



WELLNESS, HEALTH PROMOTION AND INJURY PREVENTION ADVOCACY

Stafford C. Rorke and Brian R. Goslin

SYNOPSIS

Approximately fifty percent of all untimely disease and death is preventable. This paper outlines public health issues and initiatives of concern to the Oakland community. The long-term cost to society of not addressing these issues, is immeasurable. We argue that no student educational experience is complete without exposure to such subject matter. Further, we advocate that every student should be given the opportunity to address personal wellness issues within the curriculum.

Health and wellness

Health and wellness issues rank highly on the interest list of many citizens. Substantial media interest and a glut of popular reports, magazines and books covering the entire spectrum of health-related issues, is testament to the thirst for knowledge and the contemporary desire for “a quick fix.” An increasing aging population, spearheaded by the baby-boomer generation, seeks the answers to increased longevity, with expecta-

tions of reaching the suggested outer limit of 120 years of human life. Charlatans pronouncing dubious and even dangerous methods to achieve the goals of health and prosperity are likely to mislead many.

Sadly, and arguably of greater consequence to society, is the fact that many citizens choose either to ignore the consequences of negative lifestyle behaviors, or are ignorant of the negative degenerative disease outcomes that await them. Crippling disability and potential years of life lost can be seen in the "top ten" causes of early morbidity and mortality. Spiraling health care costs are driving initiatives in managed care and preventive medicine.

Both the Oxford English Dictionary and Shorter Oxford Dictionary date the term wellness to 1654, defined as "the state of being well or in good health." For some time this was reflected in the World Health Organization's definition of health, namely "freedom from disease." Mosby's Medical Dictionary indicates a conceptual shift in thinking with a change in wellness definition to "a dynamic state of health." This reflects a more positive approach to achieving full potential in life. Halbert Dunn is credited with popularizing the term wellness and advocating a conscious and deliberate approach to an advanced state of physical, psychological and spiritual health (Dunn, 1959; 1961).

Merriam-Webster's Collegiate Dictionary suggests wellness is an actively sought goal. Contemporary models typically reflect between five to seven life domains, considered essential key aspects of human well being. Thus: *Wellness refers to optimum physical, emotional, spiritual, social, intellectual, occupational and environmental health.* Arguably, all individuals should be conversant with positive intervention strategies for enhancing wellness in all life domains.

Healthy People 2010

In January 2000, the U.S. Department of Health and Human Services and the Surgeon General released *Healthy People*

2010, a well-respected report that highlights the ongoing need for concerted efforts in wellness, health promotion and injury prevention. Two overarching national goals are advocated. Goal 1: Increase the quality and years of healthy life. Goal 2: Eliminate health disparities. Twenty-eight (28) focus areas contain 467 health objectives. Interventions are designed to reduce or eliminate illness, disability and premature death. Others focus on issues, such as strengthening public health services or dissemination of health-related information.

"Addressing the challenge of health improvement is a shared responsibility that requires the active participation and leadership of the Federal Government, States, local governments, policymakers, health care providers, professionals, business executives, educators, community leaders, and the American public itself" (Healthy People 2010, 2000 p4).

Conveying knowledge, understanding and appreciation of the serious public health issues and threats facing Michigan and the Nation, is an appropriate and expected response of institutions of higher education.

Health Status of the Nation and Michigan

The top ten leading causes of death in the United States are presented in Table I and data for Michigan in Table II. As can be seen the National and State profiles are similar. Many of the leading causes of premature death are preventable. Specifically, the first four leading causes of death have common risk factors, while most others are highly correlated with negative physiological change as an outcome of destructive lifestyle behaviors.

Leading causes of death are frequently used to describe the health status of a Nation. The United States has seen a great deal of change over the past 100 years in the leading causes of death. At the beginning of the 1900s, infectious diseases ran rampant worldwide and topped the leading causes of death. A century later, with the control of many infectious agents, and the increasing age of the population, chronic diseases top the list (Healthy People 2010, 2000).

TABLE I: Leading causes of death and percentage of all death in the United States (1997) (Michigan Department of Community Health, 1999).

1. Heart disease (31.4%)
2. Cancer (23.3%)
3. Stroke (6.9%)
4. Chronic obstructive pulmonary disease (COPD) (4.7%)
5. Unintentional injuries (4.1%)
6. Pneumonia/influenza (3.7%)
7. Diabetes (2.7%)
8. Suicide (1.3%)
9. Kidney Disease (1.1%)
10. Chronic liver disease and cirrhosis (1.1%)

TABLE II: Leading causes of death by age, Michigan residents, 1998 (Michigan Department of Community Health, 1999).

Cause of Death	All	Under			
	Ages	20	20-44	45-74	75+
All Causes of Death	84,906	2,069	5,240	31,371	46,224
Heart Disease	27,851	48	683	9,274	17,845
Cancer	19,442	66	827	10,642	7,907
Stroke	5,760	20	138	1,447	4,155
COPD	3,804	15	56	1,571	2,162
Accidents	3,098	451	1,020	916	711
Pneumonia/influenza	3,096	18	76	666	2,336
Diabetes	2,449	5	103	1,102	1,239
Kidney Disease	1,087	5	18	306	758
Suicide	965	71	477	313	104
Liver Dis/Cirrhosis	981	2	173	654	152
All Other Causes	16,373	1,368	1,669	4,480	8,855

A very different picture emerges when the leading causes of death are viewed for various subgroups. Unintentional injuries, mainly motor vehicle crashes, are the fifth leading cause of death for the total population, but they are the leading cause of death for people aged 1 to 44 years. Similarly, HIV/AIDS is the 14th leading cause of death for the total population but the leading cause of death for African American men aged 25 to 44 years (Healthy People 2010, 2000).

“The leading causes of death in the United States generally result from a mix of behaviors; injury, violence, and other factors in the environment; and the unavailability or inaccessibility of quality health services. Understanding and monitoring behaviors, environmental factors, and community health systems may prove more useful to monitoring the Nation’s true health, and in driving health improvement activities, than the death rates that reflect the cumulative impact of these factors. This approach has served as the basis for developing the Leading Health Indicators” (Healthy People 2010, 2000 p.21).

Health indicators

Healthy People 2010 focuses attention on 10 Health Indicators that reflect major public health concerns in the United States. These indicators were chosen for their ability to motivate action, availability of data to measure progress, and the relevance to broad public health issues. These 10 indicators are: *Physical activity, overweight and obesity, tobacco use, substance abuse, responsible sexual behavior, mental health, injury and violence, environmental quality, immunization and access to health care.*

An abridged review of the *Healthy People 2010 (2000)* health indicators illustrates the importance of these issues for all persons.

Exercise and health

Lack of regular physical exercise is associated with all causes of mortality (Blair, 1996). Regular physical activity throughout life is important for maintaining a healthy body, enhancing

psychological well-being, and preventing premature death. Many individuals lack the knowledge of how to exercise properly and effectively. Consequently, many lose the substantial health and disease protection benefits to be gained with a lifetime commitment to exercise.

Regular physical activity is associated with lower death rates for adults of any age, even when only moderate levels of physical activity are performed. Regular physical activity decreases the risk of death from heart disease, lowers the risk of developing diabetes, and is associated with a decreased risk of colon cancer. Regular physical activity helps prevent high blood pressure and helps reduce blood pressure in persons with elevated levels.

Regular physical activity also: increases muscle and bone strength, increases lean muscle and helps decrease body fat, aids in weight control and is a key part of any weight loss effort, enhances psychological well-being and may even reduce the risk of developing depression, appears to reduce symptoms of depression and anxiety and to improve mood. In addition, children and adolescents need weight-bearing exercise for normal skeletal development, and young adults need such exercise to achieve and maintain peak bone mass. Older adults can improve and maintain strength and agility with regular physical activity. This can reduce the risk of falling, helping older adults maintain an independent living status. Regular physical activity also increases the ability of people with certain chronic, disabling conditions to perform activities of daily living.

Women are less active than men are at all ages. People with lower incomes and less education are typically not as physically active as those with higher incomes and education. African Americans and Hispanics are generally less physically active than whites. Adults in northeastern and southern States tend to be less active than adults in north central and western States. People with disabilities are less physically active than people without disabilities. By age 75, one in three men and one in two women engage in no regular physical activity. The

major barriers most people face when trying to increase physical activity are lack of time, access to convenient facilities, and safe environments in which to be active.

Overweight and obesity

Being overweight is directly associated with the onset of both early morbidity and mortality. The increase in obesity is alarming given the direct association with Type-2 diabetes and heart disease later in life. Obesity substantially raises the risk of illness from high blood pressure, high cholesterol, stroke, gallbladder disease, arthritis, sleep disturbances and problems breathing, and endometrial, breast, prostate, and colon cancers. Obese individuals may also suffer from social stigmatization, discrimination, and lowered self-esteem.

Obesity is a major contributor to many preventable causes of death. On average, higher body weights are associated with higher death rates. The number of overweight children, adolescents, and adults has risen over the past four decades. One in four children in the U.S. is obese and the incidence is rising. Currently 7% of Michigan residents are diabetic with 36% of diabetics taking insulin (Michigan Department of Community Health, 1999). Total costs (medical cost and lost productivity) attributable to obesity alone amounted to an estimated \$99 billion in 1995.

Tobacco use

Cigarette smoking is the single most preventable cause of disease and death in the United States, resulting in more deaths each year than AIDS, alcohol, cocaine, heroin, homicide, suicide, motor vehicle crashes, and fires combined. Tobacco-related deaths number more than 430,000 per year among U.S. adults, representing more than 5 million years of potential life lost. Direct medical costs attributable to smoking total at least \$50 billion per year.

Smoking is a major risk factor for heart disease, stroke,

lung cancer, and chronic lung diseases, the leading causes of death. Smoking during pregnancy can result in miscarriages, premature delivery, and sudden infant death syndrome. Other health effects of smoking result from injuries and environmental damage caused by fires. Environmental tobacco smoke (ETS) increases the risk of heart disease and significant lung conditions, especially asthma and bronchitis in children. ETS is responsible for an estimated 3,000 lung cancer deaths each year among adult nonsmokers.

Overall, the percentage of adolescents in grades 9 through 12 who smoked in the past month increased in the 1990s. Every day, an estimated 3,000 young persons start smoking. These trends are disturbing because the vast majority of adult smokers tried their first cigarette before age 18 years; more than half of adult smokers became daily smokers before this same age. Almost half of adolescents who continue smoking regularly will eventually die from a smoking-related illness (Healthy People, 2010, 2000).

In 1997, thirty-six percent of adolescents were current smokers. In the same year, 24% of adults were current smokers. In 1998 the percentage of smokers in Michigan remained unacceptable high at 27.4 %, while the incidence of smoking among Oakland University students was slightly lower at 23% (Hartman, 1999). Smoking is a primary risk factor for the 3 leading causes of death. The Michigan incidence of hypertension is 1 person in 4. Hypertension, together with smoking, is highly correlated with stroke incidence (Michigan Department of Community Health, 1999).

Substance abuse

Alcohol and illicit drug use are associated with many of the United States most serious problems, including violence, homicide, suicide, drowning, injury, sexually transmitted disease, teen pregnancy, school failure, motor vehicle crashes, disruption to family, work and personal life, homelessness, and, escalation of health care costs. Prevention of alcohol

abuse could reduce leading causes of death among youth, and reduce heart disease, cancer, alcohol-related liver disease, and fetal alcohol syndrome, among other diseases.

The annual economic costs to the United States from alcohol abuse were estimated to be \$167 billion in 1995, and the costs from drug abuse were estimated to be \$110 billion. The Core Alcohol and Drug Survey Results report by Hartman (1999) indicates that 69% of Oakland University students' drink (past 30 days), and twenty-three percent (23%) report binge drinking.

Sexual behavior

Sexually transmitted diseases (STDs) are common in the United States, with an estimated 15 million new cases reported each year, almost 4 million of these in adolescents. Women generally suffer more serious complications than men, including pelvic inflammatory disease, ectopic pregnancy, infertility, chronic pelvic pain, and cervical cancer. African Americans and Hispanics have higher rates of STDs than whites. The total cost of the most common STDs and their complications is conservatively estimated at \$17 billion annually. Nearly 700,000 cases of AIDS have been reported in the United States since the HIV/AIDS epidemic began in the 1980s. The latest conservative estimates indicate that 650,000 to 900,000 people in the United States are currently infected with HIV. The lifetime cost of health care associated with HIV infection, in light of recent advances in HIV diagnostics and therapies, is \$155,000 or more per person

Half of all pregnancies in the United States are unintended; that is, at the time of conception the pregnancy was not planned or not wanted. Unintended pregnancy rates in the United States have been declining. The rates remain highest among women aged 20 years or younger, women aged 40 years or older, and low-income African American women. Approximately 1 million teenage girls each year in the United States have unintended pregnancies. Nearly half of all unin-

tended pregnancies end in abortion. The cost to U.S. taxpayers for adolescent pregnancy is estimated at between \$7 billion and \$15 billion a year.

Mental health

Approximately 20% of the U.S. population is affected by mental illness during a given year. Depression is the most common disorder with more than 19 million adults in the United States suffering from depression, a leading cause of disability, and the cause of more than two-thirds of suicides each year. In 1997, only 23% of adults diagnosed with depression received treatment.

Depression is also associated with other medical conditions, such as heart disease, cancer, and diabetes, anxiety and eating disorders, as well as being associated with alcohol and illicit drug abuse. An estimated 8 million persons aged 15 to 54 years had coexisting mental and substance abuse disorders within the past year. The total estimated direct and indirect cost of mental illness in the United States in 1996 was \$150 billion.

Mental health is sometimes thought of as simply the absence of a mental illness but is actually much broader. Mental health is a state of successful mental functioning, resulting in productive activities, fulfilling relationships, and the ability to adapt to change and cope with adversity. Mental health is indispensable to personal wellbeing, family and interpersonal relationships, and one's contribution to society.

Interventions are based upon increasing the proportion of adults with recognized depression that receive treatment as well as attending to other life domains of wellness such as exercise.

Accidental deaths

Much attention has been focused on prevention of degenerative and infectious disease, but not enough has been done to

address the issue of the fifth leading cause of death, namely accidents. Motor vehicle accident crash deaths, and general accidents from firearms, poisoning, suffocation, falls, fires, drowning, homicide, infant homicide from fatal child abuse, and other accidents, are all largely preventable.

The cost of injury and violence in the United States is estimated at more than \$224 billion per year, an increase of 42 percent over the last decade. These costs include direct medical care and rehabilitation as well as productivity losses to the Nation's workforce. The total societal cost of motor vehicle crashes alone exceeds \$150 billion annually.

Environmental health

An estimated 25% of preventable illnesses worldwide can be attributed to poor environmental quality. In the United States, air pollution alone is estimated to be associated with 50,000 premature deaths and an estimated \$40 billion to \$50 billion in health-related costs annually. Poor air quality contributes to respiratory illness, cardiovascular disease, and cancer. Both physical and social environments play major roles in the health of individuals and communities.

Two indicators of air quality are ozone (outdoor) and environmental tobacco smoke (indoor). In 1997, approximately 43% of the U.S. population lived in areas designated as non-attainment areas for established health-based standards for ozone. During the years 1988 to 1994, sixty-five percent of nonsmokers were exposed to environmental tobacco smoke (ETS).

Dramatic improvements in air quality in the United States have occurred over the past three decades. Between 1970 and 1997, total emissions of the six principal air pollutants decreased 31%. Still, million of tons of toxic pollutants are released into the air each year from automobiles, industry, and other sources. In 1997, despite continued improvements in air quality, approximately 120 million people lived in areas with unhealthy air based on established standards for one or

more commonly found air pollutants, including ozone. In 1996, a disproportionate number of Hispanics and Asian and Pacific Islanders lived in areas that failed to meet these standards compared with whites, African Americans, and American Indians or Alaska Natives.

Immunization

Vaccines are among the greatest public health achievements of the 20th century. Immunizations can prevent individual disability and death from infectious diseases, and can help control the spread of infections within communities.

In 1997, only 43% of persons aged 65 and older had ever received a pneumococcal vaccine. Immunizations against influenza and pneumococcal disease can prevent serious illness and death. Together, pneumonia and influenza constitute the sixth leading cause of death in the United States. Influenza causes an average of 110,000 hospitalizations and 20,000 deaths annually; pneumococcal disease causes 10,000 to 14,000 deaths annually (Healthy People 2010, 2000).

In 1996, sixty-nine percent of children aged 19 to 35 months from the lowest-income households received the combined series of recommended immunizations, compared with 80 percent of children from higher-income households. Both influenza and pneumococcal immunization rates are significantly lower for African American and Hispanic adults than for white adults. Coverage levels for immunizations in adults are not as high as those achieved in children, yet the health effects may be just as great. Barriers to adult immunization include not knowing immunizations are needed, misconceptions about vaccines, and lack of recommendations from health care providers.

Access to health care

Determinants of health and predictors of access to quality health care include socioeconomic status, structural, and per-

sonal barriers. Minority populations are disproportionately represented in many of the Michigan's urban areas and often have higher rates of disability and disease. There remain differences in life expectancy as a function of both race and gender (Michigan Department of Community Health, 1999).

Strong predictors of access to quality health care include having health insurance, a higher income level, and a regular primary care provider or other source of ongoing health care. Use of clinical preventive services, such as early prenatal care, can serve as indicators of access to quality health care services. In 1997, eighty-six percent of all individuals had health insurance, or had a usual source of health care. Also in that year, 83% of pregnant women received prenatal care in the first trimester of pregnancy.

However, more than 44 million persons in the United States do not have health insurance, including 11 million uninsured children. Over the past decade, the proportion of persons aged 65 years and under with health insurance remained steady at about 85 percent. About one-third of adults 65 years and under below the poverty level were uninsured. For persons of Hispanic origin, approximately one in three was without health insurance coverage in 1997. Mexican Americans had one of the highest uninsured rates at 38 percent.

Preventable hospitalizations

Preventable hospitalizations are not directly listed among the 10 leading health indicators. However, while considerable attention is paid to prevention of degenerative and infectious disease, there remains the issue of prevention and/or reduction of morbidity. Many acute and chronic ailments such as osteoporosis or low back pain do not directly kill, but require hospitalization or long-term care. These conditions are amenable to timely prevention or intervention by trained practitioners, or through concerted wellness, health promotion or injury prevention strategies.

Table IV: Preventable hospitalizations and rates per 10,000 population for patients of all ages by selected leading diagnoses—Michigan residents, 1991–1997 (Michigan Department of Community Health, 1999).

PREVENTABLE HOSPITALIZATION DIAGNOSES	Average Annual Number		RATE PER 10,000 POPULATION Average annual Rate	
	1991–1996	1997	1991–1996	1997
	All preventable Hospitalizations	229,593	232,541	240.2
Congestive Heart Failure	36,038	39,438	37.7	40.4
Pneumonia	32,736	32,632	34.3	33.4
COPD	15,069	19,208	15.8	19.7
Asthma	17,815	17,136	18.6	17.5
Kidney/Urinary Infections	12,839	13,339	13.4	13.6
Dehydration	11,556	11,497	12.1	11.8
Diabetes	10,097	10,410	10.6	10.7
Cellulitis	9,019	9,499	9.4	9.7
Angina	20,255	9,171	21.2	9.4
Convulsions	5,632	5,994	5.9	6.1
All Other Preventable Hospitalization	58,538	64,217	61.2	65.7

CONCLUSION

Healthy People 2010 (2000) clearly and systematically details the serious public health challenges facing the United States and Michigan, but more positively, outlines efficacious wellness intervention strategies. Wellness, health promotion and injury prevention are worthy subjects for academic pursuit. Inculcating individual knowledge, skills and abilities in personal and community health, should be high on a University's academic agenda. To this end, we advocate that students should be exposed to critical wellness, exercise, health promotion, and injury prevention paradigms and technologies within a university degree curriculum. Such knowledge rounds out the student's general education and serves to enhance life-long learning.

REFERENCES

- Blair, Steven N. (1996): Physical Inactivity: The Public Health Challenge. *President's Report. Sports Medicine Bulletin*, 31(4), 3.
- Dunn, H. L. (1959): "High-level wellness for man and society. *American Journal of Public Health*, 49, 786–792.
- Hartman, Brenda (1999): Alcohol and other drug use among Oakland University Students. A summary of the 1999 Core Alcohol And Drugs Survey Results. *Oakland University Counseling Center*.
- Healthy People 2010 (2000)*: United States Department of Health and Human Services and the Surgeon General, Wash. D.C.
- Merriam-Webster's Collegiate Dictionary (1993)*: Tenth Edition, Springfield, Massachusetts; p1342.
- Michigan Department of Community Health (1999): Preventable Hospitalization Diagnoses 1991–1997. *State of Michigan*. http://www.mdch.state.mi.us/mdch2/index_t.htm
- Michigan Department of Community Health (1999): Vital Records and Health Statistics. *State of Michigan*. http://www.mdch.state.mi.us/mdch2/index_t.htm