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# Comparing Need between Health Occupation and Health Education Schools: Which Students Benefit Most from the School Health Education Program

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## Abstract

*Comparing need between Health Occupation and Health Education Schools: Which students benefit most from the School Health Education Program? First-year medical students taught general health topics at public high schools. Pre-test and post-tests were given for each presentation. Health Education students had lower pre-test scores but showed greater improvement. With greater need and fewer resources, Health Education students benefit most.*

## Introduction

The School Health Education Program (SHEP) began in 2002 as a collaboration between the University of Hawaii John A. Burns School of Medicine (JABSOM), the Hawaii State Department of Education (DOE), and public high school health teachers. This project is sponsored in part by the Fund for the Improvement of Post-Secondary Education (FIPSE) and the U.S. Department of Education.<sup>1</sup> Goals of this initiative included exposing medical students to service learning, and assisting high school teachers in meeting the DOE's Health Content Standards, which took effect in August 2001.<sup>2</sup>

One of the new Health Content Standards' goals was to support the development of healthy behavior by establishing effective health promotion and education in the kindergarten through twelfth grades. There have been increases in various youth risk behavior. The 1999 national Youth Risk Behavior survey reported that among adolescents, 67% have tried cigarettes, 45% drank alcohol in the past 30 days, and 36% had been sexually active in the past three months. The survey also reports that violence (homicide and suicide) is (among) the leading preventable cause of death among persons age 10-24 years. SHEP aimed to address these preventable high-risk behaviors through a service-learning modality.<sup>3</sup> First-year medical students were sent to six different public high schools to serve as mentors and teachers of general health topics.

Consistent with similar studies relating to teaching high school students,<sup>4</sup> SHEP had been successful in increasing high school students' knowledge of health topics, as measured by pre-test (given prior to medical student intervention) and post-test test scores from previous years. In this study, the authors looked to improve the program by examining which of the schools benefited most from SHEP. This paper describes SHEP during the 2002-2003 year. The classes in the six high schools were divided into one of two groups: health education classes and health occupation classes. Health education classes were pre-requisites for graduation, while health occupation classes were elective courses chosen by students who have a personal interest in pursuing health careers. Determining which group benefits most is an important question to consider, as funds, time, and human resources are limited and the waiting list of high schools requesting SHEP services is long. Answering this study question has been an exercise in the development of medical student awareness of social responsibility to the community and the meaning of professionalism.

## Methods

### Study Design

Fifteen first-year medical students were recruited for the 2002-2003 school year. Medical students were divided into three teams, with each team being assigned to two of the six schools. The schools involved were McKinley, Castle, Roosevelt, Waipahu, Nanakuli, and Farrington high schools. Each team worked closely with supervising faculty from the Office of Medical Education (OME), and with health education and health occupation teachers from the respective high school sites. Medical students spent four hours a week participating in SHEP activities, including health content training, curriculum design seminars, and presentation skills training prior to delivery of the specific lessons at the high schools.

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The cooperating schools were composed of socio-economically diverse students. The teaching methods designed were tailored to meet the specific needs of students from each of these schools. The health education standards topics and teaching methodologies designed by the medical students for the schools included:

1. **Healthy Living:** focused on diet, exercise, nutrition and coping with stress
  - Small group discussions, games, poster boards, Problem-Based Learning Case on Eating Disorders
2. **Substance Abuse:** focused on teenage use and health consequences of alcohol, tobacco, ecstasy, and other illicit drugs
  - Power point presentation, small group discussions, games, and Problem-Based Learning Case on amphetamine use
3. **Sexual Health:** focused on STD's, date rape, pregnancy and contraceptives
  - Power point presentation with explicit photos (STDs), posters, and proper condom use demonstration
4. **Violence Prevention:** focused on school violence, domestic abuse, suicide, homicide, and motor vehicle accidents
  - Power point presentation, Jeopardy game, guest speaker from Honolulu Police Department, and skits

### **Study Population**

A total of four classes at McKinley, Nanakuli, and Roosevelt high schools made up the health education group. These health education classes were required for graduation, and the students in them had a wide range of interest in health care: some students were very interested in health issues and careers, others were not. One class each at Castle and Waipahu high schools were the health occupation classes. These were elective classes for students interested in pursuing health care careers. Students in these classes were self-selected and expressed an interest in learning about health care issues and wanted to pursue careers in medicine and nursing. Farrington high school had two classes, one each of health education and health occupation. Farrington high school was excluded from the study results because data from the two different classes were not segregated.

With the exception of Castle and Waipahu high schools, students at each school participated for one semester. New classes of students arrived the next semester. Castle and Waipahu high schools were on a year-long schedule.

### **Health Education Classes: McKinley, Roosevelt, and Nanakuli High School**

**McKinley High School:** McKinley High School is located in the center of Honolulu, Hawaii the political and economic center for the State of Hawaii. The top ethnic groups at McKinley High School were Chinese 22% and Filipino 16.1%. The average family size of McKinley's community was three, and the median household income was \$34,350. The median household income of the State of Hawaii was \$49,820. Also, 8.4% of households in this community received Public Assistance Income, compared to 7.6% for the State of Hawaii, and 19.1% of children (ages 3-19) were below the poverty level. Forty-three percent of students received free or reduced-cost lunch, 10.1% were enrolled in Special Education Programs, and 19.6% had limited English proficiency.<sup>5</sup>

**Roosevelt High School:** Roosevelt High School is also located in Honolulu, Hawaii, and serves a diverse community. Ethnically, 33% were Japanese, 15% Part-Hawaiian, 13% Chinese, 13% mixed, and 7% Caucasian. The number of students enrolled in 2002 was 1543. Scores on the Stanford Achievement Test for Roosevelt tenth graders were 19-29% below average in reading, and 15-20% below average in math. Median household income for this community was \$52,797; 4.5% were on public assistance; the number of families living with children in poverty was 11.7%. Eight percent of students had limited English proficiency.<sup>6</sup>

**Nanakuli High School:** Nanakuli High and Intermediate School is the only school with both intermediate and high school under one administration. The school consists of almost 70% Hawaiian or part-Hawaiian students. The median household income in this community, below that of the state, was at \$44,457. Twenty two point five percent of families received public assistance, compared to 7.6% at the state level.<sup>7</sup>

### **Health Occupation Classes: Castle and Waipahu High School**

**Castle High School:** Castle High School is located in Kailua, Hawaii. The major ethnic groups at Castle were 32.7% Part-Hawaiian, 19.8% Japanese, and 12.1% White. The average family size of Castle's community was 3.6, and the median household income was \$68,914, significantly higher than that of the state. Seven percent of households received Public Assistance, and 6.2% of children ages 3-19 lived with families below the poverty level. Approximately forty percent of students received free or reduced-cost lunch, 15.2% were enrolled in Special Education Programs, and 2.6% had limited English proficiency.<sup>8</sup>

**Waipahu High School:** Waipahu High School serves a community with an ethnic distribution consisting of 58% Filipino, by far the majority, followed by 12% Samoan, and 9% Part-Hawaiian. The student population was approximately 2,400. Over the past four years, test scores revealed 25-44 % of tenth grade students were below average in math, and 34-43% were below average in reading on the Stanford Achievement Test. At the socioeconomic level, the median household income was \$59,578; 10.9% of households were on public assistance; 9.4% of families with children lived in poverty. Almost fourteen percent of the students had limited English proficiency.<sup>9</sup>

#### **Mixed Classes: Farrington High School**

**Farrington High School:** Farrington High School has the largest student population of all Hawaii's public schools. The ethnic distribution at this school is 58% Filipino and 14% Samoan, with other ethnic groups making up a minority. Median household income was slightly less than the state while the percent of households with Public Assistance income was 17%, compared with 7.6% for the State. Sixty-five percent of students received free or reduced-cost lunch and 20% had limited English proficiency.<sup>10</sup>

#### **Outcome Measures**

Multiple choice pre-tests were given prior to the presentation. Although variation existed to account for differences in high school students' needs, a core set of questions were used at every school. After each presentation, medical students encouraged high school students to ask questions and provide feedback. The class period concluded with the administration of post-tests to measure knowledge, confidence in making health decisions, and attitudes regarding learning (the students' self-perceptions of learning). A one group pre- test/post- test design method was used to indicate of how much, or how little students learned about the health risk behaviors in which they engaged. Analysis of data was performed using a Pearson test, comparing test score difference across schools and semesters.

#### **Results**

A one-group pretest-post test design was used with a mixed analysis of variance including one-nested factor of high school, and two-repeated measure factors of time (pre versus post) on content knowledge and confidence in health decisions. A full school year of presentations was analyzed, and demonstrated a statistically significant difference between the health occupation and health education classes at pre-test and post-test ( fall  $p = .0002$ , spring  $p < .0001$  ). The health occupations classes consistently scored higher when compared with the health education classes.

#### **Discussion**

The data showed that although the health occupation classes had higher pre- test scores, health education classes showed greater improvement in scores. Factors that account for higher pre- test scores among the health occupation classes include differences in the level of the class, the resources available to students, and the self-selectivity of students in health occupation classes.

The curriculum of the health occupation classes is designed specifically for students interested in health careers. Prior to SHEP, students in these classes have had previous, in-depth exposure to health topics from their teachers. These students also participated in learning activities outside of the classroom and had other resources available to them. For example, students at Castle high school attended fieldtrips to hospitals, shadowed physicians, and had access to a clinical skills classroom equipped with anatomical models and medical equipment. Students at Waipahu high school also had charts and models available to them and were required to volunteer in hospitals. Students at the health education schools did not have any of these educational opportunities. Finally, students in the health occupation classes were homogenous in their level of interest

Some of the limitations in this study were variation in medical students' teaching methods and content and researcher bias. Although the topics taught were fundamentally the same for all schools, each team of medical students had flexibility in how they presented the material. The teams catered to the particular needs of the students in each class. For example, at McKinley high school, the presentations were simplified for the large number of students with limited English proficiency. To control for these differences, the pre- and post- tests had a set of core questions for all schools.

Teaching at both health education and health occupation schools has proven to be challenging and rewarding for the medical students. However, this study has shown that student in the health education classes reaped greater benefits and have greater need for SHEP services. Therefore, in light of limited resources, priority should be placed on health education schools. The data from this study has led to a recent program change in SHEP. SHEP services are no longer provided to Castle and Waipahu high schools' health occupation classes. Instead, resources have been reallocated to two additional health education classes—one at Waipahu High School and the other at Kailua High School. Although it is difficult to deny services to any one group, it is important to allocate resources where they are needed most. Such decision making is not taught in the medical school curriculum.

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and carcinoma or determining the causative infectious agent is critical as well. It is also important to remember that the presence of EBV virus or other infectious agents does not preclude underlying FHLH and genetic testing is recommended for all cases.<sup>8</sup> Ultimately in FHLH, after initial treatment with the chemotherapy, the ultimate curative therapy is allogeneic bone marrow transplant. Our patient has done very well and is completing his therapy, without return of the syndrome.

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