement " It is important for me to recognize common signs and symptoms of asthma as a healthcare student " with a mean score of 6.76 ($SD \pm .852$). In contrast, their lowest agreement was to the statement that " I utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student" with a mean score of 4.04 ($SD \pm 2.181$). (See Table 2).

The study also reported that physical therapy students have a positive perception of asthma management. Their highest agreement was with the statement that "It is important for me to recognize common signs and symptoms of asthma as a healthcare student" with a mean score of

6.73(SD±.551). The physical therapy students' least agreement was in the statement " I utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student" with a mean score of 2.68 (±1.712). (See Table 2).

Moreover, the findings show that respiratory therapy students have a positive response toward the management of asthma. Respiratory therapy students demonstrated the highest agreement with two statements "It is important for me to recognize common signs and symptoms of asthma as a healthcare student" and "It is important for me to understand the treatment of asthma as a healthcare student" with mean score and standard deviation of 6.79 (SD±.548) and (SD±.527) respectively. Nevertheless, respiratory therapy students least agreed to utilize the Global Initiative for Asthma (GINA) guidelines as healthcare students with a mean score of 5.66 (SD±1.668). (See Table 2).

The study also reported that occupational therapy students have their highest agreement was to the statement " It is important for me to recognize common signs and symptoms of asthma as a healthcare student " with a mean score of 6.59(SD±.753). The occupational therapy students' least agreement was in the statement " I utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student. " With a mean score of 2.49 (SD±1.566). (See Table 2).

Table 2. Findings Related to Question 1: The level of perception of healthcare students regarding asthma management.

Item No.	Survey statement	Total Mean (±SD)	Nursing Mean (±SD)	Physical Therapy Mean (±SD)	Respiratory Therapy Mean (±SD)	Occupational Therapy Mean (±SD)
2-	It is important for me to recognize common signs and symptoms of asthma as a healthcare student	6.72 (±.716) *	6.76 (±.852) *	6.73 (±.551) *	6.79 (±.548) *	6.59 (±.753) *
3-	It is important for me to understand the treatment of asthma as a healthcare student.	6.61 (±.779)	6.73 (±.860)	6.34 (±.871)	6.79 (±.527) *	6.45 (±.669)
7-	My peers believe that I should recognize common signs and symptoms of asthma as a healthcare student.	6.33 (±.988)	6.39 (±1.095)	6.19 (±.873)	6.53 (±.886)	6.12 (±.961)
1-	It is important for me to identify the causes of asthma as a healthcare student.	6.29 (±1.106)	6.58 (±.977)	5.80 (±1.216)	6.75 (±.660)	5.73 (±1.197)
8-	My peers believe that I should understand the treatment of asthma as a healthcare student.	6.29 (±1.005)	6.43 (±1.078)	5.96 (±.974)	6.55 (±.847)	6.06 (±.947)
12-	I recognize common signs and symptoms of asthma as a healthcare student.	6.04 (±1.104)	6.17 (±1.095)	5.53 (±1.211)	6.41 (±0.966)	5.88 (±.948)
6-	My peers believe that I should understand the causes of asthma as a healthcare student.	5.93 (±1.238)	6.23 (±1.225)	5.35 (±1.192)	6.53 (±.835)	5.29 (±1.170)
13-	I understand the treatment of asthma as a healthcare student.	5.86 (±1.256)	6.10 (±1.227)	5.15 (±1.294)	6.36 (±1.070)	5.57 (±1.089)
11-	I understand the causes of asthma as a healthcare student.	5.74 (±1.283)	6.03 (±1.210)	4.96 (±1.267)	6.38 (±.986)	5.28 (±1.179)
4-	It is important for me to utilize the Global Initiative for Asthma (GINA)	5.69 (±1.312)	5.68 (±1.443)	5.25 (±1.258)	6.42 (±.920)	5.34 (±1.157)

	guidelines as a healthcare student.					
5-	It is important for me to attend continuing education offerings on asthma and asthma management.	5.43 (±1.524)	5.89 (±1.349)	4.46 (±1.475)	6.21 (±1.234)	4.70 (±1.340)
9-	My peers believe that I should utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student.	5.21 (±1.551)	5.15 (±1.651)	4.68 (±1.394)	6.19 (±1.182)	4.73 (±1.379)
10-	My peers believe that I should attend continuing education offerings on asthma and asthma management.	5.03 (±1.649)	5.34 (±1.630)	4.29 (±1.640)	5.76 (±1.478)	4.39 (±1.349)
15-	I may attend continuing education offerings on asthma and asthma management after graduation.	4.84 (±1.839)	5.08 (±1.816)	3.74 (±1.667)	5.96 (±1.429)	4.23 (±1.628)
14-	I utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student.	3.90 (±2.156) ⁺	4.01 (±2.181) ⁺	2.68 (±1.712) ⁺	5.66 (±1.668) ⁺	2.94 (±1.566) ⁺

SD: Standard Deviation.

(*): Highest score, (+) lowest score.

Note: Means are based on a 7-point Likert-scale in which 1 indicates strongly disagree and 7 indicates strongly agree. Scores above 4.5 indicate agreement with the statement.

Findings Related to Research Question 2

The second question asked, “Are Respiratory Therapy students more confident regarding asthma management standards than other healthcare professionals? “. The second question investigated whether Respiratory Therapy students exhibit greater confidence in adhering to asthma management standards compared to other healthcare professionals. Following a post hoc test, statements assessing familiarity and confidence levels demonstrated a statistically significant impact. Specifically, Statement 4 "It is important for me to utilize the Global Initiative for Asthma

(GINA) guidelines as a healthcare student" revealed a statistically significant difference between Respiratory Therapy students and students in other healthcare programs ($p < 0.001$). Respiratory Therapy students displayed higher confidence levels compared to Nursing students, with a mean difference of (0.742 ± 0.166) , Physical Therapy students with a mean difference of (1.168 ± 0.191) , and Occupational Therapy students with a mean difference of (1.076 ± 0.186) . Additionally, Statement 9, "My peers believe that I should utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student," showed a significant difference between Respiratory Therapy students and students in other healthcare programs ($p < 0.001$). Respiratory Therapy students exhibited greater familiarity compared to Nursing students, with a mean difference of (1.035 ± 0.194) , Physical Therapy students with a mean difference of (1.512 ± 0.222) , and Occupational Therapy students with a mean difference of (1.445 ± 0.220) .

Furthermore, Statement 14, "I utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student," demonstrated a marked difference between Respiratory Therapy students and students in other healthcare programs ($p < 0.001$). Respiratory Therapy students exhibited greater familiarity compared to Nursing students, with a mean difference of (1.562 ± 0.249) , Physical Therapy students with a mean difference of (2.984 ± 0.285) , and Occupational Therapy students with a mean difference of (2.72 ± 0.283) .

Overall, the findings of the second research question affirm that respiratory therapy students showed the highest confidence levels compared to other healthcare student programs. Followed by nursing students, occupational therapy students, and physical therapy students who showed the lowest confidence levels among all programs.

Table 3. Findings Related to Question 2: A comparison of asthma management guidelines between respiratory therapy students and other healthcare students.

Item No.	Survey statement	Total Mean (±SD)	Nursing N= 145	Physical Therapy N= 80	Respiratory Therapy N=91	Occupational Therapy N=82	P-value
			Mean (±SD)	Mean (±SD)	Mean (±SD)	Mean (±SD)	
4-	It is important for me to utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student.	5.69 (±1.312)	5.68 (±1.443)	5.25 (±1.258)	6.42 (±.920)	5.34 (±1.157)	>.001
9-	My peers believe that I should utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student.	5.21 (±1.551)	5.15 (±1.651)	4.68 (±1.394)	6.19 (±1.182)	4.73 (±1.379)	>.001
11-	I understand the causes of asthma as a healthcare student.	5.74 (±1.283)	6.03 (±1.210)	4.96 (±1.267)	6.38 (±.986)	5.28 (±1.179)	>.001
12-	I recognize common signs and symptoms of asthma as a healthcare student.	6.04 (±1.104)	6.17 (±1.095)	5.53 (±1.211)	6.41 (±0.966)	5.88 (±.948)	>.001
13-	I understand the treatment of asthma as a healthcare student.	5.86 (±1.256)	6.10 (±1.227)	5.15 (±1.294)	6.36 (±1.070)	5.57 (±1.089)	>.001
14-	I utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student.	3.90 (±2.156)	4.01 (±2.181)	5.68 (±1.712)	5.66 (±1.668)	2.94 (±1.566)	>.001
15-	I may attend continuing education offerings on asthma and asthma management after graduation.	4.84 (±1.839)	5.08 (±1.816)	3.74 (±1.667)	5.96 (±1.429)	4.23 (±1.628)	>.001

SD: Standard Deviation.

Note: p-value was obtained from the ANOVA test.

Means are based on a 7-point Likert-scale in which 1 indicates strongly disagree and 7 indicates strongly agree. Scores above 4.5 indicate agreement with the statement.

In terms of personal experience with asthma and asthma-related knowledge among healthcare students, the results indicated that individuals diagnosed with asthma exhibited a

significantly higher understanding of the causes, signs, and symptoms, as well as a more comprehensive awareness of asthma treatments compared to non-asthmatic counterparts ($p = .036$, $p = .002$, $p = .009$ respectively). However, no statistically significant difference was observed in the utilization of GINA guidelines or participation in continuing education on asthma between students self-reporting an asthma diagnosis and those reporting no asthma diagnosis. (See Table 4).

Table 4. Personal Experience of Being Diagnosed with Asthma and The Level of Asthma Management.

Item No.	Survey statement	Yes N= 80	No N= 318	P-value
		Mean (\pm SD)	Mean (\pm SD)	
11-	I understand the causes of asthma as a healthcare student.	6.01 (\pm 1.288)	5.68 (\pm 1.275)	.036*
12-	I recognize common signs and symptoms of asthma as a healthcare student.	6.38 (\pm 1.072)	5.95 (\pm 1.097)	.002*
13-	I understand the treatment of asthma as a healthcare student.	6.19 (\pm 1.332)	5.78 (\pm 1.224)	.009*
14-	I utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student.	3.98 (\pm 2.216)	3.88 (\pm 2.143)	.718
15-	I may attend continuing education offerings on asthma and asthma management after graduation.	4.88 (\pm 1.912)	4.83 (\pm 1.823)	.835

*The significant level is .050.

SD: Standard Deviation.

Note: p-value was obtained from the ANOVA test.

Means are based on a 7-point Likert-scale in which 1 indicates strongly disagree and 7 indicates strongly agree. Scores above 4.5 indicate agreement with the statement.

Chapter V

Interpretations of Findings

The objective of this chapter is to examine the results presented in Chapter IV. This chapter encompasses six major sections: an overview of the study, a discussion of findings, implications for research, recommendations for future studies, the study's limitations and strengths, and a conclusion.

An overview of the study

The goal of this descriptive study is to assess and compare the perceptions of asthma management among healthcare students lacking clinical experience. Data was collected from four healthcare professional programs. Two research questions guided this investigation:

- 1- What are the perceptions of entry-level master's and bachelor's respiratory therapy, graduate physical therapy, graduate occupational therapy, and undergraduate nursing students about asthma management?
- 2- Are Respiratory Therapy students more confident regarding asthma management standards than other healthcare professionals?

Discussion

The first question asked, “What are the perceptions of entry-level master's and bachelor's respiratory therapy, graduate physical therapy, graduate occupational therapy, and undergraduate nursing students about asthma management?” The main results of this research question revealed that healthcare students had positive perceptions toward asthma management guidelines. This is consistent with other studies on how healthcare students perceive evidence-based practice for asthma management. Alobaidi (2021) found that healthcare students had a positive perception of

evidence-based asthma methods for management. Likewise, the findings of García-Marcos et al. (2004) reported variations in asthma knowledge of first-year nursing students of childhood asthma during the first week of their training in three European nations. Moreover, the study revealed that Manchester students had significantly higher mean asthma knowledge scores than students at Cartagena and Cologne nursing schools. In contrast, Al-Obaidi et al. (2020) the findings revealed that college students from the Biotechnology Department have a moderate understanding of the symptoms and treatment of asthma. However, their knowledge of triggers and basic asthma information is considerably low, and their knowledge regarding the prevention and treatment of exercise-induced asthma is poor. The study findings of Puerto and Cardona (2020) revealed statistically significant weaknesses in asthma management knowledge among undergraduate medical students, particularly in areas like early detection, diagnosis, and medication management ($p < 0.05$). This goes against the current study findings. The reason for the inconsistency with the current study could be due to the large sample size and the involvement of 8 universities in Puerto and Cardona's study.

Maepa et al. (2019) identified gaps in knowledge among last-year medical students regarding inhaler techniques, suggesting a need for improved training in this area. Contrary to the present study findings, which showed a positive perception among healthcare students toward understanding the treatment of asthma assessed by two survey statements, "It is important for me to understand the treatment of asthma as a healthcare student" and "I understand the treatment of asthma guidelines as a healthcare student" ($p < .001$, $p < .001$) respectively.

Moreover, the lowest level of agreement was about the utilization of asthma guidelines, particularly GINA guidelines, this could be explained by the lack of awareness about the GINA guidelines. GINA works alongside healthcare providers, patient advocates, and public health

agencies globally to reduce asthma prevalence, impact, and mortality rates by enhancing its diagnosis, treatment, and prevention through evidence-based approaches and accessible resources. Each year, GINA releases the Global Strategy for Asthma Management and Prevention, which serves as a valuable resource for clinicians worldwide, helping them to improve the quality of asthma care. Additionally, GINA also offers evidence-based educational tools to enhance asthma understanding, diagnosis, and control among individuals affected by asthma (Global Initiative for Asthma, 2023).

The current study findings showed that students who self-reported having asthma rated their awareness of causes, signs, and symptoms and their understanding of asthma treatment significantly higher than non-asthmatic students. This emphasizes the impact of personal experience of having asthma on knowledge of disease management. These findings are compatible with Alobaidi's (2021) findings regarding the personal experience of being an asthma patient and the level of asthma knowledge among healthcare students, the findings revealed that students who had been diagnosed with asthma had significantly higher levels of knowledge about signs and symptoms as well as a better understanding of asthma treatments than non-asthmatic students. Furthermore, the findings of García-Marcos et al. (2004) study included nursing students, of which ten were asthmatic, revealed that these asthmatic nursing students demonstrated higher levels of knowledge regarding asthma management than non-asthmatic nursing students.

The second question asked, “Are Respiratory Therapy students more confident regarding asthma management standards than other healthcare professionals?” The present study aimed to investigate the confidence levels of respiratory therapy students regarding asthma management standards compared to other healthcare students. The overall findings from this research question showed that there were significant differences in familiarity regarding asthma guidelines between

respiratory therapy students and other healthcare students ($p<0.001$). These findings are aligned with Urrutia-Pereira et al. (2018) findings. According to Urrutia-Pereira et al. (2018), college students observed varying levels of knowledge regarding asthma triggers and pharmaceutical management which showed most college students were able to identify asthma symptoms and triggers. As a result, pharmacy, and physical education students exhibited a statistically higher level of knowledge regarding asthma triggers compared to students from medicine, nursing, and physiotherapy. Contrary to the findings of a study by Alobaidi (2021), which suggested that respiratory therapy students showed no superior perceptions over other healthcare students in terms of familiarity with asthma guidelines. The reason for the insignificant differences in the familiarity with asthma guidelines between respiratory therapy and other healthcare students could be explained by the insufficient sample size of the respiratory therapy students in Alobaidi's study, while the current study, included 91 respiratory therapy students who participated in the survey.

Implication of Research

The study findings provide an in-depth insight into the perceptions of asthma management among a sample of healthcare students from different majors. The information obtained from this study's information could be used to design a targeted intervention to improve understanding of asthma management in college settings. The present study findings address the importance of enhancing the perception of asthma management among interdisciplinary healthcare students through providing asthma simulation sessions, with an emphasis on evidence-based practices and interdisciplinary collaboration to improve both asthma understanding and clinical outcomes. The findings also support the idea that highlights informing healthcare students about the available sources for the latest asthma guidelines such as GINA guidelines. Finally, the current study findings will contribute to future practice-informed research on asthma management.

Suggestions For Future Research

Future research is recommended due to the lack of studies that evaluate healthcare students' perceptions of asthma management guidelines. Moreover, it is suggested to compare respiratory therapy students to nursing students and first-year students to second-year students in future investigations. Furthermore, replication of the study to include a greater variation of healthcare professions and multiple educational institutions is advised. This approach would enhance the generalizability and validity of the findings, providing a more comprehensive understanding of healthcare students' perceptions toward asthma management.

Limitations and Strengths

The present study has multiple factors that limit the study findings and need to be taken into consideration. One of the main factors restricting the study is including a single educational institution, which leads to limited generalizability of the findings. In addition, there is a lack of research that assesses healthcare students' perceptions toward asthma management, especially respiratory therapy students, which shows challenges in comparing the current study's findings with those of previous research in this area. Furthermore, doctoral-level occupational therapy and physical therapy students who lack clinical experience in asthma management exhibit a weakness in their perception of asthma management. Consequently, their educational level is adversely affected. Despite the limitations of the present study, this study included a large sample size with various healthcare student programs in different levels of academic degrees.

Conclusion

Healthcare students have positive perceptions regarding asthma management guidelines. The study's findings support that respiratory therapy students showed higher familiarity with asthma guidelines than other healthcare students. The study confirms that students who self-

reported having asthma exhibited their awareness and understanding of causes, signs, symptoms, and asthma treatment significantly higher than non-asthmatic students. Finally, the current study emphasizes the importance of personal asthmatic experience in disease management knowledge.

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Appendix A: informed Consent and Study Questionnaire

Georgia State University

Department of Respiratory Therapy

Informed Consent

Title: The Perception of Asthma Management Among Healthcare Student Programs at an Urban University.

Principal Investigator: Douglas S. Gardenhire, EdD, RRT-NPS, FAARC

Student Principal Investigator: Yazeed Felemban, BSc, RT

Dear Healthcare Students,

You are invited to take part in a research study because you are an undergraduate or graduate healthcare student. The purpose of this study is to evaluate the perceptions of healthcare students toward asthma management.

The research is being conducted by Yazeed Felemban, a master's student at Georgia State University, under the direction of Dr. Douglas S. Gardenhire, Chairman of the Respiratory Therapy Department at GSU. You will receive no direct benefit from participating in this study, but the information gained will help evaluate and assess the perceptions of healthcare students toward asthma management. If you are willing to participate in this study, you will be asked to complete the following survey. The survey should take approximately 10 minutes or less to complete.

Please note that your responses will be used for research purposes only and will be strictly confidential. To protect your confidentiality, no names or codes will be used to identify you or your survey. All surveys will be shredded after they have been analyzed. There is no

compensation or known risk associated with participation. We don't foresee this study causing you any harm or discomfort. You do not have to be in this study. You may skip questions or stop participating at any time. We hope that you will submit a completed survey. However, if you choose not to participate in this study, you may withdraw at any time by not completing or submitting a blank survey.

If you have any questions about the research, please contact Yazeed Felemban at yfelemban1@student.gsu.edu or Dr. Douglas S. Gardenhire, at dgardenhire@gsu.edu. The department's contact information can be found at the bottom of this page. If you are 19 years of age or older and agree to the above, please proceed to the survey. When finished, please place your survey in the designated envelope in the room.

Thank you in advance for your cooperation.

Sincerely,

Yazeed Felemban

Department of Respiratory Care Georgia State University

P.O. Box 4019

Atlanta, GA 30302

(404) 413-122

Survey of the perceptions of healthcare students toward Asthma Management

Please answer each of the following questions by circling the number that best describes your opinion.

To what extent do you agree with each of the following statements?	Strongly disagree \longleftrightarrow Strongly Agree						
1.It is important for me to identify the causes of asthma as a healthcare student.	1	2	3	4	5	6	7
2.It is important for me to recognize common signs and symptoms of asthma as a healthcare student	1	2	3	4	5	6	7
3.It is important for me to understand the treatment of asthma as a healthcare student.	1	2	3	4	5	6	7
4.It is important for me to utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student.	1	2	3	4	5	6	7
5.It is important for me to attend continuing education offerings on asthma and asthma management.	1	2	3	4	5	6	7
6.My peers believe that I should understand the causes of asthma as a healthcare student.	1	2	3	4	5	6	7
7.My peers believe that I should recognize common signs and symptoms of asthma as a healthcare student.	1	2	3	4	5	6	7
8.My peers believe that I should understand the treatment of asthma as a healthcare student.	1	2	3	4	5	6	7
9.My peers believe that I should utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student.	1	2	3	4	5	6	7

10. My peers believe that I should attend continuing education offerings on asthma and asthma management.	1	2	3	4	5	6	7
11. I understand the causes of asthma as a healthcare student.	1	2	3	4	5	6	7
12. I recognize common signs and symptoms of asthma as a healthcare student.	1	2	3	4	5	6	7
13. I understand the treatment of asthma as a healthcare student.	1	2	3	4	5	6	7
14. I utilize the Global Initiative for Asthma (GINA) guidelines as a healthcare student.	1	2	3	4	5	6	7
15. I may attend continuing education offerings on asthma and asthma management after graduation.	1	2	3	4	5	6	7

Part II.

Please answer the following background variables.

16. What is your gender?

- ☐ Male.
- ☐ Female.

17. What is your age in years?

.....

18. Have you ever been diagnosed with asthma?

- ☐ Yes.
- ☐ No.

19. What is your major?

- ☐ Nursing.
- ☐ Physical Therapy.
- ☐ Respiratory Therapy.
- ☐ Occupational Therapy.
- ☐ Other, please specify

20. What is your level of education?

- ☐ Undergraduate (baccalaureate).
- ☐ Graduate (master).
- ☐ Clinical doctorate.

Other, please specify.....

21. What is your current level in the professional program?

- ☐ First year.
- ☐ Second year.
- ☐ Third year.
- ☐ Other, please specify.....

Thank you for participating in this survey.

Appendix B: IRB Approval



INSTITUTIONAL REVIEW BOARD

Mail: P.O. Box 3999 In Person: 3rd Floor
Atlanta, Georgia 30302-3999 58 Edgewood
Phone: 404/413-3500 FWA: 00000129

January 18, 2024

Principal Investigator: Douglas Gardenhire

Key Personnel: Felemban, Yazeed F; Gardenhire, Douglas

Study Department: Georgia State University, Respiratory Therapy

Study Title: The Perception of Asthma Management Among Healthcare Student Programs at Byrdine F. Lewis College of Nursing and Health Professions, Georgia State University

Submission Type: Exempt Protocol Category 2

IRB Number: H24315

Reference Number: 377666

Determination Date: 01/12/2024

Status Check Due By: 01/11/2027

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.

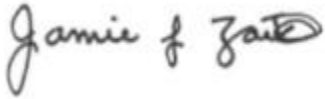
This determination applies only to research activities engaged in by the personnel listed on this document.

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,

A handwritten signature in black ink that reads "Jamie f Zaikov". The signature is written in a cursive, slightly informal style.

Jamie Zaikov, IRB Member