

# Michigan Evaluation of School-based Health

## OVERVIEW

More than 70 state-funded Child and Adolescent Health Centers (CAHCs) provide a range of primary, preventative, and early intervention services to over 100,000 children at all grade levels throughout the State of Michigan. The **Michigan Evaluation of School-based Health (MESH) Study**<sup>1</sup> is the first statewide study of the impact of CAHCs on the health and health behaviors of children and youth in Michigan. The MESH study was conducted by a team of researchers at Michigan State University.<sup>2</sup>

## SUMMARY OF FINDINGS

The findings from this study indicate that CAHCs are associated with a wide range of health benefits. The presence of CAHCs in schools was associated with **health benefits for the entire student population, such as:**

- less physical discomfort,
- less emotional discomfort,
- higher self-esteem,
- engaging in fewer individual risks,
- fewer threats to achievement, and
- fewer negative peer influences.

In addition, **the use of CAHC services was associated with health benefits such as:**

- greater satisfaction with health,
- greater self-esteem,
- less physical discomfort,

- engaging in more physical activity,
- eating more healthy foods,
- greater family involvement, and
- more active social problem-solving skills.

Taken together, these findings suggest that CAHCs are an important component of school environments that support student health, whether students directly use CAHC services or not.

## REPORT

This brief report presents answers to two questions:

1. What is the **school-wide impact** of having a CAHC on student health and health behaviors?
2. Among students with access to CAHCs, what is the **impact of CAHC use** on students' health and health behaviors?

## Design

To understand the impact of CAHCs on student health and health behaviors, the MESH study followed middle and high school students in selected schools over a 3-year period.

The study's longitudinal design had three advantages: First, it allowed us to examine changes in students' health and health behaviors over time. Second, it allowed us to analyze differences in students' health and health behaviors after three years of exposure to a CAHC. Finally, the presence of baseline (year one) measures allowed us to account for any pre-existing differences at the start of the study, increasing our confidence that any differences found between students with and without access to CAHCs were attributable to the CAHCs and not other factors.

In order to understand the impact of CAHCs on student health and health behaviors, we recruited students from three kinds of schools: implementation schools (n=6), which had CAHCs that were implemented in the spring of 2006; established schools (n=5), which had CAHCs that had been in operation for six or more years; and comparison schools (n=5), which had no CAHCs.



## Measures

Using the Child Health and Illness Profile – Adolescent Edition™ (CHIP-AE), we surveyed students in 16 middle and high schools across the state. In middle schools, the same students were surveyed from sixth grade through eighth grade; in high schools the same students were surveyed from ninth grade through eleventh grade. The major health and health behavior outcomes from the CHIP-AE used in this study are displayed in Table 1.

## Analyses

Multilevel statistical models were used to analyze the differences in health and health behaviors. Multilevel statistical techniques allowed us to examine how students' health and health behaviors changed over time while accounting for differences between students in the same school and differences between students in different schools.

To account for non-CAHC factors that might affect health and health behavior outcomes, we tested

the effects of gender, race, age (relative to one's classmates), grade, and socio-economic status on the outcomes. All demographic factors that were significantly related to the outcomes were included in the final statistical models. In addition, health and health behavior outcomes at year one were included in all models in order to account for pre-existing differences between the different groups of students. Finally, when testing for differences between users and non-users, we accounted for the type of CAHC (implementation vs. established sites).

We tested differences between schools with and without CAHCs using the entire sample (16 schools). In order to test for differences between users' and non-users' health, we analyzed data from a subset of students at schools with established CAHCs (five schools) and sites with newly implemented CAHCs (six schools). In each statistical model, we examined both differences at year three and differences in change over time. For the sake of clarity, we present the findings for each research question separately.

**Table 1. Health and Health Behavior Outcomes**

<b>Outcome</b>	<b>Description</b>
<i>Satisfaction with Health</i>	Overall perceptions of and beliefs about one's health
<i>Self-esteem</i>	General self concept
<i>Physical Discomfort</i>	Positive and negative somatic feelings and symptoms
<i>Emotional Discomfort</i>	Positive and negative emotional feelings and symptoms
<i>Limitations of Activity</i>	Restrictions in age-appropriate activities and limitations in mobility due to health
<i>Individual Risks</i>	Activities that threaten individual health and development
<i>Threats to Achievement</i>	Behaviors that typically disrupt social development
<i>Peer Influences</i>	Involvement with peers who engage in risky behaviors
<i>Nutrition</i>	Rates of eating healthy and unhealthy foods
<i>Family Involvement</i>	Level of activities with family and perceived family support
<i>Social Problem Solving</i>	Active approaches to solving an interpersonal problem
<i>Physical Activity</i>	Level of involvement in activities related to fitness

## Question 1

# What is the school-wide impact of having a CAHC on student health and health behaviors?

## Participants

This sample included 1,038 middle and high school students. Overall, 45% of participants were male and 55% were female. The sample was racially and ethnically diverse: 41% of participants were white, 31% were African American, 14% were Latino, 3% were Native American, 1% were Asian American/Pacific Islander, and 10% identified as “other.” The majority of participants were in high school (63%); 37% were middle school students.

The sample was fairly evenly distributed across the five comparison sites (30%), six implementation sites (33%), and five established sites (37%).

## Findings: CAHC vs. No CAHC

### *Differences at Year Three*

Compared to students at schools without CAHCs, students at schools with implementation CAHCs reported better overall health and health behaviors in year three, including<sup>3</sup>:

- less physical discomfort,
- less emotional discomfort,
- higher self-esteem,
- engaging in fewer individual risks,
- fewer threats to achievement, and
- fewer negative peer influences.

In addition, students at schools with established CAHCs reported less physical discomfort in year three compared to students at schools without CAHCs.

### *Differences Over Time*

The health and health behaviors of students at schools with implementation CAHCs improved over time compared to students at schools without CAHCs, including:

- decreased physical discomfort,
- decreased individual risk, and
- decreased threats to achievement.

## Question 2

# Among students with access to CAHCs, what is the impact of CAHC use on students' health and health behaviors?

## Participants

This sub-sample included 720 middle and high school students who had access to CAHCs. The demographic characteristics of this sample were nearly identical to the larger sample of 1,038 students. The majority of participants were in high school (65%); 35% were middle school students.

The sample was fairly evenly distributed between established sites (53%) and implementation sites (47%). Seventy-nine percent of participants reported that they had used their school's health center at least once during the three years of the study.

## Findings: Users vs. Non-Users

### *Differences at Year Three*

Compared to non-users, users reported significantly better health outcomes and behaviors in year three, including:

- greater satisfaction with health,
- greater self-esteem,
- less physical discomfort,
- engaging in more physical activity,
- eating more healthy foods,
- greater family involvement, and
- more active social problem-solving skills.

Users also reported engaging in more individual risk behaviors than non-users at year three. An examination of the individual items comprising the individual risk behavior measure revealed that users had slightly higher mean scores on every single item. In addition, there were the following significant differences between users and non-users:

- Users had significantly higher scores on items in the adolescent risk-taking scale, for example, racing on a bike, skateboard, boat, or car for excitement; doing something risky or dangerous on a dare; or breaking a rule set by your parents just for the thrill of seeing whether you could get away with it.
- A greater proportion of users were sexually active.

We examined whether CAHC services affected males and females differently. For physical and emotional discomfort we found that female non-users had significantly higher physical and emotional discomfort than female users.

We also found differences in unhealthy eating habits:

- Among users, males reported eating more unhealthy food than females.
- Among males, users reported eating more unhealthy food than non-users.

### **Differences in Change Over Time**

Compared to non-users, users' health and health behaviors improved over time, including increased:

- satisfaction with health,
- physical activity,
- healthy eating,
- self-esteem,
- family involvement, and
- active social problem solving.

## **Summary and Implications**

The findings from this study indicate that CAHCs are associated with a wide range of health benefits. The presence of CAHCs in schools was associated with various health and health behavior benefits for the student population in year three, including fewer symptoms of discomfort, fewer individual risks and fewer negative peer influences. In addition, use of CAHC services was associated with health and health behavior benefits in year three such as greater satisfaction with health, engaging in more physical activity and eating more healthy foods. Taken together, these findings suggest that CAHCs are an important component of school environments that support student health, whether students directly use CAHC services or not.

There were two unexpected findings in this study: male CAHC users reported eating more unhealthy foods than male non-users in year three, and CAHC users engaged in more risk-taking behaviors than non-users in year three. It is highly improbable that the use of CAHC services caused students to eat more unhealthy foods or engage in the risky behaviors measured by the CHIP-AE (e.g., shoplifting, using drugs, or engaging in sexual activity). Rather, it is more likely that unhealthy eating, risk-taking, and the resulting health problems (injuries, infections, overweight, etc.) are what led the youth to seek CAHC services. If this is the case, then CAHC visits provide excellent opportunities for nutrition and risk-reduction counseling. Further research is needed to better understand these associations.

In addition to the unhealthy eating habits of males and general risk-taking behaviors, these results highlight other areas CAHCs could target to improve student health and health behaviors. Specifically, we found no differences in the nutritional habits (neither healthy food intake nor unhealthy food intake) of students at schools with CAHCs and students at schools without CAHCs. Nutrition interventions that explicitly encourage students to increase their intake of healthy foods and decrease their intake of unhealthy foods could result in improved nutrition.

While female users experienced less emotional discomfort than female non-users, no parallel effects were found for males. This suggests that mental health services are either not being utilized or are not having the intended effects on males. As such, outreach efforts targeting males may be warranted.

Finally, the school-wide effects of CAHCs may, in part, be due to the fact that CAHC staff members routinely engage in health education, promotion and prevention activities that go well beyond the walls of their health centers. However, because many such activities are not eligible for reimbursement by health insurance plans, they are an important, yet under-resourced function of CAHCs. As such, policies that provide increased resources for these efforts might enhance the health benefits of CAHCs.

<sup>1</sup> The MESH Project was funded by grants from the Michigan Department of Community Health and the Families and Communities Together (FACT) coalition at Michigan State University.

<sup>2</sup> Michigan State University MESH Project Team: Miles McNall, PhD, Lauren Lichty, PhD, Brian Mavis, PhD, Pat Farrell, PhD, Celeste Sturdevant Reed, PhD, Laura Bates, MA, Jason Forney, MA, and Aimee DeLyser, MA, EdS.

<sup>3</sup> All reported differences are significant at  $p < .05$ .

### **For more information about the MESH project contact:**

**Miles McNall, Ph.D.**, Assistant Director  
Community Evaluation and Research Collaborative  
University Outreach and Engagement

Michigan State University  
Kellogg Center, Garden Level  
East Lansing, MI 48824-1022

(517) 353-8977 • [mcnall@msu.edu](mailto:mcnall@msu.edu)  
Web: [outreach.msu.edu/cerc](http://outreach.msu.edu/cerc)

