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## Relationship Between Parent Asthma Knowledge, Parental Control of Child's Asthma, and Parent QoL

Glori Sommerer  
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# Walden University

College of Social and Behavioral Sciences

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Walden University  
2020

Abstract

Relationship Between Parent Asthma Knowledge, Parental Control of Child's Asthma,  
and Parent QoL

by

Glori Sommerer

MS, Walden University, 2019

MS, Tarleton State University, 2009

BS, Tarleton State University, 2005

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Health Psychology

Walden University

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## Abstract

The long-term responsibility of caring for a child with asthma can result in parents experiencing a lower quality of life (QoL), especially if the child's asthma is not well controlled. Asthma knowledge can enhance asthma control practices among parents. However, research has not explored these variables together to determine whether parental control of child's asthma mediates the relationship between parent asthma knowledge and parent QoL. This quantitative research study explored whether parental control of child's asthma mediated the relationship between parent asthma knowledge and parent QoL. The theoretical foundation was asthma self-regulation theory, focused on the importance of asthma knowledge for parents to effectively control the child's asthma and experience an overall improved QoL. A convenience sample of 70 parents of children with asthma participated in the study. Hayes macros was used to test for mediation. A significant relationship between parental control of child's asthma and QoL was found; however, mediation was not supported by the data. Adequate communication between parents and medical health professionals is vital in being able to implement the appropriate measures needed to control asthma in children. Because research has consistently determined a relationship between parental control of child's asthma and QoL, a parental QoL assessment may be helpful as part of the treatment plan provided for the child. The results of the present study may contribute to positive social change by adding to the research supporting the importance of controlling symptoms for children for parental QoL.

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## Dedication

I dedicate this dissertation to God, my husband, my children, my parents, my siblings, and my uncle who is no longer with us. During the dissertation process I relied on God for strength, wisdom, and guidance; He never fails. My husband, Karl has been my biggest encourager every step of the way. He refused to let me quit and provided me with support during the most challenging parts of my dissertation. My children, Jeremiah, Faith, and Joy are my world, and through this I wanted to teach them that with hard work and commitment anything is possible. My parents, Steven and Marta, have always believed in me and motivated me along the way. I attribute my strong work ethic to my parents who raised me to persevere and to work hard for what I wanted in life. My siblings and best friends in life, Steven and Milaris, who continuously encouraged me and uplifted me with their kind words. Finally, I would like to dedicate this dissertation to my uncle, Manuel, who passed from complications due to COVID-19. You were a light to this family and will continue to live on through the beautiful memories we shared. I know that you are proud of me.

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## Chapter 1: Introduction to the Study

Asthma is a chronic lung condition that is common among children. Nearly six million children in the United States are affected by asthma (Zahran, Bailey, Damon, Garbe, & Breysse, 2018). The symptoms of asthma typically consist of wheezing, coughing, chest tightness, and difficulty breathing. Asthma cannot be cured; however, symptoms can be minimized using asthma control medications (e.g., inhaled corticosteroids) and by avoiding asthmatic triggers such as allergens (e.g., cigarette smoke, pet dander; Zahran et al., 2018).

*Asthma control* is a central element in the treatment of asthma and is defined as the degree to which asthmatic symptoms, for example needing reliever medication every day to accomplish daily activities or waking up during the night with asthmatic symptoms, are minimized by daily treatments (Pijnenburg et al., 2015). The long-term risks for children with uncontrolled asthma involve asthma attacks, impaired lung development, decline in lung function, and treatment side effects. Although there are effective treatments available that help in controlling asthmatic symptoms, many children do not have their asthma substantially controlled and experience restrictions during everyday activities (Pijnenburg et al., 2015).

The goal of asthma treatment for children is for parents to control symptoms, to reduce future risks for the child, and for the child to experience minimal restrictions in their daily lives (Pijnenburg et al., 2015). However, parents of children with asthma often demonstrate a lack of knowledge about asthma and the preventative measures needed to control asthma exacerbations (Kuti & Omole, 2016; McClelland, Wenz, Sood, & Yono,

2013; Soo & Tan, 2014). The methods used by parents to control the child's asthma can vary due to the level of understanding, perceptions, fears, health beliefs, and experiences (Soo & Tan, 2014).

Parents of children with asthma also experience high levels of stress that can affect their overall quality of life (QoL). Adjusting to the new role of caring for a child with an illness such as asthma can cause a great deal of distress, especially when symptoms are not effectively controlled. Research reveals that parents of children with chronic illnesses report a lower QoL when compared with parents of healthy children (Gopal & Rai, 2016).

In the present study, I investigated whether parental control of child's asthma mediated the relationship between parent asthma knowledge and parent QoL. The results may provide doctors and professionals who develop and implement asthma education programs with a better understanding on the importance of asthma knowledge for parents of children with asthma. Findings may also be used in the development of asthma educational programs that are geared toward increasing asthma awareness and QoL among parents of children with asthma. I organized this chapter by introduction, background, problem statement, purpose of the study, research questions and hypotheses, theoretical framework, nature of the study, definitions, assumptions, scope and delimitations, limitations, significance, and summary.

### **Background**

A lack of parent asthma knowledge can result in poor asthma care for the child (McClelland et al., 2013). Asthma action plans and asthma education provided by health

care providers are used to teach children and parents how to recognize the early signs of asthma exacerbations and how to effectively treat and control the chronic illness. When parents have adequate asthma knowledge, they provide better care for their child with asthma (Paymon & Riley, 2018). Good asthma knowledge involves being aware of symptoms, triggers, and appropriate treatments available (Silva & Barros, 2013). However, not all parents have the asthma knowledge needed to effectively control symptoms (Grover et al., 2016; Kuti & Omole, 2016; McClelland et al., 2013; Soo & Tan, 2014).

Parents of children with asthma also tend to experience higher levels of stress and a lower QoL when compared with parents of healthy children. Chronic asthma requires daily and consistent treatment to prevent asthmatic symptoms. Parents must learn to balance their daily activities and roles to provide optimal care for the child with asthma, which can lower their QoL (Waters et al., 2017). A lower QoL among parents of children with a chronic illness has been negatively linked to asthma control for children (Bellin et al., 2015; Carey, Edds-McAfee, Martinez, Gutierrez de Blum, & Thornton, 2019; Cerdan, Alpert, Moonie, Cyrkiel, & Rue, 2012; Everhart, Borschuk, Miadich, Barsell, & Heron, 2018; Stelmach et al., 2012). However, research reveals that asthma educational programs aimed at increasing asthma knowledge can also increase parent QoL (Grover et al., 2016).

### **Problem Statement**

A large body of evidence shows the effects of child asthma on parental QoL (Bellin et al., 2015; Cano-Garcinuno et al., 2015; Cerdan et al., 2012). A decreased QoL

for parents of children with asthma involves frequent night awakenings, lack of sleep, limited social activities, decreased emotional health, and days missed from work (Gopal & Rai, 2016). Parents caring for a child with asthma are tasked with the responsibility of preventing symptoms and intervening once symptoms arise (Ekim & Ocakci, 2016).

Despite carefully attending to the needs of their children, parents of children with asthma often experience challenges in controlling their child's asthma (Gopal & Rai, 2016). The repetitive and long-term responsibility of providing care for a child with a difficult to control, serious, and chronic condition such as asthma can result in daily stress that can ultimately take a toll on the parents' functional, emotional, and social wellbeing (Ekim & Ocakci, 2016), that is, their QoL. The severity of symptoms can also affect the parents' overall QoL (Gopal & Rai, 2016). Adequately controlled asthma in children, on the other hand, has been associated with higher levels of QoL among parents (Bellin et al., 2015).

Asthma control is related to knowledge of the asthmatic symptoms, triggers, and effective treatments available (Arıkan-Ayyıldız et al., 2016). Parent asthma knowledge has been associated with parents feeling prepared, confident, and competent in controlling their child's asthma (Dudeney, Sharpe, & Hunt, 2017). Parents who have asthma knowledge report fewer emergency department visits, fewer hospitalizations, and improvements in their child's asthma control (Arıkan-Ayyıldız et al., 2016). Poor parent asthma knowledge, on the other hand, has been linked to ineffective asthma control practices that often lead to deficiencies in the asthma care provided for children (Zhao et al., 2013).



To date, research has shown a relationship between parent asthma knowledge and parent QoL (Bryant-Stephens & Li, 2004; Chan et al., 2007; Lio, Hamaguchi, Narita, Takenaka, & Ohya, 2017), parent asthma knowledge and parental control of child's asthma (Arıkan-Ayyıldız et al., 2016; Dudeney, Sharpe, & Hunt, 2017), and parental control of child's asthma and parent QoL (Bellin et al., 2015; Cano-Garcinuno et al., 2015; Cerda et al., 2012). These findings suggested that parental control of child's asthma mediated the relationship between parent asthma knowledge and parent QoL. However, no research study had tested this relationship. Therefore, the present study explored the potential mediating effects of parental control of child's asthma on the relationship between parent asthma knowledge and parent QoL.

### **Purpose of the Study**

The purpose of the present study was to examine the relationship between parent asthma knowledge, parental control of child's asthma, and parent QoL. Research revealed that parents with asthma knowledge generally had a higher QoL (Bryant-Stephens & Li, 2004; Chan et al., 2007; Lio et al., 2017) and had children with well-controlled asthma (Arıkan-Ayyıldız et al., 2016; Dudeney et al., 2017). However, researchers had not explored the relationship among these variables together or whether parental control of child's asthma mediated the relationship between parent asthma knowledge and parent QoL. Therefore, to address this gap in literature, I used a quantitative approach to examine the potential mediating effects of parental control of child's asthma on the relationship between parent asthma knowledge and parent QoL.

### **Research Question and Hypotheses**

Research question: Does parental control of child's asthma mediate the relationship between parent asthma knowledge and parent QoL?

*H<sub>0</sub>*: Parental control of child's asthma, as measured by the Asthma Control Test Caregiver Report (ACT-CR<sup>TM</sup>) does not mediate the relationship between parent asthma knowledge, as measured by the Asthma Knowledge Questionnaire and parent QoL, as measured by the Pediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ).

*H<sub>1</sub>*: Parental control of child's asthma, as measured by the Asthma Control Test Caregiver Report (ACT-CR<sup>TM</sup>) does mediate the relationship between parent asthma knowledge, as measured by the Asthma Knowledge Questionnaire and parent QoL, as measured by the Pediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ).

### **Theoretical and/or Conceptual Framework for the Study**

Asthma self-regulation theory (Stephney, Kane, & Bruzzese, 2011) was derived from social cognitive theory (Bandura, 1989) and explains how learning occurs when individuals feel confident in their skills to successfully control asthmatic symptoms. Asthma self-regulation in the case of children, whose illness is controlled by parents, involves the parent's asthma knowledge, confidence, and skills used to control their child's asthma (Stephney et al., 2011). There are four phases included in the theory of asthma self-regulation: avoidance, acceptance, compliance, and self-regulation (Stephney, Kane, & Bruzzese, 2011).

This theory was an appropriate framework for this study because it suggested that asthma knowledge was beneficial at every phase the parent is in to motivate the provision of appropriate care to control their child's asthma. When parents obtain the knowledge and skills needed (i.e., identifying flare-ups, allergens, treatment regimens) to effectively care for the child with asthma, the parents' overall QoL life is enhanced as well. Chapter 2 includes a more detailed explanation on the concepts and application of asthma self-regulation theory.

### **Nature of the Study**

Because I examined the relationship among variables, I used a quantitative approach. The predictor variable in this study was parent asthma knowledge, the dependent variable was parent QoL, and the mediating variable was parental control of child's asthma. The parents of children with asthma completed (a) the Asthma Knowledge Questionnaire to measure asthma knowledge, (b) the Asthma Control Test Caregiver Report (ACT-CR™) to measure parental control of child's asthma, (c) the Pediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ) to measure their QoL, and (d) a demographic questionnaire that was used to describe the sample.

Researchers have used the Asthma Knowledge Questionnaire to measure parent asthma knowledge and have determined it to be a useful and reliable measurement (Pink, Pink, & Elwyn, 2009; Rodriguez Martinez & Sossa, 2005). Various researchers have also found the PACQLQ as a useful tool in measuring the QoL of parents of children with asthma (Gonzalez-Conde, Perez-Fernandez, Ruiz-Esteban, & Valverde-Molina, 2019; Ibrahim et al., 2019; Juniper et al., 1996; Ibrahim et al., 2019). Last, research has also

indicated that the ACT was a valid and reliable measurement of parental control of child's asthma (Schatz et al., 2006).

### **Definitions**

*Asthma control:* Absent or minimal symptoms of asthma (e.g., coughing, wheezing, difficulty breathing) with minimal to no use of the rescue inhaler. There should also be a lack of early morning or nighttime symptoms and living a close to normal lifestyle (Cockcroft & Swystun, 1996).

*Asthma knowledge:* An understanding regarding asthma in children; familiarity with the symptoms, features of the disease, and treatment options available (Gajanan, Padbidri, & Chaudhury, 2016).

*Quality of Life:* QoL is a subjective and multidimensional concept (Gopal & Rai, 2016) that refers to an individual's perceived satisfaction in the domains of functional, emotional, and socio-occupational well-being (Cano-Garcinuno et al., 2016).

### **Assumptions**

For this study, I assumed that the participants understood the questionnaires selected and answered in an honest and unbiased manner. It was important for participants to respond truthfully so that their responses would accurately reflect reality and provide accurate information for the gap in literature. I also assumed that the valid and reliable questionnaires selected for this study were appropriate for the sample I obtained. Additionally, I assumed that the information collected from the participants provided insight into the relationship between parent asthma knowledge, parental control of child's asthma, and parent QoL.

### **Scope and Delimitations**

The research sample was limited to parents of children with medically diagnosed between the ages of 4 and 11 years. The participants confirmed that their child had received a diagnosis of asthma by a physician. The study was also limited to the biological parent of the child with asthma. Parents/caregivers who were not the child's biological parent (e.g., foster parent, stepparent, grandparent) were not included in the study, because the parent and child relationship may have differed significantly between biological parents and nonbiological parents and affected the generalizability of the results. Data were collected through ads on Facebook targeting parents of children with asthma. I also intended to collect data from allergy and asthma clinics in Central, Texas.

### **Limitations**

A potential limitation was that the allergy and asthma clinics in Central, Texas, would not have allowed me to recruit from their clinics. If I were prohibited from recruiting from the allergy and asthma clinics, I could have also networked with other local clinics and hospitals in the area and recruited participants from these locations. The last resort would have been to recruit all of the participants online.

Recruiting all of the participants online could limit the generalizability of the results. Parents of children with asthma who participated in online surveys may have differed significantly from parents who did not participate in online surveys. However, further research may be conducted to understand whether differences exist. Another limitation involved self-reporting. Parents could have exaggerated or minimized their responses or try to present a best-case scenario, in which case, results would have not

accurately reflected parental control of child's asthma and parent QoL. The anonymous nature of the data collection efforts might have reduced this potential limitation.

### **Significance**

The results of this study provided further insight into the factors that contributed to the QoL of parents of children with asthma and whether the relationship between parent asthma knowledge and parent QoL was mediated by parental control of child's asthma. Should parental control of child's asthma mediate the relationship between parent asthma knowledge and parent QoL, then future studies can explore the level of asthma knowledge needed to enhance awareness and prepare parents in controlling asthmatic symptoms for the child. Understanding the level of asthma knowledge needed to control the child's asthma can also provide researchers with the opportunity to develop programs and interventions that aim to increase the level of asthma knowledge needed for parents, which could in turn improve the asthma control practices of parents of children with asthma and also the parent's overall QoL.

Findings from this study can also potentially quantify the importance of asthma knowledge in the process of controlling asthma in children, and help researchers understand the negative effects that can occur in the parents' QoL if symptoms are not adequately controlled in the child. Gaining this insight may help to understand the importance of asthma knowledge and parental control of child's asthma in parent QoL. Furthermore, results may also reveal the need to include a QoL analysis for parents of children with asthma as part of the medical treatment plan.

## Summary

This chapter introduced a quantitative study and examined the relationship between parent asthma knowledge, parental control of child's asthma, and parent QoL. Background information concerning the prevalence of asthma among children, the importance of parent asthma knowledge to control asthmatic symptoms, and the QoL among parents of children with asthma was included. Previous research has revealed a relationship between parent asthma knowledge and parent QoL (Bryant-Stephens & Li, 2004; Chan et al., 2007; Lio et al., 2017), parent asthma knowledge and parental control of child's asthma (Arıkan-Ayyıldız et al., 2016; Dudeney et al., 2017), and parental control of child's asthma and parent QoL (Bellin et al., 2015; Cano-Garcinuno et al., 2015; Cerda et al., 2012). However, research has not explored these variables together. The purpose of this study was to explore parental control of child's asthma as a potential mediating variable on the relationship between parent asthma knowledge and parent QoL. Chapter 2 includes a detailed literature review of what has been found through research on the relationship between parent asthma knowledge, parental control of child's asthma, and parent QoL.

## Chapter 2: Literature Review

### Introduction

Children with asthma rely on their parents to control their asthma. Providing a high level of care (e.g., identifying triggers and symptoms) for a child with asthma can be complicated and involve many responsibilities to ensure the child's asthma is well controlled (Ekim & Ocakci, 2016). Asthma knowledge can enhance the parents' asthma control practices (Soo & Tan, 2014). Parents of children with asthma who are knowledgeable about asthma tend to have children with well controlled asthma. Therefore, if parents obtain the asthma knowledge and skills needed to effectively treat asthma, then the child's health outcomes can potentially be improved (Paymon, Riley, & Miller, 2018).

There is a well-established relationship between parental control of child's asthma and parent QoL (Bellin et al., 2015; Carey, Edds-McAfee, Martinez, Gutierrez de Blum, & Thornton, 2019; Cerdan, Alpert, Moonie, Cyrkiel, & Rue, 2012; Everhart, Borschuk, Miadich, Barsell, & Heron, 2018; Stelmach et al., 2012). When a child's asthma is effectively controlled, parents typically have a better QoL (Stelmach et al., 2012). However, poor asthma control in children has been associated with a lower QoL for parents (Bellin et al., 2015).

The purpose of the present study was to examine the potential mediating effects of parental control of child's asthma on the relationship between parent asthma knowledge and parent QoL. Prior research has revealed a relationship between parent asthma knowledge and parent QoL (Bryant-Stephens & Li, 2004; Chan et al., 2007; Lio,



Hamaguchi, Narita, Takenaka, & Ohya, 2017), parent asthma knowledge and parental control of child's asthma (Arıkan-Ayyıldız et al., 2016; Dudeney, Sharpe, & Hunt, 2017), and parental control of child's asthma and parent QoL (Bellin et al., 2015; Cano-Garcinuno et al., 2015; Cerda et al., 2012). These findings indicated that parental control of child's asthma may mediate the relationship between parent asthma knowledge and parent QoL. Specifically, that knowledge may predict QoL because it improves control of asthma. However, research had not explored these variables together. Further, no study had yet tested this mediation. Findings from the present study may help provide a better understanding on the mechanism through which parent asthma knowledge and parent QoL are related, and if the hypothesis were supported, highlight the importance of asthma education programs for parents. I organized this chapter by literature search strategy, theoretical foundation, background of asthma in children, and the role of parental control of child's asthma on the relationship between parent asthma knowledge and parent QoL.

### **Literature Search Strategy**

The literature search review for this study included the following databases: ProQuest, MEDLINE, Academic Search Premier, Psychinfo, and Psycharticles. I also used the search engine Google Scholar. The years that were included in the search were from 1989 to 2019. The key words that were used in the search consisted of *parent, parental, caregiver, asthma, bronchial, severity, knowledge, education, awareness, perception, child, children, pediatric, poor, poorly, control, controlled, uncontrolled, symptoms, symptomatic, efficacy, burden, coping, quality of life, QoL, lifestyle, family, families, chronic, illness, disease, attitudes, diagnosed, monitoring, allergy, allergies,*

*self-efficacy, factors, mediate, mediation, experiences, impact, affecting, self-regulation, treatment, social cognitive, effective, Pediatric Asthma Caregiver's Quality of Life Questionnaire, and PACQLQ.*

### **Theoretical Foundation**

The theoretical framework that I selected for this research study was asthma self-regulation theory (Stephney et al., 2011), which was derived from social cognitive theory (Bandura, 1989). Asthma self-regulation theory as applied here to parents focused on the extent in which learning allows parents to feel confident in their role to effectively control asthmatic symptoms in their children. Asthma self-regulation explained the importance of parents obtaining the knowledge and skills needed to appropriately control asthma in their children, which ultimately improves their QoL (Stephney et al., 2011).

#### **Asthma Self-Regulation Theory**

Parents of children with asthma can control their child's asthma by setting appropriate goals, using strategies to ensure goals are met, and monitoring the effectiveness of those goals (Stephney et al., 2011). The goal of asthma care for children is to achieve asthma control (van Aalderen, 2012). Parents can achieve control when they are knowledgeable on asthma and provide the appropriate treatments needed as recommended by health care professionals. Asthma is a serious chronic illness that must be consistently monitored to ensure that the treatment being provided is working effectively. Therefore, it is vital for parents of children with asthma to become knowledgeable about potential triggers, medication use, and how to effectively control the illness (van Aalderen, 2012). Asthma self-regulation theory proposes that experts

such as health care professionals can provide effective strategies and information needed for parents to meet the goal of asthma control by providing them with feedback, guidance, and asthma education (Stephney et al., 2011).

According to asthma self-regulation theory parents generally go through a four-phase process when their child is diagnosed with asthma, at the end of which they are ready to effectively control their child's asthma (Stephney et al., 2011). The phases included in asthma self-regulation theory are the following: avoidance, acceptance, compliance, and self-regulation. Progression through each of the phases requires a change of thinking regarding asthma, as well as feeling a sense of growing confidence in being able to manage and control the illness. Asthma knowledge can serve to empower parents and motivate them to meet the child's health needs (Stephaney et al., 2011). When parents are well informed and feel empowered to provide optimal care for their child, their QoL is enhanced (Lio et al, 2017; Sheng, Ma, Ding, & Zhang, 2019).

### **Asthma**

Asthma is a chronic illness that involves the airways in the lungs and is common in children (Centers for Disease Control and Prevention [CDC], 2018a). The airways of individuals with asthma become inflamed and narrowed, which makes it difficult for the air to enter and exit the lungs (American Academy of Allergy Asthma and Immunology [AAAAI], 2019a). Many individuals with asthma have a family history of asthma or allergies which is, referred to as allergic asthma, whereas some people experience asthma only during or after physical activity which is referred to as exercise-induced asthma (EIB; AAAAI, 2019a). However, triggers can be different from person to person.

Therefore, it is vital for parents of children with asthma to become aware of the specific triggers (e.g., tobacco smoke, air pollution, pets, mold, flu, cockroach allergen) for their child and learn ways to avoid them (CDC, 2018b).

### **Asthma Symptoms**

Asthma involves inflammation in the airways that is long lasting and needs to be controlled. An asthma flare-up or attack can be unpredictable and occur at any time. Mild symptoms of asthma can last for a few minutes while severe symptoms can last anywhere from a few hours to days (Asthma and Allergy Foundation of America [AAFA], 2019). Wheezing is one of the common symptoms of asthma; however, other symptoms include chest tightness, chronic coughing, shortness of breath, and difficulty sleeping resulting from coughing or wheezing (AAAAI, 2019a). Some children may experience only a chronic cough as the only symptom. Other symptoms of asthma in children include fatigue, rapid breathing, problems eating or exhibiting grunting noises while eating, and avoiding sports. Asthma symptoms are also known as flare-ups or asthma attacks (AAAAI, 2019a).

Some signs of a severe asthma attack may include fast breathing, chest retractions, pale face and lips, rapid nostril movements, and unresponsiveness (AAFA, 2019). When flare-ups occur as a result of allergies or triggers, the person has been exposed to allergens (e.g., pet dander, dust mites, mold, pollen) or environmental triggers (e.g., smoke, cold air, pollution). Asthma symptoms can worsen during physical activity or when the immune system has been affected by a cold or stress (AAAAI, 2019a).

## **Asthma Diagnosis**

An allergist normally diagnosis asthma (AAAAI, 2019a); however, a primary care physician can also diagnose asthma in children (CDC, 2018b). One test that is used to diagnose asthma severity and how well the treatment is working is called the spirometry. The spirometry test involves taking deep breaths and blowing into a sensor that is used to measure the amount of air that the lungs hold and the speed of air when the person inhales or exhales (AAAAI, 2019a). Another test that is used to test lung inflammation is a fractional exhaled nitric oxide (FeNO) test where the person breathes out of a tube. A FeNO test is used to measure the amount of nitric oxide in the person's breath to show how much inflammation is in the airways (Asthma and Allergy Foundation of America [AAFA], 2017).

It can be challenging to diagnose asthma in children younger than 5 years because children generally have difficulty explaining how they feel (Asthma and Allergy Foundation of America [AAFA], 2015). Most children with asthma exhibit symptoms before the school age years but do not obtain an asthma diagnoses until they are beyond the preschool age. It can be easier to diagnose asthma in children that are beyond the preschool years because not all children who wheeze have asthma. Some signs of wheezing could result from respiratory viruses that mimic the symptoms of asthma. For younger children that are ultimately diagnosed with asthma, the diagnosis of asthma usually results from the child having a history of recurrent wheezing, coughing, breathlessness, and chest tightness all of which are considered uncommon recurrent symptoms of respiratory diseases (van Aalderon, 2012).

To diagnose asthma in children, the doctor can obtain detailed information from the parents such as any family history of asthma or allergies, breathing symptoms and patterns, and the child's behavior. The doctor may also run some blood tests, X-rays, and allergy tests to obtain more detailed information (AAFA, 2015). Last, the doctor may also use a spirometry on the child to see how well the lungs are working before and after asthma medication use (CDC, 2018b).

### **Asthma Causes and Triggers**

It is still unknown what causes certain individuals to develop asthma. However, children with a family history of allergies or asthma are more likely to get diagnosed with asthma early in life. Children who are born to a smoking mother also have a greater likelihood of being diagnosed with asthma during the early years of life (AAFA, 2015). Other risk factors for the development of asthma include genetics, low birth weight, preterm birth, stress, obesity, respiratory syncytial virus, rhinovirus, pertussis, stress, antibiotic use, and inhaled exposures (e.g., smoking, pollution, dust mites; Beasley, Semprini, & Mitchell, 2015). Some of the most common triggers for asthma include allergies (e.g., dust mites, pollen, mold, cockroaches, pet dander), air irritants (cigarette smoke, air pollution, charcoal grills, strong smells such as perfume or paint, chemicals, dust, wood fires.), respiratory illnesses (colds, influenza, sinus infections, sore throat, pneumonia), experiencing strong emotions (laughter, crying, yelling, fear, excitement, fear), weather, and exercise (AAFA, 2019).

## **Asthma Treatment for Children**

Although there is no cure for asthma, symptoms can typically be controlled with asthma treatment. The treatment for asthma generally involves using medications as specified and avoiding triggers that lead to asthma symptoms (AAAAI, 2019a). Asthma treatment differs from person to person and comes in two forms, which are “quick-relief and long-term control” (CDC, 2018b). Quick-relief medications are used when the person is experiencing asthma symptoms, whereas long-term control medications are used to calm the airways and reduce inflammation long-term; long-term control medications are ineffective during an asthma attack (AAFA, 2015; CDC, 2018b). Controller medications are used daily despite experiencing symptoms while quick relief inhaled medications are used only during asthma flare-ups and help in relaxing and opening the airways immediately. For severe symptoms oral and/or intravenous corticosteroids (prednisone and methylprednisolone) may also be used (AAAAI, 2019a).

Quick-relief and controller medicines used to treat asthma in children are generally provided in inhaled forms. Infants typically use a nebulizer, which is a breathing machine that forces the air out for the infant to breathe in the medication through a small mask. Infants and children can also use small spacers that can be attached to inhalers to make it easier for the child to use and so that the medication can be effectively inhaled by the child (AAFA, 2015).

## **Parental Control of Child’s Asthma**

Parents are primarily responsible for the treatment that will control their child’s asthma (Guo, Gao, Guo, Wen, & Zheng, 2015). Therefore, the goal of asthma treatment

is for parents to control the symptoms of asthma so that the child can experience minimal limitations during daily activities (van Aalderen, 2012). Asthma control in children is typically assessed by the prevalence of daytime and nighttime symptoms, limitations in daily activities, and the need for rescue treatment (van Aalderen, 2012).

Well-controlled asthma in children consists of an absence of nighttime symptoms and early awakenings; symptoms occurring no more than twice a week; use of rescue inhaler occurring no more than twice a week; no limitations at school or during exercise; and a normal “peak flow (PEF)/forced expiratory volume in one second” (Dinakar & Chipps, 2017). A PEF is a tube-like handheld device that measures the effectiveness of air moving out of the lungs (AAFA, 2019). Controlled asthma in children has been associated with better cognitive function, fewer missed days of school for children, fewer missed days of work for parents, lower risk of exacerbations, and an improved QoL for the parents and children (Pederson, 2016).

When a parent is not effectively controlling their child’s asthma, symptoms can occur more than twice a week; nighttime symptoms occur more than twice a month; the child may experience limitations in school or during exercise; and their peak flow may be 60% to 80% (Dinakar & Chipps, 2017). Children whose parents do not control their asthma may visit the hospital more often and experience long-term consequences such as obesity, poor school performance, and even depression. Furthermore, research indicates that uncontrolled asthma in children has been linked to lower cognitive function and educational attainment (Pederson, 2016). Uncontrolled asthma in children can be costly to families and impair daily living such as children missing more days of school and



parents missing more days of work (Bacharier et al., 2019). Therefore, controlling the symptoms of asthma in children is vital. Unfortunately, many parents indicate not understanding asthma and the methods used to prevent, treat, and control symptoms (Archibald et al., 2015; Al-Muhsen et al., 2015). Because the parents provide most of the asthma care for their children, it is essential for parents to have the asthma knowledge needed to effectively control their child's asthma (Archibald et al., 2015).

### **Parent Asthma Knowledge**

To effectively control asthma in children, it is important to understand the disease. Research reveals that parents who are knowledgeable on asthma generally control their child's asthma more effectively than parents who lack asthma knowledge (Al-Muhsen et al., 2015; Paymon & Riley, 2018). Asthma knowledge helps parents become aware of symptoms, learn the appropriate steps needed to avoid triggers and adhere to treatment (Jones, 2008). For example, AlOtaibi and AlAteeq (2018) found that parents in their study who had asthma knowledge gave their children the asthma treatment regularly, visited the doctor regularly, and did not use herbal supplements to treat asthma. The practices utilized by parents in this study who had adequate asthma knowledge reflected positively in their approaches to controlling their child's asthma (AlOtaibi & AlAteeq, 2018).

Knowledge of asthma also helps parents understand the importance of adhering to treatment which can include the use of prescribed inhaled corticosteroids (ICS) despite having symptoms (Hossny, Carraballo, Casale, El-Gamal, & Rosenwasser, 2017). Inhaled corticosteroids are vital in the prevention of future asthma flare-ups and attacks

(CDC, 2018a) and considered the most effective treatment used to suppress inflammation in the airways. The asthma knowledge obtained allows parents to be well informed on ICS treatment, how to properly use inhaler devices and when to seek medical help. Asthma knowledge helps parents make informed decisions that can help to improve the parents overall QoL and asthma control practices utilized (Hossny et al., 2017; Lio et al., 2017; Sheng et al., 2019).

Asthma knowledge also prepares parents to take a more active role in the asthma care provided for the child (Alatawi, 2017). When parents have adequate asthma knowledge, they generally feel confident and prepared in recognizing triggers, using strategies to prevent or minimize triggers, and initiating treatment promptly upon the early signs of asthma symptoms which typically also improves their QoL (Lio et al., 2017). For example, Horner (2016) found that parents with greater asthma knowledge had better asthma control scores and a greater QoL than parents with less asthma knowledge. The asthma knowledge obtained can help parents feel equipped to control their child's asthma which can ultimately improve the practices used on a regular basis and improve the parent's overall QoL (Lio et al., 2017; Sheng et al., 2019).

It is clear that asthma knowledge improves asthma control (Cleveland, 2013; Paymon & Riley, 2018), however, many parents of children with asthma generally lack enough asthma knowledge and express many misconceptions of the disease (Gajanan et al., 2016; Guo, Gao, Guo, Wen, & Zheng, 2015; Roncada et al., 2018; Soo & Tan, 2016). For example, Soo and Tan (2016) found that parents perceived asthma to result from chest infections that could negatively impact the child's lungs if not treated. Some

parents believed that asthma could be overcome with willpower while other parents avoided giving their children certain foods or drinks to minimize symptoms. The researchers also discovered that medical providers at times reinforced some of the misperceptions. Furthermore, most of the participants in their study were unaware that the influenza vaccination was beneficial in reducing the likelihood of complications in children diagnosed with asthma (Soo & Tan, 2016). Parents in another study believed that their child was addicted to the medication or that the treatment could ultimately lead to developmental effects or even death (Guo et al., 2015). Silva and Barros (2013) also found that parents tended to underestimate the severity of asthmatic symptoms and overestimate the level of asthma control resulting from a lack of asthma knowledge.

In a study conducted by Urrutia-Pereira et al. (2018) parents of children with asthma also demonstrated insufficient asthma knowledge. For example, only 63% of parents could identify asthma symptoms, 45% believed asthma should only be treated when symptoms were present, and 60% believed that the children's physical activity should be suspended. Parents also expressed fear related to the treatment or that an asthma attack could evolve to death. The fears expressed by the parents could potentially lead to the parents' placing unnecessary limitations on the child (Urrutia-Pereira et al., 2018).

A lack of asthma knowledge can also lead to parents delaying treatment, feeling unsatisfied with the effects of treatment, and even life-threatening events for the child. For example, one parent in the study conducted by Guo et al. (2015) explained not knowing what to do when their child started coughing, wheezing, and turning blue. The

parent felt helpless and began to cry versus taking immediate action to minimize symptoms (Guo et al., 2015). In this situation asthma knowledge could have helped the parent learn the warning signs and what to do to control the child's asthma symptoms (AAFA, 2015).

Parents of children with asthma can receive most of their asthma knowledge from family physicians, pediatricians, written material, and online (AlOtaibi & AlAteeq, 2018). Health care professionals who diagnose and treat patients with asthma provide information on asthma to help empower parents with the skills, knowledge, and confidence needed to control their child's asthma. Health care professionals can also provide parents with a written asthma action plan (AAP) that can further help parents in managing their child's asthma (NIH, 2011). It is recommended that anyone with asthma have an AAP that serves as a guide daily and during emergency situations such as an asthma attack. The AAP will provide parents of children with asthma information and instructions on how to control their child's asthma daily, including identifying triggers, avoiding allergens, and appropriate use of medication. Furthermore, the AAP provides additional information on recognizing, and controlling severe asthma, and when to seek emergency care (NIH, 2013).

Parents can also obtain adequate asthma knowledge through personal experiences (e.g., parent or additional family members being diagnosed with asthma; Kuti & Omole, 2016) and tailored asthma educational programs (Lio et al., 2017). There are also credible online sites that can provide parents with resources and quick links that help to inform parents on the basics of asthma care for children (AAAI, 2019a; AAFA, 2019; American

Lung Association, 2019a). The American Lung Association (2019b) also has an online support group for parents of children with asthma where parents can interact, gain knowledge, learn together, and share experiences.

### **Parent Quality of Life (QOL)**

Parents of children with a chronic health condition typically have a lower QoL when compared to parents of healthy children (Hatzmann, Heymans, Ferrer-i-Carbonell, van Praag, & Grootenhuis, 2008). Having a child with asthma is no exception (Gopal & Rai, 2016; Horner & Brown, 2015). Parents of children with asthma experience a lower QoL through factors related to the child's severity of symptoms (Horner & Brown, 2015). Aspects of a lower QoL include lack of sleep, limited social activities, poor emotional health, and missed days of work (Gopal & Rai, 2016).

QoL is a subjective and multidimensional concept (Gopal & Rai, 2016). QoL refers to an individual's perceived satisfaction in the domains of functional, emotional, and socio-occupational wellbeing (Cano-Garcinuno et al., 2016; Forns, Prat, & Tauler, 2011). QoL usually involves an evaluation of both the negative and positive experiences of life (CDC, 2018c; Theofilou, 2013). The term QoL can be challenging to measure because the definition can differ from person to person (CDC, 2018c).

The concept of QoL is broad includes various domains. For the purpose of this research study, there are three specific QoL domains (functional, emotional, and socio-occupational) that will be the central focus when understanding and evaluating the QoL of parents of children with asthma (Forns, Prat, & Tauler, 2011). The three QoL domains and their facets are described below to give a better understanding of each.

**Functional wellbeing.** The functional domain of QoL consists of the parent's ability to experience an adequate amount of sleep on a regular basis that is not disturbed (Cano-Garcinuno et al., 2016; Forns, Prat, & Tauler, 2011). The functional domain will include whether the parent is waking up during the nighttime hours, whether their sleep is being disturbed, and whether they feel tired as a result of the child's asthma (Cano-Garcinuno et al., 2016; Forns, Prat, & Tauler, 2011). Parents generally provide most of the asthma care at home and therefore may experience night awakenings as a result of attending to the needs of the child (Meltzer & Pugliese, 2017).

Parents of children with asthma also commonly report feeling tired in trying to keep up with the various treatment regimens (Garbutt et al., 2017). These parents juggle many responsibilities such as implementing treatment, making appointments and taking their children to the appointments, monitoring symptoms regularly, being attentive to any potential medication side effects, protecting their child from environmental triggers, and making the decision to seek acute care during asthma attacks (Crespo & Silva, 2014).

Obtaining good sleep is vital and essential for the QoL of parents of children with asthma. Parents may often cut back on their sleep to meet the needs of their children, but not obtaining good sleep can place parents at risk for a decreased QoL to include poor health such as obesity, diabetes, high blood pressure, coronary heart disease, strokes, mental health problems, and even death (CDC, 2019). Not obtaining an adequate amount of sleep can also impact the emotional health of parents such as experiencing a bad mood throughout the day and being less productive at work (CDC, 2019).

**Emotional wellbeing.** The emotional domain of QoL consists of the parent's

ability to live a life that is emotionally fulfilling lacking worry, sadness, fear, and anxiety. The emotional domain will include whether the parent is worried, sad, anxious, uncertain, and being over-protective (Cano-Garcinuno et al., 2016; Forns, Prat, & Tauler, 2011). Parents often report feeling afraid upon the initial diagnosis and concern over the asthma medication that is being prescribed to their child (Garbutt et al., 2017). Parents of children with asthma also experience uncertainty because asthmatic symptoms can occur rapidly and sometimes without warning interfering with the child's ability to breathe normally (Crespo & Silva, 2014).

Parents also typically worry about the long-term effects of asthma and their child's ability to live a normal and fulfilling life (Crespo & Silva, 2014). In one study many parents worried that their child would experience an asthma attack at school, especially if the child was participating in physical activity (Kornblit, Cain, Bauman, Brown, & Reznik, 2018). Parents expressed feeling worry and fear that their child would not be able to recognize their asthma symptoms and continue being active (Kornblit et al., 2018). Parenting children with asthma can also result in higher levels stress (Gopal & Rai, 2016). For example, Bellin et al. (2015) found that a lower quality of life (QOL) among parents of children with asthma was associated with higher life stress and greater asthma caregiving stress.

Emotional wellbeing is important and fundamental to the parents' QoL. A greater emotional wellbeing indicates that parents perceive their life as satisfying and free from negative feelings on a consistent basis. Individuals with greater emotional well-being

tend to experience positive emotions on a regular basis which in turn also helps parents become more productive at work and in their communities (CDC, 2019d).

**Socio-occupational wellbeing.** The socio-occupational domain of QoL involves the parent's ability to engage in social activities with friends and family without having to consistently change plans, and ability to experience a good quality work life without having to miss work often (Cano-Garcinuno et al., 2016; Forns, Prat, & Tauler, 2011; Garbutt et al., 2017). The socio-occupational domain will include whether the parent is experiencing interference with daily activities, changing plans with family, spending minimal time with friends and family, having inadequate support from family, having additional expenses, taking leave from work, and missing work often (Cano-Garcinuno et al., 2016; Forns, Prat, & Tauler, 2011; Garbutt et al., 2017).

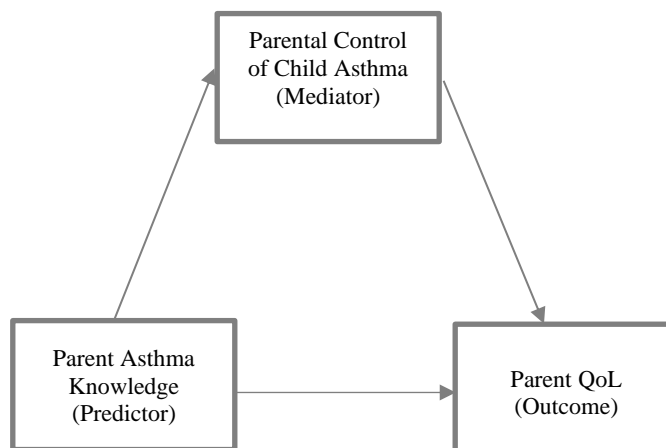
Parents of children with asthma may limit their own personal time to meet the needs of their children especially when symptoms are present. As a result, parents may feel restricted and lack freedom that is not easy to escape from (Gopal & Rai, 2016). Parents will typically assume the full responsibility of providing care, even when there is no additional help, which can result in feeling isolated (Garbutt et al., 2017).

### **QoL in the Predicted Model**

To explain the predicted model for the study, the focus was on a more general concept on how to increase the QoL of parents of children with asthma. Research indicated that the QoL of parents with asthma could be enhanced when the parent was knowledgeable about asthma and understood how to effectively treat and control the chronic illness (Lio et al., 2017; Sheng et al., 2019). This may occur because when the



child's symptoms of asthma are sufficiently controlled, the parent can experience fewer disruptions in their daily activities and experience an overall improved QoL (Crespo & Silva, 2014). Thus, my review of the literature suggested a mediation prediction model for parent QOL (see Figure 1).



*Figure 1.* Conceptual model of parental control of child's asthma as mediator in the relationship between parent asthma knowledge and parent quality of life (QoL).

The conceptual model identified and explained the hypothesized relationship between the predictor variable and the outcome variable via the mediating variable. The mediating variable, parental control of child asthma was hypothesized in this present study to be the intermediate in the relationship between parent asthma knowledge and parent QoL. Therefore, the mediator in this conceptual model could have potentially served to clarify the relationship between parent asthma knowledge and parent QoL.

## Summary and Conclusions

In this chapter, I presented an extensive background of asthma in children, which included the symptoms, diagnosis, causes, triggers, and treatments for childhood asthma. Because parents are typically responsible for controlling the symptoms of asthma in children (Guo et al., 2015), I then turned the focus of this chapter on the role of parents who provided most of the care for the child with asthma. This chapter reviewed the role of parental control of child's asthma on the relationship between parent asthma knowledge and parent QoL. The primary objective of this chapter was to explore in detail the relationship between parent asthma knowledge, parental control of child's asthma, and parent QoL. Previous research had primarily focused on the relationship among these variables bivariately such as observing the link between parental control of child's asthma and parent QoL (Cano-Garcinuno et al., 2015; Carey et al., 2019; Ibrahim et al., 2019; Stelmach et al., 2012); parent asthma knowledge and parental control of child's asthma (Berg et al., 2007; Cleveland, 2013; McClelland et al., 2013; Paymon & Riley, 2018); or parent asthma knowledge and parent QoL (Alatawi, 2017; Bryant-Stephens & Li, 2004; Chan et al., 2007; Horner, 2016; Lio et al., 2017). However, no identified research had been found that tested the relationship among these three variables together. This review revealed the need to investigate the relationship among these variables together to understand whether parental control of child's asthma mediated the relationship between parent asthma knowledge and parent QoL. Therefore, the current study filled a gap that was found in the literature reviewed. In Chapter 3, I included a

discussion of the research processes that were used to investigate the relationship between parent asthma knowledge, parental control of child's asthma, and parent QoL.

### Chapter 3: Research Method

The purpose of the study was to examine the relationship between parent asthma knowledge, parental control of child's asthma, and parent QoL, specifically whether parental control of child's asthma mediated the relationship between parent asthma knowledge and parent QoL. No research had explored the relationship among these variables together and whether parental control of child's asthma mediated the relationship between parent asthma knowledge and parent QoL. Therefore, a quantitative approach was used to examine the potential mediating effects of parental control of child's asthma on the relationship between parent asthma knowledge and parent QoL. This chapter includes a description of the research design and rationale, sample, procedures, instrumentation, data analysis, and ethical considerations.

#### **Research Design and Rationale**

Since the relationship among variables was explored, this study used a quantitative approach. This approach was selected based on a thorough review of asthma research on children. The predictor variable in this study was parent asthma knowledge, the dependent variable was parent QoL and the mediating variable was parental control of child's asthma. Means, standard deviations, and simple bivariate correlation coefficients were used to determine whether the relationship between parent asthma knowledge and parental control of child's asthma was statistically significant. The relationship between child asthma knowledge and parent QOL was also observed, as well as the relationship between parent asthma knowledge and parent QOL. Hayes' mediation macro was used to test for an indirect effect where parent asthma knowledge was the

predictor, parental control of child's asthma was the mediator, and parent QOL was the final outcome (Hayes & Rockwood, 2017). Mediation analysis was used to help gain a better understanding of how the effect of parent asthma knowledge relates to parent QOL.

## **Methodology**

### **Population**

The target population for this study was English proficient adult males and females, 18 years of age and older who were the biological parents of children between the ages of 4-11 medically diagnosed with asthma in the United States. Exclusion criteria included non-English proficient since instruments were written in English, parents under the age of 18, non-biological parents (e.g. stepparents, foster parents), and non-United States residents. Participants had to meet the inclusion criteria to participate in the research study. A sample size of 68 was determined for a multiple regression analysis with two predictors using a medium effect size ( $d = .15$ ) with  $\alpha$  level of 0.5 and power of 0.80 (Faul, Erdfelder, Buchner, & Lang, 2009).

### **Procedures**

The first step was to gain approval from the Walden University's Institutional Review Board (IRB). Once approval from Walden's IRB was obtained, I created an ad on Facebook that targeted parents of children with asthma. The ad included a flyer to my study with a link that brought participants to SurveyMonkey to complete the survey. I also gained approval from the individual(s) overseeing an allergy and asthma clinic in Killeen Texas to hand out flyers at their clinic. If approval was not granted to share the flyer at the allergy and asthma clinic in Killeen Texas, I planned to recruit participants

from other allergy and asthma clinics in Central Texas (Austin, Cedar Park, Georgetown, and Round Rock).

The study was advertised as a study designed to learn more about the QoL of parents of children diagnosed with asthma. Once participants read the informed consent, they proceeded to complete the surveys. There was a total of four surveys (the Asthma Knowledge Questionnaire, ACT-CR<sup>TM</sup>, PACQLQ, and demographics) completed by the participants. At the end of the questionnaire, participants read a statement thanking them for their participation in the study and an introduction of an asthma information sheet that was found on the next page. The asthma information sheet included facts about asthma in children and online resources. Participation in the study was strictly voluntary. To maintain anonymity the surveys were identified using an identification number instead of names.

### **Instrumentation and Operationalization of Constructs**

The instruments that were used in the present study included the Asthma Knowledge Questionnaire (Rodriguez Martinez & Sossa, 2005), the Asthma Control Test Caregiver Report (ACT-CR<sup>TM</sup>, QualityMetric Incorporated, 2013), the Pediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ; Juniper et al., 1996), and a short demographic questionnaire, which included questions that helped to describe the sample. Completing all four of the questionnaires did not take longer than 20 minutes.

#### **The Asthma Knowledge Questionnaire**

The Asthma Knowledge Questionnaire was used to measure the predictor variable, parent asthma knowledge which involved an understanding regarding asthma in

children; familiarity with the symptoms, features of the disease, and treatment options available (Gajanan, Padbidri, & Chaudhury, 2016). The asthma knowledge questionnaire had been used in several samples of parents of children with asthma to measure asthma knowledge (Rodriguez Martinez & Sossa, 2005; Franken, Veenstra-van Schie, Ahmad, Koopman, & Versteegh, 2018). The instrument had been confirmed to be valid and reliable in measuring parent asthma knowledge (Rodriguez Martinez & Sossa, 2005). The stability of the Asthma Knowledge Questionnaire to measure the level of asthma knowledge over time has revealed test-retest reliability. Lin's correlation coefficients of agreement for the total score was 0.92 (Rodriguez Martinez & Sossa, 2005). Cronbach's  $\alpha$  was 0.73 for the questionnaire as a whole (Rodriguez Martinez & Sossa, 2005). Rodriguez Martinez and Sossa (2005) considered the questionnaire to be useful and reliable in quantifying parent asthma knowledge.

The questionnaire was made up of 17 items on a Likert-type scale of five points (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree; Rodriguez Martinez & Sossa, 2005; Franken, Veenstra-van Schie, Ahmad, Koopman, & Versteegh, 2018). Some sample items for measuring parent asthma knowledge were: "Inhaler use can lead to dependence or addiction", "The main cause of asthma is airway inflammation", and "Children who have asthma shouldn't participate in sports that make them run too much". If an item that was true was answered correctly and assigned a five (strongly agree) by the participant, a total of five points was given for that answer (Rodriguez & Sossa, 2005). If an item that was false was answered correctly and assigned a one (strongly disagree) by the participant, a total score of five was given for

that answer. Scoring gradually decreased until one point was given for responses answered incorrectly. At the end of the questionnaire, all items were totaled with scores ranging from 17-85. Higher scores indicated greater asthma knowledge (Rodriguez & Sossa, 2005).

### **The Asthma Control Test Caregiver Report (ACT- CR™)**

The Asthma Control Test Caregiver Report (ACT-CR™) was used to measure the mediating variable, parental control of child's asthma which involved the child experiencing minimal symptoms of asthma (e.g., coughing, wheezing, difficulty breathing) with minimal to no use of the rescue inhaler (Cockcroft & Swystun, 1996). The ACT-CR™ was tailored specifically for parents or guardians of children with asthma (QualityMetric Incorporated, 2013). The original ACT had been used in previous studies to measure asthma control (Jaakkola, Heikkinen, Hernberg, Kiihamaki, & Jaakkola, 2017). Nathan et al. (2004) developed the asthma control test (ACT) and determined the instrument to be valid and reliable in measuring asthma control in patients diagnosed with asthma. The internal consistency of the ACT was 0.84.

The questionnaire is made up of five items of five points (1 = all of the time, 2 = most of the time, 3 = some of the time, 4 = a little of the time, and 5 = none of the time). Some of the sample items for measuring asthma control were: "In the past 1 week, how much of the time did your child's asthma limit him or her from doing usual physical activities such as running, swimming, sports, walking uphill or upstairs and bicycling?", "During the past 1 week, how often has your child had breathing problems such as wheezing, coughing, or shortness of breath?", and "During the past 1 week, how often did



your child's asthma symptoms (wheezing, coughing, shortness of breath) wake him or her up at night or earlier than usual in the morning?". Each response had a total value from one to five. To obtain a total score for the ACT-CR™, all point values for each of the responses were added. Any point value of 19 or lower indicated that the child's asthma was not well-controlled (QualityMetric Incorporated, 2013).

### **The Pediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ)**

The Pediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ) was used to measure the independent variable, parent QoL, an individual's perceived satisfaction in the domains of functional, emotional, and socio-occupational well-being (Juniper et al., 1996). The instrument had been widely used in previous studies to measure parent QoL (Gonzalez-Conde, Perez-Fernandez, Ruiz-Esteban, & Valverde-Molina, 2019; Ibrahim et al., 2019; Juniper et al., 1996). Juniper et al. (1996) developed the PACQLQ and found it to be valid and reliable in measuring the QoL of parents of children with asthma. "The within-subject standard deviation of change was 0.31 for overall quality of life and the intraclass correlation coefficient was 0.85" (Juniper et al., 1996, p. 32)

The questionnaire is made up of 13 items on a seven-point scale where lower scores indicated a poorer QoL while higher scores indicated a better QoL (Juniper et al., 1996). The instrument included questions asking parents to recall impairments that were experienced during the last week. Some of the sample items for measuring QoL were: "During the past week, how worried or concerned were you about your child being able to lead a normal life?", "During the past week, how worried or concerned were you about

being overprotective of your child?”, and “During the past week, how often did you feel angry that your child has asthma?” (Juniper et al., 1996).

### **Demographics**

The demographics that were used to describe the sample included the participants age, gender, ethnicity, employment status, annual family income, whether the parent was the biological mother or father of the child, whether the parent resided in the United States, current age of the child diagnosed with asthma, whether the child was diagnosed with asthma by a medical health professional and age of diagnosis, how many children in the home had been diagnosed with asthma, and whether the participant had any children with additional medical health conditions. The current study took place during the coronavirus disease 2019 (COVID-19) pandemic; therefore, two additional questions were added (“How worried or concerned are you currently feeling about COVID-19?” and “How much do you think COVID-19 has impacted the responses you completed in this survey?”). The additional questions provided some insight as to whether COVID-19 impacted the participants responses.

### **Data Analysis Plan**

The latest version of SPSS was used to analyze the data (Field, 2013). Means, standard deviations, and simple bivariate correlation coefficients were used to determine whether the relationship between parent asthma knowledge and parental control of child’s was statistically significant. The relationship between parent asthma knowledge and parent QoL was observed, as well as the relationship between parent asthma knowledge and parent QoL. Hayes’ mediation macro was used to test for an indirect

effect where parent asthma knowledge was the predictor, parental control of child's asthma was the mediator, and parent QoL was the final outcome (Hayes & Rockwood, 2017). Mediation analysis helped to gain a better understanding of how the effect of parent asthma knowledge related to parent QOL.

### **Research Question and Hypothesis**

I explored the effects of parental control of child's asthma on the relationship between parent asthma knowledge and parent QoL. Below is the research question and hypothesis that was selected for this study:

Research question: Does parental control of child's asthma mediate the relationship between parent asthma knowledge and parent QoL?

*H*<sub>0</sub>: Parental control of child's asthma, as measured by the Asthma Control Test Caregiver Report (ACT-CR™) does not mediate the relationship between parent asthma knowledge, as measured by the Asthma Knowledge Questionnaire and parent QoL, as measured by the Pediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ).

*H*<sub>1</sub>: Parental control of child's asthma, as measured by the Asthma Control Test Caregiver Report (ACT-CR™) does mediate the relationship between parent asthma knowledge, as measured by the Asthma Knowledge Questionnaire and parent QoL, as measured by the Pediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ).

### **Threats to Validity**

External validity refers to making conclusions from the research study and applying it to the general population. Threats to external validity may have occurred when the results of the study were generalized, and inferences were made (LaCoursiere, 2003). The present sample consisted of a convenience sample of parents on Facebook, therefore, I used extra caution when interpreting the results of the study. The demographics that were collected from the participants helped to provide descriptive statistics of the sample in my study.

Threats to internal validity may have occurred if extraneous variables influenced the results of the study (Tofthagen, 2012). Researchers must always consider extraneous variables when making statements suggesting cause and effect. The lack of comparing to a control group could have also impacted the results of the study (Tofthagen, 2012). Therefore, the internal validity was considered weak since I did not have a control group to compare the participants in this study. However, since the present study was correlational, I did not use causal statements when interpreting the results of the study.

Construct validity refers to whether an instrument measures the construct adequately (Brahma, 2009). Construct validity is valuable in research studies and helps to minimize subjectivity. To maximize construct validity in the present study all instruments used had been previously used in research studies and were also considered valid and reliable measurements.

### **Ethical Considerations**

Prior to collecting data, I obtained approval from Walden's IRB to ensure all ethical dilemmas were considered. The research study was completely voluntary and anonymous, therefore, there were minimal ethical risks to consider for this study. The flyer used to advertise the study explained the purpose of the research study along with the participants' rights and information to contact me with any questions or concerns. All participants in the study were adults and their children were not directly involved. Participants could withdraw from the study at any time without penalty. I was the only one who collected the data and had access to it. The computer used to access the data was secured with a password. Any data that was printed was kept in a locked filing cabinet. The data will be destroyed five years after collection.

### **Summary**

The purpose of this chapter was to describe the research design and rationale, sample, procedures, instrumentation, data analysis, and ethical considerations of this quantitative study. The purpose of this study was to examine whether parental control of child's asthma mediated the relationship between parent asthma knowledge and parent QoL. Data was obtained from a convenience sample of parents of children with asthma online from Facebook ads. Four self-report surveys (the Asthma Knowledge Questionnaire, the ACT-CR<sup>TM</sup>, the PACQLQ, and demographics) were used to collect data on participants. SPSS was used to analyze the data using Hayes' mediation macro. All ethical dilemmas were considered and extra measures were taken to ensure

participants rights and confidentiality were held. Chapter 4 includes information on the data collected and the results of the present study.

## Chapter 4: Results

### Introduction

The purpose of this nonexperimental quantitative research study was to examine the relationship between parent asthma knowledge (predictor variable), parental control of child's asthma (mediating variable), and parent QoL (dependent variable). An online survey was completed by the biological parents of children between the ages of 4 to 11 with medically diagnosed asthma in the United States. An analysis was used to investigate whether parental control of child's asthma mediated the relationship between parent asthma knowledge and parent QoL. In this chapter, I describe the sample of participants in the study, the data collection process, the results, and a summary of the analysis. The present study answered the following research question:

Research question: Does parental control of child's asthma mediate the relationship between parent asthma knowledge and parent QoL?

*H*<sub>0</sub>: Parental control of child's asthma, as measured by the Asthma Control Test Caregiver Report (ACT-CR<sup>TM</sup>) does not mediate the relationship between parent asthma knowledge, as measured by the Asthma Knowledge Questionnaire and parent QoL, as measured by the Pediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ).

*H*<sub>1</sub>: Parental control of child's asthma, as measured by the Asthma Control Test Caregiver Report (ACT-CR<sup>TM</sup>) does mediate the relationship between parent asthma knowledge, as measured by the Asthma Knowledge Questionnaire and

parent QoL, as measured by the Pediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ).

### **Data Collection**

Parents of children with asthma decided to participate in the research study via a flyer that was shared through ads on Facebook. The flyer contained a link to access and complete the survey online via SurveyMonkey. I did not visit any allergy and asthma clinics in Central Texas because the current study took place during the COVID-19 pandemic and individuals in the state of Texas were practicing social distancing. The data collection process began in April 2020 and ended in May 2020. The online survey was completed by 90 participants, but nine of the participants did not have a child who was between the ages of 4 to 11 years, one of the participants was not the biological parent, and there were 10 incomplete surveys. Therefore, the analyses for the study was based on a sample size of 70. The target sample for this study was 68.

Participants provided information on their knowledge of asthma, their child's asthma control, and their QoL. Participants also provided demographic information which included their employment status, annual income, sex, their child's sex, their child's age, whether their child had additional medical conditions, how many children in their home had asthma, whether other children in their home had additional medical conditions, how worried or concerned they were currently feeling about COVID-19, and how much COVID-19 affected the responses they completed in the survey. I used the most recent version of SPSS to compute the total scores for the predictor variable (parent



asthma knowledge), the mediating variable (parental control of child's asthma), and the dependent variable (parent QoL).

### **Descriptive Statistics**

The majority of the participants were employed (71.4%) non-Hispanic White (75.7%) females (98.6%) between the ages of 25 to 55 years with a mean age of 35 years. The most prevalent annual household income (28.6%) was between \$50,000 to \$74,000. Most of the participants only had one child (78.6%) with asthma, with the majority of the children being males (61.4%) with a mean age of 8 years and diagnosed with asthma at the mean age of 4 years. Concerning the COVID-19 pandemic, more parents in the study reported feeling a great deal of worry or concern (40%) about COVID-19. However, more parents reported that COVID-19 did not affect their responses at all (45.7%).

Table 1

<i>Descriptive Statistics of Study Participants</i>				
	Frequency	Percentage	Mean	SD
Gender				
Male	1	1.4%		
Female	69	98.6%		
Employment				
Employed	50	71.4%		
Unemployed	20	28.6%		

*(table continues)*

Race		
American Indian/ Alaska Native	4	5.7%
Asian	1	1.4%
Black or African American	3	4.3%
Hispanic or Latino	9	12.9%
Non-Hispanic White	53	75.7%
Annual income		
0 - \$24,000	8	11.4%
\$25,000 - \$49,000	16	22.9%
\$50,000 - \$74,000	20	28.6%
\$75,000 - \$99,000	12	17.1%
\$100,000 - \$149,000	11	15.7%
\$150,000 or more	3	4.3%
Parent age (years)		35
		5.27
Child sex		
Male	43	61.4%
Female	27	38.6%
# of children with asthma		
1	55	78.6%

(table continues)

2	13	18.6%		
3	2	2.9%		
Child current age (years)			8	2.12
Age diagnosed (years)			4	1.99
COVID-19 worry				
A great deal	28	40.0%		
A lot	12	17.1%		
A moderate amount	16	22.9%		
A little	11	15.7%		
None at all	3	4.3%		
COVID-19 impact				
A great deal	11	15.7%		
A lot	5	7.1%		
A moderate amount	8	11.4%		
A little	14	20.0%		
None at all	32	45.7%		

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This sample is not representative of the actual population of parents of children with asthma because most of the participants (72.8%) in this study obtained a low to medium asthma knowledge score and had children with well controlled asthma (68.6%). More than half of the participants (52.8%) also had a high QoL. See Table 2 for descriptive statistics.

Table 2

*Descriptive Statistics of Main Variables*

Variable	<i>N</i>	Mean	<i>SD</i>	Skewness Statistic	Std. Error	Kurtosis Statistic	Std. Error
AK	70	46.929	5.51	.471	.287	.433	.566
UA	23	14.739	2.94	-.928	.481	.611	.935
CA	47	22.489	1.71	.143	.347	-1.245	.681
QoL	70	75.214	14.62	-1.090	.287	.294	.566

*Note.* AK = asthma knowledge; UA = uncontrolled asthma; CA = controlled asthma.

**Missing Values, Outliers, and Normality Testing**

Missing values and outliers may occur during the data collection process. Missing values can lead to smaller sample sizes and compromise the reliability of the results. Missing values can at times be ignored or replaced with specific values in SPSS (Kwak & Kim, 2017). For the purposes of this research study, there were no missing values detected.

Hoaglin and Iglewicz (1987) suggested that 2.2 was a valid standard factor used in detecting outliers in SPSS. The interquartile range for the asthma knowledge variable was 6.25 but when multiplied by the standard factor of 2.2 it became 13.75. I subtracted

13.75 from the lower quartile of 44 and added 13.75 to the upper quartile, the 25<sup>th</sup> percentile was 30.25 and the upper 75<sup>th</sup> percentile was 80.25. There were no outliers detected in the total scores for asthma knowledge. The same steps were used to obtain the scores for the 25<sup>th</sup> and 75<sup>th</sup> percentiles for controlled asthma, uncontrolled asthma, and QoL. The 25<sup>th</sup> percentile for controlled asthma was 14.4 and the 75<sup>th</sup> percentile was 30.6. The 25<sup>th</sup> percentile for uncontrolled asthma was 7.4 and the 75<sup>th</sup> percentile was 10.4. There were no outliers detected in the total scores for controlled and uncontrolled asthma. The 25<sup>th</sup> percentile for QoL was 23 and 75<sup>th</sup> percentile was 130. There were also no outliers detected in the total scores for QoL.

A common assumption about variables is that they are normally distributed. Normality is important when interpreting and making inferences about the results found. Numerical methods such as skewness and kurtosis are used to conduct the statistical tests for normality (Park, 2015). Therefore, normality testing was also performed using SPSS. According to Sánchez (2015) the values between -2 and +2 for skewness and kurtosis are considered acceptable for a normal distribution. The results of the variables presented a normal distribution.

### **Correlations**

I completed a correlations matrix and evaluated the significance of the correlations among the variables (see Table 3). The matrix revealed correlations between asthma knowledge and QoL (negative correlation), and parental control of child's asthma and QoL (positive correlation) but not between asthma knowledge and parental control of child's asthma. However, the variable COVID-19 worry correlated with all three

variables (asthma knowledge, parental control of child's asthma, and QoL) which suggested the need to control for it.

Table 3

*Interitem Correlations for Parents of Children with Asthma*

Variable	1	2	3	4	5	6
1. Asthma knowledge		-.15	-.24*	.35**	-.15	-.27
2. Asthma control	-.15		.68*	-.25*	.20	.27*
3. QoL	-.24*	.68*		-.33**	-.37**	.23
4. COVID-19 worry	.35**	-.25*	-.33**		.40**	.13
5. COVID-19 response	.15	.20	-.37**	.40**		-.28*
6. Annual income	-.27	-.27*	.23	.13	-.28*	—

*Note.* \*\* $p < .01$ , \* $p < .05$ .

## Results

I first performed a multiple regression analysis of QoL predicted from asthma knowledge and parental control of child's asthma. The model was statistically significant,  $R^2 = .479$ ,  $F(2, 67) = 30.74$ ,  $p < .001$ . The  $R^2$  value suggested that 48% of the variance in QoL was predicted by asthma knowledge and parental control of child's asthma.

However, only parental control of child's asthma reached statistical significance ( $\beta = .524$ ). Participants' QoL score increased 2.254 points for each asthma control score.

To test the study hypothesis, two mediation analyses using PROCESS were run to investigate whether parental control of child's asthma mediated the relationship between parent asthma knowledge and parent QoL. The first mediation analysis did not control for

COVID-19 worry (see Figure 2) while the second mediation analysis controlled for COVID-19 worry (see Figure 3).

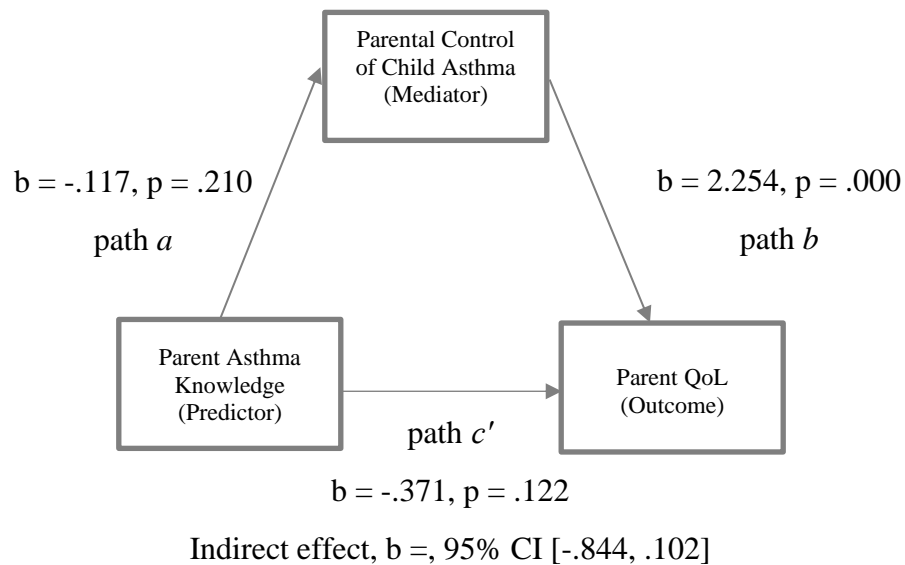


Figure 2. Direct and indirect effects of asthma knowledge and asthma control on QoL.

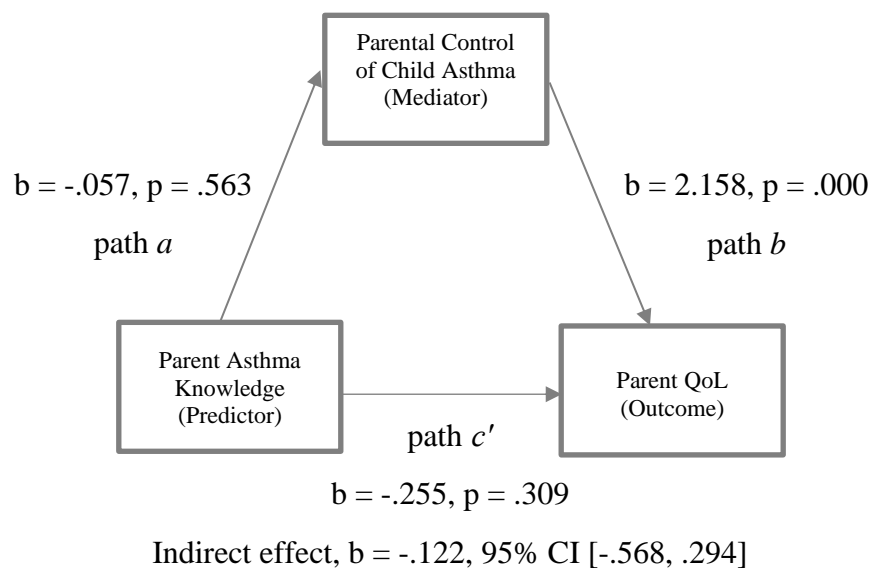


Figure 3. Direct and indirect effects of asthma knowledge and asthma control on QoL while controlling for COVID-19 worry.

There was not a significant indirect effect of asthma knowledge on QoL through parental control of child's asthma for either mediation analysis. Therefore, the null hypothesis was not rejected. There was no evidence that asthma knowledge and QoL were mediated by parental control of child's asthma.

### Summary

This chapter included the detailed findings of the research study. This study took place during the COVID-19 pandemic and most of the participants reported they felt a great deal of worry or concern but most also reported that COVID-19 did not impact their responses at all. The majority of the participants had low to medium asthma knowledge, children with well controlled asthma, and just over half of the participants reported a high QoL. There were several significant relationships found. However, asthma control did not mediate the relationship between asthma knowledge and QoL. Therefore, the null hypothesis was not rejected. Chapter 5 summarizes the main findings, describes the potential contributions to social change, and the recommendations for future research studies.



## Chapter 5: Discussion, Conclusions, and Recommendations

### Introduction

This chapter includes an interpretation of the findings, limitations, recommendations for future research, implications for social change, and conclusions of the research study. I designed the present research study to expand understanding of the QoL of parents of children with medically diagnosed asthma. The purpose of this research study was to examine the relationship between asthma knowledge, parental control of child's asthma, and QoL, specifically whether parental control of child's asthma mediated the relationship between parent asthma knowledge and parent QoL. I hypothesized that parental control of child's asthma would mediate the relationship between asthma knowledge and QoL.

There is an important caveat to the conclusions that can be drawn in the present study. The study was conceptualized in May of 2019. In April of 2020, in the midst of the COVID-19 pandemic, data collection began. Individuals with asthma were among individuals at high risk for severe illness from COVID-19 (CDC, 2020a). At the time of data collection, COVID-19 was understood as a contagious respiratory illness with a wide range of symptoms that could be mild, moderate, or severe. From January 22, 2020, to May 30, 2020, there were approximately 5,817,385 reported cases of COVID-19 and 362,705 deaths that occurred (CDC, 2020b).

At the time of data collection there was also no treatment or vaccine that prevented COVID-19. Some of the serious symptoms of COVID-19 included trouble breathing, chest pain or pressure, confusion, inability to wake up or stay awake, bluish

face or lips, and death (CDC, 2020d). For individuals with asthma COVID-19 could affect their respiratory tract which could lead to an asthma attack, pneumonia, acute respiratory disease, and death (CDC, 2020c). During the time of data collection, parents of children with asthma were being advised to stock up on supplies, take daily precautions to stay away from others who were ill, maintain safe distances from others in public situations, wash hands often, use hand sanitizer, stay in their homes as much as possible, and follow the child's asthma action plan to maintain asthma control (CDC, 2020a). The CDC (2020a) also advised that controlling asthma during the pandemic was important and could be accomplished if proper care was taken such as continuing the use of current medications, which included inhalers and steroids if necessary. Based on this unique challenge, two additional questions ("How worried or concerned are you currently feeling about COVID-19?" and "How much do you think COVID-19 has impacted the responses you completed in this survey?") were added to the demographics portion of the survey. The additional questions provided some insight as to whether COVID-19 impacted participant responses and therefore the results of the study.

### **Interpretation of the Findings**

Data for the study was gathered through SurveyMonkey and analyzed using correlations, a multiple linear regression model, and Haye's mediation PROCESS to test the study hypothesis. The target sample for the analysis was 68, however, a total of 90 participants completed the survey, and 70 ultimately met the criteria. Among these participants, 98.6% were females that obtained a low to medium asthma knowledge score

(72.8%), had children with well controlled asthma (68.6%), and more than half (52.8%) had a high QoL.

The correlations matrix revealed a negative and significant relationship between asthma knowledge and QoL. The more knowledge the participants had regarding childhood asthma the lower the QoL. There was not a significant relationship between asthma knowledge and parental control of child's asthma. However, there was a positive and significant relationship between parental control of child's asthma and QoL. The variable for worrying about COVID-19 significantly correlated with all three of the variables of interest (asthma knowledge, parental control of child's asthma, and QoL) suggesting some potential impact on the results found. Haye's PROCESS revealed that there was not a significant indirect effect of asthma knowledge on QoL through parental control of child's asthma for the mediation analysis. Therefore, I was not able to reject the null hypothesis and conclude that parental control of child's asthma mediated the relationship between asthma knowledge and QoL.

### **Parental Control of Child's Asthma**

Previous research has revealed that parents who did not effectively control their child's asthma visited emergency departments and hospitals more often than parents who effectively controlled their child's asthma (Pederson, 2016). Prior research also indicated that uncontrolled asthma in children could impair the daily lives of both the parent and the child, such as the child missing more days of school and the parent missing more days of work (Bacharier et al., 2019). Therefore, researchers have suggested that controlling

the symptoms of asthma in children is vital for both the parent and the child (Bacharier et al., 2019).

The results in the present study revealed that a majority (68.6%) of the parents had children with well controlled asthma. It is possible that this finding would have also been obtained at normal times, but it is also possible that the high percentage of well controlled asthma was related to the virus. At the time of data collection, there was a decrease in pediatric asthma related emergency department visits and hospitalizations (Oreskovic, Kinane, Aryee, Kuhlthau, & Perrin, 2020) indicating greater asthma control. This could be the result of government mandated stay-at-home orders, which in turn possibly reduced the spread of other respiratory viruses (rhinovirus and respiratory syncytial virus), outdoor allergens, and pollutants that often exacerbate asthma in children (Gupta, Bush, & Nagakumar, 2020; Oreskovic et al., 2020; Papadopoulos). Another potential reason for controlled asthma among the children could be attributed to the parents in the present study experiencing a heightened concern in controlling their child's asthma during a pandemic involving a respiratory illness. Parents may have also supervised their children more actively, filled prescriptions regularly, and adhered to the prescribed medications more often (Oreskovic et al., 2020; Gupta et al., 2020).

### **Parent Asthma Knowledge**

Most of the participants in the present study had low to medium asthma knowledge scores which was consistent with the findings of previous research studies where participants also lacked asthma knowledge (Abutiheen, Al-Saadi, & Al-Quraini, 2019; Archibald et al., 2015; Al-Muhsen et al., 2015; Urrutia-Pereira et al., 2018;). For

example, Gajanan, Padbidri, and Chaudhury (2016) found that parents in their study lacked adequate asthma knowledge and had many misconceptions of the chronic illness. Many of the parents in their study refused to accept the asthma diagnosis and did not know how to effectively use the inhalers to minimize symptoms (Gajanan et al., 2016).

Although previous studies have also shown that parents who were knowledgeable on asthma typically had children with well controlled asthma (Al-Muhsen et al., 2015; Paymon & Riley, 2018) there was no relationship found between asthma knowledge and parental control of child's asthma in the present study. One possible explanation is that parents in the present study had children with mild symptoms of asthma (AAAAI, 2019b). Severity of symptoms was not assessed in the present study. Severe asthma can be more challenging to control when compared to mild asthma. Individuals with severe asthma usually require higher doses of inhaled steroids combined with other long-acting medications that are used daily (AAAAI, 2019b). Children with severe asthma are also at an increased risk for experiencing asthma symptoms and more likely to visit clinics and hospitals more often for acute exacerbations (Ramratnam, Bacharier, & Guilbert, 2017). Another explanation is that the lack of correlation was because parents were more focused on control because of the virus and state of control reported in this study was not representative of the typical state of the children.

### **Parent QoL**

In prior research studies it was suggested that parents of children with asthma typically have a lower QoL through factors associated with the child's severity of symptoms (Horner & Brown, 2015). Aspects of a lower QoL included parents

experiencing a lack of sleep, limited social activities, poor emotional health, and missing work more often (Gopal & Rai, 2016). Prior research has indicated that parents provide most of the care needed to control symptoms and when symptoms are not controlled parents tend to sleep less, feel more tired, juggle more responsibilities (Garbutt et al., 2017), and spend less time with family and friends (Gopal & Rai, 2016). Parents also tend to experience a wide range of emotions (sadness, worry, fear, anxiousness) that come with the initial diagnosis (Garbutt et al., 2017) and when the child is experiencing symptoms (Cano-Garcinuno et al., 2016). All these factors can contribute to the QoL of parents of children with asthma.

The results of the present study reveal that slightly more than half (52.8%) of the parents in the study had a high QoL. There was also a positive and significant relationship between parental control of child's asthma and QoL. The more control the parents had over their child's asthma the greater their QoL score. These results are consistent with previous research conducted on the relationship between parental control of child's asthma and parent QoL (Bellin et al., 2015; Carey, Edds-McAfee, Martinez, Gutierrez de Blum, & Thornton, 2019; Everhart, Borschuk, Miadich, Barsell, & Heron, 2018; & Shahid et al., 2017). For example, Shahid et al. (2017) found that the child's asthma control test score significantly correlated with the parents QoL score.

The findings on quality of life might be surprising considering the time of data collection. As explained above, COVID-19 was especially dangerous for individuals suffering from asthma because it affected the airways and was considered highly contagious, spreading faster than influenza (CDC, 2020e). Individuals with asthma were

at a greater risk of becoming extremely sick from COVID-19 (CDC, 2020c). Therefore, it was expected that parents would have been more stressed and worried about their child experiencing symptoms because it could lead to an emergency department visit and potential exposure to individuals with COVID-19.

Previous studies also recognized a relationship between asthma knowledge and QoL among parents of children with asthma. In two separate studies Lio et al. (2017) and Sheng et al. (2019) indicated that parents who had sufficient asthma knowledge generally felt confident and equipped to recognize when their child was experiencing symptoms and were able to act quickly to minimize symptoms which ultimately improved their QoL. However, in the present study a negative and significant correlational relationship between asthma knowledge and QoL was found. The more asthma knowledge the parents had the lower the QoL and vice versa.

These findings do not match the literature and would normally be difficult to explain. However, it is possible that COVID-19 significantly impacted this relationship. There was a correlational relationship found in the present study between asthma knowledge and COVID-19 worry and between QoL and COVID-19 worry. Parents that scored higher on asthma knowledge also scored significantly higher on being more worried and concerned about COVID-19 and parents who were more worried and concerned about COVID-19 also had a lower QoL. Glasper (2020) suggested that the COVID-19 pandemic had especially worried many parents of children with chronic health conditions like asthma. A possible explanation for the results found in the present

study is that parents with greater asthma knowledge were more aware of the dangers, and were therefore more worried about COVID-19, which in turn impacted their overall QoL.

### **Limitations of the Study**

The first limitation was that the study took place during the COVID-19 global pandemic. Most of the participants indicated feeling a great deal of worry and concern about COVID-19. The variable for worrying about COVID-19 significantly correlated with all three of the variables of interest (asthma knowledge, parental control of child's asthma, and QoL) indicating some potential impact in the results found. Another limitation of the study was that all participants were recruited online. The participants in the study could have significantly differed from other individuals who did not have internet access or individuals who did not respond to the online survey. At the same time, the study provided an unintentional opportunity to learn about the factors that contributed to the QoL of parents of children with asthma during a time of heightened danger for these children and their parents.

The participants in the study were also predominantly female, so the findings cannot be generalized to male parents of children with asthma. Participants were also mostly non-Hispanic White, so the findings cannot be generalized to other ethnicities. This is especially problematic because "African-American children have the highest prevalence of asthma" (AAFA, 2020). Approximately 13.4 percent of African-American children are diagnosed with asthma, compared to nearly 7.4 percent of white children. African-Americans are also more likely to become hospitalized as a result of asthma and also three times more likely to die from complications of asthma (AAFA, 2020).



Most of the participants only had one child with asthma, participants with two or more children with asthma may have obtained different results compared to parents with only one child diagnosed with asthma. Most of the participants in the study also obtained a low to medium asthma knowledge score and had children with well controlled asthma. The results cannot be generalized to populations of parents with high asthma knowledge and parents of children with uncontrolled asthma. The study also relied on self-report information which cannot be verified. Social desirability bias is common in research studies using measures of well-being (Caputo, 2017). Participants could have potentially enhanced their child's asthma control score and their own QoL score. For the Asthma knowledge portion, social desirability bias was less likely to occur because the answers reflected the actual knowledge the participants had regarding childhood asthma. However, the anonymous nature of the data collection efforts might have reduced this potential limitation.

Lastly, I also did not measure for asthma severity which could have potentially explained some of the findings. Most of the children in the study had well controlled asthma however, there is a possibility that the children had mild asthma instead of moderate or severe. Measuring for asthma severity would have helped to categorize children as either having mild, moderate, or severe asthma.

### **Recommendations for Research**

My first recommendation would be to replicate the study during a time when the COVID-19 pandemic is no longer a contributing factor since COVID-19 may have significantly impacted the results of the study. As a result of COVID-19 social distancing

was also in effect, so the data was only collected online. I recommend for the study to be replicated using online sources and also in person with participants who are visiting an asthma or allergy clinic to learn more about other populations of parents who may differ from participants who complete surveys online. I also recommend for data to be collected from parents of children who have recently visited an emergency department or have recently been hospitalized with symptoms of asthma to gain further insight into the QoL of parents of children with uncontrolled asthma. The asthma knowledge score and QoL score may differ among the population of parents of children with uncontrolled asthma. Recruiting participants online and in person may also provide us with a diverse sample of participants who are male and female, of different ethnicities, parents with more than one child diagnosed with asthma, and also individuals that differ in levels of asthma knowledge, parental control of child's asthma, and QoL. There was also a possibility that the population of parents in the present study had children with asthma that was mild making it easier to control in comparison to parents who had children with moderate to severe asthma (AAAAI, 2019b). I recommend future studies categorize the children into groups of mild, moderate, and severe asthma to understand if similarities or differences are found among these different populations. Categorizing the children into groups will also help to distinguish differences between asthma control and asthma severity.

To understand the relationship between parental control of child's asthma and QoL further, I recommend future research studies explore any potential mediating variables (e.g., family history of allergies, emergency department visits, hospital admission, adherence to prescribed medication, parent attitudes regarding asthma) in the

relationship between parental control of child's asthma and QoL (Ibrahim et al., 2019). Lastly, another recommendation is to investigate the potential barriers (e.g., caregiver burden, lack of neighborhood safety, education, family support, empowerment, competence) of child asthma control (Prather, Foronda, Kelley, Nadeau, & Prather, 2020) and the guidelines needed to maintain asthma control among children (Ibrahim et al., 2019).

### **Recommendations for Practice**

The study revealed a significant and positive correlation between parental control of child's asthma and parent QoL. Adequate communication between healthcare professionals and parents can help to uncover the specific measures that parents use to control their child's asthma (Searle, Jago, Henderson, & Turner, 2017). Furthermore, I also recommend the need to include a QoL assessment for parents of children with asthma as part of the medical treatment plan.

### **Implications for Social Change**

The results of this study may contribute to positive social change by expanding on previous research conducted on the QoL of parents of children with asthma. There was a positive and significant relationship between parental control of child's asthma and QoL which is consistent with previous findings. These findings suggest the importance of controlling symptoms so that parents can potentially experience an improved QoL. The study can be shared with medical health professionals who implement programs aimed at increasing asthma control among children and their parents overall QoL. The study also

took place during the COVID-19 pandemic and provided valuable information that would normally not be available during typical living conditions.

### **Conclusion**

I examined the following hypothesis in this study: whether parental control of child's asthma mediated the relationship between asthma knowledge and QoL. According to the results, parental control of child's asthma did not mediate the relationship between asthma knowledge and QoL. A significant and positive relationship between parental control of child's asthma and QoL was found which was consistent with previous research studies (Bellin et al., 2015; Carey, Edds-McAfee, Martinez, Gutierrez de Blum, & Thornton, 2019; Everhart, Borschuk, Miadich, Barsell, & Heron, 2018; & Shahid et al., 2017). Adequate communication between parents and medical health professionals is vital in being able to implement the appropriate measures needed to control asthma in children (Searle, Jago, Henderson, & Turner, 2017). Since research has consistently determined a relationship between parental control of child's asthma and QoL, a QoL analysis for parents may be helpful as part of the treatment plan provided for the child. The results of this study may contribute to social change by expanding on the previous research conducted on the QoL of parents of children with asthma. The correlational findings reveal the importance of controlling symptoms for children and parents experiencing an improved QoL.

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## Appendix A: Flyer

# Asthma Research Study

## Does your child have asthma?

Volunteers are needed for a study designed to learn more about the quality of life of parents of children medically diagnosed with asthma



**This study is being conducted for a dissertation at Walden University**

You may qualify if you:

- Are 18 years of age or older
- Have a child diagnosed with asthma
- Your child is between the ages of 4-11
- You are the biological parent
- You reside in the United States

If you participate:

- There is no cost
- It is strictly voluntary
- It is anonymous
- You may discontinue participation at any time prior to submitting the survey

**To participate in the study visit**

**<https://www.surveymonkey.com/r/childwithasthma>**

For more details: Please email researcher at [email redacted]

## Appendix B: Informed Consent

### CONSENT FORM

You are invited to participate in a research study on asthma. The researcher is inviting parents 18 years of age or older who have a child between the ages of 4-11 with medically diagnosed asthma. The informed consent is used to give you the opportunity to understand the study before making the decision to participate in the study. The researcher conducting this study is Glori Sommerer, a doctoral student at Walden University.

#### **Background of the Study**

The purpose of the study is to learn more about the quality of life of parents of children medically diagnosed with asthma.

#### **Procedures:**

A flyer will be used to invite participants to the study. The flyer will include a link to a web page that participants can visit. The link will take participants to the informed consent. Once the informed consent is read, participants can click on a button to proceed to complete the survey. The survey will take approximately 10-20 minutes to complete.

#### **Sample Questions:**

- Children who have asthma shouldn't participate in sports that make them run too much.
- In the past 1 week, how much of the time did your child's asthma limit him or her from doing usual physical activities such as running, swimming, sports, walking uphill or upstairs and bicycling?
- During the past 1 week, how often has your child had breathing problems such as wheezing, coughing, or shortness of breath?
- Little time for family and friends.
- Sad because of asthma.

#### **The Study is Voluntary:**

Participation in the study is strictly voluntary. You have the right to accept or decline to participate in this study at any time. You will not experience any negative consequences for declining to participate in this study. If you decide to participate in the study and during the study you change your mind, you are free to stop participating at any time.

#### **Risks and Benefits of Participating in the Study:**

Participating in this study may involve some minor risks such as experiencing some stress, sadness or worry when answering some questions about your child's asthma. However, participation in this study will not involve any risks to your overall safety and wellbeing. Participating in this study may also involve some benefits such as helping to

provide professionals who develop and implement asthma education programs with a better understanding on the importance and role of asthma knowledge for parents of children with asthma.

**Cost:**

There is no cost to participate in this study.

**Privacy:**

The study is anonymous and will not contain any identifiable information. To maintain anonymity the surveys will be identified using an identification number instead of names. The information shared by participants in the surveys will only be used for the purpose of the research study. The computer used to access the data will be secured with a password. Any data that is printed will be kept in a locked filing cabinet for at least 5 years which is a requirement at Walden University.

**Contact Information:**

If you have any questions pertaining to this study you may contact the researcher at [email redacted] or [telephone number redacted].

**Obtaining Your Consent:**

If you fully understand the research study and consent to participate, please click on the button below to complete the survey. Thank you for your time.