

Native Hawaiian Health in Hawaii: Historical Highlights

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Abstract

The Hawaiians still have evidence of remarkable spiritual, mental, and physical illness since western contact over two centuries ago. Their pure blooded population has decreased by more than 98% but the mixed Hawaiians are approximately near pre-contact pure blooded levels, at 400,000. 60,000 (15%) people with Hawaiian ancestry now live in California. This paper attempts to provide a detailed but concise historical summary of health in Hawaii and of Native Hawaiians. Also, an attempt is made to educate health providers, and to help them take better care of their Native Hawaiian and traditional patients.

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Keywords: Hawaiian, Hawaii, Health, History

Introduction

Native Hawaiian health is a very fascinating and critical topic. Since pre-1778 western contact, Native Hawaiians have changed from a population of about 400,000 (literature ranges from 100,000 to one million) to a current population of around 7,000, signifying more than a 98% decline (Schmitt, 1977; Stannard, 1988). In contrast, Part-Hawaiian or mixed blooded Hawaiian populations increased from zero to 401,162 (with only 1.7% pure blooded) in the United States (US Census, 2000). Currently, 15% of people with Hawaiian ancestry live in California totaling 60, 048. Many Hawaiians have moved from Hawaii to California. And rightly so, where else can you get a beautiful ocean and mountains right next to each other with a very gracious climate reminding one of home? This author has also recently relocated to Santa Barbara, California.

It is well established that those of Hawaiian ancestry still have alarming physical morbidity and mortality, mental health, socioeconomic status, education level, welfare use, incarceration representation, drug abuse, high risk behavior, obesity, etc., in Hawaii. (Blaisdell, 1989, 1990, 1996; Hawaii State Department of Health, 1997, 2001). In response

to this overwhelming situation, many organizations have been organized and fundings obtained to address the challenged health status of Native Hawaiians and to change it for the better.

Western contact literally resulted in the virtual obliteration of the Hawaiian cosmology, customs, beliefs, land occupation, spirituality, medicine, population, values, social infrastructure, language, and lifestyle (Bushnell, 1993; Halford, 1954; Mills, 1981). No blaming is in order however, since a true kanaka makua or mature Hawaiian would accept responsibility for their own existence, forgive, and remain respectful to themselves, others, and the environment (Bray, Low, 1990; Ka'anoi, 1992; Pukui, Haertig, & Lee, 1979). Still, certain facts remain. Now the challenge remains whether Hawaiians will reverse these trends and take personal, positive and active steps. We are a people in need of help and support during this critical time of transition. This journal's special Hawaii issue is a step in the right direction.

This paper attempts to present a basic historical overview of Native Hawaiian and Hawaii's health in order to help the reader gain an appreciation and understanding of the past and

present. This is an effort to educate health care providers outside and inside Hawaii to better address and help these sacred and precious people called the Hawaiians. The timeline was constructed from the remaining references cited below.

A Timeline Of Historical Highlights In Hawaii's Health

Pre-Western Contact

100AD: About 2000 years ago, the first settlers traveled more than 2,000 miles from Kahiki/Marquesas Islands to Hawaii. See 1976 notation (Blaisdell, 1989, 1990, 1996; Bushnell, 1993).

<1778: *Papa* (earth mother) and *Wakea* (sky father) produce the cosmos and *Haloa* who is the first kanaka and ancestor of all kanaka maoli or Native Hawaiians (Beckwith, 1970; Malo, 1951).

Diseases are more related to trauma and degenerative diseases. One out of about 1,100 fossil skeletons showed evidence of cancer metastases to bone. Low incidence of dental caries was also noted (Chappell, 1927; Snow, 1974).

Due to lack of documentation, pre-contact 1778 Kahuna ways are not entirely known. Population pre-contact estimates have ranged from 100,000 to 1 million, with academic consensus at about 400,000 pure blooded Native Hawaiians (Schmitt, 1977; Stannard, 1988).

Post-Western Contact

Ancient Hawaiians live in harmony and balance with spirits, nature, and each other. They pass knowledge on by oral tradition, and have rules in the form of *kapus* (that promote cleanliness and order), resolve psychological and interpersonal conflicts with *ho'oponopono* (a type of family group therapy), eat natural healthy foods (78% complex carbohydrates, 12% protein, and 10% fat, high fiber) and are physically active (Shintani, Hughes, 1993; Shook, 1985). Hawaiians live in communal segments, called *ahupua'a*, from the mountains to the sea, and inhabitants share goods and services (not barter system). The chief or *ali'i* helps to supervise

and organize their *ahupua'a* or land area. Health was defined as possession of a powerful sacred living force called *mana* which must be kept in *pono* or harmony and *lokahi* or unity with the universe. Native Hawaiian health always involved *mana*, *pono*, and *lokahi*. Illness could also be associated with negative thoughts or words from another or oneself, and kahunas used this to their advantage to facilitate healing. There are a few anecdotal stories of Hawaiians dying once they truly believe a Kahuna 'ana'ana is intending to kill them. Likewise, positive words and thoughts can heal. The natives greet by *honi* (a "kiss") or sharing of breath via nares. *Ha*, or the breath of life, is shared and sacred (Dudley, 1990; Blaisdell, 1989, 1990, 1996; Handy & Pukui, 1972; Malo, 1951; Kamakau, 1964).

Kahunas have a holistic approach (incorporate body, mind, and spirit), learn and practice at healing temples, called *heiaus*, require years of training, and made house or hale calls. There is one famous story of a Kahuna performing an autopsy to find out why his father died. There are many Kahuna (specialized experts) specialties in medicine, but the other experts included genealogy, chanting, and canoe building. An example of a Kahuna visit includes prayer, help from the gods (Ku, Lono, Kane, Kanaloa, Hina, Ma'iola, etc.), dream work, a specific diet, and "family counseling" called *ho'oponopono*. A history and physical could be done. This may be followed by collection and distribution of an herbal preparation and or *lomilomi* massage. The whole process from beginning to end involved spirituality and prayer.

Kahunas reserved the right to refuse certain cases. Many traditional healers learned to send "western diseases" to western physicians. Kahunas passed their knowledge down mainly by oral tradition which was considered a secret and sacred. A kahuna's *mana* (powerful and sacred life force) could be passed to their apprentice via *ha* (the breath of life) over the crown of the head or by spitting into their mouth. There is some modern research investigating the efficacy of Hawaiian healing and herbs (Bushnell, 1993; Chun, 1986;

Emerson, 1997; Pukui, Haertig, & Lee, 1979; Tabrah & Eveleth, 1966; Whistler, 1992).

1778: Captain James Cook discovers the Hawaiian islands and some say he was thought to be a God named Lono by natives. Cook failed in his honest attempt to prevent the transmission of sexually transmitted diseases such as syphilis and gonorrhea. A history and physical is not enough to triage these diseases. Morbidity, mortality, and infertility ensue (Bushnell, 1993). Captain Cook was killed by Native Hawaiians in 1779.

1800's: Subsequent visitors from ships and immigrants throughout the 1800's introduce tuberculosis, Hansen's disease- in 1840 first Native Hawaiian with leprosy is detected by Dr. Dwight Baldwin in Maui (Blaisdell, 1989, Ka 'Uhane Lokahi, 1998), measles, influenza, cholera, gastroenteritis, mumps, scarlet fever, dengue, bubonic plague, scabies, sylvatic plague, etc., that literally killed thousands over the next century (Bushnell, 1993; Blaisdell, 1989, 1990, 1996). Many of the infectious diseases introduced to Hawaii came from Asian immigrants, mostly from China. As a result of labor shortages in the fields, and Hawaiians in 1834 refusing to work for low wages, the agricultural corporations began importing cheap labor from Asia under contracts. The native custom of *honi* ("kiss") or sharing the *ha* or breath of life via touching nares may have facilitated upper respiratory transmission of microbes.

1804: Probable cholera or typhoid epidemic kills an estimated 15,000.

1819: King Kamehameha I, who united the Hawaiian Islands aided by western weapons, dies of a stroke at around 69 years of age. His death results in the eventual dissolution of the *kapu* system and social and religious infrastructure. It was never reinstated by successor King Kamehameha II, who was thought to be influenced by Chiefess Ka'ahumanu and western ideas. In essence, the Hawaiians no longer had their traditional rules, order, and spirituality. They were exposed.

1820: Missionaries arrive from New England with first physician Dr. Thomas Holman during an opportunistic and vulnerable time in Hawaii's history. Dr. Holman becomes a physician to royalty (Halford, 1954). They introduce Christianity and a written language, but many westerners condemn traditional native Hawaiian cosmology, beliefs, customs, values, and spirituality. In all fairness, many Hawaiians (royalty and commoners) "buy into newer and better ways".

1822: The first water filtration plant on Oahu is established.

1824: King Kamehameha III (27 years old), and Queen both die of "measles".

1827: Mosquitos arrive in Hawaii.

1828: Dr. J. P. Judd, a missionary physician, arrives and starts Hawaii's first medical school in 1870 to train natives, and to publish an anatomy textbook in Hawaiian language (Judd, 2003). Ten Hawaiian students graduate and are licensed in 1872. The medical school dissolves shortly after death of Dr. Judd (Bushnell, 1967). Dr. Judd was also active with vaccination campaigns.

1836: Screening of all visiting vessels for small pox ordered by Kuhina Nui Kina'u.

1839: Kamehameha III signs quarantine law, and first Vital Statistics Act initiated.

1845-49: California gold miners bring over influenza.

1848: The *Great Mahele* results in only 0.8% of lands going to 30% of Hawaiians. Hawaiians did not have a concept of land ownership in their culture. The Gods owned everything, and their role was a *kuleana* or right to cultivate and live on the land and share resources.

1846-47: Native Hawaiians leave Hawaii for San Francisco to join California gold rush.

1850: First cases of the cholera epidemic diagnosed in San Francisco were *Kanakas*.

1851: Kamehameha III starts First Board of Health.

1853-54: Small pox from California kills around 7,000 lives. Small pox vaccine was instituted. Kamehameha III dies at 42 years old from seizures and delirium. Hawaiian population now at 70,000.

1859: Kamehameha IV and Queen Emma start Queen's Hospital on Oahu to provide free care to sick Hawaiians. A medical license is now required to practice medicine.

1862: Sanitary Commission created to address sanitation and depopulation.

1863: King Kamehameha IV dies at 29 years old from asthma. Some of the 58 traditional herbs used for asthma are found to have antiinflammatory and antispasmodic activities (Hope & Massey, 1993; Massey, Chien, & Fournier-Massey, 1994).

1865: Hansen's disease or leprosy isolation law completed and established in Kalaupapa/Kalawao. Hawaiian Government issues license for Kahuna healers and lomilomi.

1866: Over next 18 years, 3,000 Hansen's disease or leprosy patients are isolated in Kalawao, Moloka'i. Father Damien dies in 1889 of same disease while helping isolated natives (Judd, 1984). Hawaiian population is now at 57,125. Oahu Insane Asylum is built (Cody, 1974).

1884: Twenty nine physicians listed with census (36/100,000 population), 0% are of native Hawaiian ancestry (Schmitt, 1975).

1872: King Kamehameha V dies in grief, just after his son dies, at 42 years old, of "abscess, dropsy, and asphyxia."

1887: All-white Hawaiian League forces "Bayonet Constitution" in Hawaii, stripping King Kalakaua of his sovereignty, and Native Hawaiians of their land rights.

1890: Peak of Hansen's disease (leprosy) in

Kalaupapa (1,159 people affected). Many immigrants from Japan, Philippines, Korea, Portugal, and elsewhere arrive to work in plantations increasing total population over next three decades.

1893: United States armed invasion of Hawaii.

1896: Pure Hawaiian population estimated at 31,019, a decrease of 92 percent since 1778. Bureau of Vital Statistics started.

1898: Food Commissioner Department initiated. Illegal United States annexation of Hawaii.

1899: First sewers in Hawaii. First bubonic plague case reported in Territory of Hawaii (Hawaii Department of Health, 2001). "The Great Fire" in Downtown Honolulu to fight "bubonic" plague in Hawaiian/Asian living quarters. Native Hawaiians displaced from their apartments (Mills, 1881, Ka 'Uhane Lokahi, 1998).

1900: About half or more of Hawaiian population provided petition signatures in opposition of annexation with United States. Hawaii becomes the Territory of Hawaii under the U.S. Organic Act.

1901: Le'ahi Hospital mainly started for tuberculosis.

1903: Dengue epidemic, 30,000 cases.

1905: Kahunas or native healers are outlawed by Revised Laws of Hawaii, Chapter 89, Section 1077, with punishment being fines or imprisonment.

1906: First public health nurse employed at Palama Settlement.

1910: Bureau of Tuberculosis started.

1911: Yellow fever arrives from Mexico (1 case), and was contained with fumigation and sanitation efforts.

1917: Queen Lili'uokulani dies of stroke at age 79.

1919: Hawaii Medicine Board to license Kahuna healers.

1920: Pure Native Hawaiian population down to 23,723, with Part-Hawaiian population up to 18,027.

1921: Fishing rights in Kalapana area for Hawaiians provided by federal law. Hawaiian Homes Commission Act passed to protect Native Hawaiian land after a petition was filed by residents of Papakolea after years of the agricultural corporations and US federal government taking their land.

1926: Bureau of Maternal and Infant Hygiene started.

1930: Bureau of Public Health Nursing established. Mental Hospital moved to Kaneohe, Oahu.

1931: Midwives regulated and number about 150.

1936: Law passed requiring diphtheria vaccine for children entering school.

1938: Psychiatric unit available at Queens Hospital.

1939: Bureau of Mental Hygiene and Office of Health Education established.

1942: Psychiatric residency started at Queens Hospital.

1945: All applicants for marriage required by law to check for syphilis.

1946: Sulfones are first effective treatment for Hansen's disease (Hawaii Department of Health, 2001). First treatment option to relieve symptoms with Hydnocarpus tree extracts were available in the 1920s as a result of Alice Ball's work at the University of Hawaii. She was the first woman to graduate from UH with a master's degree. She was a black woman from Seattle.

1951: Dental health program became a law.

First year no deaths reported from tuberculosis.

1959: Hawaii becomes the 50th state of the United States.

1960: Pure blooded Native Hawaiian population down to 11,294, and Part-Hawaiians 91,109.

1965: Hawaii Medical Board collapses and native Kahuna healers are without license. Lomilomi now under massage license.

1970: Many organizations started and federal funding obtained to identify problems and improve health of Hawaiians. Federal Census no longer counting pure Hawaiians only mixed. Hawaiian cultural pride becomes popular. Alu Like, a non-profit organization, established to help Hawaiians in 1970's. 961 physicians registered in census (134/100,000 population, close to continent rate).

1973: Kahunas legalized to practice per State of Hawaii Penal Code, Title 37, Chapter 773. State Office of Family Planning Services established.

1974: Native Hawaiian Health Improvement Act passed.

1976+: Canoe voyages of Hokule'a confirm ancestors ability to travel across the Pacific using only signs of nature as "compass".

1977: Safe Drinking Water Program started.

1978: Office of Hawaiian Affairs begins.

1983: First case of AIDS reported in Hawaii.

1984: Pure Native Hawaiian population estimated at 8,244, and Part-Hawaiians about 200,000.

1985: E Ola Mau: Native Hawaiian Health Needs Study done.

1987: Hawaiian language immersion schools started to promote culture.

1988: Native Hawaiian Health Care Act. Papa Ola Lokahi founded.

1989: Hawaii Primary Care Association established.

1990: Federal Census not requiring biologic Hawaiian ancestry as criteria to be documented as "Hawaiian." State Health Surveillance Program uses parental ancestry to determine a person's ethnicity.

1991: Native Hawaiian Health Profession Scholarship (federally funded) helps recruit and support Native Hawaiian training in medicine, nursing, psychology, social work, and dentistry. This was possible via Senator Daniel Inouye. Native Hawaiian Center of Excellence started at John Burns School of Medicine in Honolulu, Hawaii. Unique programs called Imi Ho'ola (seekers to heal) and Kulia (to strive) exist, facilitating admission of more native Hawaiian students into medical school.

1993: President Clinton signs law apologizing for United States role in overthrow of Hawaii's monarchy.

1997: Department of Health reports five new AIDS cases, nine gonorrhea, five Hansen's disease, and nine tuberculosis. 1,351 students now enrolled in Hawaiian language immersion schools.

1998: Native Hawaiian Health and Wellness Summit and Island 'Aha. Honolulu, Hawaii. It emphasizes role of *Kahuna Lapa'aus*, *kupuna* (elders), *ohana* (family) and spirituality with healing for Hawaiians. Future health and wellness discussions committed to include Hawaiians living outside the state of Hawaii. Pacific health medical journal called Pacific Health Dialog has exclusive issues on native Hawaiian health in 1998 and 2001 publications.

2000: Pure Native Hawaiian population estimated at 7,000? (decreased >98% since 1778) and Part-Hawaiians in Hawaii about 250,000. 5.5% of Hawaii's physicians in Hawaii are Native Hawaiian but Hawaiians comprise 20% of population. 15% of Part-Hawaiians in total United States live in California (60,048) (US Census, 2000).

2001: Newest dengue epidemic first reported in Hana, Maui.

2002: Pacific Region Indigenous Doctors International Medical Conference held in Honolulu, Hawaii. Presentations from Native Hawaiian physicians confirm continued higher morbidity and mortality of Hawaiians in regard to cancers, cardiovascular disease, mental health, asthma, etc.

The timeline continues....

Discussion

The journey is not finished. Like the Hokule'a voyages, traditional ways are achievable and possibly hold the secret for progressive improvement in the health of Native Hawaiians. In the way that the Hokule'a voyage showed how Hawaiians and others can learn, work together and confidently accomplishing their goals by utilizing traditional ways, Hawaiians need support and need to work together to reach their destination of wellness. What I learned myself while writing this article is that I could not keep a very narrow scope in timeline summary of events due to obvious impact other issues have on Hawaiians psychological and therefore physical health. Imagine if a country came to the United States and told you that your language, beliefs, lifestyle, values, spirituality, was wrong and you were forced to change. Imagine your land being taken away and suddenly living in a society that spoke a different language. It would be devastating, spiritually, mentally and physically. Therefore, healing the native Hawaiians will obviously involve incorporating their spirituality, cosmology, Kahunaism, ho'oponopono ("to make things right", type of family therapy that promotes forgiveness and closure of conflicts), giving back the *kuleana* (right to cultivate and live) of the land or *'aina*, sovereignty, and ancient habits of eating natural foods and being physically active.

Recommendations

The following are recommendations by this author to health care providers to help them take better care of patients with Hawaiian ancestry or who have traditional belief systems:

1. Spend more time with them (longer visits, more frequent visits, follow-up phone calls, make home visits, "talk story" and share appropriate personal things about yourself). Traditional ways require more time to gain confidence and bonding. Kahunas or *Curanderismos* (traditional Mexican healer) might even spend hours or days with patients. You are following their lead.
2. Incorporate the respected family member, who may be an elder, sibling, or even younger family member, to approve of the treatment plan and help.
3. Encourage them to seek out counseling using the ho'oponopono technique. Point out similarities in your technique to ho'oponopono to optimize acceptance.
4. Become informed yourself and encourage Hawaiian patients to explore their Hawaiian cultural needs and beliefs. Of course most younger generation Hawaiians will be more of a hybrid incorporating old and new ways. It is always individualized.
5. Avoid being judgmental or negative about interest or activities with lomilomi ("Hawaiian massage") practitioners or a Kahuna Lapa'au (healer).
6. Be more aware of screening for cardiovascular risk factors, cancers, asthma, drug abuse, underlying mental illness, violence, and "noncompliance."
7. Identify young Native Hawaiians who could be great health care providers and introduce them into the profession by shadowing or preceptoring and introducing them to research.
8. If you get frustrated with a Native Hawaiian patient, look within yourself and consider language or cultural barriers that need to be overcome. Avoid being judgmental, egotistical, ethnocentric, and having "western" expectations. Hang loose and be patient.
9. Don't interpret lack of Native Hawaiian eye contact or different body language to apathy or lack of intelligence. It may be their way of showing you respect.
10. Always remember the impact words or *'olelo* can have on the psychology of a Hawaiian. Never present their health situation as hopeless. They may believe you. Be honest and optimistic. Use familiar terminology. Use cultural topics or objects as analogies to teach.
11. Incorporate spirituality in treatments. For example, suggest a prayer when taking medications. Encourage and explore meditation and relaxation via reiki (healing touch) which utilizes concepts similar to mana. Many hospitals have these volunteer practitioners. Refer patients to them.
12. Learn what "ALOHA" really means, and make it part of your personal daily life and work.

References

- Beckwith, M. (1970). Hawaiian mythology. Honolulu, HI: University of Hawaii Press.
- Blaisdell, R. K. (1989). History of medicine in Hawaii. Honolulu, HI: University of Hawaii Department of Medicine. Personal Communication.
- Blaisdell, R. K. (1989). The health of Native Hawaiians (Vol. 32). Honolulu, HI: University of Hawaii Press.
- Blaisdell, R. K. (1990). Organization of Hawaiian traditional medicine. *Journees De La Recherche. Tahiti.*
- Blaisdell, R. K. (1996). Update on kanaka maoli (indigenous Hawaiian) health. *Asian American and Pacific Islander Journal of Health*, 4, 160-165.
- Braun, K. L., Look, M. A., Yang, H., Onaka, A. T., Horiuchi, B. Y. (1996). Native Hawaiian mortality

- 1980 & 1990. *American Journal Public Health*, 86, 888-889.
- Bray, D. K., Low, D. (1990) *The kahuna religion of Hawaii*. Garberville, CA: Borderland Sciences Research Foundation, Inc.
- Bushnell, O. A. (1967). *Hawaii's first medical school*. Honolulu, HI: *Hawaiian Historical Review*.
- Bushnell, O. A. (1993). *The gifts of civilization. Germs and genocide in Hawaii*. Honolulu, HI: University of Hawaii Press.
- Chappell, H. G. (1927). *Jaws and teeth of ancient Hawaiians*. Bernice P. Bishop Museum, 9, 249.
- Caver, C. V. (1955). *The History of tuberculosis At Kalaupapa settlement*. *Hawaii Medical Journal*, 15(1), 27-29.
- Chun, M. N. (1986). *Hawaiian medicine book. He buke la'au lapa'au*. Honolulu, HI: Bess Press.
- Cody, W. J. (1974). *Psychiatry in Hawaii: A short story*. *Hawaii Medical Journal*, 33(6). 207-210.
- Dudley, M. K. (1990). *A Hawaiian nation. I. Man, gods, and nature*. Honolulu, HI: Na Kane No Ka Malo Press.
- Emerson, N. B. (1997). *Pele and Hiiaka. A myth from Hawaii*. Honolulu, HI: Ai Pohaku Press.
- Hale Kuamo'o. *Na Kula Kaiapuni Hawai'i*. (1996). *Hawaii state department of education*. Hilo, HI: Author.
- Halford, F. J. (1954). *9 doctors and god*. Honolulu, HI: Tongg Publishing Company.
- Handy, E. S., & Pukui, M. K. (1972). *The polynesian system in Ka'u, Hawaii*. Tokyo: Charles E. Tuttle Company.
- Hawaii State Department of Attorney General. (1998). *Crime prevention division. Crime in Hawaii: 1997 A review of uniform crime reports*. Honolulu, HI: Author.
- Hawaii State Department of Health. (2001). *Annual report*. Honolulu, HI: Author.
- Hawaii State Department of Health. (1997). *Epidemiology branch*. Honolulu, HI: Author.
- Hawaii State Department of Human Services. (1999). *Planning office*. Honolulu, HI: Author.
- Hawaii State Department of Public Safety. (1997). *A statistical report on Hawaii's prison population, admissions, and releases, fiscal years 1990-1996*. Honolulu, HI: Author.
- Hope, B. E., & Massey, D. G. (1993). *Hawaiian materia medica for asthma*. *Hawaii Medical Journal*, 25(6), 160-167.
- I'i, J. P. (1959). *Fragments of Hawaiian history*. Honolulu, HI: The Bishop Museum Press.
- Judd, C. S. (1984). *Leprosy in Hawaii, 1889-1976*. *Hawaii Medical Journal*, 43(9), 328-334.
- Judd, G. P. (2003). *Anatomia, 1838. Hawaiian text with English translation by E. T. Mo'okini*. Honolulu, HI: University of Hawaii Press.
- Ka Uhane Lokahi. (1998). *1998 Native Hawaiian health and wellness summit and island 'aha*. Honolulu, HI: Papa Ola Lokahi.
- Ka'anoi, P. (1992). *The need for Hawaii*. Jefferson, MO: Ka'ano'i Productions.
- Kahalewai, N. S. (2000). *Hawaiian lomilomi. Big island massage*. Honolulu, HI: Island Massage Publishing.
- Kamakau, S. M. (1964). *Ka po'e kahiko. The people of old*. Honolulu, HI: Bishop Museum Press.
- Kanahele, G. H. (1986). *Ku kanaka. Stand tall*. Honolulu, HI: A Kolowalu Book, University of Hawaii Press.
- Kimmich, R. A. (1956). *100 years of Hawaiian psychiatry*. *Hawaii Medical Journal*, 15, 345-347.
- Krauss, B. H. (2001). *Plants in Hawaiian medicine*. Honolulu, HI: The Bess Press.
- Lee, R. K. C. (1956). *History of public health in Hawaii*. *Hawaii Medical Journal*, 15, 331-337.
- Malo, D. (1951). *Hawaiian antiquities*. Honolulu, HI: Bishop Museum Press.
- Massey, D. G., Chien, Y. K., Fournier-Massey, G. (1994). *Mamane: Scientific therapy for asthma*. *Hawaii Medical Journal*, 12, 350.
- McBride, L. R. (2000). *The kahuna versatile masters of old Hawaii*. Hilo, HI: Petroglyph Press.
- Mills, G. H. (1981). *Hawaiians and medicine*. *Hawaii Medical Journal*, 40(10), 272-276.
- Office of Hawaiian Affairs. (2002). *Native Hawaiian data book*. Honolulu, HI: Author.
- Office of Hawaiian Affairs. (1986). *Population survey/needs assessment. Final report*. Honolulu, HI: Author.

- Pacific Health Dialog. (1998 & 2001). The health of Hawaiians. New Zealand: Resource Books.
- Pukui, M. K., Haertig, E. W., Lee, C. A. (1979). Nana i ke kumu (vol. I & II). Honolulu, HI: Hui Hanai.
- Schmitt, R. C. (1967). Differential mortality in Honolulu before 1900. *Hawaii Medical Journal*, 26(6), 537-541.
- Schmitt, R. C. (1975). Health personnel in Hawaii, 1820-1974. *Hawaii Medical Journal*, 34(2), 53-55.
- Schmitt, R. C. (1977). Historical statistics of Hawaii. Honolulu, HI: The University Press of Hawaii.
- Shintani, T., & Hughes, C. (1993). The Wai'anae book of Hawaiian health. Honolulu, HI: Wai'anae Coast Comprehensive Health Center.
- Shook, E.V. (1985). Ho'oponopono. An east-west center book. Honolulu, HI: University of Hawaii Press.
- Snow, C. E. (1974). Early Hawaiians: An initial study of skeletal remains from Mokapu, Oahu. Lexington, KY: University of Kentucky.
- Stannard, D. E. (1988). Before the horror: The population of Hawaii on the eve of western contact. Honolulu, HI: University of Hawaii Press.
- Tabrah, F. L., & Eveleth, B. M. (1966). Evaluation of the effectiveness of ancient Hawaiian medicine. *Hawaii Medical Journal*, 25(3), 223-230.
- United States Bureau of the Census. (1993). 1990 census of population social and economic characteristics, Hawaii. 1990 CP-2-13. USA.
- United States Bureau of Census. (1983). 1980 census of population. General social and economic characteristics, Hawaii. PC80-1-C13. USA.
- United States Census Bureau. (2000). Census 2000. Summary file 1.
- Whistler, W. A. (1992). Polynesian herbal medicine. Lawai, HI: National Tropical Botanical Garden.

Acknowledgements

Special thanks to Janette, Sophia, Ka'uloa, Dr. Richard Kekuni Blaisdell, Dr. Douglas Massey, Hawaii Medical Library, John Burns School of Medicine, Mamiya Medical Heritage Center, and staff and patients at Wahiawa Medical Arts Clinic, Wahiawa, Hawaii.

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