



## Healthy Kids Learn Better...and Perform Better The Links Between Health and Academics

By Ginny Ehrlich, RMC Tools to Practice for School Health Project Director

In 1997, Symons, Cinelli, James and Groff conducted a landmark literature review on the links between health risk behaviors and education outcomes that outlined the empirical basis for this statement. They concluded that, "a rich body of literature confirms a direct link between student health risk behavior and education outcomes..."<sup>25</sup>. Since that time, school health professionals have used this literature review, as well as other studies, to make the case for engaging the education community as partners to ensure that school-aged youth have access to quality school health programs. Despite their wide spread efforts, there has not been a significant change in the implementation of school health programs<sup>16</sup>. As a result,

many school health professionals are hungry for even more data that support the contribution that school health programs can have on student achievement.

This literature review builds upon the work of Symons et al. by reviewing the primary literature on the impact of prevalent health risk behaviors on education outcomes published from 1997 to the present. Specifically, this review includes primary literature that explores the links between student achievement and discipline and alcohol, tobacco, and other drug use, adequacy of nutrition, early sexual activity and teen pregnancy among school-aged youth. These health risk behaviors not only carry educational costs, but larger societal costs, making them particularly important to prevent among school-aged youth.

use and high school graduation, grade point average (GPA), and standardized test scores. Since that time, researchers have further pinpointed the actual substances associated with education outcomes, as well as student populations disproportionately affected by ATOD use and a decrease in education outcomes.

One of the more surprising developments is that several studies suggest a stronger and more consistent relationship between tobacco, marijuana and other illicit drug use and education outcomes than between moderate alcohol use and education outcomes<sup>3,4,5</sup>. This pattern has remained stable over five years of published articles and among different population samples and study designs. Specifically:

- In a three-year study on the impact of students' substance use on their academic motivation, the authors found a reciprocal relationship between cigarette use, marijuana use, and academic motivation<sup>3</sup>.
- In a predominantly African-American urban school environment, a reciprocal relationship between education outcomes and student use of tobacco and marijuana among 10th and 12th graders was found. The associations were particularly strong between the use of tobacco use, marijuana and truancy<sup>5</sup>.

### Alcohol, Tobacco, and Other Drug Use

Many studies show that the ongoing and persistent substance use has impacted middle and high school students' ability to learn and complete their schooling. Schools also suffer the financial consequences of students' substance abuse. A 2001 report from the Center on Addiction and Substance Abuse estimated that students' substance abuse and addiction added at least \$41 billion to elementary and secondary costs in the United States<sup>6</sup>. Symons et al. reported links between alcohol, tobacco, and other drug (ATOD)

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Though many studies have explored this link<sup>3,4,5</sup>, a significant link between students' moderate use of alcohol and a decline in education outcomes is largely elusive among the general population of school-aged youth. Amongst studies that looked at sub-populations of students, only one study found a relationship between alcohol use and educational achievement. One longitudinal study found that female high school athletes who used alcohol suffered a decrease in academic achievement, as measured by grade point average<sup>7</sup>. In reflecting on why their study, as well as previous studies found no effects related to alcohol use, one group of researchers hypothesized that, "the finding of a nonreciprocal relation between academic motivation and alcohol use could be due to the normative use of alcohol among adolescents,"<sup>3</sup> meaning that moderate alcohol users may be less likely to have other co-factors affecting their educational success, such as living in poverty or participation in other health risk behaviors.

Some researchers have used longitudinal data to study the effects of ATOD use on the educational outcomes of specific sub-groups of student<sup>4,5,7,8,14</sup>. Results from these studies reveal that:

- High school athletes who used substances experienced a more significant decline in academic achievement than their non-athletic peers. These findings were stronger for male athletes than for female athletes<sup>7</sup>.
- Cigarette use and binge drinking (more than five drinks in one sitting) among students with disabilities were significantly correlated to even more educational consequences, including lower GPAs, fewer credits, higher drop out rates, no diploma eight years after scheduled graduation date, and lower

rates of college attendance than for their non-disabled peers<sup>14</sup>.

- Studies that examined the impact of race and ethnicity on student ATOD use and their education outcomes were inconclusive. Though many showed large mean differences between the academic achievement and motivation among African American, Latino, and White students, no differences were statistically significant<sup>5,8</sup>.

***Research continues to support strong empirical evidence that the adequacy of nutrition and school breakfast programs are linked to education outcomes among school-aged youth.***

In sum, the studies show that students who use cigarettes, marijuana and/or other illicit drugs are very likely to experience adverse education outcomes such as lower grades, achievement scores, and are more likely to drop out of school. Aside from students with disabilities, there are few differences in the effects of ATOD use on education outcomes amongst sub-populations. Because of the prevalence of ATOD use, this makes the implementation of effective substance abuse prevention programs essential to ensuring the educational success of school-aged youth and the reduction of unnecessary costs on the educational system.

### **Adequacy of Nutrition and Education Outcomes**

Approximately 18% of children in the United States live in "food insecure" households<sup>22</sup>. "Food insecure" households are defined as those where there are, "limited or uncertain availability of nutritionally adequate or safe foods to feed all members of the household"<sup>1</sup>. In

their 1997 literature review, Symons et al. concluded that there is an extensive body of research that supports the negative impact of inadequate nutrition, as well as a plethora of research that supports the positive impact of school breakfast programs on students' education outcomes.

The relationships between food insecurity, academic performance, and behavioral patterns have been studied amongst both young children (6-11 years old) and adolescents (12-16 year olds). The studies yielded findings that include:

- Intensive interviews with parents revealed that children (6-11 years old) from food insecure households were significantly more likely to receive special education services and to display aggressive behaviors at school (such as fights with other children) than their peers from food secure households<sup>15</sup>.
- After adjusting for characteristics such as poverty level, lack of family health insurance, and an unemployed head of household, that can also negatively impact student achievement, researchers found that the 6-11 year old students from food insecure households had significantly lower standardized math scores and were more likely to have repeated a grade<sup>1</sup>.
- Older students (12-16 years old) who lived in food insecure households were more likely to have been suspended from school, but their academic measures were not significantly affected<sup>1</sup>.

A meta-analysis of studies on the relationship between students eating breakfast and academic performance based on articles published in peer-reviewed journals from 1983 - 1998 reconfirmed a definitive relationship between students participating in the school breakfast program and increased school attendance. These findings held true for both students whose participation was supported through the free

and reduced meals program and for students who paid to eat breakfast at school<sup>23</sup>. Another study supported the academic benefits of eating breakfast at school for all students, regardless of their eligibility for the free and reduced meals program. It found that students who ate breakfast at school at least 80% of the days they were present had significantly higher math scores and significantly decreased absence and tardy rates than those students who did not participate in the breakfast program as frequently<sup>19</sup>. These findings make a strong case for universal school breakfast programs as a support for positive education outcomes among all school-aged youth.

Research continues to support strong empirical evidence that the adequacy of nutrition and school breakfast programs are linked to education outcomes among school-aged youth. Additionally, the research supports the continued availability of school breakfast programs due to their positive impact on mitigating the educational risks of students from food insecure households, as well as enhancing the educational outcomes for all students.

### **Sexual Activity, Teen Pregnancy, and Education Outcomes**

Each year, approximately 410,000 teenage girls become parents before their scheduled high school graduation dates<sup>11</sup>. The vast majority of teen pregnancies are unintended and a result of unprotected sexual intercourse<sup>10</sup>. Descriptive statistics indicate that only 41% of these teen mothers will complete high school<sup>20</sup>, and only 1.5% of teen mothers will complete college by the time they were 30 years old<sup>18</sup>. The empirical literature shows a changing trend in the effects of early sexual activity and teen parenthood on education outcomes.

In recent years, studies that link early sexual activity and adverse educational outcomes have surfaced in the literature:

- In 2000, a study found that the initiation of sexual intercourse before age 14 was directly related to poor academic achievement, as measured by a combination of standardized test scores, GPA, and self-reported grades<sup>4</sup>.
- Researchers found that the initiation of sexual intercourse led to a reduced interest in academic goals and a lower achievement ranking after the initiation of sexual intercourse. This effect was particularly true for girls who initiated sexual intercourse before age 15. Correlations between the initiation of sexual intercourse and achievement ranking and academic goals were also stronger for girls, overall, than for boys, and stronger for white students than for African-American students<sup>24</sup>.

There are also new trends in the relationship between teen parenthood and education outcomes. General belief has been that pregnant and parenting teens drop out of school as a result of their challenging circumstances. Longitudinal data from a nationally representative sample of White, Hispanic and African-American students who were enrolled in eighth grade in 1988 supports that notion to a point. The longitudinal study found that White and Hispanic female students who gave birth between the eighth and twelfth grades were significantly more likely to drop out of school than their peers who delayed childbearing. However, these students were just as likely to drop out prior to becoming pregnant, as they were to drop out after giving birth<sup>17</sup>. Among African-American students who gave birth and dropped out of school, significantly more dropped out after giving birth.

Some researchers have begun to chal-

lenging the impact of teen pregnancy and parenting on high school completion. One review of several longitudinal studies found that though teen motherhood was consistently predictive of dropping out of school, more recent studies showed a reduced effect of teen childbearing on dropping out of school. To further investigate this changing trend, a group of researchers began to examine new questions and employ new methods<sup>12</sup>. They believed that their pursuit was important because, "data have been gathered over many years, during which political and cultural factors have changed and new methods and data have become available"<sup>12</sup>. Instead of limiting their study to the impact of teen parenthood on high school completion, the researchers used longitudinal data sets to also investigate the impact of teen parenthood on years of college attendance up until 29 years old. The results showed new trends in schooling among teen parents. In all of the analyses, the researchers controlled for known predictors of early childbearing including mothers' educational level, lack of prior success in school, and lack of future aspirations<sup>12</sup>.

On the surface, the findings on high school completion were consistent with earlier studies. Compared to women who gave birth for the first time in their 20s and 30s or had not given birth, teen mothers were significantly less likely to have completed high school and less likely to have attended college in all of the time periods studied. However, when researchers looked at differences in years of schooling between women who gave birth in their teens in the 1960s, 1970s, 1980s, and 1990s, significant differences were found. Findings showed that the gap in high school completion rates between teen and non-teen parents were highest in the 1960s, decreased in the 1970s and 1980s, and increased again in the 1990s. Over time, college attendance has increased among women who were teen

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parents and who delayed childbearing, but the gap between teen mothers and delayers has progressively widened between the 1960s and the 1990s. With shifts in the workforce and economy requiring progressively higher levels of education, these researchers contended that the implications of college attendance had become more important than high school completion. Thus, the researchers concluded that "teen mothers are at least as disadvantaged [educationally] today as they were in the past"<sup>12</sup>.

Recent studies support a link between early sexual activity, reduced academic achievement, and lower educational aspirations, as well as a shift in trends and thoughts about the impact of teen parenthood on educational outcomes. Since the Symons et al. literature review, there has been increased evidence of a relationship between early sexual activity and decreased academic performance<sup>4,24</sup>. Combined with a significant decrease in the age of first intercourse among teens in the United States<sup>24</sup>, the link between early sexual activity and decreased academic performance is particularly troublesome. The relationship between teen motherhood and high school completion has weakened in recent years, with more teen mothers completing high school than 20 years ago. Conversely, researchers concluded that teen parenthood delayed or canceled the attainment of higher education aspirations, reducing the likelihood of gainful employment and increasing the likelihood for a life in poverty.

### Conclusions

The assertion of Symons et al. that there is "a direct link between student health risk behaviors and education outcomes"<sup>24</sup> continues to be supported in the primary literature. Researchers continue to refine the specifics of these relationships, identi-

fy changes in these relationships over time, and identify specific populations that are disproportionately affected by these relationships<sup>3,4,5,12,13,14,17</sup>. The increased scope and specificity of findings provides the opportunity for education and health professionals to target their health, prevention and intervention programs more precisely, as well as to better advocate for role of school health programs in successful efforts to increase student achievement. In the short-term, doing so could improve the likelihood that more schools will meet the rigorous accountability measures outlined in the No Child Left Behind Act of 2001. In the long-term, reducing the incidence of student health risk behaviors will increase the education outcomes of students, thus increasing their collective potential to contribute productively to society.

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# CDC Manual Offers Guidelines for Improving School Nutrition

Source: Centers for Disease Control and Prevention, Division of Adolescent and School Health

Poor eating habits, along with physical inactivity, contribute to obesity and other serious health problems. In the past 20 years, the prevalence of overweight has more than doubled among American children and tripled among adolescents. Concern has been raised about the nutritional quality of foods and beverages sold in schools outside of federally regulated meal programs. The good news is that many schools are making changes that make healthy choices the easy choice for students.

*Making It Happen! School Nutrition Success Stories* tells the stories of 32 such schools and school districts from across the United States. K-12 schools, reflecting broad diversity in geographical location and demographics of the communities served, have implemented innovative strategies to improve the nutritional quality of foods and beverages sold outside of Federal meal programs.

A key insight from *Making It Happen!* is that students will buy and consume healthful foods and beverages—and schools can make money from selling healthful options. Of the 17 schools and school districts that reported income data, 12 increased their revenue as a result of the changes and four reported no change.

Themes from *Making It Happen!* include:

- One champion, such as a parent, foodservice manager, or school principal, is usually the driving force behind the change.
- Improving school nutrition involves multiple steps; teams with diverse skills and backgrounds are well-positioned to undertake such change.
- A useful starting point is to assess the current nutrition environment of the school to identify strengths and weaknesses.
- Attention to the change process is impor-

- tant in order to help sustain the change.
- Improvements are occurring, but more data are needed to document their impact.
- Change is occurring at all levels: school, school district, state, and national.

*Making It Happen!* begins by describing the importance of healthy eating for young people and how schools can support good nutrition, and provides information on the change process and school nutrition policies. The success stories are divided into six chapters based on the primary approach used to promote healthy eating, although in most cases schools and school districts used more than one of the following approaches:

- Establish nutrition standards for competitive foods.
- Influence food and beverage contracts.
- Make more healthful foods and beverages available.
- Adopt marketing techniques to promote healthful choices.
- Limit student access to competitive foods.
- Use fundraising activities and rewards that support student health.

The *Making It Happen!* success stories are supported by examples of actual policies, regulations, letters to parents, nutrition standards, nutrition resources, and contact information from the schools and districts. All the information is designed to establish healthy school nutrition environments as a normal expectation of schools. *Making It Happen!* includes a form that invites readers to send in their success stories as a source of inspiration and motivation to others.

Free copies of *Making it Happen!* can be ordered or downloaded at:  
<http://www.cdc.gov/HealthyYouth/nutrition/Making-It-Happen/index.htm>

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# A Tribute to Whitey Wilson

H.G. "Whitey" Wilson, RMC's founder, passed away on August 11, 2005 after a prolonged illness. Whitey started what was then called the Rocky Mountain Regional Training Center in 1973 while serving as Health and Physical Education Curriculum Director for the Adams 12 School District. In the early years, the Center provided training on the Berkeley Project, later called the School Health Curriculum Project, and ultimately known as Growing Healthy. Under Whitey's direction, the Center added the Teenage Health Teaching Modules curriculum in 1981 providing Colorado school districts their first opportunity to participate in a K-12 research-based health education curriculum.

In 1985, Whitey and the newly formed Board of Directors started the Rocky Mountain Center for Health Promotion and Education (RMC), moving away from the Adams 12 School District. Whitey retired as Executive Director in 1988. Over 30 years after the first health education training was conducted, Whitey's vision still guides the work of RMC. We are all grateful for the major contributions he made to the field of school health.

## Capture Their Attention...*With Data*

**Y**outh risk behavior and educational data can be a powerful tool for initially drawing hard to reach audiences to school health-related professional development events, as well as to build their commitment over time. To maximize the power of data as a marketing tool, keep these tips in mind:

**B**e creative. Use pictures and symbolic representations of the data. For audiences who aren't data savvy, these depictions are much more understandable and compelling than graphs and charts.



**M**ake it fun. Take a cue from the way that newspapers and magazines present data. It's those quick facts that draw people in, and those deeper connections between health data and the other concerns of your audience that maintain their interests.

**K**eep it simple. Choose no more than 3 data points for an initial marketing brochure or effort, and no more than 10 points for an ongoing marketing presentation.



**C**reate anticipation. Ask your audience to guess a percentage before providing them with the information, or to give them a few data points with web links to others.

**M**ake connections. Connect student health risk behavior and education outcome data with other data that matter to your audience. For example, connect alcohol use amongst youth to taxpayer dollars spent on youth treatment or missed days of school.



You can find some examples of how different organizations and agencies have effectively used data to promote the importance of school health by checking out the following websites:

Association for Supervision and Curriculum Directors – Health in Education Project – [www.ascd.org](http://www.ascd.org)

Society of State Directors of Health, Physical Education, and Recreation - [www.thesociety.org](http://www.thesociety.org)

WestED - [www.wested.org/chks](http://www.wested.org/chks)

Colorado Connections for Healthy Schools – [www.cde.state.co.us/cde-prevention](http://www.cde.state.co.us/cde-prevention)

Healthy Kids Learn Better Partnership (Oregon) – [www.hklb.org](http://www.hklb.org)



# RMC Welcomes New Staff!

**Kevin Hornsby** (Health Education Consultant, K-12 Tobacco Preventive Initiative) was most recently the school counselor at Ellicott Elementary and Middle schools. One of his many successes at Ellicott included implementing a school-wide tobacco prevention program. Prior to Ellicott, Kevin served the Elizabeth School District as the Administrative Director of CDE's Early Intervention Program, as the Director of Male Programs at Teen Resources, and as an instructor at The Center on Fathering in Colorado Springs.

**James Hurley** (Health Education Consultant, K-12 Tobacco Preventive Initiative) joins RMC from Sagewood Middle School in Douglas County. Jamie served as a health education teacher and department chair for the past five years. Jamie's has also been a coach and athletic trainer. He is currently working towards his Doctorate of Philosophy, Educational Leadership and Innovations with a focus on technology integration in education.

**Dan Lawrence** (Librarian, Prevention Information Center), comes to RMC from the University of Northern Colorado in Greeley where he served as an Instruction Librarian and Assistant Professor of University Libraries. Dan received his Masters of Library Science from San Jose State University, and is currently working toward a Masters degree in Instructional Technology. Dan brings a wealth of experience in managing collections, document delivery services, and library technology applications to RMC.



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## **Our Mission:**

The Rocky Mountain Center for Health Promotion and Education provides health education training, technical assistance, and resources for the benefit of children, youth, and their communities.

## **Our Values:**

- ^ Research to test the validity of our knowledge
- ^ The importance of family in children's lives
- ^ The process of human development
- ^ Diversity
- ^ The strength of community support