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Worksite Environment, Culture, and Modifiable Health Risk: Assessment of a University Worksite

by

Stephanie R. Keteyian-Stacy

Thesis

School of Health Promotion and Human Performance

Eastern Michigan University

in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

in

Community Health Education

Thesis Committee:

Kay Woodiel, Ph.D., Chair

Joan Cowdery, Ph.D.

Andrew Cornett, Ph.D.

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Dedication

  I dedicate this thesis to my parents, for instilling in me the importance of hard work, following my passion, and higher education. Their unconditional love and support provided an unwavering foundation, which allowed me to think creatively and grow. It is also dedicated to my husband, my rock. Thank you for your unconditional love, support, and encouragement.

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Abstract

This study used an online Health Risk Appraisal (HRA) to assess individual employee health and eight additional statements to assess the worksite health "culture" of Eastern Michigan University. It was hypothesized there will be a relationship between EMU employees' levels of self-reported health risk and their perceptions of supportiveness of the worksite environment and health culture. The results indicated the relationship between health risks of participants and perception of supportiveness of the worksite culture was not significant (p >.05). Of the employees that participated, the top three risk factors identified were body weight (20%), stress (14%), and blood pressure (10%). The tenets of the PEN-3 model were used to identify points of entry for possible future health promotion programming. It was found that 54% of participants were willing to participate in programs to enhance overall health. Further assessment using a larger sample size is needed to enhance understanding of the relationship.

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Chapter 1: Introduction

The Centers for Disease Control and Prevention (CDC, 2009) reports one out of every two adults in the U.S. had at least one chronic illness in 2008. Chronic disease is the leading cause of death and disability in the United States. Heart disease, stroke, diabetes, cancer and arthritis are among the most common, costly, and preventable of all health problems in the U.S. (USDHHS, 2007). Due to the high cost of healthcare, employers are taking on a great deal of this burden. To combat the strain on employers a trend of workplace health promotion has emerged. Evidence supported in literature identified workplace wellness programs as an important strategy to prevent the major shared risk factors for chronic conditions. The focus of worksite health promotion has begun to shift from the individual employee to the worksite environment and health culture. The US Department of Health and Human Services (DHHS) specifically identifies universities and colleges as key locations for workplace health promotion programs (USDHHS, 2007). There is a gap in literature assessing university culture and the potential impact targeted program planning may have to reduce the prevalence of chronic disease.

Economic Impact

Obesity and other chronic disease risk factors place enormous economic demands on the United States. The CDC (2009) reported approximately 75% of health care expenses every year are attributed to chronic disease. A substantial portion of these diseases and their associated economic costs are attributable to modifiable health risk factors. The United States leads the world in health care spending, and costs continue to increase. In 2001 the average health care

cost was $5,035 per American (CDC, 2009). In 2015, Borger et al. (2006) projects that health care costs in the United States will reach $4.0 trillion, or $12,320 per person.

Employers are the leading provider of health insurance. Chronically ill patients cause financial strain on employer to insure. In 2008, the average annual employer contribution for family health insurance was $9,325, a 117% increase from $4,247 in 1999 (The Henry J. Kaiser Foundation, Employer Health Benefits: 2008 Summary of Findings, 2008). Employees with metabolic syndrome, defined as a group of risk factors that occur together and increase the risk for coronary artery disease, stroke, and type 2 diabetes (Mokdad , 2004) are more costly to insure for an employer, with an estimated excess medical cost of $259 per month compared to those without metabolic syndrome (Fitch, Pyenson, & Iwasaki, 2007). Those employers also report low scores in health-related quality of life (greater mentally and/or physically unhealthy days and more days of limitation to their activities of daily living) than adults without this syndrome. This lack of well-being reduces job productivity through absenteeism and disability, which contributes to the indirect cost of metabolic syndrome.

Literature provides evidence that health and wellness promotion programs offered to employees provide positive results in reducing employee fiscal burden. Due to this evidence, the number of organizations and companies offering a health promotion program for their employees at the worksite has increased over the past 25 years (Aldana, 2005). At the employer's expense, poor employee health stimulated this trend. Health professionals find the workplace a suitable place to reach the majority of the population and potentially increase quality of life, and decrease mortality (USDHHS, 2010).

A typical employer approach to cost containment is to target individual employees with wellness programs focused on physical activity, weight control, and stress management.

Literature contains evidence of significant returns on investment from such programs. The challenge is to change behavior from lifelong unhealthy habits, to maintainable positive health behaviors (Aldana, 2001).

It has been suggested in order for a worksite to be healthy, the individuals and the organization must be considered as a cohesive unit (Golaszwski, Allen, & Edington, 2007). Investigations (Goetzel et al., 2007) into best practices have revealed a healthy worksite environment and a health supporting worksite culture are critical components of worksite health promotion programs, and agree that once considered stand-alone enhancements, such initiatives should be fully integrated within workplaces. This integrative approach is referred to in literature as the "next generation" of health promotion and management programs (Golaszewski et al. 2008). The "next generation" of programs aim to include three dimensions: 1) based on social ecological approaches; 2) address multiple risk factors; and 3) consider the broad social context of the worksite.

The Task Force on Community Preventive Services (2010) has developed evidence-based recommendations to meet the goals set for Healthy People 2020. Evidence based research designed to evaluate multiple components should include Assessment of Health Risk and Feedback (AHRF) in conjunction with health education. The problem is lack of consistent evaluation tools to assess the health of worksite as a culture. The worksite environment and "health culture" are significant factors to improve employee health-related quality of life, decreases chronic disease, and decreases fiscal cost to employers.

There are current gaps in literature. One significant gap includes the lack of evidence-based health promotion programs investigating the worksite health culture of the populations at the university level.

Purpose

The purpose of this study is to examine the relationship between modifiable health risks and perception of supportiveness of the worksite environment. The EMU worksite community will be viewed as a culture. Tenets of the PEN-3 model will be used to assist the researcher in identifying possible points of entry for potential future health education programs. By using a theory-driven approach to understand the EMU worksite health culture, more targeted programming decisions can be made.

Significance of Study

The findings from this study have the potential to help better understand the worksite health culture of Eastern Michigan University and identify modifiable health risk behaviors that may create a healthier workforce and reduce the employers' financial burden. The Healthy People 2020 guidelines endorse the need for Worksite Health Promotion programs (WHP). This study provided a unique approach as the US Department of Health and Human Services (DHHS) specifically identifies universities and colleges as key locations for workplace health promotion programs (Task Force on Community Preventive Services, 2010). This study may fill in gaps in literature by exploring the complexities of a University setting for impacting the Chronic Disease Burden in the United States.

Despite favorable research conditions of higher education institutions, the majority of WHP research is performed in business and industry. More research is crucial to understanding how to implement effective programs and help program planners understand the relationship of the university culture and its potential to help reduce chronic disease rates nationally.

Assumptions

The assumptions of this study include the following:

1. Anonymous questionnaires are valid instruments to measure health related

    issues, characteristics, perceived barriers, incentives to participate in modifying

    health risk behaviors, and perceived health interests.

2. Respondents answered the questionnaire honestly and to the best of their ability.

Limitations

The limitations of this study included the following:

1. Willingness of Eastern Michigan University faculty and staff to participate in the survey.

2. Sample size may not be truly representative of actual demographics.

3. Honesty of reporting, and accuracy of the questionnaire's administration.

Delimitations

The delimitations of this study included the following:

1. The study population is limited to a survey of employees of only one university.

2. The instrument utilized for this study was distributed online only.

Specific Aims

The specific aims of this study include:

1. The use of Health Risk Appraisal (HRA) questionnaire as a tool to assess individual

    employee's current health and quality of life.

2. The use of eight statements to assess the worksite health "culture" of Eastern Michigan

    University and the role it plays in supporting healthy employee lifestyles.

3. The use of the PEN-3 model to identify points of entry for possible future health promotion programming and provide recommendations.

Research Questions and Hypothesis

1. What are the overall wellness scores (The wellness score is generated from three major components of the HRA: behavioral health risks; mortality risks; and preventive services usage) for the Eastern Michigan University employees?

2. What are the top three most prevalent modifiable health risk behaviors of the participants (identified by the HRA)?

3. What are the participants' attitudes about their coworkers supporting one another's efforts to adopt healthier lifestyle practices?

4. Do participants feel Eastern Michigan University has a sense of community (for example, co-workers get to know each other, feel a sense of belonging, and care for one another in times of need)?

5. How do participants perceive Eastern Michigan University's commitment to supporting healthy lifestyles (through resources such as time, space and money)?

It is hypothesized there is a relationship between Eastern Michigan University levels of self-reported modifiable health risk (as measured by the HRA wellness score) and the Eastern Michigan University employees' perceptions of the supportiveness of the worksite environment and worksite health culture (as measured by worksite health cultural questions).

Chapter 2: Review of Literature

The literature review will focus on the following six categories: (1) brief history of worksite wellness; (2) Assessment of Health Risk Assessments (HRA) to examine effectiveness of worksite wellness programs; (3) worksite environment; (4) worksite "health culture"; (5) brief background of modifiable health risk; and (6) PEN-3 model history and framework.

History of Worksite Wellness

Over the past 25 years, the number of organizations and companies offering health promotion programs for employees at the worksite has increased. The Wellness Councils of America reports 81% of businesses with 50 or more employees have some form of health promotion program, the most popular being exercise programs, smoking cessation classes, low-back pain programs, and stress management (Sparling, 2010).

The field of occupational health appeared in the early 20th century, and the awareness of the association between work-life and health and wellness was first documented over a decade ago (Danna & Griffin, 1999). The Bureau of Labor Statistics 2010 reported the average employed person aged 25 to 54 spends close to nine hours per working day on the job. The CDC launched the worksite wellness initiatives to address the workforce, in aims to reduce the prevalence of chronic disease by addressing the high risk health behaviors.

Health and safety of the workforce became a concern during the industrial revolution. Employers are required to provide safe and healthy work environments. The motivation to do so occurred in the latter part of the 20th century. It has been predicted that if rising healthcare costs and current health trends are not reversed or stabilized, health care spending will soon overtake profits (Hewitt Associates, 2006). Companies such as Dow chemical and Johnson and Johnson have implemented comprehensive worksite health promotion programs designed to enhance the

health and quality of life for employees, while resulting in more productivity and other financial benefits for the companies themselves (Henke, et. al, 2011). Johnson & Johnson reported estimates of the company's annual savings since the worksite health promotion plan was implemented of $9 to $10 million from reduced medical utilization. Overall weighted savings average per employee of approximately $224. Most benefits were experienced in the third and fourth years after program initiation.

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 a Return on Investments of $300-450 (Henkin, 2008). This suggests that worksite health promotion programs can have a significant impact on both the physical health of individual employees, as well as the financial wellness of the employers. The fiscal benefit acts as an incentive for companies, while the multidimensional worksite health promotion programs are important to public health and reducing morbidity and mortality rates related to chronic disease.

Although literature reveals the workplace as a pivotal location to improve national health and quality of life, a 2004 National Worksite Health Promotion Survey indicated fewer than 7% of the programs are evidence based and have all five of the key elements contained in the Office of Disease Prevention and Health Promotion's definition of comprehensive worksite health promotion programs: 1) health education programs; 2) supportive physical and social environment; 3) health screening and appropriate educational follow-up; 4) linkages to other related programs (e.g., safety, employee assistance programs); and 5) integration within the organization (e.g., staff, budget, resources) (Goetzel, et al., 2007). One objective of Healthy People 2010 was for at least 75% of worksites to offer comprehensive worksite wellness programs for their employees (Task Force on Community Preventive Services, 2010). (Task

Force on Community Preventive Services, 2010) Worksite programs are part of a public health strategy to address the increase in chronic diseases. The Task Force on Community Preventive Services is an independent, non-governmental, volunteer body of public health and prevention experts, whose members are appointed by the Director of CDC. The role of the Task Force is to 1) oversee systematic reviews led by scientists, carefully consider and summarize review results, make recommendations for interventions that promote population health, and identify areas within the reviewed topics that need more research (Task Force on Community Preventive Services, 2005). The Task Force recommends 18 components of an effective comprehensive worksite wellness program that fall into four categories: insurance benefits, policies, programs, and communications. Worksite programs shown to be most effective were those that used evidence-based interventions to help employees lose weight, increase physical activity, reduce tobacco use, and have better access to influenza vaccination.

There are five health conditions identified by the Task Force on Community Preventive Services, (2010) that are potentially responsive to health intervention (diseases of the heart, cancers, cerebral-vascular disease, chronic lower respiratory disease, and unintentional injuries). The diseases associated with these conditions are strongly affected by modifiable behavioral factors (Mokdad, 2004). The four factors include: tobacco use, poor diet, physical inactivity, and alcohol use as risk factors for the previous top five conditions mentioned, as well as 20 of the most costly physical health conditions for U.S. employers (including angina pectoris, diabetes mellitus, acute myocardial infarction, chronic obstructive pulmonary disease, and back pain) (Goetzel, 2003).

The illness burden of chronic disease is one of the most costly aspects of health care. In 2007, The Center for Disease Control Reported 75% percent of total health care spending in the

United States went towards the treatment of chronic diseases, such as diabetes and asthma.

Approximately half of all chronic diseases are linked to preventable problems including

smoking, obesity, and physical inactivity (CDC, 2009). Numerous studies have shown that when

patients with chronic diseases focus on their health and get involved in their own care, health

improves and health expenses decrease.

While the effect of worksite wellness programming is highly publicized in the literature,

it remains difficult to measure and evaluate at the university setting. Wellness programs lack

standards of evaluation and are limited in their ability to demonstrate effectiveness and impact on

employee health and well-being. One major limitation of previous research is the lack of a

common metric for determining employee health risk across worksites. It is also noted that most

past studies question individual employees and few examine the corporate environment and/or

organizational health culture.

Assessment of Health Risk Assessments (HRA) to Examine Worksite Wellness Programs

According to a 2004 national survey of worksite health promotion programs, Health-Risk

Assessment was offered at 50% of companies of more than 750 employees (Linnan, 2008).

Assessments of health risks are user friendly, low cost, and electronic versions make them

appealing to large companies. The HRA are of interest to worksite health promotion planners

because they are easy to administer, convey a lot of information quickly for needs assessment,

can provide access to a large number of people, are representative of part of the workforce, and

allow the potential for follow-up.

Literature has revealed the terms health-risk appraisal and health-risk assessment are used

interchangeably, and share the acronym HRA. This can become confusing for the average

consumer of a worksite wellness program. Most literature describes the basic elements of HRAs:

the assessment of personal health habits and risk factors (which may be supplemented by biomedical measurements of physiologic health); a quantitative estimation or qualitative assessment of future risk of death and other adverse health outcomes; and provision of feedback in the form of educational messages and counseling that describe ways in which changing one or more behavioral risk factors might alter the risk of disease or death (DeFriese, 1990).

Assessment of Health Risks with Feedback (AHRF) is a new focus of the Healthy People 2020 and the primary intervention component, when used alone, or as part of a broader worksite health promotion program. This is particularly effective when health education and other health promotion components are offered as follow-up to the assessment in an effort to improve the health of employees. That said there are potential research questions that should be further addressed: Does AHRF, when used alone, lead to behavior change or change in health outcomes among employees? Does this type of assessment, when used with other worksite-based intervention components result in change? And finally, what types of behaviors or health outcomes are affected by these interventions (Guide to Community Preventive Services 2009)?

Early research regarding HRA use for changing targeted health behaviors and conditions was conducted at the community level in the U.S. with the Multiple Risk Factor Intervention Trial (MRFIT) (Multiple Risk Factor Intervention Trial Research Group, 1982). That was followed by the European Collaborative Trial of Multifactor Prevention of Coronary Heart Disease (WHO European Collaborative Group, 1980). The European initiative focused on more than 60,000 working men across worksites in six countries in Europe. In the mid-1980s the CDC released an HRA for public use. A partnership between the CDC and the Carter Center developed around this tool, and the Carter Center later adopted it (it is now known as the Healthier People HRA).

An increase in HRA reviews was found during the 1990s. The general consensus was that the use of HRAs and other AHRFs, when used alone (not in the context of broader health education programs), had value as tools for assessing the health of populations and for increasing awareness of potential health risks. Problems with the quantity and quality of the available evidence, however, made it difficult to draw a conclusion about the impact of these interventions on health behaviors and risk factors (Anderson, 1996).

Modifiable Health Risk

The World Health Organization broadened the definition of health in the 1940s to include physical, mental and social well-being (Grad, 2002). In the1950s the term "wellness" was coined by Dr. Halburt Dunn. He defined this as "an integrated method of functioning which is oriented toward maximizing the potential of which the individual is capable" (Dunn, 1961, p. 4, as cited in Palombi, 1992). The definition of health has since progressed and is defined in the Merriam-Webster Dictionary as person's mind, body and spirit, usually meaning to be free from illness, injury or pain (Merimann-Webster, 2012).

Research has identified specific modifiable lifestyle risks. These include: smoking, physical activity, alcohol use and seatbelt use. Biological risks have been identified as blood pressure, cholesterol, body weight, medical problems, and days of work missed due to illness. Psychological risks identified include stress, personal life or professional satisfaction, and self- reported physical health that impacts health, and wellness (DeFriese & Fielding, 1990).

In terms of health risk the Health Enhancement Research Organization (HERO) Committee, 1998, followed 46,000 employees over a six-year period and found that employees with seven modifiable risk factors (tobacco use, high blood pressure, high cholesterol, overweight/obesity, high blood glucose, high stress, and lack of physical activity), in particular,

cost employers 228% more in health care costs when compared to those with none of the seven risk factors. High-risk, modifiable health factors have become the targets of worksite wellness interventions. There is sufficient evidence regarding the relationship between employee risk profiles and total cost to employers (Aldana, 2001). Despite sometimes significant short-term gains, the maintenance of such behaviors continues to present problems and the need for ecological interventions to support individual health has been demonstrated in the literature (Brownson, Hopkins & Wakefield, 2002). Recent publications provided by the Task Force on Community Preventive Service (2010) suggest similar findings.

The Worksite Environment

A recent trend in literature focused on the environment of the workplace. Policies and programs to increase physical activity, improve healthy eating, decrease stress, and reduce tobacco support employee health and encourage positive lifestyle behaviors. These are components of a supportive worksite environment (Brisette, Fisher, Spicer, & King, 2008). The amount of time the average employed American spends at work provides a beneficial setting for a focus of environmental changes. The benefits of targeting the physical worksite with wellness initiatives may be attractive to employers who have limited resources, or for employees who might perceive it as less threatening than more individualized interventions (Gates et al., 2006).

Stokols (1992, pg 6.) offers that "environments can be described in terms of their physical and social components, but they also can be characterized in terms of their objective (actual) or subjective (perceived) qualities, and their scale or immediacy to individuals and groups (proximal vs. distal)". This definition provided insight that the physical and social environments of the worksite are considered to potentially have an influence on the health of individual employees. Engbers et al., 2005 review of the literature revealed that despite

methodological and measurement issues in the limited number of studies of environmental components of worksite health promotion programs, there is evidence that multi-component/multi-dimensional programs can influence diet and nutrition risk among employees.

In 2005, the Surgeon General's call to action included a challenge to employers to provide more opportunities for physical activity and to promote healthier food choices on-site (Gates et al., 2006; U.S. Department of Health and Human Services, 2010), and employers are increasingly motivated to meet this challenge. In 2006 a press release was issued by Hewitt Associates, who analyzed more than 1800 health plans throughout the United States, including 400 major employers. The press release stated: "Employers need to create an environment of health in their organization from the top down, and need to hold leadership and their employees much more accountable for understanding and using the integrated health and health risk management programs that support this environment of health" (Hewitt Associates 2006, p. 3).

Golaszewski and Fisher (2002) designed the Heart Check (HC) evaluation that takes into account the health of the worksite environment in addition to the health of individual employee. It is one of the most widely used instruments specifically designed to measure environmental structure and policy issues important to successful of wellness programs.

Golaszewski and Fisher's (2002) study found the following:

Heart Check has served as a needs assessment, providing user-companies with extensive information on their health promotion strengths and weaknesses. When used within a large public health initiative, system-wide profiles were easily obtained, helping the process of decision-making, and resource allocation across multiple work organizations. (p.140)

While the development of environmental assessments and the analysis of their utility are more recent, there seems great room for advancement and potential. This aids in the argument

that the worksite environment in an effort to enhance employee health, remains a viable component of worksite wellness initiatives.

The Worksite Health Culture

An examination of the culture of the workplace has not been addressed in literature until recently. The terms "organizational culture" and "health culture" are being used more regularly. It is unclear whether these terms hold value among the research community, or are part of a trend the business and wellness communities are using. "There is no consensus about its definition, but most authors agree on the following characteristics of the organizational/corporate culture construct: it is (1) holistic; (2) historically determined; (3) related to anthropological concepts; (4) socially constructed; (5) soft; and (6) difficult to change" (Hofstede, Neuijen, Daval-Ohayv, Sanders, 1990, p. 286).

Allen (2002) and Golaszewski (2008) recognized six key components of the organizational health culture to include: 1) exercise/diet norms; 2) general health norms; 3) values; 4) supervisor modeling; 5) cultural touch points; and 6) climate. Interest in the organizational culture as a construct of health models has increased over the past 20 years, yet there seems to be a large gap in the literature with it being an unexamined mechanism for facilitating or maintaining individual employee health (Allen, 2002). Little empirically generated evidence exists to support a significant association between worksite health culture and the actual employee health risk.

Public health practitioners recognize the importance of social structure and how relationships influence health behavior. Through network analysis, a recent development in the field of public health, researchers are able to study multiple component worksite health programs (Luke and Harris, 2007). The Framingham Heart Study, a longitudinal analysis over 32 years,

revealed a spread of obesity (Christakis & Fowler, 2007), happiness (Christakis & Fowler, 2008), smoking (Christakis & Fowler, 2008), and depression (Rosenquist, Fowler, & Christakis, 2010), through social networks. Other health issues such as regular breast screening have also been found to be related to social networks. This indicated that peer perception of screening as a normative health behavior was predictive of regular screening among 1045 working women across 27 worksites (Allen et al. 1999).

As worksite wellness successes and failures continue to be published, companies and health promotion professionals need to approach worksite health promotion activities with multidimensional initiatives that look at the use of HRAFs, worksite environment, health culture, and levels of modifiable health risk of individual employees. An extensive literature review conducted by Goetzel et al. (2007) identified seven promising practices: 1) integrating health and productivity management (HPM) programs into the organization's operations; 2) simultaneously addressing individual, environmental, policy, and cultural factors affecting health and productivity; 3) targeting several health issues; 4) tailoring programs to address specific needs; 5) attaining high participation; 6) rigorously evaluating programs; and 7) communicating successful outcomes to key stakeholders. Researchers, health educators, and practitioners must continue evaluating worksite health promotion programs for health and cost impacts, targeting at-risk groups and optimizing the design and cost of interventions.

The PEN-3 Model

The PEN-3 model was developed to emphasize culture as a central determinant of health behavior in health promotion and disease prevention interventions in African American communities (Airhihenbuwa, 1995). The framework provides a guideline for ensuring the intervention developed is culturally sensitive by identifying and organizing a community's

cultural components as part of the planning process. (Cowdery, Parker, & Thompson, 2010).

The constructs of the Pen-3 Model (figure 1) show the three dimensions of health beliefs and behavior that are interrelated and interdependent. The PEN-3 framework takes an ecological approach incorporating life experiences, community surroundings, and cultural beliefs. (Airhihenbuwa & Pineiro, 1988). Figure 1 illustrates the constructs as follows: *Cultural Identity, Relationships & Expectations, and Cultural Empowerment*. Within the three dimensions are another three categories corresponding to the acronym PEN. *Cultural Identity* is the first dimension, reflecting the commitment of health education to the *Person*, the *Extended Family,* and the *Neighborhood*. The framework of the model helps create an understanding of the categories before designing health education interventions. *Relationships & Expectations*, the second dimension expands on the constructs in the first dimension. Social networks, community, peers (like family), and the environment play a role in decision-making and health. The framework for the model addresses health behavior and the cultural appropriateness of those behaviors assessing both positive and negative factors, then aims to address the factors through education of the individual and environmental influences of the individual's social network (Airhihenbuwa, 1995).

In the past decade, the emphasis on cultural relevance in community-based interventions has grown in the United States. Since the PEN-3 model was first published (Airhihenbuwa, 1989), revisions have been made. The model has been used to address several health problems including cancer (Erwin et al., 2007), hypertension (Walker, 1999), diabetes (Goodman, Yoo, & Jack, 2006) smoking (Scarinci, Silveira, Figueiredo dos Santos, & Bettina, 2007), food choices (Underwood et al., 1997), and obesity (Kumanyika & Obarzanek, 2003). There are no examples in the literature of the PEN-3 model being used within a worksite. As the trend in literature

evolves to support interventions that look at the worksite as its own culture, there have yet to be

programs developed using evidence based cultural framework such as the Pen-3 framework.

Furthermore, Eastern Michigan University's worksite environment has never been studied as a

culture.

Figure 1. The PEN-3 Model Diagram (Airhihenbuwa & Pineiro, 1988)

Interest in culture as a construct of health models has increased over the past 20 years, yet

there seems to be a large gap in literature of it being an unexamined mechanism for facilitating

or maintaining individual employee health (Allen, 2002). Adjustments to the worksite

environment and worksite health culture may have impact on the individual modifiable health

risk of employees, and the PEN-3 framework will be used to identify relationships among them.

Eastern Michigan University has no health promotion program in place to date. No

literature currently uses the PEN-3 model in conjunction with HRA to look at the worksite health

culture of a university to see if it would create more program adherence. The study used the

EMU employee population to study the overall ecological constructs of the EMU worksite health culture.

Determining employees' perceptions of the EMU worksite health culture and how it contributes to their health behaviors will help program planners understand the EMU community culture, to create more targeted programming. After the HRA and cultural environment data was received, the PEN-3 model was used to identify points of entry for future health education programs and interventions (Airhihenbuwa, 1995).

Chapter 3: Methodology

In this chapter, the study design, study population, instruments, theoretical framework, data collection, and data analysis procedures are described. This study was approved by the university's human subjects committee.

Study Design

This was an exploratory cross-sectional study utilizing a two part questionnaire: Part a., the Health Risk Assessment (HRA) was used to identify current employee wellness behaviors and perceptions, and part b., eight additional questions assessing worksite health "culture" at EMU. The HRA and worksite health culture questions were used to identify variables to enable researchers to identify relationships using the tenets of the PEN-3 model.

Study Population

Eastern Michigan University Employees, including faculty, staff, and administrators were the population selected for the study. EMU employees were recruited by their University email account. Participants in this study were selected if he or she was over 18 years of age and eligible for general benefits (health, retirement, etc.) offered by the employer.

Participants were identified by submitting a request for service form to the EMU Information Technology (IT) department (appendix A). Additional approval was obtained before University employee information was released. The report was generated by the EMU IT staff and sent to the researcher through email. Faculty and staff information was extracted on November 9, 2012. Data was sent to the researcher through email. The email contained an excel document with 2,360 EMU employees' information. UM-HRA required participants' names to confirm eligibility. The unique ID was required to complete the HRA. Strong emphasis was

placed on ensuring participants understood from the instructions that their information would not ever be used to identify them. None of the personal identifiable data was shared. All identifiable data were immediately separated from participants' health information.

To ensure the confidentiality of the subjects the following procedures were in place:

1. A neutral administrator served as an external consultant, UM-HRC.

2. Individualized HRA report was only visible to the participant who completed the survey.

3. Usernames & passwords were required to access the survey and responses were encrypted.

4. Online systems encrypted the data and stored results on a secure server.

Eastern Michigan's Information Technology department completed the Request for Service (RFS) DATA EXTRACT/MAILING LABEL SUPPLEMENT Faculty/Staff Edition. The faculty, staff, and administration boxes were marked to ensure all faculty/staff will have the opportunity to participate. No limits were included. All genders, ages (18 and over), races, and ethnicities were represented. It was requested that last name, first name, Emich ID number, university email and university address be provided.

Categories of employee were grouped for the purpose of this study, and are defined as follows:

1. Executive/Administrator

2. Faculty: Full-Time Faculty, Full-Time Lecturers

3. All other staff: Other Professionals, Technical, Paraprofessionals and Clerical Service/Maintenance, Skilled Crafts

Instruments

The instruments used in this study include the HRA questionnaire sent to all qualifying

employees in cooperation with the University of Michigan's Health Management Research

Center (Ann Arbor, MI). In addition to asking respondents about the presence of biological and

lifestyle health risks, the HRA included an eight-item version of the Lifegain Health Culture

Audit (LHCA) to assess worksite health culture. Instrument selection was chosen based on best

practice guidelines (Task Force on Community Preventive Services, 2010).

   Health Risk Appraisal. The HRA is a scientific tool designed to help people identify

biological, life-style, and family history risk factors and provide individuals with a report on their

health risks. The HRA used in this study was developed by The University of Michigan Health

Management Resource Center (UM-HMRC) HRA. The UM-HMRC HRA is adapted from the

public domain HRA originally developed by the Centers for Disease Control and

Prevention/Carter Center. The UM-HMRC HRA consists of 51 questions. The questions

include 31 original CDC HRA items, which are grounded in evidence and based on medical

research and nationally recognized standards.

   The advances in health care and research have led to a continuous evaluation and

redesign of the HRA. The UM-HMRC includes these advancements by incorporating 20 items

to measure stress, social support, life satisfaction, and job satisfaction. University of Michigan

Health Management resource center indicates that their HRA is aimed at the following:

- Give individuals an assessment of their current health and quality of life.

- Assessment promotes health awareness for the individual by reviewing one's personal
  lifestyle practices and revealing health issues that personal choice could impact.

- The personalized Profile report from the HRA survey recommends healthy behaviors
  according to age group, gender, and risk level. The Profile presents the top 3 personal
  risks and provides resources listed by availability.

The HRA provided estimates of mortality or morbidity risk for various diseases. Advancements have since been used to motivate and measure change in health risk behavior. HRAs are widely used in worksite health initiatives; however the impact of their use on modifiable health risk is not well-understood and recently has been the subject of review (Task Force on Community Preventive Services, 2010). The literature has recommended and identified evidence for their support and appropriate use in worksite health promotion (Task Force on Community Preventive Services, 2010). The HRA has been modified several times, and many of the studies of the validity of the CDC-HRA are comprehensive, sophisticated, easily replicable, contain large sample sizes, and utilize longitudinal models. The CDC-HRA demonstrated strong predictive validity in the Tecumseh Community Health Study. From 1959 – 1979 3135 subjects were followed and extreme accuracy occurred when classifying subjects into risk categories (Foxman & Edington, 1987). This is strong evidence to support the use of the HRA.

Worksite Health Culture Questions. The eight-item version of the Lifegain Health Culture Audit (LHCA) was used to assess worksite health culture. Questions were adopted from the Lifegain Health Culture Audit (LHCA), an instrument designed specifically for health promotion program planning and evaluation. Lifegain Health Culture Audit (LHCA) tool is used to identity relationships between employee health and organizational health culture. Versions of the survey have been used by hundreds of companies, schools, and government organizations (Allen, 2002). The tool design is a multiple choice, 25-question anonymous survey. Respondents are asked to indicate their level of agreement of how their immediate work group supports healthy lifestyles.

Reliability and Validity. An independent study of the Lifegain Health Culture Audit was published in The American Journal of Health Studies. The study showed data from 55 western

New York companies displayed strong evidence of internal consistency as well as construct and

criterion validity (Golaszewski, 2007).

Participants in this study were asked to rate their level of agreement (strongly agree,

agree, undecided/do not know, disagree, or strongly disagree) with the eight statements on how

the worksite health culture plays a role in supporting healthy employee lifestyles.

The PEN-3 Model. The eight-item worksite health culture statements were applied to

the tenets of the PEN-3 model to assess worksite health culture and modifiable employee health

risks (Table 1). By understanding the EMU culture, more targeted programming decisions can

be made.

Table 1 Tenets of the PEN-3 model			
Domains	**Positive**	**Existential**	**Negative**
Perceptions Knowledge, attitudes, values, beliefs, affecting personal, family, community motivation to change behavior			
Enablers Cultural, societal, systematic, structural forces affecting change			
Nurturers Degree to which attitudes, beliefs, & actions are influenced, mediated, and nurtured by extended family, kin, friends, peers, & community.			

Note. Adapted from the writings: (Cowdery, Parker, & Thompson, 2010)

Data Collection Procedures

The popularity of electronic surveys targeted to students and faculty has increased greatly in higher education research. It is used in almost all facets of assessment and planning (Porter, 2003). The instrument for data collection used is a questionnaire using Dillman's (2007) Tailored Design Method as a strategic guide. Dillman's Tailored Designed Method lays out a complete, start-to-finish guide for effectively administering surveys. The method draws on social science, statistics, and proven best practices for increasing response rates and obtaining high-quality feedback (Dillman, 2007).

From the time the participant is contacted to the end of the project, the procedure is as follows:

The initial recruitment email was disseminated on November 14, 2012 (Appendix A). The first email to participants introduced the research study and clearly emphasized they are being asked to participate in a student research project. Participation was voluntary and participants had the option to withdraw at any time without negative consequences. The initial email introduced the study and procedure. The email informed participants the survey was confidential and would take 10 to 15 minutes to complete. Once completed, a personal report was generated, identifying lifestyle behaviors to maintain or improve their health (see Appendix H for a sample of individualized report). Participants were informed a second message containing the link to the HRA would be sent the following week.

The second email was sent on November 19, 2012 (Appendix B). A link embedded in the email directed participants to the HRA secure site. The first page was informed consent (Appendix E). This link directed them to the log in screen. Participants were prompted to enter last name, EMU ID, and create a password.

Once the HRA was complete and the participants clicked submit, a personalized report was generated within 30 seconds. The report identified top three risks specific to that individual as determined by the UM-HRA exclusive Trend Management System (TMS ™). These are the most important risks that influence the participant's overall health status and health care utilization over the next one to three years.

The first reminder email was sent one week after the initial survey blast on November 26, 2012 (Appendix D). Following Dillmans best practice survey methods, the emails was sent to remind participants of the opportunity to complete a free health risk appraisal and contribute to researchers learning more about the health culture at Eastern Michigan University. If participants indicated interest in the $50 gift card, UM-HRA flagged the emails of those individuals. No health related data was linked to the email. This information was stored in a secure database. The University of Michigan Health Research Management center pushed the data to the research through a secure link. The emails of the individuals who indicated they wanted to be entered in the drawing for the Starbucks gift card were sent to the researcher in an excel document. A random selection was performed in excel to identify one person. The individual was notified via email that they were randomly selected to receive the gift card and sent to the University address (APPEDNIX G).

Data Analysis

Descriptive Statistics were used to summarize tenets of the PEN-3 Model, the HRA results and the perceptions of the worksite health culture (see table 3). The data collected through the HRA were processed through UM-HMRC. The UM-HMRC uses an algorithm to identify most critical risks for each individual and produces a wellness score that is used to

measure an individual's overall physical, mental, emotional, social, and spiritual health based on answers they provided.

Scores for variables were dichotomized based on common practice in the field. Items measuring perceived support of workplace culture were recorded as "no" (strongly disagree and disagree coded as "4, 5"), undecided (coded as "3") and "yes" (agree and strongly agree coded as "1, 2"). A t-test was used to analyze the wellness score produced by the HRA and the relationship between the employees' perceptions of supportiveness of the EMU culture. Chi-square test was used to identify relationships between study participants' agreement level to the worksite health culture questions and modifiable risk factors identified by the HRA.

Timeline

The approval of Human Subjects Review Committee was obtained November, 2012, prior to distribution of the study surveys. Data was collected for 2 weeks, November 11, 2012, to December 3, 2012.

Chapter 4: Results

Sample Characteristics

An email was sent to 2,360 participants containing the HRA link. Of the email recipients, 8.8% (N=208) completed the survey. Reasons for declining participation included: the participants retired from Eastern Michigan University, were no longer employed by the University, or were not interested. Less than 1% (N=21) requested their email address be removed.

Table 2 shows the demographics of participants: 11 (5%) were between 20 and 29 years, 46 (22%) were between 30 and 39 years, 47 (23%) were between 40 and 49 years, 61 (29%) were between 50 and 59 years, 39 (19%) were between 60 and 69, and 4 (2%) were 70 years or older. The majority of respondents (83%) identified as white. One participant did not complete the question indicating job category. Of the respondents, 64% (N=134) were female and 36% (N=74) were male.

Table 2 Participant Demographics			
Characteristics		**Frequency**	**Percentage of sample**
Gender	Male	74	36%
	Female	134	64%
Age (At last birthday)			
	20-29	11	5%
	30-39	46	22%
	40-49	47	23%
	50-59	61	29%
	60-69	39	19%
	70+	4	2%
Race/origin			
	White (non-Hispanic origin)	173	83%
	Black (non-Hispanic origin)	19	9%
	Hispanic	5	2%
	Asian or Pacific Islander	8	4%
	American Indian / Alaskan Native	0	0%
	Other	3	1%

As indicated in Table 3, half of the participants (50%) stated their current employment

category as Other Professional, (34%) Faculty and (16%) Executive/Administrator. Table 3

depicts the highest level of education received (65%) were post graduate or professional degrees.

The majority of the respondents indicated their expected household income level over $50,000,

22% reported $75,000-$99,999, and 42% reported $100,000 or more.

Table 3 Participants Income and Education Levels		Frequency	Percentage
Highest level of education			
	Some high school or less	0	0%
	High school graduate	5	2%
	Some college	20	10%
	College graduate	47	23%
	Post graduate or professional degree	136	65%
Expected household income this year			
	less than $35,00	9	4%
	$35,000-$49,999	22	11%
	$50,000-$74,999	43	21%
	$75,000-$99,999	45	22%
	$100,000 or more	86	42%
Your current employment category:			
	Executive/Administrator	33	16%
	Faculty (Full-Time Faculty, Full-Time Lecturer)	70	34%
	Other Professionals (Technical/Paraprofessionals, Clerical, Service/Maintenance, Skilled Crafts	104	50%

Health Risk Appraisal (HRA) questionnaire

The UM-HRA survey recommends healthy behaviors according to age group, gender,

and risk level. The UM-HMRC algorithm identifies the most critical risks for each individual.

The Profile provides the top three personal risks for the individual identified. Once data was

received from the Health Management Resources Center, the researcher identified which risks

were most prevalent among respondents who completed the survey. Shown in Table 4, of the

participants who complete the survey, the top 3 most common risks identified were body weight

(20%), stress (14%), and blood pressure (10%).

Table 4 Participants Health Risks		
Identified Risks By HRA	**Frequency**	**Percentage**
Body weight	92	20%
Stress	65	14%
Blood pressure	48	10%
Physical activity	40	9%
Personal life satisfaction	41	9%
Use of medication/drug to relax	40	9%
Medical problems	30	6%
Perceived physical health (Fair or poor)	25	5%
Job satisfaction	22	5%
Illness Days	18	4%
Safety belt use (less than 100%)	18	4%
Smoking	9	2%
Alcohol use	10	2%
Cholesterol	6	1%
Health age index	1	0%

Top 3 Risks Identified

1. Body Weight

Table 4 identifies risks identified by the HRA. Body weight was the most prevalent risk

identified among participants at 20% (N=92). Table 5 depicts the BMI status of participants.

38% (N=79) of the study sample are within a healthy weight range. The majority of the study

sample are considered overweight (33%, N=69) or obese (29%, N=60).

Table 5 Participants Body Mass Index (BMI)			
BMI*	**Considered**	**Frequency**	**Percentage**
Below 18.5	Underweight	0	0
18.5 to 24.9	Healthy weight	79	38%
25.0 to 29.9	Overweight	69	33%
30 or higher	Obese	60	29%
*BMI between 25 and 29.9 are considered overweight and a BMI of 30 or higher are considered obese			

2. Stress

Stress was identified as the 2nd most common personal risk behavior (14%). As depicted in

Table 6, 13% (N=27) of participants indicated stress had an effect on their health *a lot* over the

last year; 42% (N=88) of participants indicated stress had some effect on their health in the past

year; 34% (N=34) indicated hardly ever; and 11% (23) indicated none. Participants were asked

to indicate if in the next 6 months they are planning to make any changes to keep themselves

healthy or improve their health. When asked specifically about coping better with stress, the

majority, 51% (N=105) of participants answered yes, 5% (N=10) answered no, 12% (N=25)

don't know and 32% (N=66) not needed. More than half of respondents indicate they plan to

make changes to cope better with stress in the next 6 months.

Table 6 Participants Stress			
Statement	**Answer**	**Frequency**	**Percentage**
During the past year, how much effect has stress had on your health?			
	A lot	27	13%
	Some	88	42%
	Hardly any	70	34%
	None	23	11%
How often do you feel tense, anxious, or depressed?			
	Often	22	11%
	Sometimes	86	41%
	Rarely	87	42%
	Never	13	6%
In the next 6 months, are you planning to make any changes to keep yourself healthy or improve your health? Cope better with stress?			
	Yes	105	51%
	No	10	5%
	don't know	25	12%
	not needed	66	32%

3. Blood Pressure

The HRA asked participants to fill in their blood pressure values if known. Of the participants that responded 38% (N=79) of the participants indicated they were not aware of their BP scores. Table 7 provided the responses of participants to the question, "Do you have high blood pressure?" The results indicate 75% (N=154) of the respondents never have had high blood pressure, 11% (N=22) indicated in the past, and 14% (N=29) currently have high blood pressure.

Table 7 Participants Blood Pressure		
Do you have: high blood pressure?	**Frequency**	**Percentage**
Never	154	75%
In the past	22	11%
Have currently	29	14%
In the past AND Have currently	0	0%

Worksite Health Culture of Eastern Michigan University

Table 8 provides participants responses to their level of agreement with how worksite health culture plays a role in supporting healthy employee lifestyles.

Table 8 demonstrates that 5% of participants stated strongly agree and 25% stated agree to the statement "Eastern Michigan University demonstrates its commitment to supporting healthy lifestyles through its use of resources such as time, space and money." The majority of participants indicated undecided (30%), and disagree (30%) and strongly disagree (10%). Almost half (46%) stated they disagree with the statement they are taught skills needed to achieve a healthy lifestyle. The majority of participants did not agree with the statement "Eastern Michigan University rewards and recognizes efforts to live a healthy lifestyle as 33% of participants answered undecided, 37% disagree, and 21% strongly disagree. 64% of respondents indicated strongly agree with the statement EMU has a strong sense of community among co-workers that Eastern Michigan University has a sense of community (for example, co-workers get to know each other, feel a sense of belonging, and care for one another in times of need).

Table 8 depicts university faculty and staff are making changes to improve their quality of life. Participants responded (30%) agree and (61%) strongly agree they attempted to make health-supporting life-style changes in the past year (for example, managing my stress, losing weight, adding more vegetables to my diet).

Table 8 Participants Perception of Worksite Health Culture			
Statement		**Frequency (n)**	**Percentage (%)**
My supervisor models a healthy lifestyle.	Strongly Agree	37	18%
	Agree	76	37%
	Undecided	55	27%
	Disagree	33	16%
	Strongly Disagree	4	2%
Eastern Michigan University demonstrates its commitment to supporting healthy lifestyles through its use of resources such as time, space and money.	Strongly Agree	10	5%
	Agree	51	25%
	Undecided	62	30%
	Disagree	61	30%
	Strongly Disagree	21	10%
My co-workers and I are taught skills needed to achieve a healthy lifestyle.	Strongly Agree	5	2%
	Agree	27	13%
	Undecided	54	27%
	Disagree	93	46%
	Strongly Disagree	34	12%
My co-workers have a positive outlook (for example, people enjoy their work, celebrate accomplishments, adopt a "we can do it" attitude and bring out the best in each other).	Strongly Agree	28	14%
	Agree	84	41%
	Undecided	39	19%
	Disagree	41	20%
	Strongly Disagree	12	6%
My coworkers support one another's efforts to adopt healthier lifestyle practices.	Strongly Agree	26	13%
	Agree	88	43%
	Undecided	54	26%
	Disagree	27	13%
	Strongly Disagree	7	3%
Eastern Michigan University has a sense of community (for example, co-workers get to know each other, feel a sense of belonging, and care for one another in times of need).	Strongly Agree	30	15%
	Agree	101	49%
	Undecided	38	19%
	Disagree	29	14%
	Strongly Disagree	7	3%
I attempted to make health-supporting life-style changes in the past year (for example, managing my stress, losing weight, adding more vegetables to my diet).	Strongly Agree	61	30%
	Agree	126	61%
	Undecided	9	4%
	Disagree	9	4%
	Strongly Disagree	0	0%
Eastern Michigan University rewards and recognizes efforts to live a healthy lifestyle	Strongly Agree	4	2%
	Agree	14	7%
	Undecided	68	33%
	Disagree	75	37%
	Strongly Disagree	44	21%

Hypothesis Testing

Presented in Table 9 are the results of a t-test evaluating self-reported health risk as

measured by wellness score and perception of worksite health culture. Of the 209 EMU

employees that responded to the question "Eastern Michigan University rewards and recognizes

efforts to live a healthy lifestyle", 18 individuals answered agreed and 119 answered disagree.

We fail to reject the null hypothesis and therefore concluded there was not a significant

difference in wellness scores between groups.

Table 9 Relationship of participants perceptions Self-Reported Health Risk As Measured and Wellness Score		
	Agree	Disagree
Mean	83.67	87.67
Variance	129.35	73.89
Observations	18	119
Pooled Variance	80.87	
Hypothesized Mean Difference	0	
Df	135	
t Stat	-1.76	
P(T<=t) one-tail	0.04	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.08	
t Critical two-tail	1.97	

Agree: individual answered agreed with the statement Eastern Michigan University rewards and recognizes efforts to live a healthy lifestyle
Disagree: individuals that answered disagree to the statement Eastern Michigan University rewards and recognizes efforts to live a healthy lifestyle

Table 9 tests whether there was a different in wellness scores between employees that

agreed or disagreed with the statement "Eastern Michigan University demonstrates its

commitment to supporting healthy lifestyles through its use of resources such as time, space and

money". To test the hypothesis, a t-test assuming equal variance was used.

Table 10 Participants Wellness Scores and Perception of supportiveness of EMU		
	Agree	**Disagree**
Mean	85.04	86.31
Variance	98.51	69.92
Observations	61	82
Pooled Variance	82.10	
Hypothesized Mean Difference	0	
Df	141	
t Stat	-0.83	
P(T<=t) one-tail	0.20	
t Critical one-tail	1.66	
P(T<=t) two-tail	0.41	
t Critical two-tail	1.98	

Agree – individual answered agreed with the statement that Eastern Michigan University demonstrates its commitment to supporting healthy lifestyles through its use of resources such as time, space and money

Disagree – individuals that answered disagree to the statement Eastern Michigan University demonstrates its commitment to supporting healthy lifestyles through its use of resources such as time, space and money

Table 11 tests whether there is a relationship between those who were identified with body weight as a risk factor and their level of agreement with the statement "Eastern Michigan University rewards and recognizes efforts to live a healthy lifestyle". This relationship was tested using a Chi-Square test.

Table 11 Participants Perception To EMU Recognizing Efforts To Live A Health Lifestyle And Body Weight As A Risk Factor				
Observed	**Agree**	**Disagree**	**Undecided**	**Total**
Individuals identified with body weight as a risk factor	5	56	31	92
Those that did not have body weight as a risk factor	13	63	37	113
Total	**18**	**119**	**68**	**205**

Expected	**Agree**	**Disagree**	**Undecided**	**Total**
Individuals identified with body weight as a risk factor	8.08	53.40	30.52	92
Those that did not have bodyweight as a risk factor	9.92	65.60	37.48	113
Total	**18**	**119**	**68**	**205**

H_0: The variables are independent
H_a: The variables are dependent on or related to each other
P = 0.31
df = 2
$X^2 = 2.37$

      The results of the Chi-Square test in table 11 show there was not a statistically significant relationship (p >.05).

      Table 12 tests whether there is a relationship between those who were identified with body weight as a risk factor and their level of agreement with the statement "My co-workers support one another's efforts to adopt healthier lifestyle practices." This relationship was tested using a Chi-Square test.

Table 12 Relationship Between Participants Identified With Body Weight As A Risk Tor Perception of Co-Workers Supporting a Healthier Lifestyle

Observed	Agree	Disagree	Undecided	Total
Individuals identified with body weight as a risk factor	49	19	24	92
Those that did not have body weight as a risk factor	65	17	30	112
Total	**114**	**36**	**54**	**204**
Expected	**Agree**	**Disagree**	**Undecided**	**Total**
Individuals identified with body weight as a risk factor	51.41	16.24	24.35	92
Those that did not have body weight as a risk factor	62.59	19.76	29.65	112
Total	**114**	**36**	**54**	**204**
P	0.59			

H_0: The variables are independent
H_a: The variables are dependent on or related to each other
P = 0.59
df = 2
$X^2 = 1.07$

The results from the Chi-Square test show there was not a statistically significant relationship (p >.05).

Of those who completed the HRA, 48 individuals had no risk factors. Table 13 tests whether there is a relationship between individuals' level of agreement with the statement "Eastern Michigan University demonstrates its commitment to supporting healthy lifestyles through its use of resources such as time, space and money" and whether or not those individuals had risk factors. This relationship was tested using a Chi-Square test.

Table 13 Participants Perception Of EMU'S Commitment To Supporting Healthy Lifestyles Through Resources And Risks Identified.

Observed	Agree	Disagree	Undecided	Total
Those with Risk identified	46	65	47	158
Those Without Risks identified	16	17	14	47
Total	**62**	**82**	**61**	**205**

Expected	Agree	Disagree	Undecided	Total
Those with Risk identified	47.79	63.20	47.01	158
Those Without Risks identified	14.21	18.80	13.99	47
Total	**62**	**82**	**61**	**205**

H_0: The variables are independent
H_a: The variables are dependent on or related to each other
P = 0.77
df= 2
X^2 = 0.51

The results from the Chi-Square test show there was not a statistically significant relationship (p >.05) between individuals' level of agreement and whether or not they were identified with risk(s).

Table 14 tests whether there is a relationship between the responses to the question, "In general, how strong are your social ties with your family and/or friends?" and whether or not individuals were identified with risk factors. This relationship was tested using a Chi-Square test.

Table 14 Relationship Between Participants Social Ties (Family And/Or Friends) And If They Were Identified With Risk Factors.					
Observed	**Very Strong**	**Above Average**	**Weaker than Avg**	**Not Sure**	**Total**
Those with Risk identified	82	59	18	1	160
Those Without Risks identified	31	16	1	0	48
Total	**113**	**75**	**19**	**1**	**208**

Expected	**Very Strong**	**Above Average**	**Weaker than Avg**	**Not Sure**	**Total**
Those with Risk identified	86.92	57.69	14.62	0.77	160
Those Without Risks identified	26.08	17.31	4.38	0.23	48
Total	**113**	**75**	**19**	**1**	**208**

H_0: The variables are independent
H_a: The variables are dependent on or related to each other
P = 0.17
df = 2
$X^2 = 2.37$

The results from the Chi-Square test show there was not a statistically significant relationship (p >.05).

Chapter 5: Discussion

This is the first study to examine the health risks and the culture of the EMU worksite using tenets of the PEN-3 model for possible targeted health education program planning. The results provide empirical evidence of the inter-relationships among health risk constructs in worksite settings.

The first purpose of this study was to assess individual employee health using the Health Risk Appraisal (HRA) questionnaire as a tool. The data revealed the most common personal risk factors as body weight (20%), stress (14%), and blood pressure (10%). The majority of the participants are considered overweight (33%) or obese (29%). This is comparable to national data, as the Centers for Disease Control and Preventions 2010 report on Adult Obesity indicated more than one third of U.S adults (35.7%) are obese (Ogden, 2012).   Almost half of the participants (42%) indicated stress had some effect on their health in the past year. The American Psychological Association, *Stress in America™* survey (2010) reported adults indicate their stress is increasing. Adults (39%) indicated their stress had increased over the past year. That same report indicated 39% of American adults engage in unhealthy behaviors due to stress. Specifically, 40% of Americans in 2010 stated they coped by with stress by overeating or eating unhealthy foods. An overwhelming percentage of employees who participated in this study stated they plan on taking the steps to improve the risks identified in this study. The majority of study participants, 54%, indicated their willingness to participate in a program that would enhance overall health.

The second purpose was to enhance the understanding of the worksite health culture with the additional statements added to the HRA. Finally, the tenets of PEN-3 model were used to organize the additional statements and assisted the researcher in identifying points of entry for

possible future health education program. The PEN-3 framework takes an ecological approach

incorporating life experiences, community surroundings, and cultural beliefs (Airhihenbuwa &

Pineiro, 1988). An ecological indicator identified was the perception of the lack of

supportiveness of the university and the efforts to support employee with resources and

education.

PEN- 3 Tenets and Reponses to HRA Statements

The second purpose was to enhance the understanding of the worksite health culture with

the additional statements added to the HRA. Figure 2 shows an ecological indicator identified

was the perception of the lack of supportiveness of the university and the efforts to support

employee with resources and education.

Figure 2. PEN-3 Framework with participant's responses to level of agreement to worksite culture questions

Domains	Positive	Existential	Negative
Perceptions Knowledge, attitudes, values, beliefs, affecting personal, family, community motivation to change behavior	Employee values and beliefs 61% agree with the statement "I attempted to make health-supporting life-style changes in the past year (for example, managing my stress, losing weight, adding more vegetables to my diet). 41% agree with the statement "My co-workers have a positive outlook (for example, people enjoy their work, celebrate accomplishments, adopt a "we can do it" attitude and bring out the best in each other)."		
Enablers Cultural, societal, systematic, structural forces affecting change	25% agreed with Eastern Michigan University demonstrates its commitment to supporting healthy lifestyles through its use of resources such as time, space and money.		46% disagree with the statement " My co-workers and I are taught skills needed to achieve a healthy lifestyle". 30% disagreed with Eastern Michigan University demonstrates its commitment to supporting healthy lifestyles through its use of resources such as time, space and money.
Nurturers Degree to which attitudes, beliefs, & actions are influenced, mediated, and nurtured by extended family, kin, friends, peers, & community.	Friends/Co-workers influence 49% of participants stated the agree with the statement "Eastern Michigan University has a sense of community (for example, co-workers get to know each other, feel a sense of belonging, and care for one another in times of need)." My coworkers support one another's efforts to adopt healthier lifestyle practices, 13% strongly agree and 43% agree	18% strongly agree, 37% agree, 27% undecided with the statement "My supervisor models a healthy lifestyle."	37% disagree and 21 % strongly disagree "Eastern Michigan University rewards and recognizes efforts to live a healthy lifestyle"

The ecological approach of the PEN-3 model incorporates life experiences, community

surroundings, and cultural beliefs (Airhihenbuwa & Pineiro, 1988). Figure 1 illustrates the

constructs as follows: *Cultural Identity, Relationships & Expectations, and Cultural*

Empowerment. Within the three dimensions are another three categories corresponding to the

acronym PEN. *Cultural Identity* is the first dimension, reflecting the commitment of health

education to the *Person*, the *Extended Family,* and the *Neighborhood*. This study identifies the

individual as the employee. The extended family and neighborhood is the University employees

and surrounding campus. *Relationships & Expectations*, the second dimension expands on the

constructs in the first dimension.

The PEN-3 Framework. Figure 2 depicts the 3 by 3 matrix and identifies a common

theme in the Cultural Empowerment and Relationships and Expectation domains. Factors within

these categories were then identified as having either a positive, existential, or negative influence

on health and health behavior. Perceptions, enablers, and nurturers themes pertinent to this study

are identified as follows:

Perceptions (include knowledge, attitudes, values, and beliefs). Of the participants,

61% answered agree to the statement. "I attempted to make health-supporting life-style changes

in the past year (for example, managing my stress, losing weight, adding more vegetables to my

diet). This reveals a majority of participants attempted to modify behaviors. Participants

indicated 41% agree with "My co-workers have a positive outlook (for example, people enjoy

their work, celebrate accomplishments, adopt a "we can do it" attitude and bring out the best in

each other)." As shown in figure 2, these themes demonstrate employees believe there is a value

of supportiveness in the EMU community among peers. Employees are actively attempting to

make changes and they feel supported by their colleagues.

Enablers (consist of cultural, societal, systematic, and structural forces that affect change). Existential and negative themes were identified. When asked the statement "Eastern Michigan University demonstrates its commitment to supporting healthy lifestyles through its use of resources such as time, space and money, 25% agreed , 30% undecided, 30% disagreed. To the statement "My co-workers and I are taught skills needed to achieve a healthy lifestyle" and 46% answered disagree. Employees indicated they perceive Eastern Michigan University does not support their employee in a healthy lifestyle in terms of resources such as space and money.

Nurturers (the degree to which attitudes, beliefs, and actions are influenced, mediated, and nurtured by extended family, friends, peers and community). Almost half of the participants (49%) agreed with the statement "Eastern Michigan University has a sense of community (for example, co-workers get to know each other, feel a sense of belonging, and care for one another in times of need)."

Cultural Identity

The Cultural Identity domain was used by the researcher to identify points of entry for a possible health education program. The person, extended family, and neighborhood are interrelated and interdependent. The PEN-3 framework may help guide future programmers determine appropriate entry point for health promotion within the EMU culture.

Person: child, parent, professional, spouse, leader, etc. Participants indicated their supervisor models a healthy lifestyle as 37% stated agree, 27% undecided, and 18% strongly agreed with this statement. Allen (2002), and Golaszewski (2008), recognize supervisor modeling as one of six a key components of the organizational health culture. Supervisors are

role models for acceptable behavior and may provide a possible point of entry for a health

promotion program.

Extended Family: marital circle, parents and children, parents and grandparents, etc.

For this study the university was considered its own culture, and extended family can be

thought of a co-worker and peers. A theme of a strong sense of supportiveness within this

"family" was indicated by the statement "My coworkers support one another's efforts to adopt

healthier lifestyle practices," 13% strongly agree and 43% agree. Social networks, community,

peers (like family), and the environment play a role in decision making and health

(Airhihenbuwa, 1995). This is another possible entry point for an intervention. This point of

entry could be a health promotion program that aims to address factors through education of not

only the individual but environmental influences of the individuals' social network.

Neighborhood: geographic area, ethnic group, gendered group in area, leaders in area,

racial group, etc. To the statement "Eastern Michigan University demonstrates its commitment

to supporting healthy lifestyles through its use of resources such as time, space and money" 25%

agreed , 30% undecided, 30% disagreed. Engbers et al., 2005 review of the literature revealed

there is evidence that multi-component/multi-dimensional programs can influence diet and

nutrition risk among employees. Body weight was the most prevalent risk factor in this study.

Americans sedentary lifestyles and poor dietary habits result in 66% of U.S. adults being

overweight, and 30% (approximately 60 million) obese (CDC 2009). This holds true among

university employees. The majority of the population is considered overweight and obese at

33% and 29% respectively. This is a possible point of entry for a health promotion program. A

program to expand the use of university resources (time, space, and money) to impact the factors

related to body weight while inversely improving the perception employee have of the supportiveness of the University.

Limitations

There are several limitations to the study. First, the study used a convenience sample over a small amount of time. The lack of a random sample may lead to a selection bias. To determine if the interpretations of the results hold value a future longitudinal analysis would be essential. Literature demonstrates health outcomes require cultural support and significant intervention may take two years to see in terms of population-level shifts in health trends (Grossmeier, Terry, Cipriotti, & Burtaine, 2010).

Another limitation includes the data was self-reported. Self-reported responses are subject to biases. Concerns the about confidentiality of responses may have been a barrier to employees opting not to take the questionnaire.

The study was open for two weeks for participants to complete. This time period coincided with final exams week. This may have been a deterrent for faculty and staff if they were preparing final exams and grades.

Implications

Results provide valuable evidence of the role of modifiable factors within the work environment of EMU.   The data revealed the top three risk factors as body weight (20%), stress (14%), and blood pressure (10%). An unhealthy lifestyle is directly correlated to the rise in chronic disease in the United States (Aldana, 2005). Americans sedentary lifestyles and poor dietary habits result in 66% of U.S. adults being overweight, and 30% (approximately 60 million) obese (CDC 2009). The majority of the Eastern Michigan University population is considered overweight and obese, 33% and 29% respectively.

Results indicate employees perceive a positive sense of community among their coworkers. Glasgow, 2006, suggest that programs which target the modifiable health risks of individuals often result in short-term health behavior change that diminishes over time. Literature supports the needs for an ecological approach to health promotion interventions to increase the longevity of significant short-term gains, and shift into the maintenance of such behaviors (Brownson, Hopkins & Wakefield, 2002).

This study is significant because before this research, the current health status and health culture of the employee population was unknown. Golaszwski, Allen, and Edington, 2008 suggest in order for a worksite to be healthy, the individuals and the organization must be considered as a cohesive unit (Golaszwski, Allen, and Edington, 2008).

Organizational culture literature reveal most organizational change initiatives fall short of expectations unless cultural changes are made (Cameron, 2008). Policy makers should consider the power of the worksite environment and culture to help set the stage for effective and sustainable worksite health promotion programming.

The results suggest important differences among the interrelationship of employees and that of the supportiveness of the University. The three most prevalent risks identified by the HRA were body weight, blood pressure and stress. An overwhelming percentage of employees stated they plan on taking the steps to improve these risks identified. Employee willingness to participate in a program that would enhance overall health may be beneficial for employee as 54% stated they would participate in a program. Almost half of the participants (49%) agree the Eastern Michigan University has a sense of community (for example, co-workers get to know each other, feel a sense of belonging, and care for one another in times of need)."According to the findings, the recommendations include a health education program to target the top three

most prevalent risks identified, with an ecological approach to capitalize on strong perception of

community that participants identified.

 Recent literature on best practices in worksite health promotion (Goetzel, et al., 2007)

calls for interventions that address exactly the constructs measured in this study (i.e., supportive

physical and social worksite environments). The apparent relationship among these constructs

and levels of modifiable health risk can help to inform future research.

The fiscal benefit may provide an incentive for the leadership at Eastern Michigan

University. 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

a Return on Investments (ROI) of $300-450 (Henkin, 2008). This suggests a health promotion

programs may have a significant impact the physical health of EMU employees, as well as the

financial saving to the employer.

Future Directions and Recommendations

The First Workforce Health and Productivity Summit (Consensus Statement of the

Health Enhancement Research Organization, 2012) has called for evidence and tools to be

developed to help employers of all sizes and types make the necessary transition to a new

"culture of health", and this study is a fundamental step in that direction.

Further investigation is needed to better understand the relationships among worksite

environment, worksite health culture, and employee health risk. A larger sample size would

increase the precision of this study's inference. Recommendations include repeating this study

with a larger sample. Possibly require employees to complete the HRA in order to qualify for

medical benefits through the University. More quantitative and qualitative approaches are

needed to comprehensively examine the constructs and relationships. In addition to further

testing of this data, future studies with a larger sample could be used to examine the stability of the factors. The data from this study could serve as a baseline to evaluate and measure future programs.

It is recommended Eastern Michigan University use the results of this study to address the employee risks identified. Programs should take advantage of the supportiveness of the culture and social networks identified by employees. Even though it was not shown to be statistically significant that those who disagree or strongly disagree with the statement "EMU rewards and recognizes efforts to live a healthy lifestyle" had a higher wellness score, we can observe that those who are healthier (fewer risks) may look outside the EMU worksite community for support. There is potential to capitalize on the relationship of the employees to implement programs. The participants of the study indicated they feel a strong sense of community; therefore increasing resources and rewards to recognize those who are living a healthier lifestyle may potentially encourage those individuals to share their healthy behaviors with colleagues. Building a supportive environment where individuals are recognized for engaging in healthy behaviors may decrease risk factors within the employee population. This study could provide a baseline as more research is needed to evaluate the possible benefits.

It is recommended future programs implemented use an ecological approach such as the framework of the PEN-3 model as a guide. The willingness of individuals to participate in a program was seen in the results of the HRA. Despite the limitations mentioned above, results provide a rationale for implementing programs that may have a positive impact on overall wellness of EMU employees and the EMU worksite health culture.

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Appendix A: Email #1 Recruitment Email

Subject Line: Free and confidential individualized health risk report!

You are being asked to participate in a student research project!

In one week you will be receiving an email with a link to a Health Risk Assessment. A blanket request is being sent to all EMU faculty, staff and administrators. This confidential health survey will take 10 to 15 minutes to complete. A personal report will be generated, identifying lifestyle behaviors to maintain or improve your health. By completing the HRA, you will be eligible to win a $50 gift card to Starbucks!

Why take the time?
- It's a free individualized health report!
- The HRA information is for your use and benefit only.
- The information can give you early warnings about health issues that may

be in the early stages of developing. That knowledge may help you get the treatment needed to prevent long-term complications (and costs)
- The info gathered from an HRA can help you live a healthier life!

Please help the researcher learn more about the uniqueness of Eastern Michigan University's health culture. Your participation may shape future health promotion programs at Eastern Michigan University.

For questions contact: KAY WOODIEL DWOODIEL@EMICH.EDU OR STEPHANIE KETEYIAN SKETEYIA@EMICH.EDU.

Thank you for your consideration.

Stephanie R. Keteyian
Graduate Student
College of Health and Human Services

Appendix B: Email #2 Follow-up to Initial Recruitment

Subject Line: Please Participate In This Student Research Study For Your Free Health Risk Assessment!

Your chance to complete a free Health Risk Assessment is here! **THIS IS A STUDENT RESEARCH PROJECT**. All participants are eligible for a $50 Starbucks gift card upon completion of the survey.

This confidential health survey will take 10 to 15 minutes to complete. A personal report will be generated, identifying lifestyle behaviors to maintain or improve your health.

The purpose of this graduate student research is to assess individual employee health using the Health Risk Appraisal (HRA) questionnaire as a tool. Additional statements have been added regarding the worksite health culture of Eastern Michigan University, and the role it plays in supporting healthy employee lifestyles.

The student has partnered with the **University of Michigan Health Management Research Center (UM-HMRC).** They are a world-wide leader in studying how health choices influence total health and productivity, quality of life, vitality and health care economics throughout a lifetime. The HRA questionnaire is the critical tool to assess and give feedback to each participant on his or her own health. Group reports generated from the HRA will help the researcher develop recommendations for future worksite health promotion policy, to support individual participants in efforts toward good health.

Your information will NOT ever be used to identify you. None of your personal identifiable data will be shared with anyone. All identifiable data will be immediately separated from your health information.

If you have questions, please contact KAY WOODIELDWOODIEL@EMICH.EDU OR STEPHANIE KETEYIANSKETEYIA@EMICH.EDU

Please click here to complete this free and confidential Health Risk Assessment!
        https://www.hmrc.kines.umich.edu/emich/

Appendix C: Email #3 Reminder to Participate

Subject Line REMINDER: Please Participate In This Student Research Study For Your Free Health Risk Assessment!

If you have already completed the questionnaire, thank you for your valuable feedback! If you found the instant feedback helpful, please encourage your peers to participate!

Several days ago I sent you an E-mail with a link to a confidential health survey that will take 10 to 15 minutes to complete. A personal report will be generated, identifying lifestyle behaviors to maintain or improve your health.

In case the original E-mail containing the link was inadvertently discarded, please follow the link below and complete the questionnaire today.

https://www.hmrc.kines.umich.edu/emich/

One week remains to participate in the questionnaire! The link will close 12/03/2012!

Again, **your information will NOT ever be used to identify you.** None of your personal identifiable data will be shared with anyone. All identifiable data will be immediately separated from your health information.

If you have questions, please contact KAY WOODIEL DWOODIEL@EMICH.EDU OR STEPHANIE KETEYIAN SKETEYIA@EMICH.EDU

Thank you for your consideration. I am grateful for your assistance.

Sincerely,

Stephanie Keteyian
Graduate Student
College of Health and Human Services

Appendix D: Email #4 Last Reminder to Participate

Subject title ONLY 4 DAYS REMAIN!!! Please Participate In This Student Research Study For Your Free Health Risk Assessment!

If you have already completed the questionnaire, thank you for your valuable feedback! If you found the instant feedback helpful, please encourage your peers to participate!

During the last two weeks I sent you several E-mails that asked you to participate in a confidential health survey that will take 10 to 15 minutes to complete. A personal report will be generated, identifying lifestyle behaviors to maintain or improve your health.

In case the original E-mail containing the link was inadvertently discarded, please follow the link below and complete the questionnaire today. https://www.hmrc.kines.umich.edu/emich/

Time is running out! **The link will close 12/03/2012!**

Again, **your information will NOT ever be used to identify you.** None of your personal identifiable data will be shared with anyone. All identifiable data will be immediately separated from your health information.

If you have questions, please contact KAY WOODIEL DWOODIEL@EMICH.EDU OR STEPHANIE KETEYIAN SKETEYIA@EMICH.EDU
Thank you for your consideration. I am grateful for your assistance.

Sincerely,

Stephanie Keteyian
Graduate Student
College of Health and Human Services

Appendix: E Participant Consent and HRA

Health Risk Appraisal Questionnaire

Dear faculty, staff, and/or administrators,

You are being asked to participate in an Eastern Michigan University student research project. A blanket request is going out to all eligible staff. This confidential health survey will take 10 to 15 minutes to complete. A personal report will be generated within 30 seconds, identifying lifestyle behaviors to maintain or improve your health. You will be entered into a drawing for a $50 Starbucks gift card for completing this assessment.

The purpose of this research is to assess individual employee health using the University of Michigan's Health Risk Appraisal (HRA) questionnaire as a tool. Additional statements have been added regarding the worksite health culture of Eastern Michigan University, and the role it plays in supporting healthy employee lifestyles.

Your EMU ID will be required to complete the HRA. **Your information will NOT ever be used to identify you.** None of your personal identifiable data will be shared with anyone. All identifiable data will be immediately separated from your health information.

VOLUNTARY PARTICIPATION: The survey is completely voluntary. You may discontinue the study at any time without penalty or impact on the benefits you receive from EMU.

CONFIDENTIALITY: Your name and Eastern Michigan University ID are required to confirm your eligibility. This information will NEVER be used to identify you. You will create a password to log in to the survey to ensure you are the only individual able to access your unique report. **None of your personal identifiable health information will be shared with your employer.** After you complete this HRA your personal data will be sent to the University of Michigan's highly secured Health Management Research Center data warehouse (HIPAA compliant). This information is used by the University of Michigan to generate your tailored report. Additionally, the data may be used in aggregate for reports and publications. The researchers may receive your email address only if you would like to be considered for being awarded the $50 Starbucks gift card.

RISKS: There is no known risk involved with your participation. Your input is extremely valued. There is no penalty for not participating, and you may discontinue the study at any time without penalty or impact on the benefits you receive from EMU.
BENEFITS: Participating in this free survey will provide you with an individualized health

report to increase your awareness of your health status.
This research protocol and informed consent document has been reviewed and approved by

THE COLLEGE OF HEALTH AND HUMAN SERVICES
Human Subjects Review Committee for use from
  OCTOBER 1, 2012 TO SEPTEMBER 30, 2013.
If you have questions about the approval process, please contact the
 CHAIR OF THE CHHS-HSRC, GRETCHEN DAHL REEVES, GREEVES@EMICH.EDU.
STUDY RELATED QUESTIONS CAN BE DIRECTED TO KAY
WOODIEL DWOODIEL@EMICH.EDU OR STEPHANIE
KETEYIANSKETEYIA@EMICH.EDU.

Please indicate your consent to participate in this research by entering below.

This Health Risk Appraisal is now closed for new Questionnaire submissions. If you've

already completed a Questionnaire, you may still enter now to view your Profile again.

Last Name [ ] University Emich ID Number [ ]

HRA Password
For the privacy of your information,
a. If this is your first time here, please enter any password of your
choice, using at least four letters or digits. **Record and save** this
password to use when you return here other times. Enter your chosen
password *twice*, once in each box.
b. If you've already registered a password, please enter it once
here. This password is *not required* to enter to complete a
questionnaire. However, without it, for the privacy of your
information, your report will not include any comparison results from
your previous questionnaire.

[ ]
[ ]

☐ I've lost my password

To personalize your questionnaire:

Sex ○ Male ○ Female

Cigarette Smoking
**How would you describe
your *cigarette* smoking habits?**

○ Still smoke cigarettes
○ Used to smoke cigarettes
○ Never smoked cigarettes

*The Health Risk Appraisal is not a substitute for a medical exam. If you have health concerns or
if the report raises questions, please consult your physician or a health professional to review
the results with you.*

Instant SSL
Certificate Secured

We comply with the HONcode standard for trustworthy health information:
verify here.

This Web site is designed so that you don't need to use your browser's **[Back]** button. But if you do ... for the privacy of your data, you may also need to click **[Refresh]** or **[Reload]** as instructed.
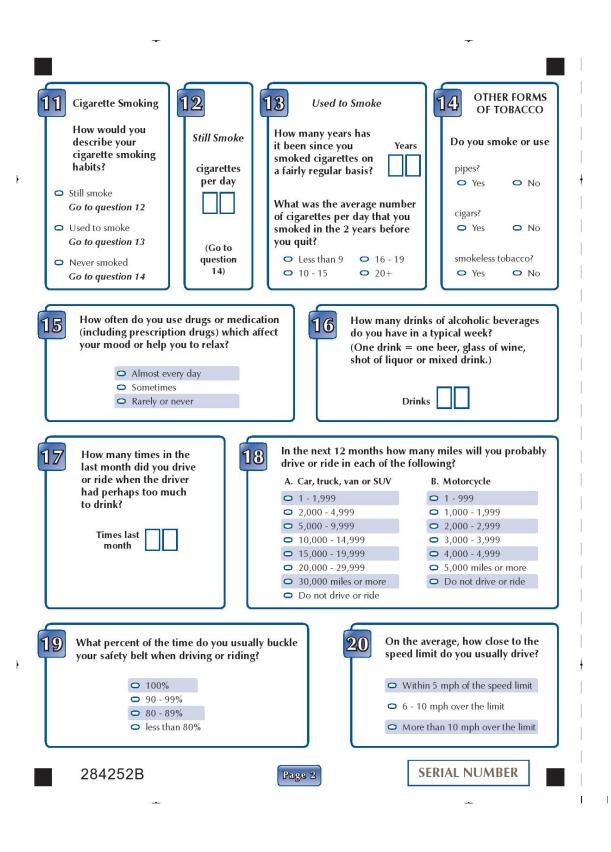
Enter

Developed by the University of Michigan Health Management Research Center

Feb 2, 2013; 12:18:46 EST   Problems: problems@www.hmrc.kines.umich.edu

Appendix F: Health Risk Appraisal

**UNIVERSITY OF MICHIGAN
HEALTH MANAGEMENT RESEARCH CENTER**

**HEALTH RISK
APPRAISAL**

Name

Address

City   State   Zip

MARKING INSTRUCTIONS

Please print UPPERCASE
letters and numbers clearly: A B C 1 2 3

Correct Mark: ○ ● ○

Mark boxes with BLACK pen *ONLY*.

Use black pen *ONLY*

Complete each question as best you can, by marking the best response. Your participation in this questionnaire is voluntary. However, to receive the most benefit from your report, please answer all questions.

Your results will be kept strictly confidential.

1 Social Security Number   ☐☐☐ – ☐☐ – ☐☐☐☐

2 Gender   ○ Male   ○ Female

3 Age
(At last birthday)   years old ☐☐

4 Are you pregnant?   ○ Yes   ○ No   ○ Does Not Apply   **If Yes**, complete questionnaire based on your health condition and lifestyle before pregnancy.

5 Height
(without shoes)   feet ☐ inches ☐☐

6 Weight
(without shoes)   pounds ☐☐☐

7 Waist Circumference
(in inches)   inches ☐☐

8 What is your blood pressure now?
Systolic (high number) ☐☐☐   Diastolic (low number) ☐☐☐   I'm not sure ○

9 What is your total cholesterol level?
(based on a blood test)
mg/dl ☐☐☐   ○ I'm not sure

10 What is your HDL cholesterol level?
(based on a blood test)
mg/dl ☐☐☐   ○ I'm not sure

284252A   Page 1   *Turn the page.* →   SERIAL NUMBER

11 Cigarette Smoking

How would you describe your cigarette smoking habits?

- Still smoke
  Go to question 12
- Used to smoke
  Go to question 13
- Never smoked
  Go to question 14

12

Still Smoke

cigarettes per day

☐☐

(Go to question 14)

13 *Used to Smoke*

How many years has it been since you smoked cigarettes on a fairly regular basis?

Years ☐☐

What was the average number of cigarettes per day that you smoked in the 2 years before you quit?

- Less than 9
- 16 - 19
- 10 - 15
- 20+

14 OTHER FORMS OF TOBACCO

Do you smoke or use

pipes?
- Yes
- No

cigars?
- Yes
- No

smokeless tobacco?
- Yes
- No

15 How often do you use drugs or medication (including prescription drugs) which affect your mood or help you to relax?

- Almost every day
- Sometimes
- Rarely or never

16 How many drinks of alcoholic beverages do you have in a typical week?
(One drink = one beer, glass of wine, shot of liquor or mixed drink.)

Drinks ☐☐

17 How many times in the last month did you drive or ride when the driver had perhaps too much to drink?

Times last month ☐☐

18 In the next 12 months how many miles will you probably drive or ride in each of the following?

A. Car, truck, van or SUV
- 1 - 1,999
- 2,000 - 4,999
- 5,000 - 9,999
- 10,000 - 14,999
- 15,000 - 19,999
- 20,000 - 29,999
- 30,000 miles or more
- Do not drive or ride

B. Motorcycle
- 1 - 999
- 1,000 - 1,999
- 2,000 - 2,999
- 3,000 - 3,999
- 4,000 - 4,999
- 5,000 miles or more
- Do not drive or ride

19 What percent of the time do you usually buckle your safety belt when driving or riding?

- 100%
- 90 - 99%
- 80 - 89%
- less than 80%

20 On the average, how close to the speed limit do you usually drive?

- Within 5 mph of the speed limit
- 6 - 10 mph over the limit
- More than 10 mph over the limit

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21 On a typical day how do you usually travel? (mark only one)

○ Sub-compact or compact car

○ Mid-size or full-size car, or minivan

○ Truck, van, full-size van or SUV

○ Motorcycle

○ Other

22 Each day, how many servings of food do you eat that are high in fiber, such as whole grain bread, high fiber cereal, fresh fruits or vegetables? (serving size: 1 slice bread, ½ c vegetables, 1 medium fruit, ¾ c cereal)

○ 5 - 6 servings a day
○ 3 - 4 servings a day
○ 1 - 2 servings a day
○ Rarely/never

23 Each day, how many servings of food do you eat that are high in cholesterol or fat such as fatty meat, cheese, fried foods or eggs? (serving size: 3 ½ oz meat, 1 egg, 1 oz/slice cheese)

○ 5 - 6 servings a day
○ 3 - 4 servings a day
○ 1 - 2 servings a day
○ Rarely/never

24 In the average week, how many times do you engage in physical activity (exercise or work which is hard enough to make you breathe heavily and make your heart beat faster) and is done for at least 20 minutes? Examples include running, brisk walking or heavy labor, e.g., chopping, lifting, digging, etc.

○ Less than 1 time per week   ○ 1 or 2 times per week   ○ 3 times per week   ○ 4 or more times per week

25 How many days per week do you get 30 minutes or more (for at least 10 minutes at a time) of light to moderate physical activity? Examples include walking, mowing (push mower), slow cycling.

○ None   ○ 1 day   ○ 2 days   ○ 3 or 4 days   ○ 5 or 6 days   ○ 7 days

26 How often do you floss your teeth?

○ Every day   ○ Almost every day   ○ Sometimes   ○ Rarely or never   ○ Does not apply

27 When in the sun, do you protect your skin by using a sunscreen at SPF 15 or above and by wearing adequate clothing?

○ All of the time   ○ Most of the time   ○ Some of the time   ○ Rarely or never

28 Considering your age, how would you describe your overall physical health?

○ Excellent   ○ Very Good   ○ Good   ○ Fair   ○ Poor

29 How many hours of sleep do you usually get at night?

○ 5 hours or less   ○ 6 hours   ○ 7 hours   ○ 8 hours   ○ 9 hours or more

Turn the page. ➡

30 In general, how satisfied are you with your life (include personal and professional aspects)?

○ Completely satisfied ○ Mostly satisfied ○ Partly satisfied ○ Not satisfied

31 In general, how strong are your social ties with your family and/or friends?

○ Very strong ○ About average ○ Weaker than average ○ Not sure

32 Have you suffered a personal loss or misfortune in the past year?
(For example: a job loss, disability, divorce, separation, jail term, or the death of someone close to you)

○ Yes, two or more serious losses ○ Yes, one serious loss ○ No

33 How often do you feel tense, anxious, or depressed?

○ Often ○ Sometimes ○ Rarely ○ Never

34 During the past year, how much effect has stress had on your health?

○ A lot ○ Some ○ Hardly any ○ None

35

Do you have:	Never	In the past	Have currently	Taking medication	Under medical care
Allergies	○	○	○	○	○
Arthritis	○	○	○	○	○
Asthma	○	○	○	○	○
Back Pain	○	○	○	○	○
Cancer	○	○	○	○	○
Chronic bronchitis/emphysema	○	○	○	○	○
Chronic pain	○	○	○	○	○
Depression	○	○	○	○	○
Diabetes	○	○	○	○	○
Heart problems	○	○	○	○	○
Heartburn or acid reflux	○	○	○	○	○
High blood pressure	○	○	○	○	○
High cholesterol	○	○	○	○	○
Menopause (women only)	○	○	○	○	○
Migraine headaches	○	○	○	○	○
Osteoporosis	○	○	○	○	○
Sleep disorder	○	○	○	○	○
Stroke	○	○	○	○	○
Thyroid disease	○	○	○	○	○
Other condition	○	○	○	○	○

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36 When was the last time you had these preventive services or health screenings?

	less than 1 year	1 - 2 years ago	2 - 3 years ago	3 - 4 years ago	5 - 6 years ago	7 or more years ago	Never	Don't know
Colon cancer screen	○	○	○	○	○	○	○	○
Flu shot	○	○	○	○	○	○	○	○
Tetanus shot	○	○	○	○	○	○	○	○
Blood pressure	○	○	○	○	○	○	○	○
Cholesterol	○	○	○	○	○	○	○	○
Dental exam	○	○	○	○	○	○	○	○
For Women Only								
Pap Test	○	○	○	○	○	○	○	○
Mammogram	○	○	○	○	○	○	○	○
Breast exam by Physician or nurse	○	○	○	○	○	○	○	○
For Men Only								
Prostate exam	○	○	○	○	○	○	○	○

37 In the past 12 months, how many times have you:

	0	1 - 2	3 - 5	6 or more
Visited a physician's office or clinic	○	○	○	○
Gone to the emergency room	○	○	○	○
Stayed overnight in a hospital	○	○	○	○

Women (Men go to question 42)

38 Have you had a hysterectomy operation?　　○ Yes　　○ No　　○ I'm not sure

39 At what age did you have your first menstrual period?
○ Younger than 12　　○ 12　　○ 13　　○ 14 or older

40 How old were you when your first child was born?
○ Younger than 20　　○ 20 to 24　　○ 25 to 29　　○ 30 or older　　○ Does not apply

41 How often do you examine your breasts for lumps?
○ Monthly　　○ Once every few months　　○ Rarely or never

Men (Women go to question 43)

42 **How often do you examine your testicles for lumps?**

◯ Monthly   ◯ Once every few months   ◯ Rarely or never

43 **Current Marital Status**

◯ Single (never married)   ◯ Separated   ◯ Divorced   ◯ Married   ◯ Widowed   ◯ Other

44 **Race/Origin**   ◯ White (non-Hispanic origin)   ◯ Black (non-Hispanic origin)   ◯ Hispanic
◯ Asian or Pacific Islander   ◯ American Indian / Alaskan Native   ◯ Other

45 **Highest level of education you have achieved**

◯ Some high school or less   ◯ Some college   ◯ Post graduate or professional degree
◯ High school graduate   ◯ College graduate

46 **Expected household income this year**

◯ less than $35,000   ◯ $50,000 - $74,999   ◯ $100,000 or more
◯ $35,000 - $49,999   ◯ $75,000 - $99,999

47 **In the next six months, are you planning to make any changes to keep yourself healthy or improve your health?**

	Yes	No	Don't Know	Not Needed
Increase physical activity	◯	◯	◯	◯
Lose weight	◯	◯	◯	◯
Reduce alcohol use	◯	◯	◯	◯
Quit or cut down smoking	◯	◯	◯	◯
Reduce fat / cholesterol intake	◯	◯	◯	◯
Lower blood pressure	◯	◯	◯	◯
Lower cholesterol level	◯	◯	◯	◯
Cope better with stress	◯	◯	◯	◯

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56 Now please think of your work experiences over the <u>past 4 weeks</u> (28 days). In the spaces provided below, write the number of days you spent in each of the following work situations.

In the <u>past 4 weeks</u> (28 days), how many days did you...

a.   ...miss an <u>entire</u> work day because of problems with your physical or mental health?
(Please include only days missed for your <u>own</u> health, not someone else's health.)   Days ▢▢

b.   ...miss an <u>entire</u> work day for any other reason (including vacation)?   Days ▢▢

c.   ...miss <u>part</u> of a work day because of problems with your physical or mental health?
(Please include only days missed for your <u>own</u> health, not someone else's health.)   Days ▢▢

d.   ...miss <u>part</u> of a work day for any other reason (including vacation)?   Days ▢▢

e.   ...come in early, go home late, or work on your day off?   Days ▢▢

57 About how many hours altogether did you work in the <u>past 4 weeks</u> (28 days)? (See example below)

▢▢▢   Number of hours in the past 4 weeks (28 days)
Hours   (Example: 40 hours per week for 4 weeks = 160 hours)

58 On a scale from 0 to 10 where 0 is the worst job performance anyone could have at your job and 10 is the performance of a top worker, how would you rate the usual performance of <u>most</u> workers in a job similar to yours?

Worst Performance	0	1	2	3	4	5	6	7	8	9	10	Top Performance
	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	

59 Using the same 0-to-10 scale, how would you rate your <u>usual</u> job performance over the <u>past year or two</u>?

Worst Performance	0	1	2	3	4	5	6	7	8	9	10	Top Performance
	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	

60 Using the same 0-to-10 scale, how would you rate your <u>overall</u> job performance on the days you worked during the <u>past 4 weeks</u> (28 days)?

Worst Performance	0	1	2	3	4	5	6	7	8	9	10	Top Performance
	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	⊂⊃	

THANK YOU FOR YOUR PARTICIPATION.

Appendix G: Additional Worksite Health Culture Questions

Please identify which of the following best describes your current employment category:

Please check one of the following:
Executive/Administrator
Faculty (Full-Time Faculty, Full-Time Lecturer)
Other Professionals (Technical/Paraprofessionals, Clerical, Service/Maintenance, Skilled Crafts)

Note: *Questions will appear as a "drop down" to choose from. The "drop down" box what is most convenient for the programmer.*

Please indicate your level of agreement to the following statements:
Strongly Agree   Agree Somewhat   Agree   Somewhat Disagree Disagree Strongly Disagree

1. My supervisor models a healthy lifestyle.

2. Eastern Michigan University demonstrates its commitment to supporting healthy lifestyles through its use of resources such as time, space and money.

3. My co-workers and I are taught skills needed to achieve a healthy lifestyle.

4. My co-workers have a positive outlook (for example, people enjoy their work, celebrate accomplishments, adopt a "we can do it" attitude and bring out the best in each other).

5. My coworkers support one another's efforts to adopt healthier lifestyle practices.

6. Eastern Michigan University has a sense of community (for example, co-workers get to know each other, feel a sense of belonging, and care for one another in times of need).

7. I attempted to make health-supporting life-style changes in the past year (for example, managing my stress, losing weight, adding more vegetables to my diet).

8. Eastern Michigan University rewards and recognizes efforts to live a healthy lifestyle.

Appendix H: HRA individual profile results and wellness score

Healthy Lifestyle Profile
UNIVERSITY OF MICHIGAN HEALTH MANAGEMENT RESEARCH CENTER

Wellness Score

Current Score	89
Previous Score 02/09/2011	84

Poor | Fair | Good | Very Good | Excellent 100

Your Wellness Score comes from the information you gave on your HRA. Improving your health and updating your routine preventive services may improve your score in the future.

① ② ③

Top 3 areas to improve your health right now!

Weight

Safety Belt Use

Cholesterol

*What you're doing **well**:*
- You do not use tobacco.
- You drink little or no alcohol.
- You have a regular breast exam.
- You have a regular Pap test.
- You have a regular mammogram.
- Your blood pressure is under 120/80.
- Your physical activity level is good.
- You eat a low fat/low cholesterol diet.
- You have good overall physical health.
- You have a positive outlook on life.
- You have a low stress level.

*What you can do **better**:*
- Do a breast self-exam monthly.
- Stay within your healthy weight range.
- Always buckle your safety belt.
- Decrease cholesterol level to 199 or less.
- Improve your HDL cholesterol level.
- Talk to your health professional about routine preventive services: *tetanus booster shot.*

Age: 49
Sex: female
17272
November 15, 2012