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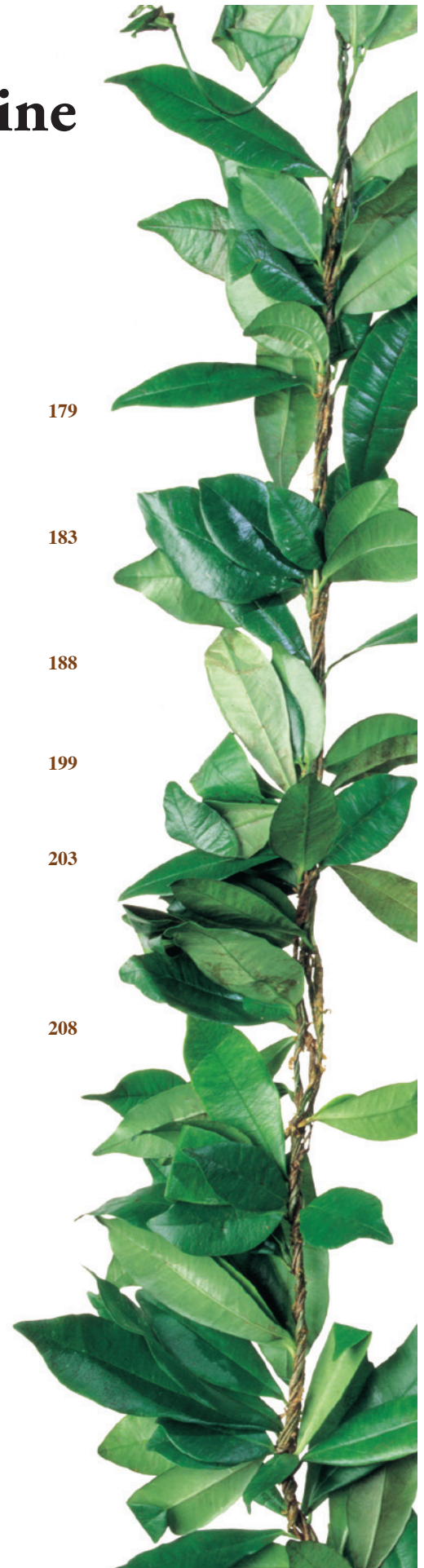
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Shingles in Pregnancy: An Elusive Case of Left Upper Quadrant Abdominal Pain

Jennifer W.H. Wong MD; Jennifer M.Y. Chin MD; and Ryan J. Schlueter DO

Abstract

Pregnancy can complicate the presentation and workup of abdominal pain. A healthy 21-year-old gravida-3 para-1 woman at 34 weeks of gestation presented for severe pain localized to her abdominal left upper quadrant (LUQ). Physical exam was unremarkable except for localized pain on palpation, and she was discharged with acetaminophen and cyclobenzaprine for presumed musculoskeletal pain. The next day, she returned for worsening pain. An extensive workup including labs, electrocardiogram, chest x-ray, and abdominal computed tomography was unremarkable, and she was discharged with hydrocodone/acetaminophen. Later that evening, after two discharges, the patient presented for increased pain with new onset of vesicles in her left T6 dermatome. She was diagnosed with shingles, started on valacyclovir and gabapentin, and eventually went on to deliver a healthy infant. Shingles classically presents as excruciating pain followed by the eruption of vesicles. This case is important because it reviews the significance of shingles in pregnancy and is one of the first reports to extensively discuss the differential and workup of LUQ abdominal pain in pregnancy. Abdominal pain is a relatively common complaint during pregnancy, and a methodical approach should be taken when evaluating LUQ in pregnancy. Shingles could be considered in the differential diagnosis of pain of unclear origin.

Keywords

Abdominal pain, Varicella zoster virus, Herpes zoster, Obstetrics, Pregnancy

Abbreviations

VZV = Varicella zoster virus

LUQ = left upper quadrant

CBC = complete blood count

CMP = complete metabolic panel

EKG = electrocardiogram

CT = computed tomography

HELLP = hemolysis, elevated liver enzymes, and low platelet count

Introduction

Varicella zoster virus (VZV) is a herpes virus that causes chickenpox and shingles. Chickenpox results from a primary viral infection. Shingles, also known as herpes zoster, is a reactivation of latent virus in the dorsal root ganglia.^{1,2} Pregnancy does not alter the incidence or severity of shingles.² Shingles affects all ages, with the highest incidence among people in their sixth decade of life, at an estimated 5-10 cases per 1,000 individuals.¹ The disease presents with prodromal pain, pruritus, or paresthesia, followed by the development of a unilateral vesicular rash in a dermatomal distribution.^{1,2} The pain can be debilitating and precedes the rash by 48-72 hours.¹ In immunocompetent individuals, lesions will form for 3-5 days, and the entire disease course will last for 7-10 days.¹ Shingles is a clinical diagnosis that is exceedingly difficult to make prior to the onset of rash. If diagnosis is uncertain, vesicular lesions

can be tested for the presence of VZV via polymerase chain reaction, direct fluorescent antibodies, or viral cultures.¹

Treatment with antivirals (Table 1) decreases the duration and severity of the illness, in addition possibly decreasing the risk of postherpetic neuralgia.^{3,4} Acute pain can be managed with acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs), narcotics, and corticosteroids.^{2,4} NSAIDs should be used with caution in pregnancies beyond 30 weeks of gestation due to the risk of premature closure of the fetal ductus arteriosus and development of oligohydramnios.⁵⁻⁷ For postherpetic neuralgia, gabapentin and tricyclic antidepressants are the most efficacious long acting pain modulators.³ Interestingly, a growing number of studies support the use of gabapentin during an acute attack in order to prevent the development of postherpetic neuralgia.^{8,9}

Susceptible individuals can acquire VZV via direct contact of infected secretions. Lesions are considered infectious until they have crusted over. While an active chickenpox infection crosses the placenta and places the fetus at serious risk for congenital varicella syndrome, shingles rarely affects the fetus. For shingles, pre-existing maternal antibodies against the virus minimizes the viral load, therefore protecting the fetus during the viral reactivation.^{10,11}

In 2006, the United States Food and Drug Administration released a vaccine for the prevention of shingles in people at least 50 years of age. This live, attenuated vaccine does not prevent chickenpox and is contraindicated in pregnant and immunocompromised individuals.¹² The American College of Obstetricians and Gynecologists recommends that non-pregnant women of reproductive age be counseled on the prevention of chickenpox. If the patient does not have a history of chickenpox, a history of vaccination, or serologic evidence of immunology, a two-dose live, attenuated varicella vaccination is recommended prior to conception or upon completion or termination of pregnancy.¹³

We report a case of shingles in pregnancy presenting as elusive left upper quadrant (LUQ) abdominal pain. In the past 10 years, a paucity of reports have been published on shingles in pregnancy, and this will be Hawaii's first-ever publication. This case is important because it reviews the significance of shingles in pregnancy and is one of the first reports to extensively discuss the differential and workup of LUQ abdominal pain in pregnancy. Abdominal pain is relatively common complaint during pregnancy, and LUQ pain diagnoses can be clinically difficult. A methodical approach should be taken when evaluating LUQ in pregnancy, and shingles could be considered in the differential diagnosis of pain of unclear origin.

Table 1. Antiviral Medications for Shingles. (Adapted from: Lexicomp, 2017 and www.goodrx.com)			
Medication (Brand Drug)	Dosage for Immunocompetent Adults	Generic Drug Cost	Brand Drug Cost
Acyclovir (Zovirax)	800mg five times daily for 7 days	\$12	\$658
Famciclovir (Famvir)	500mg three times daily for 7 days	\$25	\$519
Valacyclovir (Valtrex)	1,000mg three times daily for 7 day	\$20	\$435

Table 2. Adverse Fetal Effects of Radiation. (Adapted from: Obstetrics: Normal and Problem Pregnancies, 2017 and Centers for Disease Control and Prevention, 2014.)		
Gestational Age (weeks)	Minimum Radiation Dose (cGy)	Adverse Effects
0-4	5-20	Embryonal demise (all-or-none phenomenon)
5-8	20-50	Embryonal demise Congenital anomalies Intrauterine growth restriction Childhood cancer
9-15	6-50	Intrauterine growth restriction Microcephaly Severe intellectual disability Childhood cancer
>16	12-150	Intellectual disability Childhood cancer

Table 3. Estimated Fetal Radiation Doses from Imaging Studies. (Adapted from: Obstetrics: Normal and Problem Pregnancies, 2017.)	
Imaging Study	Estimated Fetal Dose (cGy)
Chest radiograph, 2 views	0.0002
Abdominal radiograph	0.1-0.3
Chest computed tomography	0.002-0.02
Abdominal computed tomography	2.5-3.5
Ventilation scan	0.007-0.05
Perfusion scan	0.04
Intravenous pyelography	0.6-1.0
Positron emission scan	1.0-1.5
Barium enema	0.7

Case Presentation

A healthy 21-year-old gravida-3 para-1 woman at 34 weeks of gestation presented to Labor and Delivery for LUQ abdominal pain that started the night before. The pain was rated 5/10 in severity, constant and dull in nature, and localized to a single point on her rib. The pain was aggravated by palpation but not with deep inspiration or movement. The patient denied any history of trauma, heavy lifting, or vigorous exercise. Varicella immunoglobulin G was positive on prenatal labs. On physical exam, no gross abnormalities were appreciated, and guarding and rebound tenderness were absent. Preterm labor was ruled out and the fetal heart tracing was reassuring, which ruled against placental abruption. She was discharged home with acetaminophen and cyclobenzaprine for presumed musculoskeletal pain.

The following day, the patient returned for the same pain, now rated 10/10 in severity. The pain was unrelieved by oral and intravenous acetaminophen, ibuprofen, cyclobenzaprine, lidocaine patches, and a combination of aluminum hydroxide, magnesium hydroxide, and simethicone. Given the unusual presentation and severity of the pain, an extensive workup was performed. A complete blood count (CBC), complete metabolic panel (CMP), amylase, lipase, and urine analysis were within normal limits. Electrocardiogram (EKG) exhibited a normal sinus rhythm. Chest x-ray was negative for rib fractures and acute cardiopulmonary disease. Abdominal computed tomography (CT) with intravenous contrast was remarkable for minimal right-sided hydronephrosis and hydroureter, likely related to the patient's gravid uterus and negative for splenic artery aneurysm rupture. Some relief was obtained with hydrocodone/acetaminophen, so she was discharged home with a short regimen of this narcotic.

Later that evening, she presented for increased pain, now described as sharp and unrelieved by hydrocodone/acetaminophen and with new onset of vesicles in her left T6 dermatome (Figures 1 and 2). The patient was diagnosed with herpes zoster (shingles) and started on valacyclovir and gabapentin. On hospital day 1, the pain improved and was associated with pruritis to the area. The patient was discharged home with close outpatient follow-up. Eventually, the patient's shingles resolved without any sequelae, and she delivered a healthy term infant.

Discussion

Diagnostic Imaging

In conclusion, shingles is uncommon in pregnancy but should be considered in the differential diagnosis of pain of unclear origin, especially if the severity of the pain appears to be out of proportion to the physical exam. The differential diagnosis of abdominal pain in pregnancy includes a wide range of causes from cardiac to gastrointestinal and of course, obstetrical etiologies. In cases of severe abdominal pain, indicated imaging should never be withheld because delayed diagnosis of life-threatening medical conditions, such as splenic artery aneurysm rupture, can result in significant harm to both the patient and fetus. Treatment goals involve pain control, antiviral medications, and possibly gabapentin for the prevention of postherpetic neuralgia. Unlike primary VZV infections, shingles rarely affects the fetus. In pregnant patients with severe, localized pain without clear exam findings, herpes zoster should be considered in the differential diagnosis.



Figure 1. Unilateral rash distributed within the T6 dermatome (arrows).



Figure 2. Vesicular appearing lesions.

Conflict of Interest

The authors have no actual or potential conflicts of interest.

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Risk and Protective Factors of Alcohol Use Identified by Community Providers and Stakeholders in Hawai'i: Qualitative Data Analysis

Codie M. Garza MS; Claudio R. Nigg PhD; Minami Konishi MPH; Ji-Young An PhD, MPH; Allison F. Wagner MA; and Danilyn K. Goya MPH

Abstract

The purpose of this study was to identify community providers' perspectives on risk and protective factors for youth alcohol use in Hawai'i to inform future trainings of providers. A total of 104 providers within communities and prevention organizations in Hawai'i were asked to list risk and protective factors for underage drinking in each of the socioecological levels (individual, family, community, and society). The majority of participants were female (66.3%). Overall, 507 risk and protective factors were listed. There were significantly more risk factors identified (54.8%) than protective factors (45.2%). Participants identified significantly fewer society level risk and protective factors than all other levels. The top three overall themes identified by participants were resources (8.3%), peer influence (7.7%), and family function (6.9%). These results not only provide information about how providers conceptualize substance abuse, but may also indicate that it is necessary to continue training providers in how to identify society level factors influencing individuals' substance use. It is recommended that more research should be conducted with community providers in Hawai'i to understand the attitudes about prevention in the community. Such research may allow for improvements in prevention strategies by providing a larger picture of substance use in the community.

Keywords

Risk factor, Protective factor, Alcohol use, Qualitative data analysis, Hawai'i

Introduction

Underage drinking is a significant public health issue in the United States, with 63.2% of high school students admitting to ever drinking alcohol in 2015 and 17.7% reporting binge drinking.¹ Specifically in Hawai'i, there is a consistent trend of alcohol consumption among youth, with 52.5% of high school students in 2013, 49.4% in 2015, and 49.0% in 2017 reporting ever drinking an alcoholic beverage. Though the overall rates of youth (9th- 12th grade) binge drinking in Hawai'i (13.4% in 2015) are lower than that for the entire United States (17.7%), data suggest differences based on ethnicity.² Native Hawaiians have significantly higher rates of binge drinking when compared to Filipino, Japanese, Other Asian, and Other Pacific Islanders in Hawai'i.² The consequences of alcohol use among youth are substantial and include violence, traffic crashes, high-risk behavior, injury, property damage, birth defects, poisoning, and death.³ These consequences cost the state copious amounts of money, adding up to over \$200 million in 2013.³

The trend in substance use among youth in Hawai'i signals the need for better prevention. Many risk and protective factors have been identified for alcohol use among youth nationwide,⁴ but there is a lack of recent research on Hawaii's youth. Upon reviewing the current literature only three studies were found locally.⁵⁻⁷ Other studies reporting risk and protective factors uti-

lized data from across the United States and in other countries.⁸⁻¹¹ Okamoto and colleagues conducted a focus group with youth in rural areas of Hawai'i to gain an understanding of risk factors and resiliency in Hawai'i.⁷ In this study, youth identified that family, including non-biologically related individuals, greatly influenced their decisions regarding substance use. This study highlights a shortcoming of assuming traditional methods and measures are appropriate for use in Hawai'i, as well as the importance of conducting research locally. Family and community are considered part of the same variable among rural Native Hawaiian youth, meaning that the typically defined construct of "family" misses part of the picture of familial influences on Hawaii's youth.⁷ Consequently, a model informed by the bioecological approach, which allows the environment to have multiple levels and conceptualizes it as extending beyond one's immediate surroundings, may be particularly well-suited for capturing risk and protective factors for substance use locally.¹²

Understanding the attitudes and knowledge of prevention and treatment providers may help to further tailor our perspective on risk and protective factors to Hawaii's unique characteristics and indicate areas for improved training of clinicians. The ability to understand factors influencing and protecting against use strengthens case conceptualizations, enhancing the blueprint used by clinicians to target interventions to a specific individual's needs.¹³ Identifying the risk and protective variables and ecological levels that are typically the focus of providers may inform future research and trainings. Perhaps these factors are emphasized because providers find them most effective to intervene on, or it remains possible that providers are overlooking variables and in need of additional training. Health provider perceptions of individuals who use substances may also influence the care they provide,¹⁴ underscoring the need to capture providers' beliefs. Further, the need to include community providers in research intended to enhance treatment and prevention of substance use is well-recognized as critical for making research more relevant to community providers and aiding them in implementing evidence-based practice.¹⁵

Additionally, most local research relies on quantitative methods.⁵⁻⁷ Although both relevant local studies found risk and protective factors among youth in Hawai'i to be consistent with those of mainland or non-Hawaiian youth, ethnic disparities encourage a deeper look into cultural ties to risk and protective factors for Native Hawaiian youth. A qualitative approach can give a fuller perspective to quantitative data.

This paper addresses the gaps in understanding risk and protective factors for underage drinking in Hawai'i. The purpose of this study was to identify risk and protective factors from the perspective of community providers in Hawai'i. Identifying these factors for youth alcohol use as seen by the community providers will help to increase the understanding of the attitudes driving prevention programs, and can potentially lead to improvements in implementation of prevention programs in the community.

Methods

Participants

Institutional Review Board approval for human research was obtained by the University of Hawai'i Office of Research Compliance, Human Studies Program, protocol number 2017-00088. Open-ended, structured qualitative sessions were held with community stakeholders during training sessions held across Hawai'i in 2015. Participants were individuals registered for a training regarding use of epidemiological data, with sessions held at Kona Community Hospital, University of Hawai'i at Hilo, University of Hawai'i Maui College, Kaua'i Community College, the High Intensity Drug Trafficking Area (HIDTA) program in Honolulu, the Alcohol and Drug Abuse Division (ADAD) in Kapolei, and the Oahu Work Links office. Participants were recruited for the data training by email through networks within communities and prevention organizations in Hawai'i, and participation in the training was not contingent upon contribution to the current study. Participants were provided with Continuing Education (CE) credits for participation in the broader training, but there was no incentive provided for involvement in the current research.

Design

Participants were placed in groups and were asked to collectively list risk and protective factors for underage drinking in each of the four socioecological levels (individual, family, community, and society). Participants were given between 10 and 20 minutes to identify these factors. Data were manually entered into an SPSS database. Broad themes were established and data were then numerically coded by theme, risk factor, protective factor, and socioecological level. The groups of participants identified and indicated which level each factor belonged during data collection. Data were initially analyzed by risk and protective factor category, theme, and socioecological level separately. Themes within risk and protective factors were then examined within both risk and protective factor categories by level. Frequency statistics using 95% confidence intervals (CI) for proportion were employed in this study. All of the statistics were placed within the CI, with overlap between confidence intervals used to determine statistical significance.

Results

A total of 104 community providers had the option of participating in the current study, and all (100%) chose to do so. The majority of the participants were female (n=69; 66.3%) (data not shown). The majority of participants were community program workers (41.1%), which included program director/supervisors, program coordinators, program assistants/specialists, and shift/team leaders. Other groups represented were social work (26.6%) and clinical practice (13.3%) (data not shown). The number of participants at each site are presented in Table 1, and years of experience in the area of substance abuse are presented in Table 2.

Overall, 507 risk and protective factors were listed by the participants in the training. Table 3 displays the number and percentages of overall risk and protective factors, as well as the number of factors identified at each ecological level. There were 278 risk factors identified (54.8%) and 229 protective factors (45.2%). In terms of risk factors, providers listed 97 individual (34.9%), 69 family (24.8%), 67 community (24.1%), and 45 society (16.2%) level factors. In terms of protective factors, providers listed 58 individual (25.3%), 49 family (21.4%), 85 community (37.1%), and 37 society (16.2%) level factors (Table 3). Participants identified significantly fewer society level risk and protective factors than all other levels.

As shown in Table 4, across risk and protective factors, the top three themes overall were resources (n = 42, 8.3%), peer influence (n = 39, 7.7%), and social support (n = 35, 6.9%). The three risk factors most frequently mentioned were peer influence (n= 27, 9.7%), mental health (n=23, 8.3%), and both family history and availability/access (n= 22, 7.9%). The three protective themes most frequently endorsed were resources (n = 34, 14.8%), social support (n=29, 12.7%), and activities/community involvement (n=27, 11.8%).

The top risk and protective factors mentioned for each socioecological level are listed in Table 5. Percentages represent the total number of risk or protective factors at that ecological level. At the individual level, the most frequent risk factor was mental health (n=20) and most cited protective factor was education status (n=12). Of the family variables identified, the most frequent risk noted was family history (n=28), while the most frequent protective factor was family function (n=14). At the community level, availability and access was the most frequently stated risk factor (n=15) and resources were the most frequently cited protective factor (n=25). Finally, for the society-level factors, the most frequently noted risk factor was media (n=14) and institutions were the most frequently indicated protective factor (n=7).

Table 1. Number and percentage of participants at each data collection site.

Training Site	N (%) (Total = 104)
Kona Community Hospital	5 (4.8%)
University of Hawai'i at Hilo	12 (11.5%)
University of Hawai'i – Maui College	16 (15.4%)
Kaua'i Community College	8 (7.7%)
HIDTA (Honolulu)	30 (28.8%)
ADAD (Kapolei)	20 (19.2%)
O'ahu Work Links	10 (9.6%)
Missing location	3 (2.9%)

Table 2. Number and percentage of participants with 0-5, 6-10, 11-15, and 16+ years of experience working in the area of substance abuse.

Years of Experience	N (%) (Total = 104)
0 – 5 years	34 (32.7%)
6 – 10 years	21 (20.2%)
11 – 15 years	13 (12.5%)
16+ years	29 (27.9%)
Missing	7 (6.7%)

Table 3. Numbers and percentages of overall risk and protective factors and factors at each ecological level identified.

Socioecological Level	Total Factors (N=507)	Risk Factors (N=278)	Protective Factors (N=229)
Individual	155 (30.6%)	97 (34.9%)	58 (25.3%)
Family	118 (23.3%)	69 (24.8%)	49 (21.4%)
Community	152 (30.0%)	67 (24.1%)	85 (37.1%)
Society	82 (16.2%)	45 (16.2%)	37 (16.2%)

Table 4. Numbers and percentages of top three themes overall, and the top three risk and protective themes.

Theme	Frequency	% of Total Factors
Overall (N=507)		
Resources	42	8.3%
Peer influence	39	7.7%
Social support	35	6.9%
Risk (N=278)		
Peer influence	27	9.7%
Mental Health	23	8.3%
Family History; Availability/Access	22	7.9%
Protective (N=229)		
Resources	34	14.8%
Social support	29	12.7%
Activities/Community involvement	27	11.8%

Table 5. Most frequently endorsed risk and protective factor themes at each socioecological level (percentage of total number of risk or protective factors at that ecological level).

	Most Frequent Risk Factor Theme (%)	Most Frequent Protective Factor Theme (%)
Individual	Mental health, 20 (out of 97, 20.6%)	Education status, 12 (out of 58, 20.7%)
Family	Family history, 28 (out of 69, 40.6%)	Family function, 14 (out of 49, 28.6%)
Community	Availability and access, 15 (out of 67, 22.4%)	Resources, 25 (out of 85, 29.4%)
Society	Media, 14 (out of 45, 31.1%)	Institutions, 7 (out of 37, 18.9%)

Discussion

Overall, several risk and protective factors identified in this study are consistent with factors identified in previous literature, such as mental health, peer influence, resources, family history/use, and social support. Overall, social support has had mixed evidence for its importance in Hawai'i. It was found to be a significant factor for substance use in mainland studies and in the current study; however, a previous local study found that social support was not a significant factor in Hawai'i.⁵ More recently, a qualitative study reported that social support from combined family and community was considered a protective factor for youth substance use.¹¹ More information is needed to understand both the significance and definition of social support in communities in Hawai'i. Additionally, future research should attempt to understand whether social support is more relevant for particular communities in Hawai'i. Makini and colleagues did not focus on rural areas of Hawai'i that are at higher risk for substance abuse and may benefit more from social support than do youth in urban areas.⁵

Several common factors identified in most other studies were not identified in this study, including age, gender, and stigmatization. This may be because participants were providers rather than the youth themselves. Providers may see many individuals for treatment or prevention services and focus on more dynamic factors, given their role in changing behavior. They cannot change the age or gender of the individual, but they may be able to target the outside factors influencing or protecting them from using substances. Therefore, age and gender may not be as much of a priority in prevention, though are still important to consider in tailoring services. Providers should be educated on the demographic characteristics that define high risk groups to improve prevention effectiveness. Additionally, if their clients are not disclosing their experienced stigmatization, providers may not be aware of its occurrence and role in substance use. Furthermore, they may even participate in this stigmatization. Providers should be trained on reducing their own bias regarding substance users, as well as making safe space for discussing stigmatization during services.

There were noteworthy differences among the way certain risk and protective factors were explained by providers. For example, previous research identified "use of resources" and participants in this study identified "availability of resources" as a protective factor for substance use. Though the two are similar, it is unclear whether the difference in definition between "use" and "availability" is meaningful. Additionally, Makini and colleagues⁵ found family history/use explained as "concern for family use" rather than the typical consideration of how family use might influence a person to use themselves. Again, it is unclear whether this is a meaningful difference to consider. Both examples could be due to how the data was collected. In the present study, participants were encouraged to write simple risk and protective factors and this could have limited much explanation or variations of factors such as "use" versus "availability." Future qualitative research should allow more time and space for providers to clarify their word choice.

These differences could also be due to the perspective of the community providers. Perhaps providers fail to consider lack of recruitment for their services or knowledge about their services and instead assume that there simply are not enough resources. Prevention programs should evaluate their own capacity and recruitment strategies to improve knowledge about and availability of these programs.

Interestingly, providers identified more risk than protective factors. Further, they identified a greater number of individual risk factors than they did society, community, and family risk factors. Examples of these individual risk factors are self-esteem, refusal skills, personality (impulsiveness), and mental health. This may suggest that providers believe risks of substance use come from individual attributes and behaviors. This attitude may be both beneficial and harmful. It may be that this attitude derives from providers' typical work with an individual; providers often focus on changeable characteristics in an individual because they meet directly with the individual. Using prevention strategies to improve resiliency and self-efficacy among youth can be powerful in prevention. However, the focus on the individual could also suggest lack of understanding regarding outside influences on youth behavior, such as family dysfunction or lack of resources. Such an absence of understanding could lead to blaming the user and stigmatization, rather than understanding the range of influences out of a user's control and building prevention strategies to reduce these factors. Providers should be encouraged to understand the multiple levels that influence youth to use substances and find prevention strategies that address these appropriately.

Providers also identified more community protective factors than most other levels. Examples of these community protective factors are availability of resources, community involvement, and social support. It is unclear whether this finding is unique to Hawaii's structure and culture, or whether this is replicable in other communities. This could suggest providers believe the community provides or has the potential to provide a protective effect against substance use. It is possible community providers feel responsible for preventing and decreasing substance use or they feel as if they have more control over these factors than others. This higher identification of community protective factors could also be due to the specific knowledge of providers. Community providers could have greater awareness of how the community can have a positive influence on substance use rather than familial or societal influences. Though it is useful for community providers to work towards community protective factors, providers may require education on incorporating other levels of protective factors to enhance prevention on a larger scale.

Limitations

Major strengths of the present study are its ability to provide the perspective of providers specifically and its use of qualitative data collection. The ability to understand how providers perceive substance use in the community and what interventions they view as successful can enhance prevention services and reduce

substance use. Furthermore, collecting qualitative data can allow for novel findings and can allow for the incorporation of perspectives not typically sampled in larger research. Hawai'i is unique culturally and ethnically, meaning that mainland studies may not be generalizable to this population.

Among the strengths of the study, there were notable limitations. First, although data collection was conducted on all islands (Big Island [2], Maui [1], O'ahu [3], and Kaua'i [1]) the majority of participants attending participated on Oahu. This may have limited the representation of providers throughout the state, especially in counties with higher rates of problematic use. Further, we are unable to provide information about which communities each provider was serving. The specific community involvement may shape providers' understanding of risk and protective factors and would be valuable information to include in future research. Second, participants were given a limited amount of time to identify risk and protective factors. It is possible participants could have been rushed to provide risk and protective factors and may have identified different factors had they been given more time. Future studies should recruit a truly representative sample of the entire state of Hawai'i and allow more time for participants to identify risk and protective factors. Third, given the qualitative nature of the study, themes were determined by authors which introduces a possibility of bias. However, the factors identified by the participants included one or two word answers which reduces the potential bias in interpretation.

Conclusion

Based on this study, we recommend additional research be conducted with community providers in Hawai'i to understand the attitudes about prevention in the community. Focus groups, qualitative survey, and longitudinal methods may be better ways to collect and study these attitudes and knowledge in the community. It would also be helpful to compare attitudes about prevention among the community providers and youth themselves. Understanding provider perspectives on risk and protective factors may allow for improvements in prevention strategies by providing a larger picture of substance use in the community. This may uncover gaps in provider knowledge about issues in the community and specific needs for improvement of substance use prevention in Hawai'i.

Conflicts of Interest

None of the authors report conflicts of interest for this study.

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Comparing Birth Outcomes in Hawai'i between US- and Foreign-Born Women

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Abstract

The objective of this study is to examine the relationship between maternal nativity status and preterm birth (PTB) or low birth weight (LBW) for Hawai'i resident mothers, to compare these relationships across different maternal race/ethnicity groups, and to identify other potential risk and protective factors related to PTB and LBW. Using the 2004 Natality Birth Data from the National Vital Statistic System of the National Center for Health Statistics, crude and adjusted odds ratios were calculated using logistic regression to determine maternal racial/ethnic-specific nativity effects on PTB and LBW. Other Asian or Pacific Islander foreign-born mothers had higher unadjusted rates of PTB, and Samoan foreign-born mothers had lower rates of LBW after adjusting for the socio-demographic covariates compared to their native-born counterparts. Given the limitation of this study particularly relating to data quality, further research is needed to identify socio-contextual factors that are involved in the relationship between nativity status and PTB/LBW.

Keywords

Nativity status, birth outcomes, low birth weight, preterm birth

Introduction

It has been estimated that around 95 million women are international migrants worldwide, and foreign-born women contribute to one-fifth of all live births in many developed countries.¹ In the United States (US), foreign-born population growth alone has accounted for 29% of US population growth since 2000.² Despite the large growth of foreign-born people in the US, the role of nativity status in altering birth outcomes—both the direction and significance—remains an open debate in the literature.

Preterm birth (PTB) and low birth weight (LBW) are adverse birth outcomes that are commonly associated with increased rates of infant death and long-term disability, such as learning and behavioral issues, cerebral palsy, and vision and hearing loss.³ Identified risk factors for PTB and LBW include, but are not limited to, previous incidence(s) of PTB, cervical insufficiency, and other comorbidities such as diabetes and hypertension.⁴⁻⁹ Determinants such as low socioeconomic status (SES), substance abuse during pregnancy, and minority maternal race and ethnicity have also been identified to be contributors for these birth outcomes.

A few studies have previously associated increased rates of PTB and LBW with nativity status,^{10,11} whereas other recent studies have reported conflicting findings that might suggest nativity status could be a protective factor against adverse birth outcomes.¹²⁻¹⁵ The foreign-born population in the US usually have lower educational attainment, lower SES, and inadequate access to prenatal care and health coverage.^{16,17} Despite the socioeconomic disadvantages that foreign-born people generally face compared to their native-born counterparts, foreign-born women seem to have lower rates of PTB and LBW. Most of the

US studies that observe a relationship between PTB/LBW and nativity status found lower or similar odds in PTB or LBW among foreign-born mothers compared to US-born mothers.^{12,13,18-21}

This phenomenon, in which being foreign born confers a protective effect against these negative birth outcomes, has been termed as an “epidemiologic paradox” and the “healthy migrant effect,” and it has been noted to occur in the US, Taiwan, and Canada.^{10,12} While there have been preliminary studies on this phenomenon, the mechanisms behind this epidemiologic paradox are not well understood and the paradox has not been found in all studies that examined the effect of nativity status.^{14,22,23}

Hawai'i offers a unique perspective into understanding the potential effect of nativity status on these birth outcomes. Hawai'i has one of the most ethnically diverse populations in the US and a large foreign-born population. Since the 1990s, the percent of foreign-born people in Hawai'i has been growing. According to the US Census, the percent of the foreign-born population in Hawai'i grew from 14.7% in 1990 to 17.9% in 2010, which was higher than the national ratio of 13.1% in 2010.^{24,25}

PTB rates in general have been decreasing over 2007-2014 across the US. However, Hawai'i is one of the few states that has not reported any statistically significant changes in PTB rates.²⁶ In 2014, Hawaii's rate for PTB was 10.04% of all live births, slightly higher compared to the overall US's rate of 9.57%. LBW between Hawai'i and the US are more similar (7.9% and 8.0%, respectively).²⁷

The purposes of this study are to: (1) examine the relationship between maternal nativity status and two adverse birth outcomes of PTB and LBW for Hawai'i resident mothers, (2) examine whether these relationships vary across different maternal race/ethnicity groups, and (3) identify other risk and protective factors related to PTB and LBW.

Methods

Sample

The Vital Statistic Natality Birth Data for 2004 used for this study was retrieved from the National Vital Statistic System of the National Center for Health Statistics (NCHS). In the US, state laws require birth certificates to be completed for all live births, and the Natality Birth Data represents all registered births. The National Vital Statistics System is supported by the collaborative effort between the NCHS and each individual state to provide federally mandated access to birth data. Because geographic information became excluded from the Natality Birth Data since 2005, the 2004 file was used for this analysis in order to focus on Hawai'i residents. The 2004 Natality Birth Data was limited to births that occurred in Hawai'i and

to mothers with Hawai'i resident status. The study sample for most of the analysis consisted of 17,677 total singleton births, with 12,781 births from US-born mothers and 4,896 births from foreign-born mothers. Births that did not include information on nativity status were dropped from the final study population (n=34). Also, births that did not report both their gestational age and birth weight were also dropped from the sample (n=3).

In the Natality Birth Data, the maternal race/ethnicity groups were determined based on the self-reported data recorded on the birth certificates. Hawai'i is one of 15 states that in its Vital Registration System collects 13 exhaustive categories of race/ethnicity: White, Black, Chinese, Japanese, Filipino, Samoan, Korean, Vietnamese, Native Hawaiian, Guamanian, American Indian/Alaskan Native, Asian Indian, and Other Asian/Pacific Islanders. On the birth certificate, individuals are identified with one or more race/ethnicity. However, if multiple race/ethnicities are selected, the NCHS imputes one of four race/ethnicity categories: White, Black, American Indian/Alaskan Native, or Asian/Pacific Islander.²⁸ Hispanic origin is reported separately on the birth certificate and thus a separate variable in the dataset. However, the majority of the Hispanic women self-reported as white in 2004, and as such we have chosen to not further disaggregate the 13 race/ethnicity categories by Hispanic origin.²⁸

For this study, the 13 original categories from the dataset were re-categorized by the authors into nine race/ethnicity groups: (1) White, (2) Black, (3) Chinese, (4) Japanese, (5) Filipino, (6) Samoan, (7) Korean/Vietnamese, (8) Native Hawaiian (includes part Hawaiian), Guamanian, American Indian/Alaskan Native, and Asian Indian (henceforth mentioned as 'NH, GU, AIAN, & AI'), and (9) Other Asian or Pacific Islander (henceforth 'Other A/PI'). Because certain ethnic groups (American Indian/Alaskan Native, Hawaiian, Asian Indian, Korean, Vietnamese, Guamanian) had small sample sizes, they were aggregated by the authors into two aggregate groups comprising different race/ethnicity groups to ensure a sample of at least 300 births.

Measures

The dependent variables in this study were the adverse birth outcomes, PTB and LBW. For this study, PTB was defined as births that were delivered less than 37 weeks of gestation, and LBW was defined as less than 2,500 grams at birth regardless of gestational age.^{26,29}

The main covariates of interest were nativity status and maternal race/ethnicity. We also controlled for the main risk factors for PTB and LBW, which included previous PTB, cervical insufficiency, diabetes, and pregnancy-related hypertension. Other control variables included socio-demographic characteristics, such as maternal age, maternal education, marital status, infant sex at birth, and known risk behaviors during pregnancy such as tobacco use, alcohol use, and inadequacy of prenatal care utilization. Adequacy of prenatal care utilization was defined using the Kotelchuck Index, also called the Adequacy of Prenatal Care Utilization (APNCU) Index, which is an alternative measure of prenatal care usage that takes the number of prenatal care visits and gestational age of the newborn into consideration.²⁸ These control variables were coded as categorical variables, which are described in Table 1. These covariates were selected because they have been previously identified in other studies as important factors that contribute to PTB and LBW.³⁰⁻³²

Statistical Analysis

All statistical analyses were conducting using Stata version 14 SE (StataCorp LP: College Station, TX). Pearson's chi-squared tests were used for the bivariate analyses of PTB/LBW and nativity status, and stratified by maternal race/ethnicity to assess the crude relationship between the birth outcomes and nativity status. Logistic regression reported in odds ratios (OR) and 95% confidence intervals (CI) were employed to compare PTB and LBW to nativity status within the individual maternal race/ethnicity groups, while controlling for other socio-demographic characteristics and behaviors during pregnancy. Since PTB is a direct contributor to LBW, it was used as a control variable while adjusting the ORs for LBW.³³ Due to the incomplete reporting

of tobacco and/or alcohol use during pregnancy (see Table 1), further adjustment for the behaviors during pregnancy covariates resulted in smaller samples.

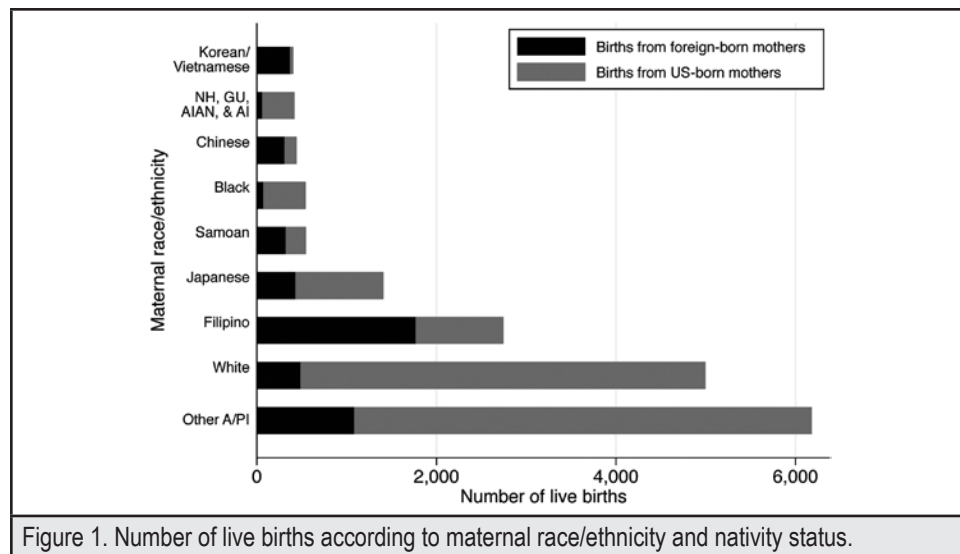


Figure 1. Number of live births according to maternal race/ethnicity and nativity status.

Table 1. Summary statistics of PTB, LBW, and selected covariates, by maternal nativity status							
		US-born		Foreign-born		Total	
		n	Col %	n	Col %	n	Col %
Preterm birth (<37 weeks in gestation)	No (ref)	11,444	89.5%	4,327	88.4%	15,771	89.2%
	Yes	1,316	10.3%	559	11.4%	1,875	10.6%
	Unknown or not stated	21	0.2%	10	0.2%	31	0.2%
Low birth weight (<2500 grams at birth)	No (ref)	11,989	93.8%	4,565	93.2%	16,554	93.6%
	Yes	788	6.2%	329	6.7%	1,117	6.3%
	Unknown or not stated	4	0.0%	2	0.0%	6	0.0%
Maternal race/ethnicity	White	4,513	35.3%	483	9.9%	4,996	28.3%
	Black	469	3.7%	71	1.5%	540	3.1%
	Chinese	131	1.0%	310	6.3%	441	2.5%
	Japanese	980	7.7%	429	8.8%	1,409	8.0%
	Filipino	977	7.6%	1,770	36.2%	2,747	15.5%
	Samoan	224	1.8%	320	6.5%	544	3.1%
	Korean/Vietnamese	36	0.3%	368	7.5%	404	2.3%
	NH, GU, AIAN, & AI	355	2.8%	61	1.2%	416	2.4%
	Other A/PI	5,096	39.9%	1,084	22.1%	6,180	35.0%
Maternal education	More than 4 years of college (ref)	3,164	24.8%	1,160	23.7%	4,324	24.5%
	No high school degree	1,135	8.9%	570	11.6%	1,705	9.6%
	High school degree	5,302	41.5%	1,721	35.2%	7,023	39.7%
	Some college	3,059	23.9%	1,369	28.0%	4,428	25.0%
	Unknown or not stated	121	0.9%	76	1.6%	197	1.1%
Marital status	Married (ref)	8,038	62.9%	3,682	75.2%	11,720	66.3%
	Not married	4,743	37.1%	1,214	24.8%	5,957	33.7%
Maternal age	25-34 years (ref)	6,030	47.2%	2,758	56.3%	8,788	49.7%
	19 years or less	1,213	9.5%	229	4.7%	1,442	8.2%
	20-24 years	3,593	28.1%	904	18.5%	4,497	25.4%
	35-39 years	1,547	12.1%	773	15.8%	2,320	13.1%
	40-54 years	398	3.1%	233	4.8%	631	3.6%
Infant sex at birth	Male (ref)	6,581	51.5%	2,483	50.7%	9,064	51.30%
	Female	6,200	48.5%	2,413	49.3%	8,613	48.70%
Adequacy of prenatal care utilization index†	Intermediate to Adequate* (ref)	10,750	84.1%	3,905	79.8%	14,655	82.9%
	Inadequate	1,593	12.5%	767	15.7%	2,360	13.4%
	Unknown or not stated	438	3.4%	224	4.6%	662	3.7%
Tobacco use during pregnancy	No (ref)	11,725	91.7%	4,773	97.5%	16,498	93.3%
	Yes	1,054	8.2%	121	2.5%	1,175	6.6%
	Unknown or not stated	2	0.0%	2	0.0%	4	0.0%
Alcohol use during pregnancy	No (ref)	12,706	99.4%	4,881	99.7%	17,587	99.5%
	Yes	73	0.6%	13	0.3%	86	0.5%
	Unknown or not stated	2	0.0%	2	0.0%	4	0.0%
Previous preterm birth	No (ref)	12,670	99.1%	4,873	99.5%	17,543	99.2%
	Yes	112	0.9%	24	0.5%	136	0.8%
	Unknown or not stated	1	0.0%	0	0.0%	1	0.0%
Cervical insufficiency	No (ref)	12,737	99.6%	4,890	99.9%	17,627	99.7%
	Yes	45	0.4%	7	0.1%	52	0.3%
	Unknown or not stated	1	0.0%	0	0.0%	1	0.0%

		US-born		Foreign-born		Total	
		n	Col %	n	Col %	n	Col %
Diabetes	No (ref)	12,004	93.9%	4,530	92.5%	16,534	93.5%
	Yes	778	6.1%	367	7.5%	1,145	6.5%
	Unknown or not stated	1	0.0%	0	0.0%	1	0.0%
Pregnancy-associated hypertension	No (ref)	12,220	95.6%	4,732	96.6%	16,952	95.90%
	Yes	562	4.4%	165	3.4%	727	4.10%
	Unknown or not stated	1	0.0%	0	0.0%	1	0.00%
Total		12,783	100.0%	4,897	100.0%	17,680	100.00%

Notes: Certain variables had missing values as indicated by 'unknown or not stated'. The variables without the "Unknown or not stated" category means that there were no missing values for that variable. ¹APNCU Index Summary – Inadequate: Prenatal care that begins after the 4th month or fewer than 50% of recommended visits has been received. Intermediate: Prenatal care that begins by the 4th month and with 50%-79% of recommended visits. Adequate: Prenatal care that begins by the 4th month with 80%-109% of recommended visits. Adequate +: Prenatal care that begins by the 4th month and with 110% or more of recommended visits.⁵¹

Results

Figure 1 compares the crude number of births by foreign-born and native-born mothers and by maternal race/ethnicity in Hawai'i during 2004. The number of live singleton births and the frequencies of PTB and LBW by nativity status are shown in Table 1. This table also shows the frequencies of the covariates including maternal race/ethnicity, maternal education, marital status, maternal age, infant sex at birth, and adequacy of prenatal care. Foreign-born mothers appear to have a slightly higher rate of PTB and LBW compared to US-born mothers. The mean gestational age for births from US-born and foreign-born mothers are comparable (Table 2). However, there is some variation in birth weight between infants from foreign-born and US-born mothers.

To determine if there was a crude (unadjusted) relationship between nativity status and the birth outcomes, a cross-tabulation with the Pearson's chi-squared and p-value was calculated. Table 3 indicates a significant relationship between nativity status and PTB (χ^2 (1, N=17,646) = 4.728; P = .030), but not for LBW. The cross-tabulation also was stratified by maternal race/ethnicity, which showed the relationship between PTB and nativity status for the Other A/PI maternal group was also significant (χ^2 (1, N=6,166) = 6.498; P = .011) indicating the variability between foreign-born and US-born Other A/PI mothers (Table 3). For the relationship between nativity status and LBW, Samoan mothers also showed a potential relationship between LBW and nativity status (χ^2 (1, N=543) = 3.845; P = .050).

Table 4 shows that Other A/PI foreign-born mothers had significantly higher unadjusted and adjusted odds of PTB (OR = 1.283, 95%CI = 1.059, 1.555; aOR = 1.290, 95%CI = 1.044, 1.595) when compared to their US-born counterparts. There were variables that indicated a statistically significant negative effect for commonly known risk factors.^{34,35} For example, Japanese mothers and Other A/PI mothers who did not receive a high school degree had higher odds of PTB in comparison to those mothers who attended more than 4 years of college (aOR = 5.962, 95%CI = 1.730, 20.55; and aOR = 1.944, 95%CI = 1.379, 2.740, respectively). Also, for Chinese, Japanese, and

Filipino mothers, there were higher odds for PTB if maternal age was greater than 40 years. However, inadequate prenatal care was associated with lower ORs for PTB for Japanese mothers. Pregnancy-related hypertension was significantly associated with a greater risk of PTB among White, Black, Filipino, and Other A/PI mothers.

Samoan foreign-born mothers showed significantly lower adjusted odds of LBW (aOR = 0.208, 95%CI = 0.052, 0.826) when compared to Samoan US-born mothers. Surprisingly, Samoan mothers with lower educational attainment also had lower odds of LBW when compared to Samoan mothers with more than 4 years of college.

As expected, there were statistically significant higher odds for LBW when births are less than 37 weeks of gestation across all maternal race/ethnicity groups, showing that gestational age has a direct impact on the overall birth weight. Maternal age of 19 years or less was a strong and significant predictor of LBW among NH, GU, AIAN, and AI mothers. Pregnancy-related hypertension was significantly associated with LBW for all race/ethnicities except for Chinese and Samoan.

Table 2. Mean of gestational age and birth weight by maternal nativity status

Panel (A) PTB				
Maternal nativity status	≥ 37 weeks		< 37 weeks	
	n	Mean (SD)	n	Mean (SD)
US-born	11,444	39.5 (1.7)	1,316	33.8 (3.1)
Foreign-born	4,327	39.5 (1.7)	559	33.9 (2.8)
Panel (B) LBW				
Maternal nativity status	≥ 2,500 g		< 2,500 g	
	n	Mean (SD)	n	Mean (SD)
US-born	11,989	3,378.7 (443.5)	788	1,998.5 (524.5)
Foreign-born	4,565	3,323.9 (437.5)	329	2,033.4 (492.3)

Table 3. Number of preterm birth and low birth weight by maternal nativity status and race/ethnicity						
Panel (A) PTB						
Maternal race/ethnicity	No. of US-born mothers		No. of foreign-born mothers		Chi-square test	
	≥ 37 weeks	< 37 weeks	≥ 37 weeks	< 37 weeks	χ^2 (df=1)	P-value
All	11,444	1,316	4,327	559	4.728	.030*
White	4,148	360	448	33	0.758	.384
Black	413	56	60	11	0.716	.397
Chinese	121	10	278	32	0.773	.379
Japanese	871	107	394	34	2.963	.085
Filipino	834	143	1,542	225	1.962	.161
Samoan	192	30	287	32	1.564	.211
Korean/Vietnamese	34	2	331	37	0.761	.383
NH, GU, AIAN, & AI	321	33	58	3	1.274	.259
Other A/PI	4,510	575	929	152	6.498	.011*
Panel (B) LBW						
Maternal race/ethnicity	No. of US-born mothers		No. of foreign-born mothers		Chi-square test	
	≥ 2,500 g	< 2,500 g	≥ 2,500 g	< 2,500 g	χ^2 (df=1)	P-value
All	11,989	788	4,565	329	1.842	.175
White	4,293	219	461	22	0.085	.771
Black	433	36	68	3	1.096	.295
Chinese	118	13	288	22	1.007	.316
Japanese	910	70	401	28	0.175	.676
Filipino	885	91	1,625	144	1.126	.289
Samoan	211	13	311	8	3.845	.050
Korean/Vietnamese	34	1	345	23	0.657	.418
NH, GU, AIAN, & AI	333	22	59	2	0.816	.366
Other A/PI	4,772	323	1,007	77	0.861	.353

*P < .05

Table 4. Unadjusted and adjusted odds ratio of preterm birth and nativity status by maternal race/ethnicity									
	White	Black	Chinese	Japanese	Filipino	Samoan	Korean/ Vietnamese	NH, GU, AIAN, & AI	Other A/PI
Unadjusted									
US-born (ref)	-	-	-	-	-	-	-	-	-
Foreign-born OR [95% C.I.]	0.849 [0.587, 1.228]	1.352 [0.671, 2.725]	1.393 [0.664, 2.923]	0.702 [0.469, 1.052]	0.851 [0.679, 1.067]	0.714 [0.420, 1.213]	1.900 [0.439, 8.232]	0.503 [0.149, 1.695]	1.283* [1.059, 1.555]
N	4989	540	441	1406	2744	541	404	415	6166
Adjusted									
Nativity status									
US-born (ref)	-	-	-	-	-	-	-	-	-
Foreign-born aOR [95% C.I.]	0.918 [0.622, 1.355]	1.354 [0.632, 2.901]	1.916 [0.824, 4.457]	0.816 [0.519, 1.283]	0.937 [0.732, 1.199]	0.775 [0.428, 1.405]	1.609 [0.307, 8.442]	0.289 [0.061, 1.381]	1.290* [1.044, 1.595]
Maternal education									
More than 4 years of college (ref)	-	-	-	-	-	-	-	-	-
No high school degree	1.202 [0.721, 2.004]	0.522 [0.107, 2.548]	2.504 [0.819, 7.653]	5.962** [1.730, 20.55]	0.610 [0.345, 1.079]	0.856 [0.265, 2.771]	1.350 [0.298, 6.124]	1.031 [0.264, 4.019]	1.944*** [1.379, 2.740]
High school degree	1.098 [0.823, 1.465]	0.636 [0.289, 1.402]	0.822 [0.312, 2.165]	0.924 [0.520, 1.642]	0.999 [0.704, 1.416]	0.392 [0.141, 1.087]	1.943 [0.731, 5.162]	0.326 [0.103, 1.033]	1.276 [0.960, 1.695]
Some college	0.861 [0.627, 1.183]	0.359* [0.143, 0.896]	0.681 [0.256, 1.815]	0.985 [0.614, 1.580]	1.188 [0.858, 1.644]	0.458 [0.152, 1.378]	0.995 [0.329, 3.005]	0.201 [0.033, 1.242]	1.337 [0.991, 1.803]
Marital status									
Married (ref)	-	-	-	-	-	-	-	-	-
Not married	1.498** [1.164, 1.930]	1.249 [0.658, 2.372]	0.560 [0.117, 2.683]	0.987 [0.522, 1.867]	1.383* [1.046, 1.828]	1.121 [0.585, 2.149]	2.819* [1.144, 6.948]	1.170 [0.461, 2.973]	1.154 [0.956, 1.392]
Maternal age									
25-34 years (ref)	-	-	-	-	-	-	-	-	-
19 years or less	0.608 [0.350, 1.056]	0.526 [0.132, 2.090]		0.342 [0.039, 3.039]	1.770* [1.075, 2.915]	0.934 [0.326, 2.676]	4.023 [0.500, 32.38]	0.556 [0.140, 2.207]	1.299 [0.986, 1.712]
20-24 years	0.922 [0.703, 1.211]	0.895 [0.472, 1.696]	4.986** [1.552, 16.02]	0.955 [0.426, 2.144]	1.288 [0.934, 1.776]	1.150 [0.577, 2.294]	0.638 [0.123, 3.309]	0.614 [0.238, 1.583]	1.091 [0.891, 1.337]
35-39 years	0.994 [0.707, 1.399]	1.463 [0.532, 4.027]	2.274* [1.025, 5.043]	1.122 [0.724, 1.740]	1.434* [1.028, 2.001]	0.841 [0.312, 2.270]	2.594* [1.033, 6.516]	0.842 [0.169, 4.197]	1.081 [0.796, 1.469]
40-54 years	1.288 [0.734, 2.260]	1.284 [0.126, 13.12]	5.146** [1.724, 15.36]	2.645*** [1.559, 4.486]	2.142** [1.305, 3.517]	1.378 [0.273, 6.943]	2.554 [0.729, 8.952]		1.306 [0.754, 2.264]
Infant sex at birth									
Male (ref)	-	-	-	-	-	-	-	-	-
Female	0.746** [0.600, 0.928]	1.053 [0.605, 1.833]	0.580 [0.286, 1.175]	0.753 [0.517, 1.097]	0.744* [0.589, 0.938]	0.806 [0.457, 1.421]	1.130 [0.527, 2.422]	0.723 [0.331, 1.575]	0.951 [0.808, 1.118]
Previous preterm birth									
No (ref)	-	-	-	-	-	-	-	-	-
Yes	3.875** [1.719, 8.734]	3.726 [0.279, 49.77]		3.668 [0.863, 15.58]	2.172 [0.868, 5.430]			36.00** [2.732, 474.3]	2.660** [1.332, 5.315]
Cervical insufficiency									
No (ref)	-	-	-	-	-	-	-	-	-
Yes	18.68*** [4.241, 82.30]			10.61 [0.648, 173.9]	4.175* [1.281, 13.61]			8.348 [0.621, 112.2]	11.15*** [4.715, 26.36]
Diabetes									
No (ref)	-	-	-	-	-	-	-	-	-
Yes	2.154*** [1.429, 3.247]	0.826 [0.170, 4.012]	0.604 [0.166, 2.198]	1.090 [0.565, 2.101]	1.435* [1.008, 2.045]	1.607 [0.547, 4.718]		2.034 [0.525, 7.877]	1.493** [1.119, 1.992]

Table 4. Unadjusted and adjusted odds ratio of preterm birth and nativity status by maternal race/ethnicity (Continued from previous page)

	White	Black	Chinese	Japanese	Filipino	Samoan	Korean/ Vietnamese	NH, GU, AIAN, & AI	Other A/PI
Pregnancy-related hypertension									
No (ref)	-	-	-	-	-	-	-	-	-
Yes	2.532*** [1.710,3.751]	4.551** [1.701,12.17]	3.498 [0.591,20.70]	1.133 [0.383,3.353]	2.769*** [1.863,4.114]	1.816 [0.623,5.295]	3.201 [0.283,36.23]	-	1.961*** [1.426,2.698]
Prenatal care									
Intermediate to Adequate+ (ref)	-	-	-	-	-	-	-	-	-
Inadequate	0.712 [0.484,1.046]	1.151 [0.462,2.869]	-	0.205* [0.061,0.691]	0.762 [0.520,1.117]	1.159 [0.612,2.195]	0.373 [0.074,1.894]	0.818 [0.317,2.109]	1.106 [0.896,1.364]
Tobacco use									
No (ref)	-	-	-	-	-	-	-	-	-
Yes	1.306 [0.848,2.012]	1.942 [0.532,7.094]	-	0.147 [0.018,1.178]	1.374 [0.698,2.702]	1.011 [0.447,2.288]	2.873 [0.548,15.05]	2.191 [0.780,6.155]	1.193 [0.921,1.547]
Alcohol use									
No (ref)	-	-	-	-	-	-	-	-	-
Yes	-	-	-	-	1.668 [0.159,17.52]	-	-	-	0.609 [0.183,2.025]
N [†]	4794	512	398	1338	2627	504	344	381	5812

Exponentiated coefficients; 95% confidence intervals in brackets. * $P < .05$, ** $P < .01$, *** $P < .001$

[†]Due to missing responses and model identification, sample size for each maternal ethnicity/race groups varies from the unadjusted and adjusted model. The N in the unadjusted model represents the total amount of births per maternal ethnicity/race group that reported gestational age.

Table 5. Unadjusted and adjusted odds ratio of LBW and nativity status by maternal race/ethnicity

	White	Black	Chinese	Japanese	Filipino	Samoan	Korean/ Vietnamese	NH, GU, AIAN, & AI	Other A/PI
Unadjusted									
US-born (ref)	-	-	-	-	-	-	-	-	-
Foreign-born OR [95% C.I.]	0.935 [0.597,1.465]	0.531 [0.159,1.771]	0.693 [0.338,1.422]	0.908 [0.577,1.429]	0.862 [0.655,1.135]	0.418 [0.170,1.025]	2.267 [0.297,17.31]	0.513 [0.118,2.240]	1.130 [0.873,1.462]
N	4995	540	441	1409	2745	543	403	416	6179
Adjusted									
Nativity status									
US-born (ref)	-	-	-	-	-	-	-	-	-
Foreign-born aOR [95% C.I.]	1.276 [0.771,2.113]	0.274 [0.054,1.390]	0.497 [0.175,1.411]	0.859 [0.491,1.504]	1.000 [0.715,1.398]	0.208* [0.052,0.826]	3.978 [0.237,66.72]	1.476 [0.229,9.506]	1.249 [0.912,1.712]
Maternal education									
More than 4 years of college (ref)	-	-	-	-	-	-	-	-	-
No high school degree	1.159 [0.547,2.458]	-	0.911 [0.170,4.874]	-	0.850 [0.411,1.758]	0.048* [0.003,0.698]	0.176 [0.010,3.197]	0.053* [0.004,0.772]	1.037 [0.614,1.752]
High school degree	1.574* [1.043,2.375]	0.548 [0.156,1.923]	1.258 [0.352,4.495]	1.861 [0.976,3.548]	0.980 [0.613,1.567]	0.119* [0.019,0.756]	0.633 [0.163,2.453]	0.456 [0.071,2.939]	1.229 [0.793,1.903]
Some college	1.322 [0.845,2.070]	0.563 [0.148,2.148]	0.754 [0.191,2.973]	1.134 [0.625,2.056]	0.919 [0.593,1.426]	0.204 [0.029,1.420]	0.585 [0.134,2.548]	1.540 [0.176,13.49]	1.671* [1.069,2.611]
Marital status									
Married (ref)	-	-	-	-	-	-	-	-	-
Not married	0.865 [0.601,1.244]	1.497 [0.564,3.975]	5.003* [1.211,20.67]	0.851 [0.392,1.850]	0.934 [0.633,1.380]	0.867 [0.236,3.185]	2.769 [0.764,10.03]	0.207 [0.040,1.068]	1.253 [0.955,1.642]

Table 5. Unadjusted and adjusted odds ratio of LBW and nativity status by maternal race/ethnicity (Continued from previous page)									
	White	Black	Chinese	Japanese	Filipino	Samoan	Korean/ Vietnamese	NH, GU, AIAN, & AI	Other A/PI
Maternal age									
25-34 years (ref)	-	-	-	-	-	-	-	-	-
19 years or less	0.844 [0.393,1.814]			1.086 [0.127,9.259]	1.956* [1.039,3.682]	1.552 [0.138,17.46]	1.264 [0.044,36.57]	45.87*** [5.332,394.6]	1.502* [1.015,2.222]
20-24 years	1.085 [0.752,1.564]	0.958 [0.354,2.588]	1.774 [0.396,7.952]	0.842 [0.315,2.248]	1.024 [0.659,1.592]	2.675 [0.676,10.59]	3.045 [0.455,20.40]	3.563 [0.754,16.84]	1.033 [0.770,1.385]
35-39 years	1.225 [0.768,1.955]	1.077 [0.220,5.284]	2.290 [0.805,6.517]	0.715 [0.402,1.272]	0.922 [0.576,1.475]	0.674 [0.055,8.335]	1.696 [0.433,6.643]	3.376 [0.452,25.19]	0.880 [0.549,1.410]
40-54 years	0.717 [0.284,1.807]	5.063 [0.228,112.2]	1.415 [0.287,6.963]	1.293 [0.648,2.579]	1.187 [0.601,2.345]	11.39 [0.866,150.0]	2.843 [0.446,18.10]		1.254 [0.566,2.777]
Infant sex at birth									
Male (ref)	-	-	-	-	-	-	-	-	-
Female	1.245 [0.922,1.682]	1.196 [0.496,2.881]	2.008 [0.801,5.035]	1.035 [0.646,1.659]	1.205 [0.881,1.648]	1.343 [0.398,4.530]	3.461* [1.094,10.95]	1.088 [0.330,3.582]	1.146 [0.905,1.452]
Preterm birth									
No (ref)	-	-	-	-	-	-	-	-	-
Yes	22.13*** [16.25,30.14]	36.67*** [14.38,93.47]	54.20*** [19.19,153.1]	13.07*** [7.987,21.39]	14.67*** [10.68,20.16]	25.95*** [7.442,90.47]	11.24*** [3.650,34.64]	33.43*** [7.932,140.9]	17.27*** [13.60,21.93]
Previous preterm birth									
No (ref)	-	-	-	-	-	-	-	-	-
Yes	5.543*** [2.111,14.55]	11.93 [0.441,322.4]		2.174 [0.321,14.73]	0.832 [0.203,3.400]		6.507 [0.033,1289]	53.44* [1.274,2242]	1.395 [0.531,3.664]
Cervical insufficiency									
No (ref)	-	-	-	-	-	-	-	-	-
Yes	5.361 [0.989,29.06]			8.643 [0.336,222.5]	1.974 [0.431,9.042]			15.71 [0.627,393.4]	3.306* [1.180,9.268]
Diabetes									
No (ref)	-	-	-	-	-	-	-	-	-
Yes	0.728 [0.372,1.421]	7.568* [1.424,40.22]	0.677 [0.113,4.049]	1.711 [0.807,3.628]	1.348 [0.841,2.162]			6.672* [1.328,33.51]	0.942 [0.603,1.470]
Pregnancy-related hypertension									
No (ref)	-	-	-	-	-	-	-	-	-
Yes	3.871*** [2.394,6.259]	5.045* [1.130,22.52]	1.859 [0.143,24.22]	3.650* [1.352,9.854]	1.960* [1.162,3.305]	1.358 [0.210,8.777]	19.04* [1.389,261.0]		3.517*** [2.368,5.222]
Prenatal care									
Intermediate to Adequate+ (ref)	-	-	-	-	-	-	-	-	-
Inadequate	1.050 [0.639,1.724]	0.412 [0.082,2.065]	2.092 [0.355,12.35]	0.364 [0.085,1.552]	0.879 [0.526,1.468]	1.122 [0.285,4.414]	0.396 [0.032,4.851]	2.704 [0.621,11.77]	0.854 [0.621,1.173]
Tobacco use									
No (ref)	-	-	-	-	-	-	-	-	-
Yes	1.169 [0.637,2.143]	0.406 [0.038,4.294]		0.994 [0.260,3.803]	1.890 [0.820,4.358]	3.920* [1.011,15.20]	5.546 [0.702,43.80]	9.443** [1.919,46.45]	1.626** [1.140,2.320]
Alcohol use									
No (ref)	-	-	-	-	-	-	-	-	-
Yes	2.777 [0.634,12.16]								2.278 [0.694,7.483]
N [†]	4828	459	423	1319	2622	473	345	381	5811

Exponentiated coefficients; 95% confidence intervals in brackets. * $P < .05$, ** $P < .01$, *** $P < .001$

[†]Due to missing responses and model identification, sample size for each maternal ethnicity/race groups varies from the unadjusted and adjusted model. The N in the unadjusted model represents the total amount of births per maternal ethnicity/race group that reported gestational age.

Discussion

This study finds two associations between nativity status and the birth outcomes in the 2004 births in Hawai'i: the adjusted lower odds ratio of LBW from Samoan foreign-born mothers and the unadjusted higher odds ratio of PTB for Other A/PI mothers when compared to their respective US-born counterparts. However, while the adjusted lower odds ratios of LBW for Samoan foreign-born mothers could potentially support the 'epidemiologic paradox', more information on how nativity differences in socioeconomic, cultural, behavioral, and other predictor factors contribute to the perinatal benefits of foreign-born Samoan women needs to be further investigated. Further research is needed on stressors related to acculturation, discrimination, and oppression faced in the US, which may impact the maternal health outcomes of US-born versus foreign-born Samoan women.^{36,37}

A few studies have been conducted to examine the protective effect of maternal nativity at the state level within the US.^{38,39} Yet, in these state-level analyses, we see that the 'epidemiologic paradox' of nativity status on birth outcomes applies only to Hispanic/Latino populations. Due to the difference in racial/ethnic composition between states, the epidemiologic paradox needs to be further explored in Hawai'i.

It has been observed that lower levels of maternal education are associated with elevated risk of PTB/LBW.^{40,41} Yet there have been conflicting findings from other studies that indicate that higher educational attainment is associated with higher risk of PTB/LBW, similar to our findings.^{10,42,43} Some previous studies, as well as this study, utilized the standard dichotomous measure of PTB/LBW to determine the association between maternal education and PTB/LBW. However, Auger, et al,⁴⁴ used a continuous measure of gestational age to assess the association between PTB and maternal education and age, and found that both lower education and older maternal age progressively strengthened the risk of PTB with decreasing gestational age.

This suggests that using the standard cut-offs for PTB (<37 weeks gestational age) and LBW (<2500 grams at birth) for all mothers might be affecting the overall results. By not evaluating these birth outcomes on a time-dependent model of gestational age, this may have affected the results for our study, especially for those mothers whose gestational age ambiguously falls around the 37-week mark. Also, the accuracy of gestational age is often difficult to determine since gestational age is frequently imputed in birth records, which would also affect what is considered to be preterm birth.^{45,46}

The categorization that determines what is considered LBW also ignores ethnicity-specific variability of birth weight distributions. While a few studies have shown that ethnicity differences exist for intrauterine growth, the definition of LBW is standardized for all births. This general cut-off of under 2500 grams at birth ultimately would skew the rates of LBW and our results.⁴⁷⁻⁴⁹

There were unexpected protective relationships between inadequate prenatal care and PTB among Japanese mothers, as well as between low maternal educational attainment and LBW among Samoan mothers. Several potential explanations can be formulated as to why there was an inconsistent protective effect for these relationships. According to the APNCU index, inadequate prenatal care is defined as mothers received less than 50% of expected visits that are recommended by the American College of Obstetricians and Gynecologists.⁵⁰ However, this index does not measure the quality of prenatal care, does not adjust for the mother's pregnancy risk conditions and complicated pregnancies, and also excludes any information on prenatal care utilization from alternative sources, which could have also influence the results.⁵¹ Also, this dataset does not differentiate between those from US Territory American Samoa and those from (Independent) Samoa, which will result in measurement error.²⁸

There are other limitations to this study. Major challenges of this study were missing values in our analyses, and compounding small sample sizes of any given ethnic group. This re-categorization aggregated different racial and ethnic groups into the same category regardless of the variation of races and ethnicities represented. The generalization of Asians, Pacific Islanders, and indigenous people by NCHS into a single category of 'Other Asians/Pacific Islander' disregards the potential variability between the different ethnic groups. While the original birth certificate lists multiple races, the NCHS algorithm for sorting individuals with multiple races into one of four categories generated the race/ethnicity distribution in the publicly available dataset, limiting our analysis. An improvement of this study would be to use the original races listed on the birth certificates on record in the Office of Health Status Monitoring in the Hawai'i State Department of Health. The NCHS grouping limits the understanding of other critical ethnic-specific factors that could be contributing to the rates of PTB and LBW. Since emerging evidence suggest that self-identified race and ethnicity is a social construct, these ethnic differences could be reflective of the sociopolitical context that shape ethnic identity.⁵² However, despite the aggregation across the maternal race/ethnicity groups, there was still variation in the maternal characteristics and behaviors during pregnancy due to the sample size.

Further, we used a cross-sectional dataset for births exclusively in 2004, and we do not claim any causal inferences between nativity status and PTB/LBW as well as the other examined factors. While the data are dated, the analysis can be seen as a baseline for which future research can be carried out. The demographic composition of the state at present has not changed drastically, and the findings are likely still relevant.

Although the key finding of the reporting of nativity status is likely to be accurate, data on medical histories were compiled from medical records, and social desirability bias from the parents could have impacted certain control variables, eg, behaviors during pregnancy (eg, tobacco use) which were used as control variables in the further robustness specifications.

Implications and Future Directions

While much of the literature indicates that there is a negative or null association between foreign-born status and adverse birth outcomes, which would support the epidemiologic paradox hypothesis, the mixed results that were produced in this study do not provide conclusive evidence that supports the notion that foreign-born mothers are at a lower or higher risk for PTB and/or LBW. The findings suggest other factors are important in predicting PTB and LBW.

Since Hawai'i does have a large foreign-born population, it is important to understand nativity status as a potential risk or protective factor to these birth outcomes. While there are studies available on these birth outcomes from Hawai'i that consider the majority of the covariates utilized in this study (maternal race/ethnicity, age, education, etc.), future studies could consider incorporating nativity status as a covariate of interest to shed more light on the complexity of these relationships.^{20,53,54} Also, future ethnic-specific interventions could be designed to incorporate nativity differences to potentially prevent these birth outcomes.

The principal findings suggest that maternal nativity status does not have a direct effect on PTB and LBW among mothers in Hawai'i. Although this study was not able to conclusively support or challenge the presence of the epidemiologic paradox in Hawai'i, this study can be helpful in guiding the direction of future studies. This study could be replicated to incorporate multiple years in the dataset. Instead of limiting the births to one year, including multiple years might provide a better estimation, and could also allow for further separation of the aggregated maternal race/ethnicity category. Also, as mentioned earlier, instead of using the dichotomous categorization of PTB and LBW, future studies should evaluate gestational age and birth weight as continuous outcomes.

To further explore the possibility of the epidemiologic paradox of the protective effect of maternal nativity status on birth outcomes, a longitudinal cohort study that evaluates not only the known risk factors to PTB and LBW (ie, the control variables of this study), but other circumstantial information, such as socio-cultural, political, and socioeconomic background of each individual could provide additional insights. It may also be important to know the circumstances of their immigration process, origin country environment, length of residency in Hawai'i prior to birth, the 'push' and 'pull' factors that contributed to their decision to migrate, current level of support system, and other potential consideration that might have an impact on their birth outcomes.¹⁷

Conflict of Interest

None of the authors identify any conflicts of interest.

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MEDICAL SCHOOL HOTLINE

Annual Report for the John A. Burns School of Medicine – Fiscal Year 2018

Jerris R. Hedges MD, MS, MMM

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; HJMPH Contributing Editor.

Annual evaluations provide the opportunity to reflect upon the accomplishments of the University of Hawai'i – Manoa (UHM), John A. Burns School of Medicine (JABSOM) during the last academic/fiscal year. This report summarizes major activities across the JABSOM missions, and performance against pre-defined outcome measures.

Major Activities During FY 2018

In FY 2018, JABSOM was notified of a successful full 8-year reaccreditation by the Liaison Committee for Medical Education (LCME), full re-accreditation by the Accreditation Council for Graduate Medical Education (ACGME), and full institutional re-accreditation by the Accreditation Council for Continuing Medical Education (ACCME). This re-accreditation trifecta is unique in the University of Hawai'i (UH) academic community.

During FY 2018, successful recruitments were concluded to fill the Associate Dean for Academic Affairs (Alan Otsuki MD) and University Health Partners of Hawai'i CEO (Larry Shapiro MD). Currently an active national search continues for the Associate Dean for Research.

The Association of American Medical Colleges (AAMC) annual data reports provide rankings for characteristic of all accredited medical schools in the United States and Canada; JABSOM's rankings are highlighted below.

- In the top 25% of schools for the percentage of its graduates who are practicing medicine in the state of training.
- In the top 10% of schools whose graduates are now practicing in primary care medicine (front-line treatment of patients).
- In the top 25% of schools whose graduates (currently in residency training) plan to practice in Family Medicine.
- The nation's leader in producing Native Hawaiian and Pacific Islander physicians.
- In the top 10% of schools for the proportion of women faculty members.
- In the top 25% of schools for basic science instruction with clinical relevance, student satisfaction, and metrics related to diversity, cultural awareness, and health disparities.

The 2019 rankings for the Best Medical Schools in America by *US News & World Report* ranked JABSOM #59 in Medical Primary Care, tied with Rush University, and just ahead of Michigan State University, the University of Tennessee, and Wake Forest University. This ranking is based in part from data compiled and reported in 2017-2018 by the AAMC.

In Medical Research, the *US News & World Reports* magazine ranked JABSOM #41 for 2019. JABSOM is tied with the University of Florida and the University of Utah, and just ahead of Dartmouth and the University of Cincinnati. JABSOM faculty members brought in \$334,000 in NIH funding per full-time faculty member. This ratio was higher than for faculty at Johns Hopkins University (\$257,000 per faculty member, Research ranking #2), UCLA (\$239,000 per faculty member, Research ranking #8), Duke (\$263-thousand per faculty member, Research ranking #10), and several other medical schools closer to the top of the 2019 Medical Research rankings.

Medical student education (MD degree program) continues to be strong following the gradual enlargement of the entering class size (70 entering students in July 2016) – growing from 62 entering students in 2008. Ninety percent of incoming students are residents of Hawai'i. This demonstrates a continued emphasis on supporting the educational aspirations of Hawai'i's citizens and enhancing retention of graduates in Hawai'i, where a significant statewide physician shortage exists. Plans to expand the class size are subject to institutional and extramural funding. JABSOM leaders continue to explore external partners to match the necessary additional institutional support.

In the spring, the 2018 senior medical student class members were notified of their post-graduate training assignments (residency training). All students matched into residency programs. This is significant since there are two applicants for every training position in the United States. Nearly two-thirds of the class matched into a primary care (medicine, pediatrics, or family practice), or an initial patient contact specialty (obstetrics/gynecology or emergency medicine). Thirty-two percent of the graduating class will start residency training and associated practice in Hawai'i, immediately increasing JABSOM's impact on the Hawai'i physician workforce.

The Graduate Programs (MS and PhD candidates) have responded to a program-wide review. Significant changes have been incorporated to build synergies. Refinement is ongoing with discussion regarding the development of an umbrella “fundamentals of medical sciences” graduate program. Already, the basic science graduate programs have integrated their courses in biostatistics, ethics, and grant writing. The Department of Clinical & Translational Research MS program has been extensively revamped and a second track focusing on quantitative health sciences has been added. The Department of Communications Science and Disorders MS program has gradually expanded its class size and begun to offer a course to prepare potential program applicants from various undergraduate degree programs for this degree. The department’s collaborations with China for the development of online educational activity have brought further educational innovation to Hawai‘i.

JABSOM continues to strengthen primary care with the evolution of a teaching service and planned teaching clinic for the family medicine residency program, partnering with Hawai‘i Pacific Health’s Pali Momi Hospital. Efforts to obtain additional legislative support for the physician shortage was successful with passage of a bill (and subsequent signing into law by Governor David Ige) to provide tax credits to volunteer instructor providers in rural and neighbor island settings. This new law allows volunteer doctor/professors from the Schools of Medicine, Nursing and Dental Hygiene, and UH Hilo’s College of Pharmacy, to receive an annual tax credit of up to \$5,000 per year.

JABSOM continued to contribute to the UHM international educational programs with the updating of Memoranda of Understandings with international medical schools. Thirty-six undergraduate and graduate medical students from Asian medical schools participated in a one-month exchange program in Hawai‘i hospitals, with 10 JABSOM students receiving reciprocal experiences at Asian institutions. In November 2017, the UH Post Graduate Medical Education Program in Okinawa, the longest-lived UH international academic partnership, celebrated its 50th anniversary. Satoru Izutsu, PhD, and I represented UHM during the official celebration in Japan. Each year 10 faculty consultants are sent to Okinawa under JABSOM’s sponsorship.

JABSOM continues to address the larger health needs of the Western Pacific through the Area Health Education Center in the Western and South Pacific. Over 20 students from Japan attended the Clinical Reasoning Workshop and 12 attended JABSOM’s Summer Educational Institute, which is organized and taught by JABSOM’s Office of Medical Education faculty members. In FY 2018, UHM undergraduate students under the sponsorship of the JABSOM Department of Tropical Medicine’s MHIRT-Hawai‘i Program spent the summer in Thailand, Cameroon, Laos, Liberia, and India conducting locally relevant research. The Step-up Program continued to mentor high school and community college students from the Pacific Islands, Guam, and Hawai‘i in basic science activities.

JABSOM faculty members continue to teach and provide research opportunities for undergraduate students from UHM

and other campuses. JABSOM supports the Undergraduate Research Opportunities Program, the Undergraduate Research Opportunity Council (Dr. Michelle Talquist from JABSOM is on the committee), and the Honors Program. JABSOM has numerous undergraduate research internships, which include the NIH-funded INBRE program, led by Dr. Robert Nichols, and the Department of Native Hawaiian Health Summer Internship program (https://www2.jabsom.hawaii.edu/native/news_sri.htm). Students have the opportunity annually in April to present at the JABSOM Biomedical Sciences and Health Disparities Symposium (<http://jabsom.hawaii.edu/events/april-18-19-2018-symposium-on-biomedical-research-and-health-disparities/>).

JABSOM also teaches undergraduate courses in the Department of Cell & Molecular Biology and Department of Anatomy, Biochemistry, & Physiology at UHM. A new course in forensic anatomy was created by faculty from the later department through the UH Outreach College. The Department of Medical Technology continues to generate qualified lab professionals for the entire state. Recent graduates are currently completing their post-baccalaureate clinical training at affiliated labs: Clinical Labs of Hawai‘i, Tripler Army Medical Center, Kuakini Medical Center, Kaiser Permanente, and Diagnostic Lab Services.

In the community, JABSOM faculty members provided educational enrichment experiences for thousands of Hawai‘i’s youth this past year. Faculty and medical students give back to the communities that support JABSOM through various activities; examples include field trips, Teen Health Camps, Keiki Health Camps, teacher training programs, student research experiences, and a new Pre-Health Career Corps. New educational grant awards in 2018 continue to strengthen clinician/medical scientist and teacher partnerships, augmenting JABSOM’s capacity to mentor the next generation of health professionals for Hawai‘i.

The College of Health Sciences & Social Welfare leadership, including the Deans of the Schools of Medicine, Nursing and Social Work, along with the Director of the Office of Public Health Studies, continued to advance academic inter-professional education programs. Dean Noreen Mokuau (School of Social Work & Public Health) partnered with JABSOM to attain a new NIH U54 Clinical & Translational Research grant (Ola HAWAII) that will provide \$23 M over 5 years to UHM. The Research Centers in Minority Institutions (RCMI) U54 Ola HAWAII grant award will help strengthen inter-professional health disparities research at UHM. JABSOM investigators continue to work with Dean Mokuau to oversee the final years of the RMATRIX U54 grant. In addition, the consortium continued to work with the UH Cancer Center on an U54 grant focusing on reducing health disparities in Micronesian peoples and building research capacity at the University of Guam.

JABSOM was also awarded an NIH/NIGMS \$11.2 million/5-year grant to develop a Center for Biomedical Research Excellence (COBRE) on Diabetes with Dr. Mariana Gerschenson as the Principal Investigator of the grant. The Center will consolidate and focus the efforts of many investigators addressing the causes, treatments, and evaluation of diabetes and insulin-resistance. The

Center will provide overall administrative and fiscal support for COBRE investigators and mentors, as well as actively seeking additional opportunities to build research capacity related to diabetes and insulin-resistance. Where appropriate, other UH research related to diabetes or insulin resistance associated diseases will be incorporated into the Center.

Repairs and renovations are underway to JABSOM's Kaka'ako buildings. In FY 2018 classrooms were enhanced by incorporating up-to-date audio-visual capacity. Work was also completed to improve safety throughout the building, including major outdoor trip hazards resulting from landscape settling and shifting. Continuing into FY 2019, work on renovations to the cafeteria and bookstore spaces to create multi-use learning facilities will ensue.

JABSOM's FY 2018 Internal Giving Campaign was a success with \$728,877 raised through the participation of 282 donors with benefit to 82 funds. To date, philanthropic gifts to JABSOM through the UH Foundation have totaled more than \$5M in FY2018, and included the following:

- The Satoru Izutsu PhD Endowed Professorship of Medical Education was established by Dr. Thomas Kosasa to honor retiring JABSOM Vice Dean Satoru Izutsu.
- Alumna Dr. Francine Tryka included a Department of Pathology Chair in her estate plan.
- Islands Hospice established a \$50,000 expendable scholarship for 4th year medical students who intend to practice geriatric medicine in Hawai'i.
- Four new endowed scholarships were established.
- A \$100,000 campaign for an endowed scholarship in honor of former JABSOM Dean Terence Rogers was launched.
- HEI (Hawaiian Electric Company) donated funding for an electric car for HOME (Homeless Outreach & Medical Education) patient transportation.
- A record 176 guests (including 33 scholarship recipients) attended the Dean's Circle reception in March.

Alumni activities for FY 2018:

- Annual reunion and CME (continuing medical education) combined, in July attracted more than 140 guests.
- Pre-game basketball mixer brought together close to 70 participants (students, alumni and friends).
- Reception for Seattle alumni held in conjunction with AAMC meeting was well attended.
- The Help Our Students Travel (HOST) program connected over 50 Alumni across the country to 3rd year medical students preparing for residency interviews.

FY 2018 Benchmarks and Performance

1. Address any insufficiencies identified during the FY 2017 LCME re-accreditation site visit for the MD program at JABSOM.

The JABSOM LCME compliance and quality improvement team has been actively making changes in policies, procedures, and bylaws as requested during the LCME reaccreditation visit. The support of the University Health Partners of Hawai'i practice plan has been essential to the implementation of changes related to patient immunization record management and strengthening of the clinical learning environment. It is anticipated that a full response to the LCME will be completed by the end of FY 2018.

2. Complete the recruitment of a full-time Associate Dean for Academic Affairs to optimize JABSOM's educational mission structure & function.

Alan Otsuki MD, began full-time in October 2017 and has led the efforts of the JABSOM LCME compliance and quality improvement team in response to the LCME accreditation update expectations. Dr. Otsuki brings great experience in educational programs and institutional preparation related to meeting accreditation standards.

3. Continue to support the evolution of the faculty practice (UCERA – DBA - University Health Partners of Hawai'i) to strengthen JABSOM accreditation status and improve clinical department academic performance.

The practice plan completed its recruitment of Larry Shapiro, MD, as its new Chief Operating Officer. Dr. Shapiro has most recently served as the Dean of the Washington University School of Medicine. He brings with him a great knowledge of Hawai'i and academic practice plan structure and function. The practice plan also has added key faculty members needed by the state and for supporting the clinical learning environment of students, residents, and other learners in Hawai'i.

4. Continue to enhance the student status of JABSOM residents/fellows via entry into the UH Manoa Banner System of student registration.

Strengthening the linkage between JABSOM residents/fellows and UH has been a major JABSOM graduate medical education effort. A strengthened bond should help with physician retention in Hawai'i and future philanthropic support of JABSOM and UH. Achieving resident/fellow registration in the UH Manoa Banner System was not successful; however, a number of other initiatives to help form a stronger bond between UH and these JABSOM trainees have been implemented.

5. Improve the JABSOM biomedical research efforts and contribution to UH Manoa through the acquisition of Kaka'ako campus infrastructure support.

Mariana Gerschenson PhD, JABSOM Director for Research, working with the JABSOM leadership team, has demonstrated fiscal need and research opportunities. A commitment from Vice Chancellor for Research Michael Bruno, PhD was secured to assign the UH Manoa portion of JABSOM-derived indirect costs back to JABSOM. This should help stabilize an aging research infrastructure and help bring resources to current and future JABSOM scientists yet to be recruited.

6. Continue to enhance the JABSOM national prominence by contributions to the AAMC Council of Deans (of medical schools) as an elected Administrative Board member.

As an elected representative to the AAMC Council of Deans Administrative Board, I have played an important part in the development of key policy and other responses to the turbulent federal, regulatory and economic environment impacting all medical schools and academic institutions. Additionally, I have remained active in the National Academy of Medicine and in the leadership of the Research Centers for Minority Institutions/NIH. I also led the LCME accreditation site survey team to the University of South Dakota in fall 2017.

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The Help Your Keiki Website: Increasing Youth and Caregiver Awareness of Youth Psychosocial Mental Health Treatment

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Insights in Public Health is a monthly solicited column from the public health community and is coordinated by HJMPH Contributing Editors Tetine L. Sentell PhD from the Office of Public Health Studies at the University of Hawai'i at Manoa and Donald Hayes MD, MPH from the Hawai'i Department of Health in collaboration with HJMPH Associate Editors Lance K. Ching PhD, MPH and Ranjani R. Starr MPH from the Hawai'i Department of Health.

Abstract

Increasing evidence-based practice (EBP) use in community mental health is a national priority, especially given that one in five youth will suffer from mental health concerns before adulthood. Implementation science offers a unique lens for understanding EBP use that identifies barriers and facilitators of successful adoption. Consumer engagement is often overlooked as an EBP implementation strategy. In this article, we describe the State of Hawai'i Child and Adolescent Mental Health Division's innovative effort to target consumer EBP demand via the Help Your Keiki Website. Feedback from community stakeholders and website analytics converge to suggest that the most helpful content is related to finding help, normalizing concerns, and questions to ask therapists. Future outreach efforts as well as ongoing improvement and enhancement of the website are discussed.

Background

Caregivers of youth with emotional and behavioral concerns often face many challenges. Are my child's difficulties different than other youth with similar concerns? Where do I find the right services for my child? How will I know if these services are working? What happens if I do not agree with the service recommendations from the numerous professionals on my child's treatment team? What if my child does not get better? A common theme that emerges from these concerns is caregiver's uncertainty and lack of control over the decisions in their child's life.

Research has demonstrated that while many psychosocial treatments have been developed and tested, youth often do not receive treatments that are informed by evidence.¹ Evidence-based practice (EBP) is defined as the integration of the best research evidence, clinical experience and expertise, and patient values and preferences.² Systematic efforts to increase the use of EBPs have helped to develop implementation science specifically in this area, which focuses on how an EBP is adopted and used within a service setting.³ There is emerging evidence that EBP implementation occurs across many contexts that includes organizations, therapists, and consumers.⁴

Borrowing from the field of marketing science, one area of youth EBP implementation science that has received increased attention is creating consumer (ie, youth, family, and caregiver) demand for EBP.⁵⁻⁷ For example, Friedberg and colleagues⁷ provided recommendations for increasing caregiver mental health treatment awareness for youth and their families through expanding the field's social media presence, elaborate marketing, branding, and direct-to-consumer marketing. Furthermore, studies have begun to accumulate consumer perspectives on the term EBP, and findings have suggested that youth and caregivers are unfamiliar with and have negative perceptions of the term EBP.^{8,9} Taken together, these studies elucidate a need for careful language and innovative marketing strategies to increase consumer EBP demand.

Development of the Help Your Keiki Website (www.helpyourkeiki.com)

The State of Hawai'i Child and Adolescent Mental Health Division (CAMHD) created the Help Your Keiki (HYK) website (see Figure 1) to provide EBP information to youth and families. Development began in 2009 with the formation of the Help Your Keiki subcommittee within the CAMHD Evidence-Based Services (EBS) Committee, an interdisciplinary task force committed to the dissemination and implementation of EBPs within the system. The larger committee and subcommittee were comprised of various stakeholders including parent partners from Child and Family Service (CFS), Hawai'i Families as Allies (HFAA), and the Special Parent Information Network (SPIN), CAMHD's Clinical Services Office and the Research, Evaluation, and Training team, the Department of Education (DOE), and the University of Hawai'i at Manoa's Department of Psychology. Over the course of two years, meetings were held at least once per month to develop site content, while placing a strong emphasis on the caregiver perspective on psychosocial treatments in language accessible to youth and families.



Figure 1. Help Your Keiki Website

Defining EBP

The HYK website content was consistent with CAMHD’s innovative efforts to conceptualize EBP at both the package level (ie, treatments with similar theoretical foundations that share a majority of treatment components) and at the element level (ie, discrete clinical techniques or strategies used as a part of a larger treatment).¹⁰ Specifically, the website heavily publicized two technical reports: Chorpita and Daleiden’s¹¹ “CAMHD Biennial Report: Effective Psychosocial Interventions for Youth with Behavioral and Emotional Needs” (<http://helpyourkeiki.com/wp-content/uploads/2013/08/2009-Biennial-Report.pdf>) and the American Academy of Pediatrics¹² “Evidence-Based Child and Adolescent Psychosocial Interventions” (https://www.practicewise.com/portals/0/forms/PracticeWise_Blue_Menu_of_Evidence-Based_Interventions.pdf).

Based on the findings from these larger reports at both the package and element level, parent partners facilitated subcommittee efforts to distill the most relevant information for youth and families. Rather than reporting on all the packaged treatments and elements within each report, the subcommittee chose to highlight the top five elements and top three packaged treatments per problem area (eg, anxiety, depression, attention/hyperactivity, disruptive behavior). Parent partners advocated for only reporting on approximately eight overall treatment approaches to reduce the potential for caregiver confusion in the face of an overabundance of information (eg, for the problem

area of anxiety, treatment recommendations were reduced from 54 to eight).

Consumer Adaptation

Parent partners further advocated for youth- and caregiver-friendly language that were reflective of Hawai’i culture. Specifically, they noted that the terms “packaged treatments” and “elements” were not particularly parent-friendly. They suggested using the headings (a) Keiki skills (coping skills for children), (b) Parent Tools (skills parents, caregivers, or therapists can use to support a youth), and (c) Treatments that Work (packaged treatments). The subcommittee also worked closely with parent partners collaboratively to translate any text that parent partners felt were too much like jargon and not easily understood. The title of the website itself, with its explicit use of the word “keiki” (the Hawaiian word for child or children, used as part of everyday speech in Hawai’i) is an outgrowth of parent partner input.

Additionally, parent partners and other subcommittee members created a shared vision and mission for the HYK website. For example, parent partners noted that the single focus of promoting EBP was too narrow and did not address the many needs of youth and families. As a result of this discussion, additional resources were developed such as (a) What to expect with a good therapist (eg, “Provides updates throughout the course of therapy”), (b) Questions to ask your child’s therapist (eg,



Figure 2. Help Your Keiki Instagram Post

“How will you monitor her progress?”), (c) Helpful Websites/ More Resources, and (d) Finding help (how to look for treatment services). In more recent years, the EBS Committee has continued its grassroots effort to maintain and update the HYK website in a variety of ways, such as outreach via several social media outlets. One example includes the creation of the HYK Instagram page (<https://www.instagram.com/helpyourkeiki>) to promote local activities (eg, Children’s Mental Health Awareness Day), recent research findings, and current events (eg, see Figure 2, dealing with unresolved trauma). Consistent with efforts to disseminate the latest research findings, quarterly roundtable discussions on local EBP-related efforts (eg, “Usage and Outcomes of Exposure Therapy in the CAMHD System”) are sponsored by the EBS Committee, open to the public for attendance, and are archived on the HYK website.

Reach, Penetration, and Feedback

Cyclical advertising and outreach efforts thus far have taken place across a variety of mediums. For example, an HYK flyer has been distributed at numerous state conferences (eg, SPIN, Hawai‘i Psychological Association, Institute on Violence, Abuse, and Trauma) and the website continues to be introduced to parents during clinical intake meetings (eg, families receive an HYK flyer upon enrolling for CAMHD services, Center for Cognitive Behavior Therapy clinical staff members share the website with parents at intake). HYK flyers are readily available to parents of all DOE youth through their school’s Student Services Coordinator.

Since the HYK launch in April 2012, reach and penetration have been monitored to help inform targeted promotion strategies within the CAMHD system and larger State of Hawai‘i. Reach is defined as the number of sessions (ie, visits) to the website by a unique user and penetration as the geographical

regions where visits originated. As of April 2018, the HYK website has had a total of 29,100 unique user visits across six years (see Figure 3). Globally over the past six years, the HYK website received visits from 150 different countries (see Figure 4) including the United States (n = 23,177 sessions, 79.65%), United Kingdom (n = 818 sessions, 2.81%), Canada (n = 737 sessions, 2.53%), Brazil (n = 513 sessions, 1.76%), and India (n = 392 sessions, 1.35%). Within the United States, the HYK website had visitors from all 50 states (see Figure 5) including Hawai‘i (n = 10,993 sessions, 47.43%), California (n = 2,291 sessions, 9.88%), New York (n = 863 sessions, 3.72%), Texas (n = 746 sessions, 3.22%), and Illinois (n = 563, 2.43%). Within Hawai‘i, the HYK website had visitors from four of the five counties (except Kalawao county) and six of the seven major Hawaiian Islands (except Ni‘ihau) which spanned 66 different cities including Honolulu (n = 6,974 sessions, 63.44%), Hilo (n = 826 sessions, 7.51%), Mililani (n = 507 sessions, 4.61%), Kailua-Kona (n = 244 sessions, 2.22%), and Kaneohe (n = 223 sessions, 2.03%).

Additionally, feedback from community stakeholders including CAMHD consumers, contracted providers, and staff have been critical for ongoing improvement efforts. For example, the 2017 CAMHD consumer surveys indicate that a majority of CAMHD caregivers (n = 138, 75.5%) were not aware of the HYK website. To address this concern, the EBS Committee has been actively soliciting feedback from direct service providers and parent partner organizations. Feedback has suggested that the most helpful resources on the HYK website are the common problems pages, which help to normalize youth mental health concerns, and the how to find help page, which goes through a step-by-step process for finding help. Consistent with this feedback, website analytic data indicated that visitors spend the most time on the questions to ask your therapist (average time

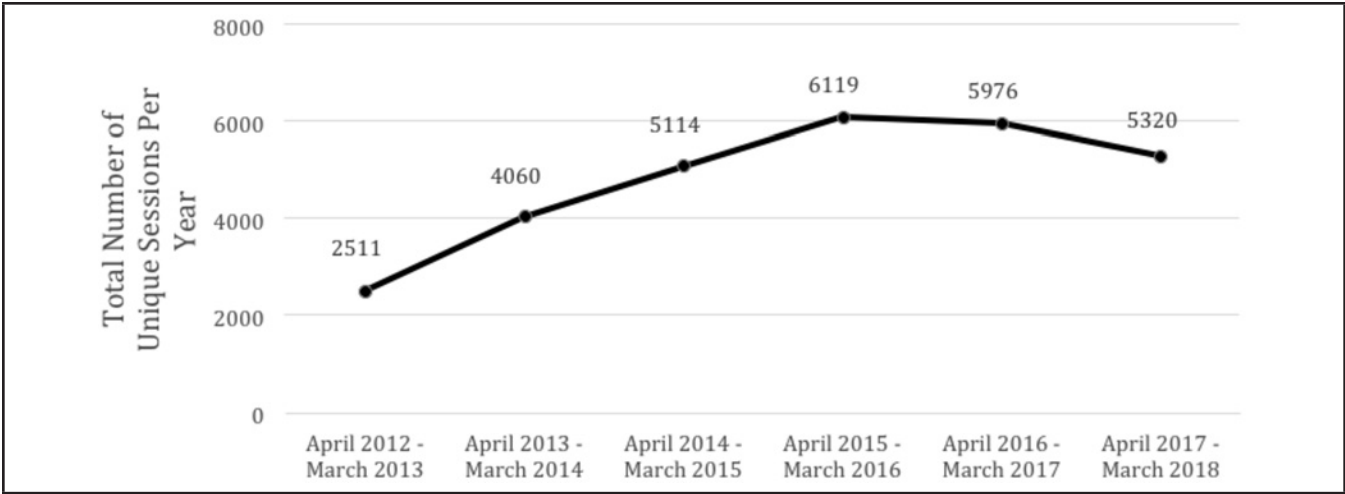


Figure 3. Help Your Keiki Website Unique Sessions per Year



Figure 4. Help Your Keiki Website Global Penetration (April 2012 – March 2018)

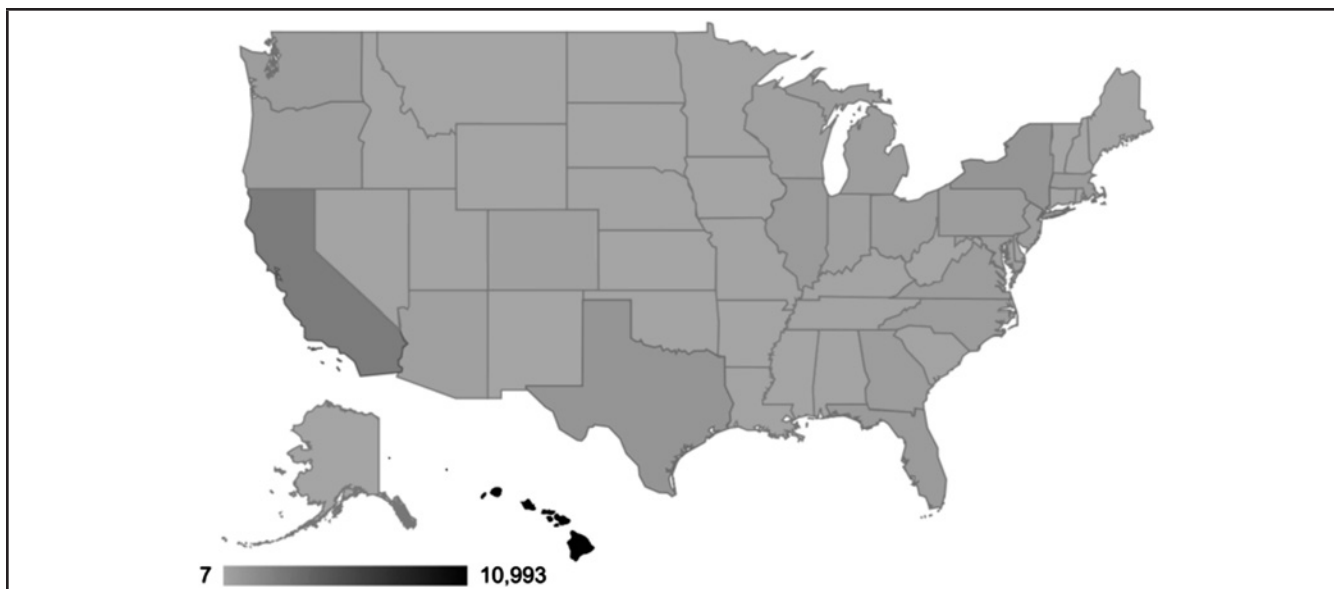


Figure 5. Help Your Keiki Website United States Penetration (April 2012 – March 2018)

= 5.05 minutes), finding help for your keiki (average time = 34 seconds), and common problems (average time = 31 seconds) pages. Additionally, areas of improvement have been identified including reducing the amount of text, keeping content up to date, improving navigation, and increasing return visits for youth and families. As a result, areas for future development may include providing examples (eg, videos) of keiki and parent skills and developing a list of natural support groups for caregivers of youth who have similar concerns.

Discussion and Future Directions

The goal of the HYK website is to increase consumer awareness of EBP using direct-to-consumer marketing to increase EBP demand. The HYK website represents a shared commitment toward promoting and empowering caregivers to advocate for the best treatments for youth with emotional and behavioral concerns. Data on reach and penetration suggest that the HYK website has garnered attention both locally, nationally, and globally. Further evidence is the promotion of the HYK website on national websites like the American Psychological Association's Society for Clinical Child and Adolescent Psychology. HYK website maintenance and expansion efforts continue to proliferate as the CAMHD EBS Committee updates the website with the latest EBP findings, coordinates quarterly roundtable presentations, and creates weekly Instagram posts to promote best practices in youth mental health. It is hoped that the HYK website will help youth and caregivers to demand EBPs in their mental health treatment, thereby creating some pressure for therapists to consider and eventually utilize such practices. Future evaluations of the HYK website may wish to examine actual behavior changes in therapist adoption and consumer demand of EBP. The HYK website also represents a reminder to all professionals to be mindful of the consumer in our shared work within the State of Hawai'i and beyond.

Acknowledgements

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- Special Parent Information Network, Honolulu, HI (SR)

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THE WEATHERVANE

RUSSELL T. STODD MD; CONTRIBUTING EDITOR

THERAPY FOR ALZHEIMER'S DISEASE IS STILL IN NEVER-NEVER LAND.

AstraZeneca PLC and Eli Lilly recently scrapped two late-stage trials of their experimental Alzheimer's drug they were co-developing. The companies said the decision was taken after an independent data-monitoring committee concluded that trials with the experimental drug would not meet their original goals. Apparently there were no safety concerns the drug just wasn't working, as well as hoped. Current treatments for Alzheimer's can alleviate symptoms but do nothing to slow the degenerative process. The disease affects an estimated five million Americans and ten million worldwide. The drug industry has failed to crack it, because scientists don't fully understand the cause. Pfizer Inc., gave up trying to find new drugs for Alzheimer's and Parkinson's in January. Amyloid is the sticky substance that builds up in the brains of Alzheimer's patients. Many drug makers have pursued targeting amyloid in the belief that could be the key. Ten years of research by J&J, Pfizer and Lilly targeting amyloid have failed to alter the disease. The reason for the persistence by big pharm is the expectation of an enormous financial return once a beneficial substance is synthesized or discovered.

YES! THAT'S TASTY. POUR ME ANOTHER.

For the first time in its 132-year history, Coca Cola is marketing an alcoholic beverage with a trial in Japan. The drink will be available only on the southern island of Kyushu with a population of 13 million. Hundreds of people lined up to try the lemon-flavored canned drink called LemonDo, available in 3%, 5% and 7% alcohol content. Coca Cola is casting a wide net in trying to capture female drinkers with the lower concentration options. The company is running television ads featuring Actor Hiroshi Abe posing as a bartender. Coke enters a highly competitive market dominated by Suntory Holdings, Kirin Holdings and Asahi Group Holdings. The marketing effort should provide Coca Cola with a yardstick for possible expansion to other countries.

RAPUNZEL, WHEN WAS YOUR LMP?

"We need a Disney princess who's had an abortion," reads a tweet from Planned Parenthood Pennsylvania, later deleted, but Keystone chief Melissa Reed stands by it. She believes that pop culture serves a critical role in educating the public and sparking a meaningful discussion around sexual and reproductive health issues and policies. Feminists have been waging war on Disney princesses since the 1990s and they are gaining ground. Peggy Orenstein's "Cinderella Ate My Daughter," a 2011 best seller, stating the fairy tale heroine is a symbol of "the patriarchal oppression of all women." In response Disney in 2016 launched "Dream Big, Princess" which recasts feminist-approved Rapunzel as a gymnast, Cinderella is a dance prodigy and Ariel is a speed-swimming champion. Disney has edited out signature inner virtues of integrity, courage, optimism and heart and replaced them with physical prowess. Seems somewhat shallow to a 20th century chauvinist porcine editor.

IN THE 21ST CENTURY SPEED IS EVERYTHING.

For those air travelers who wonder about the future of commercial supersonic jets, the door is ajar, if not opening. Lockheed Martin Corp., maker of the first business jet is planning a return to the passenger aircraft business after a two-decade gap. The world's largest defense company by sales is considering a joint venture with Aerion Corp. an aerospace firm that plans to have a 12 passenger supersonic business

jet by 2025. Of additional interest is Boom Technology Inc., a U.S. start-up planning to market a faster-than-sound airliner capable of carrying 50 passengers between the U.S. West Coast and Tokyo in about five hours. Further details by Boom have not been forthcoming but the project is expected to cost more than \$1 billion. Japan Airlines Co., has invested \$10 million, a pittance for JAL, but a strategic partnership reflecting industry interest.

SOMETIMES A JOKE JUST DOESN'T MAKE IT.

It seemed like a good idea at the time to senior Kylan Scheele, 18, of Independence, Missouri, who did not go along with the prank of releasing live mice. Instead, Kylan put his high school up for sale on Craigslist. He listed attractive amenities such as newly built athletic fields, lots of parking and a bigger than normal dining room. It was meant as a joke, but the school authorities were not amused. He was slapped with a three-day suspension, and barred from participating in graduation. A lawsuit filed by the ACLU of Missouri failed to reduce the penalty.

BOND MANIA.

Dr. No premiered in 1962 and was a movie smash. The film launched the most successful film series in history. By 1997 a total of 20 Bond films had been made, including 7 with Sean Connery, 7 with Roger Moore, 2 with Timothy Dalton, 2 with Pierce Brosnan and one each with David Niven and George Lazenby.

A DRIVER'S LICENSE IS ALWAYS USEFUL IF ONLY FOR I.D.

A University of Michigan study reveals a sharp decline over the past two decades among people under age 25 getting their driver's licenses. The drop shows high-schoolers and college-age Americans are less interested in driving than previous generations. Interesting contrast is that the elderly feel very attached to their motor vehicles, and see a loss of license as a threat to independence.

THIS SHOULD BE A PROJECT FOR PSYCHO-SOCIAL STUDY.

American women are having children at the lowest rate on record. Last year's fertility rate drop was the largest one-year decline since 2010. The number of babies born in the U.S. last year was a 30-year low.

ADDENDA

- A teaspoon of honey represents the life's work of 12 bees.
- Author Ian Fleming smoked 70 cigarettes each day.
- Southernmost state capitol in the continental U.S. - Austin, Texas
- To get rid of a wart, rub it with a peeled apple and feed the apple to a pig.
- Until Eve arrived, this was a man's world.
- The present world condition is proof that God is a committee.
- All God's children are not beautiful. Most of them are barely presentable.
- Monogamous and monotonous are synonymous.
- I was involved in the Great Music Scare back in the sixties when it almost caught on.
- For flavor, instant sex will never supersede the stuff you have to peel and cook.

ALOHA AND KEEP THE FAITH *rts*

(Editorial comment is strictly that of the writer.)

Hawai‘i Journal of Medicine & Public Health

Instructions to Authors

The Hawai‘i Journal of Medicine & Public Health (HJMPH) publishes original contributions, reviews, balanced viewpoints (ie, point/counterpoint articles), editorials, and other categories of articles. Topics of interest include scientific articles related to the practice of medicine and public health, with a focus on the unique, multicultural and environmental aspects of the Hawaiian Islands and Pacific Rim region. Some frequently published types of articles are described herein. Authors interested in published other types of articles may contact the journal.

Original articles are usually research-related, quantitative or qualitative papers.

Reviews summarize the literature, address current practice or issues within the medical or public health communities, and are intended to promote a discussion of different viewpoints.

Case Reports are original and interesting reports that contribute significantly to medical knowledge. They generally describe unreported or unusual side effects, unexpected or unusual presentations of a disease, diagnoses and/or management of new and emerging diseases, unexpected events during treatment, or observations that highlight the need for new practice standards in the management of certain disease conditions.

Viewpoints presented opinionated pieces on a topic of current controversy. Viewpoint pieces should nevertheless independently meet the scientific rigor for a published article through the inclusion of appropriate citations, and the use of non-inflammatory language. It is the journal’s policy to present balanced opinions (ie, each viewpoint article must be paired with a counter-point article). Therefore, authors who submit a viewpoint article without the corresponding counter-point article may be delayed until an appropriate author for the counter-point piece can be found, and the article written. Authors are encouraged to work with colleagues to submit point-counterpoint articles together.

Editorials are usually solicited by the editors. The journal currently publishes four editorials, Public Health column, Medical School column, Pharmacy column, and the UH Cancer Center column. Authors interested in editorial pieces should contact the respective hotline editor.

For authors/editors interested in commissioning a HJMPH supplement, please view additional guidelines at <http://hjmph.org/submit.htm>.

Manuscripts

Manuscripts are reviewed by the editors, the peer review panel, and other experts in the particular specialties. The HJMPH only accepts articles that have not been published or currently under review by other journals.

I. Word Limit, Font, and Formatting:

Keep manuscript to 3,000 words maximum (title page, abstract, keyword, abbreviations, references, tables/figures not included).

- Use Times font in 10 point size.
- Do not underline and do not use full caps.
- Use double spaces between lines. Do not use 1-1/2 spacing.
- Use a single space between sentences. Do not use two spaces.
- Number pages consecutively beginning with the title page.

II. Tables and Figures:

Tables and figures may be submitted as part of your manuscript. Each table or figure should be carefully selected or designed to add value to the manuscript by showing a relationship of ideas, data, or objects that would be difficult to describe precisely or completely using words alone. Authors must be judicious in their use of tables and figures.

- All illustrations (ie, graphs, flow charts, diagrams, drawings, maps, and photographs) are identified using the word “Figure.” Do not mix in alternatives such as “Photo” or “Chart.”
- Tables and figures may be up to 7-1/2 inches in width.
- Tables and graphs must be prepared in Microsoft Word, PDF, or Excel.
- Flow charts, diagrams, drawings, maps, and photos must be submitted as a high resolution (300 dpi is optimal) in JPEG, TIFF or PDF format.
- All tables and figures must be numbered sequentially, and include a caption. They must be well-labeled, stand alone, and not require the reader to refer back to the text.
- All tables and figures must be referenced within the text (ie, readers must be appropriately referred to all tables and figures that are part of the article.)
- Data points on graphs should be labeled. Numerical data should accompany graphs.
- Do not embed tables, figures, and graphs within the text; their placement must be at the end of the manuscript.

III. Cover Letter

A cover letter should contain the following components:

1. The title of the submission
2. The names of all contributing authors, listed in the order in which they will appear in the manuscript. List first name, middle initial and last name of each author with highest academic degrees; and name of department and institution to which the work should be attributed.
3. Please provide each co-author’s role in the preparation of the manuscript. As needed, please identify the primary author responsible for each of the following areas:
 - Guarantor of integrity of entire study
 - Study concept design
 - Data acquisition/analysis
 - Manuscript drafting/revision for intellectual content
 - Literature review
 - Clinical studies
 - Statistics
 - Manuscript editing
4. Name of the corresponding author; include an address, phone number, and email address.
5. Information on whether the article submitted is Medical, Public Health or Cross Cutting
6. The names of two potential peer reviewers for the article, along with their contact information (email address at minimum).

IV. Title Page, Abstract, Keywords, and Abbreviations

Title Page— The title page of the manuscript should note the title, full names and highest academic degrees of all authors and word count. On the title page, please also notate if you are submitting an article that is medical, public health, or cross-cutting (both medical and public health).

Abstract— The second page of the manuscript should include an abstract that highlights for the reader the essence of the authors' work. It should focus on facts rather than descriptions and should emphasize the importance of the findings and briefly list the approach used for gathering data and the conclusions drawn. The abstract must be written as a standalone paragraph, and not be broken up into sections. ******Keep abstract to 250 words maximum.**

A few specific guidelines to consider in preparing an abstract follow:

- Do not begin the abstract with a repetition of the title.
- Cite no references.
- Avoid abbreviations.
- Use the salt or ester of a drug at first mention.
- If an isotope is mentioned, when first used spell out the name of the element and then, give the isotope number.
- Avoid the use of trademarks or manufacturers' names unless they are essential to the study.
- Include major terms in the abstract, since the abstract can be text searched in many data retrieval systems.
- Include Keywords

Include Keywords

Include Abbreviations: for example, Abbreviations and Acronyms

BP = blood pressure

CI = Confidence Interval

V. Sections of the Manuscript

We recommend that articles be divided into sections with headings. The traditional layout described below may not apply to all submission types (eg, editorials or case reports). Nevertheless, the journal recommends that authors create 3-5 sections with appropriate headings to optimize the organization and flow of their write-ups. In addition, a background/review piece, and a summary/discussion piece is recommended for all types of articles submitted to the journal. *Note:* If your manuscript includes more than five abbreviations, please include a list of abbreviations, along with their definitions in a table.

Introduction—Describe the purpose of the article and rationale for the study. Review the existing literature, and identify any gaps in the literature that the submission seeks to fill. Define any terms or concepts discussed in the remainder of the paper, and state any hypotheses associated with the study. For case reports, it may be useful to include the current body of knowledge and/or standard practice guidelines to provide context for the case described.

Methods/Case Report—Describe the patients or experimental animals clearly. For review articles, describe the methodology used for searching and identifying the appropriate articles to include in the review. Identify the methods, apparatus, and procedures in sufficient detail to allow other researchers, public health professionals, or physicians to reproduce the results.

NOTE: Ethical Approval of Studies and Informed Consent. For human or animal experimental investigations, formal review and approval, or review and waiver, by an appropriate Institutional Review Board (IRB) or ethics committee is required and should be described in the Methods section. For those investigators who do not have formal ethics review committees, the principles outlined in the Declaration of Helsinki should be followed. For investigations of human subjects, state in the Methods section the manner in which informed consent was obtained from the study participants (ie, oral or written). Where applicable, the manuscript must explicitly state that IRB approval was obtained, and provide a reference number whenever possible.

Results—Present the results in logical sequence. Do not repeat all of the data in the text; summarize important observations. Do not include any inferences or interpretations within this section. The results section may not be appropriate for all types of contributions to the journal (for example, editorial pieces, or case reports). If the results section includes statistical analyses, it may be helpful to additionally consult the HJMPH Statistical Guidelines at <http://hjmph.org/submit.htm>.

Discussion—Emphasize the new and important aspects of the study and conclusions taken from them. Do not repeat data in Results section. It is important to interpret the results or observations reported in the paper in the context of the background information presented in the introductory section, and discuss the implications of the results. State new hypotheses that emerge from the findings of the paper when warranted, but clearly label them as such. Please include study limitations, and recommendations that naturally flow from the conclusions.

Acknowledgments—Acknowledge only persons who have made substantial contributions to the study. Authors are responsible for obtaining written permission from everyone acknowledged by name; readers might believe those acknowledged are endorsing the study and conclusions.

VI. Disclosure Statement

In order to facilitate the citation and indexing of articles for MEDLINE and for full-text access on PubMed Central, the National Library of Medicine requires that disclosure information be provided by each author. This disclosure information must be specific and address any financial relationship with the sponsoring organization, any interests represented, and/or products discussed or implied. These statements should appear within the paginated text of the article. This is to promote transparency and allow PubMed users to judge the value of findings in published articles.

While you may file ICMJE (International Committee of Medical Journal Editors) Uniform Disclosure Form for Potential Conflicts of Interest (http://www.icmje.org/coi_disclosure.pdf), a simple statement disclosing all relationships that could be viewed as presenting a potential conflict of interest would be sufficient. This includes a financial disclosure statement pertaining to: grants, honoraria, royalties, payments for manuscript preparation or other activities, patents, stock options, travel expenses, gifts, and so on.

A disclosure can be a team statement such as: “None of the authors identify any conflict of interest.” Or, “Dr. XXX reports serving on the scientific advisory boards of XYZ Company. Dr. YYY reports serving on... Associated honoraria for Drs. XXX and YYY are paid to... No other authors reported any financial disclosures.” Or “This work was supported by grant ABC from ... Treatment and placebo capsules were donated by XYZ Company...” Please refer to JAMA or NEJM for model statements.

VII. Conflict of Interest

Authors must disclose all relationships that could be viewed as presenting a potential conflict of interest.

VIII. Citing References

Use JAMA style for in-text citations and references. A few key styling guidelines are presented below. For more details, please consult the AMA Manual of Style.

In-text Citations:

- Identify references with superscript Arabic numerals corresponding to the item in your reference list.
- If you are using the same citation in more than one location within the paper; you can refer to the same citation number.
- Place citations outside of punctuation marks.

Creating your References:

- List the citations in their order of appearance within your paper.
 - Examples of reference style:
1. Garbutt JM, Banister C, Spitznagel E, Piccirillo JF. Amoxicillin for acute rhinosinusitis: a randomized controlled trial. *JAMA*. 2012;307(7):685-692.
 2. Steinbrook R, Ross JS. “Transparency reports” on industry payments to physicians and teaching hospitals [published online ahead of print February 14, 2012]. *JAMA*. doi:10.1001/jama.2012.211.
 3. Centers for Medicare & Medicaid Services. CMS proposals to implement certain disclosure provisions of the Affordable Care Act. <http://www.cms.gov/apps/media/press/factsheet.asp?Counter=4221>. Accessed January 30, 2012.
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Additional JAMA Styling Tips:

- Statistical Probability P (upper case, italics)
- Standard Error SE
- Standard Deviation SD
- Relative Risk RR
- Title of books Italics
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