

NATIVE HAWAIIAN CAREGIVERS' CULTURAL PERSPECTIVES OF PEDIATRIC
ASTHMA MANAGEMENT

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Dedication

This work is dedicated to the 1%. May our work inspire others to join our rank.

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“He kukui no kau olelo no ko‘u mau wawae

A he malamalama ho‘i ia ma ko‘u alanui

Thy word is a lamp unto my feet and a light unto my path” (Psalm 119:105)

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Abstract

Asthma remains the leading cause of chronic respiratory illness among Native Hawaiian children 0 to 17 years in Hawai‘i. The National Asthma Education and Prevention Program (NAEPP) established asthma management guidelines which includes medical assessment and monitoring, education in partnership with the caregiver, control of environmental triggers, and medication adherence (National Asthma Education Prevention Program [NAEPP], 2007). However, these guidelines do not consider the worldview, health beliefs, and cultural practices of caregiver, child, and family.

The purpose of this study was to describe how Native Hawaiian caregivers manage pediatric asthma, to understand which strategies are considered cultural practices, and to identify other cultural practices used to manage asthma.

Eighteen interviews with self-identified Native Hawaiian caregivers of school-aged children between the age of 5 and 12 with a diagnosis of mild-persistent, moderate-persistent, or severe-persistent asthma were conducted. Interviews used a talk story approach to understand how the child’s asthma was managed and to identify cultural practices the caregivers were aware of and used to manage pediatric asthma. Interviews were audio recorded and transcribed.

A thematic form of inductive content analysis was used to analyze the data. Each transcript was independently reviewed and coded. The codes were then categorized and themes and subthemes emerged. Multiple coders validated the identified themes. Two overarching themes and six subthemes emerged from the analysis. The themes included asthma and its causes, physical activity, and management strategies.

Native Hawaiian caregivers in this study believed that asthma was caused by heredity and environmental exposure. Asthma management strategies included using alternative therapies,

responding to asthma symptoms, and preventing asthma symptoms. Awareness of cultural practices was readily discussed by caregivers. However, cultural practices such as la'au lapa'au (herbal medicine) and lomilomi (traditional massage) were seldom, if ever, used. Caregivers reported that they lacked the knowledge of and how to properly use such cultural practices as a treatment for asthma. Future research should explore the role and influence cultural beliefs have on health practices and the role and influence of the community one lives as it relates to asthma management.

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List of Abbreviations

ALA – American Lung Association

CDC – Centers for Disease Control and Prevention

CHW – Community Health Workers

CINAHL – Cumulative Index of Nursing and Allied Health Literature

FAMSS – Family Asthma Systems Survey

HAI – Hawai‘i Asthma Initiative

IgE – Immunoglobulin E

KOKO – Kīpuka O Ke Ola

KOM – Ke Ola Mamo

NACI – National Asthma Control Initiative

NACP – National Asthma Control Program

NAEPP – National Asthma Education and Prevention Program

NEEF – National Environmental Education Fund

NHLBI – National Heart, Lung, and Blood Institute

NHHCS IRB – Native Hawaiian Health Care Systems Institutional Review Board

OHA – Office of Hawaiian Affairs

WCCHC – Wai‘anae Coast Comprehensive Health Center

WHO – World Health Organization

List of Hawaiian Words

- ‘Aina – land, physical environment
- ‘Aumakua – family god, ancestral deity
- ‘Ohana – family, extended family
- ‘Uhane – spirit
- Akua – God, higher being, higher power
- Hale – house
- Hanai – adopted
- Hāno – asthma, to be without breath
- Haumana – student
- Ho‘omanawanui – patience
- Ho‘oponopono – act of forgiveness, to make right
- Hula – dance
- Ka ‘Ai Pono – living properly
- Ka Mālama ‘Āina – care of the environment
- Ka Wai Ola – waters of life
- Kahuna – priest, healer, practitioner
- Kahuna la‘au lapa‘au – priest who uses herbal medicine
- Kai – ocean
- Kalo – taro, used in herbal medicine
- Kanaka Māoli – person, human being, original people
- Kāne – man, fellow man
- Ke Ao ‘Ōiwi – the people

Ke Ola Mamo – the life of the descendants

Ko‘oko‘olau – type of plant used in herbal medicine

Koa – type of native wood used in herbal medicine

Koali – type of native wood used in herbal medicine

Kūkākūkā – talk story

Kumu – teacher

Kumulipo – a Hawaiian creation chant, origin source of life

Kūpuna – elder

La‘au – herbs

La‘au Lapa‘au – herbal medicine

La‘au kahea – medicinal prayer

Lani – heaven

Lōkahi – unity, connection with all things

Lomilomi – traditional massage

Lua – hand to hand combat

Mahi‘ai ‘aina – land cultivation

Mana – energy, power

Meleana – singing

Mihi – resolution

Mo‘okū‘auhau – genealogy

Nā Pou Kihi – corner posts

Nioi – Hawaiian chili pepper used in herbal medicine

Nui – coconut, used in herbal medicine

Oli – chant

Ola – life, health

Pa‘ao‘ao – latent childhood disease, malfunctioning of the body or predisposition

Pālua – dualism

Piko – umbilical cord

Pili ‘uhane – spiritual

Poi – mashed taro

Pono – balance, harmony

Po‘o – head

Puakala – type of plant used in herbal medicine

Pule – prayer

Ti – type of plant used in herbal medicine

Wai – water

List of Māori Words

Ha o a koro ma, kui ma – breathe of life from the forbearers

Hauora – health

Hinengaro – mental

Mana ake – unique identity of individuals and family

Māori – original people

Mauri – life force in people and objects

Mauriora – life force, cultural identity

Ngā manukura – community leadership

Taha hinengaro – mental health

Taha tinana – physical health

Taha wairua – spiritual health

Taha whānau – family health

Te mana whakahaere – autonomy

Te orange – participation in society

Te Pae Māhutonga – the Southern Cross star constellation

Te taha wairua – spirituality

Te whanau – the family

Te Whare Tapa Whā – the house

Te Wheke – the octopus

Te Whetu – the star

Tinana – physical health

Toiora – healthy lifestyles

Waiora – health, physical environment),

Wairua – spirit

Wairuatanga – spirituality

Whakapapa – genealogy

Whānau – family

Whanaungatanga – extended family,

Wharenuī – large house

Whātumanawa – the open and healthy expression of emotion

Whenua – land

Chapter 1. Introduction

Asthma is a chronic respiratory illness which causes the airways to constrict and swell (National Asthma Education and Prevention Program [NAEPP], 2007). Pediatric asthma is the leading chronic respiratory illness for children 0-17 years of age, in the United States (Centers for Disease Control and Prevention [CDC], 2012). Left uncontrolled, pediatric asthma can lead to increased health care costs, missed school days for children, and loss of work for the caregiver.

Asthma management strategies include proper medical assessment and monitoring, education in partnership with the caregiver, control of environmental triggers, and medication adherence (NAEPP, 2007). In addition to these known asthma management strategies, caregivers report using home remedies and cultural practices (Bearison, Minian, & Granowetter, 2002; Horky, Kleinman, & Firth, 2007; Van Sickle, Morgan, & Wright, 2003; Van Sickle & Wright, 2001). However, little is known about how Native Hawaiian caregivers manage pediatric asthma and which cultural practices are used to manage pediatric asthma.

Background

Prevalence of Asthma in the United States

Nationally, the prevalence of pediatric asthma increased from 2001 to 2008, plateaued from 2008 to 2013, and declined since 2013 with a prevalence of 8.3% (Akinbami et al., 2012; Akinbami, Simon, & Rossen, 2016). Prevalence of pediatric asthma among children 0 to 17 years of age also varied across the United States and by race/ethnicity. Data from 2009 indicated that the prevalence of pediatric asthma among children 0 to 17 years of age was highest in Northeastern states (9.3%) and lowest in Western states (7.7%) (Akinbami, Moorman, & Liu, 2011). National data from 1980-2007, showed that the prevalence for pediatric asthma was

higher among ethnic/racial minority children ages 0 to 17. For example, 19.2% of Puerto Rican, 12.8% of Black, and 9.9% of American Indian and Alaska Natives children have pediatric asthma compared to 7.9% of White children (Akinbami, Moorman, Garbe, & Sondik, 2009).

Asthma Prevalence in the State of Hawai‘i

Native Hawaiians, the original settlers and indigenous people of the Hawaiian archipelago (Appendix A), have the highest pediatric asthma prevalence in the State of Hawai‘i, 25.7%. White children’s pediatric asthma prevalence, by contrast, is 9.1% (Hawai‘i Health Data Warehouse, Hawai‘i State Department of Health, & Behavioral Risk Factor Surveillance System, 2012).

State of Hawai‘i data indicated that prevalence of pediatric asthma for Native Hawaiian children from 2005 to 2010 varied by county and age group. Among children between the ages 0 and 4, Maui County reported the highest prevalence at 23%, followed by Hawai‘i County (21.5%), and Honolulu County (9.6%) (Hawai‘i Health Data Warehouse, Hawai‘i State Department of Health, & System, 2013). For the same period, asthma prevalence for children ages 5 to 12 was highest in Honolulu County (31%), followed by Hawai‘i County (28%), and Maui County (26%) (Hawai‘i Health Data Warehouse, Hawai‘i State Department of Health, & Behavioral Risk Factor Surveillance System, 2013a). For children ages 13 to 17 years, asthma prevalence was highest in Kaua‘i (44%), followed by Hawai‘i (27%), Maui (25%), and lowest in Honolulu (24%) (Hawai‘i Health Data Warehouse, Hawai‘i State Department of Health, & Behavioral Risk Factor Surveillance System, 2013b) (Appendix B).

Impact of Vog on Asthma Prevalence

Hawai‘i’s unique natural environment may contribute to higher asthma prevalence. For example, Hawai‘i’s sub-tropical climate, active volcanoes, and other environmental irritants

such as vog may contribute to the high prevalence of asthma (Hawai'i State Department of Health, 2013). Vog is volcanic smog with a haze appearance caused by the mixing of sulfur dioxide with the atmosphere (Hawaiian Volcano Observatory, 2012).

Vog can contribute to an increased prevalence of asthma. However, prior to the onset of Kilauea Volcano's eruption in 1981, the Hawai'i State Department of Health did not collect asthma prevalence data. Nor was there known historical data on asthma prevalence prior to the state of the volcanic eruption. Therefore, comparative data on asthma prevalence before the start of the volcanic eruption and in the years immediately following is unavailable (J. Chosy, personal communication, July 25, 2013).

Asthma Healthcare Utilization Nationwide

Akinbami et al. (2011) reported an overall decrease in asthma-related non-urgent and outpatient care between 2005 and 2007 in children ages 0 to 17 with current asthma. Emergency department usage and hospitalization remained unchanged nationwide during this time period. However, there are differences in access to emergency care and non-urgent care by race/ethnicity. White children accessed non-urgent asthma care more frequently than black children. In contrast, black children frequented the emergency department more than white children. Overall, ethnic/racial minority children continued to underutilize non-urgent health care services and over-utilize emergency services and hospital care for asthma.

Asthma Healthcare Utilization in the State of Hawai'i

In the state of Hawai'i Krupitsky et al. (2009), reported that between 2000 and 2005, 38% of asthma-related emergency department visits were by children. Native Hawaiian children had a visit rate of 70 per 10,000 compared to white children's visit rate of 10 per 10,000. The western community of Kona, which has the second-largest Native Hawaiian population on Hawai'i

Island, reported the highest number of emergency department visits for pediatric asthma in the State of Hawai‘i with a yearly average of one in seven children. In the same report, using hospitalization data from 1995 to 2005, Krupitsky et al. (2009) reported a hospitalization rate of 23 per 10,000 for Native Hawaiians compared to white children’s hospitalization rate of seven per 10,000 (Krupitsky et al., 2009).

Hawai‘i’s costs from 2000 to 2005 for emergency department care for pediatric asthma totaled \$1.2 million. Costs associated with the hospitalization of children with asthma in Hawai‘i from 1995 to 2005 totaled \$2.2 million per year (Krupitsky et al., 2009).

National Asthma Programs

The National Heart, Lung, and Blood Institute (NHLBI) responded to the increased asthma prevalence during the 1980s and 1990s by establishing the National Asthma Education and Prevention Program (NAEPP). In 1991, the NAEPP released the first Expert Panel Guidelines. Each set of guidelines reflected the best (Western) practices available for diagnosis, treatment, and management of asthma (CDC, 2010). The most recent NAEPP guidelines, released in 2007, included four components to asthma management: (a) assessment and monitoring of asthma, (b) asthma education, (c) control of environmental factors, and (d) medication (NAEPP, 2007).

The National Asthma Control Initiative (NACI), created in 2008 by NAEPP, translates NAEPP guidelines for practice settings, homes, schools, and communities. The NACI strived to improve asthma outcomes through educating health care providers, patients, families, caregivers, and others (National Heart, Lung, and Blood Institute [NHLBI], 2011).

The Centers for Disease Control and Prevention’s (CDC) National Asthma Control Program (NACP) was created in 1999. The NACP aimed to reduce adverse asthma outcomes of

death, hospitalization, and emergency department visits, as well as missed school days and workdays. To improve asthma outcomes, the CDC's NACP provided program funding to improve asthma surveillance, train the healthcare workforce, and extend health education to the community at large (CDC, 2015) .

Established in 1990 under the National Environmental Education Act, the National Environmental Education Foundation (NEEF) is committed to educating health care providers and caregivers in order to improve asthma outcomes. NEEF's educational program focuses on identification and control of environmental factors that trigger asthma. NEEF works in partnership with institutions, public health agencies, and health professional associations nationwide to ensure that providers and caregivers are trained (National Environmental and Education Foundation [NEEF], 2016).

The American Lung Association's (ALA) Asthma-Friendly Schools Initiative provides tools and resources that communities and schools may use to develop a comprehensive approach to asthma management. The initiative aligns with the CDC's Coordinated School Health Model and is a comprehensive asthma management program (American Lung Association [ALA], 2016a).

Open Airways for Schools is a school-based education program developed by the ALA. In six 40-minute sessions the curriculum teaches asthma self-management to children between the ages of 8 and 11 (ALA, 2016b).

Hawai'i Asthma Programs

Hawai'i Asthma Initiative (HAI) is comprised of statewide organizations that share the goal of improving quality of life and life expectancy for those with asthma. The Hawai'i Department of Health, the lead agency, identifies resources and compiles data regarding asthma

within the state of Hawai‘i. HAI informs the health care community about recent trends in asthma prevalence and health care utilization (Hawai‘i State Department of Health & Hawai‘i Asthma Initiative, 2012).

In addition, community health centers have developed and designed asthma interventions. The Waianae Coast Comprehensive Health Center (WCCHC) designed and tested a community-based asthma intervention using Community Health Workers (CHW). The intervention was based on the NAEPP guidelines and aimed to reduce use of emergency care at the Health Center (Beckham, Kaahaaina, Voloch, & Washburn, 2004).

Asthma Management National Guidelines

Asthma management is most commonly linked with environmental and medical protocols. Consistent with the 2007 NAEPP guidelines, asthma episodes may be prevented by minimizing exposure to environmental triggers and by following an asthma action plan. The asthma action plan is based on the NAEPP guidelines and developed between the patient/caregiver and health care provider. The plan includes three zones: green, yellow, and red. Each zone identifies symptoms a patient might exhibit and a corresponding medication treatment plan.

Asthma medication includes two classes of drugs: long-term medications (i.e. inhaled corticosteroids) and quick-relief medications (i.e. short-acting beta-agonists) (NAEPP, 2007). Long-term control medications are used daily (green zone) and quick-relief medications are used for acute asthma episodes (yellow zone). Stronger medications are used if the child is in the red zone. These medications are administered at a medical visit or in the Emergency Department (NHLBI, 2007). Asthmatic episodes, if not treated immediately, may result in death.

Asthma Management for Native Hawaiians

Little is known about whether Native Hawaiian caregivers know or use cultural practices in managing their children's asthma. A traditional approach to manage asthma for Native Hawaiian caregivers includes prevention through healthy diet and daily physical activity (Kūpuna 3, personal communication, September 23, 2013). Should asthma symptoms occur, Native Hawaiian traditional practitioners used cultural practices such as la'au lapa'au (herbal medicine) and lomilomi (traditional massage) (Kūpuna 2, personal communication, September 17, 2013). While the kūpuna (elder) described asthma management as including herbs, massage, diet, and physical activity, it remains unknown if these cultural practices are widely used by Native Hawaiian caregivers. A deeper understanding of caregivers' use and knowledge of cultural practices is described in this study.

Cultural Practices

Cultural practices are activities that perpetuate traditional knowledge. Cultural practices reflect a cultural group's values, beliefs, attitudes, behaviors, and customs which are transferred from generation to generation (Miller & Goodnow, 1995). For Native Hawaiians, cultural practices are rooted in the cosmographic worldview that all things are interconnected (Mokuau, 2011). The Native Hawaiian cosmographic worldview is holistic and includes pono (balance, harmony), lōkahi (unity, connection with all things), and 'ohana (immediate and extended family) (Handy & Pukui, 1972; Kamakau, 1991b; Malo, 1951). Traditional Native Hawaiian cultural practices related to health and healing include lomilomi, la'au lapa'au, and ho'oponopono (act of forgiveness, to make right) (Hilgenkamp & Pescaia, 2003).

The current study defines Native Hawaiian cultural practices as activities or actions related to asthma management performed by a self-identified Native Hawaiian caregiver who

learned the cultural practice from a family member or kumu (teacher). These cultural practices include: (a) la‘au lapa‘au, (b) traditional Native Hawaiian diet, (c) pule (prayer), (d) physical activity such as swimming in the ocean, or sitting at the beach inhaling the salt air, and (e) use of lomilomi. These activities and actions are shared between individuals with the intent of passing on knowledge related to cultural practices for healing, health, and wellness.

Alternative healing practices used to manage asthma symptoms may be perceived as embodying culture. These alternative healing practices are not unique to Native Hawaiian caregivers but are used to manage asthma. They include using: (a) Vicks VapoRub, (b) essential oils, (c) relaxation techniques, or (d) body manipulation. Similar to Native Hawaiian cultural practices, these alternative healing practices are learned from a family member.

Statement of the Problem

National and state asthma control programs aim to reduce adverse outcomes related to asthma. Asthma control programs focus on improving asthma outcomes through training health care providers and educating caregivers and school-aged children about asthma management. Despite national and state asthma control programs’ best efforts, asthma-related management remains poor among ethnic/racial minorities across the nation and highest among Native Hawaiians in Hawai‘i (Akinbami et al., 2016; Hawai‘i Health Data Warehouse et al., 2012). The consideration of the worldview, health beliefs, and cultural practices of caregiver, child, and family may improve the management of pediatric asthma.

Purpose of the Study

The purpose of this study was to describe: (a) how Native Hawaiian caregivers manage pediatric asthma and (b) the cultural practices being used to manage pediatric asthma. Understanding how Native Hawaiian caregivers manage pediatric asthma may inform how

providers develop asthma management plans and how cultural practices may contribute to managing pediatric asthma.

Significance of the Study

Native Hawaiian health beliefs and cultural practices may influence how Native Hawaiian caregivers manage their child's asthma. There is limited research and data available on how Native Hawaiian caregivers manage their school-age child's (5-12 years old) asthma, including which cultural practices are used and whether caregivers are aware of Native Hawaiian cultural practices to manage asthma. Understanding the use of cultural practices as an asthma management strategy among Native Hawaiian caregivers who have a child with mild persistent, moderate persistent, or severe persistent asthma may inform the development of effective culturally-based asthma management interventions for this population.

Research Questions

1. What do Native Hawaiian caregivers believe causes asthma?
2. How do Native Hawaiian caregivers manage their child's asthma?
3. What cultural practices do Native Hawaiian caregivers use to manage asthma?

Summary

The overall prevalence of asthma and asthma-related complications remains high among Native Hawaiians compared to all racial/ethnic groups. Little is known about whether Native Hawaiian caregivers know or use Native Hawaiian cultural practices to manage their child's asthma. As such, this study seeks to: (a) describe Native Hawaiian beliefs about the cause of asthma, (b) understand how Native Hawaiian caregivers manage their child's asthma, and (c) investigate whether Native Hawaiian cultural practices were used to manage asthma.

Chapter 2. Literature Review

A review of the literature was conducted to (a) understand concepts of health and culture as they relate to asthma and (b) describe asthma management strategies. Since the literature on asthma management among Native Hawaiians is limited, the review included both Hawaiian books and personal communications with Kūpuna.

Databases and Search Strategy

Using the University of Hawai‘i at Mānoa databases, a keyword search was done in three health-based databases and two broad-based databases. The health-based databases were Cumulative Index of Nursing and Allied Health Literature (CINAHL) with full text, Psychology and Behavioral Sciences Collection, and PubMed. The two broad-based databases were Academic Search Complete and ERIC. The databases were used to identify empirical qualitative and quantitative studies on health beliefs related to asthma, culture related to asthma, and asthma management.

A keyword search was initiated using the keywords “related to asthma” and one of the following: “health,” “health beliefs,” “culture,” “cultural practices,” “caregiver,” “child,” “pediatric,” “community-based,” “parent-child dyad,” “decision making,” “asthma,” and “asthma management.” The initial keyword search yielded over 1,000 articles with duplication across databases. Therefore, additional limitations were added to the literature search including articles published in English and articles available in full text.

In addition, a cultural perspective was sought, so the keywords “related to asthma” were joined with each of the following keywords: “indigenous worldview,” “indigenous health beliefs,” “indigenous cultural practices,” “Native Hawaiian,” “Māori,” “Māori health,” “Pacific

People,” “American Indian,” “Alaska Native,” and “Aboriginals of Australia.” These latter keyword searches yielded less than 10 articles.

The review of literature included the 40-year period from 1976 to 2016. The older sources are books related to the concept of health and culture among Native Hawaiians. The literature on asthma and asthma management included articles published from 2007 to 2016. Articles from 2007 were included to understand the progression of asthma management after the release of the NAEPP (2007) guidelines.

Article abstracts were reviewed for inclusion in the literature review. Articles included in this review described: (a) asthma management among caregivers with children who have asthma, (b) adult asthma management, and (c) the use of cultural practices related to asthma management. Books written about (a) Native Hawaiians, (b) Native Hawaiian cultural practices, and (c) Native Hawaiian values were included. Inclusion was based on the following criteria: books included (a) provided Native Hawaiian historical context, (b) identified themselves as resources for Native Hawaiian health and well-being, or (c) were cited in an article written on Native Hawaiian health disparities. Books included provided historical contexts (a) for Native Hawaiian cultural practices, (b) health beliefs, and (c) connection between health beliefs and the spiritual realm.

Personal communications with Kūpuna provided further insight on how cultural practices are used today to manage asthma. Kūpuna who self-identified as traditional practitioners were approached. If they agreed to discuss asthma management we met to kūkākūkā (talk story).

Data Management

Data from articles, books, and reports were entered into an Excel spreadsheet. These data included: (a) the article or book citation, (b) purpose of the study, (c) methodology, (d) analysis,

(e) results, and (f) discussion/conclusion. The table was used to organize the literature. In total, 68 articles, 19 books, and four reports are included in the review.

Findings

The review of the literature is presented in three sections. Section one, “Health,” defines health and its relationship with asthma through the lens of indigenous people and racial/ethnic minorities. Section two, “Culture,” describes culture within the context of a given group of people and explains associated cultural practices related to asthma. The final section, “Asthma Strategies,” describes the core areas presented in the NAEPP guidelines (NAEPP, 2007).

Health

The World Health Organization (WHO) defines health holistically. “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (World Health Organization [WHO], 1948, p. 10). Similarly, the WHO offers this broad definition of indigenous health: “well-being is about the harmony that exists between individuals, communities and the universe” (WHO, 2007, p. 1). For indigenous people, health is a holistic representation of the individual which includes core beliefs of spirit, mind, body, and family (Cram, Smith, & Johnstone, 2003; Durie, 2004; Kahn-John, 2010; Mark & Lyona, 2010; Mokuau, 2011). By this definition, the cultures and cultural beliefs of indigenous people can influence their definitions of health.

This importance of culture to the definitions of health is supported by Kleinman, Eissenberg, and Good (1978), who defined disease as “malfunctioning or maladaptation of biologic and psychophysiologic processes in the individual” (p. 252). Illness, a traditional concept, is described as “personal, interpersonal, and cultural reactions to disease or discomfort” (p. 252). Differing perspectives on health between the healthcare provider and patients should be

considered when providing care (Brown & Closser, 2016). The approaches associated with treatment of a disease or illness differs. Illness is treated holistically and considers the individual, family, and community; the treatment of a disease focuses on finding a cure (Kleinman et al., 1978).

Native Hawaiian Health

Ola (life, health) is a holistic, interconnected, state of well-being centered on the values of lōkahi and pono. These values are upheld through the daily maintenance of a relationship between kāne (man, fellow man), ‘aina (land, physical environment), and Akua (god, higher being, higher power) (Hilgenkamp & Pescaia, 2003; Kinney, 1996). Tengan (2008) expands on Native Hawaiian ideas of health by adding that health includes physical, psychological, spiritual, cultural, and political well-being. Ka ‘Uhane Lōkahi, the Native Hawaiian Health Summit, identified three principles of Native Hawaiian health and well-being: “wellness must begin with oneself, political influence is pivotal, and ‘aina, wai, and kai (land, water, and ocean) are key to the well-being of Hawaiians” (Look, Mackura, & Spoehr, 1998, p. 272). The interconnected relationship one has with all things is rooted in spirituality and the relationship one has with Akua (Handy, Emory, Bryan, Buck, & Wise, 1965; Mokuau, 2011).

Spirituality is a central concept to Native Hawaiian health. Native Hawaiians believe that spirituality connects them with all things. Spirituality establishes a sense of beginning and connects Native Hawaiians to the cosmos (Andrade & Bell, 2011).

The Hawaiian dictionary, however, has no word for spirituality. Rather, Hawaiians use the word spiritual in place of spirituality. Hawaiian words for spiritual include: mana (power, energy), lani (heaven), ‘uhane (spirit), pili ‘uhane (spiritual) and lōkahi (Pukui & Elbert, 1986).

Native Hawaiian creation stories mark the beginning of time. These stories include the kumulipo (origin source of life) and the story of kalo (taro). The creation stories are important to understanding the spiritual connection Native Hawaiians have with all things. The kumulipo, a type of mo‘okū‘auhau (geneology) oli (chant) connects Native Hawaiians to the beginning of time. The kumulipo emphasizes that pālua (dualism), which is a guiding principle of pono and lōkahi, is essential to health (Beckwith, 1951; Blaisdell, 1989; Kane, 1997). Pālua also represents the importance of maintaining optimal health through spiritual relations (Cook, Withy, & Tarallo-Jensen, 2003). Similarly, the story of kalo established Native Hawaiians’ mo‘okū‘auhau to the ancestor kalo (Beckwith, 1970).

The connection Native Hawaiians have with their food source is related to their health. ‘Aina (land, physical environment) and health are intertwined with one another (Hilgenkamp & Pescaia, 2003). Oneha (2001) defined a sense of place as “directly linked to self-identity, self-esteem, and spiritual well-being for indigenous peoples” (p. 299). The sense of place is considered a sacred relationship between kanaka maoli (person, human being, original people) and the `aina. This sacred relationship nurtures the kanaka maoli’s spirit through mahi ‘ai ‘aina (land cultivation) and respect for Akua. In return Akua provided clean wai (water) and fertile lands (Bushnell, 1993).

The impact that food has on health is exemplified in a study with kūpuna. The consumption of kalo and poi (mashed taro) are important for Native Hawaiians health and well-being. The importance of kalo and poi for all aspects of health, spiritual, physical, and emotional was further discussed by participants in a qualitative study using listening groups with kūpuna and ‘ohana caregivers (Browne et al., 2014). The study concluded that Western dietary

influences decreased participant consumption of kalo and poi, which resulted in poor health (Browne et al., 2014).

Another key component of Native Hawaiian health is the concept of “triple piko” (umbilical cord). The “triple piko” is the Hawaiian connection with the past, present, and future. Pukui, Haertig, and Lee (1972) described it as the connection (a) to ancestors and the spiritual realm, (b) to parents, and (c) to the future generation (Appendix C).

Kame’elehiwa (1986) offers this interpretation of Native Hawaiians’ connection to the past, present, and future.

The Hawaiian stands firmly in the present, with his back to the future and his eyes fixed upon the past, seeking historical answers for present-day dilemmas. Such an orientation is to the Hawaiian an eminently practical one, for the future is always unknown whereas the past is rich in glory and knowledge. (p. 28-29)

Native Hawaiians honor the past present, and future through living a pono life. They believe that good health comes from maintaining pono relationship among all things (Kinney, 1996). A pono relationship requires four domains to exist in balance. The four domains are (a) individual – mind, body and spirit, (b) spiritual – Akua and ‘aumakua (family gods, ancestral deity) who guided daily life, (c) social – daily interactions with others, and (d) physical – respecting nature because it is made of physical manifestations of the gods (Andrade & Bell, 2011). Illness is a result of an imbalance in one or more of these four domains (Hope, Massey, & Fournier-Massey, 1993). In order to maintain a state of well-being, balance and harmony need to be maintained.

Native Hawaiian health is a complex system of beliefs centered on the interconnectedness one has with all things. Ola is a lifestyle in which the individual upholds the values of lōkahi and pono daily. This lifestyle, when lived, includes giving thanks to Akua throughout the day, connecting with all things, including people and nature, consuming food and goods that are

needed. Prevention of illness is achieved through living a balanced life reflective of one's culture.

Culture

Culture influences how individuals perceive and interact with the world. Lipson and Dibble (2005a) explain that "culture refers to integrated patterns of human behavior" (p. xi). It provides a perspective on how individuals interact with health care, transitions in life, and society (Lipson & Dibble, 2005a). Culture is transmitted interpersonally over time, between generations, and shared both within the family and among social groups. Culture defines an individual's worldview and guides the individual's decision-making process.

A person's engagement with health care is influenced by culture. Health-related beliefs are influenced by culture and Helman (2000) identified that health-related beliefs are influenced by culture and four additional factors: (a) individual factors, (b) education, (c) socio-economic factors, and (d) environmental factors. Although a person may identify with a specific culture, health beliefs may be influenced by any one of the four factors mentioned. As such, culture influences health-related beliefs and should not be considered homogenous. Culture should be considered within an individual's specific context. Such contexts may include the individual's history, socio-economic situation, and lived environment (Helman, 2000). Acknowledging an individual's cultural beliefs and practices can improve patient-provider interaction (Lipson & Dibble, 2005a).

Health Belief Systems

Caregivers have varying perspectives on health, maintenance of health, and management of illness. One's perspective on health and illness can influence his or her management and use of the health care system. Health care providers should consider the health belief system of the

caregiver. Jackson (1993) provides the description of three health belief systems which include: (a) biomedicine or western medicine, (b) the personalistic system, and (c) the naturalistic system. The biomedicine system focused on addressing the biological or psychological causes of the disease. The personalistic system focused on the cause of the illness and holds that illness is caused by another being. The being causing illness can be supernatural, nonhuman or human. Treatment of personalistic illness focused on correcting the problem caused by another being. By contrast, the naturalistic system focused on illness caused by imbalance within the individual. Treatment of illness focused on correcting the imbalance (Bhasin, 2007; Jackson, 1993). Central to all three health belief systems is an understanding of caregivers' perspectives related to the: (a) cause, (b) diagnosis, and (c) treatment of disease or illness (Jackson, 1993).

Health Beliefs about the Cause of Asthma

Indigenous Peoples, such as American Indian and Alaska Native, and ethnic minority groups, such as Puerto Ricans in the Northeast and Hispanics in the in the west and Southwestern parts of the United States, described the cause of asthma within the context of their cultural health belief system. Such groups often describe the cause of asthma as either an imbalance within the affected person or as set of symptoms caused by triggers (Martin, Beebe, Lopez, & Faux, 2010; Wind, Van Sickle, & Wright, 2004). Asthma was seldom described as a chronic disease (Horky et al., 2007; Wind et al., 2004).

Hispanics' beliefs about the cause of asthma included both a medical perspective and a traditional perspective. Hispanics believed that the cause of asthma is attributed to an imbalance in one of the body's four humors: (a) phlegm, (b) blood, (c) yellow bile, and (d) black bile. Those who believed that an imbalance in humors caused asthma were more inclined to use traditional practices to restore balance (Alicea-Alvarez, Swanson-Biearman, & Kelsen, 2014).

Other Hispanic caregivers described their asthma experience within a Western medical belief system. They described their asthma symptom-based, episodic, and caused by environmental triggers.

Among Puerto Rican caregivers, the cause of asthma was symptomatic and environmental (Koinis-Mitchell et al., 2008). Similarly, Dominican Americans described the cause of asthma to be symptom-based (Bearison et al., 2002). Mexican-American mothers described asthma as a “silent” illness due to its unpredictable nature (Arcoleo, Zayas, Hawthorne, & Begay, 2015). These beliefs echo current literature on the cause of asthma (U.S. Department of Health and Human Services, National Institutes of Health, & National Heart Lung and Blood Institute, 2008).

Among Navajo families in the Southwest, differing understanding of asthma’s causes influenced which management strategy families chose when caring for their children’s asthma. A study with Navajo families identified the following causes of asthma: (a) hereditary, (b) environmental, (c) developmental (in terms of lung development), and (d) lifestyle. The study also described traditional causes of asthma such as exposure to lightening (Van Sickle & Wright, 2001). Among Navajo families who used traditional healing practices to treat their children’s asthma, the cause of asthma was believed to be loss of harmony, pregnancy violation caused by an unfortunate event, or the loss of traditional ways of life (Van Sickle et al., 2003).

An Alaska Native tribe, the Yup`ik, attributed asthma to the changing environment of their rural communities during summer and winter (Wind et al., 2004). Exposure to indoor drafts, overly dry air, mold, indoor fires and outdoor exposure to cold air are believed to cause asthma (Wind et al., 2004). Introduced environmental changes, such as pollution and urban development were described as being asthma-causing parts of an individual’s environment. The Yup`ik

perceived that the environmental changes had the most impact on a person's health and caused asthma (Wind et al., 2004).

The cause of asthma for Navajo, Yup'ik, and Hispanics are shaped by their health belief systems. Traditional beliefs about the cause of asthma include an imbalance in life including the loss of harmony, pregnancy violation caused by an unfortunate event, or loss of traditional ways of life. Contemporary beliefs related to the cause of asthma include (a) heredity, (b) environmental changes, (c) poor lung development, and (d) lifestyle. A caregiver's beliefs about the cause of asthma impact how that caregiver manages the condition.

Native Hawaiian Health Beliefs about the Cause of Asthma

The literature on Native Hawaiian beliefs about the cause of asthma is limited to two books and one article. Some Native Hawaiians believe that asthma is caused by a loss of energy and balance. The Hawaiian health belief system is centered on maintaining pono and preventing the loss of mana (Kamakau, 1991a). The Native Hawaiian word for asthma, hānō, means to be without breath (Hope et al., 1993). As such, hānō was perceived as a loss of pono and mana (Kūpuna 3, personal communication, September 23, 2013). Pre and post 1778, asthma was classified as a pa'ao'ao (latent childhood disease, malfunctioning of the body, or predisposition to disease) sickness (Bushnell, 1993). Kūpuna 2 (personal communication, September 17, 2013) explained that asthma is a choking illness and caused by conflict between the patient's parents. The conflict manifests itself as asthma. Kūpuna 3 (personal communication, September 23, 2013) offers an alternative view of the cause of hānō. Hānō is preventable, Kūpuna 3 said, result of family members not doing their part in the child's development. For Native Hawaiians, hānō was a result of an imbalance within family. These beliefs about asthma can influence how Native

Hawaiians interact and engage with healthcare. However, this belief is not well documented in the literature.

Cultural Management of Asthma

Cultural management of asthma varied by cultural group and corresponding health belief systems. The Navajo worldview about asthma, for example, includes both contemporary, western and alternative medicines, and traditional beliefs. As such, caregivers' asthma management strategies were dependent on their worldviews. Those who believe that the cause of asthma is due to loss of traditional ways or other traditional point of views would manage their children's asthma using traditional approaches. Navajos who believed in the traditional ways treated asthma with medicinal herbs and one of four ceremonies focused on restoring balance to the patient's body (Van Sickle et al., 2003). Whether or not medicinal herbs were used depended on the families' belief systems. Families indicated that medicinal herbs purchased at an outdoor market devalued the medicinal quality of the herb. Ceremonies were used traditionally to treat illnesses of the chest, lung, and throat; the ceremonies were believed to protect the asthmatic child and relieved symptoms, even to the point of curing the child. In some cases, though, the benefits of the ceremonies were short-lived and the traditional healer recommended additional ceremonies (Van Sickle et al., 2003).

A case study by Mehrotra, Ramagopal, and Dodani (2014) discussed the challenges that health beliefs pose to the care of children with asthma. The case studies identified that caregivers may not trust or have confidence in Western medicine. In the first case study, the use of incense contributed to the child's asthma symptoms, but due to cultural respect, the caregiver complied with the practice of incense burning. The second and third case studies highlighted concerns about the use of medication and Western healthcare practices. For example, caregivers' fears

regarding long-term use of inhaled corticosteroids resulted in poor asthma control for children. The final case study presented the use of alternative medicine modalities as conducted by Ayurvedic (whole-body healing) practitioner and a homeopathic practitioner. The belief among Asian Indians is that Ayurvedic and homeopathic medicines are less harmful than Western medicines.

Hispanic cultural management of asthma is rooted in the concept of humors, or elements of the body that, when out of balance, can cause illness (Alicea-Alvarez et al., 2014). Cold is the humor associated with asthma. As such, consumption of or exposure to cold elements is believed to cause asthma. Treatment of asthma, then, relies on promoting hot elements or restoring balance between cold and hot (Alicea-Alvarez et al., 2014). A study among multicultural Hispanic caregivers included the following asthma management remedies: (a) prayer, (b) over the counter medications, (c) herbal remedies, and (e) massage (Mazur, DeYbarrondo, Miller, & Colasurdo, 2001). In a qualitative study with a Puerto Rican caregiver, prayer was a part of the process to cope with the child's asthma. (Coffey, Cloutier, Meadows-Oliver, & Terrazos, 2012). In another study among Puerto Rican families, asthma was managed using topical and ingested remedies such as aloe, honey, and menthol to treat asthma (Zayas et al., 2011).

Native Hawaiian Cultural Management of Asthma

The only study that described Native Hawaiian management of asthma was based on cultural beliefs. One primary Native Hawaiian cultural belief is that culture is a collectivistic therefore asthma management is structured around social support. According to Kealoha (2012) contemporary Native Hawaiian caregivers experience uncertainty about asthma management; consequently, Kealoha found that caring for children with asthma should not be done in isolation. Rather, Native Hawaiian social support, which included both the immediate and

extended ‘ohana, should be used. Management strategies included use of (a) comfort measures, (b) home remedies, and (c) Hawaiian cultural healing practices. Such practices were used prior to the use of Western medication, and include the use of (a) salt water, (b) lomilomi, and (c) herbal remedies such as teas or placement of ti leaves on the chest. The study recommended that providers, when working with Native Hawaiian caregivers, consider the influence of cultural values and caregivers’ indigenous worldview.

Cultural Practices

Definitions of cultural practices are found throughout the literature. Miller and Goodnow (1995) defined cultural practices as “actions that are repeated, shared with others in a social group, and invested with normative expectations and with meanings or significances that go beyond the immediate goals of the actions” (p. 7). The authors developed this definition by understanding the terms “culture” and “practices.” The literature widely recognizes the complexity of the term “culture.” The Office of Minority Health and U.S. Department of Health and Human Services (2013) through the Culturally and Linguistically Appropriate Services (CLAS) Policy and Practice offers this adapted definition of culture:

The integrated pattern of thoughts, communications, actions, customs, beliefs, values, and institutions associated wholly or partially, with racial, ethnic, or linguistic groups, as well as with religious, spiritual, biological, geographical, or sociological characteristics. Culture is dynamic in nature, and individuals may identify with multiple cultures over the course of their lifetimes (p. 10).

Similarly, Lipson and Dibble (2005b) define culture as “integrated patterns of human behavior” (p. xi). Practices are defined as actions which are observable and interpretable by an observer (Miller & Goodnow, 1995).

Native Hawaiian Cultural Practices

The literature describing Native Hawaiian cultural practices included a recent article and three books. Native Hawaiian cultural practices include: (a) behaviors, (b) attitudes, (c) beliefs, and (d) values shared by Native Hawaiian individuals and families. These health behaviors include lifestyle which influence health beliefs. Within the context of health and asthma management, Native Hawaiian cultural practices include traditional healing modalities passed between generations or from kumu to a haumana (student). To understand traditional Native Hawaiian healing modalities, one must understand the worldview these modalities are rooted in. Native Hawaiians have a cosmographic worldview in which all things are interconnected (Mokuau, 2011). This worldview is based on the relationship Native Hawaiians have with all things animate and inanimate including Akua, Kāne, and ‘aina (Handy & Pukui, 1972; Kamakau, 1991a; Malo, 1951). Native Hawaiians strive to live a pono life and therefore perceive health, wellness, and healing through this lens.

Traditional Native Hawaiian healing modalities are based on the goal of promoting wellness through prevention. Such modalities include (a) exposure to and use of seawater/salt air, (b) traditional diet, (c) pule, (d) lomilomi, (e) ho‘oponopono, and (f) la‘au lapa‘au. For the purpose of the study, a Native Hawaiian cultural practice is defined as an activity or action related to asthma management done by a self-identified Native Hawaiian caregiver who learned the cultural asthma management practice from a family member or a kumu. As such, Native Hawaiian cultural practices are traditional healing modalities.

Native Hawaiian Traditional Healing Modalities

Literature describing Native Hawaiian traditional healing modalities related to asthma is limited to three books and personal communications with Kūpuna. Kamakau (1991a) described

asthma management as based on restoring balance and power to the individual through pule and la‘au lapa‘au. To ensure that balance was restored, Native Hawaiian Kahuna (priest, healer, practitioner) followed strict healing protocols. Bushnell (1993) explained that healing protocol began with a prayer and the use of opening medicine such as cathartics (purgative medicines). All la‘au lapa‘au were collected under strict guidelines. Once prepared the la‘au lapa‘au was consumed by the patient. The healing protocol ended with closing medicines which included the consumption of certain foods. Food used during pani (closure) or closing ceremony included a creature from the sea associated with the illness or other plants used as medicine. Traditional Native Hawaiian healing practices believed in palua and the restoration of pono. As such, the premise was that all plants and animals on land had an opposite in the sea (Bushnell, 1993).

Today, Native Hawaiian traditional healing modalities are practiced by traditional practitioners. These individuals are selected and trained by a master Kahuna. Traditional healing modalities included: (a) la‘au lapa‘au, (b) la‘au kahea (medicinal prayer), (c) lomilomi, (d) ho‘oponopono, and (e) other healing arts. Traditional practitioners adhered to protocols taught by his or her kumu (Gross, 1998).

The foundation of Native Hawaiian traditional healing modalities is the practitioner’s connection with Akua. Native Hawaiian healing includes a spiritual belief that healing power is 80% from Akua and 20% is through medicine (Kūpuna 1, personal communication, July 25, 2013). This spiritual connection between the traditional practitioner and Akua helps the practitioner with the healing process (Chun, 2011). As stated by Hilgenkamp and Pescaia (2003), “the body cannot be healed without healing the spirit” (p. 35). Kūpuna 2 (personal communication, September 17, 2013) emphasized that healing requires belief and trust in Akua. Without such belief and trust, healing cannot happen. The first step for the patient is to be pono

with oneself and all things. As Kūpuna 2 explained, asthma is caused by a conflict between parents. To resolve the conflict and health their child, the parents must go through the process of ho‘oponopono. This process requires ho‘omanawanui (patience) before mihi (resolution) is achieved.

Gross (1998) described the gathering of la‘au (herbs). Gathering la‘au occurs during early morning hours, with the practitioner offering prayers before harvesting the plant. A traditional practitioner gathered only what was needed in accordance with the patient’s gender and illness. Specific la‘au for asthma and lung conditions included 58 herbs. Among them were: (a) koa, (b) kukui, (c) puakala, (d) ko‘oko‘olau, (e) nioi, (f) nui, (g) kalo, (h) ti, and (i) koali (Hope et al., 1993). Kūpuna 2 (personal communication, September 17, 2013) explained that treatment and management of asthma might also include exposure to ocean or seawater/salt water mist. The use of herbal medicines required the practitioner to demonstrate knowledge, practice, and understanding of human systems, plant properties, and human-plant interactions.

Kūpuna 3 (personal communication, September 23, 2013) shared that hānō is preventable through daily physical activity and proper diet. Chun (2011) indicated that prevention began with proper diet, which included complex carbohydrates, lean protein, and fresh foods.

Physical activity included cultural practices of oli and meleana (singing). Physical activity such as swimming, diving, hiking, running, and mountain climbing was also an option for daily physical activity. The goal of such physical activity was for children to mature into healthy adults who could contribute to society.

Traditional Chinese Medicine

One strategy for managing asthma involved combining Traditional Chinese Medicine with Western medicine. Wu (2014) found that Traditional Chinese Medicine, which included

herbal medication, acupuncture, massage, herbal ointment, and weekly music therapy positively improved asthma outcomes. Findings also indicated that the use of combined therapies improved clinical outcomes such as peak expiratory flow and reduced serum Immunoglobulin E (IgE). In addition, patients who underwent combined therapies saw an improved quality of life and a reduction in emergency room visits and hospitalizations.

Aboriginal Cultural Practices

Among Aboriginals of Australia, successful asthma management programs focused on the use of cultural practices, such as teaching girls a traditional style of singing and teaching boys to play didgeridoos (Eley, Gorman, & Gately, 2010). Study findings indicated that participants experienced fewer asthma episodes compared to before the intervention.

Asthma Management Strategies

Asthma management is a complex system of monitoring symptoms and intervening with appropriate care measures. Asthma management strategies include: (a) medication, (b) changing behaviors related to asthma management, (c) learning how to manage asthma symptoms, (d) increasing physical activity, (e) educating patients and caregivers about asthma management, and (f) engaging community health workers and school nurses.

Medication

Nationally, most asthma management research has focused on inner city and ethnic/racial minority communities of African Americans and Puerto Ricans (Everhart et al., 2014; Handelman, Rich, Bridgemohan, & Schneider, 2004). Guidelines released by the NAEPP Expert Panel (2007) recommended early diagnosis and medication management for asthma. However, the prescriptive nature of these asthma management guidelines does not take into account patients' and families' cultural practices.

Medication management was a strategy all caregivers used. For some caregivers, assessing the severity of a child's asthma episode was the first step before deciding to administer medication. In a study among Australian Aboriginals, caregivers withheld medications if they determined that symptoms were not worsening (Barton, Sulaiman, Clarke, & Abramson, 2005). Caregivers sought emergency department care if the asthma episode worsened. Caregivers believed that medication given at the emergency room was more potent than what they had at home (Barton et al., 2005).

In two studies, medication adherence among Aboriginal and Navajo caregivers was questionable. Caregivers described fears associated with addiction, long-term use, and side effects as reasons for not using prescribed asthma medication (Barton et al., 2005; Van Sickle & Wright, 2001). In another study, caregivers of Mexican descent described concerns with the use of inhaler medication. Their concerns included: (a) over-medication, (b) long-term effects, and (c) medication addiction (Arcoleo et al., 2015). Similarly, reasons for medication non-adherence among other ethnic/racial minority caregivers and children included: (a) fear of addiction, (b) improper use of an inhaler, and (c) dividing the responsibility between the parent/caregivers and child (Peterson-Sweeney, Halterman, Conn, & Yoos, 2010; Peterson-Sweeney, McMullen, Yoos, & Kitzman, 2003).

As children mature, caregivers transfer asthma management responsibilities to them. In a study among Puerto Rican school-aged children asthma management responsibilities were transferred from caregiver to child as the child aged. Caregivers supervised their school-aged child's self-management of asthma symptoms. As they reached adolescence, asthma patients became more independent with less frequent parental involvement (Martin et al., 2010). In another study, adolescent age determined the ability of the adolescent to adequately self-manage

his or her asthma. Older adolescents were more likely to take full responsibility for asthma management. By contrast younger adolescents perceived that their caregivers were still responsible for asthma management (Bruzzese et al., 2012). Similarly, caregivers perceived that adolescents should take on more responsibilities as they age. Responsibilities required the caregivers to educate children about the importance of consistently taking controller medications (Gibson-Young, Turner-Henson, Gerald, Vance, & Lozano, 2014). Adolescents believed that medication was only needed when symptoms were present, and therefore did not adhere to the use of daily controller medication (Wamboldt, Bender, & Rankin, 2011). Responsibility for asthma management among Turkish caregivers found the responsibility for asthma management shifts as a child ages and varies based on asthma severity (Ekim & Ocakci, 2013).

Behaviors

Other strategies for asthma management described in the literature include (a) managing the child's emotion, (b) protecting the child from harm, and (c) promoting a healthy lifestyle. Caregivers' concern and worry for their children's safety resulted in a protective approach to asthma management. For example, a study in Australia describes that caregivers worried about their children with asthma (Barton et al., 2005). Caregiver worry resulted in close management of a child's asthma. Rather than burden others with their child's care, caregivers encouraged the child to invite friends to his or her home. This allowed the caregiver to manage the child's asthma while promoting a normal childhood. Among Puerto Rican children, the use of relaxation techniques and dressing warmly was done to manage and prevent asthma episodes (Martin et al., 2010). Additional management strategies used by Puerto Ricans included behavioral strategies such as making lifestyle changes, adhering to religious and spiritual practices, avoiding environmental triggers, and practicing mind-body exercises (Zayas et al., 2011).

Assessing family asthma management is a strategy for appropriate asthma care. The Family Asthma Systems Survey (FAMSS) identified that caregivers who reported more asthma exacerbations were likely to better manage their children's asthma (da Silva & Barros, 2014). Another strategy for asthma care is caregiver confidence. Caregiver confidence can be an important indication of how a caregiver manages a child's asthma. Higher confidence was associated with improved asthma outcomes among maternal caregivers (Gibson-Young et al., 2014).

Challenges facing Puerto Rican caregivers differ between those who live in the continental United States and those who live in Puerto Rico. Managing multiple family responsibilities coupled with the difficulty of adjusting to their children's asthma resulted in poor asthma control among island Puerto Ricans (Everhart et al., 2014). A study among ethnic minority inner-city families examined the relationships between caregivers' responsibilities, conflict between child and parent, and asthma morbidity. Findings included: children with low quality of life indicators and low levels of child-parent conflict required higher caregiving loads from their caregiver (Murdock, Adams, Pears, & Ellis, 2012).

Understanding patient and caregiver fears related to asthma management is critical to developing asthma action plans. Key informant interviews with Māori, Pacific Islander, and New Zealand European stakeholders were conducted to discuss fears associated with asthma management and accessing general practitioners in New Zealand (Buetow et al., 2003). The findings indicate that such fears are complex and contribute to Māori and Pacific Islander access to general practitioners. Key informants identified fears related to asthma, self, and general practitioners' care. Specific fears included: (a) use of medication to manage asthma, (b) possible hospitalization, and (c) culturally disrespectful care. Study recommendations included educating

Māori and Pacific Islander patients and caregivers about how to work with general practitioners to improve asthma outcomes.

Similar findings pertaining to child-caregiver and provider interaction was found in studies about South Asians and inner-city ethnic minorities in London. Smeeton, Rona, Gregory, White, and Morgan (2007) found that South Asians sought asthma care more readily at emergency care facilities than their general practitioners' office. Participants reported receiving superior care at the emergency department compared to their general practitioner's office. Among these participants, medication was another concern. Some believed that inhaler use was addictive, and withheld inhalers from their children. Thus, the impact of cultural beliefs on asthma management may result in poor control of asthma among children. The findings from this study suggest that understanding parental and/or caregiver cultural beliefs as they relate to asthma management is a key factor to improving asthma outcomes (Smeeton et al., 2007).

Caregivers of a focus group expressed additional fears related to asthma. These fears included: (a) uncertainty of asthma symptoms, (b) a belief that asthma won't go away/won't get better, and (c) dying (Kieckhefer & Ratcliffe, 2000). Similar concerns were expressed by youth ages 11 to 16, who self-managed their asthma (Gabe, Bury, & Ramsay, 2002).

Learning Asthma Self-Management

Shared decision-making within parent and child dyads builds on the child's self-management of asthma. Dyads where asthma knowledge and self-efficacy are positively associated resulted in better asthma outcomes among Mexican-American and African-American parent and child dyads (Horner & Brown, 2015). Developing a parent-child dyad is an on-going process that requires continuous interaction between the parent and child. As such, responsibilities can be transferred based on the child's asthma symptoms and level of severity.

Acute situations required management by the parent, whereas the child was able to manage non-acute situations independently (Garnett, Smith, & Ormandy, 2016). A change in caregiver beliefs regarding medication use and education about asthma as a disease improved a caregiver's child's asthma outcomes (Ellis et al., 2014).

The use of web-based asthma management tools is effective among caregivers who have a child with asthma. The use of "myasthma" portal, for example, improved asthma outcomes by encouraging caregivers to engage with their providers regarding their child's asthma (Fiks et al., 2015). The use of a portal is similar to the development of an asthma action plan, which is the current standard of care for asthma management. As such, low participation by the child in the development of an asthma action plan leads to poor asthma outcomes related to child non-adherence (Sleath et al., 2011).

Physical Activity

Physical activity contributes to improved asthma management. Among school-aged children with asthma, poor asthma control may limit physical activity in school. An exploratory study of inner-city students was conducted to understand the impact of an in-school asthma management program (Walker & Reznik, 2014). Findings suggest that due to lack of access to medication and negative feelings such as embarrassment, asthmatic students were unable to participate in physical activity. The researchers suggest that to improve asthma control and increase participation in physical activity, students need to have access to medications. Health room staff should receive adequate education on asthma and physical activity, and students should adhere to asthma action plans. The impact of limited physical activity impacts asthma. In an Australian study among Aboriginal adults with asthma, inadequate physical activity coupled

with increased television viewing time resulted in increased hospital utilization and health care visits (Doggett & Dogra, 2015).

Lived Environment

Environment inside and outside of the home impacts asthma. Caregivers in this study were mindful of environmental causes that can trigger children's asthma. One environmental trigger unique to Hawai'i is the continuous emission of volcanic smog (vog) due to the on-going eruption of Kilauea Volcano on Hawai'i Island. A study conducted by Michaud, Grove, and Krupitsky (2004) found that vog contributed to an increase in emergency department visits for asthma and chronic obstructive pulmonary disease (COPD). These findings were also supported in a later study. In this study, adults reported an increase in cardiorespiratory symptoms during periods of higher vog emission or exposure (Longo, Yang, Green, Crosby, & Crosby, 2010). The presence of vog may influence asthma symptoms such as cough, acute airway problems, and pharyngitis.

The impact of vog and housing conditions influence how caregivers manage pediatric asthma. Caregivers response to voggy resulted in increased emergency department visits associated with increased sulfur dioxide emissions influences (Longo et al., 2010). Housing conditions may be out of a caregiver's control. However, with proper management, such as the avoidance of asthma triggers, asthma may be controlled.

The NAEPP recommends the use of environmental control practices in asthma management. A cross-sectional study among ethnic minorities across four states identified that comprehensive environmental control practices were not frequently used by caregivers as an asthma management strategy (Roy & Wisnivesky, 2010). However, caregivers implemented the following environmental control practices: (a) smoke avoidance, (b) pet avoidance, and (c)

washing sheets in hot water to improve asthma outcomes. The use of comprehensive environmental control practices was associated with decreased asthma visits. Similarly, additional asthma education resulted in improved asthma outcomes. An analysis of the National Asthma Survey found environmental control practices were more likely to be used among white groups than ethnic minority groups (Roy & Wisnivesky, 2010). The lack of environmental control practices among ethnic minorities presents an opportunity to counsel caregivers about how such measures can help alleviate a child's asthma symptoms.

Managing a home environment to reduce asthma triggers may be a challenge for caregivers. Among ethnic minorities, living in an inner-city housing environment influences caregiver ability to control asthma. Non-Hispanic whites with a supportive home environment were more likely to have better managed asthma than Hispanics and African-Americans. For Hispanics and African-Americans, total control of a housing situation and thus of the home environment was not always possible (Sato et al., 2013).

Health Education Materials

There is extensive literature describing the importance of health education to asthma management. The NAEPP (2007) guidelines include health education as a key component in improving asthma outcomes. An interpretative phenomenological study sought to describe the relationship between print health literacy and asthma health outcomes (Melton, Graff, Holmes, Brown, & Bailey, 2014). The findings suggest that those with higher print literacy may be able to more fully participate in shared decision-making with a health care provider.

Consideration should be given to the development and implementation of culturally tailored asthma education materials. A study of First Nations and Inuit of Canada developed and evaluated asthma-related health education materials both in print and on-line (Latycheva et al.,

2013). The materials incorporated traditional cultural practices and ceremonies which increased material use by patients

Similarly, for newcomer populations the use of appropriate print material is critical. Newcomer Asians residing in Canada, for example, have some of the poorest asthma outcomes in that country. When trying to access healthcare and manage asthma, newcomers can face barriers associated with language and culturally appropriate care. Focus groups with newcomer asthma patients identified concerns, fears, and hopes pertaining to patient perceptions of asthma. Among these concerns were questions about the course of treatment. Patients in this study expressed fears related to medication use, as well as the belief that medication should be used only when a patient was symptomatic. They also expressed the hope that their asthma would get better over time. The healthcare system in Canada lacks cultural competency as evidenced by the lack of health care providers engaging with patients and teaching about self-management practices (Poureslami, Rootman, Doyle-Waters, Nimmon, & Fitzgerald, 2011).

Engaging Community Health Workers and School Nurses

The use of CHWs as health educators provides an effective means of improving asthma outcomes. In one study, CHWs engaged with caregivers of children with asthma over a six-month period and provided them with individualized asthma education. The interaction between CHWs and caregivers improved asthma outcomes. Such caregivers were less likely to use the emergency department and reported improved quality of life (Margellos-Anast, Gutierrez, & Whitman, 2012). A home-based intervention study that partnered with an environmental justice program reduced emergency room visits and school absenteeism by using CHWs (Shani et al., 2015). In addition to improving asthma outcomes among the participants, the study reduced environmental exposures within a defined neighborhood. A school-based asthma program for

adolescents with asthma improved self-management, as demonstrated by a reduction in school absenteeism, number of asthma symptom days, and limitations to patient physical activity (Halterman et al., 2011).

Engaging school nurses in managing asthma is integral to improving asthma outcomes among school-aged children. A study of members of the National Association of School Nurses found that school nurses with higher levels of asthma self-efficacy and who rated asthma management behaviors highly were more likely to perform those behaviors. Understanding the school nurses' health beliefs about asthma plays a vital role in determining whether they will perform behaviors related to asthma management (Quaranta & Spencer, 2015).

Summary of Literature

In summary, the review of the literature sought to understand concepts of health and culture as they relate to asthma, and to explore asthma management strategies. The review was presented in three parts: (a) health, (b) culture, and (c) asthma management strategies. Health beliefs for Native Hawaiians are centered on the interconnectedness between (a) fellow man, (b) family and others, (c) a higher being, and (d) land. Central to interconnectedness was spirituality, a key concept of health. As such, health focused on preventing illness, while maintaining respect, balance, and a relationship with god, others, and the land. Health practices are influenced by cultural beliefs which impact how Native Hawaiians manage asthma.

The literature describing Native Hawaiian beliefs about the cause of asthma was limited to two books and one article. However, Navajo and Alaska Native perspectives are presented in three articles. The Navajo traditional perspective on the cause of asthma included the belief that asthma was caused by lightening or wind (Van Sickle et al., 2003). Similarly, the Yup'ik, hold that asthma is caused by environment and seasonal changes (Wind et al., 2004). The limited

literature on Native Hawaiian beliefs about the cause of asthma lends itself to further exploration on related literature pertaining to cultural perspective on disease management.

Native Hawaiian cultural practice is defined as an activity or action related to asthma management done by a self-identified Native Hawaiian caregiver who learned the cultural practice from a family member or a kumu. As such, Native Hawaiian cultural practices may include traditional healing modalities.

The literature on pediatric asthma management provided a rich description of what caregivers do to care for the child. The available literature described a variety of strategies to manage asthma, including (a) medication, (b) changing behaviors, (c) learning asthma self-management, (d) understanding the lived environment, (e) the use of health education materials, and (f) engaging community health workers and school nurses.

The literature specifically on Native Hawaiians and asthma is sparse. A few relevant books described the influence of cultural beliefs on health practices and how Native Hawaiians managed asthma prior to the introduction of Western medicine, but these books do not offer an analysis in-depth enough to explain the role health beliefs and cultural practices play in asthma management today. As such, a review of literature on asthma management strategies was completed. The review of literature provided an understanding of how Native Hawaiians view health, the influence culture and its practices have on health, and the potential of these health belief systems to influence asthma management. Only 11 relevant articles, books, and reports were found by combining keyword searches such as “related to asthma” and “Native Hawaiian” or “related to asthma” and “cultural practices”. Abundant available literature describes Western biomedical strategies for asthma management such as (a) medication management, (b) shared

decision-making, (c) consideration of the lived environment, and (d) evaluations of interactions between individuals and healthcare services.

Chapter 3. Methods

This study describes how Native Hawaiian caregivers manage pediatric asthma and identifies cultural practices used as strategies for managing pediatric asthma. This study sought to answer the following research questions:

1. What do Native Hawaiian caregivers believe causes asthma?
2. How do Native Hawaiian caregivers manage their child's asthma?
3. What cultural practices do Native Hawaiian caregivers use to manage asthma?

Definitions Used in This Study

Cultural Practices

Cultural practices are defined as activities and actions shared by a group of people with the purpose of perpetuating traditional knowledge. Cultural practices include folk medicine, spiritual beliefs, healing practices, and other traditions (Helman, 2000). Native Hawaiian cultural practices are grounded in a connection with the spiritual realm (Bushnell, 1993; Mokuau, 2011; Rezentes III, 1996). These cultural practices include: (a) pule (prayer), (b) la'au lapa'au, (c) lomilomi, (d) ho'oponopono, and (e) hula (dance) (Bushnell, 1993; Kamakau, 1991b).

Based on the literature presented in Chapter Two, Native Hawaiian cultural practices are defined as activities or actions related to asthma management done by a self-identified Native Hawaiian caregiver. Such caregivers learned the cultural practice from a family member or kumu. These cultural practices include: (a) pule, (b) swimming in the ocean, (c) sitting at the beach, or (d) using lomilomi. These activities and actions are shared from one person to the other. They transmit cultural knowledge related to healing, health, and wellness.

Alternative healing practices used in asthma management may be perceived as embodying culture. These alternative healing practices are not unique to Native Hawaiian

caregivers and include using: (a) Vicks VapoRub, (b) essential oils, (c) relaxation techniques, or (d) body manipulation. Similar to Native Hawaiian cultural practices, these alternative practices are learned from a family member.

Caregivers

Caregivers are defined as adults who manage a child's asthma. For the purpose of this study, a caregiver included: biological mother or father, aunt, uncle, grandmother, grandfather, or hanai (adopted) mother or father. To be included in the study, the individual must consider himself or herself to be the primary caregiver for the child with asthma. A primary caregiver was an individual who provides at least 70% of the child's care. This includes managing the child's asthma daily, taking the child to medical appointments, and accompanying the child to extra-curricular activities such as sports, dance classes, music lessons, etc.

Native Hawaiian

For the purposes of this study, the term Native Hawaiian(s) was used. In this study, Native Hawaiian(s) are defined as individuals who self-identify as Native Hawaiian (Appendix A).

Study Design

A qualitative descriptive methodology with interviews was used. Qualitative descriptive methodology is a type of qualitative research in which the scope is limited and allows for a description of a specific phenomenon (Magilvy & Thomas, 2009). This methodology does not focus on one theoretical framework, but rather uses the naturalistic inquiry process (Sullivan-Bolyal, Bova, & Harper, 2005). Interview questions were designed to illicit the influence of culture on health and pediatric asthma management. The interview method was chosen because it

fosters a talk story, or sharing of knowledge between people (Handy & Pukui, 1972; Kamakau, 1991a; Pukui et al., 1972).

Participants and Setting

Participants in this study were a convenience sample of Native Hawaiian caregivers of school-aged children between the age of 5 and 12 years from O‘ahu and Hawai‘i. All of these school-aged children had at least mild persistent asthma. Their asthma could be classified as one of the following three types (Table 1): (a) mild persistent asthma, (b) moderate persistent asthma, and (c) severe persistent asthma.

Table 1

Definitions of Asthma Severity Type from the American Academy of Pediatrics (2011)

| | Symptoms | Management | Activity Level |
|---------------------|---|----------------------------|--|
| Mild persistent | Occur more than twice a week, but less than once a day Nighttime flare-ups occur more than twice a month, but less than once a week Lung function is 80% of normal or greater | | May affect activity |
| Moderate persistent | Occur daily with flare-ups usually lasting several days Nighttime flare-ups occur more than once a week Lung function is between 60% and 80% of normal without treatment | Daily management of asthma | Normal daily activities may be hindered by coughing and wheezing |
| Severe persistent | Occur daily and often Sleep is disrupted Lung function is less than 60% of normal without treatment | Daily management of asthma | Daily activities are curtailed |

Criteria for inclusion. Individuals were eligible if they self-identified as a Native Hawaiian caregiver of school-aged child(ren) between the ages of 5 and 12 years with at least

mild persistent asthma. Additional inclusion criteria included: (a) caregivers must be 18 and older, (b) reside in the State of Hawai‘i, and (c) read and speak English. The caregiver must provide at least 70% of the child’s asthma care. If the caregiver provided asthma care for more than one child with asthma between the ages of 5 and 12, the caregiver was asked to share his or her experience of treating the child whose asthma severity was the highest. Therefore, the caregiver was classified according to the eligible child between the ages of 5 and 12 and that child’s higher asthma severity.

Recruitment

Recruitment presentations and materials. Recruitment activities included a presentation about the study and dissemination of recruitment materials (Appendix D). The presentation included: (a) an overview of the study, (b) review of the recruitment materials, and (c) a brief description of the target population. Study overview described (a) the purpose of the study, (b) inclusion criteria, (c) the interview process, and (d) time commitment. A review of recruitment material followed. The presentation concluded with an opportunity to ask questions.

The recruitment materials included a cover letter and study flyer (Appendix D). The cover letter and flyer included (a) the purpose of the study, (b) interview process, (c) inclusion criteria, and (d) study contact information. The recruitment materials were disseminated at the time of presentation and posted at various Native Hawaiian-serving organizations.

Recruitment procedures. Ke Ola Mamo (the life of the descendants) (KOM) Client Services Department, including the Client Services Manager, Case Managers, and CHWs, and the Research Department and the Research Associate assisted with caregiver recruitment. The Client Services and Research Department staff were trained using the recruitment presentation. Briefly, KOM is the Native Hawaiian Health Care System for O‘ahu, whose mission is to

empower, educate, and promote the health and well-being of our Native Hawaiian community. KOM provides services to Native Hawaiian individuals and families. KOM's services includes health promotion and disease prevention services, as well as primary health care.

Recruitment presentations were provided to KOM's Client Services and Research Staff, at a KOM sponsored community event, and to Partners in Development – Ka Pa'alana Program which assisted with recruitment. Through the efforts of the Client Services and Research staff, study flyers were distributed to community-based organizations, such as Queen Lili'uokalani Children's Center, Alu Like, Inc., Partners in Development – Ka Pa'alana Program; health care facilities such as Waimānalo Health Center and Ko'olauloa Health and Wellness; and at community health fairs. Recruitment materials were also posted at KOM community offices. The KOM community offices are located within Native Hawaiian communities on O'ahu (Nānākuli, Waimānalo, Kahuku, Kalihi and Liliha).

Additional recruitment materials (Appendix D) were disseminated to culturally-based organizations, other Native Hawaiian-serving organizations on Maui and Hawai'i Island, asthma support programs, private medical practices, Hawaiian language immersion schools, and caregiver participants. The researcher reached out to a network of key contacts whom she has a trusting relationship with. Specifically, recruitment materials were disseminated to culturally-based organizations that focus on perpetuating cultural practices within the community and included 'Aha Kāne and Hui Maoli Ola. 'Aha Kāne is a culturally-based non-profit organization whose mission is "to strengthen the Native Hawaiian community through nurturing and perpetuating the traditional male roles and responsibilities that contribute to the physical, mental, spiritual, and social well-being of Native Hawaiian males, their families, and communities" ('Aha Kāne, 2016). Hui Maoli Ola is a culturally-based non-profit organization whose mission

includes “promoting and improving the health and well-being of our communities through empowering and providing access to quality care and educational opportunities” (Hui Maoli Ola, 2016). Both of these culturally-based organizations promote cultural values and practices such as the special roles and responsibilities of kāne and healing practices.

Recruitment materials were also shared with the two additional Native Hawaiian-serving organizations, Hui No Ke Ola Pono, Native Hawaiian Health Care System on Maui, and Kīpuka o Ke Ola (KOKO) on Hawai‘i Island. In addition, recruitment materials were disseminated to the State of Hawai‘i’s Department of Health Asthma Initiative group, private health care practices, and Ke Kula ‘o Samuel M. Kamakau (Samuel M. Kamakau School). Lastly, as the study progressed, snowball sampling technique was used. This approach assisted with identifying caregivers who may not have been included in the identified recruitment plan. Recruitment concluded once data redundancy was achieved in the analysis (Lincoln & Guba, 1985).

Interested caregiver participants were referred to the researchers by Native Hawaiian serving-organizations and a total of 41 referrals were received. The study received referrals from KOM Clients Services Staff (n=16), other community-based organizations (n=15), self-referral (n=9), and referral from a caregiver participant (n=1). Of the 41 referred, 33 caregivers were screened and eight were not screened for the following reasons: (a) no additional contact information provided (n=5), (b) unable to reach after three attempts (n=1), (c) asked to be called back (n=1), and (d) contact information not current (n=1). Of the 33 screened, 26 were eligible and 7 ineligible. Of the 26 eligible, 18 were interviewed and eight were not interviewed for the following reasons: (a) no longer interested when contacted to schedule the interview (n=5), (b) unable to reach (n=2), and (c) no show (n=1). Five calls and messages were left for the two caregivers who were unreachable to schedule an interview. Similarly, five calls and messages

were left before the caregivers either answered or returned the call to inform the researcher that they were no longer interested.

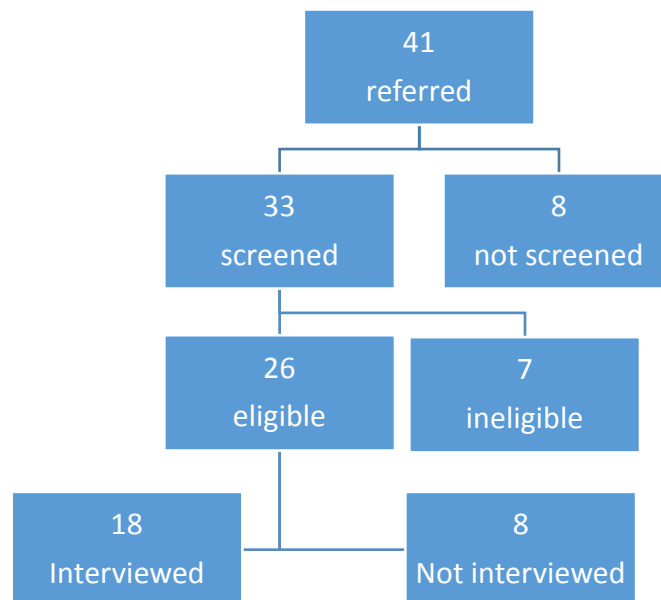


Figure 1. Recruitment.

Screening. Interested Native Hawaiian caregivers called the number listed on the study recruitment materials (Appendix D). The Researcher screened interested caregivers over the phone or in person for eligibility using the Screening Form (Appendix E). The Screening Form determined study eligibility and included the following questions:

- Do you self-identify as a Native Hawaiian?
- Are you 18 years or older?
- Do you reside in the state of Hawai‘i?
- Do you read and speak English?
- Do you take care of a child between the age of 5 and 12 who has asthma?
- Do you manage your child’s asthma at least 70% of the time?
- How severe is your child’s asthma?

Caregivers who had more than one child between the ages of 5 and 12 with mild persistent, moderate persistent, or severe persistent asthma were asked to share their experiences of caring for the child with the higher asthma severity. The caregiver was classified according to the eligible child with the higher asthma severity. The screening process took about 15 minutes. After the screening process was completed the interview was scheduled. All caregivers, regardless of eligibility were provided with information about asthma resources (Appendix F), such as health education classes, support groups. They were then thanked for their time before the interview ended.

Scheduling the Interview

Caregivers who were screened and eligible to participate in the study were asked to share their availability for interviews. Interviews were scheduled at the convenience of the caregiver and held at an agreed-upon location. Locations included the caregivers' homes, KOM community office, coffee shop, a park, or other public places.

Measures

Participant information form. The Participant Information Form (Appendix G) solicited descriptive information about the caregiver and child(ren) with asthma. The form included two sections. Section one solicited demographic information on the caregiver. Items included: (a) gender, (b) education, (c) employment, (d) household income, (e) number in household, (f) if there are any smokers who live with the child with asthma, and (g) level of Hawaiian cultural identity. Level of Hawaiian cultural identity was self-assessed on a scale of 1 to 10, with 1 being low Hawaiian cultural identity and 10 being high Hawaiian cultural identity.

The second section asked about the child(ren) with asthma. Items included: (a) the number of children living in the household; (b) number and age of children with asthma; (c)

gender of children and years with asthma; (d) length symptoms remain with child during asthma episode; (e) management strategies used, including cultural practices such as prayer, herbal medicine/remedy, massage, treatments by a traditional/native practitioner; and (f) number of emergency department and hospital visits within the past 12 months.

Interview guide. An interview guide (Appendix H) with semi-structured open-ended questions was developed from the Explanatory Model (Kleinman, 1980), Native Hawaiian acculturation (Rezentes III, 1993), and indigenous health models (Appendix I) (Durie, 1994; Kaholokula, 2015; Mark & Lyona, 2010; Pere, 1991). The Explanatory Model is rooted in medical anthropology and explored the patient's belief about an illness through three of the five areas of inquiry and included: (a) cause of the illness, (b) symptoms, and (c) treatments.

Indigenous health and Native Hawaiian acculturation models seeks to understand how individuals identify with or practice their cultures. As such, the interview guide (Appendix H) included questions about (a) beliefs about the causes of asthma, (b) management of child's asthma, and (c) knowledge of Native Hawaiian cultural practices used to manage asthma. The interview questions were developed to understand the caregivers' health beliefs about asthma and asthma management including knowledge of and use of cultural practices.

Sections of the interview guide. The interview guide consisted of four sections: (a) introduction, (b) beliefs about causes of asthma, (c) management of child's asthma, and (d) knowledge of Native Hawaiian cultural practices used to manage asthma. The introduction section provided an overview of the study. The introduction consisted of six parts: (a) purpose of the study, (b) definition of cultural practice, (c) responsibility of the caregiver participant, (d) confidentiality statement, (e) permission to record, and (f) a question and answer period.

The remaining three sections of the interview guide explored the caregivers' perspective on taking care of a child's asthma. The sections were based on the first and last question of the Explanatory Model in which the researcher seeks to understand the patients beliefs around the etiology of the disease and the treatments used (Kleinman, 1980). The other questions of Kleinman's Explanatory Model focused on a medical understanding of health and included "(2) time and onset of symptoms; (3) pathophysiology; and (4) course of sickness (including both degree of severity and type of sick role – acute, chronic, impaired, etc.)" (Kleinman, 1980, p. 105). The first section, beliefs about the causes of asthma, established a foundation for the caregivers' beliefs about what caused their child's asthma symptoms. The next section, management of child's asthma, identified caregivers' management strategies and styles of asthma management. The final section of the interview guide explored caregivers' knowledge of Native Hawaiian cultural practices used to manage asthma. Caregivers were asked to identify what treatments they considered cultural practices and to describe why they considered the treatments cultural practices. The final two sections of the interview guide sought to understand the treatments caregivers use to manage their child's asthma.

Data Collection

Study Identification

A 2-digit study identification number was assigned to each eligible caregiver. The study identification number began at 01 and continued until the last caregiver (18). The study identification number was written on all study forms and entered into the master code sheet.

Interview Preparation

Once the interview was scheduled, a Participant Profile Form (Appendix J) was started. The Participant Profile Form included: the interview date, time, and location; the caregiver's

name, address, and telephone number; gift card acknowledgement, study checklist; and field notes relating to the interview. The field notes included observational notes as well as a summary of the interview.

Each participant's interview packet was prepared prior to the interview. Packets included the Participant Profile Form (Appendix J), completed Screening Form (Appendix E), Consent (Appendix K), Participant Information Form (Appendix G), Interview Guide (Appendix H), gift card, recruitment materials (Appendix D), and a copy of the asthma resource sheet (Appendix G). These forms were placed in a document-sized envelope. Written on the flap of the envelope were the interview date, time, and location. The 2-digit study identification number was written on the top right side of the envelope flap. A reminder call to participants was made one day prior to the scheduled interview.

Prior to each interview, the researcher noted any thoughts she had from previous interviews as well as thoughts going into the interview. These reflective notes were kept in a notebook and used to understand the researcher's perspective prior to the interview. They were not included in the transcripts.

Consent

The consent form was written at a 7th grade reading level (Appendix). The caregiver was given the consent form to follow along as the researcher read, explained, and reviewed each section. The form included the study purpose, risks and benefits, an explanation that participation is voluntary, advance notice that the interview would be digitally recorded and a statement that information shared during the interview is confidential. The caregiver was informed that the information collected on all study forms was confidential and shared only with the research team. The caregiver was given an opportunity to ask questions before signing the consent form.

If the caregiver agreed, he or she was asked to date, print, and sign his or her name on the consent form. A copy of the signed consent form was provided to the caregiver with the original filed by the researcher.

Pre-interview

The researcher introduced herself to the caregiver and asked to begin. A brief overview of the process was provided before obtaining the consent (Appendix K), completing the Participant Information Form (Appendix G), and conducting the interview. At this time, the caregiver was informed that the entire process should take no longer than 60 minutes.

The researcher documented the interview environment using the field notes section of the Participant Profile Form (Appendix J) upon arrival. Observational notes on the home environment were made in the field notes section for interviews held at the caregiver's home. If the interview was conducted outside the home, such as at a café or office, the researcher then asked the caregiver about his or her home environment. Based on the Environmental Protection Agency Asthma Home Environment Checklist, caregivers were asked about the presence or absence of known home environmental triggers such as: presence of secondhand smoke, pets such as dogs or cats, use of household cleaners with strong odors, use of air conditioner with filter, type of furniture and whether it was upholstered, type of flooring, presence of stuffed toys, drapery such as curtains or blinds, type of cooking appliance, presence of moisture; presence of mold, and presence of cockroach droppings or other rodent droppings (United States Environmental Protection Agency, 2004).

Participant information form. Caregivers were provided with a brief explanation of the form and given an opportunity to ask questions. The interview began upon completion of the Participant Information Form (Appendix G).

Interview

The interview guide (Appendix H) asked Native Hawaiian caregivers to describe Native Hawaiian cultural practices related to asthma management and treatment. The interview was recorded using one digital recorder. It began with the first question in the Interview Guide and ended after progressing all questions. Each question was asked allowing time for the caregiver to respond. Before the researcher moved to the next question, the caregiver was asked if he or she had any additional comments. The researcher took notes throughout the interview. All interviews were conducted by the researcher.

At the completion of the last question, caregivers were asked to share any additional thoughts about caring for children with asthma. At this point, informal member checking occurred. The researcher summarized the interview and asked the caregiver whether or not the summary included all major points shared during the interview. The interview ended with the researcher giving a copy of the recruitment materials (Appendix D) to the caregiver. The researcher asked the caregivers to pass the materials along to other caregivers who had children with asthma. Caregivers received a \$5.00 gift card in recognition regardless of whether they completed the interview.

The caregiver signed the Gift Card Acknowledgment section of the Participant Profile Form (Appendix J). Included in the acknowledgement section was the gift card number and participant signature.

Post-interview

After the interview, all of the study forms were reviewed for completion and labeled with the participant's study identification number in the top right corner or where indicated on the form. Additional field notes included responses to the prompt: What stands out about this

interview? What were your overall impressions of how the interview went?. The final field note was a summary of the interview. These reflective field notes provided the researcher with the opportunity to record additional thoughts or impressions from the interview. The audio recording was transcribed verbatim by the researcher. Prior to the next caregiver interview, the transcript was reviewed to build on the previous interview. Additional reflective notes were made in a notebook and included thoughts about the researcher's Native Hawaiian identity. Reflective notes related to Native Hawaiian identity were not included in the transcripts.

Data Management

Management

Study forms were maintained in a file folder and kept in a locked file cabinet at the study office. All forms were labeled with a study identification number at the end of the interview. The Screening, and Participant Information Form were filed with the transcript in a file folder. The Consent Form and Participant Profile Form were kept separate from the other study forms and filed in a separate file cabinet drawer.

Data security. Study-related documents and equipment were kept in a locked file cabinet at the study office. The digital audio recordings of the interviews were transferred to an external drive for storage. At the end of the study, the digital audio recordings were erased from all sources. In addition, electronic files including transcripts and databases were password protected.

Transcripts. Interviews were recorded and the researcher transcribed the interview recording verbatim. Field notes from the Participant Profile Form (Appendix J) were typed at the end of the transcript and provided descriptive and reflective statements about the interview. The transcript was reviewed for accuracy by a community member who listened to the recorded

interview while reading and editing the transcript. The community member in private industry and has experience reviewing transcripts for accuracy.

Transcripts were formatted as follows: (a) top right header included Interview number - severity (i.e. Interview 01 – Mild), (b) top right header second line indicated date screened/date interviewed (i.e. mm.dd.yyyy (s) /mm.dd.yyyy (i)), (c) interviewer was labeled as I, (d) caregiver was labeled as C Interview number (i.e. C01), (e) line numbers were continuous, and (f) page numbers were continuous. If the caregiver referenced a name during the interview, the name was omitted and labeled as first letter followed by three asterisks, (L***) in the transcript.

Transcription of the interview was completed within one week of the interview. The transcripts from these interviews were used for data analysis.

Forms. Descriptive data collected on the Screening Form (Appendix E) and Participant Information Form (Appendix G) were entered into an Excel spreadsheet.

Data Analysis

Research Team

The research team included three individuals with qualitative research experience (one Research Assistant, a Social Worker, and the researcher). The Research Assistant has a Bachelor's degree in Hawaiian and Pacific Studies, is currently pursuing a Master's in Public Health, and works on community-based participatory research project. The Research Assistant is a cultural practitioner of hula. The Social Worker has a Master's degree in Social Work, previously worked as the Research Assistant at KOM, and has community-based participatory research experience. The Social Worker is a cultural practitioner of hula, lua (hand to hand combat), and ho'oponopono. The researcher is a community investigator for multiple community-based participatory research projects and has adult onset asthma. The researcher and

her team were responsible for: (a) coding, (b) categorizing, and (c) identifying themes from the transcripts.

The researcher sought expert advice from Susana Helm, Ph.D. a researcher in the Department of Psychiatry at the John A. Burns School of Medicine at the University of Hawai‘i at Mānoa. Dr. Helm is a qualitative researcher and uses NVivo extensively for data management and data analysis. Dr. Helm provided guidance on how to optimize the features in NVivo for qualitative analysis. The researcher met with Dr. Helm to set up the initial transcript and nodes in the system. Nodes are equivalent to codes and are used in NVivo to organize ideas and develop themes. Subsequent meetings were held with Dr. Helm to review and categorize established nodes. A final meeting with Dr. Helm pertained matrix coding, a feature in NVivo which compares data across nodes.

Establishment of Coding Reliability

Following a systematic approach to data analysis, each member of the research team independently reviewed and coded all 18 transcripts. For each transcript, the team met one week after the initial read and open coding phase to discuss each member’s identified codes and to establish coding reliability. Once coding reliability was established, the team met bi-weekly to discuss progression and complete the data analysis. Due to a break in data collection between November 2014 and September 2015, the research team revisited and reviewed the initial 10 transcripts in September 2015 to reconfirm the initial codes identified.

Approach Used for Data Analysis

Analysis of the interview data used a thematic form of inductive content analysis. This form of analysis is a systematic approach to describing a phenomenon (Elo & Kyngäs, 2008).

The purpose of this form of analysis is to provide knowledge of and insight into the phenomenon.

The process for thematic form of inductive content analysis is based on guidelines described in Burnard (1991, 1996), Elo and Kyngäs (2008), Aronson (1994), and Fereday and Muir-Cochrane (2006). The process included open coding, categorizing, and abstraction followed by identification of main themes from abstraction. Data analysis occurred simultaneously to interviewing to ensure that data collection stopped once data redundancy was reached (Pope, Ziebland, & Mays, 2000). Multiple coders were used to validate the data (Burnard, 1991, 1996; Elo & Kyngäs, 2008; Twycross & Shields, 2008). Transcripts were manually coded and codes entered into NVivo version 11.

Data Analysis Procedures

The analytical approach included three phases that involved both individual member coding and group coding activities. Transcripts were analyzed according to asthma severity and across asthma severity levels. Study-related materials including transcripts, code sheets, and categories sheets were provided to the research team. Research team members were asked to adhere to the steps in each phase.



Figure 2. Data analysis.

Phase 1 – Data Immersion

Interview transcripts were distributed to the research team. Team members independently reviewed and coded all 18 transcripts. The inclusion of the field notes provided descriptive and

reflective notations about the interview. To assist the coders to contextualize the interview. The initial read-through immersed the reader into the data. Open coding occurred on the subsequent read-through of the transcript. Open coding identifies meaningful text and is broad and contextual. The open codes generate headings or categories captured in the margins of the transcript and associated with lines of text from the transcript. This initial step, open coding, sought to answer the research question of (a) how Native Hawaiian caregivers manage their child's asthma, and (b) what cultural practices caregivers use to manage pediatric asthma. The subsequent headings were discussed within the research team during bi-weekly meetings to discuss the codes identified in the transcripts. Each member presented the open codes to the team and provided a brief explanation of how the open code was identified (DeCuir-Gunby, Marshall, & McCulloch, 2011). Acceptance of a code was based on consensus. If consensus was not reached, then the code was negotiated until consensus was reached. The process continued with each transcript. As new codes were identified, the research team discussed whether it was similar to an existing code. If the code was similar, the research team discussed which code would be used and applied that code. As new codes emerged or codes changed, the previous transcripts were re-coded and new transcripts coded using the current list. A code sheet including the agreed-upon open codes along with corresponding text was entered into NVivo 11 and distributed for categorization.

Phase 2 – Categorization

The next step, categorization, reconvened the research team to work on sorting broad open codes into categories. The research team received a document of codes and corresponding text. Each member independently reviewed the agreed-upon codes, and developed categories and working definitions of the categories prior to the group meeting. The following guiding questions

were used by each member: (a) “What’s going on?” (b) “What’s being asked?” and (c) “Does this relate to a previous passage?”. As categories were identified, a working definition was developed for each category. The categories with a working definition were presented and discussed within the research team. If similar categories were presented, the research team discussed which category to use and reviewed the working definition. The process continued until all codes were either categorized or placed into a “miscellaneous” pile. One final review determined whether any of the codes placed in the “miscellaneous” pile belonged to one of the categories.

The research team met one week after the code sheets were distributed. Each member presented the categories with corresponding codes and created the working definition of the category. The team reviewed each category and discussed whether relationships existed among categories or if the categories could be further collapsed into each other. Acceptance of the categories and definitions was through consensus. The categories were defined by the research team and based on the codes within the category. Categories were then named according to content-characteristic. The final categories, definitions, and examples were entered into NVivo11, which managed the data and provided a complete list of categories with codes.

Phase 3 – Themes

The next step, data abstraction, included the identification of main themes and sub-themes. Category sheets were distributed to research team members. Each team member independently reviewed and identified overarching themes and subthemes. Themes emerged from the categories and subthemes from the themes.

The team met one week after receiving the category sheets to discuss the independently identified themes and subthemes. Similar themes were merged. The final list of themes and

subthemes were distributed for review and comments. A week later, a final meeting was held to discuss the identified overarching themes related to the research questions. Sub-themes were identified as a way to further explain the themes. Findings were summarized and presented by main themes and subthemes. Examples from the transcripts were reviewed to substantiate the themes.

Field Notes

Field notes collected at each interview were typed verbatim at the end of each transcript. They were used to understand the context of the interview, which included a description of the home environment. The field notes also provided a point of reference during data analysis and included reflective statements related to how the interview went as well as a summary of main points for the interview.

Forms

Using Excel, descriptive statistics were generated for the Screening and Participant Information Form. Descriptive data was linked to the transcript via the study identification number. Data included the caregiver characteristics, child characteristics, asthma severity of child(ren), and residential location. Caregiver and child(ren) characteristics are presented in detail in Chapter Four.

Evaluation and Rigor

The criteria for evaluation and rigor for this research were guided by trustworthiness. Lincoln and Guba (1985) define trustworthiness as the ability to persuade self and others that the findings are important. Specifically, trustworthiness includes four criteria: credibility, transferability, dependability, and confirmability. Credibility establishes truth value, which is demonstrated through prolonged engagement, persistent observation, peer debriefing, and

member checking. Prolonged engagement encompassed the researcher's to engagement with caregivers who have a child with asthma, as well as interaction with the Native Hawaiian community and education about the cultural practices. Persistent observation included the researcher making observations about the caretaker's home environment. Transferability was accomplished by the use of thick description of the qualitative work and demonstrated through convenience sampling. Dependability and confirmability rely on audit trails and reflexive journaling. The researcher kept a reflective journal which included thoughts about interview as well as thoughts about Native Hawaiian identity. These reflective notes were kept in a notebook and used to understand the researcher's perspective of the inquiry. They were not included in the transcripts. Additional reflective notes were part of the field notes found in the Participant Profile Form (Appendix J) and were included in the transcripts.

Member checking occurred as both a formal or informal process in which the researcher asked the caregiver or other individuals to confirm what the data says after the researcher interpreted the data. Informal member checking occurred immediately after the interview with the caregiver. The researcher summarized the interview and asked the caregiver whether or not the summary included all major points shared during the interview. Debriefing sessions were held throughout the study. The debriefing sessions were held with the recruitment team (KOM Staff) as well as the research team. This allowed additional insight into the study. Debriefing sessions included periodic meetings with the Client Service Manager to check in on the recruitment process and weekly meetings with the research team throughout the study. Erlandson, Harris, Skipper, and Allen (1993) recommend debriefing sessions because they allow the researcher to address any of the study's challenges or rewards through discussion.

Protection of Human Subjects

This research study received approval from the University of Hawai‘i Committee on Human Subjects. Additional approval was received from the Native Hawaiian Health Care Systems Institutional Review Board (Appendix L). The Native Hawaiian Health Care Systems Institutional Review Board (NHHCS IRB) was dissolved on December 31, 2014. A modification was filed with the University of Hawai‘i Committee on Human Subjects in May 2015 to recruit statewide. Approval was received in June 2015. No study modification request was submitted to NHHCS IRB.

Confidentiality

Caregivers consented to participate in an interview. As part of the consenting process, caregivers were informed of the confidentiality of the information shared during the interview. In addition, caregivers were informed during the consent process that their names and other identifying information were not reported. Data collected were reported collectively. In the event that a quote was used to exemplify a theme, an alias was assigned to the caregiver.

Summary

A qualitative descriptive methodology with one-time interview was used to describe how Native Hawaiian caregivers manage pediatric asthma and identify cultural practices that are used as strategies to manage pediatric asthma. The study recruited Native Hawaiian caregivers of school-aged child(ren) between the ages of 5 and 12 with at least mild persistent asthma. In total, 41 caregivers were referred with 18 participating in an interview. Interviews were transcribed and analyzed using a thematic form of inductive content analysis. The study was reviewed and

received research approval from the University of Hawai‘i at Mānoa Committee on Human Subjects and the Native Hawaiian Health Care Systems Institutional Review Board.

Chapter 4. Findings

This chapter presents the findings from the 18 Native Hawaiian Caregivers who participated in this study. Caregivers' characteristics and interview findings are presented collectively and according to the asthma severity types of (a) mild persistent, (b) moderate persistent, and (c) severe persistent. Direct quotes provide an example of the sub-themes. Sixteen categories and two overarching themes and six sub-themes were identified through a systematic qualitative analysis.

Characteristics of the Sample

Caregiver recruitment and interviews were conducted between May 2014 and December 2015. Initial recruitment occurred between May 2014 and November 2014. The researcher determined that a broader recruitment area was needed, and in May 2015 the researcher requested and received approval from the Committee on Human Subjects from the University of Hawai'i at Mānoa to recruit caregiver participants statewide. Recruitment resumed in September 2015 and concluded in December 2015. Data redundancy was reached at different points in time for each asthma severity type. In total, 18 interviews were conducted; six interviews for mild persistent, seven for moderate persistent, and five for severe persistent.

The researcher received 41 referrals from Native Hawaiian serving-organizations during the course of study recruitment. Of the 41 referrals, 36 were from O'ahu and five from Hawai'i. Of the 41 referred, eight were not screened for the following reasons: (a) no additional contact information provided (n=3), (b) lost to follow up (n=2), (c) unable to reach after three attempts (n=1), (d) asked to be called back (n=1), and (e) contact information not current (n=1). Of the 33 caregivers screened, 26 were eligible to participate. Of the 26 eligible caregivers, eight did not

complete an interview for the following reasons: (a) no longer interested (n=5), (b) unable to reach (n=2), and (c) no show (n=1).

The 18 Native Hawaiian caregiver participant interviews captured how asthma was managed with a child who has mild persistent, moderate persistent, or severe persistent asthma. Demographic characteristics of caregivers and the child with asthma were collected from the Screening Form (Appendix E) and Participant Information Form (Appendix G). The 18 interviews reflect the perspectives of caregivers for 14 male and 4 female children. Seven children were 5-6 years of age, five were 7-9 years of age, and six were 10-12 years of age.

Table 2 presents caregiver characteristics. Caregiver participants included 17 female and one male, 15 married, and 11 employed with an income range of \$35,001 to \$50,000. Caregivers of children with mild and moderate persistent asthma completed a high school or GED. All caregivers of children with severe persistent asthma received at least some college education. Three caregivers were from Waimea on Hawai'i Island and 15 from Ko'olaupoko, Ewa, Kapolei, and Waianae on O'ahu.

Table 2

Caregiver Characteristics by Asthma Severity

| | Mild (n=6) | Moderate (n=7) | Severe (n=5) | Total (n=18) |
|-----------------------------|-----------------------|---------------------------|-------------------------|-------------------------|
| Gender | | | | |
| Male | 1 | | | 1 |
| Female | 5 | 7 | 5 | 17 |
| Marital Status | | | | |
| Single | | 1 | | 1 |
| Married | 4 | 6 | 5 | 15 |
| Partnered | 2 | | | 2 |
| Highest education completed | | | | |
| High School / GED | 3 | 4 | | 7 |
| Some college | 2 | 1 | 2 | 5 |
| College | | 1 | 2 | 3 |
| Graduate / Professional | 1 | 1 | 1 | 3 |
| Employment | | | | |
| Full Time | 2 | 2 | 4 | 8 |
| Part Time | 2 | 1 | | 3 |
| Unemployed | 2 | 4 | 1 | 7 |
| Income range | | | | |
| Less than \$35,000 | | 4 | | 4 |
| \$35,001 - \$50,000 | 5 | 2 | 1 | 8 |
| \$50,001 - \$65,000 | | | 3 | 3 |
| \$65,001 - \$80,000 | 1 | 1 | | 2 |
| \$80,001+ | | | 1 | 1 |
| Island | | | | |
| O‘ahu | 5 | 6 | 4 | 15 |
| Hawai‘i | 1 | 1 | 1 | 3 |

Hawaiian cultural identity was measured using a self-report scale of 1 to 10, with 1 being low Hawaiian cultural identity and 10 being high cultural identity. Five caregivers reported a Hawaiian cultural identity of 10 and two reported a Hawaiian cultural identity of 1. The remaining caregivers reported a Hawaiian cultural identity of 4 to 9. Those who reported a higher cultural identity, rating of 7 or higher (n=13), readily discussed the importance of

maintaining a relationship with a higher being through living a pono lifestyle and daily pule, and expressed an interest in learning more about traditional Native Hawaiian cultural practices.

Whereas those who had a lower cultural identity, rating of less than 4 ($n=2$), discussed the use of alternative practices such as Vicks VapoRub and importance of medication.

Interviews were conducted at home, at the office, café or park. Nine interviews were conducted at home, six at an office, and three at a café or park. Direct observation of the home environment occurred during home interviews. Using the filed notes section of the Participant Profile form (Appendix J), observations of the home environment were documented. For interviews conducted outside of the home the researcher asked the participant about the home environment. Of the 9 in-home interviews, caregivers maintained a tidy home as observed by the researcher. All caregivers reported daily vacuuming or dust mopping of floors and minimized dust accumulation with weekly dusting. Of the in-home interviews there was no sign of mold, water damage, nor cockroach dropping.

Findings

Field Notes

Field notes provided reference points and context for the data analysis. Observational notes on the home environment provided context on how the caregivers responded to managing asthma symptoms. Other field notes such reflections on the interview provided a reference point on what happened during the interview and an overall impression.

Categories

Categories were identified by grouping and collapsing the open codes. The open codes were broad, contextual, and found throughout the 18 transcripts. The codes were grouped under higher-level headings to create categories. As categories emerged, working definitions were

established. The categories included: (a) alternative practices, (b) cause of asthma, (c) child's role, (d) cultural practices, (e) decision-making, (f) emergency care, (g) environmental triggers, (h) healthcare utilization, (i) heredity, (j) home remedy, (k) improved lung function, (l) keeping a clean home, (m) medication, (n) physical activity, (o) preventive, and (p) spirituality.

Themes and Subthemes

The themes emerged from the categories and are overarching. The research team determined that the overarching themes included: (a) asthma and its causes and (b) asthma management.

Sub-themes emerged from the themes. Across asthma severity, six sub-themes were identified: (a) heredity, (b) environmental exposure, (c) engaging in physical activity, (d) alternative practices, (e) responding to asthma symptoms, and (f) preventing exposure to asthma triggers.

Table 3

Categories, Themes, and Subthemes

| Categories | Themes | Subthemes |
|--|------------------------------|---|
| Cause of asthma Environmental triggers Heredity | Asthma and Its Causes | Heredity Environmental exposure |
| Alternative practices Child's role Cultural practices Decision making Emergency care Healthcare utilization Home remedy Improved lung function Keeping a clean home Medication Physical Activity Preventive Spirituality | Management Strategies | Engaging in physical activity <ul style="list-style-type: none"> • Playtime • Organized sports Alternative practices <ul style="list-style-type: none"> • Refrain from medication • Use alternative care before medication Responding to asthma symptoms <ul style="list-style-type: none"> • Treatment based on experience, symptoms, and child's response • Adaptable to situation • Prepared Preventing exposure to asthma triggers <ul style="list-style-type: none"> • Routine care • Shared management • Clean home |

Theme 1. Asthma and Its Causes

The first theme, asthma and its causes, was defined as an illness or disease commonly found among family and a result of exposure to environmental triggers. It is described in further detail by the subtheme “heredity” and “environmental exposure.”

Subtheme 1.1. Heredity. Caregivers’ stated that asthma was commonly found in their families. Caregivers used words such as “hereditary” and “genetics” throughout the interviews to describe the cause of asthma. The use of these words by caregivers stemmed from their belief

that asthma was passed down through families. Many caregivers stated that they believed asthma was hereditary because someone in their family had asthma. In some cases though, asthma diagnosis skipped a generation.

“Ok, you know my biggest probably take on it is that it’s um hereditary, because my father was badly asthmatic” C03 – Severe

“Well my grandparents had it, my great grandparents had it, my dad had it, so now I have it, and now my children have it.” C05 – Moderate

Subtheme 1.2. Environmental exposure. Exposure to outside and home environmental triggers was believed to cause asthma symptoms. Caregivers’ described that outside environmental triggers such as vog, change in temperature or weather, and second-hand smoke exposure caused asthma episodes. Caregivers of children of all asthma severity types believed that vog increased the likelihood of a child having an asthma episode.

“When we know that vog is going to be present, we try to keep him indoors as much as possible. Not too much outside.” C01 – Mild

Caregivers described that a change in temperature (cold to hot or hot to cold), wind direction, and climate contributed to asthma symptoms.

Similarly, caregivers believed that the location of their homes impacted frequency of asthma episodes. Caregivers who lived in dry or damp areas believed that the climate contributed to the frequency of a child’s asthma episodes. A change in wind direction, from trade winds (northeasterly winds) to kona winds (south winds) contributed to asthma, they believed. Another cause of asthma symptoms was the exposure to household environmental triggers. These triggers included pet dander, mold, mildew, cockroach dropping, dust, second hand smoke, including barbecue and cigarette, and other irritants. Thus, some caregivers were fanatical about keeping a clean home.

“My [spouse] is almost sterile with cleaning the house, I mean yeah, it gets kind of hard sometimes but [the], [the] lifestyle is just make everything super clean, so the house is clean.” C17 – Mild

Theme 2. Management Strategies

The second theme, management strategies, was defined as the strategies that caregivers used to manage the child’s asthma. Caregivers were interested in engaging in physical activity, managing symptoms with alternative practices, and preventing asthma symptoms. They relied on past experience and knowledge when responding to an asthma episode.

Subtheme 2.1. Engaging in physical activity. Engaging in regular physical activity such as playtime or organized sports was described as both a cause of asthma and a way to manage a child’s asthma. Caregivers expressed that the limited lung capacity of a young, physically active child with asthma caused asthma episodes. However, caregivers added as children aged and increased their physical activity, to include organized sports, asthma symptoms improved. As this change occurred, caregivers viewed physical activity as a way to improve lung capacity, therefore a suitable asthma management strategy. Caregivers encouraged children with asthma to participate in regular physical activity, which included group sports or active play outdoors. Caregivers encouraged children to run and swim to build lung capacity. Often caregivers took children to the beach to swim, surf, boogie board, or paddle. Group physical activities included volleyball, football, softball, and basketball. Overall, caregivers believed that increasing a child’s physical activity level improved the child’s asthma symptoms.

“It’s the, you know I think ever since the age he started sports, his whole episodes have reduced a dramatically, we were concerned in the beginning of him playing sports and being able to compete against everybody.” C17 – Mild

Subtheme 2.2. Alternative practices. To manage their children's asthma, caregivers sought a minimal impact approach in care using alternative practices. For example, caregivers evaluated what therapies to give their child before medication was administered. As such, caregivers used warm and cold therapies to manage a child's asthma. Warm management therapies included dressing a child in warm clothes such as long pants and a long sleeved shirt, taking warm showers, and drinking warm beverages to open the airways. In other cases, caregivers used cold therapies. A cool rag was placed on the child's neck to bring body temperature down and promote relaxation. In addition, caregivers placed children in an air-conditioned rooms to calm their breathing. Other minimal impact management therapies included using essential oils such as eucalyptus or lavender on a cloth placed next to the child as he or she slept. Similarly, a humidifier with essential oils was also used. Caregivers believed that the humidified essential oils relaxed children and allowed them to breathe more freely through the night.

“but I remember growing up that mom whenever we were sick, she would always use that hot bath steam to always help us out and at one point, it you know, helped one...and I continued to use it I don't know if it is helping or hurting (laughs).” C03 – Severe

Additional alternative practice strategies caregivers used included Vicks VapoRub to open a child's airways, either in conjunction with massage or as an ointment rubbed on the chest or placed under the nose. Caregivers also used body manipulation: encouraging the child to stretch his or her back, or exposing the child to cold air. Caregivers believed that the cold air helped slow a child's breathing. Caregivers also described taking a child down to the beach, explaining that the ocean cleanses the body. Salt air, the caregivers believed, also provided a natural form of sulfate that helped alleviate asthma symptoms.

“As we grew up if we got sick my grandma would take us down to the beach, because she said that the salt air would help us cleanse the inside of our immune system. Until that, I still believe in that, I do that to my little one, especially to my new born, if I don’t have a humidifier then I’d go out there and you know spend half of the day letting them inhale all of that salt air you know.” C07 – Moderate

Caregivers talked about spirituality and the importance of being connected to a higher being, such as Akua. This connection was through prayer, meditation, or experiencing nature. In addition to being connected, caregivers described the importance living a pono life. A pono life required living in balance and harmony with all things, ensuring a connection with Akua, ‘aina, and others. Caregivers believed that a pono life resulted in a reduction in asthma symptoms.

“Ah, I think that uh, spiritual side is very important and I think its very culture to Hawaiian being spiritual and learning something that’s of higher power...” C17 – Mild

“Piko is observed in the morning, um, it’s a time of, um asking for guidance for the day and centering yourself, centering all of your piko and making sure you are in alignment, so making sure that you start your day with good intentions, so we try to always do that at home also, and it’s not as formal, not a formal piko but it’s about checking in every morning.” R15 – Severe

Subtheme 2.3. Responding to asthma symptoms. Caregiver response to asthma symptoms was based on past experiences and caregiver knowledge of how to manage children’s asthma. Caregivers watched the children they cared for, checking for asthma symptoms. A change a child’s in behavior prompted caregivers to monitor that child’s symptoms and intervene as needed. For example, caregivers might see a child’s behavior shift from actively engaged in activities to being reserved. Another indicator of asthma symptoms was a change in the child’s breathing. In extreme cases, the child would change color due to his or her inability to breathe.

Caregivers described a process for knowing what strategy to use and when to use it before medication was administered. For example, if the child was experiencing difficulty

breathing, the caregiver would ask the child to sit before helping the child calm down. If impaired breathing continued, the caregiver used warm or cold therapy to open the airways. If warm or cold therapy failed, then the caregiver would give the child medication.

“Hot water, salt water um run the hot water in the tub and let the mist hit the baby for about five minutes. I’m like, oh my gosh, my electricity is going to go high, you know just put the baby’s face to, just the mist, like the mask.” C07 – Moderate

Additional medical management strategies were used to manage the child’s asthma. Caregivers readily discussed their use of medication. However, caregivers stated that they only used medication after trying alternative management strategies such as relaxation, cold compresses, and warm water.

As a last resort, caregivers sought, emergency care when they found that medications were not effectively and easing a child’s breathing.

“I think that’s why I choose to be more proactive, because I remember a lot of times being in the emergency room and so many times sitting through the masks on my face and all of that so I don’t, I don’t think that’s where I wanted to be but I think that’s why I chose to be more proactive with my children with their asthma...” C08 – Moderate

Subtheme 2.4. Preventing asthma symptoms. A key strategy in asthma management is prevention. Prevention strategies include knowing the cause of asthma, avoiding asthma symptom triggers, and involving children in self-managing their care.

Understanding the cause of asthma determines what management strategies the caregiver uses. Caregivers believe that asthma is caused by environmental exposures. To prevent asthma symptoms, caregivers described monitoring weather reports for the presence of vog. Caregivers responded to changing weather by keeping a child indoors if vog was forecast and dressing a child appropriately if a temperature change was forecasted. If a caregiver’s home had air

conditioning, a child was kept in an air-conditioned room to minimize vog exposure. Exposure to secondhand smoke, including cigarette smoke and barbecue smoke were avoided. Additional management strategies included vigilantly keeping clean home. These practices included vacuuming, dusting, and minimizing the child's exposure to stuffed animals and strong odors. Whenever possible, caregivers removed carpets and drapery to minimize the accumulation of dust, which can trigger asthma symptoms in some children.

“Yeah, I try to keep him, well basically keep tabs on the weather, kind of just know when the vog is coming and stuff like that.” C01 – Mild

As a child aged, caregivers began to teach children how to manage asthma symptoms. The child was deemed ready to learn self-management strategies when he or she began to recognize symptoms such as chest tightness or difficulty breathing. Caregivers described such recognition as a pivotal point. By demonstrating awareness of their bodies' responses to asthma triggers, children showed they could be taught to avoid triggers and manage symptoms.

“Absolutely, just trying to explain, how it can be of benefit, and once they got older and realized that it did benefit them, they'll go and get it themselves” C15 – Severe

Daily controller medication were seldom used to prevent asthma symptoms. Medications delivered by inhalers and nebulizers treated asthma when symptoms occurred. A few caregivers described fears associated with the use of daily controller medications.

“I'm using it every day and her response was basically, that it's not going to be a long term, it's just to stabilize him especially because of the mainland [reference to a respiratory cold on the continent] upper respiratory situation that is going on.” C09 – Moderate

Themes Compared by Asthma Severity Type

Theme 1. Asthma and Its Causes

Across all asthma severity types, heredity was seen as the cause of a child's asthma diagnosis. Each caregiver consistently attributed the children's asthma to a positive family history of asthma and described other family members with asthma. A few caregivers could recount up to five generations of family members with asthma.

Exposure to environmental and household triggers was discussed by caregivers across asthma severity type. Caregivers of children with severe persistent asthma described household irritants as a cause of asthma symptoms. Irritants included odors such as those associated with cleaning solutions, laundry detergent and softener, dryer sheets, and bleach. Among caregivers of children with moderate persistent asthma, household triggers such as dust and environmental triggers such as a change in weather were commonly described. Caregivers minimized exposure to these household triggers through frequent vacuuming, dusting, and washing. Weather was frequently monitored as well.

For caregivers with a child who has mild persistent asthma, environmental triggers were discussed more frequently than household triggers. Environmental triggers included fog, changes in weather, and pollen exposure. Caregivers were mindful of weather patterns and took preventive steps when the weather changed or pollen was in the air. In all, exposure was consistently described as a cause of asthma, but the extent varied by asthma severity.

Theme 2. Management Strategies

Physical activity improved asthma symptoms. Caregivers of children with moderate persistent asthma described that engaging children in physical activity prevented asthma symptoms and built lung capacity. Similar descriptions were found among caregivers of children

with severe persistent asthma. Among those with mild persistent asthma, physical activity was associated with triggering asthma symptoms. Caregivers in general believed in the long-term benefits of engaging in physical activity. They often encouraged children to participate in simple activities such as running in the yard or park, kicking or hitting a ball, or group sports.

Caregivers focused on managing asthma symptoms using alternative practice strategies favoring home remedies and other practices before prescribed medication. The use of Vicks VapoRub was commonly discussed by caregivers. Often, Vicks VapoRub was used in conjunction with massage and dressing warmly. Caregivers described that the massage relaxed the child and the mentholatum in Vicks VapoRub opened the child's airways.

Cultural practices used to manage asthma symptoms included going to the ocean and focusing on living a balanced life. Caregivers across all severity types found ocean water a natural way to detoxify the body. Most often, caregivers described having the child play at the seashore and swim in the ocean. In terms of living a balanced life, caregivers reported that a balanced life necessitated a strong spiritual connection. Spirituality, according to caregivers across severity types, could be defined as maintaining a relationship with a higher power through prayer and meditation

Caregiver response to asthma included (a) having a plan to address asthma symptoms and (b) maintaining awareness of when a child with asthma was ready to self-manage his or her care. Caregivers of children with mild persistent asthma described observing children before intervening. Similarly, caregivers of children with moderate persistent asthma established a process to respond to asthma symptoms. One caregiver described the process: have the child remain inside, take a shower, rub down, and rest. However, if symptoms worsened, the caregiver would take the child to the emergency room. Another caregiver of a child with moderate

persistent asthma described a different process. When symptoms were present, the caregiver would take the child to the doctor's office for direction on asthma care. The caregiver expressed hesitancy about administering medication through a nebulizer unless directed to do so by a doctor. Caregivers assessed through observation and assessment of active symptoms what to do next for a child with asthma symptoms. Among caregivers of a child with moderate persistent asthma, providing a nurturing environment assisted with responding to asthma. For caregivers whose children had severe persistent asthma, caregivers were vigilant in asking the child about the child's symptoms. Interventions depended on how the child responded. If the asthma symptom was a cough, then the caregiver monitored the cough; if wheezing was present, then the child was placed on the nebulizer. Consistently, across all asthma severity types, caregivers indicated that children who were seven years or older with asthma were ready to take on responsibilities related to self-management. Responsiveness to care relied on caregivers' observations and assessment of the child with asthma. This required the caregiver to intervene using various levels of non-medical and medical care.

Preventing exposure to asthma triggers is key to asthma management, as is the use of medication. Caregivers across all severity types indicated that vigilant keeping of a clean home prevented exposure to asthma triggers. As such, caregivers monitored children's exposures to known triggers such as mold, dust, and cockroach droppings. Similarly, caregivers of all asthma severity types discussed the use of medication. However, the use of daily control medications was infrequently discussed. Medication was used to treat asthma symptoms but seldom used to prevent them.

Summary

Chapter Four presented findings based on 18 Native Hawaiian caregivers. Each caregiver had a child between the ages of 5 and 12 with mild persistent, moderate persistent, or severe persistent asthma. Two overarching themes emerged to describe these caregivers experience: (a) asthma and its causes and (b) asthma management. Six sub-themes emerged from the two themes and included: (a) heredity, (b) environmental exposure, (c) engaging in physical activity, (d) alternative practices, (e) responding to asthma symptoms, and (f) preventing exposure to asthma triggers.

Similar findings were found among all asthma severity types. Across all severity types, caregivers related the cause of asthma diagnosis to family history and heredity, and reported that preventing patient exposure to triggers is key to asthma management. Differences among asthma severity included (a) environmental triggers as a cause of asthma, (b) the use of physical activity, and (c) response to care. Environmental triggers including irritants were most cited by caregivers of children with severe persistent asthma. Household triggers were cited among caregivers of children with moderate persistent asthma, and changes in weather patterns with severe persistent asthma. Response to care varied by asthma severity type as well. Caregivers whose children had higher severity asthma were more likely to ask a child about asthma symptoms and then provide the appropriate medication. Those who cared for those with lower severity type asthma opted for alternative approaches such as relaxation, massage, or exposure to hot or cold elements.

Chapter 5. Discussion, Limitations, and Implications

Chapter Five discusses the study's findings as they relate to the present literature on health, culture, and strategies for asthma management. In addition, study limitations, implications, and recommendations for future research are described.

The purpose of this study was to describe how Native Hawaiian caregivers manage pediatric asthma and to identify cultural practices used to manage pediatric asthma. Eighteen Native Hawaiian caregivers completed a semi-structured interview over the span of two years. Caregivers were classified according to the child's asthma severity. If the caregiver had multiple children who were between the ages of 5 and 12, the caregiver was classified based on the child with the most severe type of asthma.

Discussion

In-person interviews elicited Native Hawaiian caregivers' perspectives about asthma management. The research questions included: (a) What do Native Hawaiian caregivers believe causes asthma? (b) How do Native Hawaiian caregivers manage their child's asthma? and (c) What cultural practices do Native Hawaiian caregivers use to manage asthma?

Research Question 1: What do Native Hawaiian caregivers believe causes asthma?

Heredity. Heredity was frequently reported as a cause for a child's asthma. Often caregivers stated that other immediate family members had asthma and therefore the child had asthma. Similar to the present study, Bearison et al. (2002) and Mazur et al. (2001) identified heredity as a cause of asthma. A study of Navajo caregivers identified the following causes of asthma: a positive family history, environmental triggers, poor lung development, and Navajo

cultural beliefs of the causes of asthma (Van Sickle et al., 2003; Van Sickle & Wright, 2001). There is presently no supporting literature for Native Hawaiians.

Environmental exposure. Native Hawaiian caregivers believed that exposure to environmental triggers caused asthma. Environmental triggers included a change in weather, the presence of vog, the child's place of residence, and the presence of household triggers such as dust, pet dander, mold, cockroach droppings, and strong odors.

Native Hawaiian caregivers from this study believed that a change in weather and the presence of vog caused asthma symptoms. The caregivers observed that when the weather changed, whether from hot to cold or cold to hot, the child would develop symptoms such as cough or nasal drip. The caregivers believed these symptoms were precursors to asthma. Caregivers diligently monitored the weather reports and adjusted a child's activity when a shift in temperature, wind direction or vog was forecast. In response to vog, caregivers kept children indoors and in air-conditioned rooms when possible. The Kilauea Volcano Health Study documented the impact vog has on patients residing in the Ka'u district of Hawai'i Island and the relationship vog has on medically diagnosed acute airway problems (Longo et al., 2010). Similarly, hot weather was believed to cause asthma among Puerto Ricans and Dominican Americans (Koinis-Mitchell et al., 2008).

Place of residence also contributed to a child's asthma symptoms. The shift from a rural physical environment to an industrial environment was described as an asthma trigger for Yu'pik of Alaska children (Wind et al., 2004). Native Hawaiian caregivers who resided in a wet climate named damp conditions and increased presence of mold as triggers for their children's asthma. Similarly, Native Hawaiians who resided in a drier climate expressed that exposure to the dry climate and increased dust and pollen contributed to asthma symptoms. Exposure to mold and

dust are known asthma triggers (National Asthma Education and Prevention Program, 2007).

Caregivers noticed that moving from inland to coastal areas on the island resulted in a change in children's asthma symptoms.

A child's home environment also contributed to asthma health. Native Hawaiian caregivers identified that exposure to household triggers such as pet dander, strong odors, and cockroach droppings contributed to asthma. A similar finding was found among Puerto Ricans and Dominicans who believed that an unclean home caused asthma (Koinis-Mitchell et al., 2008).

Mexican mothers described asthma as unpredictable and "silent" due to the episodic and symptom-based nature of the illness (Arcoleo et al., 2015). However Native Hawaiian caregivers in this study did not describe asthma as particularly unpredictable. The caregivers in this study identified symptoms such as cough, runny nose, and wheezing. Caregivers believed that these symptoms were precursors to asthma episodes. This knowledge helped them anticipate when asthma episodes would begin. However,

The literature on Hispanics and Native Hawaiians described the cause of asthma through the respective cultures' health belief systems (Alicea-Alvarez et al., 2014; Andrade & Bell, 2011). Among Puerto Ricans and Dominican Americans, asthma was caused by an imbalance between one of four bodily humors, which included: (a) phlegm, (b) blood, (c) yellow bile, and (d) black bile (Alicea-Alvarez et al., 2014). Asthma is associated with a cold humor. Similar beliefs exist among Native Hawaiians, who see well-being as the result of a connection between core values of *lōkahi* and *pono*. Health is the result of living a *pono* life and maintaining harmony (Andrade & Bell, 2011; Hope et al., 1993; Kinney, 1996). Native Hawaiian caregivers in this study did not describe imbalance as a cause of asthma. However, caregivers did discuss

the importance of spirituality and living a pono life. The discussion on spirituality included the importance of being connected to a higher being and rooted to one's cultural beliefs as a source of well-being.

Research Question 2: How do Native Hawaiian caregivers manage their children's asthma?

Medication. Native Hawaiian caregivers in this study frequently described the use of medication such as medication delivered through a nebulizer, when a child's asthma became exacerbated. Caregivers were inclined to use medication when alternative approaches failed. Caregivers did express concerns about the potential use of medication and the long-term impact of a child's medication. Alaska Natives and Hispanic caregivers described fears associated with long-term use of medication such as addiction and side effects (Barton et al., 2005; Van Sickle & Wright, 2001).

Caregivers in this study and those found in other studies adhered to prescribed asthma medication regimen. In most cases, caregivers in this study administered medication when asthma symptoms were exacerbated. For most caregivers in this study, a daily controller medication was neither discussed nor readily used. Of those caregivers whose children were prescribed a daily corticosteroid, the caregiver sought reassurance from the health care provider and eventually adhered to the medical instructions. Caregivers in this study were unlike other ethnic/racial minority caregivers, as these other caregivers did not adhere to asthma medication use (Peterson-Sweeney et al., 2010; Peterson-Sweeney et al., 2003).

Learning asthma self-management. Shared decision-making improved pediatric asthma self-management. Shared decision-making is a process in which the caregiver and child manage asthma together. The child's readiness to self-manage his/her condition occurred when the child could to identify asthma-related symptoms such as chest tightness or difficulty breathing.

Acknowledging what symptoms preceded asthma episodes was the first step in teaching a child asthma management. Caregivers taught children to use alternative asthma management strategies such as relaxation, self-massage, and rest before using medication. Medication was used when asthma symptoms worsened. Caregivers described working with children to decide which alternative management strategies to use and to emphasize the importance of understanding what to do first. Native Hawaiian caregivers in this study emphasized that as children became pre-teens, they were better able to self-manage their asthma independently. Such children sought assistance only when symptoms did not improve.

In a study of Puerto Rican caregivers with asthmatic children, asthma management also shifted from the caregiver's responsibility to the child's responsibility as the child approached adolescence. A study by Horner and Brown (2015) found that the child-caregiver dyad played an important role in asthma management. Similar findings existed about Mexican-American and African-American parent-child dyads (Horner & Brown, 2015).

Physical activity. Regular physical activity improved lung capacity among children with asthma. Consistent participation in group or individual physical activity improved a child's asthma. Native Hawaiian caregivers described children with asthma playing outdoors and spending time at the beach swimming, boogie boarding, or surfing. Group activities included volleyball, football, softball, and basketball.

However, a school-based exploratory study of inner-city students found that increased participation in physical activity and better asthma control required improved access to medication, as well as additional education about the relationship between physical activity and asthma (Walker & Reznik, 2014).

Lived environment. A child's lived environment impacted his or her asthma. The importance of maintaining a clean home, free of dust, pet dander, mold, strong odors, and cockroach droppings was described by Native Hawaiian caregivers. Cleaning tasks were classified as daily, weekly, and monthly. Daily cleaning tasks included routine vacuuming, light dusting, and mopping. Weekly cleaning tasks included washing linen and removing mildew or mold from household surfaces. Monthly cleaning activity included cleaning the window screens, ceiling fans, and air-conditioner vents. Often the tasks were shared among household members, including the child with asthma. The literature described that homes of asthma patients were frequently cleaned to minimize known household triggers (Yinusa-Nyahkoon et al., 2007). Other environmental triggers documented in the literature and also described by caregivers of this study included smoke and pet dander (Roy, Downes, & Wisnivesky, 2011). Similarly, caregivers in this study described the importance of cleaning the home as a prevention strategy.

Alternative management strategies. Native Hawaiian caregivers in this study opted to use alternative management strategies before using Western medications. Alternative management strategies included the use of (a) Vicks VapoRub, (b) hot and cold therapies, (c) essential oils, (d) massage, and (e) herbal remedies. The use of alternative management strategies are not considered Native Hawaiian cultural practices for asthma management, however they are frequently used by Native Hawaiian caregivers and embodies cultural meaning in that the practice was used and shared within families. The use of Vicks VapoRub independently or in conjunction with massage was described by caregivers as a remedy passed down among family members. Menthol, the active ingredient of Vicks VapoRub helped children to breathe, and when used with massage, to relax. A study of multi-ethnic caregivers identified similar strategies for

asthma management. The results indicated that the multi-ethnic caregivers used Vicks VapoRub to manage children's asthma (Sidora-Arcoleo, Yoos, Kitzman, McMullin, & Anson, 2008).

Caregivers also adapted to changing weather environments by watching weather reports and adjusting the children's activity levels and clothing. For example, when the weather became cooler, caregivers dressed children in warmer clothing. When the weather became warm and vog was present, children were kept in an air-conditioned environments. Other forms of relaxation included the use of a cool compress behind the neck to slow down the child's breathing. A similar study of Dominican-Americans described the use of hot/cold therapies as a strategy for asthma management (Bearison et al., 2002).

Massage with essential oils or coconut oils also relaxed the child. The use of massage was also found among a study of multicultural caregivers (Mazur et al., 2001). When asked about the type and style of massage, caregivers described both a deep massage and a gentle manipulation of the affected area. Neither massage style is within the context of traditional Native Hawaiian lomilomi, which is a gentle kneading of the body that starts and ends with pule (Harden, 1999).

Essential oils such as lavender and eucalyptus were discussed by Native Hawaiian caregivers in this study. The use of essential oils promoted breathing when placed either in a humidifier or on a cloth placed near the child.

Herbal remedies were used to care for asthmatic children among urban Puerto Ricans, residing in the northeastern United States (Zayas et al., 2011). Among Native Hawaiian caregivers in this study, herbal remedies were not readily used.

Research Question 3: What cultural practices do Native Hawaiian caregivers use to manage asthma?

This study defined Native Hawaiian cultural practices as traditional Hawaiian activities or actions related to asthma management. Such cultural practices needed to be performed by a self-identified Native Hawaiian caregiver who learned the asthma management practice from a family member or kumu. Native Hawaiian cultural practices included traditional healing modalities. Native Hawaiian caregivers in this study were aware of cultural practices like la‘au lapa‘au, but did not use them. This research question was often interpreted by the many respondents as “what other cultural practice are you are of?” for example, caregivers expressed interest in learning more about la‘au lapa‘au, but either did not know any practitioners or knew only practitioners who had passed away.

By contrast, Native Hawaiian caregivers frequently described their awareness and use of lomilomi. However, caregivers used the word lomilomi to mean any form of massage, not necessarily the traditional practice of lomilomi. Lomilomi is a cultural practice with specific protocols and intent (Harden, 1999). Native Hawaiian caregivers in this study frequently described the use of seawater as an asthma management practice. Seawater was considered a universal remedy by Native Hawaiians (Kamakau, 1991a). Margaret Machado used a saltwater cleanse to rid the body of toxins (Harden, 1999). Similarly, Native Hawaiian caregivers in this study described taking children to the ocean to rid their bodies of toxins. Going to the ocean is a Native Hawaiian cultural practice used in closing ceremonies of la‘au lapa‘au practitioners (Bushnell, 1993).

The use of traditional cultural arts such as singing and playing digeridoos were found to improve asthma symptoms among Aboriginal children in Australia (Eley et al., 2010). Native

Hawaiian caregivers in this study did not describe traditional cultural arts such as hula, oli, or meleana as parts of a child's physical activity. Nor did caregivers describe these cultural arts as potential contributors to asthma management strategies.

The Hawaiian cultural identity scale indicated that of the 18 caregivers, 13 caregivers rated their cultural identity at a 7 or higher. Although not fully explored in the interviews, those with higher Hawaiian cultural identity discussed more frequently and in more detail the importance of using cultural practices which connected them spiritually as well as management strategies such as exposure to salt air/water. Those who rated their cultural identity at less than 4 readily discussed the use of medication and alternative practices.

Strengths

A strength of this study is an increased interest by Native Hawaiian caregivers to learn more about traditional Native Hawaiian cultural practices to manage asthma symptoms. Prior to this study, literature on Native Hawaiian asthma management was limited to a dissertation and historical books describing asthma and the treatments used by kahuna la'au lapa'au (priest who use herbal medicine). This study contributes to the literature by describing Native Hawaiian caregivers' beliefs about the causes of asthma, strategies for managing asthma, and awareness of Native Hawaiian cultural practices related to asthma.

Limitations

Study Design

Methodology. Qualitative descriptive is not grounded in a specific qualitative philosophy such as grounded theory, phenomenology, ethnography, or narrative inquiry (Magilvy & Thomas, 2009). Rather, qualitative descriptive methodology is based on existing knowledge and

seeks to describe the experience using the words of the participant (Neergard, Olesen, Andersen, & Sondergaard, 2009).

Interview. A one-time cross-sectional interview with Native Hawaiian caregivers sought to understand their beliefs around the cause of asthma and how their child's asthma symptoms were managed including awareness and use of Native Hawaiian cultural practices. Because the interview was a one-time occurrence, the researcher had to establish rapport and trust with the caregiver prior to the interview. This occurred either at an initial meet and greet session such as at recruitment presentations or through phone conversations. At the interview, the researcher also took the time to talk story with the participant prior to starting the interview. The format of the semi-structured open-ended interview guide did not lend to gathering in-depth information on the caregivers lived-experience with managing their child's asthma. Rather the intent of the interview was to understand beliefs about the cause of asthma and the caregivers' use of cultural approaches to manage pediatric asthma.

Recruitment plan. The recruitment plan needed to be expanded, which impacted data collection and analysis. Initial data were collected between May 2014 and December 2015 on O'ahu. During this data collection period, an initial 10 interviews with Native Hawaiian caregivers on O'ahu were completed. These 10 interviews included the perspectives from three asthma severity types (mild = 4, moderate = 4, severe = 2) and reached data redundancy when the data were analyzed in their entirety. When the data were analyzed by asthma severity type, the researcher determined that the perspective of additional Native Hawaiian caregivers was needed and should include the perspective of caregivers from other islands.

A revised recruitment plan was submitted to and approved by the University of Hawai'i at Mānoa Committee on Human Subjects. Recruitment paused between May 2015 and August

2015 as the researcher attended Māhina International Indigenous Health Research Training Program in Aotearoa/New Zealand from June 2015 to August 2015. Statewide recruitment was planned but the implementation was limited to three islands: O‘ahu, Hawai‘i and Maui during the period of September 2015 through December 2015, which preliminary analysis indicated data redundancy by asthma severity type.

The researcher followed a recruitment strategy similar to the initial recruitment plan, contacting key Native Hawaiian-serving agencies on two islands that had higher prevalence of asthma. The two islands were Hawai‘i and Maui. In October, the researcher conducted three interviews in Waimea on Hawai‘i Island after receiving five referrals from a Native Hawaiian-serving agency. The researcher planned to return to Hawai‘i Island to conduct additional interviews, but no additional referrals were received. Due to time constraints, recruitment ended in early December. The researcher also contacted the Native Hawaiian Health Care System on Maui, Hui No Ke Ola Pono, ahead of a scheduled workshop to solicit potential participants. Unfortunately, no referrals were received. The study received a total of 41 referrals from Native Hawaiian-serving organizations (n=15), Native Hawaiian Health Care Systems (n=16), self-referral (n=9), and caregiver participant referrals (n=1).

The pause in recruitment and data collection between November 2014 and September 2015 affected data collection among eligible caregivers. The delay in contacting eligible caregivers for an interview resulted in a higher number of caregivers expressing that they were no longer interested.

Data Collection and Analysis

The resumption of data collection after a year required the researcher and research team to reorient themselves to the data. A year passed between the tenth interview and the eleventh

interview and to address this lapse in time, the researcher and research team reviewed and recoded the original 10 interviews prior to receiving the eleventh transcript. As interviews were completed and transcripts distributed codes were further discussed and if new codes were identified, previous transcripts were reviewed and new codes applied. From their categories, themes, and subthemes emerged.

Another limitation was the involvement of participants to review the initial findings through a process called member checking. Formal member checking did not occur because the length of time from first interview to final interview was over 2-years. Formal member checking involves the participation of participants to review the initial findings and provide feedback to the researcher and the research team. The additional input of participants provides credibility of the data. Informal member checking was done with the Native Hawaiian caregiver at the conclusion of the interview. The researcher summarized the interview and asked the participant for any feedback. The participant's feedback was obtained and notated.

Midway through the data collection period, attendance at the Māhina International Indigenous Health Research Training Program in Aotearoa/New Zealand influenced how the researcher perceived her study. Māhina added insight on how culture influences health behaviors and beliefs. As data collection resumed, the researcher was able to develop a definition for asthma management as it related to Native Hawaiian cultural practices. The definition was shared with the research team and guided coding, categorizing, and identifying themes. The definition of cultural practices was conceptualized midway through data collection. This may have influenced the design of the study. The definition clearly identified asthma management activities and actions related to Native Hawaiian cultural practices to include use of: (a)

seawater/salt air, (b) pule, (c) traditional diet, (d) lomilomi, (e) la‘au lapa‘au, and (f) ho‘oponopono.

As with any qualitative methodology, the researcher is the tool and findings are subjective descriptions based on the researcher’s perspectives. The researcher was mindful that as a Native Hawaiian interviewing other Native Hawaiians, she needed to remain neutral in her interviewing style in order not to influence the caregiver’s responses around cultural practices. The researcher reduced culture bias but acknowledging her own cultural assumptions around the use of cultural practices for asthma symptom management and established a definition of Native Hawaiian cultural practice. This definition was used to guide data analysis. As a person with adult onset asthma and a nurse, the researcher was mindful to not introduce knowledge around recommended asthma symptom management in the interview process. Furthermore, the researcher debriefed herself with the following questions after each interview which were subsequently included at the end of each caregiver transcript. The questions included what stands out about this interview? and what were your overall impressions of how the interview went?. A final note was made regarding the summary of the interview. In a separate notebook the researcher also noted thoughts related to her identity as a Native Hawaiian.

Two additional Native Hawaiian researchers participated in the data analysis. These two individuals had experience with qualitative data analysis and brought additional perspectives relative to their professional disciplines as well as their cultural identity.

A limited sample of 18 Native Hawaiian caregivers of children (aged 5-12 years old) with one of three asthma severity types were interviewed. Of those interviewed, six had a child with mild persistent asthma, seven with moderate persistent asthma, and five with severe persistent asthma. The perspective of caregiver asthma management by severity type is well presented.

However, the majority of the caregivers interviewed were from O‘ahu (n=15) and the remainder were from Hawai‘i Island (n=3). As such, the perspective of neighbor island caregivers is limited. Although data redundancy was reached through data analysis with the current sample, a larger sample size inclusive of additional neighbor island caregivers by asthma severity may describe a broader perspective on the three research questions. Such perspective would allow for a deeper understanding of how Native Hawaiian caregivers manage pediatric asthma.

The researcher entered this study with two conflicting roles – that of a Program Manager position at Ke Ola Mamo (administrative) and that of a student enrolled in an academic program. It was important to delineate the roles because the Program Manager position at Ke Ola Mamo is part of the Administration Team and may have influenced the staff’s willingness to recruit for the study. At the time of the initial meeting or interview with caregivers, the researcher introduced herself as a doctoral student and not as a Program Manager for Ke Ola Mamo, however, her longstanding role at Ke Ola Mamo may have influenced some to perceive her in the administrative role.

Definition of Cultural Practice

The researcher developed an asthma-specific definition of Native Hawaiian cultural practices. While this definition was needed for the implementation of the study, it may also be limiting what the researcher was able to delineate as a “Native Hawaiian cultural practice”. According to this alternative definition, Native Hawaiian caregivers in this study only used seawater or pule as a cultural practice. However, these caregivers were also aware of other Native Hawaiian cultural practices like lomilomi and la‘au lapa‘au.

Cultural Identity

The cultural identity scale measured the participants' identity to the Native Hawaiian culture. Caregivers who had a high cultural identity, a rating of greater than 7 (n=13), frequently discussed how they used cultural practices in managing their child's asthma symptoms. Similarly, those who had a low cultural identity, a rating of less than 4 (n=2), did not discuss they use of cultural practices in managing asthma symptoms. It is not definitive that a relationship exists between cultural identity and the use of cultural practices for asthma symptom management. However, no questions related to cultural identity were included in the interview guide. Questions may have provided additional understanding on the influence cultural identity had on how caregivers managed pediatric asthma symptoms.

Implications

Nurses working with Native Hawaiian caregivers of a child with asthma should not assume that caregivers' implement cultural practices or are knowledgeable about cultural practices in the management of asthma symptoms. Assessing the caregivers' belief system orients the nurse to the caregivers' worldview (Brown & Closser, 2016; Kleinman, 1980). This orientation will assist nurses in developing meaningful action plans that incorporate cultural practices in addition to medication (Horky et al., 2007). Caregivers who use medication in conjunction with cultural practices should consider disclosing this information to their health care providers, as the disclosure of cultural practices can reduce potential harm. Lastly, between the ages of 5 and 12 children begin to understand and take on additional responsibilities. As children are ready to take on additional self-care responsibilities, caregivers should be mindful about providing culturally appropriate and age-appropriate health education.

Recommendations for Future Research

The findings identified that Native Hawaiian caregivers, for the most part, describe an awareness of and desire to learn traditional practices including lomilomi and la‘au lapa‘au. Caregivers in this study readily discussed the use of pule and sea water/salt air as asthma management strategies. The degree to which these Native Hawaiian cultural practices were used varied by severity type. Caregivers frequently used pule, but rarely used la‘au lapa‘au or lomilomi for asthma management. Future research should further explore the role and influence of where one lives within in the state of Hawai‘i, and the influence of culture on health practices among Native Hawaiian caregivers whose children have mild, moderate, and severe persistent asthma. Caregivers who moved from wet to dry or dry to wet climates described a change in their children’s asthma symptoms. Pediatric asthma management by Native Hawaiian caregivers also varied by place of residence and what may have influenced some of their cultural practices such as access to seawater/salt air. Understanding the impact of the lived environment and how the caregivers manages asthma symptoms may provide a broader understanding of how pediatric asthma is managed.

Summary

This study sought to understand pediatric asthma management, especially Native Hawaiian caregivers’ use of cultural practices for managing asthma. A qualitative descriptive methodology with a thematic form of inductive content analysis yielded two main themes. Thematic findings focused on understanding the beliefs Native Hawaiian caregivers had about asthma and its causes and the identification and description of asthma management strategies. Lastly, findings identified that Native Hawaiian caregivers use of Native Hawaiian cultural

practices included seawater to manage pediatric asthma. However, the caregivers in this study were aware of cultural practices that could manage their children's asthma.

A discussion of the study's findings as they relate to the present literature on health, culture, and asthma management strategies is presented. Through in-person interviews, Native Hawaiian caregivers' perspectives about asthma management were elicited. Of interest were beliefs about the cause of asthma, asthma management, and the use of cultural practices for asthma management. The literature supported this study's findings that asthma is caused by heredity and exposure to environmental triggers. Asthma management strategies found in the literature and in this study included medication, shared decision-making, physical activity, modification of the lived environment, and alternative therapies such as hot/cold therapies, essential oils, massage, and herbal remedies. Native Hawaiian cultural practices were seldom used by the caregivers in this study; although, the literature describes the use of la'au lapa'au for asthma treatment.

The strengths of this study include bringing awareness to cultural beliefs and their influence on health practices, and identifying a desire by Native Hawaiian caregivers to learn how to use Native Hawaiian cultural practices in asthma management. Limitations included study design, namely a change in the recruitment plan, the small sample size with most caregivers from O'ahu, the development of an asthma-specific definition of cultural practice, and cultural identity. Future research should explore the role and influence of the lived environment and the role and influence of culture on health practices among Native Hawaiian caregivers whose children have mild, moderate, or severe persistent asthma.

Conclusion

A qualitative descriptive methodology with medical anthropology framework of 18 self-identified Native Hawaiian caregivers sought to describe pediatric asthma management strategies, define cultural asthma management practices, and identify cultural practices caregivers were aware of but did not use. Caregivers participated in a one-time interview using a semi-structured open-ended interview guide. Findings indicated that Native Hawaiian caregivers believed that the primary causes of asthma were hereditary and exposures to the environment exposures regardless of how severe their child's asthma was. Asthma management strategies included using alternative therapies, such as Vicks VapoRub, responding to asthma with the use of medication, and preventing asthma through shared decision-making and managing the lived environment. This study provides nurses with knowledge regarding Native Hawaiian caregivers and their beliefs about the cause of asthma. It also supplies nurses with strategies for managing pediatric asthma in Native Hawaiian patients, including the use and awareness of traditional cultural practices.

Appendix A: Definition of Native Hawaiians

Native Hawaiians are members of the Polynesian race. As the original settlers of the Hawaiian archipelago, Native Hawaiians are the indigenous people of the land. Since the passage of the Hawaiian Homes Commission Act of 1920, federal, state, and local governments have sought to define who Native Hawaiians are (Kauanui, 2008). This discussion continues today. The Office of Hawaiian Affairs (OHA) has compiled various definitions related to Native Hawaiians. They distinguish between “Native Hawaiian” and “native Hawaiian.” The term “Native Hawaiian” is defined as “all persons of Hawaiian ancestry regardless of blood quantum” (Office of Hawaiian Affairs [OHA], 2006, p. 219). The term “native Hawaiian” is defined as “those with 50% and more Hawaiian blood” (OHA, 2006, p. 219). The United States Census Bureau defines Native Hawaiians as “person having origins in any of the peoples of Hawaii.” However, when collecting US Census data, respondents are able to self-identify with one or more racial category (U.S. Census Bureau, 2013).

Appendix B: Asthma Prevalence for Years 2005-2010

Table B.1

Asthma – Child prevalence by State and County for 2010

| State | # | % | C.I. (95%) | Estimated Population |
|--------------|----------|----------|-------------------|-----------------------------|
| Hawaii | 48,000 | 16.9 | 14.6 - 19.2 | 284,000 |

| County | # | % | C.I. (95%) | Estimated Population |
|---------------|----------|----------|-------------------|-----------------------------|
| Hawaii | 8,100 | 19.7 | 15.0 - 24.4 | 41,000 |
| Honolulu | 30,600 | 15.6 | 12.6 - 18.6 | 196,200 |
| Kauai | 3,000 | 21.4 | 14.1 - 28.7 | 14,100 |
| Maui | 6,300 | 19.2 | 14.4 - 23.9 | 32,700 |

Note: Weighted numbers (#), percentages (%) and 95% confidence intervals; Respondents aged 18 years and older; n/r (Not Reportable) – If the unweighted total response for a dimension (row) is <50, that row will not be shown; n/a (Not Available) – Not asked of a subset of respondents.

From Hawaii Health Data Warehouse, Hawaii State Department of Health, & Behavioral Risk Factor Surveillance System (2012). Asthma - child prevalence by state, county, child age group, child DOH race-ethnicity, child gender, for the year(s) - 2005, 2006, 2007, 2008, 2009, 2010.

Honolulu: Hawaii Health Data Warehouse

Table B.2

Asthma Prevalence Among Children Aged 0-4 years by County and Race/Ethnicity for Years 2005-2010

| Race/Ethnicity | Hawai‘i | | Honolulu | | Kauai | | Maui | |
|---------------------------|----------------|-------------------|-----------------|-------------------|--------------|-------------------|-------------|-------------------|
| | % | C.I. (95%) | % | C.I. (95%) | % | C.I. (95%) | % | C.I. (95%) |
| Caucasian | 10.3 | 5.3 – 15.4 | 6.8 | 3.9 – 9.8 | 10.7 | 0.1 – 21.3 | 8.1 | 3.9 – 12.3 |
| Native Hawaiian | 21.5 | 12.4 – 30.7 | 9.6 | 4.5 – 14.7 | n/r | n/r | 22.8 | 12.8 – 32.7 |
| Chinese | n/r | n/r | 6.6 | 0 – 13.3 | n/r | n/r | n/r | n/r |
| Filipino | 15.1 | 5.1 – 25.2 | 12.4 | 6.7 – 18.2 | 13.3 | 2.3 – 24.2 | 20.8 | 10 – 31.6 |
| Japanese | 15.6 | 5 – 26.2 | 10.1 | 5.3 – 14.9 | n/r | n/r | n/r | n/r |
| Black | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r |
| Other Pacific Islander | n/r | n/r | 22.1 | 10.3 – 33.9 | n/r | n/r | n/r | n/r |

Note: 95% confidence intervals (C.I.); n/r = Not Reportable, where unweighted total responses <50; n/a = Not Available

From Hawaii Health Data Warehouse, Hawaii State Department of Health, & Behavioral Risk Factor Surveillance System (2013).

Asthma prevalence among children aged 0-4, 5-12, and 13-17 years, by county and race/ethnicity, for the aggregated years 2005 to 2010. Honolulu: Hawaii State Department of Health.

Table B.3

Asthma Prevalence Among Children Aged 5-12 years by County and Race/Ethnicity for Years 2005-2010

| Race/Ethnicity | Hawai'i | | Honolulu | | Kauai | | Maui | |
|---------------------------|----------------|-------------------|-----------------|-------------------|--------------|-------------------|-------------|-------------------|
| | % | C.I. (95%) | % | C.I. (95%) | % | C.I. (95%) | % | C.I. (95%) |
| Caucasian | 24.9 | 19.4 – 30.4 | 16.9 | 13.6 – 20.3 | 13.6 | 7.9 – 19.2 | 8.5 | 5.4 – 11.6 |
| Native Hawaiian | 28.2 | 21.1 -35.3 | 30.3 | 23.9 – 36.8 | 30.2 | 17 – 43.5 | 25.6 | 18.4 – 32.7 |
| Chinese | n/r | n/r | 20.8 | 12.5 – 29.1 | n/r | n/r | n/r | n/r |
| Filipino | 23.5 | 14.5 – 32.5 | 23.7 | 18.0 – 29.3 | 31.2 | 17.7 – 44.7 | 24.4 | 16.4 – 32.5 |
| Japanese | 30.7 | 20.8 – 40.6 | 18.9 | 14.4 – 23.4 | n/r | n/r | 18.6 | 10.3 -27 |
| Black | n/r | n/r | 27.1 | 16.0 – 38.3 | n/r | n/r | n/r | n/r |
| Other Pacific Islander | n/r | n/r | 17.6 | 8.2 – 27.1 | n/r | n/r | n/r | n/r |

Note: 95% confidence intervals (C.I.); n/r = Not Reportable, where unweighted total responses <50; n/a = Not Available

From Hawaii Health Data Warehouse, Hawaii State Department of Health, & Behavioral Risk Factor Surveillance System (2013).

Asthma prevalence among children aged 0- 4, 5-12, and 13-17 years, by county and race/ethnicity, for the aggregated years 2005 to 2010. Honolulu: Hawaii State Department of Health.

Table B.4

Asthma Prevalence Among Children Aged 13-17 years by County and Race/Ethnicity for Years 2005-2010

| Race/Ethnicity | Hawai‘i | | Honolulu | | Kauai | | Maui | |
|---------------------------|----------------|-------------------|-----------------|-------------------|--------------|-------------------|-------------|-------------------|
| | % | C.I. (95%) | % | C.I. (95%) | % | C.I. (95%) | % | C.I. (95%) |
| Caucasian | 17.3 | 12.4 – 22.2 | 18.2 | 14 – 22.5 | 8.8 | 3.6 – 13.9 | 17.7 | 12.1 – 23.4 |
| Native Hawaiian | 26.7 | 18.6 – 34.8 | 24.4 | 17.5 – 31.3 | 44.2 | 26.9 – 61.4 | 25.1 | 16.1 – 34.1 |
| Chinese | n/r | n/r | 19 | 11 – 27.1 | n/r | n/r | n/r | n/r |
| Filipino | 18.3 | 9.4 – 27.1 | 18.4 | 11.6 – 25.2 | 30.2 | 16.7 – 43.8 | 23.1 | 14 – 32.3 |
| Japanese | 11 | 5.3 – 16.8 | 16.5 | 12.4 – 20.6 | 24.6 | 11 – 38.3 | 29.3 | 16.8 – 41.7 |
| Black | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r |
| Other Pacific Islander | n/r | n/r | 26.3 | 11.2 – 41.4 | n/r | n/r | n/r | n/r |

Note: 95% confidence intervals (C.I.); n/r = Not Reportable, where unweighted total responses <50; n/a = Not Available

From Hawaii Health Data Warehouse, Hawaii State Department of Health, & Behavioral Risk Factor Surveillance System (2013).

Asthma prevalence among children aged 0-4, 5-12, and 13-17 years, by county and race/ethnicity, for the aggregated years 2005 to 2010. Honolulu: Hawaii State Department of Health.

Appendix C: Triple Piko

As Pukui, Haertig and Lee (1972) state:

The Hawaiian observed in thought and ritual, a concept we term today as the ‘triple piko. The concept, a fusion of reasoning and the poetry of mysticism, went something like this:

The po‘o (head) was the place where the ‘aumakua hovered; where man’s own living ‘uhane made exit and returned from the sleep excursions of dreams...

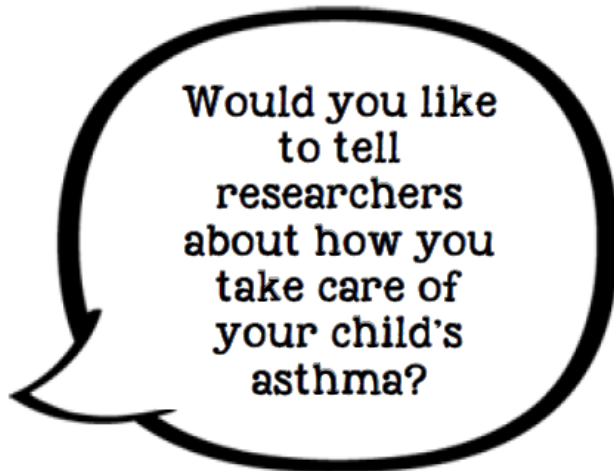
And so the crown of the head (located by the whorl or hair or “cowlick”) was the piko sacred to the ‘aumakua. This was the symbolic “umbilical cord” between mortal man and his ancestors-become-immortals...

The umbilical cord was the obvious link between the infant and the mother... The mother-child piko was extended symbolically to all blood-kin...

The visible, tangible evidences of a bond with descendants were the genitalia, both male and female. These not only provided great pleasure, they made each person a progenitor, a creative link in the long and mystic chain from ‘aumakua on through the flesh-and-blood offspring of the infinite future... (p. 182-183).

Appendix D: Recruitment Materials

The University of Hawai'i at Mānoa, Department of Nursing is conducting a research study



Native Hawaiian Caregivers' Cultural Perspectives of Asthma Management Of their Child

**You may be
eligible to
participate**

- Do you self-identify as a Native Hawaiian?
- Do you reside in the state of Hawai'i?
- Do you read and speak English?
- Do you have a child between the age of 5 and 12?
- Does your child have asthma?

The purpose of this study is to learn from Native Hawaiian caregivers about how they manage their child's asthma, understand which strategies are considered cultural practices, and identify other cultural practices that are used to manage asthma.

- Participate in one interview
- Study volunteers will receive a \$5 gift certificate

**To learn more about the study
please call Donna-Marie Palakiko
848-8000 ext. 227**

UH CHS Approval #21331
NHHCS IRB Approval # 13-N-11

Would you like to tell researchers about how you take care of your child's asthma?

Welcome to the "Native Hawaiian Caregivers Cultural Perspectives of Asthma Management of their Child" study. The purpose is to learn how parents and caregivers manage their child's asthma, understand what cultural practices are used, and to learn about other cultural practices that are used for taking care of children's asthma.

A talkstory session will last about 60 minutes. It will take place at an agreed upon location. In appreciation of your time, a \$5 gift certificate will be provided. Information gathered from these sessions will contribute to understanding how Native Hawaiian Caregivers manage their child's asthma and describe what cultural practices are being used to manage their child's asthma.

This study is being done by Donna Palakiko, RN. Donna is a registered nurse and graduate student at the University of Hawaii at Mānoa, in the Department of Nursing.

Please call 380-8436 for more information.

Appendix E: Screening Form

Screening Form

Date:

| | | | | | | | | | |
|--|--|---|--|--|---|--|--|--|--|
| | | - | | | - | | | | |
|--|--|---|--|--|---|--|--|--|--|

1. Do you self-identify as a Native Hawaiian?

| | |
|--|-----|
| | Yes |
| | No |

2. Are you 18 years or older?

| | |
|--|-----|
| | Yes |
| | No |

3. Do you reside on O‘ahu?

| | |
|--|-----|
| | Yes |
|--|-----|

Where:

| | |
|--|----|
| | No |
|--|----|

4. Do you read and speak English?

| | |
|--|-----|
| | Yes |
| | No |

5. Do you have a child between the age of 5 and 12 who has asthma?

| | |
|--|-----|
| | Yes |
| | No |

6. Do you treat your child’s asthma at least 70% of the time?

| | |
|--|-----|
| | Yes |
| | No |

7. How severe is your child’s asthma?

| | |
|---|---|
| Intermittent Asthma A child who has symptoms of wheezing and coughing no more than 2 days a week is considered to have intermittent asthma; nighttime flare-ups occur twice a month at most. Outside of these few episodes, a child with intermittent asthma is free of asthma symptoms. | Caregiver not eligible to participate if this stage is selected |
| Mild Persistent Asthma In <u>mild persistent</u> asthma, symptoms occur more than twice a week but less than once a day, and flare-ups may affect activity. Nighttime flare-ups occur more often than twice a month but less than once a week. Lung function is 80% of normal or greater. | |

| | |
|---|--|
| <p>Moderate Persistent Asthma</p> <p>Asthma is classified as <u>moderate persistent</u> if symptoms occur daily. Flare-ups occur and usually last several days. Coughing and wheezing may disrupt the child's normal activities and make it difficult to sleep. Nighttime flare-ups may occur more than once a week. In moderate persistent asthma, lung function is roughly between 60% and 80% of normal, without treatment.</p> | |
| <p>Severe Persistent Asthma</p> <p>With <u>severe persistent</u> asthma, symptoms occur daily and often. They also frequently curtail the child's activities or disrupt his sleep. Lung function is less than 60% of the normal level without treatment. Severe is the least-common asthma level.</p> | |

NOTE: Any child with asthma symptoms more often than 2 days a week or 2 nights per month, on average, is felt to no longer have intermittent asthma but *persistent* asthma. Persistent asthma has 3 levels of severity.

Source: [Guide to Your Child's Allergies and Asthma \(Copyright © 2011 American Academy of Pediatrics\)](http://www.healthychildren.org/English/health-issues/conditions/allergies-asthma/Pages/default.aspx) <http://www.healthychildren.org/English/health-issues/conditions/allergies-asthma/Pages/default.aspx>

Study Use Only

☐

Ineligible

Provide asthma resources as requested

☐

Eligible

Study ID # _____

Complete Participant Profile form

Appendix F: Asthma Resources

Asthma Education

Open Airways for Schools – Asthma education program offered at select elementary schools throughout O‘ahu. For more information contact American Lung Association at (808) 537-5966 ext. 211

Asthma Health Education – General asthma education offered at Ke Ola Mamo Community Offices. For more information contact Kaimaile Kiefer at (808) 848-8000 ext. 237.

Online Resources

American Lung Association in Hawai‘i

www.ala-hawaii.org

State of Hawai‘i Department of Health – Asthma

<http://health.hawaii.gov/asthma/>

Support Groups

Asthma Support Group

American Lung Association of Hawaii

Contact Person: Brenda Moniz

PH: 687-5377 Fax: 537-5971

E-mail: asthma@ala-hawaii.org Website: www.ala-hawaii.org

Appendix G: Participant Information Form

Study ID # _____

Participant Information Form

Part I: Demographics

Date: - -

What is your gender?

| | |
|--------------------------|-------------|
| <input type="checkbox"/> | Male |
| <input type="checkbox"/> | Female |
| <input type="checkbox"/> | Other _____ |

What is your marital status?

| | |
|--------------------------|-----------------------|
| <input type="checkbox"/> | Single |
| <input type="checkbox"/> | Currently Married |
| <input type="checkbox"/> | Partnered |
| <input type="checkbox"/> | Divorced or separated |
| <input type="checkbox"/> | Widow/Widower |

What is your highest level of education you completed?

| | |
|--------------------------|-----------------------------------|
| <input type="checkbox"/> | Less than high school |
| <input type="checkbox"/> | High school diploma / GED |
| <input type="checkbox"/> | Some college / technical training |
| <input type="checkbox"/> | College degree |
| <input type="checkbox"/> | Graduate / Professional degree |

Are you employed?

| | |
|--------------------------|-----|
| <input type="checkbox"/> | No |
| <input type="checkbox"/> | Yes |

If yes, what is your level of employment?

| | |
|--------------------------|-----------|
| <input type="checkbox"/> | Full time |
|--------------------------|-----------|

☐ Part time

What is your household income level?

| | |
|--------------------------|-----------------------|
| <input type="checkbox"/> | Less than \$35,000 |
| <input type="checkbox"/> | \$35,001 to \$50,000 |
| <input type="checkbox"/> | \$50,001 to \$65,000 |
| <input type="checkbox"/> | \$65,001 to \$80,000 |
| <input type="checkbox"/> | Greater than \$80,000 |

Number of family members living in household?

Does anyone who smokes live with the child?

| | |
|--------------------------|-----|
| <input type="checkbox"/> | Yes |
| <input type="checkbox"/> | No |

How would you rate your level of Hawaiian cultural identity using the following scale?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10

Part II: Child's Asthma

Number of children who live in the household?

a. Of those included above, how many have asthma?

b. Please list the age, gender, and number of years each had asthma:

| Age | Gender | # of years with asthma |
|-----|--------|------------------------|
| | | |
| | | |
| | | |
| | | |
| | | |

Circle the child/children you will refer to during the interview

|

For the following questions, please respond according to the child/children you circled above
When your child/children have an asthma episode, how long do symptoms last?

What do you use to treat your child/children's asthma when they have an episode?

| | |
|--------------------------|---------------------------------|
| <input type="checkbox"/> | Medications from doctor |
| <input type="checkbox"/> | Over the counter medications |
| <input type="checkbox"/> | Inhaler |
| <input type="checkbox"/> | Relaxation |
| <input type="checkbox"/> | Dressing appropriately |
| <input type="checkbox"/> | Minimizing stress |
| <input type="checkbox"/> | Prayer |
| <input type="checkbox"/> | Herbal Medicine/Remedy |
| <input type="checkbox"/> | Massage |
| <input type="checkbox"/> | Traditional/Native Practitioner |
| <input type="checkbox"/> | Other: _____ |

Number of emergency department visits within the past 12 months? _____

Number of hospital admissions within the past 12 months? _____

Appendix H: Interview Guide

INTERVIEW GUIDE

Thank you for meeting with me today. I am interested in learning from you how you take care of your child /children with asthma and what strategies you use including medical and cultural practices. A cultural practice is a tradition passed down from generation to generation.

You are one of several individuals I will talk with.

There is no right or wrong answer and I want to hear your thoughts on the topic. I will ask you to share your thoughts on the questions I ask.

The information you share with me will be kept private. I will report the information as a whole and no response will be linked with you.

The interview will be recorded to help me take notes. The tapes will be erased once the study is finished. I will also take notes during the interview to help me remember what we talked about. Is it okay if I tape record what we talk today?
Do you have any questions?

Before we start, can you tell me, what is one thing you do with your child/children?

[Summarize and begin interview questions]

1. What do you believe causes asthma?
2. How do you take care of your child's asthma?
 - a. What treatments have you used?
 - b. What treatments do you use?
 - c. Which treatments do you consider to be a Native Hawaiian cultural practice?
 - d. Which cultural practices have you tried?
 - e. What was your experience with the cultural practice?
 - f. How do you tell the difference between a Native Hawaiian cultural practice and one that is not?
 - g. What role does culture play in how you take care of your child's asthma?

3. Are there other Native Hawaiian cultural practices you know about that are used to take care of asthma?
4. If yes, what?
 - a. How do you find out about the cultural practices for taking care of asthma?
 - b. How does the cultural practice work?

That is the end of our questions. Is there anything else you would like to share on the topic of how you take care of your child's asthma?

Before I end the interview, I want to make sure that I captured what you shared with me.
[State summary of the interview from notes]

That is my summary of some of the ideas/thoughts you shared with me today. Did I miss any?

Thank you for sharing your thoughts with me about asthma and asthma management. I want to remind you that what you shared with me is confidential. The information will be reviewed and summarized. I'll be holding additional interviews to gather additional information from other caregivers with a child or children with asthma. If you would like a copy of the results, please let me know. If you have any additional questions, please let me know. If you know of any other caregivers like you who may be interested in being interviewed, please give them a copy of the flyer and have him or her contact me.

In appreciation of your time, I want to provide you with a \$5.00 gift card for your help.

Thank you again for your time and thoughts.

Appendix I: Indigenous Models about Health

A brief presentation of indigenous models of health are presented. Nā Pou Kihi (the corner posts), is a Native Hawaiian centered model of health based on work by Sir Mason Durie. The next three, Te Whare Tapa Whā (the house), Te Wheke (the octopus), Te Whetu (the star), and Te Pae Māhutonga (the Southern Cross Star Constellation) are Māori models of health. The final model discussed is the medicine wheel an American Indian and Alaska Native model of health.

Nā Pou Kihi (the corner posts) is modeled after Te Whare Tapa Whā (the house) by Sir Mason Durie (1999). Nā Pou Kihi, developed by Kaholokula (2015) is a Native Hawaiian health model which depicted the four essential posts to a hale (house) (Figure D1). The four posts included: (a) Ke Ao ‘Ōiwi (the people), (b) Ka Mālama ‘Āina (care of the environment), (c) Ka ‘Ai Pono (living properly), and (d) Ka Wai Ola (waters of life). Ke Ao ‘Ōiwi strives to achieve optimal health through achievement of a culturally nurturing space. The second post, Ka Mālama ‘Āina, strives to create healthier communities and environments through economic self-sufficiency, food sovereignty and security, and engagement in civic activities. The next post, Ka ‘Ai Pono, encourages access to healthier lifestyles including community health promotion programs and access to affordable Hawaiian foods. The final post, Ka Wai Ola, seeks to achieve social justice by promoting livable wages and reductions in health disparities.

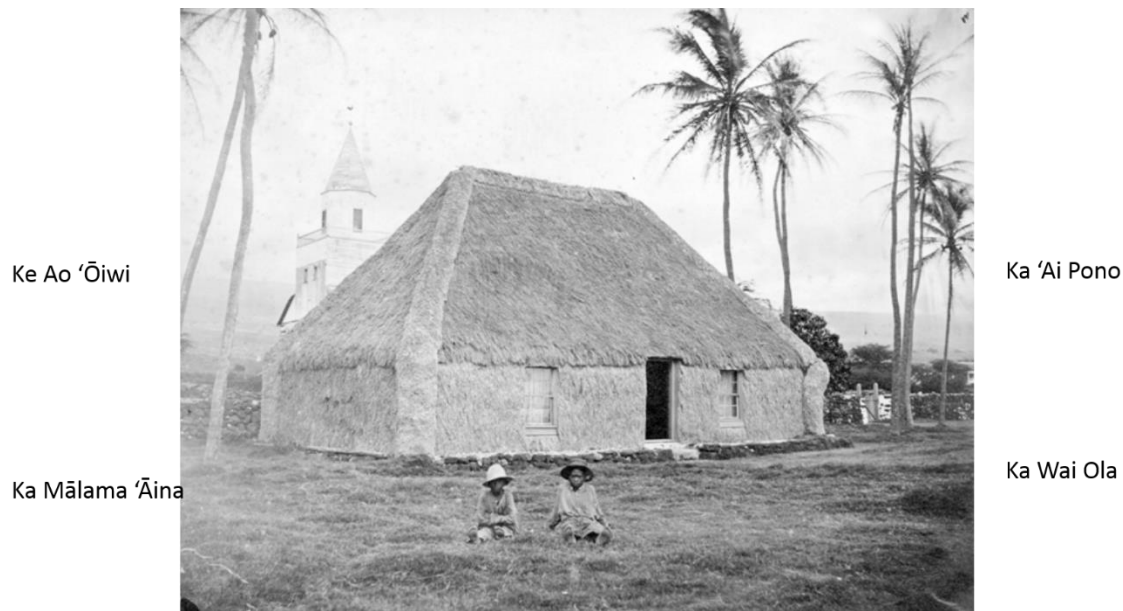


Figure D1. Nā Pou Kihī (the corner posts).

Te Whare Tapa Whā (the house), was developed by Hui and Sir Mason Durie (1994). Durie's Hauora Māori (Māori health) model depicted the four walls of a wharehau (large house) as the foundation of Māori (original people) health and well-being (Pollock, 2014) (Figure D2). They included: (a) taha tinana (physical health), (b) taha wairua (spiritual health), (c) taha whānau (family health), and (d) taha hinengaro (mental health) (Durie, 1994; Manatū Hauora Ministry of Health, 2015b).

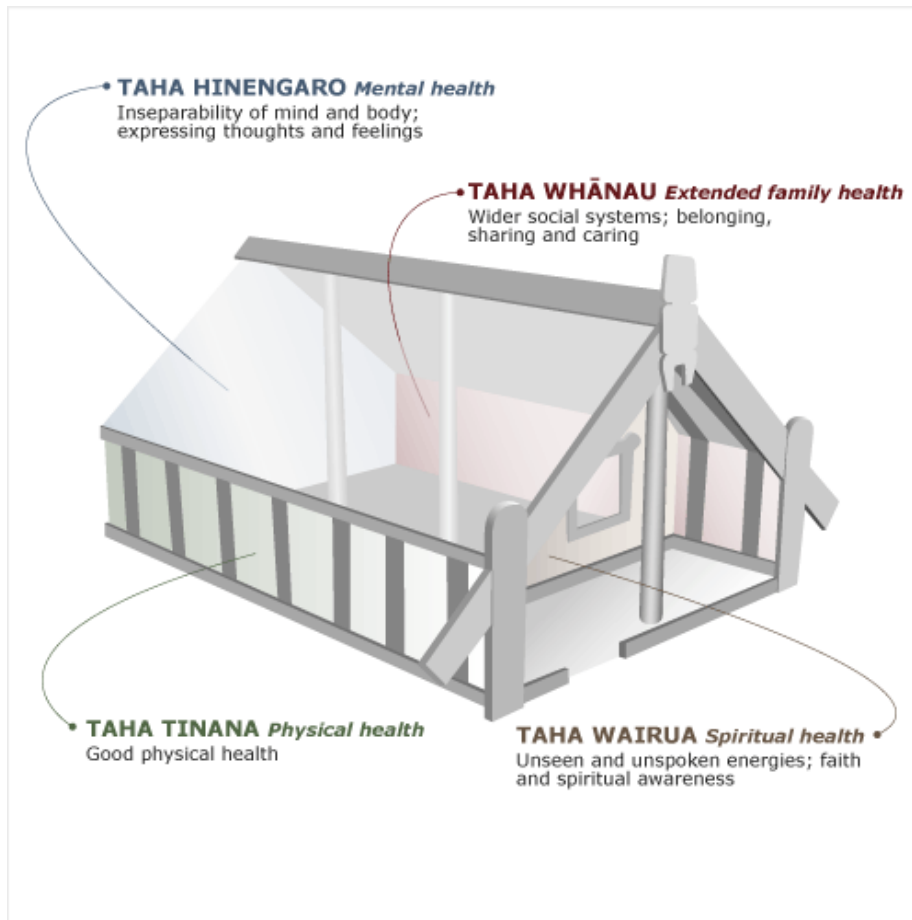


Figure D2. Te Whare Tapa Whā (the house) from <http://www.health.govt.nz/our-work/populations/maori-health/maori-health-models/maori-health-models-te-whare-tapa-wha>.

Te Wheke (the octopus) developed by Pere (1991), is a comprehensive model of family health (Kokiri Hauora, 2016) (Figure D3). The wheke's head and eight tentacles each represent a dimension of family health: head - te whānau, eyes - waiora defined as total wellbeing for the individual and family. The eight tentacles are interwoven and represent the close relationship among (a) wairuatanga (spirituality), (b) hinengaro (the mind), (c) taha tinana (physical wellbeing), (d) whanaungatanga (extended family), (e) mauri (life force in people and objects), (f) mana ake (unique identity of individuals and family), (g) hā a koro ma, a kui ma (breath of

life from forbearers), and (h) whatumanawa (the open and healthy expression of emotion) (Love, 2004; Manatū Hauora Ministry of Health, 2015c).

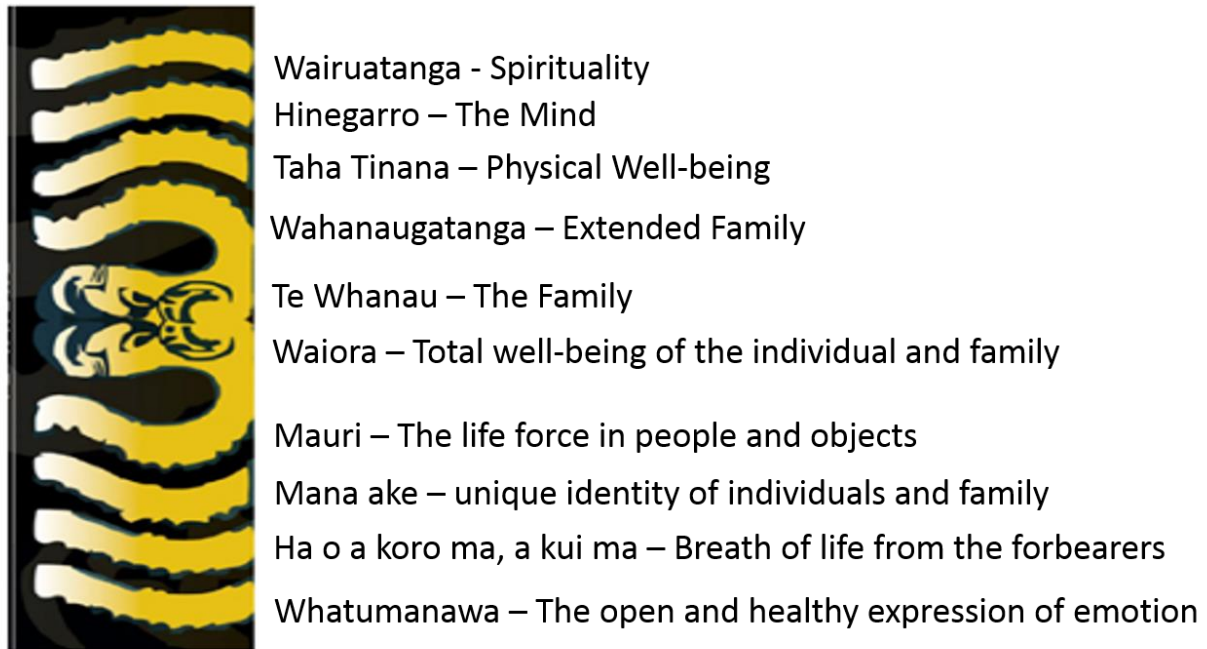


Figure D3. Te Wheke (the octopus) from www.health.govt.nz/our-work/populations/maori-health-models/maori-health-models-te-wheke.

Te Whetu (the star) was developed by Mark and Lyona (2010) to broaden the dimensions of Māori health and well-being (Figure D4). Similar to other Māori health models, Te Whetu included five dimensions of health and well-being. The five dimensions included: (a) hinengaro (mind), (b) tinana (body), (c) whenua (land), (d) whānau/whakapapa (family/genealogy), and (e) wairua (spirit). The inclusion of whenua within Te Whetu acknowledges the importance that land has on health. The health of the land impacts the health of the people and vice versa.

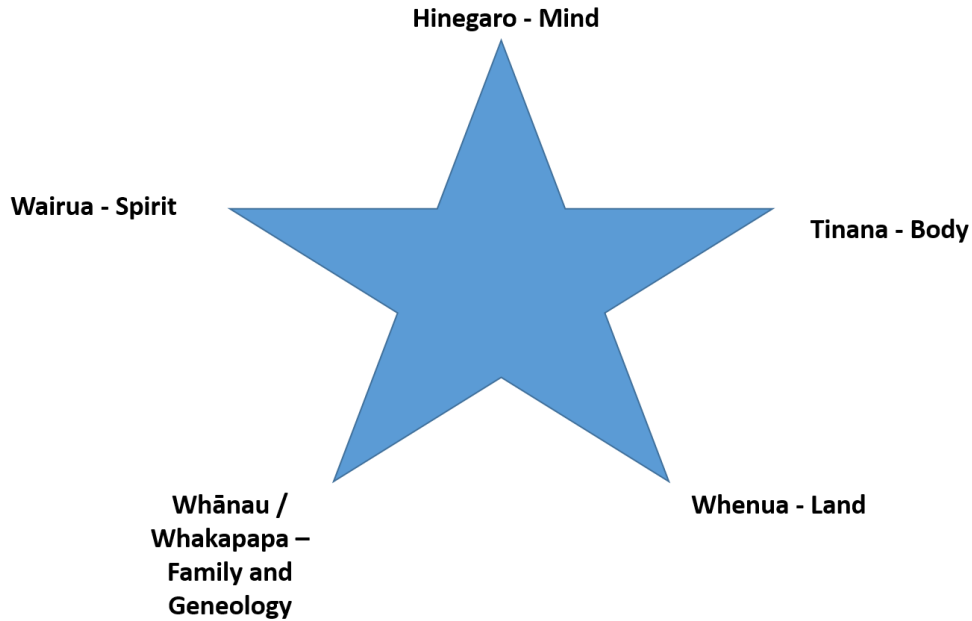


Figure D4. Te Whetu (the star) from Mark G. T., & Lyona, A. (2010). Māori healers' views on wellbeing: The importance of mind, body, spirit, family, and land. *Social Science and Medicine*, 70, 1756-1764.

Te Pae Māhutonga (the southern cross star constellation) was developed by Durie (2004) to provide a health promotion model for Māori (Healthy Christchurch Champions, 2016) (Figure D5). Te Pae Māhutonga included four key areas of health promotion: (a) mauriora (life force, cultural identity), (b) waiora (health, physical environment), (c) toiora (healthy lifestyles), and (d) te orange (participation in society). The final two pointer stars are ngā manukura (community leadership) and te mana whakahaere (autonomy) (Manatū Hauora Ministry of Health, 2015a).



Figure D5. Te Pae Māhutonga (the Southern Cross Star Constellation) from <http://www.health.govt.nz/our-work/populations/maori-health/maori-health-models/maori-health-models-te-pae-mahutonga>.

The medicine wheel is an American Indian and Alaska Native model about health. Weaver (2002) describes the medicine wheel as a circle divided into quadrants. Each quadrant is associated with a color and ordinal direction representing spirit beings, clans, and elements. Rybak and Decker-Fitts (2009) explained that the medicine wheel is a reminder of the importance of maintaining balance. If balance or harmony is disrupted, illness will occur.

Appendix J: Participant Profile Form

Study ID #

INTERVIEW INFORMATION

DATE

TIME

LOCATION

PARTICIPANT INFORMATION

GIFT CARD ACKNOWLEDGEMENT

GIFT CARD #

INTERVIEW FORM CHECK LIST

| | REQUIRED | COMPLETED |
|------------------------------|--------------------------|--------------------------|
| COMPLETED SCREENING FORM | <input type="checkbox"/> | <input type="checkbox"/> |
| PARTICIPANT PROFILE FORM | <input type="checkbox"/> | <input type="checkbox"/> |
| PARTICIPANT INFORMATION FORM | <input type="checkbox"/> | <input type="checkbox"/> |
| CONSENT | <input type="checkbox"/> | <input type="checkbox"/> |
| INTERVIEW GUIDE FORM | <input type="checkbox"/> | <input type="checkbox"/> |
| GIFT CARD | <input type="checkbox"/> | <input type="checkbox"/> |
| STUDY FLYER | <input type="checkbox"/> | <input type="checkbox"/> |

| | | |
|---|---|---|
| FIELD NOTES | | |
| OBSERVATIONS – HOME ENVIRONMENT | | |
| <input type="checkbox"/> smokers <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> pets <input type="checkbox"/> cat <input type="checkbox"/> dog <input type="checkbox"/> other <input type="checkbox"/> household products with strong odors <input type="checkbox"/> air conditioner w/ filter | <input type="checkbox"/> type of furniture <input type="checkbox"/> wood <input type="checkbox"/> upholstered furniture <input type="checkbox"/> flooring <input type="checkbox"/> carpet <input type="checkbox"/> wood <input type="checkbox"/> tile <input type="checkbox"/> drapery <input type="checkbox"/> curtains <input type="checkbox"/> blinds <input type="checkbox"/> other <input type="checkbox"/> stuffed animals | <input type="checkbox"/> cooking appliance <input type="checkbox"/> gas <input type="checkbox"/> electric <input type="checkbox"/> mold <input type="checkbox"/> Water damage <input type="checkbox"/> pests <input type="checkbox"/> cockroach <input type="checkbox"/> rodents |
| WHAT STANDS OUT ABOUT THIS INTERVIEW? | | |
| HOW DID THE INTERVIEW GO? | | |

INTERVIEW SUMMARY:

Appendix K: Consent

University of Hawai'i

Consent to Participate in Research Study

Native Hawaiian Caregivers' Cultural Perspectives of Asthma Management of Their Child

Researcher: Donna-Marie Palakiko, APRN, MS
School of Nursing and Dental Hygiene, University of Hawai'i at Mānoa

Introduction. My name is Donna-Marie Palakiko. I am a student at the University of Hawai'i at Mānoa (UHM) in the Department of Nursing who is doing a research study (study).

Project Description. The purpose of my study is to learn how Native Hawaiian caregivers take care of their child's asthma. I am asking you to participate in an interview because you take care of a child between the age of 5 and 12 with asthma.

Activities and Time. If you participate in this study, I will ask you to take part in an interview. The interview will be just like talking story. It will last 45 to 60 minutes. It will be held in a place that is good for you. The interview will include open-ended questions. I will ask you about your beliefs about asthma, how you care for your child's asthma, and what cultural ways you know of to take care of asthma. I will take notes as I talk with you. I will also use a tape recorder so that I can take detailed notes later on.

All interview recordings will be stored in a locked file cabinet. The recordings will be typed out for use. At the end of the study all recordings will be erased. Your name will not be recorded at all.

Benefits and Risks. There are no direct benefits to you. However, the results of this study might help us make asthma programs for Native Hawaiian children. Findings

might help us learn more about how Native Hawaiian caregivers take care of their child's asthma.

Taking part in the interview may bring up some bad memories or experiences. If the interview brings up bad memories or experiences, you can take a break, ask to skip the question, or stop. Information on asthma support groups will also be on hand.

Protection of Privacy. Taking part in this study may involve a loss of privacy. Your information will be handled as privately as possible. This Informed Consent, all study forms, and the information shared during the interview is private. What you tell me will be private. I will only use your first name during the interview and not link your name with any comments.

During this study, I will keep all data in a locked location. Only my UHM advisor, Alice, study helpers, Ephrosine and Emily, and I will see the data. Only UH Human Studies Program and the Native Hawaiian Health Care System Institutional Review Board can review study records. At the end of the study I will erase/destroy the tape recordings. When I type and report the results of my study, I will not use your name or any other information that could identify you. Rather I will use fake names and report my findings in a way that protects your privacy as much as possible.

Voluntary Participation. Taking part in this study is completely up to you. You may stop at any time. You may choose to skip question(s) at any time for any reason. You can also quit from the study.

For your time and sharing you will receive a \$5 gift card. You will receive the gift card, even if you do not finish the interview.

Questions. If you have any questions about this study, please call me at (808) 380-6436. You can also email me at dmp@hawaii.edu. If you have any questions regarding

your rights as a participant, please contact the UH Human Studies Program, by phone at (808) 956-5007. You can email them at uhirb@hawaii.edu. You may also contact the Native Hawaiian Health Care Systems Institutional Review Board at (808) 597-6550.

“I have read and I understand the above. I have been given acceptable answers to my questions about study steps and other matters. I am free to withdraw my consent and to stop taking part in the study at any time without losing help.

I give my consent to take part in this study with the understanding that such consent does not give up any of my legal rights, nor does it release the researcher or the University of Hawai'i or any employee or agent from legal duty for carelessness.”

If you agree to take part in this study, please sign and date the bottom of this page. By signing below you agree to be recorded



(Cut or tear here)

Signature:

I have read and understand the information. I know that I can change my mind about participating in this study at any time. I can stop taking part by letting the researcher know (Donna-Marie Palakiko).

My signature below shows that I agree to take part in this research project.

Your Name (print) _____

Your Signature _____

Today's Date _____

UH CHS Approval #21331
NHHCS IRB Approval #13-N-11

Appendix L: Human Subjects Approvals



UNIVERSITY
of HAWAII
MĀNOA

Office of Research Compliance
Human Studies Program

June 27, 2013

TO: Donna-Marie Palakiko
Principal Investigator
Nursing

FROM: Denise A. Lin-DeShetler, MPH, MA
Director

A handwritten signature in black ink, appearing to read "Denise A. Lin-DeShetler".

SUBJECT: CHS #21331- "Cultural Perspectives of Native Hawaiian Asthma"

This letter is your record of the Human Studies Program approval of this study as exempt.

On June 27, 2013, the University of Hawai'i (UH) Human Studies Program approved this study as exempt from federal regulations pertaining to the protection of human research participants. The authority for the exemption applicable to your study is documented in the Code of Federal Regulations at 45CFR 46.101(b)(Exempt Category 2).

Exempt studies are subject to the ethical principles articulated in The Belmont Report, found at <http://www.hawaii.edu/irb/html/manual/appendices/A/belmont.html>.

Exempt studies do not require regular continuing review by the Human Studies Program. However, if you propose to modify your study, you must receive approval from the Human Studies Program prior to implementing any changes. You can submit your proposed changes via email at uhirb@hawaii.edu. (The subject line should read: Exempt Study Modification.) The Human Studies Program may review the exempt status at that time and request an application for approval as non-exempt research.

In order to protect the confidentiality of research participants, we encourage you to destroy private information which can be linked to the identities of individuals as soon as it is reasonable to do so. Signed consent forms, as applicable to your study, should be maintained for at least the duration of your project.

This approval does not expire. However, please notify the Human Studies Program when your study is complete. Upon notification, we will close our files pertaining to your study.

If you have any questions relating to the protection of human research participants, please contact the Human Studies Program at 956-5007 or uhirb@hawaii.edu. We wish you success in carrying out your research project.

1960 East-West Road
Biomedical Sciences Building B104
Honolulu, Hawai'i 96822
Telephone: (808) 956-5007
Fax: (808) 956-8683

An Equal Opportunity/Affirmative Action Institution



NHHCS - IRB

Native Hawaiian Health Care System - Institutional Review Board

NHHCS - IRB
CONSORTIUM

Hui No Ke Ola Pono
J. Walter Cameron Center
95 Mahalani St., Ste. 21
Wailuku, HI 96793

Ho'ola Lāhui Hawaii
P.O. Box 3990
Lihue, HI 96766

Ke Ola Mamo
1130 N Nimitz Hwy #A-221
Honolulu, HI 96817

Hui Malama Ola Na O'iwi
311 Kalaniana'ole Ave.
Hilo, HI 96720

Na Pu'uwai
P.O. Box 130
Kaunakakai, HI 96743

Papa Ola Lōkahi
894 Queen St.
Honolulu, HI 96813
Ph 808.597.6550
Fx 808.597.6558

Martina Kamaka, MD
Chair

Melissa Souza, RN
Co-Chair

January 13, 2014

Donna Palakiko, R.N., M.S., Principal Investigator
Ke Ola Mamo
1505 Dillingham Blvd., #205
Honolulu, HI 96817

Re: Final Approval of protocol #13-N-11
Native Hawaiian Caregivers' Cultural Perspectives of Asthma Management for
their Child

Aloha e Donna:

Your revised documents were received and administratively reviewed on December 20, 2014. The changes you made address all the conditions set by the NHHCS IRB. This letter and the enclosed certificate are your records of NHHCS-IRB approval of your study. **This decision is in effect for one year until December 19, 2014,** or when funding ends, whichever is first. If funding ends prior to this date, please notify us in writing. If you expect your project to continue beyond this date, you must submit a continuation application to the NHHCS-IRB. Application for renewal must be submitted approximately 6 weeks prior to the expiration date to allow for proper review.

If, during the course of your project, you intend to make changes related to your approved protocol or which may significantly affect the human participants involved, you should obtain NHHCS-IRB approval prior to implementing these changes. Any unanticipated problems related to your use of human participants must also be promptly reported to the NHHCS-IRB. The NHHCS-IRB may be contacted through its Chairperson, Keawe Kaholokula, or through this office.

This is required so that the NHHCS-IRB can update or revise protective measures for human participants as may be necessary. In addition, under the NHHCS-IRB's assurance with the U.S. Department of Health and Human Services, the NHHCS-IRB must report certain situations to the federal government. Examples of these reportable situations include deaths, injuries, adverse reactions or unforeseen risks to human participants. These reports must be made regardless of the source of funding for your project.

In accordance with the NHHCS-IRB policy, you are expected to maintain as an essential part of your project records, any records pertaining to the use of human subjects in your research. This includes any information or materials conveyed to, and received from, the participants, as well as any executed consent forms, data and analysis results. These records must be maintained for at least three years after project completion or termination. You should also be aware that these records are subject to inspection and review by authorized representatives of the federal government.

Please notify this office when your project is completed. We may ask that you provide information regarding your experiences with human participants and with the NHHCS-IRB review process. Upon notification, we will close our files pertaining to your project. Any subsequent reactivation of the project will require a new NHHCS-IRB application.

Should you have any questions, please call (808)597-6553 ext 211 or email me at misaacs@papadialokahi.org. Correspondence should be sent to the NHHCS-IRB, c/o Papa Ola Lokahi, attention: R. Mei-Ling Isaacs. Please reference Protocol File 13-N-11.

Thank you for your cooperation and efforts throughout this review process. We wish you success in your continued endeavors.

Sincerely,

A handwritten signature in black ink, appearing to read 'Mei-Ling', written over a horizontal line.

R. Mei-Ling Isaacs
Director, NHHCS-IRB

Protection of Human Subjects
Assurance Identification/IRB Certification/Declaration of Exemption
(Common Rule)

Policy: Research activities involving human subjects may not be conducted or supported by the Departments and Agencies adopting the Common Rule (56FR28003, June 18, 1991) unless the activities are exempt from or approved in accordance with the Common Rule. See section 101(b) of the Common Rule for exemptions. Institutions submitting applications or proposals for support must submit certification of appropriate Institutional Review Board (IRB) review and approval to the Department or Agency in accordance with the Common Rule.

Institutions must have an assurance of compliance that applies to the research to be conducted and should submit certification of IRB review and approval with each application or proposal unless otherwise advised by the Department or Agency.

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|--|---|--|
| 1. Request Type <input checked="" type="checkbox"/> ORIGINAL <input type="checkbox"/> CONTINUATION <input type="checkbox"/> EXEMPTION | 2. Type of Mechanism <input type="checkbox"/> GRANT <input type="checkbox"/> CONTRACT <input type="checkbox"/> FELLOWSHIP <input type="checkbox"/> COOPERATIVE AGREEMENT <input type="checkbox"/> OTHER: _____ | 3. Name of Federal Department or Agency and, if known, Application or Proposal Identification No. |
| 4. Title of Application or Activity Native Hawaiian Caregivers' Cultural Perspectives of Asthma Management for their Child | | 5. Name of Principal Investigator, Program Director, Fellow, or Other Donna Palakiko, RN, MS |

6. Assurance Status of this Project (Respond to one of the following)

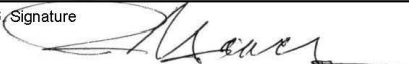
- ☒ This Assurance, on file with Department of Health and Human Services, covers this activity:
Assurance Identification No. FWA 00001039, the expiration date 07/02/18 IRB Registration No. IRB00001392
- ☐ This Assurance, on file with (agency/dept) _____, covers this activity:
Assurance No. _____, the expiration date _____ IRB Registration/Identification No. _____ (if applicable)
- ☐ No assurance has been filed for this institution. This institution declares that it will provide an Assurance and Certification of IRB review and approval upon request.
- ☐ Exemption Status: Human subjects are involved, but this activity qualifies for exemption under Section 101(b), paragraph _____.

7. Certification of IRB Review (Respond to one of the following IF you have an Assurance on file)

- ☒ This activity has been reviewed and approved by the IRB in accordance with the Common Rule and any other governing regulations.
by: ☐ Full IRB Review on _____ or ☒ Expedited Review on December 20, 2013.
☐ If less than one year approval, provide expiration date _____
- ☐ This activity contains multiple projects, some of which have not been reviewed. The IRB has granted approval on condition that all projects covered by the Common Rule will be reviewed and approved before they are initiated and that appropriate further certification will be submitted.

8. Comments

NHHCS IRB Identification #13-N-11

| | | | |
|--|---------------------------|---|--|
| 9. The official signing below certifies that the information provided above is correct and that, as required, future reviews will be performed until study closure and certification will be provided. | | 10. Name and Address of Institution Papa Ola Lokahi 894 Queen Street Honolulu, HI 96813 | |
| 11. Phone No. (with area code) | (808) 597-6553 ext. 211 | | |
| 12. Fax No. (with area code) | (808) 597-6552 | | |
| 13. Email: | misaacs@papaolalokahi.org | | |
| 14. Name of Official R. Mei-Ling Isaacs | | 15. Title IRB Director | |
| 16. Signature  | | 17. Date January 13, 2014 | |

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References

- 'Aha Kāne. (2016). 'Aha Kāne: Our vision, purpose mission. Retrieved from http://www.ahakane.org/about/our_vision_purpose_mission
- Akinbami, L. J., Moorman, J. E., Garbe, P. L., & Sondik, E. J. (2009). Status of childhood asthma in the United States, 1987-2007. *Pediatrics*, 123, S131-S145.
- Akinbami, L. J., Moorman, J. E., & Liu, X. (2011). *Asthma prevalence, health care use, and mortality: United States, 2005 - 2009* Hyattsville, MD: National Center for Health Statistics.
- Akinbami, L. J., Moorman, M. S., Bailey, C., Zahran, H. S., King, M., Johnson, C. A., & Liu, X. (2012). *Trends in asthma prevalence, health care use, and mortality in the United States, 2001 -2010*. Hyattsville, MD: National Center for Health Statistics.
- Akinbami, L. J., Simon, A. E., & Rossen, L. M. (2016). Changing trends in asthma prevalence among children. *Pediatrics*, 137(1), 1-7. doi:10.1542/peds.2015-2354
- Alicea-Alvarez, N., Swanson-Biearman, B., & Kelsen, S. G. (2014). A review of barriers to effective asthma management in Puerto Ricans: Cultural, healthcare system and pharmacogenomic issues. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 51(1), 97-105. doi:10.3109/02770903.2013.845205
- American Academy of Pediatrics. (2011). Guide to your child's allergies and asthma. Retrieved from <http://www.healthychildren.org/English/health-issues/conditions/allergies-asthma/Pages/default.aspx>
- American Lung Association. (2016a). Asthma-friendly schools initiative. Retrieved from <http://www.lung.org/lung-health-and-diseases/lung-disease-lookup/asthma/asthma-education-advocacy/asthma-friendly-schools-initiative/>

- American Lung Association. (2016b). Open airways for schools. Retrieved from <http://www.lung.org/lung-health-and-diseases/lung-disease-lookup/asthma/asthma-education-advocacy/open-airways-for-schools/about-open-airways.html?referrer=https://www.google.com/>
- Andrade, N. N., & Bell, C. K. (2011). The Hawaiians. In J. F. McDermott & N. N. Andrade (Eds.), *Peoples and cultures of Hawaii: The evolution of culture and ethnicity*. Honolulu, HI: University of Hawaii Press.
- Arcoleo, K., Zayas, L. E., Hawthorne, A., & Begay, R. (2015). Illness representations and cultural practices play a role in patient-centered care in childhood asthma: experiences of Mexican mothers. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 52(7), 699-706. doi:10.3109/02770903.2014.1001905
- Aronson, J. (1994). A pragmatic view of thematic analysis. *The Qualitative Report*, 2(1). Retrieved from <http://www.nova.edu/ssss/QR/BackIssues/QR2-1/aronson.html>
- Barton, C., Sulaiman, N., Clarke, D., & Abramson, M. (2005). Experiences of Australian parents caring for children with asthma: It gets easier. *Chronic Illness*, 1(4), 303-314.
- Bearison, D. J., Minian, N., & Granowetter, L. (2002). Medical management of asthma and folk medicine in a Hispanic community. *Journal of Pediatric Psychology*, 27(4), 385-392.
- Beckham, S., Kaahaaina, D., Voloch, K., & Washburn, A. (2004). A community-based asthma management program: Effects on resource utilization and quality of life. *Hawaii Medical Journal*, 63, 121-125.
- Beckwith, M. W. (1970). *Hawaiian Mythology*. Honolulu, HI: University of Hawaii Press.
- Beckwith, M. W. (Ed.) (1951). *The Kumulipo: A Hawaiian creation chant*. Honolulu, HI: University of Hawaii.

- Bhasin, V. (2007). Medical anthropology: a Review. *Ethno-Medicine*, 1(1), 1-20.
- Blaisdell, R. K. (1989). Historical and cultural aspects of Native Hawaiian health. In E. L. Wegner (Ed.), *Social Process in Hawaii* (pp. 1-21). Honolulu, HI: University of Hawaii.
- Brown, P. J., & Closser, S. (Eds.). (2016). *Understanding and applying medical anthropology* (3rd ed.). New York, NY: Routledge.
- Browne, C., Mokuau, N., Ka'opua, L., Kim, B., Higuchi, P., & Braun, K. (2014). Listening to the voices of Native Hawaiian elders and 'ohana caregivers: Discussions on aging, health, and care preferences. *Journal of Cross-Cultural Gerontology*, 29(2), 131-151.
doi:10.1007/s10823-014-9227-8
- Bruzzese, J.-M., Stepney, C., Fiorino, E. K., Bornstein, L. E. A., Jing, W., Petkova, E. V. A., & Evans, D. (2012). Asthma self-management is sub-optimal in urban Hispanic and African American/Black early adolescents with uncontrolled persistent asthma. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 49(1), 90-97.
doi:10.3109/02770903.2011.637595
- Buetow, S., Adair, V., Coster, G., Hight, M., Gribben, B., & Mitchell, E. (2003). Key informant representations of Maori and other patient fears of accessing general practitioner care for child asthma in Auckland, New Zealand. *Health Education*, 103(2), 88-98.
doi:10.1108/09654280310467717
- Burnard, P. (1991). A method of analysing interview transcripts in qualitative research. *Nurse Education Today*, 11(6), 461-466.
- Burnard, P. (1996). Teaching the analysis of textual data: An experiential approach. *Nurse Education Today*, 16(4), 278-281.

- Bushnell, O. A. (1993). *The gifts of civilization: Germs and genocide in Hawaii*. Honolulu, HI: University of Hawaii Press.
- Centers for Disease Control and Prevention. (2015). CDC's national asthma control program. Retrieved from <http://www.cdc.gov/asthma/nacp.htm>
- Centers for Disease Control and Prevention (CDC). (2010). *Breathing easier*. Retrieved from http://www.cdc.gov/asthma/pdfs/breathing_easier_brochure.pdf
- Centers for Disease Control and Prevention (CDC). (2012). *Asthma in Hawai'i*. Retrieved from http://www.cdc.gov/asthma/stateprofiles/Asthma_in_HI.pdf
- Chun, M. N. (2011). *No na mamo: Traditional and contemporary Hawaiian beliefs and practices*. Honolulu, HI: University of Hawaii Press.
- Coffey, J., Cloutier, M., Meadows-Oliver, M., & Terrazos, C. (2012). Puerto Rican families' experiences of asthma and use of the emergency department for asthma care. *Journal of Pediatric Health Care*, 26(5), 356-363. doi:<http://dx.doi.org/10.1016/j.pedhc.2011.01.006>
- Cook, B. P., Withy, K., & Tarallo-Jensen, L. (2003). Cultural trauma, Hawaiian spirituality, and contemporary health status. *Californian Journal of Health Promotion*, 1, 10-24.
- Cram, F., Smith, L., & Johnstone, W. (2003). Mapping the themes of Māori talk about health. *New Zealand Medical Journal*, 116(1170).
- da Silva, C. M., & Barros, L. (2014). Pediatric asthma management: Study of the family asthma management system scale with a Portuguese sample. *Children's Health Care*, 43(3), 203-220. doi:10.1080/02739615.2013.837822
- DeCuir-Gunby, J. T., Marshall, P. L., & McCulloch, A. W. (2011). Developing and using a codebook for the analysis of interview data: An example from a professional

- development research project. *Field Methods*, 23(2), 136-155.
doi:10.1177/1525822x10388468
- Doggett, N., & Dogra, S. (2015). Physical inactivity and television-viewing time among Aboriginal adults with asthma: A cross-sectional analysis of the Aboriginal Peoples Survey. *Maladies Chroniques et Blessures au Canada*, 35(3), 54-61.
- Durie, M. (1994). *Whaiora: Māori health development*. Auckland, New Zealand: Oxford University Press.
- Durie, M. (1999). Mental health and Maori development. *Australian & New Zealand Journal of Psychiatry*, 33(1), 5-12. doi:10.1046/j.1440-1614.1999.00526.x
- Durie, M. (2004). An indigenous model of health promotion. *Health Promotion Journal of Australia*, 15(3), 181-185.
- Ekim, A., & Ocakci, A. F. (2013). Perceptions of parents and children regarding asthma management responsibilities. *Journal for Specialists in Pediatric Nursing*, 18(4), 289-296 288p. doi:10.1111/jspn.12037
- Eley, R., Gorman, D., & Gately, J. (2010). Didgeridoos, songs and boomerangs for asthma management. *Health Promotion Journal of Australia*, 21(1), 39-44.
- Ellis, D. A., King, P., Naar-King, S., Lam, P., Cunningham, P. B., & Secord, E. (2014). Effects of family treatment on parenting beliefs among caregivers of youth with poorly controlled asthma. *Journal of Developmental and Behavioral Pediatrics: JDBP*, 35(8), 486-493. doi:10.1097/DBP.0000000000000093
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62(1), 107-115.

- Erlandson, D. A., Harris, E. L., Skipper, B. L., & Allen, S. D. (1993). *Doing naturalistic inquiry: A guide to methods*. Newbury Park, CA: Sage.
- Everhart, R. S., Koinis Mitchell, D., Friedman, D., Kopel, S., Canino, G., Fritz, G., & McQuaid, E. L. (2014). Pediatric asthma management within Latino and non-Latino White families. *Families, Systems & Health: The Journal of Collaborative Family HealthCare*, 32(2), 167-175 169p. doi:10.1037/fsh0000005
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 1-11.
- Fiks, A. G., Mayne, S. L., Karavite, D. J., Suh, A., O'Hara, R., Localio, A. R., . . . Grundmeier, R. W. (2015). Parent-reported outcomes of a shared decision-making portal in asthma: A practice-based RCT. *Pediatrics*, 135(4), e965-973 961p. doi:10.1542/peds.2014-3167
- Gabe, J., Bury, M., & Ramsay, R. (2002). Living with asthma: The experiences of young people at home and at school. *Social Science & Medicine*, 55(9), 1619-1633.
- Garnett, V., Smith, J., & Ormandy, P. (2016). Child-parent shared decision making about asthma management. *Nursing Children & Young People*, 28(4), 16-22.
- Gibson-Young, L., Turner-Henson, A., Gerald, L. B., Vance, D. E., & Lozano, D. (2014). The Relationships among family management behaviors and asthma morbidity in maternal caregivers of children with asthma. *Journal of Family Nursing*, 20(4), 442-461 420p. doi:10.1177/1074840714552845
- Gross, A. (1998). *Laa lapaau: An introductory guide to Hawaiian medicinal plants*. Honolulu, HI: Center on Aging, School of Public Health, University of Hawaii.

- Halterman, J. S., Riekert, K., Bayer, A., Fagnano, M., Tremblay, P., Blaakman, S., & Borrelli, B. (2011). A pilot study to enhance preventive asthma care among urban adolescents with asthma. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 48(5), 523-530. doi:10.3109/02770903.2011.576741
- Handelman, L., Rich, M., Bridgemohan, C. F., & Schneider, L. (2004). Understanding pediatric inner-city asthma: An explanatory model approach. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 41(2), 167-177.
- Handy, E. S. C., Emory, K. P., Bryan, E. H., Buck, P. H., & Wise, J. H. (1965). *Ancient Hawaiian civilization: A series of lectures delivered at the Kamehameha schools*. Tokyo, Japan: Charles E. Tuttle.
- Handy, E. S. C., & Pukui, M. K. (1972). *The polynesian family system in Ka`u, Hawaii*. Tokyo, Japan: Charles E. Tuttle.
- Harden, M. J. (1999). *Voices of wisdom: Hawaiian elders speak*. Honolulu, HI: Aka Press.
- Hawai'i Health Data Warehouse, Hawai'i State Department of Health, & Behavioral Risk Factor Surveillance System. (2012). *Asthma - child prevalence by state, county, child age group, child DOH race-ethnicity, child gender, for the year(s) - 2005, 2006, 2007, 2008, 2009, 2010*. Retrieved from Honolulu, HI:
- Hawai'i Health Data Warehouse, Hawai'i State Department of Health, & Behavioral Risk Factor Surveillance System. (2013a). *Asthma prevalence among children aged 5-12 years, by county and race/ethnicity, for the aggregated years 2005 to 2010*. Retrieved from
- Hawai'i Health Data Warehouse, Hawai'i State Department of Health, & Behavioral Risk Factor Surveillance System. (2013b). *Asthma prevalence among children aged 13-17 years, by*

- county and race/ethnicity, for the aggregated years 2005 to 2010. Retrieved from Honolulu, HI:
- Hawai'i Health Data Warehouse, Hawai'i State Department of Health, & System, B. R. F. S. (2013). *Asthma Prevalence Among Children Aged 0-4 Years, by County and Race/Ethnicity, for the Aggregated Years 2005 to 2010*. Retrieved from Honolulu, HI:
- Hawai'i State Department of Health. (2013). State of Hawai'i department of health asthma - chronic disease prevention and health program. Retrieved from <http://health.hawaii.gov/asthma/home/environmental-triggers/>
- Hawai'i State Department of Health, & Hawai'i Asthma Initiative. (2012). *Hawai'i asthma plan: 2011- 2016*. Retrieved from Honolulu:
- Hawaiian Volcano Observatory. (2012). Frequently asked questions about air quality in Hawaii. Retrieved from http://hvo.wr.usgs.gov/hazards/FAQ_SO2-Vog-Ash/P1.html#vog
- Healthy Christchurch Champions. (2016). Key issue papers and Te Pae Mahutonga. Retrieved from <http://www.healthychristchurch.org.nz/city-health-profile>
- Helman, C. G. (2000). *Culture, health, and illness* (4th ed.). Oxford, England: Butterworth-Heinemann.
- Hilgenkamp, K., & Pescaia, C. (2003). Traditional healing and western influence. *Californian Journal of Health Promotion*, 1, 34-39.
- Hope, B. E., Massey, D. G., & Fournier-Massey, G. (1993). Hawaiian materia medica for asthma. *Hawaii Medical Journal*, 52(6), 160-166.
- Horky, S. C., Kleinman, S. H., & Firth, D. G. (2007). A comparison of parent and provider beliefs about asthma in children. *Pediatric Asthma, Allergy & Immunology*, 20(1), 36-47.

- Horner, S. D., & Brown, A. (2015). An exploration of parent-child dyadic asthma management influences on quality of life. *Issues in Comprehensive Pediatric Nursing*, 38(2), 85-104 120p. doi:10.3109/01460862.2015.1017668
- Hui Maoli Ola. (2016). Hui Maoli Ola: Mission/Purpose. Retrieved from <http://www.huimaoliola.org/missionpurpose/>
- Jackson, L. E. (1993). Understanding, eliciting and negotiating clients' multicultural health beliefs. *Nurse Practitioner*, 18(4), 30.
- Kahn-John, M. (2010). Concept analysis of Diné Hózhó: A Diné wellness philosophy. *Advances in Nursing Science*, 33(2), 113-125 113p. doi:10.1097/ANS.0b013e3181dbc658
- Kaholokula, J. K. a. (2015). *Ka Pouhana: Indigenous leadership and health promotion*. Presentation. Department of Native Hawaiian Health. John A. Burns School of Medicine. Healing Our Spirit Worldwide.
- Kamakau, S. M. (1991a). *Ka poe kahiko: The people of old*. Honolulu, HI: Bishop Museum.
- Kamakau, S. M. (1991b). *Tales and traditions of the people of old: Na mo`olelo a ka po`e kahiko*. Honolulu, HI: Bishop Museum.
- Kame'eleihiwa, L. (1986). *Land and the promise of capitalism: A dilmema for the Hawiian chiefs of the 1848 Mahele*. (Doctor of Philosophy PhD), University of Hawaii
- Kane, H. K. (1997). *Ancient Hawai'i*. Honolulu, HI: Author.
- Kauanui, J. K. (2008). *Hawaiian blood: Colonialism and the politics of sovereignty and indentity*. Durham, NC: Duke University Press.
- Kealoha, M. K. (2012). *Malama na makua i na keiki me ka hano: Native Hawaiian parents caring for their children with asthma*. (Doctor of Philosophy (Doctoral Dissertation)).

- Retrieved from ProQuest Dissertations and Thesis database), University of Hawaii, Honolulu, HI. (UMI No. 3534567)
- Kieckhefer, G. M., & Ratcliffe, M. (2000). What parents of children with asthma tell us. *Journal of Pediatric Healthcare*, 14(3), 122-126.
- Kinney, G. L. (1996). Native Hawaiian health. *Reflections*, 22(4), 21.
- Kleinman, A. (1980). *Patients and healers in the context of culture: An exploration of the borderland between anthropology, medicine, and psychiatry*. Berkeley, CA: University of California.
- Kleinman, A., Eisenberg, L., & Good, B. (1978). Culture, illness, and care. *Annals of Internal Medicine*, 88(2), 251.
- Koinis-Mitchell, D., McQuaid, E. L., Friedman, D., Colon, A., Soto, J., Rivera, D. V., . . . Canino, G. (2008). Latino caregivers' Beliefs about asthma: Causes, symptoms, and practices. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 45(3), 205-210. doi:10.1080/02770900801890422
- Kokiri Hauora. (2016). Te Wheke - Māori health models. Retrieved from <http://www.r2r.org.nz/maori-health/te-wheke.html>
- Krupitsky, D., Reyes-Salvail, F., Kromer, K., & Pobutsky, A. (2009). *State of asthma - Hawai'i 2009*. Retrieved from Honolulu:
- Laster, N., Holsey, C. N., Shendell, D. G., McCarty, F. A., & Celano, M. (2009). Barriers to asthma management among urban families: Caregiver and child perspectives. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 46(7), 731-739. doi:10.1080/02770900903082571

- Latycheva, O., Chera, R., Hampson, C., Masuda, J. R., Stewart, M., Elliott, S. J., & Fenton, N. E. (2013). Engaging First Nation and Inuit communities in asthma management and control: Assessing cultural appropriateness of educational resources. *Rural & Remote Health*, 13(1), 1-11
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.
- Lipson, J. G., & Dibble, S. L. (2005a). Providing culturally appropriate health care. In J. G. Lipson & S. L. Dibble (Eds.), *Culture and clinical care*. San Francisco, CA: UCSF Nursing Press.
- Lipson, J. G., & Dibble, S. L. (Eds.). (2005b). *Culture and clinical care*. San Francisco, CA: University of California San Francisco Nursing Press.
- Longo, B. M., Yang, W., Green, J. B., Crosby, F. L., & Crosby, V. L. (2010). Acute health effects associated with exposure to volcanic air pollution (vog) from increased activity at Kilauea volcano in 2008. *Journal of Toxicology and Environmental Health, Part A: Current Issues*, 73(20), 1370-1381. doi:10.1080/15287394.2010.497440
- Look, M. A., Mackura, G., & Spoehr, H. (1998). Native Hawaiian health and wellness summit: Ka 'Uhane Lōkahi. *Pacific Health Dialog*, 5(2), 271-272.
- Love, C. (2004). Extensions on Te Wheke. *The Open Polytechnic of New Zealand, Working Paper*.
- Magilvy, J. K., & Thomas, E. (2009). A first qualitative project: qualitative descriptive design for novice researchers. *14*(4), 298-300. doi:10.1111/j.744-6155.2009.00212.x
- Malo, D. (1951). *Hawaiian antiquities*. Honolulu, HI: Bishop Museum.

Manatū Hauora Ministry of Health. (2015a). Māori health models - Te Pae Mahutonga.

Retrieved from <http://www.health.govt.nz/our-work/populations/maori-health/maori-health-models/maori-health-models-te-pae-mahutonga>

Manatū Hauora Ministry of Health. (2015b). Māori health models - Te Whare Tapa Whā.

Retrieved from <http://www.health.govt.nz/our-work/populations/maori-health/maori-health-models/maori-health-models-te-whare-tapa-wha>

Manatū Hauora Ministry of Health. (2015c). Māori Health Models - Te Wheke. Retrieved from

www.health.govt.nz/our-work/populations/maori-health-models/maori-health-models-te-wheke

Margellos-Anast, H., Gutierrez, M. A., & Whitman, S. (2012). Improving asthma management among African-American children via a community health worker model: Findings from a Chicago-based pilot intervention. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 49(4), 380-389. doi:10.3109/02770903.2012.660295

Mark, G. T., & Lyona, A. (2010). Māori healers' views on wellbeing: The importance of mind, body spirit, family, and land. *Social Science and Medicine*, 70, 1756 - 1764.

Martin, M., Beebe, J., Lopez, L., & Faux, S. (2010). A qualitative exploration of asthma self-management beliefs and practices in Puerto Rican families. *Journal of Health Care for the Poor & Underserved*, 21(2), 464-474.

Mazur, L. J., DeYbarrondo, L., Miller, J., & Colasurdo, G. (2001). Use of alternative and complementary therapies for pediatric asthma. *Texas Medicine*, 97(9), 64-68.

Mehrotra, N., Ramagopal, M., & Dodani, S. (2014). Cultural factors impacting asthma management in Asian Indian children. *Indian Journal of Allergy, Asthma, and Immunology*, 28(2), 63-67.

- Melton, C., Graff, C., Holmes, G. N., Brown, L., & Bailey, J. (2014). Health literacy and asthma management among African-American adults: an interpretative phenomenological analysis. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 51(7), 703-713. doi:10.3109/02770903.2014.906605
- Michaud, J.-P., Grove, J. S., & Krupitsky, D. (2004). Emergency department visits and “vog”-related air quality in Hilo, Hawai’i. *Environmental Research*, 95(1), 11. doi:10.1016/S0013-9351(03)00122-1
- Miller, P. J., & Goodnow, J. J. (1995). Cultural practices: Toward an integration of culture and development. *New Directions for Child Development*, 67, 5-16.
- Mokuau, N. (2011). Culturally based solutions to preserve the health of Native Hawaiians. *Journal of Ethnic and Cultural Diversity in Social Work*, 20, 98 - 113. doi:10.1080/15313204.2011.570119
- Murdock, K. K., Adams, S. K., Pears, E., & Ellis, B. (2012). Caregiving load and pediatric asthma morbidity: Conflict matters. *Families, Systems & Health: The Journal of Collaborative Family HealthCare*, 30(2), 101-113. doi:10.1037/a0028604
- National Asthma Education and Prevention Program. (2007). *Expert panel report 3: Guidelines for the diagnosis and management of asthma*. Retrieved from Bethesda, MD:
- National Environmental and Education Foundation. (2016). Integrating Environmental Management of Asthma into Pediatric Health Care. Retrieved from <https://www.neefusa.org/health/asthma>
- National Heart Lung and Blood Institute. (2011). National asthma control initiative. Retrieved from <https://www.nhlbi.nih.gov/health-pro/resources/lung/naci/>

- National Heart Lung Blood Institute. (2007). *Asthma action plan*. Bethesda, MD: National Institutes of Health Retrieved from http://www.nhlbi.nih.gov/health/public/lung/asthma/asthma_actplan.pdf.
- Neergard, M. A., Olesen, F., Andersen, R. S., & Sondergaard, J. (2009). Qualitative description - the poor cousin of health research? *BMC Medical Research Methodology*, 9(52). doi:10.1186/1471-2288-9-52
- Office of Hawaiian Affairs. (2006). *Native Hawaiian databook*. Honolulu, HI: Office of Hawaiian Affairs.
- Office of Minority Health, & U.S. Department of Health and Human Services. (2013). *National standards for culturally and linguistically appropriate services in health and health care: A blueprint for advancing and sustaining CLAS policy and practice*. Retrieved from
- Oneha, M. F. M. (2001). Ka mauli o ka `oia a he mauli kanaka: An ethnographic study from an Hawaiian sense of place. *Pacific Health Dialog*, 8(2), 299-311.
- Pere, R. R. (1991). *Te wheke: A celebration of infinite wisdom*. Gisborne, New Zealand: Ao Ako Global Learning.
- Peterson-Sweeney, K., Halterman, J. S., Conn, K., & Yoos, H. L. (2010). The effect of family routines on care for inner city children with asthma. *Journal of Pediatric Nursing*, 25(5), 344-351. doi:DOI: 10.1016/j.pedn.2009.02.017
- Peterson-Sweeney, K., McMullen, A., Yoos, H. L., & Kitzman, H. (2003). Parental perceptions of their child's asthma: Management and medication use. *Journal of Pediatric Health Care*, 17, 118-125. doi:10.1067/mp.2003.31
- Pollock, K. (2014, 23 December 2014). Public health - Social and ethnic inequalities. Retrieved from <http://www.teara.govt.nz/en/diagram/31387/maori-health-te-whare-tapa-wha-model>

- Pope, C., Ziebland, S., & Mays, N. (2000). Qualitative research in health care: Analysing qualitative data... second in a series of three articles. *BMJ: British Medical Journal*, 320(7227), 114-116.
- Poureslami, I., Rootman, I., Doyle-Waters, M. M., Nimmon, L., & Fitzgerald, J. M. (2011). Health literacy, language, and ethnicity-related factors in newcomer asthma patients to Canada: a qualitative study. *Journal Of Immigrant And Minority Health / Center For Minority Public Health*, 13(2), 315-322. doi:10.1007/s10903-010-9405-x
- Pukui, M. K., & Elbert, S. H. (Eds.). (1986) Hawaiian Dictionary. Honolulu, HI: University of Hawaii.
- Pukui, M. K., Haertig, E. W., & Lee, C. A. (1972). *Nana i ke kumu (Look to the Source)* (Vol. 1). Honolulu, HI: Hui Hanai.
- Quaranta, J. E., & Spencer, G. A. (2015). Using the health belief model to understand school nurse asthma management. *Journal of School Nursing*, 31(6), 430-440.
- Rezentes III, W. C. (1993). Na mea Hawaii: A Hawaiian acculturation scale. *Psychological Reports*, 73.
- Rezentes III, W. C. (1996). *Ka lama kukui Hawaiian psychology: An introduction*. Honolulu, HI: `A`ali`i Books.
- Roy, A., Downes, M. J., & Wisnivesky, J. P. (2011). Comprehensive environmental management of asthma and pediatric preventive care. *Pediatric Asthma, Allergy & Immunology*, 22, 277-282.
- Roy, A., & Wisnivesky, J. P. (2010). Racial and ethnic differences in the use of environmental control practices among children with asthma. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 47(5), 507-512.

- Rybak, C., & Decker-Fitts, A. (2009). Understanding Native American healing practices. *Counselling Psychology Quarterly*, 22(3), 333-342 310p.
doi:10.1080/09515070903270900
- Sato, A. F., Kopel, S. J., McQuaid, E. L., Seifer, R., Esteban, C., Coutinho, M. T., . . . Koinis-Mitchell, D. (2013). The home environment and family asthma management among ethnically diverse urban youth with asthma. *Families, Systems & Health: The Journal of Collaborative Family HealthCare*, 31(2), 156-170 115p. doi:10.1037/a0032462
- Shani, Z., Scott, R. G., Schofield, L. S., Johnson, J. H., Williams, E. R., Hampton, J., & Ramprasad, V. (2015). Effect of a home intervention program on pediatric asthma in an environmental justice community. *Health Promotion Practice*, 16(2), 291-298.
doi:10.1177/1524839914529593
- Sidora-Arcoleo, K., Yoos, H. L., Kitzman, H., McMullin, A., & Anson, E. (2008). Don't ask, don't tell: Parental nondisclosure of complementary and alternative medicine and over-the-counter medication use in children's asthma management. *Journal of Pediatric Health Care*, 22, 221-229.
- Sleath, B. L., Carpenter, D. M., Sayner, R., Ayala, G. X., Williams, D., Davis, S., . . . Yeatts, K. (2011). Child and caregiver involvement and shared decision-making during asthma pediatric visits. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 48(10), 1022-1031. doi:10.3109/02770903.2011.626482
- Smeeton, N. C., Rona, R. J., Gregory, J., White, P., & Morgan, M. (2007). Parental attitudes towards the management of asthma in ethnic minorities. *Archives of Disease in Childhood*, 92(12), 1082-1087.

- Sullivan-Bolyal, S., Bova, C., & Harper, D. (2005). Developing and refining interventions in persons with health disparities: The use of qualitative description. *Nursing Outlook*, 53, 127-133. doi:10.1016/j.outlook.2005.03.005
- Tengan, T. P. K. (2008). *Native men remade: Gender and nation in contemporary Hawai'i*. London, UK: Duke University Press.
- Twycross, A., & Shields, L. (2008). Research update. Content analysis. *Paediatric Nursing*, 20(6), 38-38.
- U.S. Census Bureau. (2013). About race. *Race*. Retrieved from <http://www.census.gov/population/race/about>
- U.S. Department of Health and Human Services, National Institutes of Health, & National Heart Lung and Blood Institute. (2008). *Guidelines implementation panel report for: Expert panel report 3 - Guidelines for the diagnosis and management of asthma partners putting guidelines into action*. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK7232/>
- United States Environmental Protection Agency. (2004). *Asthma home environment checklist*. Washington DC.
- Van Sickle, D., Morgan, F., & Wright, A. L. (2003). Qualitative study of the use of traditional healing by asthmatic Navajo families. *American Indian And Alaska Native Mental Health Research*, 11(1), 1-18.
- Van Sickle, D., & Wright, A. L. (2001). Navajo perceptions of asthma and asthma medications: clinical implications. *Pediatrics*, 108(1), E11-E18.
- Walker, T. J., & Reznik, M. (2014). In-school asthma management and physical activity: children's perspectives. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 51(8), 808-813. doi:10.3109/02770903.2014.920875

- Wamboldt, F. S., Bender, B. G., & Rankin, A. E. (2011). Adolescent decision-making about use of inhaled asthma controller medication: Results from focus groups with participants from a prior longitudinal study. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 48(7), 741-750. doi:10.3109/02770903.2011.598204
- Weaver, H. N. (2002). Perspectives on wellness: Journeys on the red road. *Journal of Sociology & Social Welfare*, 29(1), 5.
- Wind, S., Van Sickle, D., & Wright, A. L. (2004). Health, place and childhood asthma in southwest Alaska. *Social Science & Medicine*, 58(1), 75-88.
- Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no.2, p. 100) and entered into force on 7 April 1948, (1948).
- World Health Organization. (2007). Health of indigenous peoples. Retrieved from <http://www.who.int/mediacentre/factsheets/fs326/en/>
- Wu, B. Y., Liu, C. T., Lin, Y. W., Hu, W. L., Sun, M. F., Tsai, M. Y., & Hung, Y. C. (2014). The management of childhood asthma using combined traditional Chinese medicine treatments. *Journal of the Australian Traditional-Medicine Society*, 20(4), 260-266
- Yinusa-Nyahkoon, L., Cohn, E. S., Tickle-Degnen, L., Cortes, D. E., Lieu, T. A., & Bokhour, B. G. (2007). Examining routines to understand the ecological context: Managing childhood asthma. *OTJR: Occupation, Participation & Health*, 27, 97S-99.
- Zayas, L. E., Wisniewski, A. M., Cadzow, R. B., & Tumiel-Berhalter, L. M. (2011). Knowledge and use of ethnomedical treatments for asthma among Puerto Ricans in an urban community. *Annals of Family Medicine*, 9(1), 50-56.