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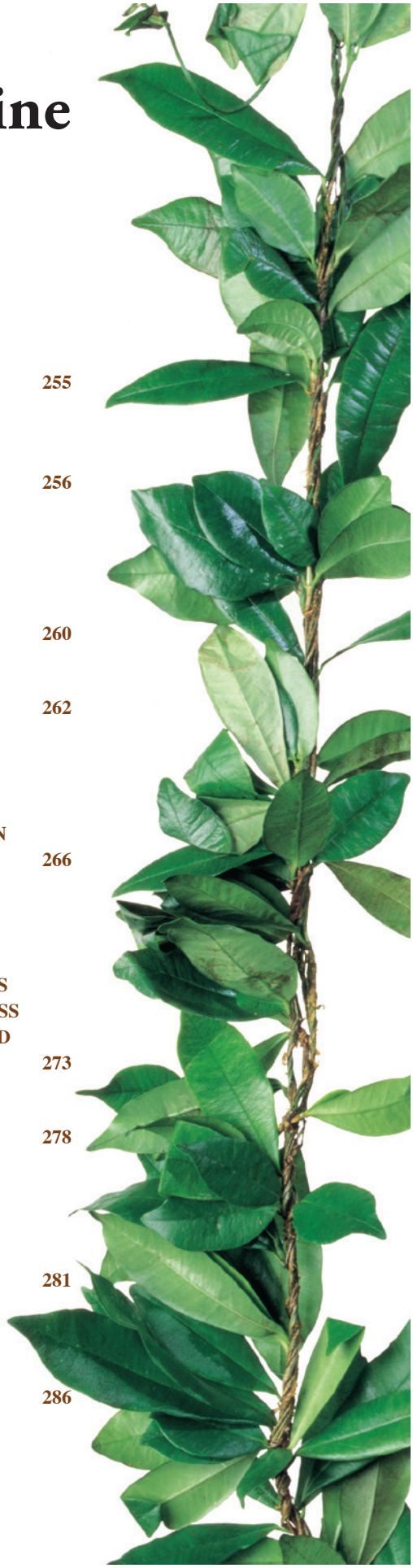

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D. Varez

EDITORIAL

Point - Counterpoint

In December 2015, we published *Infant mortality due to Congenital Anomalies on Guam*[1] recognizing certain limitations within the article while remaining convinced of its utility to our readers. The article quickly engendered significant discussion among readers of the *Journal* concerning the design methods used and the conclusions drawn from them.

The following two articles offer a summation of those concerns and the authors' invited response. We offer these, as presented, to allow the reader to judge the merits of the criticisms provided and the authors' rationale for the methods used.

We thank Dr. Voss,[2] Mr. Noel[3] and their associates for their contributions. As the individual reader may now determine the validity of each group's conclusions, the *Journal's* educational role has been accomplished.

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3. Noel, et al. Response to Commentary on Infant Mortality due to Congenital Anomalies on Guam. *Hawaii J Med Public Health.* 2016;75:260-261.

Hawai'i Journal of Medicine & Public Health, Co-Editors,

Michael Meagher MD, FACR
Kalani Brady MD, MPH, MACP

Commentary on Disparities in Infant Mortality Due to Congenital Anomalies on Guam

Jameson D. Voss MD, MPH (Capt, USAF); Roger A. Erich PhD;
Pauline M. Lucas MPH (LtCol, USAF); Danny C. Dacey MPH (Maj, USAF);
Carol C. Walters PhD (Col, USAF); and James R. Poel MPH (Col, USAF)

Dear Editors,

Recently, we read the article on congenital causes of death in Guam.[1] As public health professionals (ie, a physician, biostatistician, a biomedical laboratory officer and three public health officers) we support highlighting the importance of congenital causes of death. Explained or unexplained, the death of a child is a sad tragedy and provides motivation for a comprehensive public health approach to mitigate potential risk factors on the island and elsewhere. Although the rate of congenital causes of death in Guam in the studied population was comparable to similar populations, there are still likely to be opportunities for preventive efforts. Well established, evidence based recommendations for lowering infant mortality should be considered a public health priority.[2]

Although it is commendable to evaluate the geographic pattern of congenital causes of death, the authors could have communicated many of their points using an editorial format with supporting anecdotes and data points. The authors acknowledge several of the scientific weaknesses in their paper, but still chose to publish the data as though they were creating generalizable knowledge in an original research paper. Unfortunately, this format creates unnecessary confusion because of methodologic weakness, scientifically inappropriate language, and poorly documented ethical considerations.

The central methodologic weaknesses in the study include the ecologic design, the small sample size, the inappropriate statistical analysis (and interpretation) and the high risk of measurement bias and confounding. Ecologic study designs are among the weakest sources of evidence because they do not identify an association among individuals (only among populations), greatly limiting causal inferences. Villages differ for many reasons, making the exposure of interest only one of many differences. Herbicide is typically used for a purpose and so village characteristics that impact congenital death might also be related to the reasons for differential spraying (ie, confounding by indication). The sample size is low (n=19) and the villages are unequally balanced between "exposed" (n=12) and "unexposed" (n=7), further reducing statistical efficiency. Within villages, some had too few births to find any cases and some had too few births to identify an accurate rate per 1000 births.

The authors' use of linear regression further weakens the scientific veracity of the study. Linear regression is based on an assumption of independence of each village. Analysis of autocorrelation among neighboring villages could have identified spatial clusters (ie, hotspots) so that spatial units were appropriately representing the underlying spatial variance in the outcome of interest. Otherwise, the spatial categories chosen may have created a modifiable area unit problem (MAUP). Looking at Figure 1, it can be seen that 18 villages border at least one other village with their same risk category, suggesting autocorrelation is present. Additional evidence of a MAUP is found in the normal levels of cause specific deaths at Yigo, when this is the closest village to Andersen Air Force Base (AFB). Using all available publically reported congenital deaths on Guam (available for the years 1991, 1993, and 1995) by village, there is an even lower rate of congenital causes of infant deaths among mothers residing in this village than was reported by the authors.[3] In fact, adding all available data shows the village of Yigo would switch from "high risk" to "low risk" by the authors' definition of these terms. This evidence of MAUP points to the larger issue: artificially separating small scale contiguous locations leads to comparisons between populations and numerous exposures that are not independent, violating model assumptions.

Even if the authors had established independent observational units, the authors acknowledge the validity of their study is also threatened by confounding. They attempt to adjust for village level confounding, using aggregate measures, but the chosen numbers have remarkably low temporal granularity. Plus, overparameterization happens quickly with only 19 observations. Thus, residual confounding is very likely as it is not possible to adjust for even well-established risk factors.[4] More specifically, there is no adjustment for the other natural and industrial toxins on the island, maternal smoking, healthcare access, obesity, infectious diseases or the use of medications during pregnancy.

While there could be several sources of bias, the likeliest source of measurement bias comes from the questionable use of memory-based methods (MBM) to determine exposure. Because memories cannot be externally measured and because they are so inaccurate for dietary habits, memory based dietary assessment methods have been called pseudoscientific and inadmissible as scientific evidence.[5] With so much controversy about near term MBM, the use of memories from several decades ago is not a scientifically appropriate basis for the claims that were made. Instead, all conclusions about the association should have used terms describing the measurement method. For instance, "spray area" should have been consistently referred to as "spray area

identified by recall several decades after spraying." It should also have been noted that recall was provided after village level outcome data was publicly reported for many of the years covered by the study.[3]

The authors further exacerbated the methodologic weakness by using several additional categories of scientifically inappropriate language throughout the paper. We recommend avoiding the use of the terms "increased" and "increases," as these words can be used to describe a causal relationship.[6] The authors also consistently over-generalize to unstudied populations, geographic areas, and time periods. Despite the low sample size, the authors excluded the births from residents of military installations. This exclusion was particularly questionable given the exposure in question is claimed to be military related and prior evidence has shown military members are an appropriate population for investigating spatial causation.[7,8] Approximately 20% of all births over the time period[9] were not considered and 27% of the land mass,[10] but the magnitude of these exclusions was not provided. All conclusions should have specified the populations and time periods covered by the study since it was not a randomly selected subsample. Plus, the land mass of the excluded installations was included in Figure 1, falsely indicating the residents on the military installations are a part of "high risk" areas when they were excluded from the study.

Additionally, the authors mishandled the precision of their data on both relative and absolute terms. For instance, Table 1 describes the birth rates for most villages with three significant digits even where case counts were less than 10 (ie, "pseudo-precision"). Even worse, the poor handling of precision was not constant across all villages, differentially exaggerating the influence of outlier observations. When case counts are low, it is expected there will be variance from the mean by chance alone until a large enough sample can be collected. For example, there were only 503 births observed in the village of Umatac, but yet the authors report the rate per 1000 births. Similarly, the regression model falsely assumed each rate was as precise as every other rate, even when sample sizes differed by >10,000. Looking at the rates in Table 1, the three villages with the fewest births were also showing cause-specific death rates furthest above or below the mean. Instead, each village should have been weighted by sample size using an "analytic weight" (ie, inverse variance weight) to account for the differing sample size in different villages. When assuming equivalent samples, the variance in cause specific death rates per 1000 births between villages is 2.3, but when accounting for sample size, the variance between villages falls to 1.1 (using Stata v13.0, StataCorp LP, College Station, TX). Thus, there is substantially less variance between villages than the authors claim. Imputation with the available data suggests this error substantially inflated the β coefficient from the linear regression model, but the degree of inflation cannot be certain because the authors did not disclose which villages were "exposed." For these same reasons, the authors' claims about the proportion of total variance explained by their models are equally suspect.

Another aspect of language that would be better suited for an editorial was the authors' focus on the controversy about the name of the chemical formulation that Veteran remembers using. Specifically, the authors say the Veteran's "claims have been reported and confirmed" by the Daily Beast. Although the Daily Beast is not typically used as an authority for deductive reasoning, even this source did not report the same information as the current memories.[11] Specifically, the Daily Beast article says the spraying occurred around the perimeter of Andersen AFB and within the base without any mention of the 12 villages throughout the island.[3] Additionally, the title of the Daily Beast article poses the story as a question rather than a scientific confirmation. Likewise, the authors incorrectly describe the Veterans Administration (VA) cases.[12,13] Unlike deductive standards, for legal determinations, doubt is to be resolved in favor of the Veteran.[12] Even by this standard, the VA did not assert Agent Orange (rather than another commercially available herbicide) was used in Guam.[12,13]

As for the Environmental Protection Agency (EPA) and the Agency for Toxic Substances and Disease Registry (ATSDR), both agencies maintain websites providing public information about dioxins on Andersen Air Force Base (AFB) on the island of Guam.[14,15] While dioxins are the principal toxin within Agent Orange, the presence of dioxins does not necessarily signal the presence of Agent Orange. More specifically, it is known that pesticides were present at the Andersen superfund site[14] and commercially available pesticides are a source of dioxin exposure.[16] For instance, historic use of pesticides in Japan released an estimated 460 kg of dioxin toxic equivalents (TEQ) as compared to estimates between 130 to 366 kg of dioxin TEQ from spraying defoliants in the larger country of Vietnam.[17] Additionally, the presence of dioxin on Andersen AFB does not mean it originated from military activity. Specifically, the EPA's website describes how, "Most soil contamination problems at Andersen are either the result of nearby industrial activity, or the result of materials being placed into scattered dump-sites."[14]

The larger public health question is why would it matter if dioxins came from Agent Orange or commercially available pesticides? While the public might falsely perceive risk based on the name of the formulation rather than seeking a comprehensive, scientifically-designed hazard assessment, the authors are still responsible for appropriately communicating their findings. Although the risk of Agent Orange is related to the fact that it contained dioxin, there are several contextual factors that have historically made the perception of Agent Orange different than other sources of dioxin. First, Agent Orange was sprayed from aircraft with the intent of defoliating jungle within a warfare context. As a result, Agent Orange is associated with presumptive exposure because the methods of application and the warfare setting would be expected to cause incidental exposures. With this unique context, it is not surprising that Agent Orange is more strongly associated with congenital malformations within Vietnam than elsewhere.[18] Thus, perceptions of Agent Orange toxicity could be inflated if Agent Orange was a surrogate marker for exposure to other combat related phenomena within Vietnam that are more dif-

ficult to measure. By the same logic, the hazard assessment for Agent Orange would be different if it were used in a peaceful location for purpose of weed control using a ground based application method, in the same manner as commercial pesticides containing dioxin. In this scenario, it would not be valid to make equivalent presumptions about village-wide exposure based on the name alone. Had the authors considered the larger picture of the hazard, they could have described the hazard assessments that have already been completed including the ATSDR identified sites with dioxin soil contamination within Andersen AFB. These sites are not expected to have previously caused hazardous exposures to the public in the past, present, or future.[15]

Although the distinction between Agent Orange and dioxins generally wouldn't impact hazard assessment, the distinction could be consequential for other reasons. Recalling a chemical formulation that conflicts with a documented comprehensive DoD assessment[19] draws more attention to the pitfalls of memory-based methods of exposure assessment.[5] Local and federal environmental protection agencies might already have reason to discount the memories because several decades lapsed before they were reported and because prior reported descriptions of spraying locations were incomplete.[11] Thus, the authors' selective focus on a toxic formulation that historical records show was not sprayed on the island unnecessarily detracts from the Veteran's memories about particular locations where he sprayed.

Nevertheless, we hope the new information will be taken for what it is. Given the prior detection of dioxins and pesticides, the Veteran's memories about spraying a chemical on 12 villages in Guam is something the public should know more about. It is unclear why spraying operations would occur in civilian areas of firmly controlled US territory or why the prior reports[3,20] of these memories were incomplete. Using an editorial could have expedited further public disclosure of these additional memories and provided a platform to call for further investigation. Instead, the authors published a research paper indicating they have access to information about 12 additional villages, but they do not disclose the village names, cardinal directions, or any other identifying details of the locations to enable soil testing.

Finally, framing the paper as if the study was deductive adds additional ethical considerations.[21] Had the authors opted for an editorial, then it would make sense to cover anecdotal claims from popular media as a relevant part of a larger narrative. On the other hand, if the authors attempted to systematically collect memories from an identifiable human for purpose of generalizable knowledge, then the authors represent the Veteran as a human subject and the description of the review board approval is missing. If memories were not collected systematically, the authors should have disclosed this methodologic weakness. Similarly, the justification for describing identifiable medical information about the Veteran and Granddaughter was not clear and informed consent for this disclosure was not documented within the paper.[21]

Overall, the rates of congenital causes of infant death available thus far are reassuring. First, residence in the island of Guam for the studied population appears safe for fetal development: cumulative rates appear slightly lower throughout the island than found in the United States overall.[1] Additionally, rigorous risk assessment from Andersen AFB shows no evidence of past, present, or future hazard to the public from dioxin soil contamination and a synthesis of all available evidence suggests congenital causes of infant death occur at the same rate among those living near Andersen AFB in the village of Yigo as they do on the rest of the island. Still, public health authorities can always strive to lower the rates of congenital deaths through a comprehensive approach. Adequate folate for all women of childbearing age (as available in a prenatal vitamin) can lower the risk of congenital malformations[2] and providers should counsel women about the developmental risks of prescription medications, even if pregnancy is not being planned. Once pregnant, women should be offered routine obstetric care to optimize health outcomes for both mother and child.[2] Ultimately, appropriate public health practice depends on rigorous science, proper implementation of well-established interventions, and proper collaboration between federal and local authorities.

Disclaimer: The opinions expressed in this document are solely those of the authors and do not represent an endorsement by or the views of the United States Air Force, the Department of Defense, or the United States Government.

Conflict of Interest

None of the authors identify any conflict of interest.

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Response to Commentary on Disparities in Infant Mortality Due to Congenital Anomalies on Guam

Jonathan K. Noel MPH; Sara Namazi MS; and Robert L. Haddock DVM, MPH

Dear Editors,

We thank the authors who commented on our recent paper[1] for their lengthy discussion regarding congenital anomalies on Guam, a discussion that nearly exceeded the original article in length. After a thorough review of their critiques, we agree in part and we disagree in part.

We agree that the original study is not perfect. The ecological study design cannot determine causation; the sample size was low; the models could have been over-parameterized; and confounding variables could explain the relationship between the independent and dependent variables. We respond to each critique in turn.

Ecological studies are not, and should not, be used to determine cause and effect or to confirm existing hypotheses. Our study is no different. Their very nature, examining differences between populations, prohibits such profound statements from being made. This does not mean ecological studies are not meaningful or that they should not be published. Indeed, they allow for initial examinations of health conditions across communities and serve as hypothesis generators.[2] Again, our study is no different. Regarding the former, as of July 25, 2016, our study was the only result of a PubMed search using the terms "congenital anomalies" and "Guam," and the first citation since 1991 using the terms "infant mortality" and "Guam." Regarding the latter, we hope our research can generate as many hypotheses as other successful ecological studies, particularly those on cancer.[3,4]

The low sample size is due to the low number of villages on Guam and is a limitation that must be taken into consideration, as we did, when forming conclusions about the data. As we stated in the original article, Guam is a small island,[1] and it is simply not possible to increase the sample size further at the ecological level. Any attempts to do so would be artificial, statistically unwise, and biased.

Over-parameterization of the multivariable models is possible. If this is a concern, we suggest our commentators, and other interested readers, focus instead on Table 3 of the article.[1] This table presents the results of univariable linear regression models for each independent variable included in the analysis. From this table, it is clear that the independent variable with the strongest association to infant death due to congenital anomalies was Agent Orange (AO) spray area. This holds true for statistical significance (the lowest p-value), practical significance (the largest coefficient), and the ability to explain the variance in the dependent value (R^2).

However, other confounding variables may explain the relationship between AO spray area and infant deaths, particularly tobacco and alcohol consumption, and this is another limitation that must be taken into consideration, as we did. Unfortunately, we were unable to locate appropriate village-level data on these and several other potential confounders to include in the models. We hope to correct this deficiency in future studies.

In the space available in the original article, we attempted to address as many limitations as possible, which, admittedly, did not cover every conceivable limitation, although few studies do. However, we went to great pains to assert that the study was not definitive and causal inferences should not be made. From our article, "*…it is important to stress that the ecological design of the study makes causal inferences of the study results impossible*."[1] That said, we believe that the methodological weaknesses of the current study can be resolved with a well-designed case-control or retrospective cohort study, and we encourage the National Institutes of Health, the Centers of Disease Control and Prevention, private foundations, and other grant making bodies to make sufficient funds available to conduct such research. If funds are available, we will happily apply.

As for the remainder of the commentary, we generally disagree. First, the reliance on memory recall in scientific research is the basis of some of the largest and most productive research studies in recent memory, and self-report is a meaningful part of nearly every surveillance study currently implemented by the United States government. To dismiss a study simply because a portion of it used recall reveals more about the biases of the commentators against social science than about the study itself.

In our study, a single individual came forward on his own accord and identified villages where AO was sprayed, a task that was a part of his daily duties while enlisted in the military and stationed on Guam. We agree with our commentators that this method was not standard scientific procedure and caution is warranted regarding his identification of AO spray villages, a fact that we freely expressed. As we wrote in the article, "*caution is required because [the individual] may harbor significant biases*."[1] Unfortunately, past efforts to obtain relevant information regarding AO use on Guam have failed. Multiple Freedom of Information requests made by one of the study authors were denied and government resources have not been allocated to perform sufficient chemical testing in all Guamanian villages. We strongly encourage the Department of Defense (DOD) to de-classify and release all information regarding the storage and use of AO so that the reliance on such individuals is no longer required.

This leads us to an important issue implied by the paper. Was AO ever used on Guam? Our commentators imply that AO could have only been used as a wartime jungle defoliant with no pos-

sible other applications. Thus, logic dictates that AO could not have been used on Guam. Yet there are several plausible uses for a defoliant in and around the area of a military base, and it is naïve to assume otherwise. Defoliants can hold vegetation encroaching upon airstrips, roads, buildings, and pipes in check. Clear lines of sight between landmarks on and off the island can be maintained. Furthermore, Veterans Administration officials have previously concluded that defoliants were used on Guam and AO was stored on Guam.

"*Although the [Veterans Benefits Administration] and [Joint Services Records Research Center] provided evidence that the Veteran was not exposed, their findings were based on the DOD list and historical reports with little or no consideration to the other evidence of record clearly demonstrating that herbicides were used in Guam, Agent Orange was stored in Guam, and there was a heavy concentration of dioxin found in the soil many years later.*"[5]

If we ask the readers anything, it is to consider the plausible scenario that a useful chemical stored at a military base during wartime could also have been used in and around the same location.

The interesting aspect of our results is that there is no reason for our "AO Spray Area" variable to be significant. Guam is a small island, and for most environmental toxins, we would expect relatively homogeneous exposures and relatively homogeneous outcomes between villages. The sample size was very small, and the memory of the individual could have been compromised over time. Combined, these suggest that a null finding was more than probable. Yet, we found the opposite. We found something. Something that deserves further investigation.

The rest of our commentator's critiques we largely dismiss. They are reminiscent of attacks made by the tobacco industry in attempts to silence researchers who published unfavorable research. Such attacks do not further scientific progress. They diminish it. They do not encourage the pursuit of new information. They quell it. Every study has some flaw, some limitation, and few studies pass through peer-review unscathed. This should not prohibit the publication of a study because these are the baseline studies that scientific progress is built upon. Whether future studies confirm or reject our findings, we hope our article is one such baseline study.

In summary, we knew mentioning the phrase "Agent Orange" was controversial and would provoke a reaction. It did, on both sides of the issue. We did not shy away from the controversy but embraced the idea that we could start an uncomfortable conversation and, hopefully, better the lives of a population that is often neglected. We look forward to publishing similar studies that will provoke more responses, generate more hypotheses, and produce more research questions. We also look forward to the day when funding is made available that will allow us to complete the necessary series of studies that provide definitive answers to these very serious questions.

Conflict of Interest

None of the authors identify any conflict of interest.

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Significance of Concussions in Hawai'i: From Land to Sea

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Abstract

Head injuries are a particular concern in Hawai'i given the large military population, the presence of many land and water sports such as football and surfing, and the lenient helmet laws for motorcycle and bicycle riders. Physical, psychological, and cognitive symptoms from single or repeated concussions can affect an individual's reentry to society and activity. Current literature indicates that repeated head injuries are associated with chronic traumatic encephalopathy (CTE) which is thought to lead to dementia. This paper reviews literature discussing causes of concussion including its incidence and prevalence in Hawai'i. Furthermore, the neurophysiological and neurobiological etiologies are discussed followed by an overview of methods for identification and management of concussion. The paper serves as information for professionals in the community such as educators, military personnel, and healthcare workers to identify risks of concussion, management of symptoms, and to connect with resources and programs available in Hawai'i.

Keywords

concussion, mild traumatic brain injury, chronic traumatic encephalopathy, service members, athletes

Introduction

Concussion is a term used synonymously with mild traumatic brain injury (mTBI) and is an injury caused by external forces to the head that disrupt the function of the brain without penetrating the skull.[1-2] Awareness of the impact of concussions has increased over the last several years as service members returned from Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), and Operation New Dawn (OND) with diagnosis of mTBI.[3-6] Former and current athletes from the National Football League have also increased awareness of head injuries as more and more players recognize the impact of repeated concussions. As these issues continue to rise, other activities have been identified as "at risk" for concussion such as soccer, surfing, and mixed-martial arts. Many of these activities are popular within the state of Hawai'i. However, the literature discussing the significance of head injury in the state is limited. This paper aims to address common causes of concussions in Hawai'i, neurophysiological factors, and directions for treatment.

Causes of Concussion

Combat-Related Concussions: The state of Hawai'i is unique in that it is home to every branch of the military and represents a disparate population at increased risk for head injury. Within the United State, approximately 100,000-250,000 concussions in service members resulted from the recent Gulf Wars, and OEF/ OIF/ OND.[3-6] An estimated 7%-12% of veterans who served in OEF/OIF/OND and received VA medical care have confirmed combat-related TBIs. Seventy-five thousand out of a total of 800,000 veterans were screened and found to have sustained concussions during combat with more than half of combat-related concussions attributed to motor vehicle accidents (MVA).[3-5] Ninety-five percent of those concussions identified were mild in severity; less than 5% were moderate to severe. About 73% of veterans with symptomatic mTBI present with a concurrent mental health diagnosis. Post-traumatic stress disorder (PTSD) is the most common mental health disorder associated with mTBI.[7-8] Over 90% of these veterans either have PTSD or chronic pain disorder.[9-10] According to the 2014 census report, there is a total of 47,213 military personnel in the state of Hawai'i.[11] The Department of Defense reported that the prevalence of mTBI in the Army was 3 times higher than other branches.[12] With four active Army bases in Hawai'i, it is very likely that the military population within the state significantly contributes to these statistics. Also, the University of Hawai'i at Manoa has a large ROTC program with cadets who may have previously deployed and may have experienced combat situations with exposure to events that lead to head injury.

Motor Vehicle Accidents: The most common non-sport civilian concussions are from motor vehicle accidents (MVA). Emergency departments in the United States treated almost 2.6 million individuals for injuries after a motor vehicle collision.[13] The most recent data for nonfatal injuries secondary to MVA in 2011 reported 433 injuries per 100,000 persons in Hawai'i.[14] The Injury Prevention and Control Section of the

Abbreviations:

AD = Alzheimer's Disease
CSF = Cerebral Spinal Fluid
CTE = Chronic Traumatic Encephalopathy
DOH = Department of Health
mTBI = Mild Traumatic Brain Injury
MVA = Motor Vehicle Accidents
NFL = National Football League
NFT = Neurofibrillary Tangles
OEF = Operation Enduring Freedom
OIF = Operation Iraqi Freedom
OND = Operation New Dawn
MMA = Mixed-Martial Arts
PCE = Post-Concussive Event
PCS = Post-Concussive Symptom
PTA = Post-traumatic Amnesia
PTSD = Post-traumatic Stress Disorder
TBI = Traumatic Brain Injury
VA = Veterans Affairs

Hawai'i State Department of Health (DOH) reported that 21% of nonfatal injuries from motorcycle crashes resulted in TBI between the years 2007-2011, followed by bicycle (18%) and automobile (16%) accidents.[15] The use of airbags in vehicles has decreased TBI fatalities but has consequently increased mTBIs that may continue to impact the victims' daily living. Although motorcycles, mopeds, scooters, and bicycles are popular forms of transportation in Hawai'i the state has only enacted a law requiring helmet use among children. The law states that persons must wear a helmet when riding a bicycle if under the age of 16 years and when driving a motorcycle if under the age of 18 years.[16-17] Concussions from MVAs demonstrate elements similar to sport and combat mTBIs.[18-20]

Sports-Related Concussions: Sports-related concussions have become a significant topic of interest due to the recent attention from the media, particularly in American football from youth to professional leagues. Within the United States, there are more than 3.8 million concussions related to sports and recreational activities annually.[18] Approximately 5%-9% of all sports injuries are concussions. Football, wrestling, girl's and boys' soccer, and girls' basketball have the highest incidence of concussions.[3-4] Another unique aspect of Hawai'i is the high participation in watersports by the locals and tourists. According to the DOH,[15] an average of 9% of near drowning accidents resulted in traumatic brain injury. Woodacre, et al, found that 24% of injuries in surfers were classified as head injuries.[21] Another study by Swinney assessed the prevalence of TBI and the use of protective gear in 50 surfers.[22] Among this sample, 70% (n = 35) reported sustaining a head injury, and of those, 37.1% (n = 13) were concussions.

Athletes who sustain a sports-related concussion have a greater likelihood of experiencing repeated concussions.[23] University athletic teams involved in sports such as football and soccer are also high risk for repeated concussions during games and practice sessions. Most concussions sustained by athletes occur during practices as opposed to competitive games. In addition, women are more likely to experience concussions than men within the same sport.[24-25] Preliminary data from a pilot study at the University of Hawai'i UH that surveyed a female university soccer team in Hawai'i found that 35% of the participants (n = 20) sustained a concussion either during a game or practice.[26] Mixed-martial arts (MMA) is another popular sport in Hawai'i and is also considered high risk for repeated concussions. Ngai, Levy, and Hsu reported a rate of 15.4 severe concussions per 1000 athlete exposures.[27] An ongoing study which includes MMA competitors indicates that at least 58% of the participants (n = 12) report an average of 2.85 concussions during practice, fights, or both.[28]

Neurophysiological Aspects of Concussion

The aftermath of sustaining a concussion with loss of consciousness is commonly the result of diffuse axonal injury in which the rotational movements of the brain within the skull damages axons.[2,29] Persons who sustain a concussion experience an alteration or loss of consciousness for up to 30 minutes with associated memory loss or post-traumatic amnesia (PTA) surrounding the event. Additional neurologic sequelae may also be present, including numbness, dizziness, uncoordination, and alterations in special senses. These sequelae and PTA are typically symptomatic for up to 24 hours following the event.[4]

More recently, clinical and research professionals are attempting to increase the awareness of potentially concussive events (PCE), particularly in high-risk activities such as exposure to blasts while serving in the military and contact sports. A PCE is an impulsive force to the head that can result in acute or chronic symptoms in some individuals; while others may be asymptomatic.[3-4] According to the Veterans Administration (VA), acute post-concussive symptoms (PCS) are characterized by axonopathy, altered glucose metabolism, short-term musculoskeletal or soft-tissue pain, and psychological changes.[30] There are concerns related to the long-term effects that may be present following this potentially cumulative trauma disorder. Chronic PCS is the result of permanent damage to axons, along with noted psychological changes.[4] Additional symptoms of PCS include persistent physical symptoms such as headaches, dizziness, blurred/double vision, and insomnia. Cognitive changes include deficits in attention, executive function, short-term memory loss, and changes in social-communication skills.[31-32] Individuals with PCS may also experience emotional and psychological symptoms. Studies have shown that 80%-90% of symptoms typically resolve within 1-4 weeks of the incident.[33] However, they usually present within the first 1-2 weeks following the event and may last for at least three months in 15%-30% of individuals. It is unclear what this means in consideration of prognosis and treatment. In 5% of cases, the consequences of concussions last more than one year. While research continues to investigate the long-term effects of concussion, there is scientific evidence that single moderate-severe TBIs are associated with long-term risks. There is also evidence that, although symptoms related to concussion may have subsided after one week of rest, the brain may not have fully recovered.

Repeated concussions can predispose individuals for neurological degeneration later in life. Athletes from the National Football League (NFL) may sustain 3,000-8,000 concussions over a lifetime of sports while American combatants from the war in Iraq report 1-151 mTBIs (average of 4) during their service.[3-5] Post-mortem examinations of the brains of former NFL players have led to the identification of chronic traumatic encephalopathy (CTE).[34] CTE, also termed "Punch Drunk" or Dementia Pugilistica is a neurodegenerative disease caused by repeated head trauma and is considered to be progressive.[35] CTE begins insidiously and usually presents over many years (5-10) following the concussive event or after the patients have stopped playing sports. Inattention, mood and behavior disturbances, confusion, and memory loss are typical symptoms. A brain with CTE exhibits physiological signs such as atrophy of frontal and temporal cortices, dilation of the lateral and third ventricles, and thinning of the corpus callosum. Postmortem microscopic examinations reveal neuronal loss and tau deposition in neurons

(neurofibrillary tangles; NFTs) and astrocytes. This pathology involves the cerebral cortex (perivascular areas, deep layers), white matter, deep nuclei, and the brainstem.[36-37]

CTE may progress over many years (5 or more) to dementia and Parkinsonism. Studies have found that multiple mTBIs can further increase the likelihood of developing CTE; however further investigation through longitudinal studies is needed. Increased research suggests that even a single event of moderate to severe TBI leads to higher risk of the development of Alzheimer's Disease (AD) in the long-term.[37-39] AD is characterized neuropathologically by beta-amyloid neuritic plaques and NFTs. CTE also shows accumulation of NFTs that are similar to those of AD, and few, if any, neuritic b-amyloid plaques.[3-5] Despite the similarities and differences in the biological makeup of AD and CTE, the results present as symptoms of dementia, which can lead to a multitude of social difficulties and medical complications.

Identification and Treatment

High-quality neuroimaging technology is commonly available (eg, diffuser tensor imaging, susceptibility weighted imaging, diffusion tensor tractography, and positron emission tomography). However, it is unclear whether brain imaging should be utilized in patients with TBI for acute clinical care, long-term management prediction, or research. Despite premium neuroimaging techniques, there is currently no gold standard to allow specialists to diagnose concussions and provide a prognosis for each patient accurately. Efforts have been made to identify cerebral spinal fluid (CSF), blood, urine, and/or salivary biomarkers of TBI.[3-5,40] Consequently, acute injury markers in CSF of moderate-severe TBIs defined in rodents have fair sensitivity but poor specificity in humans. Currently, there are no clear acute or chronic biomarkers for mTBI.

Recently, there has been a move to "advance best practices, policies, and research related to the care of injured service members."[41] The VA's treatment of mTBI is called "post-deployment syndrome management" and is a three-tiered process that includes education, intervention, and goals.[4,30] Education consists of diagnosis including the explanation of multiple contributors, such as prognosis from evaluating an individual's level of optimism/self-actualization. Education also addresses health management such as levels of fitness, sleep, diet, and mind/body wellness. Interventions address maintaining adequate levels of sleep either naturally or with medication, pain management, and behavior management through counseling with the option of dosing with mood stabilizers. Cognitive rehabilitation with a certified speech-language pathologists addresses cognitive-linguistic deficits and functional life participation. The goals include normalization, deinstitutionalization, return to productivity and activity, and reintegration into social roles and activities.[4,30]

Guidelines for an athlete's return to school and play are determined based on a consensus from a multidisciplinary team who monitors the student from the moment of experiencing the concussive event. Symptom management is the primary tool, but it is undecided if there should be focal or comprehensive neuropsychological testing for incidents in this population. It is considered "best practice" for athletes to return to their sport once they are symptom-free at rest as well as during physical activity.[4,42] This means that the athlete is released to participate in regular activities after passing physical and neurological tests or screeners. However, previous literature indicate that symptom resolution and return-to-normal brain function do not appear to be simultaneous.[43]

Conclusion

It is imperative for professionals in Hawai'i to understand the activities that lead to concussions, the etiology of the injury, and how it affects the individual for appropriate identification and treatment. In consideration of return to work, school, and other life activities, there may be short- and long-term consequences in returning to premorbid activities too soon which can affect athletes, military personnel, and civilians. There are laws in place for children and adolescents. In 2012 the Hawai'i Sess. Laws Act. 197 (2012 HB 2273) was enacted and required the development of a concussion awareness program within public and private schools to provide guidelines for education, identification, and management of concussion for children and adolescents between the ages of 14-18 years. The Hawai'i Concussion Awareness Management Program provides education and baseline testing to high school students in the state.[44] Within the young adult population, the National Collegiate Association of America partnered with the Department of Defense in 2014 to study concussion and its impact.[45] Additional programs that make efforts to raise awareness of concussions in Hawai'i through programs such as the Hawai'i Neurotrauma Registry, in which individuals of all ages voluntarily provide information related to their brain injury.[46] The registry is beneficial in that it tracks the reported brain injuries in the state with the intention to support future legislative change to support increased care. Furthermore, the Department of Communication Sciences and Disorders at the University of Hawai'i is conducting research on brain injury to investigate high-risk populations in the area of cognitive-linguistic skills and audiology. Continuation of these programs will assist in the prevention and better management of brain injuries in the state by providing appropriate and adequate resources to those working with high-risk populations. Further research that investigates the long-term effects of repeated concussions is necessary as clinicians are seeing an increase in patients who have sustained TBIs.

Conflict of Interest

None of the authors identify a conflict of interest.

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Self-Reported Experiences of Discrimination and Depression in Native Hawaiians

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Abstract

Discrimination is an acute and chronic stressor that negatively impacts the health of many ethnic groups in the United States. Individuals who perceive increased levels of discrimination are at risk of experiencing psychological distress and symptoms of depression. No study to date has examined the relationship between perceived discrimination and mental health in Native Hawaiians. The purpose of this study is to explore the relationship between perceived discrimination and depression based on the Homestead Health Survey mailed to Native Hawaiian residents of Hawaiian Home Lands. This study also explores the role of cultural identity and how it may impact experiences of discrimination and symptoms of depression. Based on cross-sectional data obtained from 104 Native Hawaiian residents, a significant positive correlation was found between perceived discrimination and symptoms of depression (r= 0.32, P*<.001). Cultural identity did not significantly correlate with discrimination or depression. Multiple linear regression analyses indicate that the relationship between depression and discrimination remained statistically significant (coefficient estimate of 0.18;* P*<.01), after accounting for differences in socio-demographics and degree of identification with the Native Hawaiian and American cultures. These findings are consistent with other studies that have focused on the effects of discrimination on psychological wellbeing for other ethnic minority populations.*

Introduction

Discrimination is an acute and chronic stressor that threatens the health of racial and ethnic minorities and lower socioeconomic groups in the United States.[1,2] During the last few decades, increased attention has focused on discrimination and its negative impact on health.[1] Individuals who perceive increased levels of discrimination are at a greater risk of experiencing psychological distress and symptoms of depression.[3,4] Indices of psychological distress are found to mediate the relationship between discrimination and physical health.[5] Research indicates that ethnic minority populations are most at risk of experiencing discrimination due to their race/ethnicity, poorer economic status, or a combination of these factors, which may result in poorer mental health.[6-9]

Studies examining the health of Native Hawaiians, the indigenous people of Hawai'i, show poorer health outcomes for Native Hawaiians compared with all other major ethnic groups in the State of Hawai'i,[10-13] which in part may be attributed to experiences of discrimination.[14] Prior to Western contact, Native Hawaiians were described as a healthy and robust population.[15] Today, they are at increased risk for many physical and mental health concerns.[11-13] According to the most recent Behavioral Risk Factor Surveillance System (BRFSS) reports, approximately 13.7% [(95% confidence interval (CI) =11.9-15.6)] of Native Hawaiian adults have been diagnosed with a depressive disorder, compared with the state average of 11.2% (95% CI=10.6-11.8).[16] Exploring the way discrimination influences depression of Native Hawaiians may shed light on the extent to which perceived discrimination leads to poorer mental health. Uncovering this relationship could lead to a better understanding of the mechanisms by which social inequities are associated with mental health disparities observed in Native Hawaiians.

To date, no study has explored the relationship between discrimination and mental health in Native Hawaiians despite their susceptibility to experiencing discrimination.[14,15] Minimal studies with Native Hawaiian participants demonstrate a positive relationship between perceived discrimination and poorer physical health outcomes such as increased hypertension and being overweight or obese.[14,17] These findings support the notion that perceived discrimination may have a negative influence on hypertension and other stress-related health outcomes among Native Hawaiians, consistent with research focusing on other indigenous and ethnic minority populations.[6-9,14,17]

Studies focusing on ethnic identity, discrimination, and health demonstrate a paradoxical relationship, identifying ethnic identity as a factor that may positively or negatively impact the relationship between discrimination and health.[18] In general, previous research exploring the impact of Native Hawaiian cultural identity suggests that individuals with increased identification with the Hawaiian culture are at greater risk of experiencing poorer health outcomes because of greater cultural discord with the mainstream culture.[19-21]

In 1921, Congress signed the Hawaiian Homes Commission Act into law, which designated 200,000 acres of government-sponsored homelands for individuals with a minimum of 50 percent Hawaiian blood quantum.[22] Today, there are approximately 9,450 Hawaiian Home Land lessees.[23] Data on residents of Hawaiian Home Lands are substantially limited.[24] Exploring the relationship between everyday experiences of perceived discrimination and mental health outcomes in individuals residing on Hawaiian Home Lands is particularly important due to individuals demonstrating susceptibility to experiencing low socio-economic status, which has been shown to be associated with poorer health outcomes.[23,24] To address this gap in the literature, the primary aim of this study is to examine the relationship between perceived discrimination and depression symptoms of Native Hawaiians residing on Hawaiian Home Lands with a study hypothesis of greater perceived discrimi-

nation being associated with more depression symptoms. As a secondary aim, this study will explore the role of cultural identity and how it may influence the relationship between perceived discrimination and depression symptoms.

Methods

Study Design and Participants

This study was approved by the University of Hawai'i Institutional Review Board (IRB). Cross-sectional data were obtained from individuals who participated in the Homestead Health Survey Project. Approximately 390 individuals residing on selected Hawaiian Home Lands from the island of O'ahu were invited to participate in this pilot study.

Procedures

Co-investigators of the Homestead Health Survey, including the primary author of this report, assembled and designed the survey based on adapted and pre-existing scales. This study used a community-based participatory research (CBPR) approach that included community members as co-investigators who directly participated in all phases of this study, to include co-authoring of this report. Blank surveys were mailed to lessees currently residing on Hawaiian Home Lands from the island of O'ahu between January and April 2015. Prospective participants also received a personalized cover letter describing the purpose of the project and a consent form explaining the informed consent process. Participants were compensated with a $15 gift card for participating in the survey.

Instruments

Table 1 summarizes variables and measures of this study. Demographic and socio-economic variables were measured by items that used the same language as items included in the BRFSS including age (in years), gender (1=male and 2 = female), annual household income, and education level. Participants reported their annual household income based on nine answer choices, which were coded into four categories: (1) less than $25,000, (2) $25,000 to less than $50,000, (3) $50,000 to less than $75,000 and 4) $75,000 or more. Education was measured by asking participants to report their highest grade or year of school completed, which was coded as (1) high school or equivalent and less, (2) some college, and (3) college graduate.

Discrimination was measured with the Everyday Discrimination Scale (EDS), which measures frequency of experiencing perceived acts of discrimination in a respondent's day-to-day life. The scale consists of 9-items on a Likert-type response scale ranging from 1 (never) to 6 (almost everyday), with a final score ranging from 9-54.[8] Higher scores indicate increased frequency of perceived discrimination. Example items include "You are treated with less courtesy than other people are" and "People act as if they are afraid of you." Participants were asked to indicate the main reason for experiences of discrimination, which included their race, ancestry, or national origins; gender; skin color; education or income level; or a physical disability. The EDS has been previously validated in other populations, with high levels of internal consistency.[27,28] Measures of internal consistency for the EDS were high in our full sample (N=125) with a Cronbach's Alpha of 0.90.

Native Hawaiian cultural identity and American cultural identity, respectively, were measured with the Native Hawaiian Cultural Identity Scale (NHCIS) and the American Cultural Identity Scale (ACIS).[21] Each scale consisted of 4-items, which measured an individual's knowledge, attitudes, feelings, and association with both cultures. An example item includes "How do you feel toward the Hawaiian (or American) culture and lifestyle?" Items were scored based on a series of answers ranging from 1 to 5 with a total score ranging from 4-20 for each scale. Higher scores indicate a stronger identity with the Native Hawaiian or American culture.

Depression was measured through the 11-item Center for Epidemiologic Studies-Depression (CES-D) measure.[25] The CES-D is a self-report scale that measures the frequency of experiencing depressive symptoms during the past week based on four sub-scales: depressed affect, positive affect, somatic symptoms, and interpersonal symptoms. Depressed affect includes feelings of depression, loneliness, and sadness. An individual with positive affect may experience feelings of happiness and enjoying life. Somatic symptoms of depression are characterized as physical symptoms that may impact daily functioning of an individual including poor appetite, feeling as though everything is an effort, and restless sleep. Interpersonal symptoms of depression are characterized as problems related to interactions with individuals that may impair social functioning. Examples include feeling as though other people are unfriendly or feeling as if people dislike the individual. Responses were based on a Likert scale ranging from rarely (less than 1 day) to most of the time (5-7 days) with final scores ranging from 0-33. Higher scores indicate increased symptoms of depression. Measures of internal consistency of the CES-D were high in our full sample (Cronbach's Coefficient Alpha =0.84, Spearman Brown Coefficient =0.85 and Guttman Split-Half Coefficient =0.85), consistent with other studies that utilized this scale as a measure of depression.[25]

Data Reduction and Statistical Analysis

Returned surveys were assigned an identification number to ensure confidentiality. Data from returned surveys were then entered into REDCap, a secured, electronic database. Characteristics of study participants were summarized by descriptive statistics. Pairwise correlation coefficients for CES-D, CES-D subscales, EDS, NHCIS and ACIS scores were obtained and tested for significance. Multiple linear regressions were performed to confirm findings from the correlation analysis with CES-D scores as the outcome variable after adjusting for age (in years), gender, education, income level, and the NHCIS and ACIS scores. All data analyses were performed in SAS 9.3.[26] A two-tailed *P*-value of less than 0.05 was regarded as statistically significant.

Results

Participant Characteristics

In total, 125 participants out of 390 adults over the age of 18 agreed to participate in the pilot study, with a response rate of 32.1%. Due to missing data, 21 participants were removed from the dataset, yielding a final sample of 104 participants. Table 2 summarizes the characteristics of participants from this study. Participants included in the final sample were predominantly female (73.1%, n=76) with an average age of 56.3 years (SD=13.3). Approximately 45% of the sample had an annual household income of less than $50,000.

Participants had an average summed score of 8.4 (out of 20) for the NHCIS and 8.8 (out of 20) for the ACIS. About 81% of the sample (n=84) highly identified with both the Native Hawaiian and American cultures, with scores of 12 or higher on both scales. The average summed score of discrimination measured by the EDS was 17.1 (out of 54, with possible scores ranging from 9-54). Participants selected race, ancestry, or national origin (41.4%) as the main reason for experiences of discrimination, followed by education or income level (37.5%), gender (30.8%), skin color (18.3%), and physical disabilities (10.6%).

The average summed score of the CES-D was 4.6, indicating on average, participants experienced depressive symptoms that were not of clinical significance.

Table 1. Summary of Study Variables and Measures

Participant Characteristics	Independent Variables	Dependent Variables
Demographic and socio-economic variables • Behavioral Risk Factor Surveillance System (Reported as a mean or N[%])	Discrimination • Everyday Discrimination Scale score (continuous)	Primary Outcome: Depression • Center for Epidemiologic Studies-Depression (CES-D) score (Continuous)
Reasons for experiences of discrimination • Everyday Discrimination Scale (Reported as N[%])	Cultural Identity • Native Hawaiian Cultural Identity Scale score (continuous) • American Cultural Identity Scale score (continuous)	Secondary Outcomes: Subscales of depression • CES-D Depressed Affect Subscale score (continuous) • CES-D Positive Affect Subscale score (continuous) • CES-D Somatic Subscale score (continuous) • CES-D Interpersonal Subscale score (continuous)

Table 2. Study Participant Characteristics (n=104)

Characteristics	Mean (SD) or Percent
Age (years)	56.3 (13.3)
Female (vs male)	73.1%
Educational attainment	
High School diploma or equivalent and less	38.5%
Some college/technical/vocational	33.7%
College graduate	26.9%
Missing	0.9%
Income	
Less than $25,000	15.4%
$25,000 to $50,000	29.8%
$50,000 to $75,000	6.7%
$75,000+	36.5%
Missing	11.6%
Everyday Discrimination Scale (EDS) mean Score	17.1 (7.9)
Reasons for experiences of discrimination	
Race, ancestry, or national origin	41.4%
Gender	30.8%
Skin color	18.3%
Education level or income level	37.5%
Physical disability	10.6%
Native Hawaiian Cultural Identity Scale (NHCIS) mean score	8.4 (3.1)
American Cultural Identity Scale (ACIS) mean score	8.8 (2.9)
Center for Epidemiologic Studies-Depression (CES-D) mean score	4.6 (5.3)

Correlation Findings

Correlation analyses were conducted to determine the pairwise Pearson correlations amongst summed depression scores of the CES-D, CES-D sub-scales, discrimination scores from the EDS, and cultural identity scores from the NHCIS and ACIS using a two-tailed test for the final sample of 104 people (Table 3). Correlation analyses indicated a significant and moderately positive association between the summed scores of the EDS and CES-D ($r = 0.32$, $P < .001$). When considering specific aspects of depression, the discrimination EDS scores were found to have a significant positive association with the CES-D somatic subscale ($r = 0.33$, $P < .001$) and the CES-D interpersonal subscale ($r = 0.40$, $P < .0001$). Cultural identification scores (NHCIS and ACIS) had no significant correlation with either depression or discrimination scores. Nonetheless, NHCIS scores were positively and significantly correlated with ACIS scores ($r = 0.54$, $P < .0001$).

Multiple Linear Regression Findings

Multiple linear regression analyses were conducted to examine the relationship between CES-D and EDS after accounting for socio-demographic variables, NHCIS scores, and ACIS scores (Table 4). The multiple regression model produced $R^2 = 0.26$, $F(10,93) = 3.29$, $P < .01$ with depression scores from the CES-D as the outcome variable, $R^2 = 0.18$, $F(10,93) = 2.08$, $P < .05$ with the CES-D somatic subscale score as the outcome variable, and $R^2 = 0.29$, $F(10,93) = 3.87$, $P < .001$ with CES-D interpersonal subscale score as the outcome variable.

As shown in Table 4, discrimination scores from the EDS had a positive and significant association with depression scores from the CES-D, with a weak coefficient estimate of 0.18 ($P < .01$), suggesting that individuals who perceived more frequent acts of discrimination tended to report greater symptoms of depression after controlling for other variables in the model, including socio-demographic variables and cultural identity. Similar findings were observed between discrimination and the CES-D somatic subscale of depression, with a very weak coefficient and positive estimate of 0.09 ($P < .01$) and the CES-D interpersonal subscale of depression, with a very weak and positive coefficient estimate of 0.05 ($P < .0001$). Income levels greater than $75,000 were significantly and negatively associated with depression scores of the CES-D, indicating that individuals with higher levels of income reported less symptoms of depression. Other demographic predictors including age, gender and education were not significantly associated with depression scores of the CES-D. To test the potential moderating effects of the NHCIS and ACIS scores on the association between EDS scores and CES-D scores, interaction terms (eg, NHCIS x EDS) were created and tested (data not shown). The interactions were not statistically significant ($P > .05$).

Discussion

In this study, the effects of discrimination and cultural identity on depressive symptoms were examined based on cross-sectional data collected from a survey administered to residents of Hawaiian Home Lands on the island of O'ahu. To date, this is the first study to examine the relationship between discrimination and depressive symptoms in Native Hawaiians. The findings demonstrate a weak and positive association between perceived discrimination and depression, which suggests that Native Hawaiians who reported more frequent acts of discrimination toward them also reported increased levels of depression symptoms, even after controlling for socio-demographic factors and identification with the Native Hawaiian and American cultures. In particular, perceived discrimination had a very weak and positive correlation with somatic and interpersonal symptoms of depression, suggesting that Native Hawaiians who perceived increased experiences of discrimination were likely to report increased symptoms of somatic and interpersonal depression. Depressed and positive affect, on the other hand, were not statistically related to experiences of discrimination.

These findings shed light on the way perceived acts of discrimination may influence reported symptoms of depression through somatic and interpersonal symptomology. In particular, negative interactions with other individuals due to feelings of inferiority or perceived discrimination may manifest as somatic

Table 3. Pairwise Pearson Correlation Coefficient (r) Matrix of Discrimination, Cultural Affiliation, and Depression

	CES-D	Depressed Affect	Positive Affect	Somatic Symptoms	Interpersonal Symptoms	EDS	NHCIS	ACIS
Depression (CES-D)	1.00	0.85***	0.59***	0.89***	0.61***	0.32**	0.17	0.12
Depressed Affect		1.00	0.37**	0.69***	0.35**	0.17	0.15	0.07
Positive Affect			1.00	0.29*	0.24*	0.10	0.16	0.12
Somatic Symptoms				1.00	0.49***	0.33**	0.11	0.07
Interpersonal Symptoms					1.00	0.40***	0.13	0.13
EDS						1.00	0.18	0.00
NHCIS							1.00	0.54***
ACIS								1.00

*$P < .05$, **$P < .001$, ***$P < .0001$

CES-D = Center for Epidemiologic Studies-Depression. CES-D sub-scales include depressed affect, positive affect, somatic symptoms, and interpersonal symptoms. EDS = Everyday Discrimination Scale. NHCIS = Native Hawaiian Cultural Identity Scale. ACIS = American Cultural Identity Scale.

and interpersonal symptoms of depression. As such, future research should further explore the way specific aspects of depression are impacted by perceived acts of discrimination as they may be targets for interventions. Income was the only socio-demographic predictor found to be significantly related to depression. Individuals who reported higher levels of income also reported decreased symptoms of depression. Education and income levels followed race, ancestry, or national origins as the most common reason for experiences of discrimination.

The authors were also interested in observing the way cultural identity may impact the relationship between discrimination and depression. In some studies, ethnic identity is identified as a coping resource that may mediate stress experienced through discrimination.[18] Other studies demonstrate the way cultural identity may intensify stressors of discrimination experienced by groups of individuals, such as indigenous peoples, who live in communities that do not value diverse cultures, and thus, exacerbate the negative health outcomes experienced by the individual.[19,20] Correlational analyses from this study indicated these relationships were not statistically significant. However, it should be noted that the relationship between discrimination and Native Hawaiian cultural identity began to approach statistical significance in the pairwise Pearson correlation (r= 0.18, *P*-value=.07). Thus, it is possible there is a positive relationship between stronger cultural identity and frequency of perceived acts of discrimination.

Future research is warranted to determine whether cultural identity serves as a moderating factor for the relationship between perceived discrimination and depression. In this sample of Native Hawaiians, those who reported increased identification with the Native Hawaiian culture also reported increased identification with the American culture. Thus, future researchers may want to expand on this study to include Native Hawaiians who reside on and off of Hawaiian Home Lands, which may provide additional insight on NHCI and ACI amongst Native Hawaiians residing in differing environments who may have varying levels of connectedness or lack of connectedness to the Native Hawaiian culture.

Limitations and Future Directions

Findings of this study were based on cross-sectional data. Consequently, this study has limitations similar to other studies with cross-sectional data including the inability to make causal inferences due to data being collected at one point in time. Data from the Homestead Health Survey was limited to individuals residing on selected Hawaiian Home Lands on the island of O'ahu, with a sample of participants who were pre-dominantly female with a mean age of 56.3 years.

While the findings of this study are consistent with other studies that have examined the effects of discrimination on psychological wellbeing in other ethnic minority populations,[3,4,6-9] findings should be interpreted with caution due to the small

Table 4. Multiple regression analyses with discrimination associated with depression, somatic depression, and interpersonal depression, adjusting for age, gender, education, income and affiliation scores.

	Depression (CES-D)			Somatic Symptoms			Interpersonal Symptoms		
Parameter	Estimate	Standard Error	*P*-value	Estimate	Standard Error	*P*-value	Estimate	Standard Error	*P*-value
Intercept	1.55	6.46	.81	0.72	2.86	.81	1.78	1.07	.10
Everyday Discrimination Scale (EDS) score	0.18	0.06	.007	0.09	0.03	.004	0.05	0.01	<.0001
Age	-0.004	0.039	.91	-0.01	0.02	.72	-0.002	0.007	.76
Gender (male)	0.30	1.17	.80	-0.07	0.58	.90	0.38	0.22	.08
Educational attainment									
Some college/technical/vocational	0.07	1.17	.96	-0.17	0.58	.77	0.18	0.22	.42
College graduate	-0.75	1.43	.60	-0.50	0.71	.49	0.003	0.26	.99
Missing	-4.49	5.32	.41	-1.84	2.63	.49	1.47	0.98	.14
Income									
$25,000 to $50,000	-1.59	1.56	.32	-0.39	0.77	.62	-0.05	0.29	.86
$50,000 to $75,000	-0.51	2.36	.83	-0.49	1.17	.68	-0.24	0.43	.58
$75,000+	-3.27	1.64	.049	-0.91	0.81	.27	-0.27	0.30	.38
Missing	3.36	1.99	.10	1.07	0.98	.28	0.72	0.37	.052
NHCIS	0.10	0.20	.63	-0.005	0.10	.96	-0.033	0.038	.38
ACIS	-0.02	0.21	.91	0.004	0.10	.97	0.034	0.038	.38

Depression was measured through the Center for Epidemiologic Studies-Depression (CES-D). Somatic and interpersonal symptoms were measured as subscales from the Center for Epidemiologic Studies-Depression (CES-D). NHCIS = Native Hawaiian Cultural Identity Scale. ACIS = American Cultural Identity Scale. The reference groups for the categorical variables include: female (for gender), high school diploma or equivalent and less (for educational attainment), and less than $25,000 (for income).

sample size and low beta coefficients in the regression model. Although the sample size of this study is small, the findings indicate the sample was large enough to detect statistically significant relationships at the 0.01 level. These findings may also indicate that the positive relationship between discrimination and depression is significant enough to detect in this small sample. In the future, the Homestead Health Survey should be administered to additional residents of Hawaiian Home Lands, including those residing on other islands, to allow generalizability of the findings to the larger Native Hawaiian population.

Future researchers should consider the way different types of discrimination influence the health of Native Hawaiians based on previous research that indicates different types of discrimination, in addition to frequency of discrimination, differentially affects the risk of health outcomes such as hypertension.[29] Future studies should also explore the impact of discrimination on physical and mental health concurrently to examine the mechanistic pathways of discrimination on health. Previous research suggests discrimination negatively impacts physical health outcomes through psychological distress.[3,5]

Accordingly, the relationship between discrimination and mental health may interplay with the effect discrimination has on physical health outcomes. As such, future researchers should explore whether the relationship between discrimination and psychological indices interacts with or mediates the relationship between discrimination and physical health outcomes (ie, hypertension and obesity) that were found to be significantly and positively associated with discrimination in previous studies focusing on Native Hawaiians.[14,17]

Conclusion

In conclusion, this is the first study to explore the relationship between discrimination and psychological wellbeing, measured through symptoms of depression, for a Native Hawaiian population residing on Hawaiian Home Lands on the island of O'ahu. Individuals who perceived more frequent experiences of discrimination also reported increased symptoms of depression, even after controlling for socio-demographic factors and identification with the Hawaiian and American cultures. Upon examination of the sub-scales measuring depression, somatic and interpersonal symptoms of depression were positively related to experiences of discrimination. However, future research is needed to address limitations of this study.

Conflict of Interest

None of the authors identify any conflict of interest.

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Recovery of Left Ventricular Function After Percutaneous Coronary Intervention Compared to Coronary Artery Bypass Grafting in Patients with Multi-Vessel Coronary Disease and Left Ventricular Dysfunction

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Abstract

Recovery of left ventricular (LV) function after revascularization has been described for coronary artery bypass grafting (CABG); however, LV recovery after percutaneous coronary intervention (PCI), and how it compares to CABG has not been well described in the literature. The aim of this single center retrospective study was to evaluate LV recovery in patients with severely reduced LV function undergoing PCI compared to those undergoing CABG. Patients with LV ejection fraction (LVEF) < 40% and multivessel coronary artery disease (CAD) undergoing revascularization with either CABG (n=16) or PCI (n=176), and with 12 months of follow up data were included in the study. LVEF at baseline exhibited significant differences between PCI (28.5 ± 8.0) and CABG (24.2 ± 6.8) groups (P=.05). LVEF recovery at 6-month follow up showed no difference between PCI and CABG groups. LVEF recovery differences at one-year follow-up was significantly different between PCI (4.82) and CABG (15.25) groups (P=.005). Patients with severely reduced LV function undergoing multivessel PCI had a statistically significant increase in LVEF over time; however patients undergoing CABG demonstrated greater gains in LVEF over the same time period. Surgical revascularization with CABG may be a procedure of choice in patients with depressed LV function and multivessel CAD.

Introduction

Globally, heart disease is the leading cause of death in both men and women, with coronary artery disease (CAD) being the major cause of morbidity and mortality.[1] CAD causes narrowing in the arteries of the heart, limiting blood flow, and may cause heart attacks, chest pain, and heart failure if not treated.

Treatment of CAD is dependent on re-establishing blood flow to the affected areas of the heart through a process called revascularization. In patients with multi-vessel CAD, coronary revascularization may be performed using either percutaneous coronary intervention (PCI) or coronary artery bypass grafting (CABG). PCI is a percutanous procedure (through the skin) where a catheter is introduced through the artery in the wrist or the groin and advanced to the heart where blockages are fixed with balloons and stents—metal tubes that act as scaffolds—from the inside of the artery. CABG is a surgical procedure where the heart is exposed through a surgical incision in the chest wall, cutting the tissues and breast bone. Bypass grafts are harvested from the chest wall, wrist or leg and used to re-establish blood flow to affected heart muscle by essentially going around the blockage—one end of the graft is attached either surgically or already attached naturally to the main artery coming out of the heart—and then attached to a normal section of blood vessel in the heart past the blockage, thereby creating the bypass. When comparing PCI and CABG, studies have demonstrated no significant difference between the two procedures in mortality; however CABG is superior in event free survival.[2-9] One group that has consistently demonstrated improved survival with CABG over PCI are patients with diabetes.[10-14] Left main stenosis (LMN – where blockage affects the main artery feeding the majority of the heart muscle and is equivalent to having multiple arteries blocked), like multivessel CAD, may be treated with comparable outcomes by either PCI or CABG.[15-16]

It is estimated that greater than 650,000 new cases of heart failure occur annually with reduced left ventricular (LV) function in about half of these patients[17]· In patients with LV dysfunction, it is believed that underlying coronary artery disease is the cause in up to two thirds of patients.[18] In the 2013 American College of Cardiology Foundation/American Heart Association (ACCF/AHA) heart failure guidelines, revascularization with CABG or PCI for patients with reduced LV function with LMN or LMN equivalent disease is a Class I recommendation with evidence Level C, indicating that revascularization is believed to be beneficial but is based on expert opinion and/or standard of care only.[18] There are no randomized controlled trials to prove or disprove this opinion. Currently CABG is recommended over PCI for patients with multivessel CAD and severely reduced LV function, but these recommendations are not based on randomized controlled trials, which are generally considered the gold standard.[19-20] This study assessed the effect of revascularization on recovery of LV function (a marker of success of revascularization), comparing PCI and CABG.[21]

Methods

This study is a retrospective chart review of all patients undergoing coronary angiography at the Pali Momi Medical Center in Honolulu, Hawaii from May 2009 to June 2013 (N=2,644). Patients with multi vessel CAD, defined as left main stenosis >50%, or stenosis >50% in any two vessels (n=1,337) were identified and then screened for LV dysfunction, defined as an ejection fraction value <40% (n=218). Patients were divided by their mode of revascularization: PCI (n=176) and CABG (n=16). Twenty-six patients were medically managed and did not undergo revascularization. They were therefore excluded from this analysis. LV function was assessed at baseline and follow-up at 6 and 12 months by standard transthoracic echocardiography. Exclusion criteria included any patients undergoing urgent revascularization for ST segment elevation myocardial infarction (STEMI); received no coronary intervention (medical therapy); or had missing baseline or follow up transthoracic echocardiography (TTE).

Differences in baseline characteristics were analyzed by t-test for continuous variables and chi-square test for categorical variables. Regression models examining changes from baseline used mixed regression models. Repeated measures were treated as clustered within the individual patients. Differences between treatments over time were estimated using least squares means. This study was approved by the institutional review board of Hawaii Pacific Health. Since the study consisted of a retrospective chart review, and the data presented were deidentified, informed consent was not required. Analysis was performed with SAS version 9.3.

Results

Baseline Demographics

Table 1 shows the baseline characteristics of the patients by intervention type. Overall, baseline characteristics did not demonstrate any significant differences between the PCI or CABG groups. The average age of the patients in the PCI group was 69 years compared to 68 years in the CABG group (*P*=.77), with 68% male in the PCI group and 69% male in the CABG group (*P*=.93). There was a high prevalence of comorbid conditions in both groups, with 84% of the PCI group and 100% of the CABG group with a history of hypertension (*P*=.13). Likewise the incidence of dyslipidemia (70% vs 69%, *P*=1.0), prior myocardial infarction (28% vs 19%, *P*=.41) and prior diagnosis of congestive heart failure (33% vs 38%, *P*=.71) were also found in a number of patients but did not differ significantly between PCI or CABG groups. The only characteristic found to be significantly different between groups was baseline LVEF, with patients undergoing PCI having a higher baseline LVEF than those undergoing CABG (28% vs 24%, *P* = .05).

Recovery of LV Function at 6 Months

Figure 1 shows the mean LVEF values at 6-months by treatment adjusted for baseline demographics and LVEF. Both PCI and CABG groups experienced a statistically significant recovery of LV function at 6 months (PCI: 3.3%, *P*=.013; CABG:12.9%, *P*=.013). Patients in the CABG group had a higher adjusted mean LVEF function at 6-months when compared to PCI patients; however, this difference was not statistically significant.

Recovery of LV Function at 12 Months

At one-year follow up, patients in the CABG group had a significant 15.3% increase in LVEF over the baseline EF (*P*=.004) compared to a significant 4.8% increase in LVEF over baseline EF in the PCI group (*P*=.001) (Table 2). As figure 2 demonstrates, the absolute increase in LVEF at the end of the study period in the CABG group compared to the PCI group was 10.5%, demonstrating a much more pronounced and rapid improvement in LV function in the CABG group (*P*=.005).

Table1. Baseline characteristics of the study population

Characteristic	PCI	CABG	*P*-Value
Mean ± SD			
Age in years	68.6 ± 12.2	67.6 ± 11.7	ns
BMI (kg/m^2)	27.8 ± 7.9	26.5 ± 7.6	ns
Baseline LVEF	28.5 ± 8.0	24.2 ± 6.8	.05
Percent (n)			
Male	67.6% (119)	68.8% (16)	ns
History of PCI	15.3% (27)	6.2% (1)	ns
History of CABG	17.1% (30)	12.5% (2)	ns
Medications			
ACE	57.3% (75)	71.4% (5)	ns
ARB	11.5% (15)	0.0% (0)	ns
Aspirin	88.6% (116)	85.7% (6)	ns
Beta Blocker	87.8% (115)	100% (7)	ns
Statin	84.0% (110)	100% (7)	ns
Chronic Conditions			
Hypertension	84.1% (148)	100% (16)	ns
Dyslipidemia	69.9% (123)	68.8% (11)	ns
Myocardial Infarction	28.4% (50)	18.8% (3)	ns
Congestive Heart Failure	33.0% (58)	37.5% (6)	ns
Cardiovascular Disease	17.6% (31)	6.3% (1)	ns
Peripheral Vascular Disease	14.8% (26)	18.8% (3)	ns

The study included 176 patients treated by PCI and 16 patients treated by CABG.
BMI = body mass index, LVEF = left ventricular ejection fraction, PCI = percutaneous coronary intervention, CABG = coronary artery bypass grafting, ACE = angiotensin receptor enzyme inhibitor, ARB = angiotensin receptor blocker, ns = not significant, *P*≤.05 is considered significant.

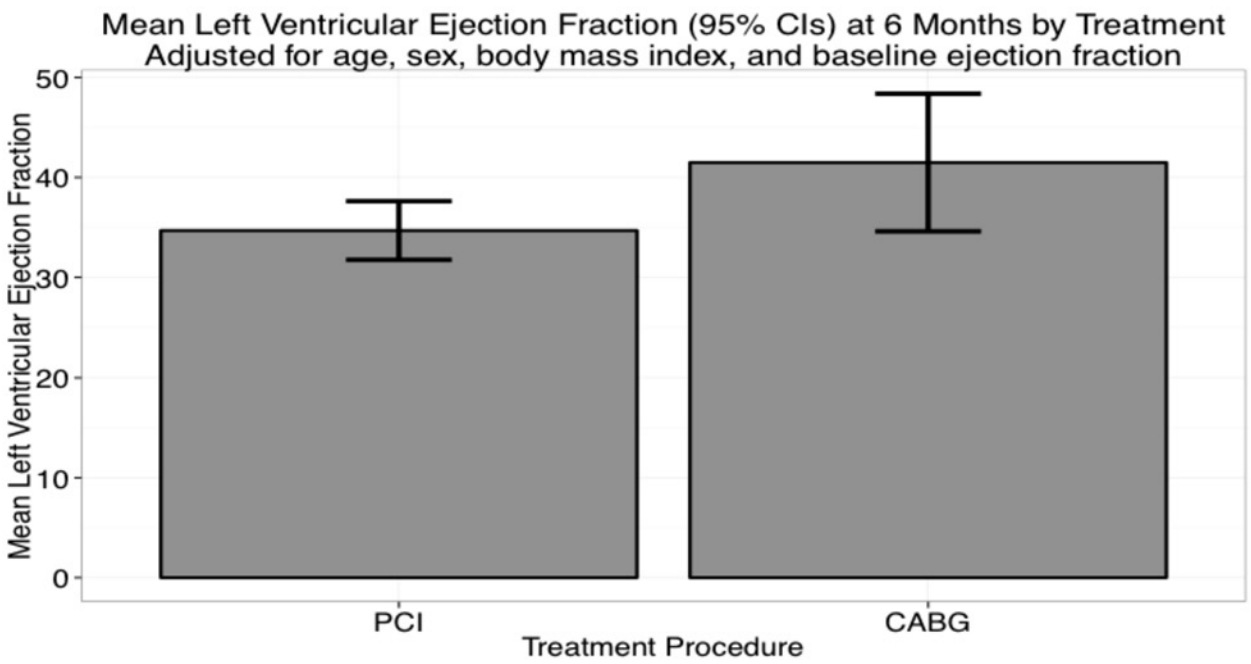

Figure 1. Mean left ventricular ejection fraction at 6-month follow up by treatment, adjusted for baseline demographics and baseline ejection fraction value.

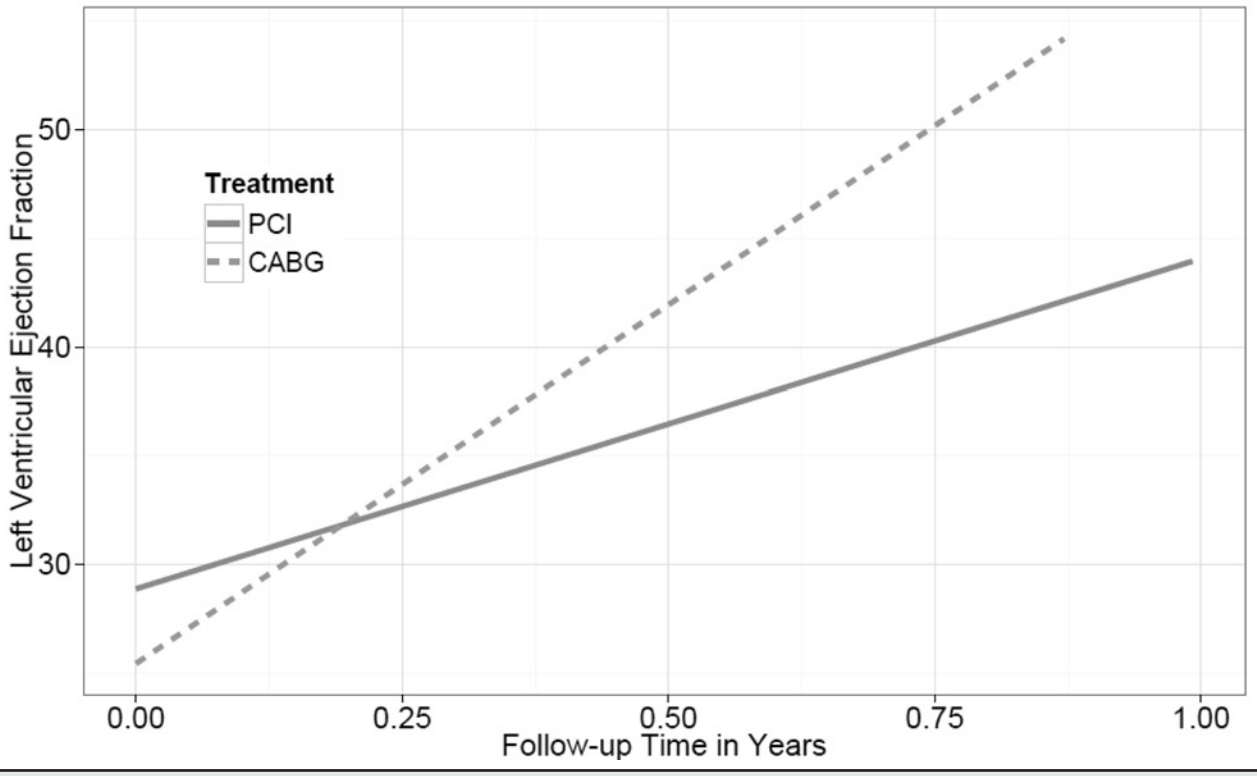

Figure 2. Changes in left ventricular ejection fraction from baseline to one-year follow up.

Table 2. Change in left ventricular ejection fraction values per year with associated p-values, adjusted for baseline demographics and baseline LVEF.

Longitudinal change in left ventricular ejection fraction (LVEF) per year with 95 % confidence intervals				
Category	**Change in LVEF % Per Year**	**Lower CI**	**Upper CI**	***P*-value**
PCI	4.8	2.2	7.4	.004
CABG	15.3	8.6	21.9	<.001
Difference in slopes	10.5	3.3	17.5	.005

Results are adjusted for age, sex, body mass index and baseline LVEF.
PCI = percutaneous coronary intervention, CABG = coronary artery bypass graft. $P \leq .05$ is considered significant.

Discussion

The efficacy of CABG and PCI as revascularization treatments for patients with severe LV dysfunction is not well described. It is a commonly held belief among medical professionals that PCI will be more beneficial to patients than medical therapy, but no data supports such a claim. Though recent literature has examined revascularization with CABG on patients with severe LV dysfunction, a comparison between revascularization of patients via PCI and CABG is not well described.[22-28] In a study done by Kunadian, et al, patients with severe LV dysfunction who underwent CABG demonstrated acceptable operative mortality and 5-year survival.[24] In another study done by Marui, et al, patients with impaired LV dysfunction who underwent CABG tended to have better survival outcomes over PCI.[28]

In this study, the two patient populations were well matched in baseline characteristics except for baseline LVEF. Our data demonstrates that patients undergoing CABG have a statistically significant greater recovery of LV function compared to patients undergoing PCI. While PCI is not as effective as CABG in improving LV function, it still demonstrated a statistically significant improvement when compared to baseline LVEF values (Table 2). At 6-month follow up both groups experienced a significant improvement from baseline EF, indicating the efficacy of revascularization via both PCI and CABG at 6 months, with the CABG group demonstrating a non-significantly greater improvement over the PCI group. While both PCI and CABG patients demonstrated an improvement in LV function over time, patients in the CABG group demonstrated a greater degree of improvement in LV function from the 6 to 12 month period. At one year follow up, CABG patients demonstrated a significant increase in recovery of LV function as compared to the PCI population.

Limitations

Important limitations of the study include absence of complete follow-up LVEF for patients and the small number of patients in the study, most particularly in the CABG group. Moreover, we were unable to adjust for influential variables such as patient preference, physician preference and surgical risk, clinical decisions for patients with multivessel coronary disease and LV dysfunction. Finally, the patient populations receiving the two respective procedures may be significantly different from one another. A larger patient population and additional data collection on patient demographics, and other contributing variables may be necessary to evaluate meaningful differences between the outcomes of the two procedure populations.

Conclusion

Both PCI and CABG demonstrated a significant improvement in LVEF compared to baseline at the 6 and 12-month time points. Patients undergoing CABG demonstrated a greater improvement in LVEF compared to patients undergoing PCI at 12 months. Our data indicates that CABG should remain the revascularization method of choice in patients with LVEF <40% with multivessel CAD; however, PCI also demonstrates a significant, if more modest, increase in LVEF and may be considered in patients who either refuse CABG or are deemed unsuitable for surgery.

Conflict of Interest

None of the authors identify any conflict of interest. Dr. Davis reports that he is supported by NIH grants U54MD007584, and 5 U54 GM104944 from the National Institutes of Health. (Supported by NIH grants U54MD007584, and 5 U54 GM104944from the National Institutes of Health. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.)

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Liaison Committee on Medical Education Accreditation, Part VIII: Faculty Development

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The Medical School Hotline is a monthly column from the John A. Burns School of Medicine and is edited by Satoru Izutsu PhD; HJMPH Contributing Editor. Dr. Izutsu is the vice-dean of the University of Hawai'i John A. Burns School of Medicine and has been the Medical School Hotline editor since 1993.

This is the eighth in a series of nine articles that reviews important accreditation standards and the preparation of the John A. Burns School of Medicine (JABSOM) for its accreditation visit by the Liaison Committee on Medical Education (LCME) in early 2017. This installment provides an overview of the faculty development requirements in the area of medical education. The primary standard is:

LCME Standard 4.5 Faculty Professional Development

A medical school and/or its sponsoring institution provides opportunities for professional development to each faculty member in the areas of discipline content, curricular design, program evaluation, student assessment methods, instructional methodology, and or research to enhance his or her skills and leadership abilities in these areas.[1,2]

This article will review how JABSOM identifies faculty development needs in the area of medical education, and describe the faculty development programs that are available to enhance teaching and other educational roles of faculty.

It is important to recognize that faculty development efforts at JABSOM go beyond the areas of teaching and medical education. Under the aegis of the JABSOM Faculty Development Program, a number of offices, departments, and projects contribute to the larger whole of faculty development.

The Identification of Faculty Development Needs in Medical Education

JABSOM utilizes two primary mechanisms for prioritizing faculty development needs in the areas of teaching and other medical education skills. The first is the needs assessment delivered by the JABSOM Faculty Development Program. In 2015, a survey was distributed to all faculty at JABSOM to rate their interest in a wide variety of topics, including medical education. The results of that survey were used to prioritize professional development seminars for all faculty. Some of the topics of greatest interest in medical education were:

- Using technology to enhance teaching efforts
- Evaluating learners and giving feedback
- Advising and counseling learners
- Student learning differences and emotional well-being
- Using manikin simulations
- Evaluating the effectiveness of educational programs
- Curriculum and course development

The second mechanism is through the review of student evaluations on the quality of lectures, problem-based learning (PBL) tutoring, and clinical teaching by the JABSOM Curriculum Committee. In general, student ratings in these areas are high, but should there be a change, faculty development sessions would be provided in response.

Faculty Development Activities that Enhance Teaching and Other Medical Education Skills

Faculty development in teaching and assessment is made available to all faculty members through the following opportunities.

OME Fellowship in Medical Education: This 10-month series of weekly seminars offered by the JABSOM Office of Medical Education (OME) is designed to prepare junior faculty members for careers in academic medicine by providing training in curriculum design, educational theory, teaching principles, presentation skills, clinical teaching, small group facilitation, problem-based learning, educational scholarship, student assessment, and academic leadership.[3] To date, over 130 faculty members representing more than 12 different disciplines have completed this fellowship program. The vast majority of the graduates of this program remain actively involved in teaching, and many have assumed leadership roles in medical education. The following are selected comments by past participants:

- As with most faculty, I learned the various instructional methods informally through colleagues. The Fellowship provided a comprehensive service-learning opportunity to assess, develop, and implement curriculum under the guidance of experienced faculty. My Fellowship project is still in use by the Department, and has resulted in presentation and publication opportunities.

- The fellowship was a great experience. The subjects covered are extremely useful and the faculty is first rate! I would highly recommend it to anyone who is involved in academic medicine and/or involved in teaching medical students or residents.

- Being a medical teacher is a great privilege and a huge responsibility. The OME fellowship is one of the most important steps I've taken in living up to the challenge.

- I feel this fellowship has given me new tools, and refined existing ones, to be a professional medical educator, not just a physician who teaches. There have been so many valuable lessons…I wish I had enrolled as a fellow years ago!

- Participating in the OME fellowship is truly one of the best things I have done for myself and for my career. The fellowship broadened my perception of academic medicine; it strengthened and developed skills I needed in order to become a better educator; it gave me "hands-on" practice (eg, developing curricula, creating lectures); and, what I think is the most important, the fellowship allowed you to explore who you are … your values, your expectations, your strengths, and your weaknesses. I met really outstanding people in the fellowship, and I am grateful for the opportunity to get to know and work with these people. I don't think you are going to find a more enjoyable and more supportive learning environment. The whole experience meant a lot to me in every way, and it hasn't ended, because I use what I learned and I interact with the people I met everyday.

Medical Education Grand Rounds: This continuing medical education (CME)-accredited series for medical educators covers a wide variety of topics such as PBL tutoring, lecturing skills, using standardized patients, computerized manikin simulations, measuring educational outcomes, writing test-items, and developing survey tools. Speakers have included JABSOM faculty as well as visiting faculty from other institutions. These sessions are made available to off-campus sites via live video feed or lecture capture. Some of the recent topics presented are shown below:

February 24, 2015
Evolving Opportunities in Medical Education Research

April 21, 2015
Assessment of Student Professionalism: Faith, Fears, and Future

July 21, 2015
Challenges in Faculty Development for FY 2016

September 8, 2015
"Adjusting the target": How the EPAs and Level 1 Milestones are Redefining the Competencies of a Graduating Medical Student

November 10, 2015
Interdisciplinary Education Using Simulation

February 9, 2016
Better MCQs: Principles of Assessment and Technical Tips

June 14, 2016
Harnessing the Power of Technology for Medical Education

In addition to the usual array of medical education topics, the Medical Education Grand Rounds have presented sessions directly related to JABSOM's upcoming LCME accreditation visit.

May 12, 2015
LCME and JABSOM: What's culture got to do with it?

October 13, 2015
Strategies to Meet Accreditation Standards: The University of Saskatchewan Experience

December 8, 2015
The LCME Accreditation Visit

Selected feedback from past attendees include the following:

- This is vital information I wish I had earlier
- Very practical and useful
- Great ideas that we need to explore here
- Makes the thought of using technology in teaching a much less scary thing

PBL Tutor Training Workshops: OME offers PBL tutor-training workshops for JABSOM faculty interested in learning or improving their PBL facilitation skills. The Comprehensive PBL Tutor Training Workshop is held twice per year and consists of two evening sessions. The first includes an overview of the PBL process and the educational theory supporting its use. The role of the tutor is covered and all participants process a PBL case together as if they were students. In the second session, faculty participants tutor a group of volunteer medical students who provide them with feedback on how they did and share tips on being a better tutor. In addition to these workshops, special departmental training sessions are provided at the request of department chairs and directors. The following are selected comments from past evaluations:

- Inspiration, working together as a team. PBL is an excellent tool for learning.
- [A strength of the course was] going through the PBL process as a learner then as a tutor
- Hands-on experience very valuable
- We are able to have a "real" experience of PBL. Then, we can get feedback from students at the end.

Health Professions Education Conference: In February 2016, JABSOM held the first Health Professions Education Conference (HPEC) in collaboration with the University of Hawai'i's schools of nursing, pharmacy and social work, and the Office of Public Health. This one-day conference was devoted entirely to faculty development in education.

The faculty development workshops included sessions on effective approaches to teaching, facilitation for simulation instructors, giving and receiving feedback, teaching and evaluating professionalism, and the remediation of learners. These sessions addressed many of the priorities identified in the JABSOM faculty development needs assessment.

The conference also provided a forum for the presentation of 38 peer-reviewed projects in education research and curriculum development. This activity allowed for sharing of ideas and potential inter-department and inter-school collaborations to form, amongst a group that would not have otherwise convened.

The post-conference survey results indicated that most sessions were thought to be exceptional. The majority of participants strongly agreed or agreed with the statements: "This conference increased my competence" (90.2%), "This conference will improve my performance" (88.5%) and "This conference will improve my student outcomes" (86.9%). Feedback included:

- Lots of innovative ideas with which to go forward
- I will be sharing some of the learnings with our GMEC (Graduate Medical Education Committee) and discussing having some of the speakers come and speak to both our faculty and residents in the future
- Several posters prompted ideas that could be brought back to my residency program
- Raised my awareness of current projects, interest, and initiatives in the community as well as provided the opportunity to meet other researchers and clinicians
- Was great to get people across fields together to discuss ideas and collaborate and meet in person!

Additional faculty development activities in the areas of teaching and medical education: Examples of additional activities to support the professional development of faculty members in the areas of teaching and medical education include:

1. Simulation facilitation skills training workshops
2. Orientation sessions and periodic meetings of instructors for required courses and clerkships
3. Online videos on timely and important topics such as Title IX and medical student mistreatment
4. Department presentations and workshops on skills such as evaluation, feedback and clinical teaching skills
5. Orientation sessions for medical student advisors
6. Orientation and training sessions for medical student applicant interviewers
7. Regular "study hall" medical education research sessions
8. One-on-one consultations with members of the Office of Medical Education

Other Faculty Development Opportunities at JABSOM

This article focused on the faculty development activities specific to teaching and medical education skills. It is important to note that other faculty development experiences are also offered by the JABSOM Faculty Development Program,[4] especially in the areas of promotion, tenure, and leadership. Various departments and offices also provide a breadth of faculty development opportunities including advanced degree training in clinical research, leadership training, research seminars, grant-writing training, laboratory safety practices, visiting professorship presentations and a number of CME opportunities across clinical disciplines.[5]

Summary

JABSOM provides a wide array of opportunities for faculty members to enhance their skills and leadership abilities in teaching, curricular design, program evaluation, student assessment, and instructional methodology. It is through this commitment to professional development that JABSOM ensures that faculty members possess the requisite skills, knowledge and attitudes to be the effective teachers that a successful medical student curriculum requires.

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All About the Insurance: The US health-Care System Through a Foreigner's Eyes

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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 Ranjani R. Starr MPH and Lance K. Ching PhD, MPH from the Hawai'i Department of Health.

Abstract

Hawai'i had high insurance coverage rates even before the Affordable Health Care Act and continues to have a high percentage of the population with health insurance today. However, high insurance rates can disguise wide variation in what is covered and what it costs. In this essay, an Australian Masters in Public Health student from the University of Hawai'i considers the strengths and weaknesses of insurance coverage in the US health-care system when her friend "Peter" becomes seriously ill.

Peter walks into the kitchen we share in our campus dorm, and I smile, relieved. I had seen him the previous evening and he wasn't himself, but I couldn't work out what was wrong. Stomachache? Depression? Fatigue? He'd given vague answers and seemed uneasy. I had urged him to see a doctor in the morning, and made him promise to meet me for lunch. I quiz him while I cook him an omelet, and it turns out he hasn't seen a doctor yet, and he doesn't seem to remember our conversation from the previous night. He trails off halfway through sentences and struggles to find the right words; he's usually gregarious and articulate. At one point he asks me for more soup, pointing to the stove. "You mean more omelet?" I ask, growing more concerned. "I'm worried about you. Let's go see a doctor. I'll come." Peter is hesitant.

"I don't know. I don't know if they take my…you know. If I can go there."

"Your insurance? Let's sort that out over there. We can try a different clinic if we need to," I reassure him.

I send him off to get his wallet while I wash up, but he comes wandering back. He's locked himself out of his room – an irritatingly easy thing to do in our building. I tell him to go talk to the front desk about a new key, and ask for his room number so I can meet him there. He stammers out some numbers, but stops, confused. He's been living in that room all year and he can't remember the number on the door. I feel hot, then cold. I tell him to forget about the wallet and the key, and practically march him over to the campus health service. The receptionist asks what we need. Peter dithers. "I just…don't feel good," he says. I take over and explain the situation, trying to convey the seriousness of Peter's symptoms without letting him hear that I'm panicking. The receptionist has other concerns. "We really need to know his insurance details before he can see the doctor." I stare at him blankly. I'm a fish out of water, an Australian encountering the American health-care system for the first time. I think of the credit card in my wallet and the savings in my bank account. How expensive could it be? "If I can just pay for it, will that do?" Peter stares at an intake form, pen hovering over the space where he's meant to write his birth date. "I'm not sure," he says, "I can't remember." The receptionist seems relieved at my suggestion. "I'm sure we can sort something out – let me talk to my supervisor."

As a Masters in Public Health student, my textbooks tell me that each developed country has its own distinct system of health care that covers four key components: financing, insurance, delivery, and payment.[1] To be honest, I'd expected "Introduction to Health Systems" to be a boring class, but we start with international comparisons—the four components vary greatly, shaped by each country's historical, political, cultural, and economic forces—and I find the variation fascinating. As an Australian, I'm surprised to discover that French doctors still make house visits; a Canadian might be shocked that Australians can get elective surgery faster if they have private health insurance. I find it odd to imagine my employer contributing to my health insurance, which is common in Germany; someone from England might find it strange that many Australians need insurance to cover ambulance costs.[1,2]

My American classmates are also surprised by the variation. Several of them confess that they had thought that developed countries had only two types of health-care system: "universal health care" and "the American way." They're not entirely wrong. While the four key components may look different in each country, and there's a myriad of possibilities when it comes to health system design, it is true that the United States is the only developed country that fails to provide all citizens with an adequate level of health care without financial burden.

Of course, there have been exciting changes to health coverage in America. We start each class with a look at the week's headlines in health policy: which states have agreed to expand Medicaid, the latest Supreme Court challenge to the Patient

Protection and Affordable Care Act (ACA), and the fall-out from the collapse of Hawai'i's health insurance exchange. Despite ongoing uncertainty, it is clear that the ACA has greatly improved coverage: nearly 17 million previously uninsured people now have insurance or are covered by Medicaid.[3] A survey by the Commonwealth Fund found that more than six out of ten people who had used their new insurance for medical care or prescriptions would not have been able to afford their care before the ACA. [3,4,5] These results are undoubtedly a "good news" story for public health, but even if all the ACA measures are fully implemented, America will still lack universal coverage. An estimated 25 million working-age adults were uninsured as of May 2015 and, compared with the overall population, those who remain uninsured are disproportionately younger and poorer.[4]

Once a doctor hears about Peter's symptoms we're advised to go straight to an emergency room. A friend of Peter's drives us — he'd also been concerned about Peter's change in behavior. We wait, making awkward small talk. I look around, trying to shake the surreal feeling that I've stepped into a clichéd American hospital drama. A rail-thin woman waits in the corridor, picking at her skin, complaining loudly about the bugs that are biting her. A scruffy man in a wheelchair smiles cheekily at the nurse who asks, "Did you fall? Is that what happened? You fell?" "Yes," he replies, "I fell for you." The machines beep and whirr. A young doctor struggles to find the words to tell Peter the bad news, but moves briskly on from her condolences. "We're going to have to find your insurance details before we do anything else. We can treat you here, but if it turns out you're with the other HMO you'll need to be moved to their hospital soon. If you're treated here they might not pay." Peter can't remember the names of his sisters. He can't remember the topic of his PhD dissertation. And now he's trying to remember his health insurance details.

I quickly learn there is a phrase essential to understanding the American health-care system that is not found in my public health textbooks: "good insurance." As in "I thought I'd better get tested before my good insurance runs out" or "I know the company pays well but I don't know if it provides good insurance." Saying that more people now have health insurance disguises the enormous variation in who gets what, and what they pay for it. The ACA does not fully address the growing problem of "underinsurance," which is when people have insurance for the full year, but they have high deductibles or out-of-pocket expenses relative to their income.[6] To say that families face bankruptcy from health-care costs is not an exaggeration. A 2007 study showed that medical costs contributed to 62% of bankruptcies. Not only did 78% of these people have health insurance (at least when they first got sick) but most were middle class, with houses, jobs, and an education.[7,8] In recent years, rapidly rising health costs and relatively stagnant incomes have exacerbated the problem of underinsurance, and in 2014 around 31 million people with health coverage were underinsured.[6] Even in Hawai'i, a state justifiably proud of its high insurance rates, an estimated 22% of people under age 65 were: uninsured (9%) or underinsured (13%) in 2012.[9] A Commonwealth Fund study found that, for people who were underinsured, illness led to difficulties paying medical bills, depleted savings, and for 7% of them, bankruptcy.[3,6] Bankruptcy due to medical costs is far from receiving health care "without financial burden," and it is something that is virtually unknown in other developed countries.[2]

When discussing the insured, uninsured, and underinsured, it is easy to lose sight of what these numbers actually mean for health. People who are underinsured don't just experience financial strain — they also fail to receive the health services that they need. Like Peter, they see seeking medical attention as something to approach with caution, they're not sure if they "can go there." In a survey of underinsured people, 44% agreed that they had skipped needed health care, which included not seeing a doctor when sick, failing to fill a prescription or not seeing a specialist when recommended by their doctor.[6] One reason that Hawai'i is one of the healthiest states in the United States is that it has relatively high rates of insurance, but Peter's story shows that insurance coverage does not necessarily mean ready access to care.[10] Overall, Americans are more likely than people in other developed countries to report missing medications and skipping care due to concerns about cost.[11]

Part of the reason the American health-care system is more expensive than other countries' systems is that it has the highest administrative costs.[2] The fragmented nature of American health-care financing means that health-care providers have to send their bills to many different payers, increasing the required number of administrative staff compared to a single payer system.[2] But complexity is not just a problem because of the costs; it is also a problem for people who need to wade through incomprehensible insurance policy documents. While this system offers consumers a lot of choice, it also gives them the burden of weighing up the risks and benefits and costs of different options — and facing the consequences if their choice turns out to be wrong. A rising problem is plans with higher deductibles, which reduce the monthly premium payment but greatly increase the cost when care is needed. This may be an appealing option for someone young and healthy, but when the unexpected and unthinkable occurs there is a risk that care could be become unaffordable.[12]

Peter's room is meticulously organized; his paperwork is kept in neatly labeled files. The tidiness doesn't ease my awkwardness, as I shuffle through the personal belongings of someone I've only known for a few months. Peter has a brain tumor and is scheduled for surgery tomorrow afternoon. His family is in the air, due to arrive in Hawai'i in a few hours. While completing his PhD he was enrolled in an insurance plan through the university, but he submitted his dissertation in May. Now it's July and he's job-hunting. We know he has some insurance, but it's time to read the fine print. It's unclear whether his insurance will cover him for out of state treatment. It's unclear if he'll be able to re-enroll in his university plan. The only thing that is

clear is that — in a best-case scenario — Peter is facing years of treatment and tubes and medical bills. With his permission, I hunt through his files, pulling out insurance paperwork, looking for some answers.

I felt sad and shaken for weeks. Sad for Peter and his family, sad reflecting on previous experiences with cancer, and shaken in the profound way that illness can shake us, knowing that what happened to Peter could happen to anyone, to wake up in the morning and find that your brain just doesn't work and your whole life is about to change.

I also felt angry — and mystified as to why Americans aren't angrier about their health-care system. But the Australian health-care system has plenty of problems and I rarely summon anger about that — because it is easy to think that the system you have is "just the way it is." In a new country, I feel like the child pointing out that the emperor has no clothes, and I can't stop looking at the naked gaps. Like the new colleague explaining that she's relieved to finally start working because her recruitment process was delayed for a month, and she had no health insurance until her new benefits kicked in. Like the pregnant classmate who's hoping for a natural birth because "who knows what I'll end up paying if it's not." Like the graduate students chatting about how confusing they find their health insurance policies – and wondering what happens if an ambulance takes them to the wrong hospital. For Americans these situations may seem familiar and reasonable, but imagine you come from a country where your job has no impact on your insurance, where it is possible to give birth without bills, and where the nearest hospital is always the right one. Imagine how disconcerting you would find these conversations.

Peter's mother thanks me warmly for taking him to the doctor, and I quickly change the subject, saying I'm glad he's able to get treatment on the Mainland. Peter's plan won't cover him out of state, but he's able to switch to a new insurer — something that would have been difficult or impossible before the ACA ended discrimination for pre-existing conditions. Peter loves Hawai'i — and it's clear from the response to his diagnosis that his community loves him. But, of course, his family wants to take him home. She shakes her head when she hears I'm studying public health. She's a soft-spoken and polite woman, but at mention of insurance she can't hide her annoyance. "It's a terrible system here," she says, "I just wish we just didn't have to deal with all this crap."

From my textbooks, I learn public health policy jargon: moral hazard and capitation, physician extenders and supply-side rationing, Medicaid gaps and donut holes. From Peter, I learn about the uncertainty and insecurity that the American healthcare system can add to the already stressful situation of illness. The challenge of health-care policy is that there is no right answer, and even a good answer for today may not be a good answer when there's a shift in economy, demography, or technology. But there's often something missing in our discussions of health-care costs, and that's what it costs us as a society in terms of dignity and equality, and how much we're willing to pay in terms of peace of mind. Change has been hard, and change achieved should be celebrated, but I challenge Americans to try to see the system through a foreigner's eyes, and see where change is still needed.

It will be my task to break the news to some people, explain about the tumor and the surgery. Some people will ask for more medical details; others are more concerned about Peter's emotional state. But on hearing their friend has cancer, every single one will eventually ask the same question: does he have good insurance?

Acknowledgments

Ruth is grateful to her friend "Peter", who recently passed away, for encouraging her to share this story.

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General Recommendations on Data Presentation and Statistical Reporting (Biostatistical Guideline for HJM&PH)
[Adapted from Annals of Internal Medicine & American Journal of Public Health]

The following guidelines are developed based on many common errors we see in manuscripts submitted to HJMPH. They are not meant to be all encompassing, or be restrictive to authors who feel that their data must be presented differently for legitimate reasons. We hope they are helpful to you; in turn, following these guidelines will reduce or eliminate the common errors we address with authors later in the publication process.

Percentages: Report percentages to one decimal place (eg, 26.7%) when sample size is >=200. For smaller samples (<200), do not use decimal places (eg, 26%, not 26.7%), to avoid the appearance of a level of precision that is not present.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Missing values: Always report the frequency of missing variables and how missing data was handled in the analysis. Consider adding a column to tables or a footnote that makes clear the amount of missing data.

Removal of data points: Unless fully justifiable, all subjects included in the study should be analyzed. Any exclusion of values or subjects should be reported and justified. When influential observations exist, it is suggested that the data is analyzed both with and without such influential observations, and the difference in results discussed.

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THE WEATHERVANE

RUSSELL T. STODD MD; CONTRIBUTING EDITOR

TALL AND TAN AND YOUNG AND LOVELY, THE GIRL FROM IPANEMA GOES...

Brazilian super model Gisele Bunchen did a sinuous strut as the 2016 Olympics opened with a bossa nova rhythm of Antonio Carlos Jobim and the words of Vinicius de Moraes. A world audience went wild. Gisele's dramatic entry was serenaded on piano by Jobim's grandson, Daniel, as a photo of the late composer flashed across the screen. Many Brazilians were moved to tears of joy and recollection. The beautiful young woman who inspired the artists in 1965, Helo Pinheiro, was a 17-year-old gymnast who worked out on the beach where she caught the songwriters' attention (and probably many others). They found her a marvelous inspiration. Today, looking much younger than her 71 years, Ms. Pinheiro is an entrepreneuer who shuttles beween her homes in Sao Paolo and Rio. When she learned of the Opening Ceremonies song, she contacted officials and offered to help in any way needed. She was turned down. Officials also snubbed the song's lyricist, Mr. De Moraes. His heirs pointed out that he was an esteemed man of letters and a world-class bon vivant. His daughter said, "We were negatively surprised and perplexed." Jobim's family seemed entirely pleased with the opening.

ALWAYS WEAK, NOW THE IOC HAS BECOME INVERTEBRATE.

The 2016 Rio De Janeiro Olympic Games are winding down with the USA collecting the expected plethora of gold, silver and bronze medals, the heroes and heroines among the huge team. While the television stories and photography carried a memorable record of performance, still the taint of PEDs (performance enhancing drugs) permeated many of the competitions because of the spineless behavior of the International Olympic Committee (IOC). Fully aware of the organized corruption within the Russian team the IOC first banned their athletes, then did an about face and backed down, opening the gates. As one American swimmer said on being congratulated for winning her gold, "We should have a level playing field." Amen to that! This bit of cowardice by the IOC renders all the pre and post testing as nothing more than foolish window dressing.

COMPARE WITH NUMBER OF DEATHS IN ELECTRIC CARS.

In 2013, 32,894 people in the United States died in motor vehicle crashes. To our driving credit, the number is down nearly 10,000 deaths since 2003. Still the over all death rate of 10.3 per 100,000 crashes still tops the 19 other high income countries. Canada had the highest percentage of fatal crashes caused by drunken drivers at 33.6 percent. New Zealand and the United States followed at 31 percent. Canada and 16 other countries outperformed the United States in seat belt use even though in 2013, 87 percent of Americans riding in the front seat, reported wearing seat belts. Exploding air bags have dealt that statistic out of the WHO (World Health Organization) data. Is your air bag armed or disarmed?

OH MY GOODNESS! WE NEED MORE RULES.

Existing auto safety regulations do not address autonomous cars, leaving regulators without authority to block autonomous car technologies before they are presented on the market. Federal transportation chief, Anthony Foxx, said there is no express prohibition in federal motor vehicle safety standards. This absence is what allowed Elon Musk to roll out the Tesla, with the so-called Autopilot driving system, via a software update to many of its electric vehicles. The fatal crash involving the system in Florida gave regulators an opportunity to scrutinize this technology. Foxx said recently that US regulators may soon demand a voice. "I've been encouraging our team to think about the extent to which we should encourage pre-market approval," he said at a conference in San Francisco. In an administration that even wants to regulate who gets to use which toilet, this absence cries out for bureaucracy. Oh please, calm down Mr. Foxx. It makes much more sense to hold off rule-makers and allow the technology to flourish. No automaker wants to offer an unsafe product.

ALEADY WE ARE GETTING SICK OF ZIKA.

Zika is everywhere in the news. The New England Journal of Medicine reported that women infected with Zika in the last trimester delivered infants without apparent defects. These babies will be followed closely for abnormalities during growth and development. But in Texas a baby was delivered with microcephaly and multiple abnormalities and did not survive. The Texas Department of State HealthServices said the infant's mother contracted the disease while traveling in Latin America during her pregnancy. The baby acquired the infection while in the womb. To date, Texas has reported 97 cases of Zika and two births with microcephaly from Harris County, Houston and crowded surrounding areas. All 97 cases involved women who had traveled abroad to areas that are hot spots for Zika. State and local health officials have been on high alert for Zika. Sanofi SA has entered into partnership with the US Army to expand research and development of experimental Zika vaccine that has shown promise in early lab studies. At least 14 other companies are racing to develop a vaccine to control the virus. Get on board.

NOW WE UNDERSTAND WHY SOME PEOPLE CAN DRINK COFFEE AFTER 3 P.M.

Coffee is one of the world's most popular drinks, second only to tea and water. Multiple benefits come with coffee addiction; less type 2 diabetes, liver cancer, melanoma and multiple sclerosis. Also it may be good for your heart. Now a growing body of evidence suggests your coffee addiction may be in your DNA. Growing up in a Swedish household, I have always assumed my coffee habit was acquired, but now I can blame it on my genes. Excuse me, my cup is empty.

IT'S HARD TO REST WHEN OTHERS ARE HAVING FUN.

In Stockholm, neighbors of a loud and frisky couple complained to the country's health minister that the couple's loud behavior was disturbing their peace. (Envy?) He investigated and came down on the side of the randy pair, saying, "Nice for them, I think. Good for public health and the country's as well." So, there you are: in Sweden noisy and raucous sex is good for you.

THIS PIPE HAS AN UNUSUAL AROMA.

Two recent incidents involving hiding drug paraphernalia in their genitals occurred in Florida where police searches revealed a crack pipe in a vagina and cocaine hidden beneath a male's genitals. They both claimed that they were providing hiding space for others.

ADDENDA

- "Do you know the way to San Jose?" No matter, you can't afford to move there. It is now the number one priciest market in the United States with a median home price of $1,095 million. San Francisco is number two at $885,000.
- The area of your body with the most bacteria is between the toes.
- We are born wet, naked, hungry and get slapped on the butt…then things get worse.
- A closed mouth gathers no foot.
- The computer is down. I hope it's something serious.
- Men are superior to women. For one thing, they can urinate from a speeding pick-up.
- There are two excellent methods of arguing with a woman. Neither one works.
- When a man brings his woman flowers for no reason—there's a reason.

ALOHA AND KEEP THE FAITH rts

(Editorial comment is strictly that of the writer.)

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