



Saskatchewan Health

EVIDENCE SUPPORTING POPULATION HEALTH PROMOTION INITIATIVES

Selected Literature Review

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Introduction

Population health promotion is about creating the conditions that support the best possible health for everyone. Promoting health is a shared responsibility that requires the co-ordinated action of many sectors working together to improve well-being.

The following document provides evidence from the literature supporting the need for health promotion. The document evidence is included in the areas of health promotion, healthy child development, heart health, home care, nutrition, physical activity/recreation, tobacco control and the workplace.

How to Use This Resource

You may find this document of value when you are developing presentations or in need of evidence to support health promotion programming. As well, the evidence may be beneficial to Health Regions when consulting or presenting to communities and other stakeholders on the benefits of health promotion initiatives.

Each bulleted section provides an overview of the sourced literature and a bolded citation from that literature source.

If you wish to access a complete document please contact the Saskatchewan Health Resource Centre by calling 306-787-3090 or by email at library@health.gov.sk.ca.

HEALTH PROMOTION

- *Population Health Promotion Practice in the Primary Prevention of Type 2 Diabetes* Saskatchewan Health, 1999.

This document focuses on primary prevention and health promotion in populations as a whole. It also contains a review of literature related to diabetes prevention.

Finland has a world famous program to reduce the risk of coronary heart disease. Changes in the first 10 years of the campaign were not spectacular, but recent years have seen marked improvements in CHD risk factors.

[Vartiainen E et al. Twenty-year trends in coronary risk factors in north Karelia and in other areas of Finland. *International Journal of Epidemiology*, 1994, 23:495-504]

- *Implementing participatory intervention and research in communities: lessons from the Kahnawake Schools Diabetes Prevention Project in Canada* Potvin L., Cargo M., McComber A.M., Delormier T., Macaulay A.C. *Social Science and Medicine* 56(6): 1295-305, 2003 Mar.

Using the Kahnawake Schools Diabetes Prevention Project, in Canada, this paper elaborates four principles as basic components for an implementation model of community programmes. The principles are: (1) the integration of community people and researchers as equal partners in every phase of the project, (2) the structural and functional integration of the intervention and evaluation research components, (3) having a flexible agenda responsive to demands from the broader environment, and (4) the creation of a project that represents learning opportunities for all those involved. The emerging implementation model for community intervention, as exemplified by this project, is one that conceives a programme as a dynamic social space, the contours and vision of which are defined through an ongoing negotiation process.

The Kahnawake Schools Diabetes Prevention Project exemplifies how a dynamic process of community health promotion can be successfully implemented through the establishment of an equal partnership between community groups and academic researchers.

- *Evidence-Based Health Promotion* Edited by Perkins, E. R., Simnett, I. and Wright, L. 1999.

Through the experience of health-promotion practitioners and academics from a variety of professional backgrounds, this book considers the theory and practice of assessing existing evidence, collecting new evidence and making decisions when evidence is imperfect.

A health promoting school is likely to be an effective school as it seeks to develop individuals to their full potential. While there has been no specific research within this context, there is evidence to show a correlation between personal and social development and academic achievement (Barber et al., 1995). External interventions have an important contribution to make but will need to ensure

that they support the development of a health promoting school through a whole school approach and the principles which underlie it. This will provide a firm foundation for future health promotion in schools.

- *Quality, Evidence and Effectiveness in Health Promotion: Striving for Certainties*
Edited by Davies, J. K. and Macdonald, G. 1998.
Concepts of quality assurance and effectiveness are brought together in this book with the focus being on health promotion research and practice. These two concepts are emphasized as fundamental for health promotion and public health specialists as they grapple with evidence-based practice. This book examines effectiveness studies through the application of a variety of evaluation methodologies, assesses practice-based quality assurance programmes and provides examples of health promotion initiatives.

Secondary prevention may become a growth industry as the United States health care system develops a prevention focus. Clinical outcome, quality of care, patient satisfaction, and disease management, including health education, are being closely scrutinized by managed care, health maintenance, and other organizations redrawing the services picture. There is evidence to suggest the scrutiny is warranted and these interventions make a difference. Changed patient behaviour and/or health status has been associated with programs provided in conjunction with clinical services for asthma (Wigel *et al.*, 1990), arthritis (Lorig *et al.*, 1987), coronary artery disease (Mullen *et al.*, 1992) diabetes (Pagett *et al.*, 1988).

- *Healthy Lifestyle: Strengthening the Effectiveness of Lifestyle Approaches to Improve Health*
Lyons, R.D. and Langille, L. 2000.
The purpose of this paper is to examine and re-construct the concept of “healthy lifestyle” so that the term can be applied to approaches in health promotion and population health.

Healthy lifestyle is an adaptation to one's social environment. Unless lifestyle is constructed (as a category of intervention) in concert with the way that lifestyle is experienced by target group(s), interventions are unlikely to succeed. The strategies for action set out in the Ottawa Charter are relevant to interventions aimed at the interdependence of individuals and communities, with most emphasis placed on strengthening communities, environments, and public policy arenas.

- *The Evidence of Health Promotion Effectiveness: Shaping Public Health in a New Europe*
A report for the European Commission by the International Union for Health Promotion and Education, 2000.
The two-part report identifies the effectiveness of health promotion over 20 years. It assesses the health, social, economic and political impacts of health promotion around the world.

There is significant evidence to show that mental health promotion strategies have reduced depression, reduced suicide rates, and reduced behavioural problems. Interventions targeted towards help in the family have resulted in less domestic aggression, fewer learning problems with small children, and generally more positive environments in which they can grow and take up active and responsible citizenship. There is evidence of significant reductions in child abuse (up to 50%) and in reductions in cases on the child protection registers (41%).

- *Evidence from Systematic Reviews of Research Relevant to Implementing the 'Wider Public Health' Agenda*

<http://www.york.ac.uk/inst/crd/wph.htm>

This website lists reviews/resources on the topic of evaluation of hp practices. This link provides access to an 80 page listing of systematic reviews that look at the effects of interventions in the field of social work, social welfare, encompassing social, public and fiscal policies, models of service delivery and interventions with individuals, groups and communities.

Programs modifying the school environment, individually focused mental health promotion effects, and attempts to help children negotiate stressful transitions yield significant mean effects ranging from 0.24 to 0.93. In practical terms, the average participant in a primary prevention program surpasses the performance of between 59% to 82% of those in a control group, and outcomes reflect an 8% to 46% difference in success rates favoring prevention groups.

- *Effective Public Health Practice Project*

<http://www.city.hamilton.on.ca/PHCS/EPHPP/AboutEPHPP.asp>

The Effective Public Health Practice Project (EPHPP) is a key initiative of the Public Health Research, Education and Development (PHRED) Program. Evidence is essential to fostering evidence-based practice and decision-making in all health care sectors and professions. The products from the EPHPP are a resource for evidence-based decision-making in public health in Ontario and Canada. EPHPP conducts systematic reviews on the effectiveness of public health interventions, and summarizes recent, high quality reviews produced by others. Although EPHPP reviews focus on public health interventions, review methodology and results are frequently of interest to a broader audience of service and research professionals. The range of review topics is broad.

A variety of school-based curriculum suicide prevention programs have been rigorously evaluated. The findings indicate that programs may improve suicide-related knowledge and attitudes, as well as mental health indicators, such as perceived stress, reduced anger, and increased self-esteem.

- *PATHS – Promoting Alternative Thinking Strategies*

Greenburg, M.T. and Kusché, C.A. Promotion Alternative Thinking

Strategies. <http://www.modelprograms.samhsa.gov/pdfs/FactSheets/PATHS.pdf>

This curriculum is a comprehensive program for promoting emotional and social competencies and reducing aggression and behaviour problems in school aged children.

It is taught 3-5 times per week for 20-30 min. per day and has resulted in a 32% reduction in teacher reports of aggressive behaviour, a 36% increase in teacher reports of students exhibiting self control; and, a 20 % increase in student scores on cognitive skills tests, etc.

- *Centre of Substance Abuse Prevention*
<http://casatweb.ed.unr.edu/cgi-bin/WebObjects/Step6.woa/wa>
This website lists best practices and promising practice in the area of substance abuse prevention and mental health prevention.

Of the forty Oregon communities that initially responded to the invitation to participate in the project, thirty-five completed all three of the *Communities That Care* trainings. Within a year after training, twenty-eight boards had completed risk-focused prevention plans and less than a year into the planning and implementation phase, twenty-seven had begun implementing risk reduction strategies. Four years later, thirty-one boards were still active, and twenty-eight of them were implementing risk reduction programs (Harachi et al., 1995).

- *Blueprints Model Programs: Midwestern Prevention Project*
Centre for the Study of Violence Prevention.
<http://www.colorado.edu/cspv/blueprints/model/programs/MPP.html>
The *Midwestern Prevention Project (MPP)* is a comprehensive, community-based, multi-faceted program for adolescent drug abuse prevention. The MPP involves an extended period of programming and strives to help youth recognize the tremendous social pressures to use drugs and provides training skills in how to avoid drug use and drug use situations. These skills are initially learned in the school program and reinforced through the parent, media, and community organization components.

Evaluations of the Midwestern Prevention Project have demonstrated for program youth, compared to control youth:

- **reductions of up to 40 percent in daily smoking;**
- **similar reduction in marijuana use, and smaller reductions in alcohol use maintained through grade 12;**
- **effects on daily smoking, heavy marijuana use, and some hard drug use have been shown through early adulthood (age 23); and**
- **increased parent-child communications about drug use.**

HEALTHY CHILD DEVELOPMENT

- *Investing in Our Children: What We Know and Don't Know about the Costs and Benefits of Early Childhood Interventions*

Karoly, L.A., Greenwood, D.W., Everingham, S.S., Hoube, J., Kilburn, M.R., Rydell, C.P., Sanders, M., Chiesa, J. (1998) Rand. Santa Monica, Ca.

This evaluation looks at multiple early intervention programs, many of which had proven effectiveness. Cost benefit analysis was done on two, looking at savings in government spending, crime losses and increase in income as a result of the program.

The Perry Preschool (1-2 years in preschool with teacher home visiting) had a \$25,000 savings versus \$12,000 cost = \$13,000 savings per child. It found statistically significant gains in the areas of IQ short run, achievement short and long term, decreased special education, and income and welfare participation. Children in the program were followed up to age 27.

- *Population Health Promotion Model: A Resource Binder*
Saskatchewan Health, 1997.

This document provides understanding and statistical background related to the determinants of health.

The Perry Preschool study showed that a \$1 expenditure in preschool programming was estimated to save \$7 in later costs for special education, social services, justice and remediation.

HEART HEALTH

- *Building capacity for heart health promotion: results of a 5-year experience in Nova Scotia, Canada*

MacLean D.R., Farquharson J., Heath S., Barkhouse K., Latter C., Joffres C, *American Journal of Health Promotion*. 17(3):202-12, 2003 Jan-Feb.

The purpose of this study is to present to the outcomes of a capacity-building initiative for heart health promotion. Twenty organizations, including provincial and municipal agencies and community groups engaged in health, education and recreation activities.

Partnerships and organizational development were effective mechanisms for building capacity in heart health promotion. This intervention may have implications for large-scale, community-based, chronic-disease prevention projects.

- *Correlates of the sustainability of community-based heart health promotion interventions*

O'Loughlin J., Renaud L. Richard L., Gomez LS., Paradis G. *Preventative Medicine* 27 (5 Pt 1): 702-12, 1998 Sep-Oct.

This study investigated factors related to the perceived sustainability of 189 heart health promotion interventions initiated by a public health department or research initiative and implemented in a variety of organizations across Canada.

Overall, 43.6% of 189 interventions were perceived to be very permanent, 34.8% were somewhat permanent, and 21.5% were not permanent.

HOME CARE

- *The Effects and Expense of an Early Health Promotion/Rehabilitation Intervention in an Elderly Home Care Population*

Wishart *et al.*, 2001.

This report discusses a proposed health promotion/rehabilitation model of care for elderly patients discharged from an acute care hospital to home care. The goals of the early health promotion/rehabilitation intervention were to minimize the clients' disabilities and increase independence, diminish caregiver burden, and optimize the efficiency of community care services.

The preliminary results of this research provide support for the benefit of an early health promotion/rehabilitation intervention for older adults.

NUTRITION

- *Review of Nutrition Interventions for Cancer Prevention*
Sahay, T., Rootman, I., and Ashbury, F., Cancer Care Ontario, 2000.
<http://www.cancercare.on.ca/prevention/Report%20Final%20-%20Nutrition%20Review.pdf>

The purpose of this review is to recommend best practices to support planning for food and nutrition interventions in the areas of programming, policy and media.

The Women's Health Trial Feasibility Study in Minority Populations (FSMP) was a 2-year (1992-94) community intervention which targeted dietary fat intake (and to a lesser extent fruit, vegetable and grain consumption) among minority women (Coates 1999). The intervention was modelled on the Vanguard Women's Health Trial and consisted of group educational sessions that were tailored for minority women. Tailoring of the group sessions included modification of print material were translated into Cuban Spanish and incorporated ethnic foods and local terminology, family members were invited to selected session to foster social support and to create a social atmosphere in keeping with cultural norms.

The intervention was successful in reducing dietary fat intake and increasing fruit and vegetable intake.

- *Diet, Nutrition and the Prevention of Chronic Disease*
World Health Organization/Food and Agriculture Organization of the United Nations, 2003
A report of a Joint WHO/FAO consultation in 2003. The report outlines global and regional changes that are affecting the rates of nutrition- and physical activity-related chronic diseases. It includes examination of not only dietary and nutrient targets but also the relationship with the environments in which people live. There is analysis of the strength of evidence for different types of strategies and then outlines a number of prerequisites for effective strategies.

The three key elements for successful interventions fall under the headings:

- 1. Range of policy principles that would help people achieve and maintain healthy dietary patterns in a simple and rewarding way.**
- 2. Prerequisites for possible strategies to introduce these strategies in different settings.**
- 3. Possible strategic actions to promote healthy diets.**

PHYSICAL ACTIVITY/RECREATION

- *Promoting Physical Activity in Rural Communities: Walking Trail Access, Use and Effects*

Brownson, R.C., Housemann, R.A., Brown, D.R., Jackson-Thompson, J., King, A.C., Malone, B.R., and Sallis, J.F. (2000). *American Journal of Preventative Medicine*, 18(3), 235-241.

This article examines how trail construction and enhancement of existing trails was one of a number of components of a community health project carried in 12 rural counties in southeastern Missouri.

Trails were emphasized because of lack of places to walk in these rural areas.

Results reported in a survey of residents concerning walking and trail use:

- **45% had walked in the past month**
- **nearly 20% had walked on average 5 times a week, 30 minutes per session**
- **nearly 39% of those with access to trails had used them**
- **women and lower-income groups had increased their walking activity since they began using the trails.**

- *Environmental and Policy Interventions to Promote Physical Activity*

Sallis, J.F., Bauman, A., and Pratt, M. (1998). *American Journal of Preventative Medicine*, 15(4), 379-397.

The article reviews the literature on environmental and policy interventions to promote physical activity.

Findings suggest that physical activity can be enhanced by:

- **planning park and recreation land for unstructured activities such as walking;**
- **providing more convenient exercise facilities;**
- **providing appropriately designed and staffed programs (barrier: programs that seem to be designed for the very fit);**
- **designing buildings with accessible stairwells and encouraging use of stairs (through signage etc.);**
- **increasing mixed use development in neighbourhoods (housing, retail, entertainment uses); and**
- **having mass transit options, rather than car use.**

- *The Use and Benefits of Local Government Parks and Recreation Services: A Canadian Perspective*

Harper, J., Neider, D., Godbey, G., and Lamont, D., 1997. Health Leisure and Human Performance Research Institute, University of Manitoba

This report reports on the expectations and perceptions of the public related to public support for recreation and to design appropriate recreation experiences.

Almost nine out of ten Canadians (86%) stated that they personally benefit from local parks. There was a significant relationship between perceived level of benefit from local parks with education, community size and region of residence.

- *Exercise – It’s Never Too Late: The Strong-for Life Program*
Jette AMP, Lachman MP, Giorgetti MMM, et al. American Journal of Public Health 1999; 89(1):66-72.
The Strong-for-Life program was designed for sedentary older adults with some degree of physical disability. The program consisted of a 35 minute video program of 11 exercise routines, colour-coded elastic bands, and exercise calendars to record activity and level achieved. Participants received 2 home visits by a physical therapist to teach techniques, with follow-up telephone support. The objective was to improve participants’ strength, balance, and mobility; enhance well-being; and reduce disability.

The Strong-for-Life home-based resistance training program is a safe, low-cost, effective method for increasing physical activity among older persons with disabilities. Findings:

- **muscle strengthening – 6%-12% net increase**
- **reduced disability effects – 15%- 18%**
- **balance and mobility improved but not to levels that were statistically significant**

- *Benefits Indicators: Measuring Progress Towards Effective Delivery of the Benefits of Parks and Recreation*
Rethink Group, 1997.
This document was prepared as a resource for pilot communities engaging in a transition towards benefits-driven communities.

Recreation helps people live longer adding up to 2 years to life expectancy.

- *Beyond “Fun and Games”*
National Recreation and Park Association, 1994.
This compilation of public recreation services was prepared to inform local, state and national policymakers of the diversity and impact of public recreation in a society increasingly at risk.

The Friday/Saturday late-evening recreation program hosted visits during the initial 13-week period. During the same period, the number of criminal incidents dropped 24 percent, from 645 to 491. City and federal officials directly attribute this to the Winton Hills late-evening recreation initiative.

TOBACCO CONTROL

- *The effectiveness of state-level tobacco control interventions: a review of program implementation and behavioral outcomes.*

Annual Review of Public Health. 23:45-71, 2002.

In 2001, nearly one billion dollars will be spent on statewide tobacco control programs, including those in California, Massachusetts, Arizona, and Oregon, funded by cigarette tax revenues, and the program in Florida, funded by the state's settlement with the tobacco industry. With such large expenditures, it is imperative to find out whether these programs are working. This paper reviews the effectiveness of the statewide tobacco control programs in California, Massachusetts, Arizona, Oregon, and Florida. It focuses on two aspects of process evaluation--the funding and implementation of the programs and the tobacco industry's response, and four elements of outcome evaluation--the programs' effects on cigarette consumption, adult and youth smoking prevalence, and protection of the public from secondhand smoke. The paper formulates general lessons learned from these existing programs and generates recommendations to improve and inform the development and implementation of these and future programs.

One study has demonstrated a specific effect of exposure to the (Florida) “truth” anti-smoking media campaign on smoking initiation among youth (79). Sly et al. (79) found that youths who reported high awareness of the media campaign at baseline were 2.4 times less likely to progress to established smoking over a ten-month follow-up period than those who did not report exposure to the media campaign.

- *Effects of Pricing on Cigarette Use Among Teenagers and Adults in Canada 1980-1989*

Ferrence, R.G., Garcia, J.M., Sykora, K., Collishaw N.E., Farinon, L., 1991.
Addiction Research Foundation, Toronto, Ontario

This report examines the effects of changes in the price of cigarettes regarding the use and levels of consumption of cigarettes by adolescents and adults in Canada.

A 10% increase in the relative price of cigarettes (over and above inflation) would likely result in a 17% decrease in cigarettes consumed per capita by 15-19 year olds, a 14% decrease in smoking, and a 6% decrease in consumption per smoker.

- *School-based Prevention: Economic Costs Versus Benefits*

Stephens, T., Kaiserman, M.J., McCall D.J., and Sutherland-Brown, C., 2000.
Chronic Diseases in Canada Vol 21, No 2.

The objective of this study was to conduct a cost-benefit analysis to compare the costs of developing and delivering an effective school-based smoking prevention program with the savings to be expected from reducing the prevalence of smoking in the Canadian population over time.

A smoking prevention program that meets published criteria for effectiveness, implemented nationally in Canada, would cost \$67 per student (1996 dollars). Assuming such a program would reduce smoking by 6% initially and 4% indefinitely, lifetime savings on health care would be \$3,400 per person and on productivity, almost \$14,000. The benefit-cost ratio would be 15.4 and the net savings \$619 million annually.

WORKPLACE

- *Health Promotion Programs at Work: A Frivolous Cost or a Sound Investment?*
The Conference Board of Canada, 2002.
This report discusses how managers can better understand taking a broad approach to integrating health promotion programs into corporate strategies and how these programs can contribute significantly to the achievement of organizational goals.

In response, organizations have introduced preventive measures in the physical work environment to address the health and safety of employees when performing job-related tasks. Over time, this focus on preventative measures in occupational health and safety has helped to decrease the incidence of injuries and deaths in the workplace. Between 1970 and 1997, the incidence of workplace injuries in Canada fell from 11.3 to 6.4 per 100 workers, while the incidence of time-loss injuries decreased from 4.3 to 3.2 per 100 workers.

- *Active Living in the Workplace*
Craig, C.L. Beaulieu, A., Cameron, C. 1993.
This report focuses on physical activity programs in the workplace from an active living perspective. Trend comparisons from 1986 to 1992 are made whenever possible.

Overall, 71% of businesses indicate that both the employer and the employee share some responsibility for the employee's health. An additional 18% indicate that the employee's health is at least a matter of interest and concern to the employer. In 10% of companies, health is considered to be the sole responsibility of the employee.

- *Financial Impact of Health Promotion Programs: A Comprehensive Review of the Literature*
Aldana, S.G., 2001. American Journal of Health Promotion 15(5): 296-320.
This study sought to answer two important questions:
 - 1) Do individuals or populations with high health risks have worse financial outcomes than those with low health risks?
 - 2) Do health promotion and fitness programs improve financial outcomes?The study results suggest that high levels of stress, excessive body weight and multiple risk factors are associated with increased health costs and illness-related absenteeism. Health promotion programs are associated with lower levels of absenteeism and health care costs, and fitness programs are associated with reduced health care costs.

The most important conclusion to be taken from this review is that it appears that health promotion programs are associated with reduced absenteeism and health care costs, and health promotion programs should be considered a viable and effective method for helping employers reduce employee-related expenses.

- *An Examination of the Implications and Cost of Work-Life Conflict in Canada*
Duxbury, L., Higgins, C., and Johnson, K.L., 1999 Ottawa, ON: Health Canada.
This report frames work-life conflict in terms of its potential costs to the individual, to the organization, and to the health care system. It uses survey data collected by Duxbury and Higgins between 1991 and 1998 to address the following questions:
 1. What are the cost of work-life conflict in terms of:
 - a. The individual employee?
 - b. The employing organization?
 - c. The Canadian health care system?
 2. What is the prevalence of work-life conflict among Canadian employees?
Which groups are at particularly high risk?
 3. What are the implications of these costs for formulation of organizational and public policy?

Workers with high work-life conflict registered 13.2 days of absence per year, compared to only 5.9 days per year in the low work-conflict group.

- *Shining Lights: Studies That Have Most Influenced the Understanding of Health Promotion's Financial Impact*
Golaszewski, T., 2001. "American Journal of Health Promotion 15(5): 332-40.
This paper examines literature from the past 20 years and identifies those studies that support the economic merit of health promotion. It includes descriptions of the scope and outcomes of 12 selected health promotion initiatives. The author concludes that health promotion interventions appear to provide positive financial returns, particularly in reducing health care costs and absenteeism.

... absenteeism reduction may represent health promotion's most defensible economic argument, partly from the well-executed studies cited earlier, but also from the fact that it represents a relatively easy and valid construct to measure.

- *Financial Impact of Health Promotion: We Need to Know More, but We Know Enough to Act*
Harris, J.R., Holman, P.B., and Carande-Kulis, V.G., 2001. American Journal of Health Promotion 15(5): 378-82.
This paper summarizes current efforts at the Centres for Disease Control and Prevention to determine the financial impact of prevention and health promotion. It concludes that although additional research is needed, there is sufficient knowledge in specific areas to take action. Examples include influenza and pneumococcal vaccination for older adults and the chronically ill, and tobacco cessation counselling and treatment. The paper also offers recommendations for employers about actions they can take to improve delivery of health promotion and prevention programs.

Although knowledge of the cost effectiveness or cost-benefit of individual interventions is an important first step, ultimately we need to know the financial impact of these interventions, used together or alone, in real-world settings relevant to health care purchasers and health plans.

- *Healthy Workplaces and Productivity: A Discussion Paper*
Lowe, G.S. 2003. This paper, prepared for the Economic Analysis and Evaluation Division, Health Canada, can be found on the Canadian Policy Research Networks website at <http://www.cprn.org>.
This paper examines two health issues of critical importance to practitioners and policy makers: What are the work environment and organizational factors that positively influence workers' health and well-being? Are organizations that support the achievement of good health for their employees also more productive?

For employers, the paper's central message is that workplace wellness programs can yield cost savings and productivity payoffs. However, the underlying determinants of health and productivity can only be altered through changes to job design, organizational systems, human resource management practices, and the overall culture of the workplace.

- *A Return on Investment Evaluation of the Citibank, N.A., Health Management Program*
Ozminkowski, R. J., Dunn, R.L., Goetzl, R.Z., Cantor R.I., Murnane J., and Harrison, M., 1999. *American Journal of Health Promotion* 14(1): 31-43.
This study of the Citibank Health Management Program represents a significant milestone in programmers' efforts to justify increased corporate investment in health promotion programs. It employed regression-based methods for determining net benefits of an intervention.

The evaluation of the Citibank Health Management Program found that the program returned at least \$4.56 for every dollar invested.