COMPARISON OF TWO INSTRUMENTS FOR NEEDS ASSESSMENT AND EVALUATION OF AN EMPLOYEE HEALTH PROMOTION PROGRAM

A THESIS

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BY

MARILYN A. HOFFMANN, RN, BSN

DENTON, TEXAS

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TEXAS WOMAN'S UNIVERSITY
DENTON, TEXAS

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Date

To the Dean of Graduate Studies and Research:

I am submitting herewith a thesis written by Marilyn A. Hoffmann entitled "Comparison of Two Instruments for Needs Assessment and Evaluation of an Employee Health Promotion Program." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Health Education.

Leah E. Kaplan
Major Professor

We have read this thesis and recommend its acceptance:

Robert L. Kaman

William B. Cissell
Department Chairperson

Dean, College of Physical Education, Recreation, and Dance

Accepted:

Leslie M Thompson
Dean of Graduate Studies and Research

To my daughters, Jenni, Nikki, and Susan, in hopes that they achieve their academic goals.

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COMPLETED RESEARCH IN HEALTH, PHYSICAL EDUCATION, RECREATION, AND DANCE
Texas Woman's University, Denton, Texas

A. Uhlir
Institutional Representative

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In order to justify a health promotion program, an accurate needs assessment and evaluation is necessary. The purpose of this study was to determine if the RiskPlan Report (RPR) and the Healthier People Health Risk Appraisal (HPHRA) could be used with an equal degree of confidence for the justification of an employee health promotion program. The percentages of each of seven risk factors (alcohol abuse, hypertension, obesity, hypercholesterolemia, sedentary lifestyle, smoking, and lack of seatbelt use) predicted by the RPR and calculated by the HPHRA for the self-selected sample population were compared. The percentage of alcohol abuse was the only percentage that was not significantly different, indicating that the two instruments cannot be used with an equal degree of confidence. However, a significant correlation was found between the relative incidence of the seven risk factors as measured by both instruments.

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CHAPTER I

INTRODUCTION

According to a Harvard Business School study, corporate health expenses are rising at such a staggering rate that, if left unchecked, by 1996 they will have eliminated all profits for the average Fortune 500 company (Barker, 1987). In response to this, an increasing number of worksites are implementing health promotion programs in an attempt to decrease health care expenditures and to increase productivity. Unfortunately, many of these programs are instituted without any prior needs assessment or evaluation, both crucial elements in developing a successful program. Hard data are vital in order to justify the program and ensure efficient allocation of resources (Kaman, 1987; Kaman & Huckaby, 1988; "Rationales, Savings," 1987). Because of numerous methodological problems, these data often are difficult to obtain (Fielding, 1988; Smith & Everly, 1988).

The Texas College of Osteopathic Medicine (TCOM), a large metropolitan medical school in Fort Worth, Texas, is planning to establish a wellness program for its employees. In order to assess their needs, the Healthier People Health

Risk Appraisal (HPHRA), an individually administered measure of health risks which was developed by the Carter Center (1988) in collaboration with the Centers For Disease Control (CDC), was offered to all TCOM employees on a voluntary basis in August, 1988. Of TCOM's 665 employees, 239 participated in the HPHRA, and the collected data were analyzed. However, in the process of examining the data for planning the wellness program, several important questions began to surface, such as: Should the program be based on the risks of the 239 employees only? How would the health risks and needs of the other 426 employees be assessed? On what basis should the costs of the program be estimated for presentation to TCOM management?

After administering the HPHRA, which is a time-consuming process, the director of the wellness program became aware of the RiskPlan Report (RPR) developed by HealthDecisions (1986). If purchased, the RPR has the capacity to answer these questions. However, no formal studies have been published on the RPR thus far.

Both the RPR and the HPHRA could be important for justifying and planning a wellness program. For example, the RPR can estimate risks for the entire population by using only demographic data from employee records. From this data, specific health risks are predicted, associated costs for each risk are estimated, and the estimated costs/benefits for specific programs are determined (HealthDecisions, 1986). The RPR also can avoid some of the confidentiality and legal liabilities of Health Risk Appraisal's (HRAs) reported by Staff (1987). On the other hand, HRAs calculate the actual individual risks for those participating, and can motivate a change in behavior. Depending on the particular setting, available resources, commitment to the program, and phase of the wellness program, one instrument may be preferred over the other or both may be needed.

Statement of the Problem

The problem of the study was to determine whether the Healthier People Health Risk Appraisal (HPHRA) and the RiskPlan Report (RPR) could be used with an equal degree of confidence for needs assessment and evaluation of an employee health promotion program.

Purpose of the Study

The purpose of this study was to compare the percentages of TCOM employees who would exhibit each of the seven risk factors as predicted by the RPR to the percentages actually measured for each risk factor by the HPHRA among the same sample population in order to determine if there is a difference in the measures provided by the instruments.

Theoretical Framework

Green's (1980) PRECEDE Model (cited in Green, Kreuter, Deeds, & Partridge, 1980) provided the framework for this study. PRECEDE is an acronym for Predisposing, Reinforcing and Enabling Causes in Educational Diagnosis and Evaluation. It promotes the use of a systematic method when designing a program consisting of epidemiological, social, behavioral, educational, and administrative diagnoses based on needs assessment. This approach is intended to decrease the disjointed planning that is so common in health education.

Hypotheses

The following null hypotheses were tested at the .05 level of significance:

1. There is no significant difference between the percentages of alcohol abuse among employees determined by the HPHRA and predicted by the RPR.

2. There is no significant difference between the percentages of hypertensive employees determined by the HPHRA and predicted by the RPR.

3. There is no significant difference between the percentages of employees with high cholesterol determined by the HPHRA and predicted by the RPR.

4. There is no significant difference between the percentages of employees leading sedentary lifestyles determined by the HPHRA and predicted by the RPR.

5. There is no significant difference between the percentages of overweight employees determined by the HPHRA and predicted by the RPR.

6. There is no significant difference between the percentages of employees who are smokers determined by the HPHRA and predicted by the RPR.

7. There is no significant difference between the percentages of employees who do not use seatbelts determined by the HPHRA and predicted by the RPR.

8. There is no significant difference between the relative incidence of the seven risk factors as determined by the HPHRA and predicted by the RPR.

Delimitation

The following was a delimitation of the study: The HPHRA was administered to 239 of 665 TCOM employees on a voluntary basis in August, 1988.

Definition of Terms

The following terms have been defined for the purpose of this study:

1. Employee Health Promotion Program. A company can be classified as having a Health Promotion Program if it offers any or all of the following six benefits to its employees: health assessments, health education, health intervention, athletic equipment and facilities, mental health programs, and incentive systems (Feuer, 1985).

2. Health Risk Appraisal (HRA). A computerized instrument which analyzes demographic variables, medical history, and lifestyle behaviors; and which presents probability statements based on mortality data about the likelihood of premature death in the next 10 years along with comments about risk behaviors (Pursley & Neutens, 1986).

3. Health Risk Factors. The following seven lifestyle variables are defined and measured by the RPR (HealthDecisions, 1986):

a. Alcohol Abuse. High risk exists if an individual has consumed 14 or more drinks per week during the last year.

b. Hypertension. High risk exists if the average of three successive blood pressure measurements for an individual taken over time is greater than 140 systolic and 90 diastolic.

c. <u>High Cholesterol</u>. High risk exists if an individual's age is between 15 and 29 years with a cholesterol level greater than 227 mg/dl; if the individual's age is between 30 and 39 years with a cholesterol level greater than 247 mg/dl; or if the individual is older than 40 with a cholesterol level greater than 268 mg/dl.

d. <u>Sedentary Life Style</u>. High risk exists if an individual exercises less than one time per week.

e. <u>Overweight</u>. High risk exists if an individual's weight is 15% greater than the weight limits defined by the 1979 Build Study chart (see Appendix A) developed by the Society of Actuaries and Association of Life Insurance Medical Directors of America.

f. <u>Smoking</u>. High risk exists if an individual is a current smoker.

g. <u>Lack of Seatbelt Use</u>. High risk exists if an individual never wears a seatbelt.

CHAPTER II

REVIEW OF LITERATURE

This review of literature is divided into four sections. The first section is a discussion of the present status of the justification of health promotion programs in terms of decreasing health care costs. The second part is an examination of the use of HRAs as needs assessment/evaluation instruments, including nonsupportive and supportive literature. The third section is a presentation of a brief review of literature concerning the RPR. A summary concludes this review. Even though health promotion programs are not new, the necessity to justify them due to corporate involvement in containing health costs is a relatively new phenomenon. This explains why the literature is contradictory and contains a great deal of opinion as opposed to empirical evidence.

Justification of Corporate Health Promotion Programs

Many health promotion programs claim to be successful. However, in 1986, Elias and Murphy conducted a review of eight major studies dealing with the impact of health promotion programs on health care costs. This review was restricted to the more rigorous studies in which attempts were made to control for threats to internal and external validity. The programs examined were those developed by the following corporations: Prudential, Canada Life and North American Life, Tenneco, Blue Cross-Blue Shield of Indiana, Blue Cross of California, AT&T, and Control Data. The authors concluded that inconsistent results were found due to measurement, design, and sampling problems.

Warner, Wickizer, Wolfe, Schildroth, and Samuelson (1988) reviewed the literature concerning the economic implications of workplace health promotion programs. They reviewed more than 400 articles dealing with the economic implications of workplace health promotion programs through 1986. It is important to note that the authors are of varying business and health backgrounds. Their conclusions were very similar to Elias and Murphy's study in that there was a dearth of sound evidence of the economic merits of workplace health promotion programs, and that the evidence is largely anecdotal or based on analyses that were flawed seriously in terms of assumptions, data, or methodology.

In 1988, Smith and Everly sought to determine whether participation in the Kimberly-Clark Corporation's Health Weight Loss Program could be associated with reduced participant health care claims. Thirty-three participating employees and 33 matched employee counterparts were studied from 1981 to 1985. Health-care claims and workers' compensation claims were measured. The data supported that there was no significant interactive effect between time and treatment and the mean dollar difference in health-care claims submitted between groups. The authors concluded that this study serves as a good example of the methodological problems in the evaluation of occupation health promotion programs. The difficulties arise from the inability to employ true experimental designs, the resultant contamination of the subject selection/assignment procedure, the data availability constraints, vulnerability to natural maturation processes, and the susceptibility to a Hawthorne effect. Aberth (1986) and Patterson (1986) published similar conclusions.

Green's PRECEDE Model (Green et al., 1980) was developed in order to overcome some of the methodological difficulties associated with the development of health promotion programs. By using this theoretical model, a program director can avoid the guesswork that so frequently leads to misdirected and ineffective programs.

The literature suggests the difficulty of financially justifying health promotion programs. It generally is agreed that the first place to begin in justifying any program is to perform a valid needs assessment followed by ongoing evaluation (Kaman, 1987; O'Donnell, 1987; "Rationale Savings," 1987).

Use of HRAs as Needs Assessment and Evaluation Instruments

HRAs first were developed by Robbins and Hall in the 1960s as an aid to the physician in practicing preventive medicine (Golaszewski, Vickery, & Pfeiffer, 1987). Throughout the years, numerous HRAs have been developed and used for various purposes, such as: attention getting devices, motivational devices, screening instruments, needs assessment instruments, and evaluation instruments (Spasoff & McDowell, 1987).

The CDC/HRA, which has been refined and modified for more than two decades, often is considered the gold standard for the industry as a tracking tool for assessing the effects of health promotion programs (Russell, 1988).

Nonsupportive Literature

Despite the frequent administration of HRAs, many authors have questioned their usefulness. Many have debated the effectiveness of HRAs in terms of ability to motivate and change health behaviors. However, this review will be limited to the validity and reliability of HRAs in general.

Wagner, Beery, Schoenback, and Graham (1982) reviewed the literature on HRAs, using a bibliography of 212 sources, with the intent of assessing the contribution HRAs have made or can make to health promotion/disease prevention. They concluded that the scientific basis for HRA risk predictors is problematic, but that it is not as much of a concern as the insufficiency of scientific evidence for certain behavior recommendations and inaccuracies in client-supplied data.

Test-retest reliability for the HRA was addressed by Alexy in 1984. She administered an HRA to 25 males, and readministered it 3 to 5 days later. No planned interventions occurred between tests. Pearson product-moment correlations were calculated on all quantifiable data. Reliability coefficients ranged from .996 to .239. The lowest reliability coefficient was associated with self-reported blood pressure. Since blood pressure is a significant factor in risk reduction computation, this research suggests that self-reported data could make HRA results questionable.

The accuracy of HRA data was examined by Kileen in 1983. She assessed the impact of the sensitivity to social desirability measured by the Crowne-Marlowe Social Desirability Scale. The 184 subjects ranged in age from 18 to 74, with equal numbers of males and females. By using the Pearson's product-moment correlation and analyses of variance, Kileen found a strong association between chronological age and the tendency to give socially desirable responses. She found that older individuals may tend to underestimate their ages, which is problematic since age is one of the key variables that influences all other risk calculations. In addition, the responses of nonsmokers and nondrinkers were associated with social desirability. Kileen recommended that, until there is more evidence to support the accuracy of self-reported information collected by questionnaires, HRAs, which include these, must be used and interpreted with caution.

Efinger (1984) suggested that evidence for the validity of the HRA often is limited to the testimony of experts because of the difficulty in demonstrating it empirically. She recommended the need for greater scientific approaches to HRAs.

Supportive Literature

Wiley (1981) reported a study which supports the HRA as a predictive instrument. In 1965, a detailed health questionnaire was completed by 6,604 subjects at a screening in Alameda County. A similar questionnaire was completed by the survivors in 1974, and mortality data were collected for all members between 1965 and 1974. The investigators completed HRAs on each subject using the 1964 data, and compared the probabilities of death from the HRA prediction to actual experience. It was found that the HRA did differentiate between high-, medium-, and low-risk groups and, although it systematically overestimated the probability of death by 26 deaths per thousand, the study still supported the validity of the HRA as a predictive tool.

Chaves, Jennings, McKinlay, and McKinlay (1984) addressed the question of whether HRA instruments provide comparable estimates of appraised risk factors for individuals with the same health profile. They limited the study to seven similar computer scored HRAs. One hundred and twenty cases were created and scored for each of the seven HRAs, and it was found that the seven HRAs were highly correlated with each other and provided equivalent estimates of risks. This does not necessarily support the validity of the predictions, but it offers some degree of confidence between their use.

A longitudinal study was reported by Wheeler and Overman (1985) concerning the accuracy of predictions made in 1980 of costs and potential savings associated with health risks for a 304 employee organization. Using the results of a computerized HRA, the researchers predicted replacement, hospitalization, and sick-day costs, and compared these predictions to the actual costs in 1980 using the *Z* score. They demonstrated that, after adjusting for inflation, the overall prediction was accurate within 1.2%. The authors suggested that the health risk appraisal method can be used to predict costs and potential savings with sufficient accuracy for it to be used to assist in planning health promotion activities.

In 1986, Pursley and Neutons administered the CDC/HRA to 43 individuals diagnosed with Black Lung disease, and to 43 computer-matched, able-bodied persons. A statistically significant difference was established between the HRA scores of the two groups. This supports the premise that HRAs can identify and measure health status differences between persons with a specific chronic disease and persons who generally are described as well.

The validity of the scoring systems of 41 HRAs for assessing coronary heart disease was evaluated by Smith, McKinlay, and Thorington in 1987. They assessed validity by comparing predictions of mortality produced by each HRA to estimates from two models, the Framingham Heart Study and the Risk Factor Update Project. The results of their correlation studies showed that HRAs using logistic regression or the Geller/Gesner methodology had the highest validity coefficients, while validity was lowest for self-administered general health status and lifestyle questionnaires. The HPHRA uses the former methodology.

Perhaps the most significant study related to this project was conducted by Foxman and Edington in 1987. They examined the accuracy of the CDC/HRA in predicting mortality. The researchers calculated the CDC/HRA risk age on each of 3,135 participants of the Tecumseh (Michigan) Community Health Study by using data that had been reported in 1959-60 by the subjects. For all age groups, the observed proportion who died during the 20 years after the study increased as the difference between the 1959 actual age and risk age increased. This indicates that the CDC/HRA may be an appropriate method for the identification of high-risk populations for health interventions and, thus, truly measures what it is supposed to measure.

RiskPlan Report

According to Jason Huckaby, the Corporate Customer Service manager for HealthDecisions, no formal studies have been published on the RPR. He stated that the RPR was created in response to a demand from the business world and has been designed completely in response to experience in the market place. Its level of validity rests on the sources of normative data used (see Appendix B) and the state-of-the-art ability to keep it current (J. Huckaby, personal communication, September 6 and 28, 1988).

The Cardiac Institute for Corporate Plans based at Swedish Hospital, Englewood, Colorado, has been using the RPR for the past year-and-a-half in planning corporate programs. The director of products and research stated that the RPR tends to be conservative, but its predictions always are "in the ballpark range" of what actually occurs as determined by preliminary studies. She felt that it has been very effective in demonstrating cost savings (P. Germain, personal communication, September 9, 1988).

David Teschler, Director of Health Center for Pillsbury Company in Minneapolis, has stated that his company also is using the RPR. Because his staff have been unsure of the RPR's validity, they are in the process of comparing the RPR to the data they have collected on their 800 employees using another HRA. Mr. Teschler commented that, so far, the RPR is looking good. The Honeywell Corporation also is using the RPR (D. Teschler, personal communication, September 14, 1988).

An article in Personnel Journal stated that regional normative data on illness, hospital costs, provider services, health surveys, and the nonworker should be used in assessing needs. Norms can reveal how much illnesses cost companies and, subsequently, can predict to what extent similar companies can predict expenditures (Sherwood, 1986). The RPR is based on normative data.

Summary

Due to methodological problems, present research is generally inconsistent in demonstrating solid empirical evidence to justify the cost effectiveness of health promotion programs. It generally is agreed that the first place to begin when attempting to justify a program is to perform an accurate needs assessment followed by ongoing evaluation. The literature is mixed on the validity and reliability of HRAs. However, HRAs commonly are used for needs assessment and evaluation, and the CDC/HRA seems to be well respected in the industry. The RPR is a new needs assessment instrument and health management report which generates vital financial information to justify programs for which corporate America has been asking. No formal studies have been published to date on the RPR. However, several large companies are using the RPR and are attempting to demonstrate its validity.

CHAPTER III

METHODOLOGY

This chapter describes the setting, reference and sample populations, instruments, data collection procedures, and treatment of data for this methodological research. According to Polit and Hungler (1983), methodological studies are used to develop, validate, and evaluate research tools or techniques. There has been a growing interest in this type of research due to the need for reliable and valid instruments for the increased sophistication of contemporary research.

Setting

This study was conducted at the Texas College of Osteopathic Medicine, a large metropolitan medical school in the south central area of the United States. TCOM employs 665 individuals. In the spring of 1988, TCOM's Employee Benefits Committee decided to offer a comprehensive health promotion program as a new benefit to all employees. Permission to conduct this study at TCOM was obtained prior to data collection (see Appendix C).

Population and Sample

The reference population of this study consisted of TCOM's 665 employees, including 272 males and 393 females. The sample population was obtained using nonprobability convenience sampling due to the recommended self-selection method for administering HRAs (Staff, 1987). The sample population consisted of the 239 employees, including 80 males and 159 females, who voluntarily participated in the HPHRA. The same sample population was used to assess risk factors by both instruments.

Instruments

Two instruments were used for this study: the Healthier People Health Risk Appraisal, produced by the Carter Center at Emory University in collaboration with the Centers for Disease Control in Atlanta, Georgia (Carter Center, 1988); and the RiskPlan Report, produced by HealthDecisions, Inc. in Minneapolis, Minnesota (HealthDecisions, 1986).

Healthier People Health Risk Appraisal

The HPHRA is the newest version of the CDC's HRA (see Appendix D). Since 1977, the CDC has been developing and improving its HRA with the help of 24 major health organizations and a nationwide network of health departments. It is fully documented, both scientifically and technically (CDC, 1987).

The HPHRA consists of 19 fill-in and 26 multiple choice questions. A participant consent form (see Appendix E) is required when cholesterol is measured using the finger stick method. Technicians measure and record blood pressure, height, weight, and body frame size, and administer the self-report questionnaire. The HPHRA takes approximately 20 minutes to complete. The collected data are entered into and analyzed by a computer which produces a two-page report for each participant. The report identifies individual risk factors associated with premature death and serious illness, and quantifies their impact in terms of present risk age and target age. Additional appropriate risk messages are included. Individual and group summary sheets also can be produced (Carter Center, 1988).

No validity or reliability coefficients have been established for the HPHRA. However, for the purposes of this study, the HPHRA was used as a basis for data collection from which the percentage of the incidence of each of the seven risk factors were calculated.

RiskPlan Report

The RPR estimates health risks in seven areas (alcohol abuse, hypertension, high cholesterol, sedentary lifestyles, overweight, smokers and lack of seatbelt use) using collective demographic data that can be obtained from a company's personnel records. No individual assessments are necessary. These data are sent to HealthDecisions where the percentages of the seven health risks are predicted, associated costs for each risk are estimated, and the estimated costs/benefits for specific programs are outlined. All these computations are based on technology using multiple current sources of normative data (HealthDecisions, 1987).

Reliability and validity studies on the RPR have not been published yet. According to its developers, its validity lies in the quality of continually updated normative data entered into the RPR program (J. Huckaby, personal communication, September 28, 1988).

Data Collection Procedures

After a program director and committee were selected to implement TCOM's health promotion program, an intense marketing effort was organized from May to August 1988 in an effort to raise awareness, understanding, and interest in the program. It was emphasized that the HPHRA is the first step necessary in planning a successful program.

The HPHRA was offered to TCOM employees at no charge and on company time, from 8 a.m. to 5 p.m., from August 8th to 12th. Additional sessions were available on August 24th and 25th to accommodate evening shift workers and those who were absent previously. The HPHRA was administered according to standard procedures outlined in the HPHRA program (Carter Center, 1988). Privacy and confidentiality were maintained by a system of numbers and multiple list sheets. The data were entered into a computer, which produced the individual two-page analysis reports, and the individual and group summary sheets used to calculate the percentages of each of the seven risk factors for the study.

The demographic data required to develop the RPR (see Appendix F) were retrieved from personnel records and the September/October salary sheet from the Personnel Department at TCOM. The demographic data were mailed to HealthDecisions, and the report was developed and returned (see Appendix G).

Treatment of Data

The actual percentages of the incidence of each of the seven risk factors were calculated from the HPHRA in a manner consistent with the RPR risk-factor definitions. The percentage of TCOM employees who have abused alcohol was calculated by analyzing responses to question 23 of the HPHRA. The percentage of TCOM employees who have been hypertensive was calculated by analyzing answers to questions 7 and 8 of the HPHRA. The percentage of TCOM employees who have high cholesterol was calculated by analyzing answers to question 10 of the HPHRA. The percentage of TCOM employees who have led sedentary lifestyles was calculated by analyzing the responses to question 36 of the HPHRA. The percentage of TCOM employees who have been overweight was calculated by analyzing answers to questions 1, 3, 4, and 5 of the HPHRA. The percentage of TCOM employees who have been smokers was calculated by analyzing the responses to questions 12, 13, and 15 of the HPHRA. The percentage of TCOM employees who have not worn seatbelts was calculated by analyzing responses to question 20 of the HPHRA.

The percentages of each of the seven risk factors predicted for TCOM's employees by the RPR were used directly from the RPR.

A _Z_ score was used to assess the probability associated with a difference in percentages computed by the HPHRA data and those estimated by the RPR. A Spearman Rank Order Correlation was used to compare the relative incidence of the seven risk factors measured by each instrument. These computations were performed manually using the equations from pages 117 and 422 in _Biostatistics: A Foundation for Analysis in the Health Sciences_ (Daniel, 1983). The .05 level of significance was chosen to test whether either instrument could be used with the same degree of confidence.

CHAPTER IV

ANALYSIS OF DATA

The purpose of this study was to compare the percentages of TCOM employees who would exhibit each of seven risk factors as predicted by the RPR to the percentages actually measured for each risk factor by the HPHRA in order to determine if there was a difference in the measures provided by the instruments. The study also was designed to compare the relative incidence of the seven risk factors as determined by both instruments. Eight hypotheses were examined in this study. The $\underline{Z}$ score, Chi Square, and the Spearman Rank Order Correlation coefficient were used to analyze the data. The .05 level of significance was used to determine if significant differences existed. A discussion of the findings is included.

Description of the Sample

The sample population of this study consisted of 239 TCOM employees, including 80 males and 159 females, who voluntarily participated in the HPHRA during August of 1988. Table 1 describes the HPHRA participants, the sample

Table 1

Sex and Average Salary of HPHRA Participants According To Age Range (Sample Population)

	Males		Females	
Age Range	n	Average Salary	n	Average Salary
10 - 19	0	$ 0	3	$11,317
20 - 29	14	$15,634	36	$15,228
30 - 39	23	$29,069	49	$19,043
40 - 49	28	$44,344	48	$19,817
50 - 59	9	$49,190	14	$17,814
60 - 70+	6	$58,148	9	$17,738
Total	80		159	

population, according to sex and average salary for each of six age ranges. Table 2 shows the sex and average salary for each of the same six age ranges for the entire TCOM workforce, the reference population (N = 665).

The mean and standard deviation for age and salary were calculated for the participating group and the nonparticipating group (see Tables 3 and 4). Z scores were calculated for both variables to determine if there was a significant difference between the two groups. The Z score

Table 2

Sex and Average Salary of Entire TCOM Workforce According To Age Range (Reference Population)

	Males		Females	
Age Range	*n*	Average Salary	*n*	Average Salary
10 - 19	0	$ 0	4	$10,704
20 - 29	29	$16,876	76	$15,617
30 - 39	85	$48,540	135	$20,165
40 - 49	89	$57,107	102	$20,405
50 - 59	48	$60,889	48	$19,665
60 - 70+	21	$73,518	28	$20,499
Total	272		393	

for the age variable was 2.76 (p = .0058). The Z score for the salary variable was 8.73 (p = $\ll$ .0002). As indicated in Table 5 a Chi Square test for sexes versus participation status was calculated (Chi Square = 8.51, df = 1, p = .005). As indicated in Table 6, a Chi Square test for race (black and other) versus participation was calculated (Chi Square = 2.66, df = 1, p = .10).

Table 3

Significance of Age Differences Among HPHRA Participants And Nonparticipants (Reference Population)

Employees	*n*	*M*	*SD*	*Z*	*p*
Participants	239	39.14	11.47	2.76	.0058
Nonparticipants	426	41.68	11.39		

Note. *Z* score is significant at the .05 level.

Table 4

Significance of Salary Differences Among HPHRA Participants And Nonparticipants (Reference Population)

Employees	*n*	*M*	*SD*	*Z*	*p*
Participants	239	24.23	11.56	8.73	.0002
Nonparticipants	426	34.59	19.00		

Note. *Z* score is significant at the .05 level.

Table 5

Significance of Differences in Sex Among HPHRA Participants And Nonparticipants (Reference Population)

Employees	Male	Female	*df*	Chi Square	*p*
Participants	80	159			
			1	8.51	.005
Nonparticipants	192	234			

Note. Chi Square Value is significant at the .05 level.

Table 6

Significance of Racial Differences Among HPHRA Participants And Nonparticipants (Reference Population)

Employees	Black	Other	*df*	Chi Square	*p*
Participating	18	221			
			1	2.66	.10
Nonparticipating	49	337			

Note. Chi Square Value is not significant at the .05 level.

The results indicate that there was no significant difference between the participating group and the nonparticipating group with respect to race: blacks and others were equally likely to participate. However, there was a significant difference between the two groups with respect to age, sex, and salary: participants were significantly younger, earned significantly less salary, and included significantly more females than males.

Findings

Analysis for Hypothesis 1.

In order to determine if a significant difference exists between the percentage of TCOM employees who abuse alcohol as determined by the HPHRA and the percentage predicted by the RPR, a *Z* score was computed. The results, as indicated in Table 7, reveal no significant difference ($Z = 1.00$; $p = .3200$).

Analysis for Hypothesis 2.

In order to determine if a significant difference exists between the percentage of hypertensive employees determined by the HPHRA and the percentage predicted by the RPR, a *Z* score was computed. The results, as indicated in Table 7, reveal a significant difference (Z = 3.00; p = .0026).

Table 7

Percentages of HPHRA Participants Who Exhibit Each of The Seven Risk Factors as Determined by the HPHRA And Predicted by the RPR

	HPHRA		RPR			
Risk Factor	f	%	f	%	Z	p
Alcohol Abuse	12	5.0	17	7.1	1.00	.3200
Uncontrolled Hypertension	28	11.7	49	20.5	3.00	.0026
High Cholesterol	4	1.7	31	13.0	4.70	.0002
Sedentary Life Style	67	28.0	38	15.9	3.27	.0012
Overweight	79	33.1	52	21.8	2.82	.0050
Smokers	39	16.3	63	26.4	2.73	.0064
Lack of Seatbelt Use	2	0.8	67	28.0	7.5	.0002

Analysis for Hypothesis 3.

In order to determine if a significant difference exists between the percentage of employees with high cholesterol determined by the HPHRA and the percentage predicted by the RPR, a *Z* score was computed. The results, as indicated in Table 7, reveal a significant difference ($Z = 4.70$; $p = \ll .0002$).

Analysis for Hypothesis 4.

In order to determine if a significant difference exists between the percentage of employees who lead sedentary lifestyles determined by the HPHRA and the percentage predicted by the RPR, a *Z* score was computed. The results, as indicated in Table 7, reveal a significant difference ($Z = 3.27$; $p = .0012$).

Analysis for Hypothesis 5.

In order to determine if a significant difference exists between the percentage of overweight employees determined by the HPHRA and the percentage predicted by the RPR, a *Z* score was computed. The results, as indicated in Table 7, reveal a significant difference ($Z = 2.82$, $p = .005$).

Analysis for Hypothesis 6.

In order to determine if a significant difference exists between the percentage of employees who are smokers determined by the HPHRA and the percentage predicted by the RPR, a *Z* score was computed. The results, as indicated in

Table 7, reveal a significant difference ($\underline{Z}$ = 2.73; $\underline{p}$ = .0064).

Analysis for Hypothesis 7.

In order to determine if there is a significant difference between the percentage of employees who do not use seatbelts determined by HPHRA and the percentage predicted by the RPR, a $\underline{Z}$ score was computed. The results, as indicated in Table 7, reveal a significant difference ($\underline{Z}$ = 7.5, p = $\ll$ .0002).

Analysis for Hypothesis 8.

In order to determine if there is a significant difference between the relative incidence of the seven risk factors determined by the HPHRA and predicted by the RPR, a Spearman Rank Order Correlation coefficient was computed. As indicated in Table 8, a significant difference does not exist ($\underline{r}$ = .0358, upper tail critical value for $\underline{r}$ = .7450, $\underline{p}$ = $>$ .05).

Discussion of Findings

The results reveal that there were no significant differences between the percentages of employees in the sample population who have abused alcohol as measured by the HPHRA and the RPR. There were significant differences

Table 8

Relative Incidence of Risk Factors

Risk Factor	HPHRA Ranking	RPR Ranking	Differences in Ranking
Alcohol Abuse	5	7	2
Uncontrolled Hypertension	4	4	0
High Cholesterol	6	6	0
Sedentary Life Style	2	5	3
Overweight	1	3	2
Smokers	3	2	1
Lack of Seatbelt Use	7	1	6

Note. $r = .0358$; upper tail critical value = .7450; $p = > .05$.

between the percentages of the other six risk factors (hypertension, cholesterol, sedentary lifestyle, overweight, smoking, and use of seatbelts). This study supports the use of either instrument with an equal degree of confidence in determining the percentage of alcohol abuse, but not for the other six risk factors. It would seem necessary, however, that the percentages of all the risk factors measured by both instruments not be statistically different in order to state that the two instruments can be used with an equal degree of confidence for measuring percentages of risks for a population. Overestimation or underestimation could lead to inappropriate decisions in program implementation and maintenance. It is interesting to note that the percentages calculated by the HPHRA of employees who have been overweight and who have led sedentary lifestyles were both higher than those percentages predicted by the RPR. The percentages of the other five risk factors (alcohol abuse, smoking, seatbelt use, hypertension, and cholesterol) were lower than those percentages predicted by the RPR.

The greatest variance in percentages was in seatbelt use (RPR = 28.0%; HPHRA = 0.8%). One explanation for this might be that Texas has a mandatory seatbelt law, and more employees felt legally bound to buckle up or, at least, to report that they do. However, the normative data used by the RPR seem to coincide with the 1986 percentages of reported seatbelt usage by the Texas Department of Public Safety (B. Johnson, personal communication, March 16, 1989).

The percentages of employees with high cholesterol also were quite different (RPR = 13.0%; HPHRA = 1.7%). Even though the technique used for cholesterol measurement was administered professionally, there is some indication that the measurements were low because of comments by participants concerning a discrepancy between the HPHRA measurements and other recent cholesterol measurements. Another factor that may account for the significant difference in percentages is the definition for high cholesterol used by the RPR. The RPR permits much higher levels than is recommended by the National Institutes of Health. This could cause the percentages to be skewed positively.

The fact that TCOM provides a smoke-free environment and that smoking was self-reported (Kileen, 1983) may be two reasons for the difference in the measures of the percentages of smokers (RPR = 26.4%; HPHRA = 16.3%). A possible explanation for the significant difference between hypertensive employees (RPR = 20.5%; HPHRA = 11.7%) is that only one blood pressure measurement was taken for each participant as opposed to the recommended average of three consecutive measurements by the RPR definition.

The research results also may have been affected because TCOM is a medical school. In 1980, Sach, Krushat and Newman concluded that self-reported data by health professionals are slightly less reliable than self-reported data by patients.

In summary, the significant differences between the percentages of the six risk factors may be attributed to: self-reported data; the sample bias; the definitions used; the population studied; and, possibly, the normative data used by the RPR. Perhaps the most significant statistical finding of the study is the high correlation of the relative incidence of the seven risk factors as predicted by the RPR and calculated by the HPHRA. However, Chaves et al. (1984) suggested that it is not sufficient to assess comparability or validity of instruments by merely checking the equivalence of rank orders. The accuracy of the percentages must be recognized. This recommendation is strengthened by this study. If the director of the TCOM health promotion program had targeted most of the available resources to a seatbelt program, the risk factor involving the highest percentage of TCOM employees as reported by the RPR, a serious mistake might have been made since data from the HPHRA indicated that lack of seatbelt use involved the lowest percentage of TCOM employees. However, the rankings by both instruments would offer some degree of confidence in the initiation of a smoking cessation program, weight management program, and hypertension program prior to an alcohol abuse or cholesterol program.

CHAPTER V

SUMMARY OF THE STUDY

This chapter includes a summary of the research procedure, as well as a description of the sample population and the reference population, tests of the hypotheses, a discussion, conclusions, and recommendations for future studies.

Summary

It is becoming increasingly necessary for corporations to justify their health promotion programs. In order to do this, it is crucial for companies to have accurate risk assessments of their employees, which often are difficult to obtain. The purpose of this study was to compare two different methods for assessing the percentages of seven risk factors of the same sample population in order to determine if the two instruments, the HPHRA and the RPR, can be used with an equal degree of confidence.

The sample population consisted of 239 TCOM employees who voluntarily participated in the HPHRA in August, 1988. The actual percentages of each of the seven risk factors were calculated from the HPHRA questionnaire and measurements in a manner consistent with the RPR risk factor definitions. The demographic data necessary to order the RPR was retrieved from TCOM's Personnel Department. When the RPR was received, the predicted percentages of each of the seven risk factors were used directly from the RPR. A *Z* score and probability value were calculated comparing the percentages of each risk factor calculated from the HPHRA and predicted by the RPR for the same population. In addition, a Spearman Rank Order Correlation coefficient and probability value were calculated in order to compare the relative incidence of the seven risk factors calculated by the HPHRA and predicted by the RPR. A statistical analysis was utilized to compare the participating group with the nonparticipating group with respect to age, salary, race, and sex. There was no statistical difference with respect to race between those who participated in the HPHRA and those who did not: blacks and others were equally likely to participate. However, there were statistical differences between the two groups with respect to age, salary, and sex. Participants were significantly younger, earned significantly less salary, and included significantly more females than males.

Tests of Hypotheses

The eight null hypotheses were tested at the .05 level of significance. The results were as follows:

Hypothesis 1. There is no significant difference between the percentages of alcohol abuse among employees determined by the HPHRA and predicted by the RPR. Not rejected.

Hypothesis 2. There is no significant difference between the percentages of hypertensive employees determined by the HPHRA and predicted by the RPR. Rejected.

Hypothesis 3. There is no significant difference between the percentages of employees with high cholesterol determined by the HPHRA and the RPR. Rejected.

Hypothesis 4. There is no significant difference between the percentages of employees leading sedentary lifestyles determined by the HPHRA and the RPR. Rejected.

Hypothesis 5. There is no significant difference between the percentages of overweight employees determined by the HPHRA and predicted by the RPR. Rejected.

Hypothesis 6. There is no significant difference between the percentages of employees who are smokers determined by the HPHRA and predicted by the RPR. Rejected.

Hypothesis 7. There is no significant difference between the percentages of employees who do not wear seatbelts determined by the HPHRA and predicted by the RPR. Rejected.

Hypothesis 8. There is no significant difference between the relative incidence of the seven risk factors as determined by the HPHRA and predicted by the RPR. Not rejected.

Discussion

In accordance with the PRECEDE model, the theoretical framework of this research, the risk factors of an employee population, which can be difficult to assess, must be clearly identified before any program is designed. In this study, alcohol abuse is the only risk factor that can be determined with the same degree of confidence by both the HPHRA and the RPR. The statistics indicate that the relative incidence of the seven risk factors in the sample population also can be accepted with an equal degree of confidence by both instruments. However, as addressed in the discussion of findings, the accuracy of the absolute scores should be considered prior to accepting the rankings as accurate.

The reference population was studied by the self-selected sample population. Analysis of the sample population indicated discrepancies from the reference population in age, sex, and salary level. These are important variables in determining risk and, therefore, the conclusions from this study cannot be generalized to the reference population.

Herein lies the problem: To obtain actual percentages of risk factors of ill health for an entire workforce, the director must rely on a self-selected population willing to participate in an HRA. Seldom does a company get a 100% participation, leaving the risks of the nonparticipants unknown. However, the implementation and evaluation of a program based on the risks of the self-selected group still may be a valid approach, since the participants probably are more motivated to change risky health behaviors than are the nonparticipants. Ideally, a director would like to know the risks of the entire workforce or reference population. The RPR attempts to predict these. However, no definitive statement can be made based on this research concerning the use of the RPR and the HPHRA with an equal degree of confidence. Additional research is needed in this area. It seems that, at this point, a program director would benefit from the information provided by both instruments, plus any additional sources, in order to make more accurate decisions on the implementation and evaluation of an employee health promotion program.

Conclusion

Based on the research findings of this study, the RPR and the HPHRA cannot be used with an equal degree of confidence for the implementation and evaluation of an employee health promotion program.

Recommendations For Further Studies

The following recommendations are suggested for future studies:

1. Replicate the study attempting to get 100% participation in the HPHRA.

2. Replicate the study in non-health related companies.

3. Replicate the study using a random sample of TCOM employees in order to secure a random population.

4. Design validity and reliability studies for the RPR to determine what it truly measures.

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APPENDIX A

TABLE OF HEIGHT/WEIGHT NORMS

TABLE OF HEIGHT/WEIGHT NORMS

MEN

HEIGHT feet	HEIGHT inches	SMALL FRAME	MEDIUM FRAME	LARGE FRAME
5	2	128-134	131-141	138-150
5	3	130-136	133-143	140-153
5	4	132-138	135-145	142-156
5	5	134-140	137-148	144-160
5	6	136-142	139-151	146-164
5	7	138-145	142-154	149-168
5	8	140-148	145-157	152-172
5	9	142-151	148-160	155-176
5	10	144-154	151-163	158-180
5	11	146-157	154-166	161-184
6	0	149-160	157-170	164-188
6	1	152-164	160-174	168-192
6	2	155-168	164-178	172-197
6	3	158-172	167-182	176-202
6	4	162-176	171-187	181-207

Weights at ages 25-59. Weight in pounds (in indoor clothing weighing five pounds, shoes with one-inch heels).

Source: 1979 Build Study, Society of Actuaries and Association of Life Insurance Medical Directors of America, 1980

WOMEN

HEIGHT feet	HEIGHT inches	SMALL FRAME	MEDIUM FRAME	LARGE FRAME
4	10	102-111	109-121	118-131
4	11	103-113	111-123	120-134
5	0	104-115	113-126	122-137
5	1	106-118	115-129	125-140
5	2	108-121	118-132	128-143
5	3	111-124	121-135	131-147
5	4	114-127	124-138	134-151
5	5	117-130	127-141	137-155
5	6	120-133	130-144	140-159
5	7	123-136	133-147	143-163
5	8	126-139	136-150	146-167
5	9	129-142	139-153	149-170
5	10	132-145	142-156	152-173
5	11	135-148	145-159	155-176
6	0	138-151	148-162	158-179

Weights at ages 25-59. Weight in pounds (in indoor clothing weighing five pounds, shoes with one-inch heels).

Source: 1979 Build Study, Society of Actuaries and Association of Life Insurance Medical Directors of America, 1980

APPENDIX B

SOURCES OF NORMATIVE DATA FOR RPR

SOURCES OF NORMATIVE DATA

Health risk and cost norms used by HealthDecisions are proprietary norms acquired under contract from review agencies. These norm sets are specially prepared so that they reflect every census region of the country. Atypical sources are subtracted from the data to ensure a true and representative mix. Adjustments are also made for the type of population and institutions represented. This norm preparation method supports a high degree of analytic accuracy in HD's products.

Health Insurance Association of America (HIAA)

University of Minnesota Review

Minnesota Medical Association

American Medical Association

Third National Cancer Survey; Biometry Branch, Division of Cancer Cause and Prevention; National Cancer Institute

Commission on Professional and Hospital Activities (CPHA)

The Framingham Study

National Heart Lung and Blood Institute Studies at:
University of California, San Francisco; Harvard; Stanford; New York University; Johns Hopkins; the Universities of Wisconsin, Maryland, Michigan, Utah, North Carolina, Rochester, and Pittsburgh

Health Examination Survey of the National Center for Health Statistics

National Highway Safety Administration, U.S. Department of Transportation

The President's Council on Physical Fitness and Sports

National Center for Health Services Research

Metropolitan Life Insurance Company

Select Committee on Nutrition and Human Needs, U.S. Bureau of the Census

APPENDIX C

AGENCY PERMISSION TO CONDUCT STUDY

TEXAS COLLEGE OF OSTEOPATHIC MEDICINE

July 15, 1988

Dear Dr. Kaplan,

Permission has been granted to Marilyn Hoffmann by Dr. Robert Kaman to conduct this study at the Texas College of Osteopathic Medicine, and to use TCOM employee data for her thesis in pursuit of a Master's Degree in Health Education at Texas Woman's University. Dr. Kaman is the director of the TCOM HealthSaver Program and a member of Marilyn Hoffmann's Master's research committee.

Sincerely,

Robert L. Kaman

Robert L. Kaman, Ph.D., FACB
Associate Professor
Department of Public Health and
Preventive Medicine

DEPARTMENT OF PUBLIC HEALTH AND PREVENTIVE MEDICINE
3500 CAMP BOWIE BOULEVARD/FORT WORTH, TEXAS 76107-2690/817-735-2252 METRO 817-429-9120
UNDER THE DIRECTION OF THE UNIVERSITY OF NORTH TEXAS BOARD OF REGENTS

APPENDIX D

HEALTHIER PEOPLE HEALTH RISK APPRAISAL

THE
CARTER CENTER
OF EMORY UNIVERSITY

Healthier People
Health Risk Appraisal

No. ______________

Detach this coupon and put it in a safe place.
You will need it to claim your appraisal results.

Healthier People
Health Risk Appraisal
The Carter Center of Emory University

No. ______________

Health Risk Appraisal is an educational tool. It shows you choices you can make to keep good health and avoid the most common causes of death for a person your age and sex. This Health Risk Appraisal is not a substitute for a check-up or physical exam that you get from a doctor or nurse. It only gives you some ideas for lowering your risk of getting sick or injured in the future. It is NOT designed for people who already have HEART DISEASE, CANCER, KIDNEY DISEASE, OR OTHER SERIOUS CONDITIONS. If you have any of these problems and you want a Health Risk Appraisal anyway, ask your doctor or nurse to read the report with you.

DIRECTIONS: To keep your answers confidential DO NOT write your name or any identification on this form. Please keep the coupon with your participant number on it. You will need it to claim your computer report. To get the most accurate results answer as many questions as you can and as best you can. If you do not know the answer leave it blank. Questions with a ★ (star symbol) are important to your health, but are not used by the computer to calculate your risks. However, your answers may be helpful in planning your health and fitness program.

Please put your answers in the empty boxes. (Examples: ☒ or 125)

1. SEX	1 ☐ Male 2 ☐ Female
2. AGE	☐ Years
3. HEIGHT (Without shoes) (No fractions)	☐ Feet ☐ Inches
4. WEIGHT (Without shoes) (No fractions)	☐ Pounds
5. Body frame size	1 ☐ Small 2 ☐ Medium 3 ☐ Large
6. Have you ever been told that you have diabetes (or sugar diabetes)?	1 ☐ Yes 2 ☐ No
7. Are you now taking medicine for high blood pressure?	1 ☐ Yes 2 ☐ No
8. What is your blood pressure now?	☐ / ☐ Systolic (High number) / Diastolic (Low number)
9. If you *do not* know the numbers, check the box that describes your blood pressure.	1 ☐ High 2 ☐ Normal or Low 3 ☐ Don't Know
10. What is your TOTAL cholesterol level (based on a blood test)?	☐ mg/dl
11. What is your HDL cholesterol (based on a blood test)?	☐ mg/dl
12. How many cigars do you usually smoke per day?	☐ cigars per day
13. How many pipes of tobacco do you usually smoke per day?	☐ pipes per day
14. How many times per day do you usually use smokeless tobacco? (Chewing tobacco, snuff, pouches, etc.)	☐ times per day

Health Risk Appraisal is an educational tool. It shows you choices you can make to keep good health and avoid the most common causes of death for a person your age and sex. This Health Risk Appraisal is not a substitute for a check-up or physical exam that you get from a doctor or nurse. It only gives you some ideas for lowering your risk of getting sick or injured in the future. It is NOT designed for people who already have HEART DISEASE, CANCER, KIDNEY DISEASE, OR OTHER SERIOUS CONDITIONS. If you have any of these problems and you want a Health Risk Appraisal anyway, ask your doctor or nurse to read the report with you.

Your report may be picked up at ___________________ on ___________________.

15. CIGARETTE SMOKING
How would you describe your cigarette smoking habits?

1 ☐ Never smoked ☛ Go to 18
2 ☐ Used to smoke ☛ Go to 17
3 ☐ Still smoke ☛ Go to 16

16. STILL SMOKE
How many cigarettes a day do you smoke?
☛ GO TO QUESTION 18

☐ cigarettes per day ☛ Go to 18

17. USED TO SMOKE
a. How many years has it been since you smoked cigarettes fairly regularly? ☐ years
b. What was the average number of cigarettes per day that you smoked in the 2 years before you quit? ☐ cigarettes per day

18. In the next 12 months how many thousands of miles will you probably travel by each of the following? (NOTE: U.S. average = 10,000 miles)
a. Car, truck, or van: ☐ ,000 miles
b. Motorcycle: ☐ ,000 miles

19. On a typical day how do you USUALLY travel? (Check one only)

1 ☐ Walk
2 ☐ Bicycle
3 ☐ Motorcycle
4 ☐ Sub-compact or compact car
5 ☐ Mid-size or full-size car
6 ☐ Truck or van
7 ☐ Bus, subway, or train
8 ☐ Mostly stay home

20. What percent of the time do you usually buckle your safety belt when driving or riding? ☐ %

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

1 ☐ Within 5 mph of limit
2 ☐ 6-10 mph over limit
3 ☐ 11-15 mph over limit
4 ☐ More than 15 mph over limit

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

23. How many drinks of alcoholic beverages do you have in a typical week?

(Write the number of each type of drink)
☐ Bottles or cans of beer
☐ Glasses of wine
☐ Wine coolers
☐ Mixed drinks or shots of liquor

☛ *(MEN GO TO QUESTION 33)*

WOMEN

24. At what age did you have your first menstrual period? ☐ years old

25. How old were you when your first child was born? ☐ years old
(If no children write 0)

26. How long has it been since your last breast x-ray (mammogram)?	1 ☐ Less than 1 year ago 2 ☐ 1 year ago 3 ☐ 2 years ago 4 ☐ 3 or more years ago 5 ☐ Never
27. How many women in your natural family (mother and sisters only) have had breast cancer?	☐ women
28. Have you had a hysterectomy operation?	1 ☐ Yes 2 ☐ No 3 ☐ Not sure
29. How long has it been since you had a pap smear test?	1 ☐ Less than 1 year ago 2 ☐ 1 year ago 3 ☐ 2 years ago 4 ☐ 3 or more years ago 5 ☐ Never
★ 30. How often do you examine your breasts for lumps?	1 ☐ Monthly 2 ☐ Once every few months 3 ☐ Rarely or never
★ 31. About how long has it been since you had your breasts examined by a physician or nurse?	1 ☐ Less than 1 year ago 2 ☐ 1 year ago 3 ☐ 2 years ago 4 ☐ 3 or more years ago 5 ☐ Never
★ 32. About how long has it been since you had a rectal exam? ☛ *(WOMEN GO TO QUESTION 34)*	1 ☐ Less than 1 year ago 2 ☐ 1 year ago 3 ☐ 2 years ago 4 ☐ 3 or more years ago 5 ☐ Never
MEN ★ 33. About how long has it been since you had a rectal or prostate exam?	1 ☐ Less than 1 year ago 2 ☐ 1 year ago 3 ☐ 2 years ago 4 ☐ 3 or more years ago 5 ☐ Never
★ 34. How many times in the last year did you witness or become involved in a violent fight or attack where there was a good chance of a serious injury to someone?	1 ☐ 4 or more times 2 ☐ 2 or 3 times 3 ☐ 1 time or never 4 ☐ Not sure
★ 35. Considering your age, how would you describe your overall physical health?	1 ☐ Excellent 2 ☐ Good 3 ☐ Fair 4 ☐ Poor
★ 36. In an average week, how many times do you engage in physical activity (exercise or work which lasts at least 20 minutes without stopping and which is hard enough to make you breathe heavier and your heart beat faster)?	1 ☐ Less than 1 time per week 2 ☐ 1 or 2 times per week 3 ☐ At least 3 times per week
★ 37. If you ride a motorcycle or all-terrain vehicle (ATV) what percent of the time do you wear a helmet?	1 ☐ 75% to 100% 2 ☐ 25% to 74% 3 ☐ Less than 25% 4 ☐ Does not apply to me

★ 38. Do you eat some food every day that is high in fiber, such as whole grain bread, cereal, fresh fruits or vegetables?	1 ☐ Yes 2 ☐ No
★ 39. Do you eat foods every day that are high in cholesterol or fat, such as fatty meat, cheese, fried foods, or eggs?	1 ☐ Yes 2 ☐ No
★ 40. In general, how satisfied are you with your life?	1 ☐ Mostly satisfied 2 ☐ Partly satisfied 3 ☐ Not satisfied
★ 41. Have you suffered a personal loss or misfortune in the past year that had a serious impact on your life? (For example, a job loss, disability, separation, jail term, or the death of someone close to you.)	1 ☐ Yes, 1 serious loss or misfortune 2 ☐ Yes, 2 or more 3 ☐ No
★ 42a. Race	1 ☐ Aleutian, Alaska native, Eskimo or American Indian 2 ☐ Asian 3 ☐ Black 4 ☐ Pacific Islander 5 ☐ White 6 ☐ Other 7 ☐ Don't know
★ 42b. Are you of Hispanic origin such as Mexican-American, Puerto Rican, or Cuban?	1 ☐ Yes 2 ☐ No
★ 43. What is the highest grade you completed in school?	1 ☐ Grade school or less 2 ☐ Some high school 3 ☐ High school graduate 4 ☐ Some college 5 ☐ College graduate 6 ☐ Post graduate or professional degree
★ 44. What is your job or occupation? (Check only one)	1 ☐ Health professional 2 ☐ Manager, educator, professional 3 ☐ Technical, sales or administrative support 4 ☐ Operator, fabricator, laborer 5 ☐ Student 6 ☐ Retired 7 ☐ Homemaker 8 ☐ Service 9 ☐ Skilled crafts 10 ☐ Unemployed 11 ☐ Other
★ 45. In what industry do you work (or did you last work)? (Check only one)	1 ☐ Electric, gas, sanitation 2 ☐ Transportation, communication 3 ☐ Agriculture, forestry, fishing 4 ☐ Wholesale or retail trade 5 ☐ Financial and service industries 6 ☐ Mining 7 ☐ Government 8 ☐ Manufacturing 9 ☐ Construction 10 ☐ Other

APPENDIX E

TCOM LIPID CLINIC CONSENT FORM

TEXAS COLLEGE OF OSTEOPATHIC MEDICINE
LIPID CLINIC
CONSENT FORM

I consent to a qualified person authorized by TCOM to take a capillary blood sample from my finger. This is performed so that my blood cholesterol could be determined to indicate the risk of coronary heart disease. I recognize that there is a very small risk of infection or injury as a result of this procedure and I understand how the sampling will be done. I hereby wave all rights to hold TCOM or any of its employees responsible for any consequences that might result from this blood sampling procedure.

______________________________ __________

Signature Date

APPENDIX F

RPR ORDER FORM FOR SAMPLE AND REFERENCE POPULATIONS

RPR ORDER FORM FOR SAMPLE POPULATION

RISKPLAN™ ORDER FORM

I. Employee Description by Age, Sex, and Salary Range

INSTRUCTIONS: Please complete all items in Sections I and II as accurately as possible. Section III need not be completed unless you wish to provide actual risk data about your employees. You are allowed to specify up to nine age ranges of employees. All three data collection forms may be duplicated and used to request RiskPlan reports for other company locations. We strongly encourage you to keep a photocopy of your completed order form.

COMPANY NAME/LOCATION: Texas College of Osteopathic Medicine, Ft Worth, TX

AGE RANGE	# OF MALES	# OF FEMALES	AVG. MALE *SALARY	AVG. FEMALE *SALARY
10-19	0	3		$11,317
20-29	14	36	$15,634	$15,228
30-39	23	49	$29,069	$19,043
40-49	28	48	$44,344	$19,617
50-59	9	14	$49,190	$17,614
60-69	4	9	$68,734	$17,738
70+	2	0	$36,858	-

**A total group average salary may be reported if data is unavailable by age/sex. If no salary information is available, please indicate so; appropriate salary ranges will be synthetically estimated for your population.*

PLEASE COMPLETE SECTION II ON THE FOLLOWING PAGE.

Sales agent should mail (or telephone) completed form to:

HealthDecisions
390 Western Avenue, Suite 200
Saint Paul, Minnesota 55102
(612) 227-5779

RISKPLAN™ ORDER FORM

COMPANY NAME/LOCATION ______

II. INDUSTRY AND RACE INFORMATION

REQUESTED TIME SPAN FOR ESTIMATES
RiskPlan provides health risk estimates for two time periods: one-year estimates are always given, and you determine the time span for the second set. (Please choose a number of years between 3 and 10.)

My choice for multi-year estimates is 5 years.

TYPE OF WORK
In what type of work do the majority of your employees engage?
(Answer required only if salary information unavailable. Please circle only one.)

a. Managerial, Professional
b. Technical, Sales, Administrative
c. Service
d. Craft, Repair
e. Operators, Fabricators, Laborers

EMPLOYEE RACE
For each age range you specified on the demographics form, please indicate the numbers of black employees in your company. This information is used to increase the accuracy of estimates for some risk factors (such as hypertension) which are race-related. If race information is unavailable, please indicate so; appropriate race distribution will be synthetically estimated for your population.

AGE RANGE	# BLACK MEN	# BLACK WOMEN
10-19	0	0
20-29	1	4
30-39	1	6
40-49	0	2
50-59	1	3
60-69	0	0
70+	0	0

RPR ORDER FORM FOR REFERENCE POPULATION

RISKPLAN™ ORDER FORM

I. Employee Description by Age, Sex, and Salary Range

INSTRUCTIONS: Please complete all items in Sections I and II as accurately as possible. Section III need not be completed unless you wish to provide actual risk data about your employees. You are allowed to specify up to nine age ranges of employees. All three data collection forms may be duplicated and used to request RiskPlan reports for other company locations. We strongly encourage you to keep a photocopy of your completed order form.

COMPANY NAME/LOCATION: Texas College of Osteopathic Medicine, Fort Worth TX

AGE RANGE	# OF MALES	# OF FEMALES	AVG. MALE *SALARY	AVG. FEMALE *SALARY
10-19	0	4	0.00	10704.00
20-29	29	76	16876.08	15616.80
30-39	85	135	45540.98	20166.04
40-49	89	102	57106.92	20404.92
50-59	48	48	60889.44	18665.00
60-69	16	27	85527.00	20993.28
70-79	5	1	35090.40	7164.00

**A total group average salary may be reported if data is unavailable by age/sex. If no salary information is available, please indicate so; appropriate salary ranges will be synthetically estimated for your population.*

PLEASE COMPLETE SECTION II ON THE FOLLOWING PAGE.

Sales agent should mail (or telephone) completed form to:

HealthDecisions
390 Western Avenue, Suite 200
Saint Paul, Minnesota 55102
(612) 227-9779

RISKPLAN™ ORDER FORM

COMPANY NAME/LOCATION ____________________

II. INDUSTRY AND RACE INFORMATION

REQUESTED TIME SPAN FOR ESTIMATES
RiskPlan provides health risk estimates for two time periods: one-year estimates are always given, and you determine the time span for the second set. (Please choose a number of years between 2 and 10.)

My choice for multi-year estimates is 5 years.

TYPE OF WORK
In what type of work do the majority of your employees engage?
(Answer required only if salary information unavailable. Please circle only one.)

a. Managerial, Professional
b. Technical, Sales, Administrative
c. Service
d. Craft, Repair
e. Operators, Fabricators, Laborers

EMPLOYEE RACE
For each age range you specified on the demographics form, please indicate the numbers of black employees in your company. This information is used to increase the accuracy of estimates for some risk factors (such as hypertension) which are race-related. If race information is unavailable, please indicate so; appropriate race distribution will be synthetically estimated for your population.

AGE RANGE	# BLACK MEN	# BLACK WOMEN
19-29	3	8
30-39	9	10
40-49	5	6
50-59	3	10
60-69	1	2
70+		

APPENDIX G

SUMMARY OF THE RPR FOR SAMPLE AND REFERENCE POPULATIONS

SUMMARY OF THE RPR FOR SAMPLE POPULATION

SPECIAL TCOM RISKPLAN SUMMARY REPORT
TCOM Forth Worth TX

Your Organization's Multiple-Year Risk Reduction Strategy

Factor: CHRONIC HEAVY DRINKING
Percent of Employees at High Levels: 7.1%
Cost of Uncorrected Risk: $316,961
Recommended Program: Outpatient
*Estimated Net Savings: $22,231

Factor: UNCONTROLLED HYPERTENSIVES
Percent of Employees at High Levels: 20.5%
Cost of Uncorrected Risk: $91,744
Recommended Program: On-site Treatment
*Estimated Net Savings: $32,906

Factor: HIGH RISK CHOLESTEROL
Percent of Employees at High Levels: 13.0%
Cost of Uncorrected Risk: $70,097
Recommended Program: Payroll Incentives
*Estimated Net Savings: $3,603

Factor: SEDENTARY LIFESTYLE
Percent of Employees at High Levels: 15.9%
Cost of Uncorrected Risk: $147,721
Recommended Program: On-site Facility
*Estimated Net Savings: $30,258

Factor: OVERWEIGHT
Percent of Employees at High Levels: 21.8%
Cost of Uncorrected Risk: $74,089
Recommended Program: On-site Competition
*Estimated Net Savings: $7,028

Factor: CURRENT SMOKERS
Percent of Employees at High Levels: 26.4%
Cost of Uncorrected Risk: $210,701
Recommended Program: Education & Speaker
*Estimated Net Savings: $15,138

Factor: NEVER WEAR SEAT BELTS
Percent of Employees at High Levels: 28.0%
Cost of Uncorrected Risk: $47.559
Recommended Program: Belt-Use Rewards
*Estimated Net Savings: $11,653

**Estimated net savings after subtracting program costs.*

SUMMARY OF THE RPR FOR REFERENCE POPULATION

RiskPlan Report
TCOM -- FT. WORTH

Your Organization's Risk Reduction Strategy for the Next Three Years

Factor: CHRONIC HEAVY DRINKING
Percent of Employees at High Levels: 8.0%
Cost of Uncorrected Risk: $954,586
Recommended Program: Outpatient
*Estimated Net Savings: $60,490

Factor: UNCONTROLLED HYPERTENSIVES
Percent of Employees at High Levels: 23.3%
Cost of Uncorrected Risk: $280,113
Recommended Program: On-site Treatment
*Estimated Net Savings: $110,515

Factor: HIGH RISK CHOLESTEROL
Percent of Employees at High Levels: 13.4%
Cost of Uncorrected Risk: $211,006
Recommended Program: Payroll Incentives
*Estimated Net Savings: $11,454

Factor: SEDENTARY LIFESTYLE
Percent of Employees at High Levels: 16.8%
Cost of Uncorrected Risk: $446,663
Recommended Program: On-site Facility
*Estimated Net Savings: $101,085

Factor: OVERWEIGHT
Percent of Employees at High Levels: 22.3%
Cost of Uncorrected Risk: $214,777
Recommended Program: On-site Competition
*Estimated Net Savings: $21,753

Factor: CURRENT SMOKERS
Percent of Employees at High Levels: 27.5%
Cost of Uncorrected Risk: $620,527
Recommended Program: Education & Speaker
*Estimated Net Savings: $44,006

Factor: NEVER WEAR SEAT BELTS
Percent of Employees at High Levels: 28.9%
Cost of Uncorrected Risk: $135,045
Recommended Program: Belt-Use Rewards
*Estimated Net Savings: $33,810

**Estimated net savings after subtracting program costs.*