
Comprehensive School Health Model: An Integrated School Health Education and Physical Education Program

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Abstract

The importance of school health education in promoting the health of young people and contributing to the overall public health has been recognized worldwide. With the development of China's public and school health education, the demand for professionals involved in the design, implementation, and evaluation of effective school health programs is inevitably increasing.

This presentation intends to introduce contemporary school health programs in the United States, in general, and discuss a conceptual framework developed for China's school health program, in particular. Currently, two models are widely adopted in the United States in guiding its school health programs -- the Comprehensive School Health Program (CSHP) and the School Health Coordinator (SHC). Special attention will be directed for delivering these program elements in a coordinated and interactive manner and how to integrate physical education and health education in a comprehensive health program for schools. The constructs in current China's school health programs will be identified. A conceptual framework that may be of assistance in China will be defined by combining the theories of behavioral science and the practices of China's education system and school health programs. Health education and physical education, as well as how these two elements could be best integrated to motivate the efforts of schools, families, and communities in health promotion, will be emphasized in the conceptual framework. Further study is needed to provide empirical evidence for effectiveness and acceptability of our proposed model for the Chinese culture. The information provided might be helpful in the current development of physical education embedded in public health, in general, and school health in specific.

INTRODUCTION

Ever since human beings have lived, health has been a great concern of nearly every individual, community, society, and country. The battle to achieve optimal health for everyone has never ceased. During the last century, dramatic strides have been made in the health field. In the United States alone, health status has been greatly improved in the following aspects: prolonged life expectancy, declining mortality rate, declining infant mortality, and advanced modern biomedicine (Barsky, 1988). Nevertheless, the United

States is still facing great challenges in the battle of health for everyone. On one side, the overall health status of the population is improving, while on the other, the nation each year is spending more money than ever on its health care. Medical care is playing an increasing role in daily lives, and yet certain diseases still find ways to spread.

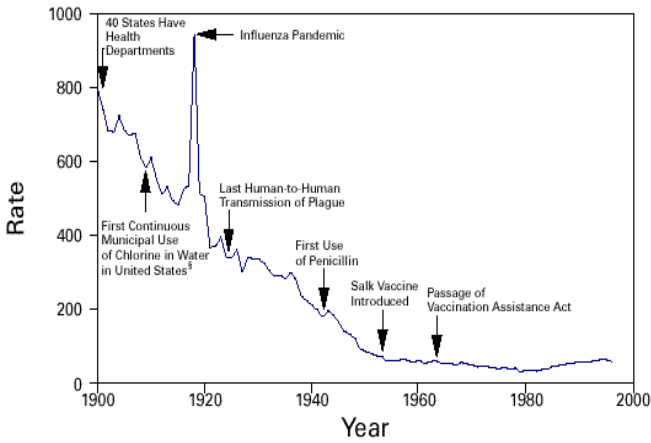
Health education is a profession that stands in the forefront of this centuries old battlefield. Its role has never been so heightened as today. The goal of health education is to provide the individual with the information, skill, and motivation necessary to make intelligent decisions concerning lifestyle and personal health behavior. In any case, health education is working to promote health, prevent disease, disability, and premature death. Within its limited space, this paper intends to analyze the trends, challenges, and opportunities health education faces, to discuss behavioral factors that influence one's health, to introduce the concept of school health education programs, and to suggest a comprehensive school health model that might work in China.

Trends, Challenges and Opportunities

Many of the health challenges facing young people today are different from those plaguing the public's health a century ago. In the early 1900s, the major causes of morbidity and mortality were infectious diseases. Many major health threats were diseases associated with poor hygiene, poor sanitation, poor nutrition, or poor maternal and infant health (Centers for Disease Control [CDC], 1999a; CDC, 1999b; CDC, 1999c). However, advances in medications and vaccines have largely addressed the ravages once wrought on children by infectious diseases. Modern biomedicine has enhanced our ability to predict, detect, diagnose, and treat the array of diseases to which human beings are heir (Barsky, 1988). During the 20th century, the health and life expectancy of persons residing in the United States improved dramatically. Deaths from infectious diseases have declined markedly in the United States (Figure 1). This decline contributed to a sharp drop in infant and child mortality. In 1990, 30.4% of all deaths occurred among children aged less than 5 years, while in 1997, this percentage was only 1.4%. The decline was also due to more than 30 years increase in average lifespan of persons in the United States, of which 25 years of this gain are attributable to advances in public health (Bunker, Frazier, & Mosteller, 1994). Today, the major health problems are caused, in large part, by behaviors established during youth (Kolbe, 1993). The 10 leading causes of death in 1900 and 1997 (Figure 2) revealed that in 1900, the three leading causes of death were pneumonia, tuberculosis (TB), and diarrhea and enteritis. In 1997, heart disease and cancer accounted for 54.7% of all deaths and most of the leading causes of death are health-compromising behaviors (CDC, 1999a).

Figure 1:

Crude death rate* for infectious diseases — United States, 1900 –1996[†]



*Per 100,000 population per year.

[†]Adapted from Armstrong GL, Conn LA, Pinner RW. Trends in infectious disease mortality in the United States during the 20th century. *JAMA* 1999;281:61-6.

[‡]American Water Works Association. Water chlorination principles and practices: AWWA manual M20. Denver, Colorado: American Water Works Association, 1973.

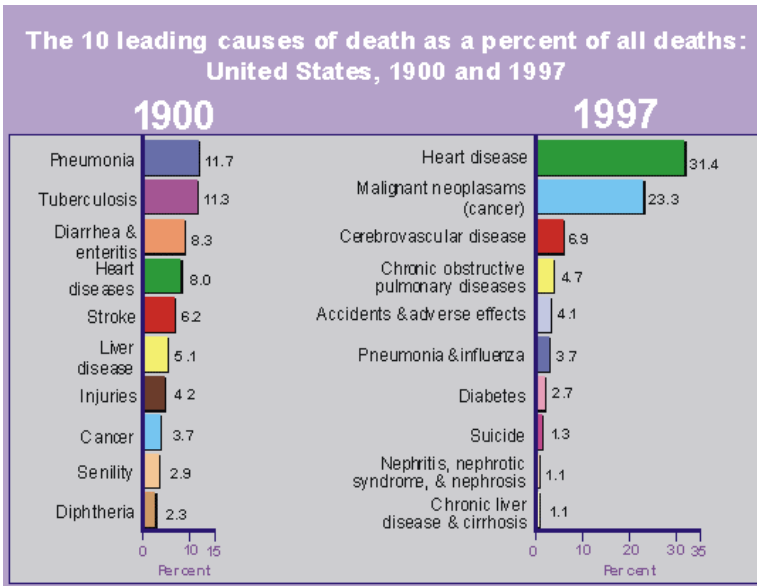
In comparing Table 1 and Figure 2, the two most rapid growth behavioral causes of death are sexual behavior and drug use (Table 1) (McGinnis & Foege, 1993). Transmission of AIDS, which joined the list of top ten causes of death, is attributed mostly to sexual behavior and drug use. Given that behaviors are often the actual causes of death, a reduction in the number of deaths caused by many diseases lies not in finding cures for them but in changing the behaviors that lead to them in the first place. The truth is that the health of young people, and the adults they will become, is critically linked to the health-related behaviors they choose to adopt.

Table 1: Nine Leading Behavioral Causes of Death

1	Tobacco
2	Diet and activity patterns
3	Alcohol
4	Microbial agents
5	Toxic agents
6	Sexual behavior
7	Firearms
8	Motor vehicles
9	Drug use

Source: Adapted from McGinnis, J. M., & Foege, W. H. (1993). Actual Cause of Death in the United States. *Journal of the American Medical Association*, 270(18), 2207-2212.

Figure 2:



In the United States, a saying states, “An ounce of prevention is worth a pound of cure,” which indicates prevention is more important than treatment in general. In many countries and cultures it is common sense to believe that taking measures to prevent illness can help more people than the treatment of preventable illness. A lot of people often neglect to maintain their health when they are young. Consequently, many preventable health problems are not prevented. This is especially true with most chronic diseases that have been traced as a result of various unhealthy behaviors. One example of this is the relationship between smoking and lung cancer.

Prevention is also a cost effective strategy in health promotion and disease prevention. Researchers in the field have provided sufficient evidence to prove that prevention is most cost effective in maintaining people's health, reducing morbidity and mortality rates, saving medical cost, yielding a higher level of productivity, and securing a happier life for the people in a community or society. Existing data have shown that as many as 50% to 80% of deaths caused by cardiovascular disease, strokes, and cancer could be avoided or delayed by preventive measures. Eliminating smoking could prevent more than 300,000 deaths each year while changes in diet could prevent 35% of unnecessary deaths from heart disease (Hales, 1999). No amount of money could possibly compensate for those lives, nor buy people's health.

Health knowledge is the accumulation of factual information that influences decision making regarding one's health. High-quality health knowledge could lead to high-quality health decision-making. Low-quality health knowledge, alternatively, may create the potential for health-compromising decisions. When a person becomes more knowledgeable about his/her own health and about the health of others, and more competent in the application of that health knowledge, he/she will realize that a positive healthy life style offers the best prospect for a healthy, long, happy, and productive life.

However, having knowledge about prevention does not guarantee that a person will establish a positive attitude toward disease prevention, or practice a healthy behavior as most positive health behaviors are a matter of voluntary action. People choose them, and they cannot be forced to accept. Altering one's attitude and behavior often requires special efforts involving education, manpower, sound strategies, and ultimately, time. Education that aims at one's behavior change cannot be a onetime snapshot. One school class session, one community health education program, or once a year mass activity may only yield a brief, or limited effect.

Schools have the potential to improve the health of young people by providing instruction, programs, and services that promote a healthy lifestyle for students. Schools are an efficient vehicle for providing health instruction and programs because they reach most children and adolescents. In the United States, every single school day, about 52 million students attend more than 100,000 schools, and roughly 14 million attend colleges and/or universities (Hales, 1999). In the lexicon of public health and medicine, this means that schools could prevent many health problems from occurring; detect health problems that do occur during the early stages when they are most treatable; and treat those problems that have not been or cannot be prevented, to preclude adverse effects on health and education (Kolbe, 1993). In short, schools can make an enormous, positive impact on the health of young people.

The good news for school health education is that health education is now recognized as being important because it is one of few curriculum areas that emphasize the individual instead of the subject matter or academic skills. The health information and skills students learn are not prerequisites for another course, but are immediately applicable to life (Lohrmann, Gold, & Jubb, 1987). Armed with advanced technology, information super-highway, health education in today's schools has many advantages it never had before. Distance learning, internet courses, interactive educational web pages, and the dramatic increase of computer availability and on-line time add fresh life to school education, which makes schooling more attractive and effective, learning more delightful and efficient, and information more broad and accessible. The technology also enables health education to reach a wider population. School health education is no longer just a classroom lecture or physical education. Comprehensive school health education programs have been well recognized and delivered to a majority of campuses nationwide. These programs tend to be more informative, student centered, demonstrative in scope, sequence, progression and continuity. Many are designed to develop students' critical thinking and individual responsibility for one's health, structured to incorporate current and emerging health problems, focused on the dynamic relationship among physical, mental, emotional, social, spiritual, and environmental well-being, and strengthened by integrating available community resources into classroom teaching (Collins et al., 1995). Although school health education curriculums vary from school to school, more community and family involvement has been included and supported. Cooperation and collaboration among health educators at local, state, national, and international levels have also fostered the effectiveness of current school health programs.

Behavior Factors and Behavior Relations

Many external factors can and often affect people's lives --- from the weather, which can temporarily dampen or brighten people's mood, to genetic predispositions that can result in certain health conditions. Behaviors that affect people's health include exercising regularly,

eating a balanced, nutritious diet, seeking care for symptoms, and taking necessary steps to overcome illness, and restore well being.

Factors that shape positive behaviors include predisposing, enabling, and reinforcing factors (Hales, 1999). Predisposing factors include knowledge, attitudes, beliefs, values, and perceptions. Unfortunately, knowledge is not enough to cause most people to change their behaviors. For example, people who are fully aware of the grim consequences of smoking often continue to puff away. Nor is attitude --- one's likes or dislikes --- sufficient; an individual may dislike the smell and taste of cigarettes but continue to smoke regardless. Beliefs are more powerful than knowledge and attitudes. Researchers reported that people are most likely to change behavior if they hold three beliefs, susceptibility --- they acknowledge that they are at risk for the negative consequences of their behavior; severity-- they believe that they may pay a very high price if they don't make a change; and benefits --- they believe that the proposed change will be advantageous to their health. The value and perception also play major roles in changing one's behavior. Many people aren't concerned about their health just for the sake of being healthy. Usually they want to look or feel better, and be more productive or competitive. Perceptions are the way people see things from their unique perspective and they vary greatly with age.

Enabling factors include skills, resources, accessible facilities, and physical and mental capacities. Before a person initiates a change, he/she needs to assess the means available to reach his/her goal. No matter how motivated a person is, he/she will become frustrated if always encountering obstacles.

Reinforcing factors may be praise from family and friends, rewards from teachers or parents, or encouragement and recognition for meeting a goal. Although these factors help a great deal in the short run, lasting change depends not on external rewards, but on an internal commitment and sense of achievement. To make a difference, reinforcement must come from within. A decision to change a behavior should stem from a permanent, personal goal, not from the desire to please or impress someone else.

Several studies demonstrated that when people took health-related actions, positive or negative, the next health-related action followed suit. One positive action taken would likely lead to another positive action, while a negative health related action would beget a negative action. For example, if an individual always wears a seat belt when he/she is in a car, he/she is more likely to wear a helmet when biking. This is because he/she has established a momentum for safe habits on the road. A study (Torabi et al., 1991) found that there was a statistically significant relationship between involvement in any varsity sport and smoking cigarettes (Table 2). Students who were active in varsity sports were less likely to smoke cigarettes as compared to those who were not involved. The finding indicated that varsity functions might discourage the use of cigarettes.

Table 2: Distribution of Students by Sports Participation and Cigarette Smoking

		"Do you take part in any varsity sports?"	
		Yes	No
"Do you smoke cigarettes?"	Yes	253	1035
	No	2234	4497

Chi-square=444.88 (p<0.01)

Source: Torabi et al. (1991).

The opposite is also true, one bad habit can lead to another. The “gateway drug effect” explains that. The gateway drugs are the drugs that serve as the “gate” or path to the use of other drugs. These gateway drugs serve as social and psychological precursors to the use of other drugs. The decisions to use tobacco or other gateway drugs could set up patterns of behavior that make it easier for a user to go on to the other drugs which often leads to adoption of the drug-using lifestyle. Social psychologists refer to this phenomenon as a “developmental progression”. Children who decide to accept the risks of smoking later find it much easier to accept the risks of using other drugs.

The study conducted in Indiana by Torabi, Bailey, and Majd Jabbari (1993) through the Indiana Prevention Resource Center at Indiana University found a dose-dependent relationship between an increasing level of cigarette smoking and an increased frequency of binge drinking. The results showed a powerful relationship between heavy smoking and heavy drinking (Table 3). The study also examined the relationship of reported smoking behavior with use of alcohol and other drugs (Table 4), which revealed that smokers were much more likely than nonsmokers to use all drugs listed. The likelihood of using other drugs was increased, along with the frequency of cigarette smoking. These results are consistent with the results reported by the National Center for Health Statistics (NCHS).

Smokers tend to have other bad habits. A nationwide survey also showed that heavy smokers compared to nonsmokers were more likely to skip breakfast, snack more during the day, drink more alcohol, and remain physically less active. Two factors that might play an important role need noting. One is that this cluster of bad habits is associated with a consumption-oriented lifestyle --- smoking, drinking, and overeating. The other is that smokers are more prone to risk taking behaviors and give less attention to healthier practices (Pruitt & Stein, 1999) (Table 5).

Table 3: Dose-Responses Relationship Between Cigarette Smoking and Binge Drinking in Indiana Students in Grades 5-12 Percent of Students in Each Smoking Category Reporting Binge Drinking

	Rate of Cigarette Smoking Reported in Past Year						
	None	Few Times	1-5 cigs. day	1/2 pk day	1 pk day	1 1/2 pk day	2+ pk day
None	92.7	67.8	53.4	40.8	34.5	24.2	27.7
Once	3.8	14	17	17.1	14	10.8	6.9
Twice	1.6	7.8	11.2	12.8	14.2	18.3	11.3
3-5 Times	1.2	7	11.6	17.5	17.9	22.6	7.5
6-9 Times	0.3	1.6	3.7	7.1	9.5	10.8	7.5
10+ Times	0.4	1.7	3.2	4.7	9.8	13.4	39

Chi Square = 5895.44. p<0.01

Table 4: Dose-Responses Relationship of Cigarette Smoking with Alcohol and Other Drug Use by Indiana Students in Grades 5-12 Percent of Students in Each Category of Smoking who Report Use of Named Drug at Least Once in the Past Year

	Rate of Cigarette Smoking Reported in Past Year				
	None	Few Times	1-5 cigs. day	1/2 pk day	1+ pk day
Alcohol*	34.5	80.2	87.6	92.9	93.8
Smokeless Tobacco*	7.5	35.1	44.2	47.6	57.6
Marijuana*	1.5	12.9	33.3	54.6	68.2
Cocaine*	0.3	1.3	3.4	8.3	23.8
Crack*	0.2	1.1	2.1	4.4	16.2
Inhalants*	3.6	12.7	20.6	24.7	36.7
Amphetamines*	1.5	11.2	24.4	37.4	51.1
Tranquilizers*	2.8	10.7	20.6	28.3	42.5
Prescription Narcotics*	1.5	4.2	9.9	16	33.2
Psychedelics*	0.7	3.8	9.3	19.2	37.2
Heroin*	0.2	0.6	2.5	3.5	16.6
Steroids*	0.8	2.3	4.1	6.4	16.1

*Statistically significant at $p < 0.01$

Table 5: Smoking Habits and Health Practices

Health Practice	Never (%)	Former (%)	Current (%)
Never eats breakfast	18.3	19.0	37.6
Heavy drinker*	7.2	11.9	20.1
Sleeps 6 hours or less	20.9	20.0	25.3
Less physically active	17.3	18.1	21.8

Note: * indicates at least 5 drinkers on 10 days or more in the past year.

Source: Pruitt & Stein. (1999).

EVOLUTION OF SCHOOL HEALTH PROGRAM

Health education has an ancient and complex history. Its beginnings can be located within the very foundation of civilization. Much of the early history of the profession closely parallels that of medicine and its associated sciences. In later time, particularly since 1800, the history of health education has taken on a richness and character uniquely its own.

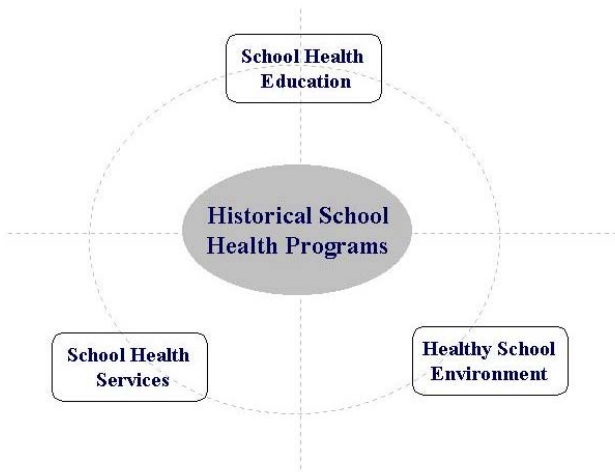
History of school health education can be dated back to period of recognition (1850-1880) when people start to recognize that school could be used to educate/screen for disease and solve health problems. From 1880 to 1920, school health education experienced a period of exploration when children's health problems were emphasized and funded studies were done to document these health problems. In 1910, the American Physical Education was

renamed American School Hygiene and Physical Education. In 1927, the American School Health Association was founded. Since the 1980s, more sophisticated school health education programs were developed, which brought school health education into a new era. The growing researchers in school health education demonstrated that school health education offers students not only the opportunity for improved health status, but also the opportunity to achieve a life-style that would lead to a satisfying and productive life (Porter, 1987).

Historical School Health Model

From the late 1880s until the late 1990s, school health programs were conceived as having three components: health education, health services, and healthy school environment (Figure 3), which still serve as a base for the school health education program today.

Figure 3: Historical School Health Model



Comprehensive School Health Program (CSHP)

During the 1980s, more sophisticated conceptions of the school health program were proposed. In 1987, Allensworth and Kolbe (1987) proposed a model, the Comprehensive School Health Program (CSHP), which extended the classic triad of health education, health services, and healthy school environment to include physical education, counseling and psychological services, nutrition services, health promotion for staff, and parent/community involvement interactive components. This model (Figure 4), broadly adopted in the United States and internationally, is an organized set of policies, procedures and activities designed to protect and promote the health, safety, and well-being of students and school staff (Meek, Heit, & Page, 1996).

Figure 4: Comprehensive School Health Program



The CSHP model requires systematic coordination among eight components to magnify the benefits available in each component. In general, schools by themselves cannot, and should not be expected to address a nation's most serious health and social problems. Collaborative efforts among families, health care workers, the media, religious organizations, and community organizations must be involved to maintain the well being of young people. The glue that could cement each component is health education, for it is the major source of the one element common to all components --- health knowledge.

School Health Coordinator (SHC)

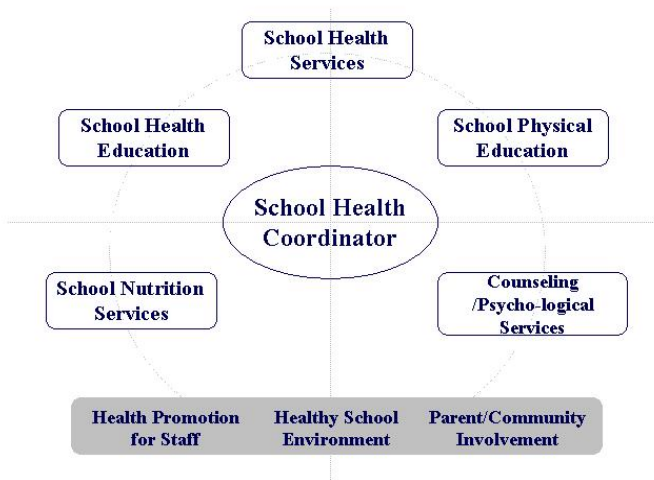
Although professionals acknowledge that the eight program elements of the CSHP should be delivered in a coordinated, interactive manner, numerous issues regarding how this integration can be achieved --- including who at the school level should accept this responsibility and how the eight components relate to each other conceptually and logistically, have not been adequately addressed (Resnicow & Allensworth, 1996).

In essence, CSHP transforms several solo performers into an orchestra. Extending this metaphor, CSHP assumes that the aggregate of a synchronized, integrated school health program will produce a product greater than the sum total of its parts. Therefore, the actual success of CSHP hinges largely on a coordinating mechanism. However, the role of a coordinator within the eight component model has not been articulated adequately.

In 1996, Resnicow and Allensworth (1996) proposed a model -- the School Health Coordinator (SHC, see Figure 5), which is revised from CSHP. The main feature of SHC is that it set up the school health coordinator component, an essential and unifying element, into the model. The major function of the SHC component is the coordination. Its principal responsibilities include administration, integration of personnel and programs, evaluation,

and direct intervention. The direct intervention includes coordinating three program elements --- health promotion for staff, healthy school environment, and parent/community involvement. Therefore these three components are considered as “second strings” which are assigned to the school health coordinator component to support and enhance the impact of the other five core elements remaining in the CSHP model. Folding these three elements into the role of the coordinator effectively reduces the number of program elements from eight to five, or six if the coordinator is considered an additional element, and thereby minimizes the number of elements which schools must adopt (Resnicow & Allensworth, 1996).

Figure 5: School Health Coordinator



In the SHC model, two committees are created to assist in implementing local comprehensive school health programs, the School Health Committee and the Community School Health Coordinating Council. The former comprises personnel representing five of the eight CSHP components including representatives from health education, physical education, nutrition services, counseling/psychology services, and health services. The primary functions of this committee are program planning and advocacy. With regard to program planning, the committee will ensure that the various professionals who directly influence student health, convene regularly to learn what their colleagues are doing, share teaching strategies, problem solve, and plan synergistic activities such as a coordinated classroom nutrition education and food services campaign. The committee also will contribute to curriculum selection and adaptation, as well as planning and designing in-service training programs. With regard to advocacy, this group can serve as a unified front to help ensure, on the school and district levels, that sufficient resources are allocated to the health program and when necessary, intervene when individuals or groups within or outside the school seek to eliminate or unfavorably alter the school health program.

The School Health Coordinating Council extends beyond the school and engages parents as well as representatives from the local business, media, political, religious, juvenile justice, and medical communities. The Coordinating Council ensures community support

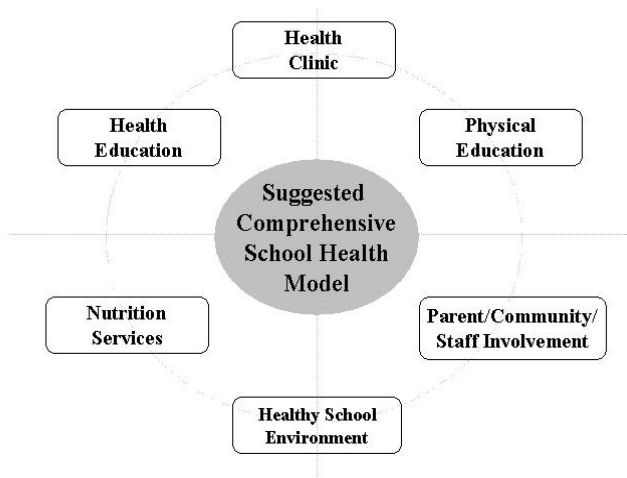
for the program, serves as a buffer against threats to local programs by vocal minorities, provides resource in the form of financial support and donated services, and links school-based activities to the community.

A SUGGESTED COMPREHENSIVE SCHOOL HEALTH MODEL FOR CHINA

Health Education became a required subject in primary and secondary schools in China in 1993. However, little has been reported since that time regarding the general status of school health education in China. The study conducted by Li and colleagues (2000) regarding current professional preparation of health education teachers and how health education has been taught in Chinese public schools indicated that 17 of 18 surveyed provinces provide formal health education among their middle schools. Among the 17 provinces, ten use a national curriculum while the remaining seven develop their own curricula. Nearly one third (30%) of the schools offer a one-hour health education class every week, and 60% have the class meet one hour every two weeks. It was found that current full-time health education teachers have a variety of educational backgrounds and are not likely to have had professional preparation in health education. Most have a Biology diploma (33.3%), followed by Medicine (30.3%), Physical Education (15.2%), and Health Education (15.2%). The study indicated that with the development of China's public and school health education, the demand for professionals involved in the design, implementation, and evaluation of effective school health programs is inevitably increasing. To have a comprehensive school health program, with sophisticated curriculum, qualified health educators are needed to promote school health in China and facilitate Chinese students' health-related knowledge, attitudes, and practices and to have an impact upon their daily lives.

The following Comprehensive School Health Education Model (Figure 6), modified based on existing school health education models implemented in the United States (Allensworth & Kolbe, 1987; Resnicow & Allensworth, 1996) and the practices of China's education system and school health programs. Six components are included in this suggested model. They are school health education, school physical education, nutrition services, health clinics, healthy school environment, and parent/community involvement. An overview of the contents, constructs, and qualifications of each component follows.

Figure 6: Suggested Comprehensive School Health Model



Health Education

School health education is a planned, and sequential health instruction for grades 1 through 12, which addresses the physical, mental, emotional, social, spiritual, and environmental dimensions of health. It integrates education as a range of categorical health problems and issues at developmentally appropriate ages. The school health education curriculum should focus on not only improving students' knowledge, but also emphasizing the development of appropriate skills and positive attitudes toward health and healthy lifestyles (Koble, Kann, & Collins, 1995). The school health education curriculum should give more emphasis on the following content areas:

Personal hygiene

Prevention and control of diseases (infectious and chronic)

Injury prevention and safety

Nutrition

Tobacco prevention

Relationships, sexuality and family planning

Physically active lifestyles

Mental and emotional health

Environmental health

Positive attitudes toward meaningful life and living

The school health education curriculum should have the flexibility to incorporate local or regional health problems as needed.

Health instruction should be implemented by qualified, academically trained teachers and certified health educators. In order to be effective, schools should only hire those instructors having proper credentials in the field or at least having a minor consisting of 50

credit hours in health education. To have a dynamic curriculum, it is important to have the programs evaluated by regional government and school administrators so that it could be routinely revised and improved.

Physical Education

School physical education is a planned, sequential grades 1 through 12 curriculum which provides cognitive content and learning experiences in a variety of activity areas such as basic movement skills, physical fitness, rhythms and dance, games, team, dual, and individual sports, tumbling and gymnastics, and aquatics. School physical education should promote, through a variety of planned physical activities, each student's optimum physical, mental, emotional, and social development. School physical education should also promote enjoyable, lifelong physical activity and improve the physical and social environments that encourage and enable physical activity (Pate et al., 1995; CDC, 1997). Schools may develop extracurricular physical activity programs that meet the needs and interests of students and involvement of parents and guardians in physical activity instruction and programs for young people (CDC, 1997). Schools should hire qualified, trained teachers to teach physical education. Schools need to have a regular evaluation of physical activity instruction, programs, and facilities.

Nutrition Services

Cooperating with health educators, the nutrition staff serving the school should take the opportunity to promote a healthy diet among students. The ultimate purpose of nutrition services is to promote health by emphasizing a balanced and adequate eating habit. Nutrition services should provide student access to a variety of nutritious and appealing meals that accommodate the health and nutrition needs of all students. School nutrition programs will reflect the Chinese Dietary Guidelines for students to achieve nutrition integrity. The school nutrition services need to offer students a learning laboratory for classroom nutrition and health education, and serve as a resource for linkages with family. Nutrition staff should serve as role models and promote personal hygiene for students. The director of school nutrition services should have educational and professional experiences in nutrition and dietary programs. The director should also routinely provide educational programs for the nutrition services division.

Health Clinic

No comprehensive school health program could be complete without a health clinic. School health clinics should be staffed by qualified professionals including physicians, nurses, dentists, health educators and pharmacists. These health professionals should have experience and expertise in the areas of school health and school aged children. The purpose of having the health clinic is to appraise, protect, and promote student health. These services should ensure access and/or referral to health care services. It should also focus on prevention and controlling communicable diseases as well as emergency care for illness or injury. The responsibilities of the health clinic include cooperation with other school staff in promoting a sanitary and safe school environment for students. The health clinic staff has an important responsibility in the use of the facility for patient education and student counseling to promote and maintain individual, family, and community health.

Healthy School Environment

A healthy school environment includes the physical surroundings, psychosocial climate, and culture of the school. School environment has a significant impact on the health and well being of school age children. Additionally, the school environment influences the success of the curriculum on children's cognitive development. Schools should provide a physical environment free from biological or chemical agents that are detrimental to health. School administrators should provide and promote a positive and healthy environment where students feel safe and happy. Schools should encourage school staff to pursue a healthy lifestyle that contributes to the school's overall coordinated health programs and create positive role modeling for students.

Parent/Community/Staff Involvement

School health programs could not be fully implemented without having staff and parents' cooperation and involvement. Parents, community leaders and teachers often can and do serve as role models for students. Students serve as a linkage with school and family while parents can and should cooperate with schools to help their children. The school health program could impact parents' knowledge, attitudes and practice regarding healthy lifestyles. Through newsletters, correspondences, meetings and volunteering, schools and parents cooperatively, and collaboratively can and should significantly impact the health and well being of students.

Six components in the Comprehensive School Health Model should reflect six aspects of a contemporary school health program in China. Coordination of these six components could have complementary, if not synergistic, effects. All six components need to "work" together as a whole to address a health behavior or health problem, though each of the six components has its own content, constructs and qualifications in the field. Further study is needed to provide empirical evidence for effectiveness and acceptability of this suggested model.

SUMMARY AND CONCLUSION

Professionals in the health education field believe in the power of education and its potential impact on one's health behavior choices. While major leading causes of death are widely linked to unhealthy behaviors, health professionals see the promise through prevention. However, they don't look at the promise through rose colored glasses. On the contrary, they do recognize the coexistence of challenges and opportunities.

Unhealthy behaviors of adults are usually sewn during their childhood. Since the greatest majority of children go to school, there is no place better than schools to provide health knowledge and skills. For decades in the United States, school health education has been a major part of the educational force in promoting healthy lifestyles. School health education has advanced from providing pure classroom lectures of anatomy and physiology to implementing comprehensive school health programs. Researchers have shown that the most effective school health education programs are those following comprehensive school health program models, theory informed, sequentially designed from kindergarten to the 12th grade, and with family and community involvement.

The successful development and implementation of comprehensive school health programs and health education theories and models in the USA provide a sample profile for health education in China. The experiences that American health educators have accumulated over time, as well as the lessons they learned from their practices and research, could be an invaluable resource to Chinese health educators. This paper suggested a comprehensive school health model, which functions under the assumption that it might work in the Chinese system. Further study is needed to provide empirical evidence for effectiveness and acceptability of this suggested model. It would be of great interest to health educators on both sides to see how this model works in China as similar models work in the United States. With health becoming a global concern, why not have health education be global in task and effort?

REFERENCES

- Allensworth, D., & Kolbe L. J. (1987). The school health program: Exploring an expended concept. *Journal of School Health, 57*(10), 409-412.
- Barsky, A. J. (1988). The paradox of health. *The New England Journal of Medicine, 318*(7), 414-418.
- Bunker, J. P., Frazier, H. S., & Mosteller, F. (1994). Improving health: Measuring effects of medical care. *Milbank Quarterly, 72*, 225-258.
- Centers for Disease Control and Prevention [CDC]. (1997). Guidelines for school and community programs to promote lifelong physical activity among young people. *MMWR, 46*(RR-6).
- Centers for Disease Control and Prevention [CDC]. (1999a). Control of infectious diseases. *MMWR, 48*, 621-629.
- Centers for Disease Control and Prevention [CDC]. (1999b). Healthier mothers and babies. *MMWR, 48*, 849-857.
- Centers for Disease Control and Prevention [CDC]. (1999c). Safer and healthier foods. *MMWR, 48*, 905-913.
- Collins, J. L., Small, M. L., Kann, L., Pateman, B. C., Gold, R. S., & Kolbe, L. J. (1995). School health education. *Journal of School Health, 65*, 302-311.
- Hales, D. (1999). *An Invitation to Health* (8th ed.). Pacific Grove, CA: Brooks/Cole Publishing Company.
- Kolbe, L. J. (1993). An essential strategy to improve the health and education of Americans. *Preventive Medicine, 22*, 544-560.
- Koble, J. L., Kann, L., & Collins, J. L. (1995). The school health policies and programs study, Context, methods, general findings, and future efforts. *Journal of School Health, 65*, 339-343.
- Li, J. J., Yang, J. Z., Lu, X. L., Chin, M. K., Zhou, F., Liao, Y. K., Cai, G., & Zhao, J. X. (2000). *Current status and future development in China's school health education*. Paper presented at the meeting of 2000 International Conference for Physical Educators, Hong Kong, China.
- Lohrmann, D. K., Gold, R. S., & Jubb, W. H. (1987). School health education: A foundation for school health programs. *Journal of School Health, 57*, 420-425.
- McGinnis, J. M., & Foege, W. H. (1993). Actual cause of death in the United States. *Journal of the American Medical Association, 270*(18), 2207-2212.
- Meeks, L., Heit, P., & Page, P. (1996). *Comprehensive School Health Education*. Columbus, OH: Meeks Heit Publishing Company.
- Pate, R. R., Small, M. L., Ross, J. G., Young, J. C., Flint, K. H., & Warren, C. W. (1995). School physical education. *Journal of School Health, 65*, 312-318.
- Porter, P. (1987). School health is a place, not a discipline. *Journal of School Health, 57*(10), 418-420.
- Pruitt, B. E., & Stein, J. J. (1999). *Health Styles: Decision for Living Well* (2nd ed.). Needham Heights, MA: Allyn & Balon.
- Resnicow, K., & Allensworth, D. (1996). Conducting a comprehensive school health program. *Journal of School Health, 66*(2), 59-63.
- Torabi, M. R., Majd Jabbari, M., Plaford, G., Seffin, C., Ellis, N., & Wood, M. (1991). Prevalence of selected factors associated with drug abuse among high school students. *Wellness Perspectives, Research, Theory and practice, 7*(4), 65-74.
- Torabi, M. R., Bailey, W. J., & Majd Jabbari, M. (1993). Cigarette smoking as a predictor of alcohol and other drug use by children and adolescent: Evidence of the "gateway drug effect". *Journal of School Health, 63*(7), 302-305.