

THE ROLE OF  
COMPREHENSIVE SCHOOL  
HEALTH EDUCATION PROGRAMS  
IN THE LINK BETWEEN  
HEALTH  
AND  
ACADEMIC PERFORMANCE:  
A LITERATURE REVIEW

2000

## TABLE OF CONTENTS

<b>Introduction</b>	<b>1</b>
<b>Links between Health and School Performance</b>	<b>1</b>
<b>Alcohol, tobacco, and other drugs</b>	<b>1</b>
<b>Teen pregnancy</b>	<b>3</b>
<b>Violence</b>	<b>3</b>
<b>Nutrition and physical activity</b>	<b>4</b>
<b>Comprehensive School Health     Education Programs Can     Help Improve School Performance</b>	<b>4</b>
<b>Alcohol, tobacco, and other drugs</b>	<b>5</b>
<b>Teen pregnancy</b>	<b>7</b>
<b>Violence</b>	<b>8</b>
<b>Nutrition and physical activity</b>	<b>9</b>
<b>Conclusions</b>	<b>10</b>
<b>References</b>	<b>11</b>

---

**For additional information, please contact:**

**Massachusetts Department of Education  
Learning Support Services  
350 Main Street      Malden, MA 02148  
781-338-3000**

Acknowledgement:

Dale McManis, Ph.D., and Debbie Sorensen were the authors of this literature review.

## INTRODUCTION

Are comprehensive school health education programs a necessary part of the curriculum? Some educators and parents may believe that if health education programs do not directly teach academic skills, such as math and science, then they are not a necessary part of school activities. However, many students are unable to focus effectively on their schoolwork and learn the basic academic skills because they are in poor health or are engaging in high-risk behavior. If comprehensive school health education programs can help influence student behavior in positive directions and therefore increase school performance, then they are indeed a necessary part of the curriculum.

The purpose of this literature review is to evaluate the role of comprehensive school health education programs in increasing academic performance.

The goals are to:

- Examine the connection between health and school performance,
- Explore the effect of comprehensive school health education program components on health-related behaviors and on school and academic performance, and
- Focus on tobacco use, alcohol, and drug use, teen pregnancy, violence, and nutrition and physical activity.

The studies presented here are from the available research literature. When possible, controlled studies were chosen that compared students who participated in school health education programs with control students who did not. The sources for the research literature reviewed here includes published studies primarily from journals and books, as well as Educational Resources Information Center (ERIC) documents, and government and non-profit organization reports.

## LINKS BETWEEN HEALTH AND SCHOOL PERFORMANCE

It is well known that healthy behavior can have long-term benefits. For students, healthy behavior can also have the more immediate consequence of better school performance. According to the American School Health Association and the United States Department of Health and Human Services (1998), "Schools are ideal places to reach children and youth. Because children's health and learning are linked, children cannot learn when they are not well or when health concerns interrupt their ability to concentrate. For this reason, schools are specifically identified in 13 of *Healthy People 2000's* objectives [1990]. Objective 8.4 calls for increasing to at least 75 percent the proportion of the nation's elementary and secondary schools that provide planned and sequential kindergarten to 12th-grade comprehensive school health education."

Many studies have shown a link between participation in high-risk and unhealthy behaviors and school performance problems. Drug use, alcohol use, and tobacco use, pregnancy, poor nutrition and physical inactivity, and violence are all related to diminished school performance. These studies suggest that if students are not in good health, they will not be able to learn and achieve to their highest potential.

There is a wide range of school performance problems that have been linked to unhealthy and high-risk behaviors. Dropping out, truancy, and delinquency are related to such behaviors. Lower academic

achievement, as measured by grade point average, test scores, and education level, as well as memory, attention, and motivation have been linked to unhealthy behaviors.

### ***Alcohol, tobacco, and other drugs***

There are many physical changes that take place in the brain and body as a result of drug, alcohol, and tobacco abuse (e.g., Jaffe, 1980). These often have negative consequences in terms of school performance. These changes in the body can make learning and concentration more difficult. Weakened immune systems as well as dependency and withdrawal symptoms can lead to time out of school. Substance abuse can have a negative effect on many aspects of school performance. This section reviews several studies that show a correlation between substance abuse and decreased school performance.

Tobacco use is often seen as a behavior that has only long-term health consequences such as lung cancer, heart disease, and emphysema. According to the U.S. Department of Health and Human Services (1988), students struggle with the short-term effects, which impede their ability to perform on a day-to-day basis. Limited access to tobacco during school hours is related to withdrawal, which increases distraction by external stimuli and decreases activity level. Students who smoke are at higher risk for contracting colds, bronchitis, and triggering asthmatic symptoms, and therefore have increased absenteeism due to illness. Tobacco use as with other drug addiction, is a biological-based disease that alters the way the brain functions. Drugs interfere with the brain's ability to receive and process information needed for daily living. Tobacco may lead to other substance use, which has also been shown to increase absenteeism and decrease students' creativity, ambition, and grades.

Marijuana is one mind-altering drug that is used by high school students. Experts have suggested that regular marijuana use can lead to amotivational syndrome, in which people lack concern and become more passive and less oriented toward achievement (e.g., U.S. Department of Health and Human Services, 1982). Marijuana use has been associated with impaired school performance, both for students who excelled at school and those who had prior behavioral problems before they began to use the drug. Marijuana use is also correlated with serious academically related behavior problems. In a large scale, nationwide survey of approximately 61,000 high school seniors between 1976 and 1996, "those seniors who were frequently truant, who spent many evenings away from home for fun and recreation, who got relatively poor grades...were also more likely than the average senior to be users of marijuana" (Bachman, Johnston, & O'Malley, 1998).

Many times students engage in multiple substance abuse. Alcohol, tobacco, and other drug use patterns of two randomly selected groups of fourteen through nineteen year-old adolescents were compared; those at high-risk for dropping out of high school and those not at-risk for dropping out (Eggert & Herting, 1993). High-risk students were identified as having a below average number of class credits, a high percent of days absent, low or declining grade point average, previous dropping out, or identification by the school as being in danger of dropping out. This study found that high-risk students had more frequent and more serious substance abuse, greater access to substances, less control of use, and more negative consequences due to substance abuse. It is not clear whether the low academic

performance led to drug abuse or vice versa. It does seem clear, however, that there is a link between the two factors.

Another study showed the relationship between drug and alcohol use and failure to graduate from high school (Friedman, Glickman, & Utada, 1985). A significantly higher percent of high school students who had previous reported drug use dropped out than non-drug users.

The link between alcohol, tobacco, and drug use and decreased school performance is not a direct causal relationship because there are many other factors involved as well. However, it is clear from the research that there is a connection, and that substance abuse has a negative impact on many different aspects of school performance.

### ***Teen pregnancy***

Teen pregnancy has a profound effect on school performance, in addition to many other aspects of life that are changed for young persons. A higher percent of teen mothers fail to complete school than teenagers who do not have children (Kirby, 1997). For example, "Less than one-third of teens who begin families before age 18 ever complete high school" (The National Campaign to Prevent Teen Pregnancy, 1997). One study found that fifty percent of teen mothers that had dropped out did so before they were pregnant, the other half dropped out after becoming pregnant (Manlove, 1998). Parenthood is a leading cause of high school dropout among teen girls (National Association of State Boards of Education, 1998). Symons, Cinelli, James, and Groff (1997) did an extensive literature review and found that "Studies also confirm that childbirth during the high school years is associated with significantly reduced academic achievement (Nord et al, 1992). Young women who bear children are less likely to complete high school than their counterparts (Upchurch & McCarthy, 1990). Adolescents who become pregnant also tend to have lower grades (Scott-Jones, 1993)".

Many teen parents must leave school to financially support their children. Teen parents are likely to do more poorly in school and to repeat grades more often than teens that are not parents. High-risk sexual behavior among teenagers, such as multiple partners and not using protection, can also lead to HIV/AIDS and other sexually transmitted diseases. These can have serious health consequences that can lead to impaired school performance.

### ***Violence***

Exposure to violence has negative psychological and physiological consequences that can have detrimental effects on school performance (e.g., Prothrow-Stith & Quaday, 1995). Studies show that children who have been exposed to violence can have increased anxiety, which may make it more difficult to attend to what is going on in school. They may also have trouble controlling both fear and anger and may have difficulty forming trust and building social relationships. Psychological problems associated with trauma and violence may interfere with the learning process. Trauma can have an effect on memory and the ability to incorporate and transfer skills. Children may become more apathetic about the future, and may have behavioral problems.

School performance problems that have been linked to violent behavior also include poor verbal skills, difficulty with attention, and antisocial behavior and problems (Prothrow-Stith & Quaday, 1995).

Exposure to violence and violent behavior can have a profound negative effect on students and many aspects of their ability to learn.

### ***Nutrition and physical activity***

Good eating habits can help students learn better. Experts suggest that healthy eating is necessary for optimal brain development and functioning (Given, 1998). Food intake can effect energy levels, concentration, and learning. Studies in this area are described below.

In one study, inner-city children and parents were surveyed about eating habits and the children's academic performance was evaluated (Murphy, Wehler, Pagano, Little, Kleinman, & Jellinek, 1998). The findings of this study showed that children who were considered hungry or at-risk for hunger had more tardiness, absenteeism, and hyperactivity. They were twice as likely to be classified as having impaired functioning. Breakfast seems particularly important to school performance. In one study, students who ate school-supplied breakfasts had higher math scores and were less often absent or tardy to school than those who rarely or never ate school-supplied breakfasts (Murphy, Pagano, Nachmani, Sperling, Kane, & Kleinman, 1998).

Physical activity has also been linked to better school performance. In one study, subjects were tested before and after physical activity and a control group that participated in a hobby class was also tested. In general, the group that engaged in the physical activity improved more on a simple cognitive task and had a more positive mood in the post-test than the control group (Lichtman & Poser, 1982). This suggests that concentration and learning might be positively affected by physical activity.

According to research (e.g., Shephard, 1983), level of arousal is strongly and immediately effected by physical activity and arousal is related to wakefulness or attentiveness. A recent Surgeon General's report (1996) stated that one result of regular physical activity is an enhanced immune system. Lack of regular exercise has been linked to disease, mental health problems such as mood disorders, and lower energy levels. Physical activity is important for maximal performance at school.

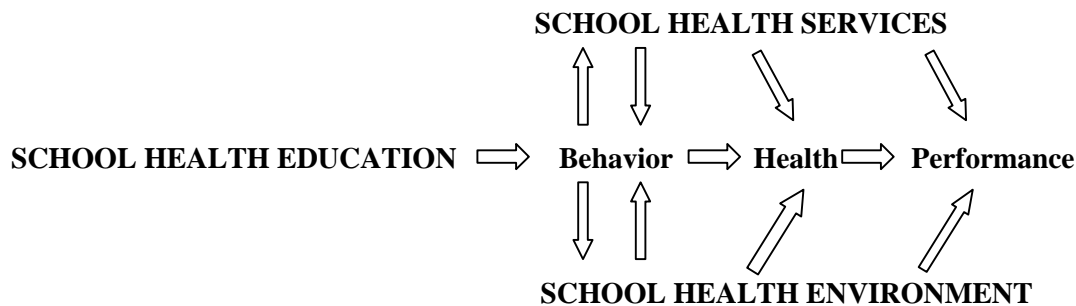
### ***Summary***

The research presented in this section suggests that healthy behavior and school performance are connected. Alcohol use, tobacco use, and other drug use, teen pregnancy, exposure to violence, and poor nutrition and physical inactivity all impact the ability of students to have good attendance, to learn, and to perform well academically in school. Optimal learning requires healthy behavior by students.

## **COMPREHENSIVE SCHOOL HEALTH EDUCATION PROGRAMS CAN HELP IMPROVE SCHOOL PERFORMANCE**

The research reviewed above shows a clear link between health and school performance. Evidence indicates that comprehensive school health education programs can have a positive impact on health behaviors in students, which can lead to better school performance. A comprehensive school health education program combines school health classes with school and community health services as well as a pro-health school environment to enhance knowledge, skills, and a positive attitude about health by students. The aspects of such a program should combine to change the student's lifestyles and behavior,

which will improve student health, and therefore contribute to improved academic performance (Kolbe, Green, Foreyt, et al., 1986). The model below illustrates these connections.



(Kolbe et al., 1986)

While further research will continue to be important, findings currently available suggest that school health education programs are an effective and important part of improving school and academic achievement. Several of the studies that support this conclusion are reviewed below.

An illustration of how health education can improve health behaviors and thereby improve school performance can be found in one longitudinal study of inner-city children who participated in a program in elementary school and were followed up at eighteen (Hawkins, et al., 1999). One group received full intervention from first through sixth grade, another group received the intervention in fifth and sixth grades only, and a control group had no intervention. The intervention included classroom management skills training for teachers, cognitive and social skills training for the children, and voluntary parent training classes about helping children in school and reducing drug risk.

The findings fell into two major areas; behavior and school performance. The full-intervention group had fewer school behavior problems. The students reported fewer violent delinquent acts, less heavy drinking, less frequent sexual intercourse, fewer sexual partners, and less pregnancy at age eighteen. They also had better academic achievement. The students had higher school-reported grade point averages. A smaller proportion of them had repeated a grade. The participants had higher self-reported achievement. The students who only had late intervention were not significantly different from the control group. Randomized, long-term studies of prevention programs such as this suggest that early prevention programs, particularly when they include parents, teachers, and students, can improve health behaviors and academic achievement on a long-term basis. Additional studies categorized by behavior follow.

### ***Alcohol, tobacco, and other drugs***

The findings from numerous studies have demonstrated the effectiveness of health education programs in preventing alcohol, tobacco, and drug abuse. These prevention programs can improve student choices and positive lifestyle changes, which can in turn facilitate improved academic performance. For many of the programs, when substance abuse rates decrease, academic performance will also improve. In the research by Hawkins et al. (1999) discussed above, decreased substance abuse behaviors were linked to academic performance improvements. Many different alcohol, tobacco and drug abuse prevention programs have been implemented and researched. Large-scale, controlled studies

have been conducted that effectively demonstrate the positive effects of such programs on the prevention of substance abuse behavior. Several of these are discussed in this section.

Research conducted by Gilbert Botvin and colleagues on an effective prevention program known as Life Skills Training involves teachers and peers helping students to learn better social and decision-making skills, as well as resistance to peer pressure to reduce substance use (e.g., Botvin, Baker, Renick, Filazzola, & Botvin, 1984; Botvin, Epstein, Baker, Diaz, & Ifill-Williams, 1997; Botvin, Schinke, Epstein, & Diaz, 1994). Botvin's line of research is a series of longitudinal, controlled studies that tests different forms and implementations of the program. Overall, this research has effectively demonstrated that the program that is delivered through the health curriculum correlates with lower alcohol, tobacco, and drug use rates.

The effectiveness of another social-influences-based prevention program has also been evaluated with positive results (MacKinnon, et al., 1991). Middle school students who attended schools that participated in the Midwestern Prevention Project were compared to students who attended control schools. Forty-two schools participated in the study, of which twenty-four had the prevention program, for a total of over five thousand students. This program consisted of teaching about youth drug use statistics, peer training, problem solving, and assertiveness training, all taught with social-learning techniques. Students were tested before and one year after program implementation. Students at schools that participated in the program reported that they were less likely to believe that there were positive consequences of drug use. They were also less likely to think they would use drugs in the future, more likely to admit that their friends are not tolerant of drug use, and more likely to be able to communicate with friends about drugs in comparison to students at schools that did not participate. Studies such as this one with a large number of students and a control group that did not receive treatment show with more certainty that there are long-term attitude changes and that they are linked to health education program participation.

Project ALERT, a program to help students learn reasons not to use drugs and to develop social skills needed to avoid peer pressure, was found to be successful overall in lowering use of cigarettes and marijuana (Ellickson & Bell, 1990). It also lowered alcohol use to a smaller and less consistent degree. This was found in a random assignment, multi-site, longitudinal study.

A study that examined the effectiveness of common school-based drug prevention programs found that when students were in high school, those who had previously participated in such activities had lower rates of drug involvement than those who did not (Donnermeyer & Davis, 1998). Students who had participated in multiple activities had the lowest levels of drug involvement. This study relied on students' reports of which activities they had participated in many years before, rather than on random assignment to a prevention program or a control group. It does suggest, however, that early participation in drug prevention programs can have a lasting effect on behavior.

One well-designed study with a program and control group for high-risk youth in danger of school failure has demonstrated positive outcomes in the area of drug use and academic performance (United States Department of Health and Human Services, 1998). Reconnecting Youth uses an approach of building life skills through bonding within the youth's personal and social network (peers, family, and

school). The main goal is to target students who skip school to use drugs and teach them to recognize the link between their emotions and behavior. With this program, students showed significant improvements in school-reported grade point average, drug control, and a trend toward less progression of drug use. One interesting point is that the instructors were teachers (who had training in the program) from various subjects, such as health, math, social studies, English as a second language, and photography.

These and other studies that have been conducted to test the effects of drug abuse prevention programs in schools demonstrate the importance of school-based prevention programs. These results suggest that such programs can lower drug, alcohol, and tobacco abuse rates and can therefore have a positive impact on school performance. Other studies, however, have found certain programs to be less effective than others in the prevention of drug use. One review of evaluations of prevention programs, for example, found that not all programs seem to be effective in long-term prevention of substance abuse (Dusenbury, Falco, & Lake, 1997). Results about some common programs, such as D.A.R.E. have been inconsistent. Some studies have shown little improvement, while others have shown more favorable results. Research has shown certain prevention programs to be better than others and it is important to determine which work the best and will increase student health the most. Keeping this in mind, a common theme is beginning to emerge in the literature that effective programs are available and many share as their foundation or approach a social influences/social skills model.

### ***Teen Pregnancy***

The effects of pregnancy can be devastating to the academic success of teenagers. Experts have suggested that prevention of pregnancy requires teens to have life options that will motivate them to prevent pregnancy, and also to be educated about sexuality and birth control (e.g., Children's Defense Fund, 1986). Sexuality education classes in schools are crucial for the prevention of teen pregnancy as previous research has demonstrated that certain programs increase abstinence and birth control use (e.g., Ounce of Prevention Fund, 1992). Family planning and counseling services are also important for students who are at-risk for pregnancy. The teen birth rate has fallen in the past few years, and some researchers believe that sexuality education programs are partly responsible for this improvement (e.g., Portner, 1998).

An evaluation of a teen pregnancy prevention program, Teen Outreach Program, followed an experimental design (Allen, Philliber, Herrling, and Kupermine, 1997). The programs' approach is to prevent problem behaviors by enhancing normal social development. Twenty-five sites nationally were randomly assigned to the program or control group. At post-test nine months later, the program students had substantially lower rates of teen pregnancy, school failure, and academic suspension.

In a very recent study, middle school students participated in either a community youth service program and a classroom sexuality education program or a classroom sexuality education program only (O'Donnel, Stueve, San Doval, et al., 1999). Students who were in the community program reported less sexual activity compared to the curriculum-only students. This study also suggests that comprehensive school health education programs that involve the community as well as the classroom are important in order help to lower teen birth rates.

A study of a pregnancy prevention curriculum for multi-racial adolescents included over 1400 youth with one group receiving the treatment curriculum and another group a comparison curriculum (United States Department of Health and Human Services, 1998). The treatment curriculum, called Teen Talk, is based on knowledge and on social learning theory. At post-test, the program participants showed significantly greater knowledge of reproduction than the comparison group. Of particular interest is that male adolescents who participated in the program improved their contraceptive practices more than young men in the comparison group. This is a promising outcome as sexually active males are a hard to reach group and often resistant to changing their sexuality-related behaviors.

Research by Hawkins et al. (1999) discussed above found that students who had participated in a comprehensive school health education program had fewer sex partners and lower pregnancy rates than students who did not participate. They also had academic improvement in the form of higher reported grade point average, and they were less likely to have repeated a grade.

Further research is necessary to determine the most effective methods of pregnancy prevention education. Studies with students randomly assigned to pregnancy prevention and birth control programs and with control groups that longitudinally examine teen pregnancy rates would be extremely useful. The available evidence does suggest that school health education programs can play a part in efforts to lower teen birth rates, which can facilitate the academic success of potential teen parents.

### ***Violence***

Patterns of violence often begin early in life, but school programs can still help ameliorate some of the effects. Experts on resilience suggest that access to a positive educational environment that promotes coping skills and that helps children understand how they can achieve and participate can contribute to a child's ability to recover from a stressful environment (e.g., Prothrow-Stith & Quaday, 1995). It can also help children to learn active coping skills. School and community-based violence prevention programs have been implemented to reduce violence. Experts believe that learning and cognitive skills help to prevent violence as they contribute to better decision making as well as personal feelings of success. Through education and training, students can learn to reason through and defuse violent situations and to help their peers do the same. Schools can provide students with safe learning environments and violence prevention programs and can offer help to those who have already been exposed to violence. Successful school-based violence prevention programs are reviewed below.

Studies have shown the positive effect that school health education programs can have on violence. For example, high school student records were examined from three different groups: students who participated in a class-specific comprehensive educational intervention, a school-wide violence prevention initiative, and a group that did not participate in either program (Hausman, Pierce, & Briggs, 1996). Suspension rates were lower for the program students, especially so for the group that had the class specific intervention.

Project Support, a three year drug and gang prevention program for elementary school students in Los Angeles, resulted in positive outcomes in both behavior and school performance. There were lower crime rates against people and property at school, as well as increased attendance, decreased tardiness, higher academic achievement scores in reading, math, and language, and increased pro-school attitudes

(Simun, Slovacek, Batie, & Simun, 1996). This study did not have a control group, but the difference in behavior before and after the program suggests that the program was effective.

Another study examined a program developed for elementary school children with disruptive behavior (Lindmark, Marshall, Riley, & Strey, 1996). These children had many different types of behaviors that prevented academic achievement and learning, including physical aggression. A “caring classroom” program was implemented, which involved conflict resolution and social skills training, reading and writing programs to improve thinking skills, and an enhancement of caring and safety in the classroom. Results of the program were assessed by student attitude surveys, behavior observation, and teacher report. After the program, there was an overall decrease in disruptive behavior and an increase in academic achievement. Most students had improved report card grades, and assignment completion improved for some of the students. This study also did not have a comparative control group, but does suggest that the prevention program was helpful in improving learning and school performance.

Experts on violence prevention have expressed certain “critical elements” of effective violence prevention programs (Dusenbury et al., 1997). Some of these elements are that programs should be comprehensive and multifaceted and include family, community, peer, and media components, should begin early, and should be reinforced across grade levels.

More controlled research is necessary to determine the most effective methods of violence prevention and recovery programs, but these studies provide a solid start. Violence prevention programs can help to improve student behavior. Such violence prevention programs are important due to the serious consequences of violent behavior on school performance. These results suggest that violence prevention programs can contribute to the reduction of negative behaviors that may interfere with school performance.

### ***Nutrition and physical activity***

School health programs can help to encourage good nutrition and physical activity habits. Not only will such programs increase life-long health, they will also increase school performance levels and help students to achieve to their highest potential. For example, students who increased participation in a school-supplied breakfast program in inner city schools had greater increases in math grades and decreases in absence and tardiness rates compared to children whose breakfast participation decreased or remained the same (Murphy, Pagano, Nachmani, Sperling, Kane, & Kleinman, 1998). This study did not have random assignment, but it does indicate that something as simple as encouraging children to eat school breakfasts can help to increase their levels of school performance.

Physical activity programs in schools can also improve student performance. One longitudinal study, known as the Trois Rivieres regional experiment, showed the impact of physical activity on academic performance. Students who received an additional five hours of physical activity per week had statistically significant school performance gains over control students who did not. They had higher grades than control students, and math, reading, and writing were enhanced (Shephard, 1982, 1883; Volle, Shephard, Lavelle, et al., 1982).

**Summary**

The literature in this section suggests that health education programs can be an effective way of improving student health-related behaviors, which can in turn improve academic achievement. Research that shows the most effective programs will be valuable to determining the best programs to use in schools.

**CONCLUSIONS**

Overall, the research that has been conducted has suggested a strong link between healthy behaviors and school performance. Students who are distracted from school or cognitively impaired due to drug use, pregnancy, violence, poor nutrition, or lack of physical activity will not perform as well in school.

Can comprehensive school health education programs contribute to lowering risky behavior, promoting health, and thereby enhancing school performance? Overall, the evidence suggests that they can. Prevention programs and health education can encourage healthy behavior and promote knowledge that will lead to good decision making by students. The research reviewed here strongly suggests that attention to and enhancement of protective factors in the lives of youth, particularly opportunities for bonding and close relationships with important others, can give students the self-control to avoid risk behaviors and the self-confidence to choose healthy behaviors. Not only can this have long-term benefits in the lives of the students, but it may also improve school performance.

Further research that examines the link between school performance and comprehensive health education programs is necessary. While much research has been done, more controlled studies that compare the behavior and school performance of students who participate in such programs to those that don't participate need to be conducted. Thorough, well-planned studies will help increase understanding of the mechanisms of this link, and will be valuable in determining which types of school health programs work the best to improve or maintain good health and promote good school and academic performance.

Conclusions from the studies reviewed here are:

- Health is important for optimal learning by youth.
- Substance abuse, teen pregnancy, and exposure to violence can be detrimental to a student's school and academic performance.
- Good nutrition and physical activity help students learn and perform at their best.
- Comprehensive school health education programs can facilitate healthy behaviors by students through positively changing health-related knowledge, skills, attitudes, and behaviors, which in turn can play a vital part in improving school and academic performance.
- Comprehensive school health education programs are an important part of the school curriculum.
- While further research is needed to determine the effectiveness of particular health programs and to improve understanding of how health impacts academic achievement, there is a growing body of knowledge in this area to support this link.
- The research that is currently available can be used to inform the planning of comprehensive school health programs.

## REFERENCES

- Allen, J.P., Philliber, S., Herrling, S., & Kupermine, G.P. (1997). Preventing teen pregnancy and academic failure: Experimental evaluation of a developmentally-based approach. *Child Development, 64*, 729-742.
- Bachman, J.G., Johnston, L.D., & O'Malley, P.M. (1998). Explaining recent increases in students' marijuana use: Impacts of perceived risks and disapproval, 1976 through 1996. *American Journal of Public Health, 88*, 887-892.
- Botvin, G.J., Schinke, S.P., Epstein, J.A., & Diaz, T. (1994). Effectiveness of culturally focused and generic skills training approaches to alcohol and drug abuse prevention among minority youths. *Psychology of Addictive Behaviors, 8*, 116-127.
- Botvin, G.J., Baker, E., Renick, N.L., Filazzola, A.D., & Botvin, E.M. (1984). A cognitive-behavioral approach to substance abuse prevention. *Addictive Behaviors, 9*, 137-147.
- Botvin, G.J., Epstein, J.A., Baker, E., Diaz, T., & Ifill-Williams, M. (1997). School-based drug abuse prevention with inner-city minority youth. *Journal of Child and Adolescent Substance Abuse, 6*, 5-19.
- Children's Defense Fund (1986). *Preventing Adolescent Pregnancy: What Schools Can Do*. Washington, DC: The Adolescent Pregnancy Prevention Clearinghouse.
- Donnermeyer, J.F., & Davis, R.R. (1998). Cumulative effects of prevention education on substance use among 11<sup>th</sup> grade students in Ohio. *Journal of School Health, 68*, 151-158.
- Dusenbury, L., Falco, M., & Lake, A. (1997). A review of the evaluation of 47 drug abuse prevention curricula available nationally. *Journal of School Health, 67*, 127-132.
- Dusenbury, L., Falco, M., Lake, A., Brannigan, R., Bosworth, K. (1997). Nine critical elements of promising violence prevention programs. *Journal of School Health, 67*, 409-414.
- Eggert, L.L. & Hertin, J.R. (1993). Drug involvement among potential dropouts and "typical" youth. *Journal of Drug Education, 23*, 31-55.
- Ellickson, P.L., & Bell, R.M. (1990). Drug prevention in junior high: A multi-site longitudinal test. *Science, 247*, 1299.
- Friedman, A.S., Glickman, N., Utada, A. (1985). Does drug and alcohol use lead to failure to graduate from high school? *Journal of Drug Education, 15*, 353-364.
- Given, B.K. (1998). Food for thought. *Educational Leadership, 68*-71.
- Hausman, A., Pierce, G., Briggs, L. (1996). Evaluation of comprehensive violence prevention education: Effects on student behavior. *Society for Adolescent Medicine, 19*, 104-110.
- Hawkins, J.D., Vatalano, R.F., Kosterman, R., Abbott, R., & Hill, K.G. (1999). Preventing adolescent health-risk behaviors by strengthening protection during childhood. *Archives of Pediatric Adolescent Medicine, 153*, 226-234.
- Jaffe, J.H. (1980). Drug addiction and drug abuse. In A. G. Goodman, L.S. Gilman, & A. Gilman (Eds.), *The Pharmacological Basis of Therapeutics*. New York, NY: Macmillan Publishing Co.
- Kirby, D. (1997). *No Easy Answers: Research Findings on Programs to Reduce Teen Pregnancy*. Washington, DC: National Campaign to Prevent Teen Pregnancy.
- Kolbe, L.J., Green, L., Foreyt, J., Darnell, L., Goodrick, K., Williams, H., Ward, D., Korton, A.S., Karacan, I., Widmeyer, R., & Stainbrook, G. (1986). Appropriate functions of health education in schools: Improving health and cognitive performance. In N.A. Krasnegor, J.D. Arasteh, & M.F. Cataldo, (Eds.), *Child Health Behavior: A Behavioral Pediatrics Perspective*. New York: John Wiley & Sons.
- Lichtman, S., & Poser, E.G. (1983). The effects of exercise on mood and cognitive functioning. *Journal of Psychosomatic Research, 27*, 43-52.
- Lindmark, T., Marshall, J., Riley, S., & Strey, E. (1996). Improving Behavior and Academic Success Through A Caring Classroom. *Master's Thesis, Saint Xavier University*. ED 399 493
- MacKinnon, D.P., Johnson, C.A., Pentz, M.A., Dwyer, J.H., Hansen, W.B., Flay, B.R., & Wang, E.Y. (1991). Mediating mechanisms in a school-based drug prevention program: First-year effects of the Midwestern Prevention Project. *Health Psychology, 10*(3), 164-172.
- Manlove, J. (1998). The influence of high school dropout and school disengagement on the risk of school-age pregnancy. *Journal of Research on Adolescence, 8*, 187-220.
- Murphy, J.M., Pagano, M.E., Nachmani, J., Sperling, P., Kane, S., & Kleinman, R.E. (1998). The relationship of school breakfast to psychosocial and academic functioning. *Archives of Pediatric Adolescent Medicine, 152*, 899-907.
- Murphy, J.M., Wehler, C.A., Pagano, M.E., Little, M., Kleinman, R.E., & Jellinek, M.S. (1998). Relationship between hunger and psychosocial functioning in low-income American children. *Journal of American Academy of Child and Adolescent Psychiatry, 37*, 163-170.
- O'Donnell, L., Stueve, A., San Doval, A., Duran, R., Haber, D., Atanafou, R., Johnson, N., Grant, U., Murray, H., Juhn, G., Tang, J., & Piessens, P. (1999). The effectiveness of the reach of health community youth service learning program in reducing early and unprotected sex among urban middle school students. *American Journal of Public Health, 89*, 176-181.
- Ounce of Prevention Fund (1992). *Success for Every Teen: Programs that Help Adolescents Avoid Pregnancy, Gangs, Drug Abuse, and School Drop-Out*. Springfield, IL: Illinois State Department of Children and Family Services. ED 352 596
- Portner, J. (1998). Educators call birthrate drop payoff for sex ed. programs. *Education Week*, May 13, 1998.
- Prothrow-Stith, D., & Quaday, S. (1995). *Hidden Casualties: The Relationship between Violence and Learning*. Washington, DC: National Health and Education Consortium.
- Shephard, R.J. (1982). *Physical Activity and Growth*. Chicago, IL: Year Book Medical Publishers.

- Shephard, R.J. (1983). Physical activity and the healthy mind. *Canadian Medical Association/Journal*, 128, 525-530.
- Simun, P.B., Slovacek, S.P., Batie, M., Simun, M. (1996). *Project Support Evaluation*. Los Angeles Unified School District, report #3- Final Evaluation. ED 398 291
- Symons, C., Cinelli, B., James, T., & Groff, P. (1997). Bridging student health risks and academic achievement through comprehensive school health programs. *Journal of School Health*, 67, 220-227.
- The National Campaign to Prevent Teen Pregnancy. (1997). *Whatever Happened to Childhood? The Problem of Teen Pregnancy in the United States*. Washington, DC: Author.
- United States Department of Health and Human Services. (1982). *Marijuana and Youth, Clinical Observations on Motivation and Learning*. Washington, DC: Author.
- United States Department of Health and Human Services. (1988). *The Health Consequences of Smoking: Addiction. A Report to the Surgeon General*. Washington, DC: Author.
- United States Department of Health and Human Services. (1996). *Physical Activity and Health: A Report to the Surgeon General*. Washington, DC: Author. DHHS Publication No. S/N 017-023-00196-5.
- United States Department of Health and Human Services. (1998). *School Health: Evaluated Programs, Second Edition*. Washington, DC: Author.