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Cost Savings from Health Promotion and Stress Management Interventions

By John Adams

We do not see many articles these days on health and stress interventions in the workplace, but this does not mean that the problems arising from excessive pressure and poor life style habits have gone away. In fact, the conventional wisdom is that stress levels are higher than ever due to the speed of work, globalization, the challenges of the 2009 economy, and the absence of support for those who are under too much pressure to be fully healthy or fully effective.

The purpose of this article is to describe the magnitude of the difficult-to-measure costs of workplace stress and poor health habits, and to present criteria for successful health promotion and stress management interventions. This article begins with data from the National Center for Health Statistics that demonstrate the interrelationships among health, health risk factors, and excessive stress. It then outlines a number of findings about the current costs of stress, poor health habits, and the cost-effectiveness of recent comprehensive interventions. Next, the few studies that were found (including the author of this article) that actually assess the longer-term impact of health and stress programs are summarized. Last, there is a listing of essential criteria and strategy elements for creating a successful comprehensive health promotion and stress management intervention.

It has long been known that up to 75-85% of total health care risks overall are related to life style habits and stress levels. Nearly all of the leading causes of “premature death” and serious illness include significant numbers of life style factors, most of which are further exacerbated by excessive stress and strain. For example, under excessive stress, smokers smoke more, drinkers drink more, overeaters eat more, and so on. To understand this, please review *Table 1*.

Each year the rankings shuffle slightly, but the overall list of causes is predictable and the associated life style and stress level contributions to risk are well established. Certainly improved stress management and the adoption of healthier life style habits will have a positive long-term impact on the state of people’s health.

Bringing this exploration into the workplace, there are “invisible overhead” costs that organizations must bear, which are rarely accounted for, and which are difficult to measure. If an effective health promotion and stress management program were able to reduce a significant portion of this invisible overhead, such a program would be incredibly cost-effective.

Invisible Overhead Costs of Poor Health Habits and Excessive Stress

The following list includes a number of different illness and health care costs arising from poor health habits and unmanaged stress. These are unmeasured costs that organizations often must pay for through direct reimbursements, absenteeism and presenteeism, poor decisions, bad judgments, turnover and replacement, and so on. Taken together, events such as these add up to a huge annual unmeasured overhead charge for an organization. It is the contention of this article that effective,

Table 1: Percentage of total deaths and lifestyle related risk factors for the 10 leading causes of death in the U.S.

Cause of Death	Percentage of Total Deaths	Primary Lifestyle Risk Factors
1. Heart Disease	28.0%	Smoking, hypertension, diet, high cholesterol, Type A behavior, lack of exercise, diabetes mellitus, obesity, stress (estimated 54% of risk is life style)
2. Cancers	24.0%	Smoking, alcohol, diet, environmental carcinogens, obesity (est. 37% of risk is life style)
3. Unintentional Injuries	5.9%	Alcohol, drugs, negative driving habits, not using seat belts (est. 60% + of risk is life style)
4. Stroke	5.1%	Hypertension, smoking, high cholesterol, stress (est. 50% of risk is life style)
5. Chronic, obstructive lung disease	5.1%	Smoking
6. Diabetes Mellitus	2.9%	Obesity, diet (est. 34% of risk is life style)
7. Pneumonia & Influenza	2.4%	Smoking, alcohol (est. 23% of risk is life style)
8. Suicide	2.1%	Stress, alcohol, drugs (est. 60% of risk is life style)
9. Kidney Diseases & Cirrhosis	1.7%	Alcohol (est. 70% of risk is life style)
10. Alzheimer's Disease	1.5%	Blood pressure, cholesterol, diabetes mellitus, mental lassitude
Other	21.3%	

(National Center for Health Statistics, 2004)

comprehensive health promotion and stress management interventions can be highly cost-effective in reducing this invisible overhead.

Cardiovascular Disorders

» 35% of employees are at significant risk.[1–see *Notes*]
» A nonfatal heart attack costs up $150,000 to treat (five years) in the U.S.[2]
» U.S. organizations spend $700,000,000 per year to recruit and train replacements for employees aged 45-65 who die of heart attacks.[3]
» Approximately 55% of cardiovascular risks are attributable to poor health habits and poor stress management.[4]
» Smoking and obesity each double the risk of a heart attack.[4]
» Stress management and life style changes reduced heart attacks 75%.[5]

Cancer

» Approximately 37% of cancer risks are attributable to life style habits—especially eating and smoking.[6]
» Ten year cost of lung cancer treatment in the U.S. is approximately $110,000[7]
» Smoking increases the risk of lung cancer 10 to 20 fold.[8]
» High fat/high chemical/low fiber diets contribute significantly to gastrointestinal cancer risks.[6]

Smoking

» An average of 1,205 Americans die as a result of smoking every day.[9]
» 23% of U.S. employees are regular smokers. Smokers are absent from work 6.5 days per year more than non-smokers.[10]
» Each smoking employee costs an organization approximately $10,000 annually in lost productivity due to: higher absenteeism, lost productivity while engaged in smoking behavior, higher medical costs, and harmful effects of secondary smoke.[10]

Substance Abuse

» At least 10% of U.S. employees are abusing alcohol and/or drugs.[11]
» Substance abusers are absent three times as often as nonusers.[12]
» Substance abusers have 3.6 times as many accidents as nonusers.[12]
» The average substance abuser's performance is diminished by 25%.[12]

Stress

» Approximately 25% of U.S. employees are experiencing high levels of stress on any given day.[13]
» Those experiencing high stress are almost certain to have diminished performance—due to "drift" or stress-based "presenteeism"—accounting for a 25% reduction in productivity. The ComPsych 2003 Organizational Survey indicated that 43% of workers report losing 1 hour or more a day in productivity due to stress; 23% of workers say they miss more than 6 work days a year due to stress, and 29% of employees say they come to work 5 or more days a year too stressed to be effective.[14]
» The "invisible overhead" workplace events associated with excessive stress are estimated to cost $200-300 billion per year, and include:[15]
  - Poor decisions and bad judgment
  - Loss of innovation and intellectual capital—superficial, simplistic, routine thinking
  - "Unresolvable" conflicts & diminished teamwork
  - Workplace violence and threats
  - Diminished customer service

- More frequent accidents (60-80% are stress-related)[13]
- More frequent mistakes[3]
- Twice as many absences and illnesses (550,000,000 days per year lost to stress related absenteeism in the U.S.[3]
- Reduced productivity or "down-shifting" (per U.S. employee: 16 days absence plus $8000 each in lowered effort)[13]
- Stress-related job turnover & replacement (Bureau of National Affairs estimates that 40% is stress related)[13]

The American health care bill is 17% of the GDP in 2009, and is estimated to rise to 20% by 2020 if no changes are implemented in our health care system. A significant portion of health care charges is due to poor life style habits and excessive stress. The "invisible overhead" workplace costs of poor health and excessive stress are up to three times higher than the direct medical costs. Depression and stress have the greatest impact on higher health care costs.

Return On Investment

» Well designed workplace health promotion and stress management programs can produce savings in health plan costs, sick leave, disability costs, and workers' compensation costs by an aggregate of 25%.[10]

» According to 2002 U.S. DHHS report, worksites with physical activity programs reduced health care costs 20-55%; reduced short-term sick leave 6-32%; and increased productivity 2-52%.[10]

» "The Wellness Council of America (WELCOA) estimates the current cost per employee to be between $100 and $150 per year for an effective wellness program that produces return on investment (ROI) of $300-450 per employee" (p. 3).[10]

» A Minnesota electronics manufacturer reported 30% reduction in Workers' Compensation claims following health and stress program.[3]

» A Minnesota plastics manufacturer reported 56% drop in workers' compensation claims following health and stress program.[3]

» Waste Management Inc. saved $3750-$15,000 per employee (depending on level) in operating costs following a health and stress program.[3]

» Motorola estimated $3.93 in performance improvement benefits for every program dollar spent.[10]

» Citibank estimated $4.56-4.73 in performance improvement benefits for every program dollar spent.[10]

» The Union Pacific Corporation estimated $4.07 in performance improvement benefits for every program dollar spent.[10]

» General Motors estimated over $4.50 in performance improvement benefits for every program dollar spent.[10]

» An insurance company experienced 30% reduction in workmen's compensation claims.[3]

General

» Poor life style habits and poor stress management cause 75-85% of ill health.[16]

» The life style choices with the biggest impact on a company's bottom line are smoking, physical activity, and nutrition.[10]

» The American health care bill is 17% of the GDP in 2009, and is estimated to rise to 20% by 2020 if no changes are implemented in our health care system.[17] A significant portion of health care charges is due to poor life style habits and excessive stress.

» The "invisible overhead" workplace costs of poor health and excessive stress are up to three times higher than the direct medical costs. Depression and stress have the greatest impact on higher health care costs.[10]

In summary, significant invisible overhead costs in the workplace are recoverable through employee education and screening programs, and through promotion of organizationally supported work-life balance support. Such initiatives have been shown to be very cost-effective.

There are enormous potential cost savings for organizations, but the work of the consultants, trainers, coaches, and so on must be explicitly supported by the leadership of the organization in order to realize these potential savings. A successful program that results in improved health and reduced stress problems creates a competitive advantage for the organization.

Building a strong case for the Return on Investment (ROI) in stress management and health promotion education and the need for support in the workplace is challenging. For example, it is not possible to measure the number of prevented heart attacks that result from such training and coaching efforts. It is equally impossible to measure the number of people who stop abusing alcohol or drugs if we do not know how many people are abusing these substances in the first place.

Most helpful would be a before and after research study that measures variables including health risk factors, stress levels, improved decision making effectiveness, reduction in turnover rates, increases in productivity, reductions in absenteeism, and improved judgment. To date this study has never been carried out. A few studies were found that assessed the longer-term impact of stress management and health promotion programs.

When evaluation studies are carried out on organizational interventions, there are at least four different focuses or levels that are possible for analysis (as developed by Kirkpatrick, 1994). In Kirkpatrick's model, Level One Evaluations are satisfaction measures typically taken at the end of an event. These are the most frequent evaluations. They are intended to measure course-end feelings about how well the

objectives were met, how well the trainer performed, and how useful the participants expect their learning to be. They cannot measure long-term outcomes.

More rarely, Level Two Evaluations are conducted. These assessments require a pre- and post- test to measure how much new knowledge was received and, after some time, how much new knowledge was retained. More rarely still, Level Three Evaluations measure the extent to which participants practice and sustain new behaviors.

Level Four Evaluations, necessary to fully assess the ROI capability of a program (almost never conducted), measure the systemic impact of the intervention on the functioning of the individual or larger system. In relation to stress management and health promotion interventions, Level Four Evaluations would assess how much each individual's health and performance actually improved at reduced operating cost to the organization. The physiological and performance data required for such a study are difficult to collect, and in many countries, individual privacy laws protect these data types.

Impact of Organizational Stress Management and Health Promotion Programs

In spite of these difficulties, a few Level Four evaluation studies of the longer range impact of stress management and health protection workplace interventions have been published, and the results of three representative examples of these are summarized here.

Van der Klink, Blonk, Schene, and van Dyke (2001) reviewed 48 studies, involving 3736 participants, carried out between 1977 and 1996, which focused on two contexts for stress management intervention: 1) increasing individual resources to cope effectively (through stress management training); and 2) changes to the organizational context (through organizational development and job redesign).

This Dutch research team asked the question 'What kinds of stress interventions are most effective?' They also explored moderating variables such as job characteristics, nature of the intervention (remedial or preventive), and the length of the intervention. The assessment resulted in four kinds of interventions that demonstrated positive outcomes—three individually focused and one organizationally focused.

1. Cognitive-Behavioral focus: new thinking patterns and new behavioral responses (18 studies)
2. Relaxation focus: a variety of relaxation techniques (17 studies)
3. Multi-modal focus: combinations of the cognitive-behavioral and relaxation techniques (8 studies)
4. Organizational focus: consideration of work pressures, sense of control, conditions, management, and colleague support (5 studies)

Seventeen of these studies showed statistically significant positive impacts. The strongest positive outcomes were found in studies that focused upon Cognitive-Behavioral change instruction (8 of 17 = 47%). Relaxation interventions were effective in five studies (of 17 = 29%). Multi-modal studies found three effective outcomes (of 8 = 38%). Organizationally focused studies found one effective outcome (of 5 = 20%). Since the number of studies is small, we can only conclude that properly delivered and implemented interventions have a good chance of being effective. More organization-level studies are needed.

Sims (1997) reviewed the effectiveness of research studies on reducing the stress levels in the workplace in a similar manner to the previous article. Twenty-six separate studies that found either positive cognitive-behavioral outcomes or positive relaxation outcomes were summarized. In her overall conclusions, the author points out that there were methodological concerns (e.g. no control groups) in most of the studies that make the results less certain. While concluding that behavioral-cognitive and relaxation approaches appear to have efficacy, she calls for more thorough research studies. She also found that group training methods are more cost-effective than individual counseling, and that the expertise of the trainer or consultant is of utmost importance. Organization impact was not considered.

McMahon, Kelleher, Helly, & Duffy (2002) published a comprehensive evaluation of the impact of a single workplace health promotion program. The program they evaluated was sponsored by the Irish Heart Foundation (The Happy Heart at Work Program), and was intended to promote a healthy life style. The program was successful, but the success level and durability was a function of how clearly the management actively supported the program and its outcomes following delivery. Program outcomes were also affected positively by high level employee "ownership" of the program. In addition to improved life style habits, outcomes included improved workplace morale and productivity, as well as reduced absenteeism and turnover. Company image in the community also improved.

The essential element of management and organizational support, emphasized by

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McMahon et al. (2002), but missing from most evaluation studies, is also emphasized in Adams (1989), summarized next. Without effective and long-term organizational support for these interventions, the efficacy of such programs are severely diminished.

Comprehensive program design features

Adams (1989) summarized many years of successfully implementing organizationally based stress management and health promotion interventions. To realize as much positive and enduring change as possible, a systematic approach to the design and delivery of these programs is clearly needed. Stand-alone training programs are generally of limited efficacy, although the number of predictable individual outcomes that were sustained for at least six months grew in proportion to the length of the training program (Adams, Fischer-Quigley & Schmidhorst, 1984).

In a control group that received only before and after questionnaires six months apart, the average person made 1.4 positive life style "improvements" and 2.8 life style "declines". In a second group that completed and received feedback on a health and life style assessment between the before and after questionnaires, the average person made 3.5 positive life style "improvements" and 1.4 life style "declines". The group that completed both the life style assessment and a four day residential training program on health promotion and stress management between the before and after questionnaires, sustained 5.3 positive life style "improvements" and reported only 1.2 life style "declines". The most predictable enduring (six month) improvements, in order of frequency, were: perceived adequacy of stress management skills, regular relaxation practice, regular vigorous exercise, awareness of consequences of poor stress management, maintain recommended weight, eat three balanced meals daily, and striving for self knowledge.

There also were predictable declines in the above training group's before and after results. Among the most frequent regularly identified declines reported on the "after" questionnaire were: feeling supported adequately at work, overall job satisfaction, and learning and growing on the job. Note that all are organizational factors. Stress management and health promotion education that includes a workplace component may help make people more aware of, and therefore somewhat less satisfied with, the stressful nature of their everyday work. Upon returning from such a training program, many people attempt to do things to reduce their on-the-job stress and meet resistance from others in the workplace who did not take part in the program—thereby reducing the level of support they are experiencing on the job. Thus a more comprehensive intervention is necessary!

My experience of 33 years, working with health promotion and stress management interventions in organizations, make it clear again that it is important to obtain active support beyond the training room in order to make a difference in the actual workplace conditions and practices.

The success criteria of an organizationally based, highly cost-effective stress management and health promotion program include (adapted from Adams, 1989 & 2003):

1. Specific, measurable, achievable participant learning goals
2. Joint focus on individual and organizational responsibilities and benefits
3. Top level support from the organization's management
4. Feedback loops for system response to ideas and issues that emerge from the training program
5. Discrete steps for planning the program that include:
   - Assessment of each employee's stress level and life style habits
   - Assessment of present adaptive and maladaptive coping strategies
   - Identify major workplace stressors
   - Explanation of what stress is
   - Identify individuals' symptoms of excessive stress
   - Identify personal causes of stress
   - Describe various stress management and health promotion response strategies
     - Self management (life style) strategies
     - Coping with unavoidable changes
     - Addressing unavoidable chronically stressful conditions
     - Optimal performance self-management
     - Behavioral and cognitive versatility
   - Develop personalized action plans for improvement
6. Develop readiness for stress management and health promotion training
   - Assess position of top management
   - Identify organizational areas of concern
   - Coordinate with relevant departments (e.g. medical, HR, strategic planning)
   - Identify and agree to program goals
   - Identify training resources
   - Anticipate and prepare for criticisms
   - Develop impact assessment
   - Identify target population

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» Determine course objectives and content
» Select a title that communicates the desired outcomes
» Select experienced and proven instructors

7. Overcoming resistance to stress management programs
   » Provide data on potential cost effectiveness
   » Cultivate understanding that the stress response is a natural biological response, and not a sign of individual weakness or an indicator of poor mental health
   » Establish that the program is for preventing problems and improving performance, and that it is not a form of treatment or psychotherapy
   » Demonstrate that many approaches and techniques will be taught, more than merely "relaxation"
8. Common errors to avoid (Adapted from McCauley and Bellingham, 1984):
   » FRAGMENTATION: developing unrelated and unintegrated programs.
   » ACTIVITIES: creating diverse activities without articulating desired results.
   » ILLNESS FOCUS: a successful program focuses on establishing and maintaining well being. This does not mean there should not be referrals for conditions requiring treatment.
   » LACK OF INVOLVEMENT: the more people involved in some way with program development and conduct, the greater the enthusiasm and involvement.
   » UNAPPLIED KNOWLEDGE: facts do not change behavior; "portable" skills and motivation are the tools for success.
   » INDIVIDUAL FOCUS: While individuals *are* responsible for implementing their own personal action plans, if the organization's leadership, practices and culture are not addressed, people's ability to sustain personal change will be limited due to the status quo inertia reflected in most organizations. *A feedback loop of constructive leadership, practices, and culture change recommendations must be considered by the organizations' strategic planning processes.*
   » EMPHASIS ON START-UP: a successful program must be based on a long-term view.

We can conclude that a positive ROI is possible if the programs are well conceived and well supported by the management of the organization. In order to realize positive outcomes from the investment in such programs, it is necessary for a significant number of individuals to exert the discipline necessary to make enduring changes in one or more of their fundamental life style and stress management habits. It is also necessary for the leadership, practices, and culture of the organization to come under scrutiny, in order to identify both sources of unnecessary stress generation and means for supporting desirable changes.

It is well known that deeply ingrained habits are difficult to change (e.g. see Adams, 2003) and if there is widespread regression from commitments at the end of a program, the net result may be few enduring changes six months or a year later. Thus, the commitment of the organization to supporting individuals in making personal changes is of utmost importance.

While individuals are responsible for implementing their own personal action plans, if the organization's leadership, practices and culture are not addressed, people's ability to sustain personal change will be limited due to the status quo inertia reflected in most organizations. *A feedback loop of constructive leadership, practices, and culture change recommendations must be considered by the organizations' strategic planning processes.*

Summary: Success Factors for Successful Stress Management and Health Promotion Programs

There are several factors that are necessary to increase the chances of a successful program. First, any program must be fully accepted and actively supported by the leadership of the organization. Second, it must be based on the idea that preventing stress and health problems requires attention to changing habit patterns—both the individual and the organization's culture. Specific supports on both the individual and the organizational levels are needed for successfully maintaining agreed to habit changes.

Third, the focus of the program should be multi-faceted. Some people need to eat differently while others need to manage their time more effectively. A wide variety of ideas must be presented to encourage individuals and teams to tailor their follow-up responses. Everyone taking part will not find every stress and health program module to be top priority. Fourth, the providers of stress management and health promotion programs should be experienced in delivering all the facets of a multi-modal program—able to address issues including: self management (eating, exercise, relaxation, etc.); individual and organizational change processes; individual habit and organizational culture change; and behavioral skill training for coping effectively with stressors as they arise.

Finally, before and after impact evaluations should be carried out to monitor both the impact and the cost-effectiveness/ROI of each program.

Notes: Sources for Magnitude of Invisible Overhead Costs

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