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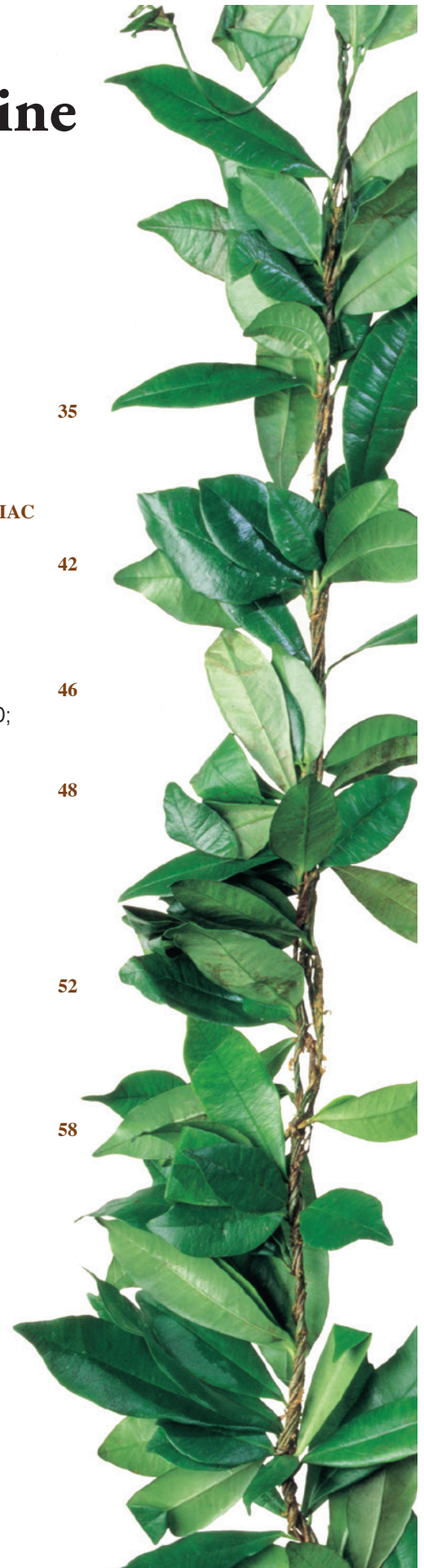
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Acculturation is Not Related to Physical Activity Stage of Change for Children in Hawai'i

Markus Rotter MPH; Claudio R. Nigg PhD; Gloria A. Renda MPH;
and Rachel Novotny PhD, RD

Abstract

The relationship between acculturation and physical activity stages of change is unexplored. Stages of change conceptualize behavior change as a progression through a series of five stages indicating the readiness to change behavior. The level of acculturation can be assessed using the Ethnocultural Identity Behavioral Index (EIBI) which is based on three factors: Cultural Activities, Social Interaction and Language Opportunities. The purpose of this project was to explore the relationship between parental acculturation and physical activity stages of change in Hawai'i children. Participants (N=85; 62% female; aged 5-8 years; 22% Native Hawaiian or Other Pacific Islanders, 42% Asian, 25% White, and 11% Other) completed the EIBI and a physical activity stages of change measure. Acculturation factor means were: Cultural Activities=4 (SD=1.26), Social Interaction=3 (SD=1.04), and Language Opportunities=4 (SD=1.29). The physical activity stages of change distribution was Precontemplation=11 (13%), Contemplation/Preparation=15 (18%), and Action/Maintenance=59 (69%). Analysis of covariance (ANCOVA) for Cultural Activities $F(3, 81)=0.77, P=.47$, Social Interaction $F(3, 81)=0.93, P=.40$; and Language Opportunities $F(3, 81)=1.34, P=.27$ showed no significant differences between physical activity stages of change. The results of our study do not show an association between acculturation and readiness to change for physical activity. The lack of differences may be due to participants being moderately acculturated, possibly lessening the differentiation of acculturation by physical activity stages of change.

Keywords

Acculturation, Stages of Change, Ethnocultural Identity Behavioral Index, Children, Physical Activity

Introduction

In the eleven years from 2000 till 2010, adults who are overweight or obese increased from 50.2% to 57.2% in the State of Hawai'i. Ethnic estimates of overweight or obesity in 2010 were: Native Hawaiians 75.5%, Whites (57.3%), Filipinos (54.9%) and Japanese (46.6%).¹ The reason for adult obesity can partly be found in childhood obesity in that childhood obesity at least doubles the risk for adult obesity.² Increased physical activity can lead to improved cardiovascular fitness, blood pressure,³ and a reduced risk of obesity.⁴ Physical inactivity, on the other hand, is linked to several health risk factors for ill health in childhood such as diabetes mellitus and high blood pressure.⁵⁻⁹

The Centers for Disease Control and Prevention (CDC) recommends at least 60 minutes of physical activity a day for every child and adolescent.¹⁰ In 2011, only 25% of middle school students in the state of Hawai'i met that recommendation.¹¹ The percentage of students who were physically active for 60 minutes or more per day on all of the past seven days also vary considerably among the diverse cultures and ethnicities in Hawai'i: 30.0% of Whites, 31.7% of Native Hawaiians, 17.7% of Filipinos, 25.9% of Japanese, 23.2% of other Pacific Islanders and 16.2% of other Asians.¹¹

The acceptance and efficacy of physical activity intervention programs can be approximated by the stages of change of an individual.^{12,13} Stages of change are the central construct of the Transtheoretical Model, conceptualizing behavior change as a progression through a series of five stages. Precontemplation describes individuals who are not regularly physically active and who have no intention of becoming regularly physically active. Contemplation describes individuals who are not regularly physically active but are intending to become regularly physically active in the next 6 months. Preparation describes individuals who are not regularly physically active but are intending to become regularly physically active within the next 30 days. Action describes individuals who have been physically active regularly for fewer than 6 months. Maintenance describes regularly physically active individuals who have been active for 6 months or longer.¹² According to the Transtheoretical Model, stages of change represents the individual's readiness to change,¹⁴ which is crucial for an effective intervention.^{15,16} One of the advantages of the stages of change model is that stage-appropriate interventions in a population can continue to demonstrate benefits long after the intervention has ended.¹⁶

One approach to potentially help understand the membership of the different stages of change is to examine the influence of acculturation to a westernized lifestyle. Acculturation is a process where groups of different cultures, through first-hand contact, undergo subsequent changes in their ancestral cultural patterns when exposed to a new culture.¹⁷ Physical health studies have used "Westernization" as one measure of acculturation.^{18,19} According to Salant, et al, "Westernization" represents adaptation to a Western lifestyle, which implies an assimilationist and behavioral definition of acculturation.²⁰

Acculturation can affect health behavior, such as a nutrition transition through adopting western dietary patterns or more sedentary behavior, and can lead to a decreased health status and increased risk for obesity.²¹⁻²⁴ Association between acculturation to a Western lifestyle and the prevalence of diabetes has been reported.^{18,19} Novotny, et al, found an increased risk for overweight and obesity in Samoans and Filipinos which may be explained by these ethnicities being newly acculturated to Hawai'i.²⁵ Although the Transtheoretical Model physical activity stages of change has been applied to children before, the possible association of acculturation with the physical activity stages of change, in general, and specifically to children of Hawai'i has not been investigated, and could prove to be useful in future efforts to improve efficacy of intervention programs among ethnically diverse populations.^{26,27}

This paper analyzed the relationship of acculturation with stages of change in physical activity of young children in Hawai'i. An ethnocultural approach may provide a greater understanding of behavior change compared to simple ethnic categorization, especially in an ethnically mixed environment. Previous studies have shown that a low level of assimilation to a westernized lifestyle may result in a lower risk for overweight, a higher level of physical activity, and a reduced prevalence of diabetes.^{19,24} Acculturation among Hawai'i's varied and mixed ethnic groups is complex. Yet, Hawai'i is increasingly modernized and it is hypothesized that more acculturated families are likely to be both more westernized and in earlier stages of change for physical activity. Different levels of acculturation may also provide some explanation for a finding of different amounts of physical activity among the different ethnic groups.²⁴

Methods

Study Design

This was a cross-sectional study.

Participants/Setting

PacDASH (Pacific Kids Dietary Approaches to Stop Hypertension for Health) is a 15 month randomized, controlled intervention study to evaluate the impact of the PacDASH intervention on preventing weight gain and improving blood pressure in children at risk for overweight and obesity in the Pacific Region.²⁸ Inclusion criteria were: age 5-8 years old; have a Kaiser Permanente Health Maintenance Organization primary care provider in O'ahu; and have a Body Mass Index (BMI) between the 50th and 99th percentile (adjusted for age and sex). For more details about inclusion and exclusion criteria, see Table 1. All participants were asked to attend five assessment visits at the research center. In addition, all children attended a well-child visit within one month after the baseline visit. Before each visit, parents completed two-day diet and physical records for their child on a weekday and on a weekend day (Friday/Saturday). At the research center, trained and standardized interventionists reviewed these two-day records with the parent/legal guardian and then probed for additional information as needed. Moreover, other anthropometric data like blood pressure and signs of puberty were assessed. Level

of acculturation of the parents and the physical activity stages of change were assessed using a questionnaire (see Appendix). No incentives were handed out.

Measures – Quantitative Variables

Demographics. Sex, age, and ethnicity were collected using the BLEND method.²⁹ The BLEND method collects all ethnic and racial groups of both parents (as reported by a parent) in percentage.²⁹ Ethnic groups were categorized considering the predominant group first (highest percentage), as: (1) Native Hawaiian or Other Pacific Islanders, (2) Asian, (3) White, and (4) Others.²⁹ For example, if a child's father was 50% Asian and 50% White and her mother was 25% Asian, 75% White, then the child's race/ethnicity was calculated at 37.5% Asian and 62.5% White, with White being predominant.³⁰ For clarity of interpretation and due to the small sample of some ethnicities, race/ethnicity was coded as Other Ethnicity (Native Hawaiian or Other Pacific Islanders, Asian and Others) and White Ethnicity (White), based on the predominant ethnic group and will be referred accordingly from here on.

Acculturation. The Ethnocultural Identity Behavioral Index (EIBI) was used to assess parental level of acculturation. The questions were adapted from the general 19 item self-report EIBI for use in Hawai'i's diverse cultural environment (see Appendix Table 1). The development of this multi-dimensional identification scale was based on a group of individuals self-identifying themselves as Asian American or Native Hawaiian. The EIBI is reported to have a high internal consistency (Cronbach's alpha [α]=0.90).³¹ This index provides an assessment of three factors: Cultural Activities (9 items, α =.88), Social Interaction (6 items, α =0.83), and Language Opportunities (8 items, α =0.87).³¹ These three factors accounted for 60% of the variance in the EIBI.³¹ Responses ranged from 1=Always to 6=Never. The resulting scores can range from 1.00 (not acculturated) to 6.00 ("fully" acculturated). A median split of the EIBI (3.29) was used to distinguish between low or high level of acculturation as previously reported in the literature.³² For the current study, α for Cultural Activities=0.92, for Social Interactions=0.78, and for Language Opportunities=0.90. As a measure of internal consistency of a scale, an α >0.70 is deemed acceptable.³⁷

Table 1. List of Inclusion and Exclusion Criteria for Participating in the Study	
Inclusion Criteria:	Exclusion Criteria:
1. Age 5 - 8	1. Diabetes Mellitus
2. > 85th up to 98th BMI-for-age percentile (overweight)	2. Polycystic Ovarian Syndrome
3. Children with primary care provider at Mapunapuna Clinic	3. Gastroesophageal Reflux
4. Living in Honolulu County	4. Gallbladder disease
	5. Non-alcoholic fatty liver disease
	6. Pseudo Tumor cerebri
	7. Slipped capital femoral epiphysis
	8. Blount's disease
	9. Obstructive Sleep Apnea/Sleep Disturbance
	10. Other chronic disease conditions that would affect participation

Stages of Change. The physical activity stage was measured using questions recommended by Nigg.³⁸ Questions were directed to the children in the presence of their parents and were answered together when necessary. Responses were preceded by the definition of regular physical activity and the question, “Do you do regular physical activity as described above?” The response choices were “No, and I do not plan to start regular physical activity during the next 6 months” (Precontemplation), “No, but I plan to start regular physical activity during the next 6 months” (Contemplation), “No, but I plan to start regular physical activity during the next 30 days” (Preparation), “Yes, I have been, but for less than 6 months” (Action), and “Yes, I have been for more than 6 months” (Maintenance). The participants were asked to select the stage that best described their current physical activity. Due to the small sample size, the stages of Contemplation and Preparation were combined as one category as well as the stages Action and Maintenance.^{39,40} This resulted in 3 stages: Nonintenders (Precontemplation)= 1, Intenders (Contemplation/Preparation)= 2 and Actors (Action/Maintenance)=3 which were used for further analysis.

Statistical Analysis. Analyses were carried out with IBM SPSS Version 20. Frequency analyses examined overall participant characteristics. A bivariate correlation analysis examined the relationship between stages of change, acculturation and the age of the participants. An independent sample T-test examined the influence of sex on acculturation and stages of change. An analysis of variance (ANOVA) examined the impact of ethnicity on stages of change and acculturation. This statistical method is used to assess if the mean of a dependent variable differs significantly across groups of independent variables. Four different models were calculated. Cultural Activities was the dependent variable (outcome) in model one, Social Interaction in model two, Language Opportunities in model three and stages of change in model four. For model one to four, ethnicity was used as the independent variable. A one-way analysis of co-variance (ANCOVA), with sex and ethnicity as covariates was carried out to compare the level of acculturation and stages of change. This statistical method is used to assess if the mean of a dependent variable differs significantly across groups of independent variables while controlling for certain covariates. In this study three models were calculated. The dependent variable for model one was Cultural Activities, for model two Social Interaction and model three Language Opportunities. For model one to three, stages of change was the independent variable, sex and ethnicity the covariates.

Results

Baseline Characteristics

A total of 1276 invitations were sent to potential participants.⁴¹ Of the 942 persons who could be contacted, 355 were eligible. After a screening at a Clinical Research Center, 150 participants were scheduled for an assessment. Of these, 85 provided consent and finished the first assessment visit. The demographic and study variable characteristics are presented in Table 2. Participants (N=85) were on average 7 years old (SD=0.95), 53 (62%) were female, and the ethnic distribution was: Native Hawaiian or Other Pacific Islanders=19 (22%), Asian=36 (42%), White=21 (25%), Other=9 (11%). The recoded ethnic distribution was: Other Ethnicity=64 (75%) and White Ethnicity=21 (25%).

The mean value for the acculturation factors were Cultural Activities=4 (SD=1.26), Social Interaction=3 (SD=1.04), and Language Opportunities=4 (SD=1.29). The stage distribution was: Precontemplation=11 (13%); Contemplation/Preparation=15 (18%); Action/Maintenance=59 (69%).

Table 2. Demographic and Study Variable Descriptives

	Participants (N = 85)
Mean age, years (SD)	7 (0.95)
Sex, female (%)	53 (62)
Ethnicity (%)*	
Native Hawaiian or Other Pacific Islanders	19 (22)
Asian	36 (42)
White	21 (25)
Other	9 (11)
Recoded ethnic distribution (%)	
Other Ethnicity	64 (75)
White Ethnicity	21 (25)
Mean Acculturation factors (SD)	
Cultural Activities	4 (1.26)
Social Interaction	3 (1.04)
Language Opportunities	4 (1.29)
Stages of change (%)	
Precontemplation	11 (13)
Contemplation/Preparation	15 (18)
Action/Maintenance	59 (69)

*Due to rounding, percentages might not add up to 100%. SD = Standard Deviation

Table 3. Stage of Change for Physical Activity and Acculturation Distribution by Ethnicity

Acculturation Type or Stage of Change	Other Ethnicity Mean (SD)	White Ethnicity Mean (SD)	F(1,83)	P-Value*	Partial Eta Squared
Cultural Activities	4.79 (0.90)	2.83 (1.07)	68.06	.00	0.45
Social Interaction	3.66 (0.94)	2.83 (1.10)	11.32	.00	0.12
Language Opportunities	4.44 (0.75)	2.16 (1.07)	116.45	.00	0.58
Stage of Change	2.54 (0.71)	2.62 (0.74)	0.16	.69	0.002

* One-way ANOVA at $\alpha=0.05$; SD = Standard deviation

Relationship of Demographic Characteristics with Acculturation and Physical Activity Stages of Change

No significant difference by ethnicity was observed for the physical activity stages of change ($P = .09$) (Table 3). However, Cultural Activities ($P < .05$), Social Interaction ($P < .05$), and Language Opportunities ($P < .05$) varied by ethnicity, where the White ethnicity group had significantly higher acculturation values.

Age (limited to 5-8 year olds) did not correlate significantly with the physical activity stages of change ($r(85) = -0.05$, $P = .62$), or with the acculturation factors Cultural Activities ($r(85) = -.07$, $P = .50$), Social Interaction ($r(85) = -.14$, $P = .19$), or Language Opportunities ($r(85) = -.10$, $P = .35$) (Table 4).

No significant difference for Cultural Activities ($P = .71$), Social Interaction ($P = .16$), Language Opportunities ($P = .72$) was observed by sex (Table 5). Also there was no statistically significant difference between the mean physical activity stages of change of females compared to males ($P = .06$).

Relationship of Acculturation and Physical Activity Stages of Change

The levels of acculturation do not differ significantly across the physical activity stages of change, controlling for ethnicity ($P > .05$) (see Table 6).

Table 4. Stage of Change for Physical Activity and Acculturation by Age		
Acculturation Type or Stage of Change	Age* $r(83)^{***}$	P-Value**
Cultural Activities	-.07	.50
Social Interaction	-.14	.19
Language Opportunities	-.10	.35
Stage of Change	-.05	.62

* limited to 5-8 year old children. **Bivariate correlation analysis; significant at $\alpha = 0.05$.

*** r = Pearson correlation coefficient

Table 5. Stage of Change for Physical Activity and Acculturation by Sex				
Acculturation Type or Stage of Change	Sex		F(1,83)	P-Value*
	Males (SD)	Females (SD)		
Cultural Activities	4.38 (1.21)	4.26 (1.30)	1.13	.71
Social Interaction	3.53 (0.89)	3.41 (1.13)	1.59	.16
Language Opportunities	4.03 (1.25)	3.79 (1.33)	1.13	.72
Stage of Change	2.47 (0.84)	2.62 (0.63)	1.80	.06

* Independent Sample t-test at $\alpha = 0.05$. SD = Standard deviation

Table 6. Levels of Acculturation across Physical Activity Stages of Change (N=85)						
Acculturation Type	PC (SD)	C/P (SD)	A/M (SD)	F(3, 81)	P-Value*	Partial Eta Squared
Cultural Activities	4.58 (1.00)	4.30 (0.96)	4.26 (1.38)	0.77	.47	0.47
Social Interaction	3.85 (0.67)	3.48 (0.97)	3.38 (1.11)	0.93	.40	0.15
Language Opportunities	4.17 (1.20)	3.82 (1.24)	3.84 (1.33)	1.34	.27	0.61

* One-way ANCOVA at 0.05. SD= Standard deviation. PC = Precontemplation. C/P = Contemplation/Preparation. A/M = Action/Maintenance.

Discussion

This study is the first to analyze the influence of acculturation on physical activity stages of change among children in Hawai'i. For context, the current Hawai'i lifestyle (people living in Hawai'i, as distinguished from traditional native Hawaiian cultural practices) is characterized by a high calorie intake, high diabetes prevalence, high rate of obesity, and cigarette smoking.^{33,34} This lifestyle is similar to the current North-American lifestyle which is also characterized by obesity and diabetes.³⁴⁻³⁶ The mean value for acculturation (approximately 3) indicates that participants are moderately acculturated. When compared to values from 5th and 6th graders,²⁶ the physical activity stages of change distributions from our study generally correspond with previous studies with most of the children being actors, followed by intenders and nonintenders.²⁶ However, Contemplation and Preparation were merged because only four children were in Contemplation.³⁹

Our results showed that acculturation was not related to physical activity stages of change among children. Findings from the literature are unclear. Some studies found that acculturation has no significant impact on health behaviors such as smoking status,⁴² while other studies report acculturation has a negative impact on health behaviors such as a disordered diet and higher alcohol consumption.⁴²⁻⁴⁶ Popkin, et al, reported an important acculturation effect, namely that second and third generation Hispanics, living in the United States are more likely to be obese compared to first generation residents.⁴⁷ In contrast to these findings, other studies report the reverse effect, whereby higher acculturation scores are associated with increased physical activity.^{29,48,49} For example, Liu, et al, showed that individuals from families with a low acculturation level, as evidenced by language spoken at home and number of generations living in the United States, had higher odds for not obtaining recommended physical activity than those living there for more than one generation and speaking English at home.⁵⁰ These findings are consistent with Chen, et al, who showed that lower parental

acculturation levels are a risk factor for higher BMI in children.⁵¹ These conflicting results show that the influence of acculturation on health behaviors can vary and may be complex. One possible explanation for the lack of a significant influence of acculturation on stages of change is that readiness to change can be influenced by various internal readiness conditions, including cognitive and behavioral factors like problem recognition and external readiness conditions such as environment and support factors.⁵² In some studies where acculturation had an effect on health behavior, the participants had either a low or a high acculturation level.^{43,44,48,53} Study participants were moderately acculturated, which could be another explanation for the lack of a clear relationship.

The grouping into White Ethnicity and Other Ethnicity for the statistical analysis was done based on the predominant ethnicity, which does not represent the whole ethnic background of participants. This may lead to a loss of information concerning residual ethnic background. Although ethnic identity can be viewed as an aspect of acculturation,³¹ and the participants could be divided by ethnicity for a more accurate overview of the level of acculturation, this fragmentation can be problematic. Typically, acculturation can be seen as a person's adjustment with the majority group culture as well as that with the referent minority group culture.³¹ Other studies describe acculturation as an interaction of two or more cultures.^{54,55} Hawai'i's population of multiple ethnicities has a unique, "local" culture that defies a bi-cultural construct. Indeed, acculturation literature suggests a multi-directional influence of cultures.⁵⁶

Stages of change among young children have not been extensively studied. Due to their early developmental stage, time perception can be difficult for young children,⁵⁷⁻⁵⁹ which may have an influence on the accuracy of answers concerning their planned physical activity. Furthermore, the parental presence or assistance while answering the questions for their five to eight year old children may bias results due to parent's personal preferences projecting onto the child, or parental ambitions concerning physical activities of the child.^{60,61} Parental responses might also result in biased answers due to different perceptions between the child and the parents.²⁷ Although the difference of perceptions in children's functioning between parents and children has been suggested previously, the distribution of actors, followed by intenders and nonintenders based on parental responses in our study roughly reflects the physical activity stages of change distribution for a group of 5th and 6th graders. To facilitate children's understanding, questions from the original paradigm of Prochaska, et al, concerning the students' readiness for physical activity were adapted.^{26,27}

Another limitation of this study is that only 85 children participated. Insufficient statistical power may be responsible for our lack of association. This may be due to the recruitment process which was reactive and may have introduced a positive response bias for those who participated. A larger more representative sample is needed to improve power for the insights of this study to be more generalizable. Another limitation is the low number of children in the Contemplation stage. To compensate for this

low number, the five groups were merged into three groups of nonintenders (Precontemplation), intenders (Contemplation and Preparation), and actors (Action and Maintenance).³⁹

A strength of this study is the utilization of the EIBI. Compared to the Suinn-Lew Asian Self Identity Acculturation Scale,⁶² the EIBI can be used with persons of Asian, Native Hawaiian, or Pacific Islander heritage and with other ethno-cultural backgrounds.⁵⁶ A limitation is that ethnicity is very mixed in Hawai'i and asking an individual which ethnicity one most identifies with may mask some important relationships.

Acculturation may be mediated by psychosocial variables. The readiness of an individual to change behavior depends on various internal conditions like the attitude towards the problem or external conditions like the environment and availability of programs.⁵² Future studies should consider investigating these variables to further our understanding of the possible relationship of acculturation on stages of change. Furthermore, a larger sample likely will result in higher numbers of individuals in each physical activity stage of change. To avoid inconsistencies in findings concerning the impact of acculturation on health behavior, a uniform means to assess the level of acculturation, like the EIBI or the Suinn-Lew Asian Self Identity Acculturation Scale,⁶² should be used when dealing with subgroups in culturally diverse populations. Because of the lack of data on stages of change and level of acculturation of children, more studies in this field of research are needed. This could inform the creation of tailored intervention programs for children in this age group with diverse ethnic backgrounds and positively influence their health status in the future.

Conflict of Interest

None of the authors identify any conflict of interest.

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Authors' Affiliations:

- Research Unit of Molecular Epidemiology, Helmholtz Zentrum München – German Research Center for Environmental Health, Neuherberg, Germany (MR)
- Public Health Sciences, University of Hawai'i, Honolulu, HI (CRN)
- The Center for Health Research, Hawai'i, Kaiser Permanente, Honolulu, HI (GAR)
- Human Nutrition, Food and Animal Sciences, University of Hawai'i, Honolulu, HI (RN)

Correspondence to:

Claudio R. Nigg PhD; Department of Public Health Sciences; University of Hawai'i at Manoa; 1960 East-West Road; Honolulu, HI 96822; Ph: (808) 956-2862; Email: cnigg@hawaii.edu

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Appendix

Questions adopted from the Ethnocultural Identity Behavioral Index to assess acculturation of children	Factor
Watch TV programs that use the language of the group or that depict the cultural group?	F3
Watch movies that use the language of the group or that depict the cultural group?	F3
Shop at stores that feature products of the group (such as a Chinese Market, Kosher Deli)?	F3
Speak the language of the group with your family or close friends?	F3
Dress in the clothes of the group (eg, Japanese kimono, Scottish kilt)?	F1
Listen to the music of the group (traditional or popular music of the culture)?	F1, F3
Read newspapers/magazines of the group (in English or in the ethnic language)?	F1, F3
Participate actively in a political movement or ideology of group?	F1
Date (or if married, socialize with) members of the group?	F2
Learn the dances and music of the group (eg, Hawaiian Hula, Japanese Bon Dance, Polish Polka)?	F1
Listen to or hear others speaking the language of the group (even if you do not always understand)?	F3, F2
Go to physicians, hair stylists, lawyers, or other professionals who are from the group?	F2
Spend time talking or chatting with members of the group?	F2
Spend time studying the history or culture of the group (on your own or in voluntary courses)?	F1, F3
Follow political and other current events of the group (locally or in the home country/region)?	F1
Interact frequently at informal gathering with members of the group (eg, parties, pot lucks)?	F2
Participate in hobbies which are popular within the group (eg, Origami, Mahjong)?	F1
Interact with close friends from the group?	F2
Participate in sports popular within the group (eg, Bocce Ball)?	F1

Answer Scale: Never, A Little, Sometimes, Often, Very Often, Always

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Underdiagnosis of Conditions Associated with Sudden Cardiac Death in Children – Is it the Absence of a Comprehensive Screening Program or a True Low Prevalence?

Marisa Takiguchi BS; Tristan Knight MD; Tin Toan Nguyen MD; Blair Limm MD; Donald Hayes MD, MPH; Venu Reddy MD, MPH; and Andras Bratincsak MD, PhD

Abstract

This study aimed to assess the prevalence of conditions associated with sudden cardiac death (SCD) among all children and children with sudden infant death syndrome (SIDS) in the State of Hawai'i, where no comprehensive screening program is conducted for such conditions. A retrospective chart review was conducted from the single tertiary pediatric hospital in Hawai'i, from offices of all pediatric cardiologists in Hawai'i, and the Hawai'i State Department of Health from 1/1/2000 to 12/31/2013. Children aged 0-18 years were included in the study. A subset of the study analyzed records of infants aged 0-12 months. SIDS rate was calculated and compared to national data. Prevalence was calculated for known conditions associated with SCD. The identified prevalence was compared to the established prevalence of conditions associated with SCD.

In Hawai'i, the infant SIDS rate (66.4/100,000) was similar to the national rate (54.4/100,000). Over 14 years, only 51 children were diagnosed with a condition associated with SCD; 28 with a cardiomyopathy and 21 with a channelopathy. A 14-year retrospective analysis in the State of Hawai'i revealed that less than 1 in 30 children, who are expected to harbor a SCD-associated condition, had been appropriately diagnosed. The underdiagnosis of conditions associated with SCD reflects that in the absence of a comprehensive screening program, conditions without obvious signs and symptoms are difficult to diagnose. Many children with these conditions will remain at risk of SCD.

Keywords

sudden cardiac death, cardiomyopathy, channelopathy, sudden infant death syndrome, prevalence

Introduction

Despite the initiation of national registries and a growing body of literature, the role that cardiomyopathies, channelopathies, and congenital cardiac anomalies associated with sudden cardiac death (SCD) play in sudden infant death syndrome (SIDS) and sudden unexpected death in childhood (SUDC) is not well characterized. SIDS is defined as the sudden death of an infant under one year of age, which remains unexplained despite a thorough investigation including complete autopsy, death scene examination, and review of the clinical history.¹ SUDC is defined as the sudden death of a child over the age of 12 months, which remains unexplained after the completion of a thorough investigation including complete autopsy.²

Children under the age of 1 year are at the highest risk of dying from any cause, with an infant mortality rate of more than 6 per 1000 in the United States.³ Approximately 4000 infants die every year of sudden, unknown causes and are termed as sudden unexpected infant deaths (SUID). Approximately half of these deaths are due to SIDS, which is the most common cause of SUID.⁴ The pathophysiology of SIDS is not completely

understood. The current prevailing theory is the “triple risk” model suggesting that SIDS occurs in infants: (a) with an underlying condition; (b) who experience a trigger event (infection, smoke exposure, airflow obstruction, or other classic SIDS risk factors); and occurs at (c) a vulnerable developmental stage.

One “underlying condition” could be the presence of primary cardiac conditions predisposing the infant to the development of potentially fatal ventricular arrhythmias. Such cardiac anomalies, including cardiomyopathies and channelopathies, have been recognized as potential causes of SIDS and SUDC.⁵⁻¹⁰ Prolongation of the QT interval (the interval on an electrocardiogram measured from the beginning of the QRS complex to the end of the T wave), for instance, has been observed in up to 50% of SIDS cases in a large cohort,⁹ and mutations associated with long QT syndrome have been demonstrated in 10% of cases in SIDS.¹⁰ Some of these pioneering studies have been conducted as part of a comprehensive screening program or in a different country and have raised a fair amount of skepticism in regards to their validity and predictive power for the general population in the United States.

The aim of the current study was to perform a comprehensive analysis to assess the prevalence of diagnosed conditions associated with SCD among infants and children in Hawai'i.

Methods

Patients

A retrospective chart review was conducted on children aged 0-18 years. Records were reviewed from the only tertiary care pediatric hospital in the State of Hawai'i (Kapi'olani Medical Center for Women and Children), offices of all pediatric cardiologists practicing in Hawai'i from 1/1/2000 to 12/31/2013, and from the Hawai'i State Department of Health from 2001 to 2012. Diagnosis of diseases associated with SCD, age at diagnosis, cause of death, and age at death (if applicable) were collected. The ICD-9 codes for the diseases associated with SCD are as follows: dilated cardiomyopathy, 425.4; hypertrophic cardiomyopathy, 425.18; left ventricular non-compaction cardiomyopathy, 425.4; restrictive cardiomyopathy, 425.4; arrhythmogenic right ventricular cardiomyopathy, 425.4; long QT syndrome, 426.82; Brugada Syndrome, 746.89; short QT syndrome, 759.89; catecholaminergic polymorphic ventricular tachycardia, 427.1; and anomalous left coronary artery from the pulmonary artery, 746.85. The study was approved by the respective Institutional Review Boards.

Diagnosis of Disease Associated with Sudden cardiac Death

Diseases or conditions associated with SCD include hereditary arrhythmia syndromes (cardiomyopathies and channelopathies) and congenital coronary artery anomalies. The following diagnoses were included in our study: cardiomyopathies (dilated, hypertrophic, left ventricular non-compaction, restrictive, arrhythmogenic right ventricular), channelopathies (long QT syndrome (LQTS), Brugada syndrome (BS), short QT syndrome (SQTS), catecholaminergic polymorphic ventricular tachycardia (CPVT), and anomalous left coronary artery from the pulmonary artery (ALCAPA). The presence of a hereditary arrhythmia syndrome or congenital anomaly associated with SCD was accepted if the diagnosis was made by a pediatric cardiologist based on echocardiographic, electrocardiographic, or genetic evidence. Besides conditions associated with SCD, information was collected about the presence of Wolff-Parkinson-White syndrome (WPW, ICD code 426.7), and cardiomyopathies due to an underlying systemic disease (such as muscular dystrophy or inborn error of metabolism), and cardiomyopathies due to chemotherapy/drugs. All medical records, ECGs, echocardiogram findings, and genetic results were reviewed by an independent pediatric cardiologist to confirm the diagnosis of a condition.

Statistical Analysis

Descriptive statistics were used to calculate prevalence, incidence, and percentages. Microsoft Excel was used for statistical analysis (Microsoft Inc., Redmond, WA, USA).

Results

In the State of Hawai'i, the average infant mortality rate (5.81/1000 live births) was comparable to the average mortality rate observed in the United States (6.57/1000 live births) (Table 1).³ Among children aged 12 months or less, a total of 135 SIDS cases were identified between 2001-2012. The rate of SIDS showed significant year-to-year variation ranging from <25 to 88.6/100,000 live births. On average, the SIDS rate in Hawai'i (66.4/100,000 live births) was similar to the average SIDS rate in the United States (54.4/100,000 live births).³ Out of all SIDS cases reviewed between 2001 and 2012 in the State of Hawai'i, not a single patient was diagnosed with a condition associated with SCD. The national SUDC rate is lower than the reported SIDS rate, ranging from 1-2/100,000 children.²⁻⁵ The State of Hawai'i does not report the rate of SUDC due to the very low annual incidence (<5 cases/year). Among the reported cases of child death in Hawai'i, none were diagnosed with a condition associated with SCD.

During the study period, a total of 51 children (aged 0-18 years) were diagnosed with a condition associated with SCD (Table 2). Of these, 28 (55%) were diagnosed with a cardiomyopathy and 21 (41%) with a channelopathy. The most common cardiomyopathy was hypertrophic cardiomyopathy (n=13, 46%) followed by dilated cardiomyopathy (n=7, 25%) and LV non-compaction cardiomyopathy (n=6, 21%). Among the 21 children diagnosed with a channelopathy, 20 (95%) carried the diagnosis of LQTS and 1 (5%) was diagnosed with Brugada

Table 1. Child and Infant Mortality in Hawai'i and the United States

Year	Hawai'i vital statistics				Infant mortality rate (1/1000)		SIDS and unknown causes of infant death rate (1/100,000)	
	Child death	Infant death	SIDS and unknown causes of infant death	Live births	Hawai'i	US	Hawai'i	US
2001	164	100	12	17043	5.87	6.84	70.4	55.5
2002	181	119	10	17446	6.82	6.95	57.3	57.1
2003	200	131	16	18066	7.25	6.84	88.6	52.9
2004	162	97	8	18238	5.32	6.78	43.9	54.6
2005	171	114	15	17882	6.38	6.86	83.9	53.2
2006	183	107	14	18927	5.65	6.71	74.0	53.1
2007	179	118	15	19086	6.18	6.75	78.6	NA
2008	160	103	15	19417	5.30	6.61	77.3	
2009	175	111	6	18843	5.89	6.39	31.8	
2010	161	107	15	18911	5.66	6.14	79.3	
2011	153	91	NR	18911	4.81	6.07	NR	
2012	139	90	9	18920	4.76	5.98	47.6	
Total	2028	1288	135	221,690	—	—	—	—
Average	169	107	12	18474	5.81	6.57	66.4	54.4

Source: Hawai'i State Department of Health, Office of Health Status Monitoring, Vital Statistics System and CDC, National Vital Statistics System.^{26, 27}

Notes: Vital Statistics information is limited to Hawai'i residents. Child Death refers to 0-18 years of age. Infant Death refers to <1 year. SIDS and Unknown causes of infant death refer to underlying cause of death with an ICD10 code of R95 and R99.

SIDS = Sudden Infant Death Syndrome, NR = not reportable due to cell size suppression of <5 events, NA = not available.

syndrome. None of these diagnosed patients had a sudden cardiac arrest. In our cohort, there was no child diagnosed with CPVT or SQTS. Two children were diagnosed with ALCAPA and 62 children were diagnosed with WPW.

Discussion

A comprehensive retrospective analysis reviewing data from 14 years in the State of Hawai'i revealed a total of 51 patients with a condition associated with SCD, resulting in an observed prevalence of 1:6666. In the United States, the cumulative national prevalence of conditions associated with SCD is estimated at 1:200 based on the summation of the established national prevalence of each condition.¹³⁻²¹ The calculated prevalence of conditions associated with SCD in living Hawai'i youth, therefore, is lower than expected and may reflect a potential issue of underdiagnosis. This finding may mean that in Hawai'i less than 1 in 30 children who may harbor a condition associated with SCD had been actually diagnosed in this cohort, while 29 out of 30 children remain undiagnosed.

Our data show that the infant mortality rate in Hawai'i is slightly less and the prevalence of SIDS is slightly more than that of the United States (Table 1). In a population of approximately 340,000 children aged 0-18 years, there would theoretically be over 1200 children with a cardiomyopathy and more than 300 children with a channelopathy.¹¹⁻¹⁹ Instead, we found only 28 children diagnosed with a cardiomyopathy and 21 children with a channelopathy. This suggests that possibly more than 1400 undiagnosed children may harbor a condition associated with sudden cardiac death.

The impact on health outcomes remains unclear. In the current study, none of the SIDS cases documented over the study

period were diagnosed prior to death with a condition associated with SCD. Similarly, none of the 51 infants with a diagnosed SCD-associated condition succumbed to sudden cardiac arrest. Nonetheless, estimates from the literature suggest that about 30-50% of children with these conditions may experience suspicious symptoms such as syncope, palpitations, and seizure due to an arrhythmia, and in up to 10% of children the very first "symptom" could be a sustained ventricular arrhythmia causing sudden cardiac death.¹¹ Even though most of these conditions may not have a complete cure, timely diagnosis is needed to facilitate appropriate therapy, possibly preventing SCD.

The low prevalence of conditions associated with SCD in our cohort could be due to several reasons: (1) ethnic differences in the prevalence of these conditions due to the unique population in the State of Hawai'i, (2) collection bias in our study due to incomplete review, (3) lack of established diagnosis in the absence of a comprehensive screening program, or (4) that the proposed prevalence data is extrapolated from a smaller cohort and may be falsely high. We visited these options one by one:

(1) Even though there are regional differences in the prevalence of conditions associated with SCD, the overall prevalence is similar in many countries.²⁰⁻²³ Reports from Asia documented similar rates of pediatric SCD to the United States,²⁴ suggesting that the low prevalence of conditions in Hawai'i is unlikely to be explained by ethnic differences related to the state's larger population of Asians.

(2) We recognize that our study may be limited by the retrospective nature of our review and the possible incompleteness of medical chart reviews and documents we relied upon. However,

Diseases associated with sudden cardiac death	Identified patients	Observed prevalence in Hawai'i	Established prevalence	Estimated missing diagnoses*
Cardiomyopathies	28	1/12,100		
Dilated cardiomyopathy	7	1/50,000	1/2500 ¹³⁻¹⁶	129
Hypertrophic cardiomyopathy	13	1/26,100	1/500 ¹³⁻¹⁶	667
Restrictive cardiomyopathy	2	1/170,000	1/5000 ¹³⁻¹⁶	66
Left ventricular non- compaction cardiomyopathy	6	1/68,000	1/1000 ¹⁷	334
Arrhythmogenic right ventricular cardiomyopathy	0	0	1/5000 ¹⁸	68
Channelopathies	21	1/16,190		
Long QT syndrome	20	1/17,000	1/2500 ¹⁹	116
Brugada syndrome	1	1/340,000	1/5000 ²⁰	67
Catecholaminergic polymorphic ventricular tachycardia	0	0	1/2500 ²¹	136
Short QT syndrome	0	0	NA	
ALCAPA	2	1/170,000	NA	
Total conditions associated with SCD	51	1/6666	Appr. 1/200	1583
Wolff-Parkinson-White syndrome	62	1/5480	1/2000 ²⁷	108

*Estimated number of undiagnosed patients harboring hereditary arrhythmia syndrome; the estimation is calculated by subtracting the number of diagnosed patients from the estimated number of patients that could be found in a population of 340000 children based on the accepted prevalence data.

ALCAPA = Anomalous Left Coronary Artery from the Pulmonary Artery, SCD = sudden cardiac death, NA = not available.

due to the limited number of pediatric cardiologists in this state (n=7), the presence of only a single tertiary referral pediatric center in the State of Hawai'i and the minimal rate of patient relocation to other states, we are confident that our cohort of children with a diagnosis of a condition associated with SCD represents an accurate profile of all children screened and diagnosed in the State of Hawai'i. In support of that, our calculated prevalence of Wolff-Parkinson-White syndrome (Table 2), which is diagnosed by ECG and may remain unnoticed given the lack of symptoms, is similar to previously reported prevalence in children.²⁵

(3) A possible explanation for the low number of diagnosed individuals with a condition associated with SCD could be the lack of established criteria to facilitate diagnosis. The established prevalence data of every condition associated with SCD is derived from a comprehensive but smaller cohort of patients who underwent systematic screening and evaluation, and is then extrapolated to the larger population.¹¹⁻¹⁹ In the absence of such a screening program, the observed prevalence – just as in our cohort – may be many-fold lower, or

(4) it is plausible that the extrapolation derived from these studies overestimates the prevalence, and does hold true for the overall population. This latter possibility raises the question whether a national prospective registry would better document and more accurately measure the true prevalence of these rare but life-threatening conditions. Future efforts may focus on establishing universal genetic screening for cardiac conditions associated with SCD, which would allow us to implement interventions that may help to prevent SIDS related to cardiac pathology.

In conclusion, the underdiagnosis of children with conditions associated with SCD in a retrospective study analyzing the population of Hawai'i may raise the need for a national registry and better understanding of the true prevalence of these conditions. Due to the absence of obvious and recognizable symptoms and without a comprehensive screening program, our current medical system will continue to miss many infants, children and youth who are at risk of SCD.

Conflict of Interest

None of the authors identify any conflict of interest.

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Authors' Affiliations:

- Hawai'i Pacific Health Research Institute, Hawai'i Pacific Health, Honolulu, HI (MT)
 - Department of Pediatrics, John A. Burns School of Medicine, University of Hawai'i, Honolulu, HI (TK, TTN, BL, VR, AB)
 - Hawai'i State Department of Health, Family Health Services Division, Honolulu, HI (DH)
 - Kapi'olani Medical Specialists, Hawai'i Pacific Health, Honolulu, HI (AB)

Correspondence to:

Andras Bratincsak MD, PhD; 1319 Punahou St., Suite 1160, Honolulu, HI 96826; Ph: (808) 942-7707; Email: andrasb@kapiolani.org

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Congenital Mesenteric Defect: An Uncommon Cause of Bowel Obstruction

Pouya Benyamini MD; Sarah Lopez; Matthew Cooper MD; Osama Mohamad MD, PhD; and Gregorio Maldini MD

Abstract

Congenital mesenteric defects can lead to internal hernias which may result in a bowel obstruction. They are very rare among the adult population, comprising only 0.2%-0.9% incidence rate of all small bowel obstructions. A 40 year old woman presented to the Emergency Department with abdominal pain. Computed tomography scan was obtained and showed a small bowel obstruction. After failed conservative management with bowel rest and nasogastric tube decompression, the patient underwent diagnostic laparoscopy. An internal hernia was identified through a congenital mesenteric defect at the level of the sigmoid colon. The hernia was reduced and the defect closed. When a patient presents with abdominal pain the diagnosis of a congenital mesenteric defect with internal hernia should be considered with subsequent emergent surgical exploration.

Introduction

Mesenteric defects with internal hernia can be either congenital or acquired. While congenital mesenteric defects with internal hernia are common in the pediatric population, it is extremely rare in adults.¹ Acquired mesenteric defects can be iatrogenic or from instances of abdominal trauma. Patients with a history of prior blunt abdominal trauma may present with late complications of a gangrenous ischemic small bowel caused by a missed diagnosis of a mesenteric injury.² Congenital transmesenteric internal hernia is a rare condition that can present with recurrent abdominal pain and clinical symptoms of acute intestinal obstruction. Preoperative diagnosis is very rare in most circumstances even with modern diagnostic modalities. There are currently only a few case reports of congenital transmesenteric defects leading to bowel obstructions and no standard practice or guidelines exist to help aid in treatment of such conditions. Without prompt diagnosis and treatment, patients can suffer significant morbidity and even death.

Congenital or acquired defects of the mesentery with internal hernia can present as small bowel obstruction and lead to incarceration or strangulation of the bowel. Mesenteric defects are usually 2-3 cm in diameter. In many instances, patients are evaluated by multiple providers at different facilities without the defect ever being diagnosed. In one example, an unexpected death of a child was reported due to a congenital internal hernia.³ Preoperative diagnosis has continued to be difficult even with the use of modern imaging techniques such as the computed tomography (CT) scan. CT scans are able to identify a transition point of bowel obstruction but frequently miss the mesenteric defect as the cause of obstruction as reported in previous cases.⁴ Close monitoring of the patient's general condition in cases of non-specific abdominal pain is essential to identify the rare deteriorating patient where surgical intervention is necessary.¹ In

this manuscript, we discuss how early intervention and surgical correction of congenital internal hernias significantly decrease the otherwise high morbidity and mortality rates.⁵

Case Report

A forty year old Japanese woman presented with one day history of vague atypical epigastric, periumbilical, and hypogastric cramping, non-radiating pain with associated nausea and three episodes of non-bloody, non-bilious emesis. She denied associated fevers or chills. Her white blood cell count was elevated at 19,000/uL. Her abdomen was distended and only mildly tender to palpation without peritoneal signs. CT scan was obtained as shown in Figure 1. She was admitted for conservative management with bowel rest and a nasogastric tube was placed for decompression. In the subsequent 48 hours, her abdomen remained distended and her pain did not resolve so she was taken to the operating room for diagnostic laparoscopy.

Although the patient had a history of both a pancreatectomy and splenectomy, laparoscopy did not reveal post-surgical adhesions near her prior sub-xiphoid incision as the cause of her obstruction. Instead she was found to have a congenital internal hernia at the level of the mesosigmoid colon mesentery that was not near her prior operative site. The serosa of the mesentery revealed an internal herniation of about 1 foot of small bowel that had herniated through this 2 cm opening. The patient's bowel did not appear strangulated and the bowel contents were easily reduced. The defect in the mesentery was then closed primarily. The patient had an uncomplicated recovery and was discharged on postoperative day seven.

Discussion

An internal hernia causing a small bowel obstruction is rare with studies reporting an incidence of one to five percent.⁶ Internal hernias are more common in the pediatric population and seldom seen among adults. In children, internal hernias are usually congenital whereas in adults they are usually iatrogenic or caused by trauma. Of the few cases reported in the literature with congenital mesenteric defect and associated internal hernia, all of the hernias were diagnosed during surgery. Of these, one mesenteric defect was reported after an unexplained death.⁷ The most common location of defects was reported to be in the distal ileum.² In the above example involving a Japanese female patient, the mesenteric defect was found at the level of the sigmoid mesocolon. Her operation and post-operative course went well but this is not always the case. CT scan is



Figure 1. Mildly dilated thin-walled small bowel in the mid-abdomen and pelvis. The white arrow shows the transition point where bowel is herniating through the bowel mesentery.

not effective at identifying congenital internal hernias. Most cases are suspected clinically and found during surgery or upon autopsy.⁸ We recommend a thorough knowledge of internal hernias for all physicians. Internal hernia should be part of the differential diagnosis for all patients with small bowel obstructions. Furthermore, we believe that during surgery it may be necessary to enlarge the defect to reduce the hernia and the defect should be completely closed during this process to prevent recurrent herniation.

Conclusion

When patients present with abdominal pain, the diagnosis of a congenital mesenteric defect with internal hernia should be considered with subsequent emergent surgical exploration.

Conflict of Interest

None of the authors identify any conflict of interest.

Authors' Affiliations:

- University of Hawai'i Surgical Residency Program, Honolulu, HI (PB, MDC,GM)
- Lincoln Memorial University, Harrogate, TN (SL)
- University of Hawai'i Transitional Year Residency Program, Honolulu, HI (OM)
- Straub Clinic and Hospital, Honolulu, HI (GM)

Correspondence to:

Gregorio Maldini MD; Straub Clinic and Hospital, 888 S. King St., Honolulu, HI 96813; Ph: (808) 522-4234; Email: gregoriomaldini@hotmail.com

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MEDICAL SCHOOL HOTLINE

Liaison Committee on Medical Education Accreditation, Part IV: Pre-clerkship Education

Sheri F.T. Fong MD, PhD; Damon H. Sakai MD; Richard T. Kasuya MD, MSED;
Kenton Kramer PhD; Vanessa S. Wong MD; William Haning MD;
Ivy Asano MD, MAT/Ed; Jane H. Uyehara-Lock MD; Karen Thompson MD;
Jill S.M. Omori MD; Shannon M. Hirose-Wong PhD; David T. Horio MD

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 fourth article in a series that will address various aspects of the LCME accreditation process,¹ which JABSOM is scheduled to undergo in early 2017. This installment provides an overview of pre-clerkship education at JABSOM and related LCME standards.

Introduction

The pre-clerkship segment of the curriculum occurs during the first two years, and is comprised of organ/systems-based (eg, cardiovascular, gastrointestinal, renal, locomotor) or thematic (eg, health and illness, life cycle) units, as well as courses in clinical skills and community health and service, and opportunity for electives (Table 1).

MD 1²⁻⁴ in the MS1 year and MD 6 and 7 in the MS2 year are problem-based learning (PBL) and lecture courses that focus on medical problem solving and critical judgment, utilizing roughly 90 PBL cases that promote learning in four domains—biologi-

cal, clinical, populational and behavioral. MD 5³ consists of two four-week blocks for one or more selectives, and MD 8 is primarily devoted to the consolidation of basic science content to prepare for the USMLE Step 1 examination. Optional electives provide enrichment of the curricular experience. Oversight of the pre-clerkship curriculum is the responsibility of the Pre-clerkship Education Committee (PEC), a subcommittee of the JABSOM Curriculum Committee.

The PEC is composed of the Course Directors of MDED 551-554, 556-557, the Clinical Skills Co-Course Directors, the Community Health and Service Co-Course Directors, two representatives from the Basic Science Education Committee (a subcommittee of the PEC) and one representative from the Educational Technology Committee (a subcommittee of the Curriculum Committee). The PEC oversees the curricular experiences and the day-to-day operations of MD 1-8. A few of roles of the PEC are:

Table 1. Pre-clerkship courses during MS1 and MS2 years.				
MS1	MD 1 (9 weeks)	MD 2 (12 weeks)	MD 3 (12 weeks)	MD 4 (12 weeks)
	Health and Illness MDED 551	Cardiovascular and Pulmonary Problems MDED 552	Renal and Hematologic Problems MDED 553	Endocrine and Gastrointestinal Problems MDED 554
	Clinical Skills MDED 571	Clinical Skills MDED 572	Clinical Skills MDED 573	Clinical Skills MDED 574
	Community Health and Service MDED 581	Community Health and Service MDED 582	Community Health and Service MDED 583	Community Health and Service MDED 584
	Electives available in MD 2, MD 3 and MD 4			
MS2	MD 5 (8 weeks)	MD 6 (15 weeks)	MD 7 (12 weeks)	MD 8 (10 weeks)
	Summer Enrichment MDED 595 and others (Required selectives)	Locomotor, Neurological, and Behavioral Problems MDED 556	The Life Cycle MDED 557	Basic Science Knowledge Consolidation MDED 558
		Clinical Skills MDED 576	Clinical Skills MDED 577	
			Evidence Based Medicine MDED 527	
	Electives available in MD 6, MD 7 and MD 8			

- Ensuring horizontal and vertical integration and implementation of curricula across multiple units
- Ensuring that the content of the curriculum advances students towards all seven graduation objectives⁴
- Periodically reviewing the pre-clerkship curriculum for gaps and redundancies.

The PEC works together with the Curriculum Committee and other educational subcommittees, to ensure that the pre-clerkship curriculum at JABSOM is comprehensive, well-coordinated, efficient, effective, and innovative. The following are examples of LCME Elements related to pre-clerkship education and how the PEC has addressed these selected requirements.

LCME Element 6.3: Self-Directed and Life-Long Learning

LCME Element 6.3 states:

The faculty of a medical school ensure that the medical curriculum includes self-directed learning experiences and time for independent study to allow medical students to develop the skills of lifelong learning.

The LCME has defined four components of student self-directed learning as a unified sequence:⁵

1. Identify, analyze, and synthesize information relevant to their learning needs
2. Assess the credibility of information sources
3. Share the information with their peers and supervisors
4. Receive feedback on their information-seeking skills

Learning activities in which pre-clerkship students engage in all components of self-directed learning include problem-based learning, the Triple Jump Examination (an oral exam that evaluates competency in the PBL process), and critical appraisal exercises in evidence-based medicine. Self-directed learning is a hallmark of the JABSOM Educational Philosophy⁶ and Objectives for Graduation⁴ to train each medical student to develop into a lifelong learner.

To provide adequate time for students to engage in self-directed learning and independent study, the PEC approved a policy entitled, *Self-Directed Learning and Independent Study Time in the Pre-clerkship Curriculum*.⁷ The policy limits structured educational experiences (eg, PBL tutorial, lectures, clinical skills, community health and service) to seven half-days or 28 hours per week, averaged over the course of the unit. The PEC reviewed the MS1 and MS2 academic calendars for Academic Year 2014-2015, and found that structured educational experiences ranged between 14.7 hours per week in MD 7 to 20.9 hours per week in MD 1, with an average of 18.8 hours per week overall, which fell well-within the policy guidelines.

The policy also limits required, unstructured educational assignments (eg, preparation of learning issues for PBL, clinical skills write-ups, community health essays) to three half-days or 12 hours per week. An estimate of these activities, based on a yearly MS 1 PBL skills survey conducted from Fall 2011 to Spring 2014, was an average of 7.8 hours per week overall, also well-within the parameters of the policy guidelines.

Adherence to the policy is assessed on each end-of-course program evaluation survey. The following are the most recent results from the Class of 2018 and Class of 2019.

Table 2: Results from MD 4 2015 and MD 1 2015 program evaluation surveys for the survey statement: *The course adhered to JABSOM's Pre-Clerkship Workload Policy.*

	Strongly Disagree	Some-what Disagree	Some-what Agree	Strongly Agree	Mean	SD
Class of 2018 MD 4 2015 N=64	0	1	10	53	3.8	0.4
Class of 2019 MD 1 2015 N=65	0	1	19	45	3.7	0.5

All the data above indicate that there is ample opportunity for pre-clerkship students to participate in self-directed learning.

LCME Element 7.5: Societal Problems

LCME Element 7.5 states:

The faculty of a medical school ensure that the medical curriculum includes instruction in the diagnosis, prevention, appropriate reporting, and treatment of the medical consequences of common societal problems.

The PEC approved the criteria and process used to select the societal problems included in the curriculum. The criteria are:

- The societal problem has health consequences that can be addressed by physicians.
- The health consequences of the societal problem create a significant burden.
- The societal problem has major implications for Hawai'i.
- Addressing the societal problem is aligned with the mission of JABSOM.

Every three years, the PEC reviews the societal problems included in the curriculum, and determines if changes are needed. Once selected, the content is reported to the Curriculum Committee. The PEC last reviewed societal problems in Fall 2015, and determined 6 general themes that thread through the curriculum:

- Substance Use Disorders
- Lifestyle Modification
- Socio/Ethno/Cultural Disparities
- Maldistribution of/ Access to Health Care Resources
- Violence at Home and Work/School
- End of Life Care/Issues

Each PBL-based unit contains at least four of the six themes. They are taught using PBL, lectures, colloquiums and patient panels. The societal problems chosen by the PEC overlap with LCME Element 7.6: Cultural Competence and Health Care Disparities, which states:

The faculty of a medical school ensure that the medical curriculum provides opportunities for medical students to learn to recognize and appropriately address gender and cultural biases in themselves, in others, and in the health care delivery process.

The PEC has approved a similar criteria and process for gender and cultural biases in the curriculum.

LCME Element 6.6: Service-Learning

LCME Element 6.6 states:

The faculty of a medical school ensure that the medical education program provides sufficient opportunities for, encourages, and supports medical student participation in service-learning and community service activities.

Service-learning and community service are required elements in the JABSOM curriculum, and are a part of the Objectives for Graduation.⁴ All MS 1 students enroll in a course series called Community Health and Service (Table 1) that runs throughout the entire academic year. Students are matched with school- or community-sponsored programs, and participate with their program for approximately 4 hours per week. Currently, there are 14 Community Health and Service options for students that include the Hawai'i Homeless Outreach and Medical Education (HOME) Project,⁸ Healthy Keiki Can, Native Hawaiian Health, Rural Health, Teen Mentorship Academy, and Wellness Initiative for Seniors in Hawai'i (WISH). Many of the programs promote healthy living or an interest in health care fields. The target populations include the underserved, homeless, youth at risk, rural communities and Native Hawaiians.

Ongoing Initiatives in Pre-clerkship Education

There are multiple initiatives that are ongoing in the pre-clerkship curriculum. The following are some examples of recent initiatives:

Course assessment: The pre-clerkship examinations are transitioning from short essay exam questions plus multiple choice questions (MCQs) to exams that consist entirely of MCQs. The

software implemented by the Office of Medical Education is ExamSoft®, which allows the banking of MCQs, exam creation, administration of exams on iPads, exam scoring and analysis, and generation of exam keys and individual student reports. MCQs in ExamSoft® can be linked to searchable items such as the AAMC Entrustable Professional Activities (EPAs) and JABSOM Objectives for Graduation, and allows for creation of an exam blueprint of topics. ExamSoft® allows for faster grading, less inter-grader variation, and analysis of student performance to help set standards of achievement.

Setting standards of achievement: Working groups for each unit consist of previous, present, and subsequent Course Directors (eg, the MD 1, MD 2, and MD 3 Course Directors would comprise this team for the MD 2 unit). Each member individually rates the MCQ items by estimating the percentage of minimally qualified performers/borderline students who would correctly answer the item. The ratings are flagged for secondary review if there is a large inter-rater variation or large variation between rating and actual student performance. The final ratings will be used in Academic Year 2016-2017 to set appropriate and justifiable pass/fail scores based on the MCQs on the exam. This helps address LCME Element 9.6 which states: *A medical school ensures that faculty members with appropriate knowledge and expertise set standards of achievement in each required learning experience in the medical education program.*

Continuous improvement of the curriculum: There are two task forces that have recently been convened: (1) The Professional Identity Development Task Force is charged with organizing a comprehensive "professional identity development" curriculum that includes professionalism, personal effectiveness, humanism, ethics, and other aspects of professional identity formation; (2) The Clinical Skills Task Force aims to modernize the content, delivery and evaluation of clinical skills, and meet the AAMC EPAs and ACGME Milestones. In addition, a new sub-committee of the Curriculum Committee, the Educational Technology Committee, has been formed, and is responsible for providing information technology resources to faculty, staff and students, necessary to support the school's medical student educational mission. There are PEC and pre-clerkship faculty representatives involved in all these initiatives.

Enhancement of learning activities: Presenters in the large group sessions are encouraged to increase the amount of active learning for greater student engagement. PBL case enhancements such as the incorporation of pictures of physical exam findings, EKGs, CXRs, blood smears, and pathology slides; as well as audio clips of abnormal heart, lung, and abdominal sounds within the cases using iAnnotate®, allow students greater opportunity to identify, analyze, and synthesize information. SimScopes™ are used to simulate heart, lung, and bowel sounds, specific to each correct anatomical location on a manikin. The SimScopes™ enable a more realistic encounter and analysis of findings. Manikin-based simulation experiences permit students

to recognize signs of a disease state, deliver appropriate treatment, and see the manikin's response to treatment, to promote clinical skills and reasoning process.

Final Thoughts

JABSOM's pre-clerkship curriculum is in a continuous state of evaluation, adjustment, and improvement, that is designed to provide medical students a curricular experience that not only meets or exceeds LCME accreditation criteria, but promotes the development of a well-rounded student who is prepared to enter and succeed in the clerkship years. The Pre-clerkship Education Committee helps to coordinate the efforts of many committed faculty and talented staff to achieve these goals, and provides effective oversight of this important segment of the JABSOM medical student curriculum.

Authors' Affiliation:

University of Hawai'i John A. Burns School of Medicine, Honolulu, HI

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INSIGHTS IN PUBLIC HEALTH

The Continued Need for Policy, Systems, and Environmental Changes in Hawai'i to Impact Growing Rates of Obesity and Chronic Disease

Katherine L. Richards MPH; Ranjani R. Starr MPH; Bronwyn M. Sinclair-White MPH; Heidi Hansen Smith BA; Jessica Yamauchi MA; and Lola H. Irvin MEd

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.

Introduction

The food and physical environments surrounding Hawai'i's people have drastically changed over the past twenty years, contributing to a dramatic rise in obesity.¹ Among adults, obesity in Hawai'i has more than doubled from 10.8% in 1995 to 22.1% in 2014.^{2,3} More than half of all adults in Hawai'i (58.1%) are overweight or obese.³ When compared to other US states, Hawai'i has the third lowest adult obesity rate; however, it ranks 30th nationally in youth obesity rates.⁴ More than one in every ten (13.4%) public high school students is obese,⁵ and nearly one in three children entering kindergarten (28.6%) is already overweight or obese.⁶ In addition, marked disparities exist among certain sub-populations, with 19.3% of Native Hawaiian (NH) youth and 40.4% of NH adults being obese.^{5,7} Rates of obesity are even higher among other Pacific Islanders (PI), at 31.2% in PI youth and 57.4% in PI adults.^{5,7} If Hawai'i as a state does not address the problem of obesity, by the year 2030, more than half of Hawai'i's adults will be obese.⁸

Diabetes and pre-diabetes rates have also been steadily increasing in Hawai'i; nearly one quarter of all adults in Hawai'i (24.1%) report having diabetes or pre-diabetes.⁹ Alarming, these rates do not fully capture the burden of these conditions. Based on a study by Dall, et al, (2014), and a methodology developed by the American Diabetes Association, half of all adults in Hawai'i (52.7%) currently have diabetes (11.2%) or pre-diabetes (41.5%), although 56.5% are unaware of their condition.^{10,11}

A growing body of evidence supports the detrimental impact of an obesogenic food environment on our escalating obesity and chronic disease crisis. The premise of this theoretical framework is that the basic biology of people has not changed, as humans are designed to respond to cues to eat and rest. What is different are the external influences and environmental opportunities for healthy lifestyles. We are at every turn bombarded with messages and easy options to over-consume and to be sedentary. A recent *Lancet Series* pointed out that today's food environments "exploit people's biological, psychological, social, and economic vulnerabilities, making it easier for them

to eat unhealthy foods."¹² This in turn bolsters demands for foods with poor nutritional quality and further enhances the unhealthy food environments around us.¹²

Past efforts to impact obesity have been ineffective in reducing obesity rates.¹³ These efforts placed responsibility on the individual to eat healthy and exercise more, without incorporating interventions to change the surrounding environment to ensure availability of appealing healthy options.¹⁴ In the new paradigm, policy, systems and environmental changes—rather than an individualistic approach—are necessary to make an impact on the large-scale environmental and societal shifts that have created increased rates of obesity and chronic disease, which in turn require strong regulation and action from the government.¹² Without leadership and major policy changes to create healthy environments and societal changes, the obesity epidemic will not be reversed.¹² This article provides an overview of the recommended policies to address Hawai'i's growing rates of obesity and chronic disease.

Recent Obesity and Chronic Disease Prevention Policy Efforts in Hawai'i

Partners across the state are working together to address and plan for the policy, environmental, and systems changes needed to create healthier environments for the people of Hawai'i. Policy efforts were strengthened in 2012 with the passage of Act 269, creating the Obesity Prevention Task Force, a group tasked by the Legislature to identify policy solutions to reduce obesity and chronic disease rates in the state. The Task Force developed twelve policy recommendations that could help enhance environments in our communities, schools, worksites, and health systems to make it easier for the people of Hawai'i to make healthy choices.¹⁵ The March 2013 *Insights in Public Health Column* in the *Hawai'i Journal of Medicine and Public Health* provided an overview of the Obesity Prevention Task Force and their policy recommendations.¹⁶

Although eight of the Obesity Prevention Task Force recommendations were introduced in the 2013 legislative session, only one of the recommendations was passed: Hawai'i Con-

current Resolution 23, which created a task force to develop recommendations for improving reimbursement for obesity prevention-related healthcare services and counseling.¹⁷ While the passage of the resolution was helpful in moving forward this important issue, partners know that continued efforts and work is needed to encourage passage of many more crucial prevention policies.

Soon after the 2013 Obesity Prevention Task Force policy recommendations were submitted to the legislature, the 2013-2020 Hawai'i State Physical Activity and Nutrition Plan was developed and released. The plan identifies priority objectives, designed to integrate physical activity and nutrition into the daily lives of the people of Hawai'i.¹⁸ All of the policy recommendations from the Obesity Prevention Task Force were incorporated into the plan.

On May 28, 2015, the Hawai'i State Department of Health facilitated the 2015 Physical Activity and Nutrition Forum. Stakeholders convened to review the progress of the policies in the State Physical Activity and Nutrition Plan and to re-identify crucial policy needs for the state. One hundred forty statewide partners and experts proposed the policy priorities outlined below. Nineteen state level policies across four sectors were identified as key strategies to create healthy environments in our communities, schools, worksites, and health systems. These policies are discussed in the next section.

Nineteen Recommended Policy Priorities from the 2015 Physical Activity and Nutrition Forum

Healthy Communities (Physical Activity) Sector:

There are many factors that influence the health of populations, including the environments where people live.¹⁹ The Healthy Communities Physical Activity Sector policy recommendations strive to make physical activity an integral and routine part of life. The built environment is shaped by transportation and land use planning and policies, and can promote or inhibit physical activity.¹⁹ Recommendations include those that will enhance the physical and built environment, rethink community design, and ensure access to places within the community where the people of Hawai'i can be physically active.

In order to create healthier communities, four priorities were identified as key policy areas to improve opportunities for physical activity. These include; (1) supporting the implementation of Complete Streets, including developing related policies and activities to propel progress; (2) creating state & county level goals for active transportation including the development of safe, accessible and comfortable pedestrian, bicycle, and transit networks that provide transportation options for all users; (3) exploring legislation to encourage the use of Health Impact Assessments (HIAs) on projects such as large-scale transportation or housing projects to review potential impact on health; and (4) ensuring that all state locations and events have secured bicycle parking, to promote and normalize bike use as an alternative form of transportation.

Healthy Communities (Nutrition) Sector:

Creating changes to Hawai'i's food environment is crucial to create an impact on the obesity epidemic.¹² The Healthy Communities Nutrition Sector policy recommendations strive to create food and beverage environments that ensure that healthy food and beverage options are the routine, easy choice. A concerted effort must happen from both the private and government sector to institute the comprehensive changes needed to impact Hawai'i's food environment. Recommendations include those that will reduce unhealthy food and beverage options and substantially increase healthier food beverage options at affordable, competitive prices.

Six policy recommendations were prioritized to improve access to healthy nutrition in communities. These include; (1) establishing a Food Systems Task Force; (2) increasing access to locally produced, healthy foods; (3) establishing state government level policies related to access to healthy food and drinks; (4) creating guidelines for healthier kids' meals that includes requiring restaurants to offer 100% juice, bottled water and low-fat milk as part of the bundled children's menu price; (5) requiring a safety warning on all sugar sweetened beverage (SSB) containers and packaging to educate consumers about the health risks associated with drinking SSBs; and (6) introducing a 1-cent per ounce fee on SSBs that could then help fund childhood and adult obesity prevention and health promotion.

Healthy Schools Sector:

Schools and educational settings not only provide physical education and serve foods and beverages to students, but also serve as role models, providing a culture that can support, rather than undermine the efforts of children, adolescents, and parents to promote healthy living.¹⁹ The Healthy Schools Sector policy recommendations strive to encourage and increase physical activity, healthy nutrition, and healthy living in the school setting to surround students with an environment that supports and encourages lifelong healthy habits. Recommendations include those that will increase and support students' ability to learn about and partake in physical activity, healthy eating, and to understand what contributes to their health and well-being.

Five policy recommendations were prioritized to create healthy school environments for Hawai'i's future generations, including: (1) requiring implementation of a statewide standardized fitness assessment in grades 5, 7, & 9; (2) assuring that all schools in Hawai'i have high quality health and physical education programs and students are required to take classes in health or physical education in middle school grades; (3) completing and adopting the early childhood education and care program wellness guidelines that are currently in development and identifying additional areas where policies can be strengthened; (4) requiring one additional physical exam at grade seven to coincide with the state immunization mandate for middle school; and (5) providing nutrition and agriculture curriculum in the classroom to reinforce the positive changes that have been introduced in the school meals program such as more servings and a greater variety of vegetables.

Healthy Worksites Sector:

Adults spend a significant portion of their lives at work making the worksite an ideal place to promote wellness.²⁰ Research has shown that worksite wellness programs can support a healthier workforce, increase morale, improve employee productivity, reduce absenteeism, and reduce healthcare costs.²¹ The Healthy Worksites Sector policy recommendations strive to support and increase opportunities for wellness at the worksite, including opportunities for employees to engage in healthy lifestyles and to participate in risk reduction and self-management programs. Recommendations include creating and expanding healthy work environments through policy, program and systems changes that support wellness.

Three policy recommendations to support healthy worksites include: (1) establishing state level policy to enhance and promote worksite wellness efforts in state agencies; (2) exploring the possibility of a paid family leave policy for Hawai'i; and (3) exploring policy to encourage employers to increase the use of Health Risk Assessments (HRAs) within a comprehensive worksite wellness program.

Health Care Systems Sector:

Health care and health service providers have opportunities to encourage patients to engage in healthy lifestyles, and engage in screening for disease risk factors.¹⁹ Enhancements to the health care system can help to create additional opportunities to incorporate obesity and chronic disease prevention into routine practice.¹⁹ The Health Care Systems Sector policy recommendations strive to increase the support structure for achieving better population health and obesity prevention. Recommendations include those that encourage coverage for obesity and chronic disease prevention, screening, diagnosis, and treatment.

Only one policy recommendation was prioritized for the health care systems sector: developing legislation to encourage and support reimbursement for preventive care. Additional research is needed to investigate gaps in health care providers' ability to prevent and provide treatment for obesity, pre-diabetes, and other preventive health care services.

A full overview of the 19 policies can be found at: http://health.hawaii.gov/healthy-hawaii/files/2015/11/Policy_Document_111815.pdf

The 2015 Weight of the State Symposium

On November 20, 2015, obesity and chronic disease prevention stakeholders, leaders, and policy makers were brought together at the *Weight of the State: Solving the Chronic Disease Crisis through Innovative Policy Change* symposium, to review the

nineteen policy recommendations identified by the Physical Activity and Nutrition Forum members and to showcase what the future of Hawai'i could look like if policies supporting obesity prevention and healthy lifestyles were passed. The mural in Figure 1 was unveiled during the symposium as a visual to display how the nineteen policies could help to create a healthier state.

Local and national experts discussed the importance of continuing comprehensive obesity and chronic disease efforts, as well as the strong need for policies that support healthy lifestyles. They recommended urgently addressing obesity and diabetes through innovative policies, systems and environmental changes in all areas of our society. Specific recommendations included policies that would limit the consumption of sugar-sweetened beverages. The experts also stressed the need for dedicated funding for obesity and chronic disease prevention. The Symposium provided a time for obesity prevention stakeholders to show their strong support and collaboration to make obesity prevention policies a reality in Hawai'i.

Next Steps

The Obesity Prevention Task Force has chosen to focus on five of the nineteen recommendations in the 2016 legislative session, including; creating guidelines for healthier kids' meals, enhancing health in child care settings by restricting SSBs from being served; requiring one additional physical exam at grade seven to coincide with the state immunization mandate for middle school; supporting policies for paid family leave; and exploring legislation to support reimbursement for diabetes prevention.

Conclusion

The continued rise in diabetes, pre-diabetes, and obesity rates highlights the crucial need for innovative and strong policies to create healthier environments in Hawai'i. Ongoing efforts by the Obesity Prevention Task Force and obesity and chronic disease prevention stakeholders have helped to identify policies recommended for passage in Hawai'i. There is strong support and collaboration amongst stakeholders, with over thirty partners signing on to support the vision of a healthier Hawai'i through the passage of the nineteen policies. While continued partnerships and collaboration among stakeholders and leaders as well as additional public education is necessary, moving the recommended strategies forward requires legislative support to create the necessary social and environmental changes to effectively address this complex and multi-faceted issue.

Authors' Affiliations:

- Hawai'i State Department of Health, Honolulu, HI (KLR, RRS, BMS-W, HHS, LHI)
- Hawai'i Public Health Institute, Honolulu, HI, (JY)



Figure 1. Obesity and Chronic Disease Prevention Policy Mural

The mural in Figure 1 represents a visual display of nineteen policies identified by one hundred forty statewide partners and experts as key strategies to create healthy environments in our community, schools, worksites, and health systems. These policies were identified at the 2015 Physical Activity and Nutrition (PAN) Forum on May 28, 2015. The state and community partners and experts met during the Forum to review the evaluation results of the PAN Plan and discuss the next priorities for action.

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General Recommendations on Data Presentation and Statistical Reporting (Biostatistical Guideline for HJMPH)

[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 greater than .999, it should be expressed as “ $P > .99$ ”. For a *P* value less than .001, report as “ $P < .001$ ”. Under no circumstance should the symbol “NS” or “ns” (for not significant) be used in place of actual *P* values.

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

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

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

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

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

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

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

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

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

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

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

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

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.



POWERFUL RESEARCH BUT A BIT FRIGHTENING.

A groundbreaking but controversial new gene-editing technology is accelerating a path to eradicate malaria. The work, published in *Nature Biotechnology* was a study at Imperial College London. The team engineered genetic changes in a common breed of malaria-transmitting mosquito that could cause its population to plummet to levels low enough to stop malaria from spreading. The report came following similar research in southern California that showed how they had altered a different breed of mosquito to resist the malaria parasite. The new mosquito could spread the new trait through the population. Both teams achieved their results using Crispr/Cas9, a powerful new technology that has transformed genetic engineering, by allowing scientists to cut and paste genes with precision. Crispr/Cas9 can also be used to build “gene drives,” a sequence of DNA that ensures the new traits are inherited and spread quickly. The technology is being explored for uses from editing genes that cause human diseases such as cancer, to reversing insects resistance to pesticide. Kevin Esvelt of Harvard University called it a remarkable advance. In 2014 he proposed the use of Crispr/Cas9 gene drives to spread genetic traits through wild populations. The potential uses of the technology have also raised serious ethical questions.

NOW MAYBE THAT CORNBALL ETHANOL WILL BE PHASED OUT.

In 2007 Congress passed the Energy Independence and Security Act, a well -intentioned effort to reduce the Middle East chokehold on American energy following Sept. 11. The Environmental Protective Agency (EPA) called for 22 billion gallons of ethanol to be blended with the gasoline supply for the following year. Now the petroleum picture has changed immensely with the domestic production of oil from fracking and other technologies. The United States is far less dependent on foreign oil so, the EPA is recommending 18.1 billion gallons of ethanol be blended into the gasoline supply. In addition, the claims of ethanol’s earth friendliness are being challenged by reports from the National Academy of Sciences and the United Nations. Both found that corn ethanol may actually produce higher emissions than gasoline. All this to consider without even mentioning the use of fossil fuels that go into raising, harvesting and shipping ethanol to market. The industry has received tens of billions of taxpayer dollars in subsidies and tax breaks since the 1980s. Because 40% of corn production is sucked up in ethanol production, Americans pay an estimated \$40 billion a year more at the grocery store. Ethanol backers say correctly big oil will benefit by having less biofuel blended into gasoline, but so what? Voters will get a close up view of aspiring presidential candidates when they respond to this issue across the midwestern states.

WAKE UP, LITTLE SUZY, WAKE UP.

For anyone who has had to endure general anesthesia, it is obvious that being on medical dream street, especially if prolonged, presents a challenge to complete memory recovery. Fearing for infants who could develop long term brain damage, anesthesiologists are now using spinals for procedures shorter than 90 minutes. The spinal approach yields fewer breathing complications, quicker recoveries and faster feeding. Families take their babies home sooner. The technique is not new. Spinal anesthesia for infants was pioneered by the University of Vermont Children’s hospital four decades ago, but it never caught on. Many pediatric surgeons and anesthesiologists were fearful of altering traditional practices, and that infants might squirm or fuss during the operation. Now hospitals around the world are participating in multiple studies to determine if exposure to anesthesia is associated with cognitive problems later on. The largest is called the Gas study, and includes 28 hospitals in the United States, Canada, New Zealand, Europe and Australia. The plan is to measure intelligence at age 5 in 722 infants who were randomized for hernia repair under spinal or

general anesthesia. *Lancet* published an interim analysis that found no cognitive difference at two years of age. But lead investigator Andrew Davidson, medical director of the clinical trial center at Murdoch Children’s Research Institute in Melbourne stated “Some aspects of neurodevelopment cannot be assessed at that age.

NOW WHEN DEVELOPING BOOBS THEY DON’T CARE.

Many men who are taking testosterone blocking drugs to treat prostate cancer—called chemical castration—have nearly twice the risk of developing Alzheimer’s Disease as those using other treatments. Some 500,000 men are taking the drugs for prostate cancer. Experts say they want to do something therapeutic and may not be candidates for radiation or surgery. The latest study published in the *Journal of Clinical Oncology* was conducted at the University of Pennsylvania and Stanford University focused on data for 16,888 patients with non-metastatic prostate cancer between 1994 and 2013. Of these, 2400 were treated with anti-androgen therapy, and had an 88% higher risk of being diagnosed with Alzheimer’s disease in the next three years than those who weren’t. Perhaps they may forget they have cancer.

BABY, IT’S COLD OUTSIDE. LET’S GET PLUGGED IN.

California and nine other states have adopted mandatory sales targets of electric and hydrogen powered cars from less than 1 percent today to more than 15 percent by 2025. California leads the United States in sales of zero-emissions vehicles, and is on track to meet the mandatory sales targets which are backed up by fines of \$5,000 per car below quota. But the electric fly in the ointment is weather. As the temperature drops batteries work less efficiently. In tests conducted by the American Automobile Association an electric car that ran 105 miles at 75F went only 43 miles at 20F—a 60% reduction in range. That is cause for anxiety in places such as Maine, a mostly rural state where people drive long distances for work, shopping and recreation. As Tom Brown, president of the Maine Automobile Dealers Association said, “California is not Maine.” Three types of cars on the road today meet the zero-emission vehicle standard, Tesla, Nissan Leaf, and the Chevrolet Volt, which can switch from electric to gasoline power.

OTHER THAN THAT SHE ENJOYED THE STORY.

Author Richard Brittain pleaded guilty to assault in Scotland’s Glasgow Sheriff Court for his response to a review panning his book, “The World Rose.” He acknowledged in a blog that he had received some criticism, but others had compared him to Dickens, Shakespeare, and Rowling. The 18 year-old supermarket worker posted her comments on an Internet site. When Brittain read her review, he used the internet to trace her and traveled 500 miles to confront her. He was arrested for knocking her out with a wine bottle stroke to the back of her head. She was seen at a hospital and released.

ADDENDA

- Radar was first used by the British in 1940 in the air Battle of Britain, as the Luftwaffe found out.
- Penguins have an organ in their foreheads that desalinates water.
- Bimonthly can mean twice a month or every other month. Go figure.
- Two or three glasses of wine per day will reduce your need to give a shit.
- My Uncle Frank lived in Chicago and was a staunch conservative. He always voted a straight republican ticket. After he died, he voted democrat.

ALOHA AND KEEP THE FAITH **rt**s

(Editorial comment is strictly that of the writer.)

Mahalo Peer Reviewers!

The Journal would like to thank those listed below, who have provided peer review in 2015.

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