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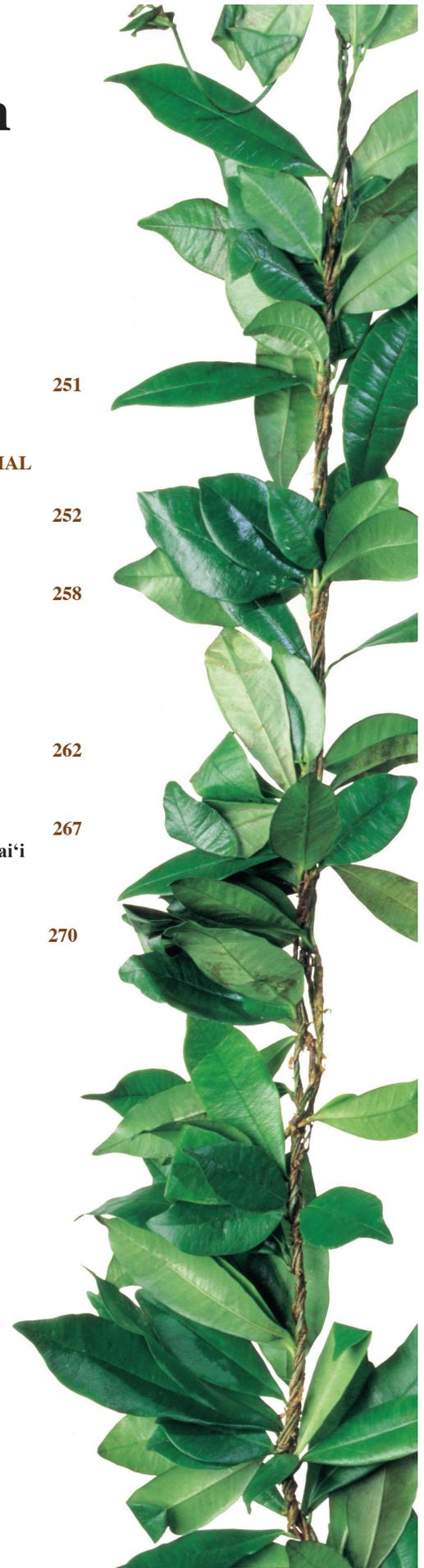
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Aim:

The aim of the Hawai'i Journal of Health & Social Welfare is to advance knowledge about health and social welfare, with a focus on the diverse peoples and unique environments of Hawai'i and the Pacific region.

History:

In 1941, a journal then called The Hawai'i Medical Journal was founded by the Hawai'i Medical Association (HMA). The HMA had been incorporated in 1856 under the Hawaiian monarchy. In 2008, a separate journal called the Hawai'i Journal of Public Health was established by a collaborative effort between the Hawai'i State Department of Health and the University of Hawai'i at Mānoa Office of Public Health Studies. In 2012, these two journals merged to form the Hawai'i Journal of Medicine & Public Health, and this journal continued to be supported by the Hawai'i State Department of Health and the John A. Burns School of Medicine.

In 2018, the number of partners providing financial backing for the journal expanded, and to reflect this expansion the name of the journal was changed in 2019 to the Hawai'i Journal of Health & Social Welfare. The lead academic partners are now the six units of the UH College of Health Sciences and Social Welfare, including the John A. Burns School of Medicine, UH Public Health, the Myron B. Thompson School of Social Work, the School of Nursing and Dental Hygiene, the UH Cancer Center, and the Daniel K. Inouye College of Pharmacy. Other partners are the Hawai'i State Department of Health and the UH Office of the Vice Chancellor for Research. The journal is fiscally managed by University Health Partners of Hawai'i.

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KAREN ROWAN MS

Highlights of recent research from the University of Hawai'i and the Hawai'i State Department of Health

IS HISTORICAL TRAUMA A CLINICAL CONDITION OR A LIFE STRESSOR?

Indigenous populations are poorly represented in psychological research, but recently, researchers have increased efforts to understand historical trauma and racial trauma. Rachel L. Burrage PhD, MSW, of the UH Mānoa Myron B. Thompson School of Social Work, and colleagues investigated the literature on historical trauma in American Indians. They found that some researchers view historical trauma as a clinical condition and seek psychotherapeutic interventions to treat it, while other researchers view historical trauma as a life stressor and recommend community interventions to improve public health. Still other researchers view historical trauma as a critical discourse, meaning it is treated as a public narrative rather than a clinical or public health issue. Conflict between research approaches could be eased by clarifying these concepts and disentangling clinical issues from social issues, the researchers concluded. The article, [American Indian Historical Trauma: Anticolonial Prescriptions for Healing, Resilience, and Survivance](#), is published in *American Psychologist*.

MEDICARE BENEFICIARIES WEIGH IN ON THE USEFULNESS OF A MEDICATION SUMMARY

Medicare rules require that beneficiaries in the prescription drug benefit program (Medicare Part D) are given a written summary of their medications called the Standardized Format (SF). Researchers including Karen Pellegrin PhD, MBA, of the Daniel K. Inouye College of Pharmacy conducted a national survey to ask recipients about the utility of the SF. Of the 434 respondents, less than half said the SF was "excellent" or "very good" at helping them correctly use their medications (45%) or helping them understand why they take their medications (42%). The SF should be designed with more flexibility, so that it can be integrated into health records and made available in a handy format, such as a wallet card, the researchers concluded based on survey responses on how to improve the program. The paper, [Findings from a National Survey of Medicare Beneficiary Perspectives on the Medicare Part D Medication Therapy Management Standardized Format](#), is published in the *Journal of Managed Care & Specialty Pharmacy*.

AN UNUSUAL PRESENTATION OF SYPHILIS

In men, syphilis typically presents as a single painless ulcer, and most symptomatic patients have a "reactive" result on a test called the rapid plasma reagin (RPR). But in a new paper, researchers including Alan Komeya MPH, of the Hawai'i State Department of Health, report the case of a 19-year-old man who presented to the STD clinic with a few painless papules on the penis, and his RPR test was nonreactive. He was misdiagnosed as having a viral infection called molluscum contagiosum. He was referred to a dermatologist, but in the eight-week interim between clinic visits, the papules enlarged, ulcerated, and began healing. A biopsy then confirmed a syphilis diagnosis. A repeat RPR was now reactive as was a confirmatory antibody test. The man received the proper antibiotics, and his skin lesions resolved, but the case shows that with any genital lesions, clinicians should keep a high index of suspicion for syphilis. The paper, [Dermatologically Challenging Syphilis Presentation](#), is published in the *International Journal of STD & AIDS*.

RISK FACTORS FOR PANCREATIC CANCER MAY VARY BY ETHNICITY

Well-known risk factors for pancreatic cancer, such as smoking, diabetes, and obesity, do not fully explain interethnic differences in incidence of this cancer, suggesting that genetic and biological factors are at work, show new findings from the Multiethnic Cohort Study. Researchers including Loic Le Marchand MD, PhD, of the UH Cancer Center, looked at data on 185,000 participants over an average of 17 years. There were 1,532 incident cases of pancreatic cancer. Native Hawaiians had a 60% increased risk and Japanese Americans had a 33% increased risk compared to European Americans, after taking into account known risk factors of the disease. The association between first-degree family history of pancreatic cancer and risk of pancreatic cancer was greatest for Japanese Americans and African Americans, whereas diabetes had the largest influence in Native Hawaiians, more than doubling their risk of pancreatic cancer. To better understand discrepancies in rates of pancreatic cancer, further research should include both behavioral and genetic data, the researchers wrote. The paper, [Interethnic Differences in Pancreatic Cancer Incidence and Risk Factors: The Multiethnic Cohort](#), is published in *Cancer Medicine*.

THE ROLES OF ORC PROTEINS IN POLAR BODY FORMATION

During DNA replication, a protein complex called the Origin Replication Complex (ORC) is essential for initiating the first steps of replication at sites called DNA replication origins. New findings show that one ORC protein, ORC4, undergoes self-association to form larger units. Researchers including Hieu Nguyen, of the John A. Burns School of Medicine, isolated mouse oocytes and used 2 fluorescent constructs of mORC4, mORC4-EGF and mORC4-FIAsH to reveal that self-association is an intrinsic property of ORC4 and suggest that ORC4 can self-assemble into cage-like structures. These structures are thought to be important in the formation of polar bodies, which contain one set of chromosomes that must be expelled from the oocyte in order for further development of the oocyte to continue. More study is needed to track particles and investigate the molecular mechanisms of mORC4 dynamics, the researchers wrote. The paper, [Spatial and Temporal Resolution of mORC4 Fluorescent Variants Reveals Structural Requirements for Achieving Higher Order Self-association and Pronuclei Entry](#), is published in *Methods and Applications in Fluorescence*.

INSULIN RESISTANCE LINKED TO LOWER ODDS OF ALZHEIMER DISEASE

Insulin resistance may be linked lower odds of developing Alzheimer Disease in older adults. Researchers led by Thomas Lee PhD, with UH Public Health, examined health records from 1,544 Japanese men participating in the Kuakini Honolulu-Asia Aging Study. The men's average age was 76, and men with type 2 diabetes were excluded. Men who had insulin resistance at baseline had lower odds of having Alzheimer disease 3 years later compared with men who did not have insulin resistance at baseline. The inverse association held even after adjusting for confounders such as hypertension. More research is needed on the roles of insulin and blood glucose levels in the development of neurocognitive disorders, the researchers wrote. The paper, [Late life Insulin Resistance and Alzheimer's Disease and Dementia: The Kuakini Honolulu Heart Program](#), is published in the *Journal of the Neurological Sciences*.

Temporal Trends of Hospitalization, Mortality, and Financial Impact Related to Preeclampsia with Severe Features in Hawai'i and the United States

Ji Hae Lee; Guangxiang Zhang PhD; Scott Harvey MD; and Kazuma Nakagawa MD

Abstract

The temporal trend of hospitalizations, cost, and outcomes associated with preeclampsia with severe features have been inadequately studied. The publicly available Healthcare Cost and Utilization Project (HCUP) National Inpatient Sample (NIS) database was accessed to examine the temporal trend of total number of discharges, age, death, and mean charges per admission associated with preeclampsia with severe features. Eleven-year temporal trends (2004 to 2014) of these measures were compared using linear regression and run charts using the statistical process control rule. From 2004 to 2014, the total number of discharges related to preeclampsia with severe features increased both for Hawai'i and the U.S. (United States) (Hawai'i: 104 to 231; U.S.: 35,082 to 55,235; both $P < .0001$). The corresponding rates of discharges per 100,000 population also both increased (Hawai'i: 8.2 to 16.3; U.S.: 12.0 to 17.3; both $P < .0001$). Comparing the temporal trends between Hawai'i and the U.S., Hawai'i had a significantly higher average annual increase in the rate of incidence than the national level (an annual increase rate of 9.2% in Hawai'i vs 4.2% nationally; $P = .0004$). The cost of hospitalization for preeclampsia with severe features also showed an increased trend for both Hawai'i and the U.S. (Hawai'i: 33.1% increase, $P = .0005$; U.S.: 41.1% increase, $P < .0001$). In the U.S., in-hospital mortality rates associated with this condition decreased from 0.09% in 2004 to 0.02% in 2014 ($P = .03$). In conclusion, the number of discharges related to preeclampsia with severe features increased over an 11-year period in Hawai'i and the U.S., and the rate of increase was higher in Hawai'i than the U.S. Maternal mortality rates from this condition also declined over the study period.

Keywords

Preeclampsia, preeclampsia with severe features, temporal trends

Introduction

Preeclampsia is a pregnancy-specific hypertensive disorder that complicates 3%–6% of pregnancies¹ and is one of the leading causes of maternal morbidity and mortality worldwide.^{2–4} In the U.S., the prevalence of preeclampsia has increased over the past three decades, affecting 2.4% of pregnancies in 1980 to 3.8% in 2010.^{1,5} This increase in incidence seems, in part, due to recent trends of delaying pregnancies to a later age and the increased rate of obesity and cardiovascular risk factors among pregnant women.^{1,6–8} Furthermore, racial minorities are at higher risk for preeclampsia.^{7,9} A recent study showed that Native Hawaiians, Other Pacific Islanders, and Filipinas are at higher risk compared to Whites and Asians.¹⁰

Preeclampsia with severe features is a separate clinical entity that is distinguished from a diagnosis of preeclampsia without severe features since it has higher rate of morbidity and mortal-

ity. Preeclampsia with severe features is defined as new onset hypertension in pregnancies greater than 20 weeks gestation and includes a systolic blood pressure of ≥ 160 mmHg or a diastolic blood pressure of ≥ 110 mmHg, pulmonary edema, liver transaminase levels two times the upper limit of normal, elevated creatinine levels, severe persistent right upper-quadrant pain, or new-onset cerebral or visual disturbances.¹¹ Women who have preeclampsia with severe features require hospitalization for fetal and maternal monitoring, as the condition is associated with increased risk of maternal mortality and higher rates of maternal morbidities, such as eclampsia, pulmonary edema, acute renal or liver failure, and stroke.^{12,13}

Over the last three decades, the diagnostic criteria used to define preeclampsia and management of the syndrome has been modified several times.^{14,15} Most recently, presence of proteinuria and peripheral edema are not required for diagnosis, where signs of end organ damage and blood pressure requiring urgent therapy signify presence of the syndrome.^{14,16} Although no preventative intervention has been shown to change the overall incidence of preeclampsia, the use of low-dose aspirin does appear to reduce the risk of preeclampsia in women with risk factors.^{14,15} Notably, patients with preeclampsia with severe features and eclampsia often require more frequent monitoring, interventions, and a higher level of care, and require a longer length of hospital stay compared to those without severe features.¹⁵

It has been estimated that the diagnosis of preeclampsia increases hospitalization costs by \$6,583 per birth to manage underlying associated comorbidities simultaneous to preeclampsia.⁵ In 2012, the cost of preeclampsia within the first 12 months of delivery was \$2.18 billion in the U.S. due to prolonged monitoring and therapeutic procedures required to manage this condition and the cost associated with caring for births of early gestational age.^{5,17} These types of tertiary intensive care that require longer hospital stay, additional diagnostic tests, and therapeutic procedures may contribute to the ever-increasing cost of health care.¹⁸ In Hawai'i, the cost burden of other acute medical conditions have been reported to be disproportionately placed on Asians and Pacific Islanders, compared to Whites.¹⁹ Given the disparity in incidence, cost, and outcome of other medical conditions between Hawai'i and the U.S., it would be important to assess whether a similar difference may exist for preeclampsia. To date, temporal trends of hospitalization, cost and outcome associated specifically to preeclampsia with severe features in Hawai'i, compared to the mainland U.S., have been

inadequately studied. Thus, we sought to assess changes in the number of hospitalizations and age of the patient and hospital charges associated with preeclampsia with severe features over an 11-year period. Comparison of the data between Hawai‘i and the United States were evaluated to assess any geographic differences.

Methods

Data Source

We obtained data for this study from HCUPnet, a public online query system from the Healthcare Cost and Utilization Project (HCUP) managed by the Agency for Healthcare Research and Quality (AHRQ). HCUP databases are derived from administrative data and contain aggregate data of clinical and nonclinical information including diagnoses and procedures, discharge status, patient demographics, and charges for each state. Since we utilized publicly-accessible, de-identified administrative level, aggregate data, rather than patient-specific data, this study was exempt from institutional review board approval. We accessed the data by searching inpatient statistics specifically related to preeclampsia with severe features. The ICD-9-CM codes used to abstract the data on preeclampsia with severe features were 642.5x. We retrieved nationwide and state inpatient statistics on the total number of discharges, age (mean), length of stay, hospital charges, and deaths from the years 2004 to 2014. The dataset accounted for a total of 473,286 discharges.

Statistical Analysis

The data were summarized by descriptive statistics. All hospital charge data were inflated-adjusted using the appropriate Consumer Price Index (<https://www.bls.gov/cpi/>) and converted to 2014 U.S. dollars. We compared the 11-year temporal trends using simple linear regression by SAS version 9.4 (SAS Institute Inc., Cary, NC), where raw discharge data were first adjusted by population census data (www.census.gov) for both U.S. and Hawai‘i, per 100,000 population level. To examine the interaction of the temporal trends between U.S. and Hawai‘i, the population-adjusted discharge data were first transformed into percentages relative to 2004 data before regression analyses, to alleviate the impact of different magnitude scales between U.S. and Hawai‘i data. Nonrandom temporal trends (or “special-cause variation”) were also demonstrated by run charts using the statistical process control decision rule.²⁰ there are 6 or more consecutive data points always going up or going down over time. Two-sided $P < .05$ was considered statistically significant without multiple comparison adjustments.

Results

A cross-sectional state-by-state comparison of discharges, hospital charges, and mean age related to preeclampsia with severe features in 2014 is illustrated in Figure 1. A total of 36 states had data related to preeclampsia with severe features in 2014. Among the 36 states, Hawai‘i ranked 17th lowest in hospitalizations (16.3 discharges per 100,000 persons), 26th in hospital charges (\$30,599), and 34th in mean age (30.0 years).

Temporal trends of hospitalizations with severe preeclampsia are shown in Figure 2. Nationally, after population adjustment, the total number of discharges significantly increased ($P < .0001$) from 35,082 in 2004 to 55,235 in 2014 by an average annual increase rate of 4.2% (95% CI=3.4%-5.1%). From 2009 and 2014, the total number of discharges with preeclampsia with severe features consistently increased each year, which was statistically significant using the statistical process control decision rule. In Hawai‘i, after population adjustment, the total number of discharges also significantly increased ($P < .0001$) from 104 in 2004 to 231 in 2014 with an average annual increase rate of 9.2% (95% CI=6.8%-11.7%). Assessing the interaction of the temporal trend of discharges between the United States and Hawai‘i demonstrated that Hawai‘i had a significantly higher average increase in the rate of discharges compared to the national level ($P = .0004$). The estimated difference in the slopes of Hawai‘i and the nation was 5.0% (95% CI=2.6%-7.4%). Similar estimates were found if we further adjusted for annual mean age in the regression analyses: 5.0% (95% CI=2.5%-7.5%, $P = .0006$).

Overall, Figure 3 shows the regression results of mean hospital charges per admission associated with preeclampsia with severe features have been increasing from 2004 to 2014 even after adjusting for inflation. Nationally, the mean charge per hospitalization changed from \$21,700 in 2004 to \$30,622 in 2014 by a mean increase of \$1,016 per year (95% CI=\$817-1,214, $P < .0001$). In Hawai‘i, the mean charge increased from \$22,982 in 2004 to \$30,599 in 2014 by an average increase of \$1,257 per year (95% CI=\$724-1,791, $P = .0005$). The hospital charges associated with preeclampsia with severe features in the U.S. and in Hawai‘i both follow the steady up trend found in the hospital charges associated with any hospital diagnosis, suggesting that the rate of increase is not significantly higher than the increased rate of overall healthcare costs. Lastly, the 11-year national trend (2004-2014) of mortality due to preeclampsia with severe features significantly decreased from 0.09% in 2004 to 0.02% in 2014 (Figure 4) (annual reduction of 0.0058%, $P = .029$).

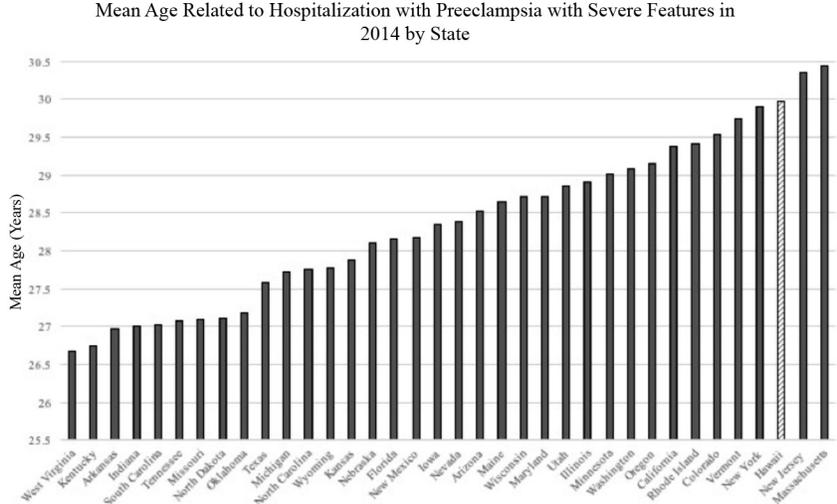
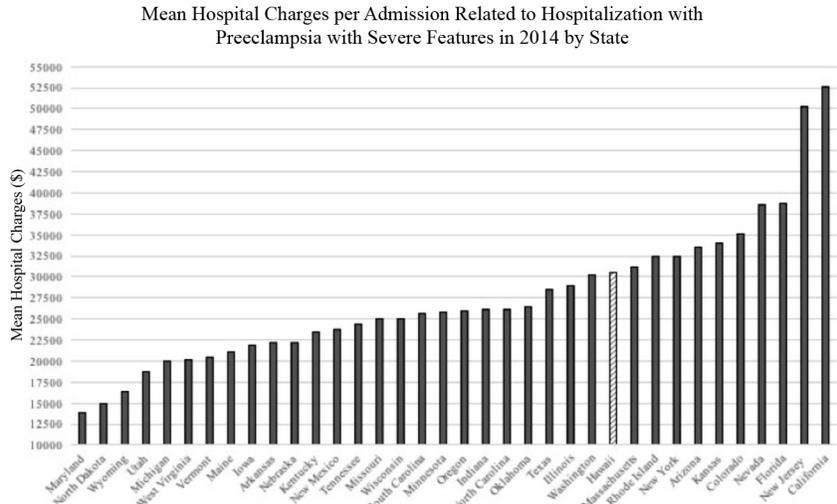
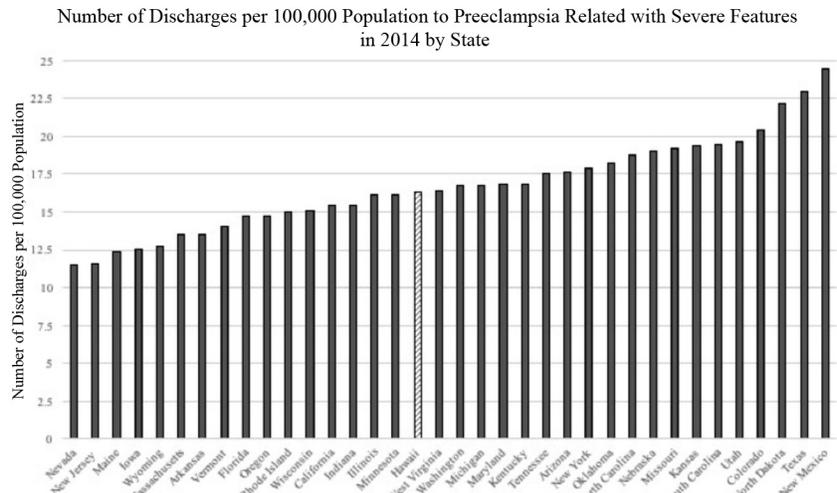


Figure 1. Cross Sectional State-by-State Comparisons of Preeclampsia with Severe Features in 2014 Regarding (Top) Discharges, (Middle) Hospital Charge, and (Bottom) Mean Age of Patients.

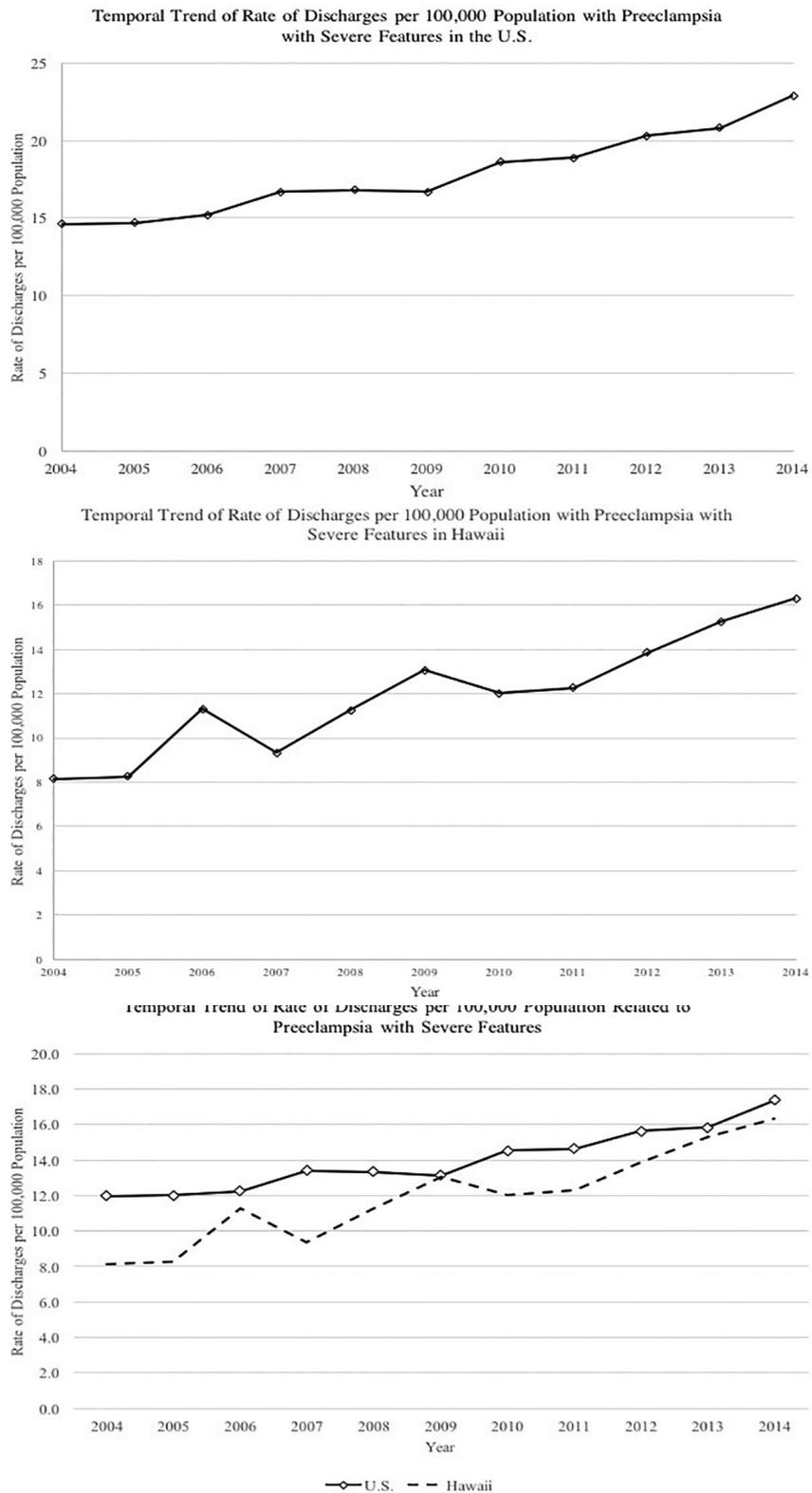


Figure 2. 11-Year Temporal Trends of Discharges Related to Preeclampsia with Severe Features in (Top) the United States and (Middle) Hawai'i; and Temporal Trend of Rate of Discharges per 100,000 Population Related to Preeclampsia with Severe Features in the United States and Hawai'i (bottom).

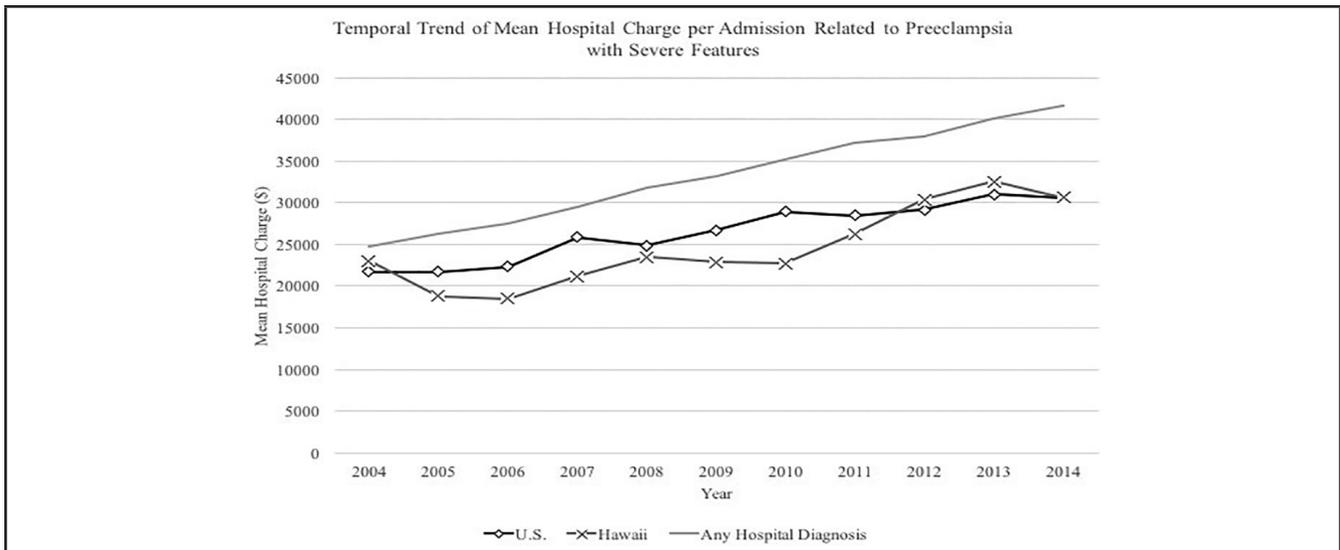


Figure 3. 11-Year Temporal Trend of Mean Hospital Charges per Admission Associated with Preeclampsia with Severe Features in the United States and Hawai'i.

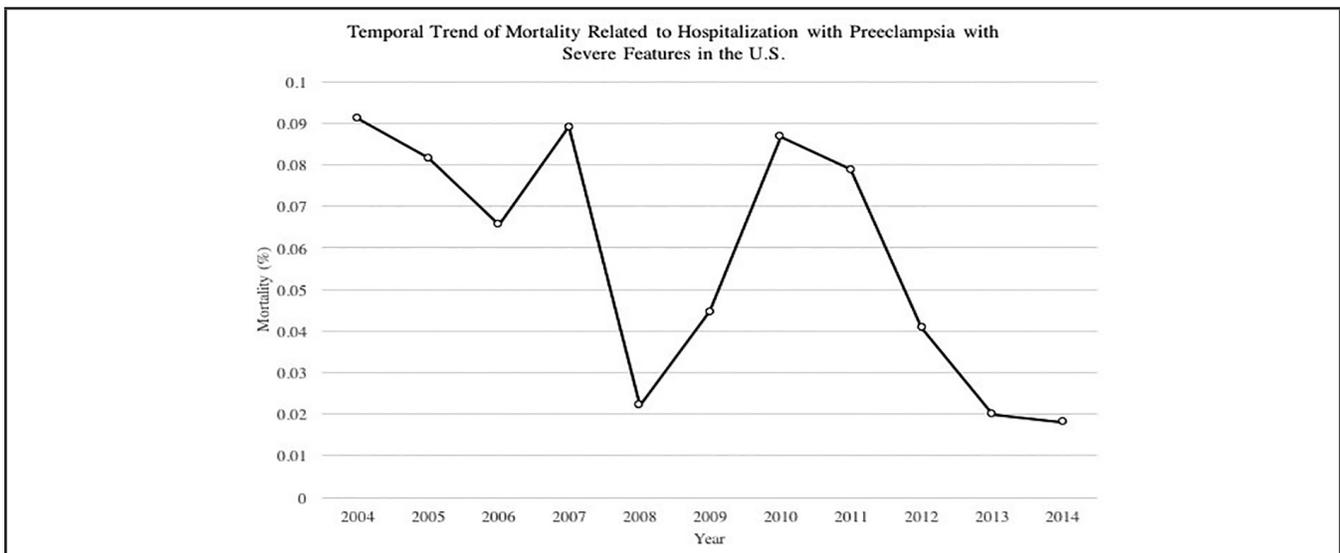


Figure 4. 11-year U.S. Trend of Mortality Due to Preeclampsia with Severe Features.

Discussion

Overall, there was an increased rate of hospitalization in patients with preeclampsia with severe features for both the U.S. and the State of Hawai'i from 2004 to 2014. The national trend of hospitalization had an overall 57.4% increase in 11 years, which is consistent with previous population-based studies.^{1,21} The significant finding of this study is that Hawai'i had a greater temporal increase in hospitalizations with preeclampsia with severe features, with an overall 122.1% increase in an 11-year period compared to the U.S. This increase in the rate of hospitalization for this condition is disproportionately higher than the

1.4% increase of livebirths for Hawai'i (hhdw.org). More public awareness and further study to assess the factors contributing to this disproportionate increase in the rate of preeclampsia with severe features in Hawai'i may be needed.

Risk factors for preeclampsia include obesity, pregestational diabetes, preexisting hypertension, those with a family history of preeclampsia, and women who suffer from medical conditions such as antiphospholipid syndrome.^{6,7,22} Hawai'i has high proportion of Asian Americans, Native Hawaiians, and Pacific Islanders, with some ethnic groups having higher prevalence of obesity, diabetes, and hypertension compared to Whites.^{10,23-25}

If the population of ethnic minority groups with high cardiovascular risks are increasing in Hawai'i, it may potentially contribute to the observed increase in the rates of preeclampsia with severe features in Hawai'i. However, the data on the temporal change in high-risk ethnic populations in Hawai'i is lacking, and thus this is speculative.

The analyses of the mean hospital charges associated with this condition demonstrated a significant increase from 2004 to 2014 both nationally and in Hawai'i. There was a steady national mean increase of \$1,016/year, and the rate of increase in Hawai'i was found to be on average \$1,257/year. The increase in hospital charges associated with preeclampsia with severe features in the nation and in Hawai'i correspond to the up-trend found in the hospital charges associated with any hospital diagnosis, suggesting that the increased rate of costs for preeclampsia was driven by an increase in healthcare costs in general rather than costs specific to this diagnosis. Lastly, the in-hospital mortality rate due to preeclampsia with severe features did show a statistically significant decrease from 2004 to 2014.

There are some limitations to our study, which are mostly associated with the lack of patient-level, detailed clinical information due to the use of a claims database. Since the database did not provide statistics on all the states, the 36 states that were used to generalize the statistics on preeclampsia with severe features may not accurately represent the United States. Furthermore, the diagnostic criteria of preeclampsia with severe features have changed during the period that was analyzed for this study, which may have affected the number of reported diagnoses. Lastly, the reported cost in this study was limited to the charges associated with maternal hospitalization and did not account for any potential cost-savings associated with neonatal hospitalization.

In summary, we showed a significantly increasing rate of preeclampsia with severe features in Hawai'i compared to the nation, and a marginal decrease in mortality rates despite substantial increases in the health care expenditures related to preeclampsia with severe features. The rate of preeclampsia with severe features in Hawai'i is increasing at a concerning rate.

Conflict of Interest

None of the authors identify any conflicts of interest.

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Characteristics of Orofacial Clefting in Hawai'i

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Abstract

Orofacial clefts are birth defects that require a multi-disciplinary approach for repair and ongoing management as there are often concomitant chronic health issues. Orofacial clefts can occur as an isolated finding, in combination with other anomalies, or as part of a genetic syndrome. When occurring as part of a genetic syndrome, the complexity of management increases and has lifelong implications for these individuals, their families, and their health care providers. Understanding factors related to the occurrence of syndromic orofacial clefting is important for birth defect research and for health care needs assessment and planning. Many research groups have addressed these issues by studying different populations and focusing on different questions. This study was a retrospective chart review of children with orofacial clefts cared for at a pediatric tertiary care center in Hawai'i to evaluate the proportion of isolated and syndromic clefts in the unique population of Hawai'i. The prevalence of syndromic and isolated clefts were then correlated with ethnicity and compared to the prevalence in other studies. Our goal was to increase knowledge about orofacial clefting in the population of Hawai'i. The proportion of isolated orofacial clefting in a population of patients with orofacial clefting cared for at a craniofacial clinic is similar to birth defect registry data for the Hawaiian Islands (59% vs 58%). Pacific Islanders in our study and prior study have a lower proportion of isolated clefts, suggesting that there are more craniofacial patients with syndromic and complex needs in this population. Further study is needed to clarify the etiologic factors.

Keywords

Hawai'i, Ethnicity, orofacial clefts, syndromic clefts, non-syndromic clefts

Introduction

Orofacial clefts are common congenital malformations of the lip, palate, or both. They may involve the lip, the roof of the mouth (hard palate), the soft tissue in the back of the mouth (soft palate), and the oral cavity which can extend onto the facial structures resulting in oral, facial, and craniofacial deformity. Orofacial clefts generally require surgical repair, and often multiple surgeries are needed to reconstruct the lip and palate. In addition to surgical treatment, individuals need other services including: pediatric care, hearing assessment, speech and language therapy, dental evaluation, orthodontic treatment, genetic services, and psychology or other mental health therapy.¹ The role of the craniofacial team in the management of cleft lip with or without palate is essential. A craniofacial team is a multidisciplinary group which provides consultations, diagnosis, treatment planning, and procedures for a range of craniofacial anomalies and syndromes.² Teamwork is highly recommended in the management of persons with orofacial clefts. This team is dedicated to ensuring that persons with the

condition are offered the necessary help, care, and support to allow them to have a better life.³ An accurate diagnosis is critical to the process of counseling families. A cleft lip or palate may negatively impact on an individual's self-esteem, social skills, and behavior.⁴

It has long been known that ethnicity is a factor influencing the occurrence of orofacial clefting with studies documenting varying incidence rates by ethnicity.¹ In 1998, Tolarova and Cervenka reported the occurrence of isolated cleft lip and palate rates among various ethnicities as follows: Caucasians 0.81/1000 livebirths, Asians 0.76/1000 livebirths, Hispanics 0.74/1000 and Blacks 0.41/1000 in a population-based sample of 4,433 cases ascertained from 2,509,881 California births.⁵ The nature of the observed ethnic differences in orofacial clefting is not clear, although some researchers suggest a genetic basis. In a 1974 study from Hawai'i, Ching and Chung found that those with Japanese ancestry continued to have an increased birth prevalence of cleft lip with or without cleft palate, while those who are Japanese-Caucasian have a birth prevalence that is intermediate between the Japanese and Caucasian populations, suggesting that the ethnic differences were independent of the environment and that genetics play a significant role in clefting.³

Recent studies have evaluated genetic susceptibility loci with single-nucleotide polymorphisms (SNPs) identified by genome-wide studies in individuals of European and Asian ancestry. Results indicate that risk factors differ between populations and confirm the importance of testing putative susceptibility variants in different genetic backgrounds.⁴ Known factors include 2p24 near FAM49A, a gene of unknown function, 19q13 near RHPN2, a gene involved in organizing the actin cytoskeleton, 1p36 (PAX7), 1p22 (ARHGAP29), 1q32 (IRF6), 8q24 and 17p13 (NTN1), and 17q23.⁵ None of these loci have been identified as exclusive causative agents.^{6,7}

Other studies have indicated that the environment may play a key role in the development of clefting. In two separate studies, researchers found that the prevalence of cleft lip with or without cleft palate in Filipino infants born in the Philippines is higher than the prevalence of Filipino infants born in the United States (of note, Filipino families in both studies reported full Filipino ancestry).^{8,9} The researchers suggested that environmental factors, in particular the improved socioeconomic status among Filipinos in the United States, may account for a portion of the observed decrease in prevalence.

Hawaii's population represents an ethnically and geographically distinct, diverse population with origins predominantly throughout the Pacific basin.¹⁰ Genetic studies related to orofacial clefts among Pacific Islanders are lacking. The goal of this descriptive study was to determine whether the proportion of isolated facial clefts in the orofacial cleft patient population of the Hawaiian islands is similar to populations in other parts of the world such as Europe, South America, and Asia.

Method/Description

We undertook a retrospective record review of patients who had a clinical genetic evaluation between September 2010 and June 2017 at the Kapi'olani Medical Center for Women and Children (KMCWC) Cleft and Craniofacial Center, a tertiary care center serving the Pacific Islands. Clinical genetics evaluation consisted of a history and record review by a genetic counselor, physical examination by a medical geneticist, and subsequent laboratory testing as indicated by this evaluation. Such laboratory tests included: chromosomal microarray and specific single gene tests if indicated by clinical suspicion of a genetic disorder.

To be included in the chart review, patients must meet all of the following criteria: 1) clinical genetics evaluation completed during the study period, 2) presence of an orofacial cleft lip, cleft palate or both (patients with other conditions as microtia or craniosynostosis were excluded), and 3) availability of self-reported ethnicity information (individuals who were not aware of their ethnic background due to adoption, foster care placement, or death of a parent were excluded).

The patients were stratified into categories of 1) Isolated orofacial clefting that included both isolated cleft lip, isolated cleft palate, and isolated cleft lip and palate, and 2) Orofacial clefting with other anomalies, for these patients a syndromic diagnosis was not known, and 3) Syndromic diagnosis where a specific syndromic diagnosis was known. The diagnoses identified are summarized in Table 1.

Ethnicity was stratified as follows: 1) Pacific Islander Only (included individuals of any combination of just the following ethnicities: Native Hawaiian, Samoan, Tongan, Micronesian); 2) Asian Only (included individuals of any of the combination of the following ethnicities: Japanese, Chinese, Korean, Vietnamese, Filipino); 3) Caucasian Only (including individuals of European ancestry); 4) Mixed Pacific Islander (Mixed ethnicity with Pacific Islander ancestry); and 5) Mixed ethnicity without Pacific Islander. Groups 1, 2, and 3 fully reported those respective ethnicities and none from other categories.

The proportion of patients with isolated orofacial clefts, those with orofacial clefts with other anomalies, and those with syndromic diagnoses was calculated for each of the above ethnicity categories. Tests of statistical significance with ANOVA and

Table 1. Types of Syndromes Noted and Number of Patients
Chromosome microduplication/microdeletion = 3
Branchio-Oculo-Facial syndrome = 1
CHARGE syndrome = 2
Cri du chat = 1
Diabetic embryopathy = 4
Diamond Blackfan anemia = 1
Down syndrome = 1
Goldenhar syndrome = 3
Kabuki syndrome = 1
Sotos syndrome = 1
Spondylocostal dysostosis = 1
Stickler syndrome = 5
Treacher Collins = 1
Van der Woude = 2
22q11.2 deletion syndrome = 3
Waardenburg = 1
Wolf-Hirschhorn syndrome = 1

P-values were then completed using Good Calculators Mathematics Statistics and Analysis Calculators software (<https://goodcalculators.com/statistics-calculators/>).

Results

The total population included 308 patients and was separated into ethnic categories by self-report of Pacific Islander Only 10.4% (n=32), Asian Only 27.3% (n=84), Caucasian Only 7.8% (n=24), Mixed ethnicity with Pacific Islander ancestry 42.2% (n=130), and Mixed ethnicity without Pacific Islander ancestry 12.3% (n=38). Pacific Islander Only patients had 59.3% (n=19) isolated orofacial clefting; clefting with other anomalies accounted for 25.0% (n=8) and syndromic diagnosis accounted for 15.6% (n=5). Asians Only had 71.4% (n=60) isolated orofacial clefting; clefting with other anomalies accounted for 17.9% (n=15) and syndromic diagnoses accounted for 10.7% (n=9). Caucasian Only had 75% (n=18) isolated clefting; orofacial clefting with other anomalies accounted for 16.7% (n=4). Mixed ethnicity with Pacific Islander had 70.8% isolated clefting; orofacial clefting with other anomalies accounted for 16.9% (n=22); syndromic diagnoses accounted for 12.3% (n=16). Mixed ethnicity without Pacific Islander had 76.3% isolated clefting; orofacial clefting with other anomalies accounted for 10.5% (n=4) (Table 2). When stratified by ethnicity, the proportion of isolated orofacial clefts varied from 59.3% to 76.3%, with Pacific Islanders Only being the lowest and Mixed Ethnicity without Pacific Islander being the highest (Table 3).

The proportion of isolated orofacial clefts did not differ significantly between the five categories of ethnic groups (F-statistic value of 0.9895 and *P*-value = .46). In addition, the total per-

Total N = 308	Pacific Islander only n (%)	Asian Only n (%)	Caucasian Only n (%)	Mixed Pacific Islander n (%)	Mixed Without Pacific Islander n (%)
Isolated Orofacial clefting including isolated cleft lip and isolated cleft palate	19 (59.3%)	60 (71.4%)	18 (75.0%)	92 (70.8%)	29 (76.3%)
Orofacial clefting plus additional anomalies	8 (25.0%)	15 (17.9%)	4 (16.7%)	22 (16.9%)	4 (10.5%)
Syndromic diagnoses	5 (15.6%)	9 (27.3%)	2 (8.3%)	16 (12.3%)	5 (13.2%)
Total	32 (10.4%)	84 (27.3%)	24 (7.8%)	130 (42.2%)	38 (12.3%)

Cleft with additional anomaly = cleft with a major anomaly (requiring ongoing developmental or medical intervention or evaluation), but no confirmed syndromic diagnosis

Pacific Islander Only = Hawaiian, Samoan, Micronesian

Asian Only = Japanese, Chinese, Korean, Vietnamese Filipino

Caucasian Only = Caucasian only

Mixed Pacific Islander = Pacific Islander plus any other ethnicity

Mixed Without Pacific Islander = More than one ethnicity without Pacific Islander

Current Study		
	Pacific Islanders	59%
	Asians	71%
	Caucasians	75%
	Mixed Pacific Islanders and Other	70%
	Mixed Ethnicity without Pacific Islanders	76%
Published Studies		
Published Studies	Population Studied	
Forrester and Merz ¹⁷	Hawaiian Islands*	58%
IPTOC ¹⁸	International	77%
Mossey, et al ¹⁹	International	88%
Croen, et al ⁷	California	74%
Milerad, et al ¹⁶	Sweden	72%
Eurocat ²⁰	Mixed European	66%
Rittler, et al ²¹	Latin America	76%

*Mixed ethnicity population from birth certificate data

centage of individuals with isolated orofacial clefts involved in our study (71%) fell within the range of percentages of isolated orofacial clefting reported in other studies (58-88%) (Table 3).

Discussion

Many epidemiologic studies have been conducted on the prevalence of isolated orofacial clefts and the variation among different ethnic groups.^{1,2,3,7,8,9,13,14,15,19,20} Clefting has been shown to be consistently more common in the Native American population and becomes progressively less common in Asians, Caucasians, and Africans.^{5,7,11} Although our data did not show a statically significant difference between the prevalence of isolated orofacial clefting among the different ethnic groups included, our prevalence estimates are consistent with past studies. We found the highest rates of isolated orofacial clefting among Asians and Pacific Islanders and the lowest rate in Caucasians.

The percentage of Asians and Pacific Islanders with isolated orofacial clefting observed in our data could simply be a reflection of the ethnic variation observed within Hawaii's population. According to the 2017 US Census Bureau, the population of Hawai'i is made up of 37.8% of individuals who self-report as Asian only, 25.7% of individuals who self-report as Caucasian only, 10.2% of individuals who self-report as Pacific Islander only, and 23.8% who self-report as being of two or more races.¹² Thus, Asian and Pacific Islanders represent some of the largest ethnic groups in Hawai'i. There may be limits on the comparability of ethnicity data in a census to that reported in a medical setting.

The total percentage of isolated orofacial clefting in our study (71%) was similar to the percentage of isolated clefting reported in other studies (Table 3). Likewise, the percentage of orofacial clefts associated with a syndrome or additional anomaly observed in our study (29%) was very consistent with those reported by other studies.^{2,14,15,16} Of note, our reported prevalence of orofacial clefts associated with a syndrome or additional anomaly is much lower than that reported by Forrester and Merz (2004), where 42% had an orofacial cleft as part of a syndrome or as one of multiple anomalies. Their study population was birth defects registry data, which included non-viable individuals with elective terminations and fetal deaths, the majority of which were not isolated, and this likely increased the number of syndromic clefts. Our study population included only viable individuals, which may select more isolated clefts.

Our data is consistent with Forrester and Merz's (2007) study indicating a higher incidence of syndromic clefting in Pacific Islanders.¹⁷ Because Pacific Islanders, historically, come from genetically isolated populations, this could reflect a unique genetic profile that confers increased risk for syndromic orofacial clefting. More research is required to further understand this trend.

Conclusion

Within our population, we observed that syndromic clefting is more common among the Pacific Islanders than among the orofacial cleft population in other ethnic groups (15.6% vs 8.3-13.2%). Our study was comparable to the prior study from birth defects registry data (Forrester and Merz¹⁷) where 58% of orofacial cleft cases were categorized as isolated; the present study identifies 59% as presenting as isolated. In other international studies the proportion of isolated clefting ranges from 66-88% (See Table 3). Therefore, the proportion of more medically complex individuals within the orofacial cleft population is higher in the current study. This would have implications for medical resource management for individuals with orofacial clefting in Hawai'i as more medically complex individuals would require greater utilization of services. As the scientific knowledge of susceptibility factors increases, future studies may be able to further clarify the etiologic factors related to this trend.

Conflict of Interest

None of the authors identify any conflict of interest.

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Dual Burden of Stunting and Obesity Among Elementary School Children on Majuro, Republic of Marshall Islands

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Abstract

Limited data are available on the dual burden of under- and over-nutrition among children in the Republic of Marshall Islands (RMI). This study aimed to identify the prevalence of stunting and obesity among elementary school students on Majuro, RMI. A cross-sectional study was conducted in public and private elementary schools on Majuro in 2017 – 2018. Anthropometric data were collected for 3,271 children, 4-16 years of age. The main outcome measures were prevalence of stunting and obesity. Differences by gender, age, and school type (public or private) were assessed using chi-squared tests. Overall, 5.1% (95% CI 4.4-5.9) of children were obese, and 23.6% (95% CI 22.2-25.1) of children were stunted. Obesity prevalence was higher among boys (6.3%; girls 3.9%; $P=0.002$) and children attending private schools (11.8%; public schools 2.9%; $P<0.001$), and increased with age (4-6 years 3.3%; 10-12 years 7.1%; $P<0.001$). Stunting prevalence was higher among children attending public schools (28.8%; private schools 8.0%) and increased with age (4-6 years 20.6%; 10-12 years 27.5%; $P<0.001$). Prevalence of stunting and obesity observed in this study support the need for interventions to improve nutrition and promote healthy lifestyles among children, both to address current undernutrition, and to intervene early to prevent the onset of obesity.

Keywords

Pacific, childhood obesity, stunting, Republic of Marshall Islands, chronic disease

Introduction

Understanding the prevalence of undernutrition and obesity among children is of critical importance for public health policy, as both are associated with lifelong adverse effects. Childhood undernutrition is associated with impaired cognitive development, reduced school achievement, and increased risk of obesity and reduced economic productivity in adulthood.^{1,2} Obesity among children adversely affects their psychological, musculoskeletal, cardiovascular and respiratory health.^{3,4} Furthermore, obese children are likely to remain obese as adults,⁵ placing them at increased risk of diabetes, hypertension, cardiovascular morbidity and premature mortality.⁶

While childhood obesity is receiving increased attention globally, undernutrition – which includes wasting (low weight-for-height), stunting (low height-for-age) and underweight (low weight-for-age) – continues to be a public health problem in many low- and middle-income countries. Many countries are experiencing a nutrition ‘dual burden’, characterised by the co-existence of undernutrition and micronutrient deficiencies, along with obesity and diet-related non-communicable diseases.⁷⁻⁹

One such country is the Republic of Marshall Islands (RMI), where evidence suggests high rates of underweight and stunting among young children, coupled with high rates of obesity in adulthood. A nutrition survey conducted in 2017 found 12% of Marshallese children aged under 5 were underweight and 35.3% stunted.¹⁰ While the same study found only 4% of children under 5 were overweight or obese, obesity emerges as an issue in adolescence and adulthood, with obesity prevalence of 26% among adolescents¹¹ and 32% of adults in RMI.¹²

RMI is located in the central Pacific Ocean and comprises five islands and 29 scattered and remote atolls, a land area of just 181 square kilometers spread over 1.9 million square kilometers of ocean. The estimated population of RMI (as of 2018) is 53,000 people, with the majority (77%) living in the densely-populated urban areas of Majuro and Kwajalein.¹³ The unique geography of RMI poses a significant challenge to food security, a key factor driving the nutrition dual burden in RMI. RMI was traditionally dependent on fishing and subsistence agriculture, however increasing urbanization and limited availability of agricultural land has led to high dependence on imported foods. Climate change, drought, and contamination with radioactive wastes have further affected both agricultural production and household food security with resultant impact on health, nutrition, water, sanitation and education status of the population.

The RMI Ministry of Health and Ministry of Education are implementing a range of initiatives in school settings to address childhood under- and over-nutrition. One such project is the Majuro Youth Lifetime Health Program,¹⁴ implemented in public elementary schools on Majuro in partnership with Canvasback Missions. The program started in July 2017, and has multiple components including (1) development of teaching materials about healthy diet and lifestyle targeting kindergarten and elementary school students, (2) building teachers’ capacity to use these materials in the classroom, (3) training of school food vendors to provide healthier school lunches, and (4) building schools’ capacity to provide physical activity classes and create safe areas for physical activity. While the program focusses on obesity prevention, the nutrition aspects of the program also have potential to address undernutrition – particularly supporting provision of healthier school lunches, engaging with parents and communities. This report presents baseline data on the prevalence of obesity and stunting among elementary school students living on Majuro.

Methods

Study Design and Sample

This was a cross-sectional study, with data collected between September 2017 and January 2018. All elementary schools on Majuro (11 public schools, 7 private schools) were invited to participate via letter to the school principal. Nine public schools and 7 private schools agreed to participate.

Ethics Approval and Consent

This study was conducted with the approval of the RMI Ministry of Health and Human Services, Ministry of Education, and the school principal at each participating school. Parents and children were advised that the study was taking place, that participation was voluntary and they could opt out at any time; however no parents or children decided to opt out of the study.

Data Collection

One day of data collection was conducted at each school, with anthropometry data collected from all students attending school that day. Demographic information (students' name, school grade, gender and date of birth) was provided by school administrators at each participating school. Each child's current height and weight were measured according to standard procedures¹⁵ by a team of eight trained staff, using standard equipment (Perspective Enterprises Stadiometer model PE-AIM-101, Seca scale Model 876). Middle upper arm circumference was also measured for Kindergarten students in some schools; these data are not presented here due to the small sample size.

Analysis

Weight status was categorized using age-specific body mass index percentiles (BMI-for-age) based on US Centers for Disease Control and Prevention child growth charts.¹⁶ BMI-for-age was classified as follows: underweight (under 5th percentile), healthy weight (5th to 84th percentile), overweight (85th to 94th percentile), and obese (95th percentile and above). Stunting was defined as current height-for-age more than 2 SDs below the mean of World Health Organization child growth standards.¹⁷ Biologically implausible values for height (<80cm), BMI-for-age (<-4 or >5 standard deviations according to CDC growth charts), and height-for-age (<-6 or >6 standard deviations according to WHO growth standards) were excluded from analysis. Prevalence and 95% confidence interval (CI) for each BMI-for-age category and stunting were calculated overall and stratified by gender, age group, and school type (public or private). Prevalence was compared between groups using chi-squared tests. *P*-values less than .05 were considered statistically significant. Analysis was conducted using SPSS Statistics Version 21 (IBM: Armonk, New York).

Results

Of the 4,551 children enrolled in participating schools, anthropometric data were collected for 3,383 children. Data for 112 children were excluded due to missing data [gender (*n*=1), date of birth (*n*=104)] and implausible anthropometry values (*n*=7), leaving a total of 3,271 children included in the analysis (Table 1). This represented 71.9% of children enrolled in participating schools.

Children were in school grades Pre-Kindergarten to 6th grade, ranging from 4 to 16 years of age. Seventy-five percent of children attended public schools (Table 1). Weight status of participating children is shown in Table 2. Overall, 5.1% of children included in the study were obese. The prevalence of obesity in boys (6.3%) was significantly higher than in girls (3.9%) ($\chi^2=9.319$, *P* = .002). The prevalence of obesity in private school students (11.8%) was significantly higher than in public school students (2.9%) ($\chi^2=99.01$, *P* < .001). Prevalence of obesity was higher among older aged children. Obesity prevalence was similar for children aged 4-6 years (3.3%) and 7-9 years (4.4%) ($\chi^2=1.60$, *P*=0.21), but was significantly higher among children aged 10-12 years (7.1%, $\chi^2=13.01$, *P* < .001, ref 4-6 years), and 13 and over (7.9%, $\chi^2=4.62$, *P* = .031, ref 4-6 years).

The overall prevalence of stunting was 23.6% (Table 3). There was no significant difference in the prevalence of stunting between boys (22.9%) and girls (24.3%) ($\chi^2=0.95$, *P* = .33). The prevalence of stunting was significantly lower in private school students (8.0%) than in public school students (28.8%) ($\chi^2=145.50$, *P* < .001). The prevalence of stunting also varied by age group. Following the same pattern as obesity, stunting prevalence was similar for children aged 4-6 years (20.6%) and 7-9 years (19.8%) ($\chi^2=0.18$, *P* = .67), but was significantly higher among children aged 10-12 years (27.5%, $\chi^2=12.28$, *P* < .001, ref 4-6 years), and 13 years and over (58.4%, $\chi^2=62.8$, *P* < .001, ref 4-6 years).

Child Characteristics	N	%	95% CI
Gender			
Boys	1620	49.5	47.8-51.2
Girls	1651	50.5	48.8-52.2
Age			
4-6 years	845	25.8	24.4-27.4
7-9 years	1246	38.1	36.4-39.8
10-12 years	1091	33.4	31.8-35.0
13 years +	89	2.7	2.2-3.3
School Type			
Public	2466	75.4	73.9-76.8
Private	805	24.6	23.2-26.1
Total	3271		

Table 2. BMI-for-Age Status of Elementary School Children on Majuro, Republic of Marshall Islands														
	Underweight			Healthy Weight			Overweight			Obese			χ ² Results for Obesity Prevalence	
	n	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	χ ²	P-Value
Overall	149	4.6	3.9-5.3	2686	82.1	80.8-83.4	269	8.2	7.3-9.2	167	5.1	4.4-5.9		
Gender														
Boys	81	5.0	4.0-6.1	1290	79.6	77.6-81.5	147	9.1	7.7-10.5	102	6.3	5.2-7.6	Ref	
Girls	68	4.1	3.2-5.2	1396	84.6	82.8-86.2	122	7.4	6.2-8.7	65	3.9	3.1-5.0	9.319	.002
Age														
4-6 Years	34	4.0	2.9-5.5	724	85.7	83.2-87.9	59	7.0	5.4-8.8	28	3.3	2.3-4.7	Ref	
7-9 Years	55	4.4	3.4-5.7	1035	83.1	80.9-85.1	101	8.1	6.7-9.7	55	4.4	3.4-5.7	1.60	.21
10-12 Years	51	4.7	3.5-6.0	859	78.7	76.2-81.1	104	9.5	7.9-11.4	77	7.1	5.9-8.7	13.01	<.001
13 Years +	9	10.1	5.1-17.6	68	76.4	66.8-84.3	5	5.6	2.2-11.9	7	7.9	3.6-14.8	4.62	.031
School Type														
Public	127	5.2	4.3-6.1	2104	85.3	83.9-86.7	163	6.6	5.7-7.6	72	2.9	2.3-3.6	Ref	
Private	22	2.7	1.8-4.0	582	72.3	69.1-75.3	106	13.2	11.0-15.6	95	11.8	9.7-14.2	99.01	<.001

Table 3. Stunting Status of Elementary School Children on Majuro, Republic of Marshall Islands								
	Not stunted			Stunted			χ ²	P-Value
	n	%	95% CI	N	%	95% CI		
Overall	2498	76.4	74.9-77.8	773	23.6	22.2-25.1		
Gender								
Boys	1249	77.1	75.0-79.1	371	22.9	20.9-25.6	Ref	
Girls	1249	75.7	73.5-77.7	402	24.3	22.3-26.5	0.95	.33
Age								
4-6 Years	671	79.4	76.6-82.0	174	20.6	18.0-23.4	Ref	
7-9 Years	999	80.2	77.9-82.3	247	19.8	17.7-22.1	0.18	.67
10-12 Years	791	72.5	69.8-75.1	300	27.5	24.9-30.2	12.28	<.001
13 Years and Over	37	41.6	31.7-51.9	52	58.4	48.1-68.3	62.8	<.001
School Type								
Public	1757	71.2	69.4-73.0	709	28.8	27.0-30.6	Ref	
Private	741	92.0	90.0-93.8	64	8.0	6.2-10.0	145.50	<.001

Discussion

Overall, the study found that 23.6% of elementary school children on Majuro were stunted, and 5.1% were obese. The prevalence of obesity was higher among boys, children attending private school, and older children. The prevalence of stunting was similar for boys and girls, but higher among children attending public school and older children.

By providing recent data from a large sample of children on Majuro, our study has made a significant contribution to the literature of childhood stunting and obesity in RMI, particu-

larly for children over 5 years of age for whom limited recent data are available. Only three previous studies have assessed prevalence of obesity and/or stunting among children in RMI. A 2017 national nutrition survey found stunting prevalence of 35% and obesity prevalence of 4% among children under 5 years of age in RMI.¹⁰ Another recent survey conducted as part of the Children's Healthy Living Program found stunting prevalence of 35% among children 2-8 years of age, and no obese children.¹⁸ Finally, a 2003 survey conducted in 6 locations in RMI, ranging from urban and peri-urban conditions to remote atolls, found 35.5% of children 1-5 years of age, and 36.3% of children 5-10 years of age, were stunted.¹⁹

The prevalence of obesity identified in our study (5%) is similar to that reported among children under 5 in the recent national nutrition survey.¹⁰ While the Children's Healthy Living Program found no obese children aged 2-8 years, this may be due to the study's small sample size (214 children).¹⁸ The obesity prevalence identified in our study is substantially lower than that reported in other United States-affiliated Pacific islands. For example, previous studies have reported obesity prevalence of 47% of children aged 8 years in American Samoa, and 23.0% of children aged 6-11 years on Guam.^{20,21} While obesity prevalence was much lower in our study, the pattern of higher prevalence of obesity among boys, and in older children, is consistent with that reported in USAPIs^{18,20} and internationally.^{22,23}

The current study identified a high prevalence of stunting (23.6%) among elementary school children on Majuro, indicating that childhood undernutrition continues to be a significant public health issue on Majuro. While this is lower than the prevalence reported in previous studies^{10,18,19} (approx. 35%), comparisons must be made with caution due to the different age groups, sampling methods and locations of the studies. Nevertheless, the observed prevalence of 23.6% is "very high" according to WHO classifications - in a well-nourished population we would expect only 2.3% of children to be stunted.¹⁷

The high prevalence of stunting in RMI, - and undernutrition more broadly - has been attributed to a complex range of factors including household food insecurity, limited availability of nutritious local foods, poor maternal nutrition during pregnancy, unhealthy household environments (eg, lack of clean water, poor sanitation), a presence of micronutrient deficiencies throughout infancy and young childhood, and poor child feeding practices (eg, limited breastfeeding, poor complementary feeding practices).¹⁰ The nutrition situation is further exacerbated by the ready availability, and aggressive marketing, of imported processed foods that are high in calories.^{19,24} The recent national nutrition survey in RMI found that poorer households were more likely to experience food insecurity, and that children under 5 in the poorest households were more likely to be stunted than children from higher wealth quintiles.¹⁰ Similarly, the higher prevalence of stunting in public school students than private school students reported here strongly suggest food insecurity as a challenge on Majuro. While previous research in RMI has mainly focussed on children under 5, future research may seek to further explore the complex associations between food security, nutrition and stunting among older children.

The study supports the need for interventions to improve nutrition and promote healthy lifestyles among elementary school-aged students, both to address the existing high rates of stunting in this age group, and to intervene early to prevent the onset of obesity. The WHO highlights the importance of 'double-duty actions' - interventions, programs, and policies that simultaneously address both undernutrition, as well as obesity and diet-related non-communicable diseases.²⁵ School-based nutrition programs have been identified as a potential area for double-duty action, and in addition to addressing undernutrition and obesity among school children may also be a potential entry point for engaging with parents and communities.²⁶ The Majuro Youth Lifetime Health Program, by promoting healthy lifestyles and nutrition for elementary school students, has potential for double-duty action. Beyond school-based education and wellness programs, there is also a need to increase the affordability and accessibility of healthy foods, for example through free in-school breakfast and lunch programs, as well as national legislation and policy. Our finding that private schools had higher obesity prevalence and lower stunting prevalence than public schools suggests that interventions in RMI may need to be tailored by school type, with greater emphasis on undernutrition in public schools and overnutrition in private schools.

There were several limitations to this study. First, although the eight members of the data collection team received anthropometry training, there was no formal standardization of the data collection team. Although erroneous data were minimised by excluding extreme values for height, BMI-for-age, and height-for-age, measurements may still be subject to measurement error. Second, the findings may not be representative of all children in RMI, as the sample did not include children from islands other than Majuro, children not enrolled in school, children who were home-schooled, and children not attending school on the day of the survey - all of whom may have different growth status to the children included in our study. However, the large sample size and high participation rate (data were collected for 72% of children in participating schools) suggests the sample is likely to be representative of Majuro elementary school students. Finally, no data were collected on children's ethnicity. In other USAPIs, prevalence of childhood obesity has been found to vary by ethnicity;²⁰ it would have been of interest to know whether this is also the case on Majuro.

In conclusion, the dual burden of undernutrition and obesity is a significant public health challenge in RMI. The rates of stunting and obesity observed in this study highlight elementary schools as an important setting for taking integrated double-duty actions to address the nutrition dual burden in RMI.

Conflict of Interest

None of the authors identify any conflict of interest.

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MEDICAL SCHOOL HOTLINE

Governor Ige's Remarks — John A. Burns School of Medicine University of Hawai'i at Mānoa, Convocation Ceremony Keynote Address, Sunday, May 12, 2019

David Y. Ige, Governor of the State of Hawai'i

In 1993, the Medical School Hotline was founded by Satoru Izutsu PhD (former vice-dean UH JABSOM), it is a monthly column from the University of Hawai'i John A. Burns School of Medicine and is edited by Kathleen Kihmm Connolly PhD; HJH&SW Contributing Editor.

Dean Hedges, Regent Portnoy, distinguished faculty, parents, families, friends, and the John A. Burns School of Medicine Class of 2019.

Good morning and *Aloha!*

Congratulations on your incredible achievement — and thank you for allowing me the honor of being a part of your special day.

We are here to celebrate and honor YOU this morning, for surviving this long and arduous journey. Congratulations Class of 2019.

Please take a moment to remember and thank those who have supported and inspired you along the way.

Perhaps it was a teacher who sparked your interest in the sciences, a fellow student who joined you in letting off some steam in your time of stress and anxiety, or a classmate who pulled all-nighters with you...

And most importantly — your parents, grandparents, *tutus* (grandmothers), aunts, uncles, *hanai* (adopted) families — who may have guided you, supported you, rooted for you and sacrificed... so that you could realize your dreams.

They too deserve to be acknowledged today.

You may be wondering, as I have — why an engineer by profession, and the governor of the State of Hawai'i — has been invited to speak to DOCTORS at the convocation for the John A. Burns School of Medicine? I have to admit, it's pretty intimidating to see the list of previous keynote speakers at convocation, but here's my story.

My grandparents, the *Issei* (first generation Japanese immigrants), immigrated to Hawai'i from Japan and Okinawa more than 100 years ago in search of a better life and future for their family.

They came to work on the plantations in Hawai'i. Weeding, cutting, and hauling sugarcane by hand is back-breaking work, for just pennies a day.

My mother, Edna Tsurue Miota, grew up on Kahuku Plantation, on the North shore of O'ahu. Her formal education in the public schools ended in the 8th grade.

My mother's dream was to become a nurse...and it became very clear that would not be possible here in Hawai'i.

A doctor at Kahuku Hospital, Dr. Rothwell, learned of my mother's dream, and took action to help make her dream come true. He contacted his friend, Dr. Totwell, in Denver and he agreed to assist.

At age 15, my mother left Hawai'i and traveled alone by steamship to the mainland. She was *hanai'd* by Dr. Totwell and lived with his family for several years, and graduated from East High School in Denver and St. Luke's School of Nursing before returning to Hawai'i.

Doctors are compassionate people who are committed to improving people's lives — and they do make dreams come true.

Life was harsh on the plantation, with few options. My father, Tokio Ige, and father-in-law, Sakuji Amano, both grew up on Ewa plantation. Their formal education was completed when they graduated from Ewa Elementary as 8th graders. They eventually began work on the plantation as a steel worker and crane operator.

On the morning of December 7, 1941, when the bombs fell on Pearl Harbor, their lives changed forever.

More than 120,000 Americans of Japanese ancestry were stripped of their Constitutional rights and relocated to internment camps.

At first, the war department classified the *Nisei*, (American born children of Japanese immigrants) as 4C, “enemy aliens” unfit for service. The *Nisei* had learned one of the most important values, “*on*”, a debt of gratitude in the deepest sense, an obligation to be grateful to the land of their birth, America. They were eager to prove their loyalty.

My father and father-in-law both volunteered to become members of the 100th Infantry Battalion of the 442nd Regimental Combat Team during World War II. Their service was legendary – the most decorated battalion for its size and length of service in US history.

After the war, the *Nisei* soldiers returned to Hawai‘i and were subjected to much of the same prejudice and discrimination they had endured before the war. But they had been changed. After proving their loyalty to America, they were committed to the vision of the Founding Fathers of this great nation, to create “A More Perfect Union,” committed to the cause of equal rights and equal opportunity for all of the residents of Hawai‘i.

The *Nisei* veterans laid down their arms and began building for the future.

They worked to elect John A. Burns as Governor in 1962. Governor Burns realized that the only way to ensure equal opportunity for all, was for Hawai‘i to have a world class university and its own medical school. This school was started in 1965.

The John A. Burns School of Medicine has become one of the best in the country in Primary Care as ranked by *US News and World Report*. Its student body is amongst the most diverse in America, giving opportunities to all ethnic groups in Hawai‘i. About half of all practicing doctors in Hawai‘i are graduates of JABSOM, and 80 percent of *Honolulu Magazine’s* Top Doctors in Hawai‘i are JABSOM graduates.

Like my mother, my niece, Kelsey Ige, had dreams of a career in healthcare. Our family is so fortunate that JABSOM was here to fulfill her dreams. She graduated in the Class of 2018 and doing her residency in Oregon.

But if there is a thread that connects us, it’s because we know the incredible effort, sacrifice, focus, struggle and plain old hard work that it takes to achieve a dream.

Some of you have worked several jobs while in medical school. You’ve been raising children and taking care of families. Others have overcome personal, social, economic or academic challenges.

But you prevailed. You did it. And it has brought you to this point today.

This is a remarkable and exciting time to be a doctor. Being a doctor continues to be one of the most honored and prestigious professions. Doctors are amongst the most trusted professionals.

But the world of health care is changing: The Internet, the super-computer that is your cell phone in your pocket, genomics, and artificial intelligence, will change how you practice as doctors.

Most of your patients, will already have consulted WebMD or Dr. Google for self-diagnosis, BEFORE they see you. They selected you because they found you on Facebook or some other search engine. They researched you and know that you graduated from one the best medical schools in the country, and you had great reviews on Yelp, or Healthgrades.com, or Bestdoctors.com.

There will be many new discoveries and breakthroughs in your lifetimes, new devices like ultrasound wands that connect to your cell phone, that you will embrace in your career.

As you celebrate the completion of medical school and reflect on your transition to your residencies wherever they may take you — as your Governor I have one ask to make of you.

Hawai‘i, like every other community in the world, has a severe shortage of doctors, in virtually every field and specialty. The people of Hawai‘i have invested a lot in each and every one of you...giving you the best medical education in the country. I humbly ask for you to consider giving back to Hawai‘i, and returning to serve the people of Hawai‘i. I will be an active partner in finding ways to help you do that.

You are now medical DOCTORS. You have a degree from this outstanding medical school. What an incredible achievement. You have everything you need now, to move on to the next phase of your journey. I conclude my remarks this morning with one final recommendation.

I strive to “live *aloha*” every day and ask you to do the same. I’ve seen it change the course of action in our community.

Aloha is a life force that defines who we are and why we are here. It is a way of life, a mind set and an attitude.

It is a natural response of love, respect, sharing and acceptance of all.

This attitude creates ripple effects – and lifts up our communities... our families...

It reaches forgotten people in far corners of our state, in our country and world... who see hope in committed young people like you.

As you move on to the next phase in your noble profession — keep adding to your body of work, and the living legacy of the John A. Burns School of Medicine.

Don't ever shy away from moments that challenge you, or that force you to try harder and to dig deeper. It is there that you will discover the strength and the gifts that you never knew you had.

Congratulations, JABSOM Class of 2019.

Aloha!

Author's Affiliation:
Governor of the State of Hawai'i

“Youth Talk Back” Leadership Program Promotes Social Change and Improved Community Health in Hawai‘i

Scott Nishimoto JD

Insights in Public Health is a monthly solicited column from the public health community and is coordinated by HJH&SW Contributing Editor Tetine L. Sentell PhD from the Office of Public Health Studies at the University of Hawai‘i at Mānoa and Contributing Editor Michele N. Nakata JD from the Hawai‘i Department of Health.

Abstract

This article describes the Youth Talk Back program in Hawai‘i, which is growing leadership for social change with relevance for community empowerment and grass-roots participation. These youth don’t subscribe to the “What do I want to be when I grow up?” mindset, but rather the “What problem can I solve right now?!” mindset. This article gives a history of the program and examples of the youth-driven work with relevance to community health and well-being.

“If you want to know what youth are wanting and needing, you must go to the source. You have to be in conversation with them.”

– Hawai‘i community organizer Causha Spellman

The Youth Talk Back program was created by Causha Spellman and Kahala Huihui in 2017 as part of a year-long women’s group that was inspired by the 2017 Women’s March. Youth Talk Back was developed within the larger organization of Ceeds of Peace. Ceeds of Peace was initiated in 2012 and is a program to empower youth to find, express, and amplify their voices, then create action in their communities to create positive impacts. Ceeds of Peace is committed to raising peacebuilding leaders who will create peaceful, just, and sustainable communities by teaching and planting 7 essential leadership skills: critical thinking, courage, communication, compassion, conflict resolution, commitment, and collaboration.

This article describes the history of the Youth Talk Back program in Hawai‘i and has been informed by talking with the founders directly about their recollections. Details are also included about some of the initiatives conceived and led by local young people with particular relevance to empowerment and community health with insights from the youth leaders.

Youth Talk Back History

The genesis of the Youth Talk Back program was a specific discussion about the importance of making sure that youth had a voice in what felt like a newly tumultuous political landscape. Members of the Women’s March felt that many members of

the legislature, mostly older men, were not likely to change their minds about critical issues. Instead, the group members concluded, if they wanted to make a positive impact in the current political climate, efforts would be better spent with youth to collectively raise “leaders for social change.”

This statement stuck with Ceeds of Peace co-founders, Dr. Maya Soetoro-Ng and Dr. Kerrie Urosevich, who were able to support Spellman’s vision by adopting Youth Talk Back as a Ceeds of Peace program. Causha Spellman reached out to a fellow community organizer, Kahala Huihui, a teacher at Waipahu High School. After subsequent discussions and planning, Youth Talk Back was born as a platform to empower youth to lead this conversation.

Youth Talk Back was specifically designed with youth as leaders as Spellman and Huihui both recognized that youth voices are often stifled by adults and that conversations about amplifying youth voice typically do not include youth themselves.

As Spellman explained: “Typically, when adults create programs for youth, they don’t take into account the fact that what [adults] think youth want and need are usually very different from what youth think and feel they want and need.” She described how important it is “to create a space where youth could unapologetically be themselves, speak their truth, and also have an opportunity to not just talk about things, but to put some action behind it... They [youth] create, build social capital, find passion and purpose, invest in their passion and purpose, advocate, and more.”

Huihui added, “Hawai‘i youth have huge interest in getting involved with their communities but lack the understanding of how to reach out and connect with others with similar interests. Historically and culturally, Hawai‘i youth think of ‘talking back’ as showing disrespect to their elders and deem it often as inappropriate or out of place. Youth Talk Back has helped to change the stigma of youth using their voices from

a dishonorable act seeking attention and personal gain, to a proactive and admirable commitment to bettering society for generations to come.”

The first Youth Talk Back cohort, which consisted of youth ages 12-17 years from across the Hawaiian Islands, finished their journey in 2018. Thanks to generous funding from The Omidyar ‘Ohana Fund at the Hawai‘i Community Foundation and Pam Omidyar, leadership from another community organizer Younghee Overly, and the persistence and sacrifice from Spellman and Huihui, Ceeds of Peace was able to expand the Youth Talk Back program beyond its pilot year into a second cohort for 2018-2019.

Youth Talk Back Framework

The Youth Talk Back efforts are in line with the United Nations Security Council’s Youth4Peace resolution, which recognizes that “young people play an important and positive role in the maintenance and promotion of international peace and security.”²¹ The resolution emphasizes the need to give youth greater voices in decision-making and establish platforms and methods that enable youth to participate meaningfully.

Youth Talk Back embraces this United Nations resolution, and then takes it a step further. Not only does the program challenge youth to “play an important and positive role” in peacebuilding but also challenges them to design and lead peacebuilding initiatives.

The youth leadership program framework is based on Kouzes and Posner’s (2012) research on leadership development and peacebuilding, which identified five practices of exemplary leadership: (1) Model the way through words and action; (2) inspire a shared vision to reach consensus on goals and get people excited enough to commit to that vision; (3) challenge the process to change the status quo when necessary; (4) enable others to act as part of viable teams; (5) encourage the heart by recognizing people for good work and celebrating successes.²

In addition, Youth Talk Back has a goal towards building sustainable communities, defined as “those that come together to protect their most vulnerable members, while designing and adapting socioeconomic systems to reflect the unique needs of their people and land.”²³

Youth Talk Back Model

Youth Talk Back has developed into a youth-driven program dedicated to help youth of Hawai‘i to find, express, and act on their voices and choices. It does so by focusing on: (1) Providing youth with a safe space to discuss peace-related issues that resonate with them, (2) equipping youth with necessary peacebuilding and community organizing tools and skills to

empower themselves, (3) connecting them with community resources and partners, and (4) supporting them throughout their action planning processes.

A staff of adult facilitators help to convene the youth and amplify these youth voices. Adult facilitators serve to challenge youth to dismantle the idea that they’re too young or that they lack the skills or connections to make profound change. They teach peacebuilding, community organizing, social engagement, design thinking, and strengths-based and solution-focused idea generation, all while keeping youth voices and choices at the center of the movement toward peace.

Specifically, the Youth Talk Back program consists of 4, in-person, 4-hour convenings and two 2-hour zoom conferences, bringing together 25-30 youth from across the Hawaiian Islands. Each convening builds on the last one, teaching a progression of skills and facilitating the sharpening of action plans. The fourth and final convening is a share-out session, giving the youth an opportunity to present their action plans to an audience of more than 100 teachers, community members, and families.

Youth Talk Back Impact

Over the past 2 years, Youth Talk Back has steadily developed into a program with profound impact. Here are 3 program success stories.

March For Our Lives and Vote 16

In the inaugural year of Youth Talk Back, 2 students organized and led a cross-school team to plan the March For Our Lives event in Honolulu in March 2018, followed by a concerted effort to push lawmakers for tougher gun control measures. The March For Our Lives event was held on March 23, 2018. This effort gained coverage in Honolulu Civil Beat and inspired youth all over the state to mobilize and launch similar movements.⁴ One year later, the same 2 students launched the Vote 16 initiative to lower the legal voting age to 16. This movement resulted in Senate Bill 4, introduced by Senators Stanley Chang and Karl Rhoads, thanks to the fierce advocacy from these high school students.

Kaua‘i High School Students for Change

Students from Kaua‘i High School organized “Kaua‘i High School Students for Change,” a club designed to take action on issues that impact youth in their community. Their youth-led club held its first youth peace summit to mentor and motivate middle school students to create community change through action planning. The project’s impact will live on beyond these students’ time at Kaua‘i High School, as they have mentored and motivated a new generation of peacebuilders in their community to continue the work they’ve started.

Co-organizer Bryden Ka‘auwai said that Youth Talk Back inspired him to start a change club at his high school. “As I watched young leaders from across the state gather and discuss about issues they wanted to take action on, I instantly knew that they were passionate leaders,” he said. The change club allows students to speak up on important initiatives such as bullying prevention. So far, the student leaders have worked to coordinate school events encourage more student participation.

Puha Stream Restoration

A team of Youth Talk Back students from Mālama Honua Public Charter School decided to restore Puha Stream in their hometown of Waimānalo. The students gathered 50-100 community members as well as various community partners to lend a hand in clearing trash, removing invasive species, and replacing them with native species.

Co-organizer Kaila‘i Vickery explains: “At first when we started thinking about our action plans we started looking at issues in the community. We then decided that our Waimānalo beaches have trash and are dirty and wanted to do a beach clean-up. While researching beach clean-ups we found out that a source of pollution comes from the streams. We then decided to do a stream clean-up to try minimize the amount of trash and pollution going on our beaches and into our oceans.”

Co-organizer Kamali‘i Akiona adds, “This brings peace within me when I work and get the job done, peace with others because I can work with them to get it done, and peace in our community because we can get to know about each other when working.”

The Role of Ceeds of Peace

Ceeds of Peace is the umbrella organization in which Youth Talk Back is embedded. It is one of many programs, which include teaching peacebuilding skills to parents, teachers, community members, and youth. Ceeds of Peace’s goal is to create movements in communities, both those designed by Ceeds of Peace and also movements to inspire others to design and launch on their own initiatives. We hope to create a generation of peacebuilding leaders who will usher us into a more compassionate, courageous, collaborative era for our community and beyond.

Ceeds of Peace aims to take a proactive approach to peacebuilding and community health, focusing on preventing the underlying issues that threaten peace and community health. For instance, violence “threatens the lives and physical and mental health of millions of people, overburdens health systems, undermines the development of human capital, and slows economic and social development.”⁵ Instead of designing responses to issues like bullying and violence, Ceeds of Peace focuses on developing youth and adults who are compassionate and engage in kindness instead of bullying and violence, and are courageous enough to be upstanders when they recognize bullying and violence.

This proactive approach is evidence-based and stems from the World Health Organization’s (WHO) series of briefings on violence prevention programs. The briefings showed how programs that address underlying causes and risk factors can reduce the frequency of violence-related outcomes by up to 50%.⁶ According to author Rachel Davis, “violence and trauma are linked to the onset of chronic diseases and mental health problems, and caring for chronic diseases represents the costliest and fastest-growing portion of healthcare costs for individuals, businesses, and government. Yet violence is preventable, and prevention is of great value by any criteria.”⁷

There are a number of methods to prevent violence. Ceeds of Peace does not necessarily prescribe or prefer a single one as the sole solution. Rather, as explained by Urosevich and Soetoro-Ng, “Ceeds of Peace helps local communities and educational institutions raise future peacebuilders by encouraging cultural values such as dialogue, collaboration, mindfulness, and courageous action. [Ceeds of Peace] emphasizes action because it is never enough to state commitments to change. People must move on their commitments. Leadership for a sustainable future is not a matter of acquiring a particular political mindset; it is about crafting a daily practice of action and service.”³ Through this focus on action planning, organizers are able to bring out the best ideas from their communities which are culturally-relevant to the specific needs of each community.

Building Health in Hawai‘i Communities

Along with reducing violence, Youth Talk Back and other programs that promote both individual and community empowerment are also likely to lead to better individual and community health. The protection of vulnerable community members and designing and adapting activities to address and reflect unique community needs are not only peacebuilding priorities, but community health priorities as well. Youth Talk Back allows the young people who know these issues well to address their communities’ unique needs. Such youth-led action can bring about important, meaningful, grassroots-driven community change immediately with the additional hope to be sustainable over time. Empowerment itself can promote health for youth and hopefully their communities as well.⁸

Conclusion

“What do you want to be when you grow up?”

As a child, this was the foundational question shaping my education, goals, and priorities. I was waiting until I was a grown-up to be something. Even in high school as I developed strong views on community and global issues, including environmental and social justice, I did not take any direct action. I believed that I was just a kid, too young, too immature, or too ignorant to play a part in changing any of the wrongs I noticed in the world. Instead, I aimed to succeed academically with the intention of being accepted into college, and to study enough to someday

make a difference in my community. I believed that change and peace had to be led by adults. After all, adults elect our government, have the money, and occupy positions of power.

While it is too late for me to be a child again, the Youth Talk Back participants in Hawai‘i don’t subscribe to the “*What do I want to be when I grow up?*” mindset. Instead, they have adopted the “*What problem can I solve right now?!*” mindset. They trust that they possess the keys to open dialogue and solutions to some of our most pressing issues. Not only do they believe that some of these movements for change and peace *can* be youth-led – they believe that they *must* be youth-led.

Will you join us? Please reach out to Scott Nishimoto at scott.nishimoto@ceedsofpeace.org or visit www.ceedsofpeace.org for more information.

Acknowledgement

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Revised July 3, 2019

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Percentages: Report percentages to one decimal place (eg, 26.7%) when sample size is ≥ 200 . For smaller samples (< 200), do not use decimal places (eg, 27%, not 26.7%), to avoid the appearance of a level of precision that is not present.

Standard deviations (SD)/standard errors (SE): Please specify the measures used: using “mean (SD)” for data summary and description; to show sampling variability, consider reporting confidence intervals, rather than standard errors, when possible to avoid confusion.

Population parameters versus sample statistics: Using Greek letters to represent population parameters and Roman letters to represent estimates of those parameters in tables and text. For example, when reporting regression analysis results, Greek symbol (β), or Beta (b) should only be used in the text when describing the equations or parameters being estimated, never in reference to the results based on sample data. Instead, one can use “b” or β for unstandardized regression parameter estimates, and “B” or β for standardized regression parameter estimates.

P values: Using *P* values to present statistical significance, the actual observed *P* value should be presented. For *P* values between .001 and .20, please report the value to the nearest thousandth (eg, $P = .123$). For *P* values greater than .20, please report the value to the nearest hundredth (eg, $P = .34$). If the observed *P* value is greater than .999, it should be expressed as “ $P > .99$ ”. For a *P* value less than .001, report as “ $P < .001$ ”. Under no circumstance should the symbol “NS” or “ns” (for not significant) be used in place of actual *P* values.

“Trend”: Use the word trend when describing a test for trend or dose-response. Avoid using it to refer to *P* values near but not below .05. In such instances, simply report a difference and the confidence interval of the difference (if appropriate), with or without the *P* value.

One-sided tests: There are very rare circumstances where a “one-sided” significance test is appropriate, eg, non-inferiority trials. Therefore, “two-sided” significance tests are the rule, not the exception. Do not report one-sided significance test unless it can be justified and presented in the experimental design section.

Statistical software: Specify in the statistical analysis section the statistical software used for analysis (version, manufacturer, and manufacturer’s location), eg, SAS software, version 9.2 (SAS Institute Inc., Cary, NC).

Comparisons of interventions: Focus on between-group differences, with 95% confidence intervals of the differences, and not on within-group differences.

Post-hoc pairwise comparisons: It is important to first test the overall hypothesis. One should conduct *post-hoc* analysis if and only if the overall hypothesis is rejected.

Clinically meaningful estimates: Report results using meaningful metrics rather than reporting raw results. For example, instead of the log odds ratio from a logistic regression, authors should transform coefficients into the appropriate measure of effect size, eg, odds ratio. Avoid using an estimate, such as an odds ratio or relative risk, for a one unit change in the factor of interest when a 1-unit change lacks clinical meaning (age, mm Hg of blood pressure, or any other continuous or interval measurement with small units). Instead, reporting effort for a clinically meaningful change (eg, for every 10 years of increase of age, for an increase of one standard deviation (or interquartile range) of blood pressure), along with 95% confidence intervals.

Risk ratios: Describe the risk ratio accurately. For instance, an odds ratio of 3.94 indicates that the outcome is almost 4 times as likely to occur, compared with the reference group, and indicates a nearly 3-fold increase in risk, not a nearly 4-fold increase in risk.

Longitudinal data: Consider appropriate longitudinal data analyses if the outcome variables were measured at multiple time points, such as mixed-effects models or generalized estimating equation approaches, which can address the within-subject variability.

Sample size, response rate, attrition rate: Please clearly indicate in the methods section: the total number of participants, the time period of the study, response rate (if any), and attrition rate (if any).

Tables (general): Avoid the presentation of raw parameter estimates, if such parameters have no clear interpretation. For instance, the results from Cox proportional hazard models should be presented as the exponentiated parameter estimates, (ie, the hazard ratios) and their corresponding 95% confidence intervals, rather than the raw estimates. The inclusion of *P*-values in tables is unnecessary in the presence of 95% confidence intervals.

Descriptive tables: In tables that simply describe characteristics of 2 or more groups (eg, Table 1 of a clinical trial), report averages with standard deviations, not standard errors, when data are normally distributed. Report median (minimum, maximum) or median (25th, 75th percentile [interquartile range, or IQR]) when data are not normally distributed.

Figures (general): Avoid using pie charts; avoid using simple bar plots or histograms without measures of variability; provide raw data (numerators and denominators) in the margins of meta-analysis forest plots; provide numbers of subjects at risk at different times in survival plots.

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