

IDENTIFICATION OF HEALTH RISK FACTORS AMONG UNDERGRADUATE UNIVERSITY STUDENTS

Stage 2: Health Hazard Appraisal

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Health Hazard Appraisal (HHA), also described as Health Risk Appraisal (HRA), is a method of estimating an individual's chance of becoming ill or dying from selected diseases within a defined period of time, usually 10 years, based on the individual's given set of characteristics. The individual's health behaviours and characteristics are compared to mortality statistics and epidemiological data.

The primary purpose of HHA is to help the individual become aware of his or her own identifiable health risk factors that may lead to illness or premature death. Neff and Landrum (1983) have found that the act of administering part of a questionnaire on alcohol use significantly reduced recidivism in a sample of drinking drivers. These two researchers suggest that simply completing the questionnaire may force people to make negative conclusions about their own actions, and may promote a private, voluntary decision to change (p.4). Thus, HHA may also be considered to be an assessment and health education tool, designed to motivate individuals to change personal lifestyle and habits that are considered risky to their life and health.

Method

Instrument

In the late 1940s and early 1950s Lewis Robbins conceived the idea of risk appraisal; also called risk quantification or estimation. In the 1960s Robbins and Hall jointly developed an instrument which they called Health Hazard Appraisal. They began to use it in the family practice residency program at Indiana Methodist Hospital (Leppink, 1982, p.42).

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During the 1970s, various types of HHA instruments were developed. Most of these consist of fill-in, self-reporting forms, with 21-25 items of client information about physical factors such as weight, height, and blood pressure; family and personal history for certain diseases; lifestyle habits such as drinking, smoking, and seat belt use; and the presence or absence of a high risk group as revealed by recent screening - for example, examination for breast or cervical cancer. When these data are computed, estimates of client's probabilities of dying during the ensuing 10 years from each of the 12 major causes of death relative to others in the same age-gender group are derived. The findings express the composite risk in form of "appraised age" (risk age), which may be higher, lower, or the same as the chronological age. They also include client's achievable (compliance) age; the lower risk age that can be achieved if client follows the recommendations in lifestyle changes (Doerr & Hutchins, 1981, pp.300-301).

In Canada, a computerized version of HHA, under the name of Evalu*Life, has been available from the Department of National Health and Welfare (DNH&W) since the early 1970s. Sponsored by the DNH&W, Spasoff, McDowell, Wright, and Dinkley (1981), undertook a comprehensive review of Evalu*Life in 1980-81. Experts in different causes of death and related risk indicators from Canada and elsewhere have updated and refined the procedures and precision of Evalu*Life (Fielding, 1982, p.338).

Validity and reliability of the HHA

Doerr & Hutchins (1981, p.303) report that a study by Cioffi, using the HHA, yielded both test-retest (N=59) and international consistency (N=70) reliabilities in the .80s, and that a study by Lauzon using the Evalu*Life yielded a test-retest reliability of .94 (N=26).

Regarding the effectiveness and efficacy of HHA, Wagner, Beery, Schoenbach, and Graham (1982, pp.347-351) question the scientific soundness of the various phases of the HHA method. Fielding (Frachel, 1984, pp.265-267) concedes that the tool in its current developmental state has flaws; but he describes widespread use and popularity, and on-going research on how effective HHA can be in increasing knowledge and motivation to change and in actually changing behaviour. For the individual, HHA provides a permanent document with personalized information that can be taken home, referred to at will, discussed with family, and used to track progress (or lack of it) in decreasing health risks over time. HHA can serve to gauge the risk of a defined population for a number of preventable diseases. It can be used as a sensitive indicator of community health, complementing morbidity and mortality statistics. It can also be put to work to recognize and quantify insurance-relevant health risks that are under the individual's control, and to help set life insurance rates based on risk levels (Fielding, 1982, p.338).

Procedure

HHA clinics were initiated and organized on the University of Windsor (U of W) campus in October 1980 by joint-researcher Sandhu. The monthly clinics provided the data for this research project, and met health and wellness needs of the university student community, in addition to providing clinical experience for post R.N. Diploma nursing students.

Each group of the nursing students (health care providers) who were scheduled for clinical practice in the HHA clinics received classroom instructions with regard to the purpose, and use of the Evalu*Life kits that were received from the DNH&W. They also received guidance for use of the data base in follow-up counselling and health education of the clients.

Most clients were students who attended the clinics, having heard of the services through the campus publicity media. At the clinics, before proceeding with the assessment, each client signed a statement permitting members of Nursing faculty the use of coded information for research purposes. The statement also covered issues of voluntary participation, confidentiality, and referral to client's physician. Self-reports were completed, independently, by clients. Help, as needed, was provided by the nursing students on duty. Blood pressures of each client were taken by the nursing students. No fasting cholesterol levels were taken for ethical reasons and because of lack of laboratory services.

Strict confidentiality was maintained through cross numerical indexing of client files. Researcher Sandhu supervised and coordinated the clinical services. The completed forms were sent to Ottawa after each clinic, and the processed printouts were returned for client's information and for follow-up counselling.

Sample and selection

Upon request by the researchers, the DNH&W again processed the HHA records of 486 undergraduate students from the total of 500 clients whose records had been sent to Ottawa during the 1980-82 academic years (Gupta, McMahon, & Sandhu, 1985). These 486 students became subjects of a convenient (volunteer) sample of the U of W undergraduate students for this second stage of the research survey.

Data processing

For the purpose of describing the health risk profiles of the sample population, the various questions in the Evalu*Life have been coded as variables 1 to 38. Appraised age and achievable age have been coded as variables 40-42. Using the Statistical Package for Social Sciences (SPSS), cross tabulations of frequency numbers and percentages of responses to each variable were computed in

Ottawa. Profiles of appraised age, achievable age, and recommendations for attaining the compliance age have been developed from the individual client printouts that were provided by student assistants at Windsor.

Findings

The results are presented in this report. Some regrouping has been done, and the questions are not exactly in the order that they appear in Evalu*Life. In order to condense the findings, some of the original tables of data are withheld from the report, but are available from the authors on request.

Height and weight

Height and weight are important indicators of genetic endowment, as well as of general physical health. Health risks, such as structural deformities of the skeleton, and nutritional risks, such as extreme obesity or anorexia nervosa, can be "cued" by simple measurements. Both variables demonstrate sex differences, with males obtaining higher recorded values. The two were compared to establish the proportion of over-weight subjects in the sample.

Findings show that 7.8% of the total population are overweight. The number of overweight females was twice that of males. Comparison of age and overweight variables reveals that older age groups have greater percentages of subjects who are overweight (Tables 1 & 2). Across the marital status variable, married and divorced subjects show the highest percentages of overweight subjects, with the single and separated individuals showing the lowest.

Canada's Home Fitness Test

This test has received much attention, for several years now. Of the sample population, 53.9% had taken the test. An overwhelming number (81.2%) of this subgroup are single, 16% are married, and very small numbers (1.2% and 1.5%) are separated and divorced students respectively.

Among the various age groups, it is the 40-49 age group that has the highest percentage (75.0) of participation. The 60+ age group has the lowest percentage (33.3) of students who had taken the test.

Physical activity

The findings reveal that 11.7% of the sample population engages in very little or no physical activity, 46.9% occasionally, and 41.4% does regular physical activity, at least 3 times per week. There is no significant difference between sexes. Marital status

Table 1
Overweight: Gender Distribution

Overweight Percentages:	0.0 n = 311	0.0-0.9 137	1.0-14.9 21	15.0-20.9 15	21.0-30.9 2	Totals 486
Male	R% 66.5	28.3	2.8	2.4	0.0	100.0
n=248	C% 34.0	14.4	1.4	1.2	0.0	51.0
Female	61.3	28.2	5.9	3.8	0.8	100.0
n=238	30.0	13.8	2.9	1.9	0.4	49.0
C Totals	64.0	28.2	4.3	3.1	0.4	100.0

Table 2
Overweight: Age Distribution

Overweight Percentages:		0.0 n=311	0.0-0.9 137	1.0-14.9 21	15.0-20.9 15	21.0-30.9 2	Totals 486
<u>Age</u>							
15-19	73	R% 60.3	35.6	2.7	1.4	0.0	100.0
		C% 9.1	5.3	0.4	0.2	0.0	15.0
20-24	240	70.8	25.4	2.1	1.3	0.4	100.0
		35.0	12.6	1.0	0.6	0.2	49.4
25-29	91	65.9	22.0	5.5	5.5	1.1	100.0
		12.3	4.1	1.0	1.0	0.2	18.6
30-39	40	57.5	32.5	10.0	0.0	0.0	100.0
		4.7	2.7	0.8	0.0	0.0	8.2
40-49	24	41.9	33.3	16.6	8.3	0.0	100.0
		2.0	0.6	0.8	0.4	0.0	4.8
50-59	12	8.3	58.3	0.0	33.4	0.0	100.0
		0.2	1.4	0.0	0.8	0.0	2.4
60+	6	50.0	33.3	16.7	0.0	0.0	100.0
		0.6	0.4	0.2	0.0	0.0	1.2
C Totals 486		64.0	28.2	4.3	3.1	0.4	100.0

categories indicate 42.1% of single, 39.2% of married, 30% of divorced, and 16.7% of separated students engage in regular physical activity. It is encouraging to note that among the various age groups, the highest percentage (66.6%) of students who have regular physical activity is the oldest (60+) age group. The second highest (50.7%) is the youngest (15-19) age group of students (Table 3). These findings demonstrate that the physical activity of the

Table 3Physical Activity: Age Variable

Age	Little or none	Occasional	Regular	Total
15-19 <u>n(R%)</u>	9(12.3)	27(37.0)	37(50.7)	73(100.0)
<u>C%</u>	1.9	5.6	7.6	20.1
20-24	22(9.2)	124(51.7)	94(39.2)	240(100.0)
	4.5	25.5	19.3	49.4
25-29	14(15.4)	43(47.3)	34(37.4)	91(100.0)
	2.9	8.8	7.0	18.7
30-39	3(7.5)	20(50.0)	17(42.5)	40(100.0)
	0.6	4.1	3.5	8.2
40-49	6(25.0)	7(29.2)	11(45.8)	24(100.0)
	1.2	1.4	2.2	4.8
50-59	2(16.7)	6(50.0)	4(33.3)	12(100.0)
	0.4	1.2	0.8	2.4
60+	1(16.7)	1(16.7)	4(66.6)	6(100.0)
	0.2	0.2	0.8	1.2
C. Total	57	228	201	486
C. Total %	11.7	46.9	41.4	100.0

sample population of university students, is different from that of the general Canadian population. For example, Statistics Canada (February, 1983) reports that the proportion of persons who are "very active" declines steadily with age. However, the report also suggests the need for refinement of the index, by defining "very active" in different ways for various age groups (p.32).

Smoking

The history of the sample population reveals that 21% of the 486 students are active (current) smokers. There is an insignificant difference in the numbers of male and female smokers; but, more females than males are heavy smokers. Fifty-five point one percent (55.1%) of the females smoke more than 15 cigarettes a day, compared to 40.7% of the males.

Among the various age groups, the highest percentage of active smokers is in the 20-24 age group. When the number of cigarettes smoked per day and the age variables are examined, an inverse trend is noted.

Marital status and smoking profiles indicate that 80.4% of the active smokers are single students. However, the divorced,

separated, and other categories show more heavy smokers than the single and married categories (Tables 4 to 6).

Table 4

Smoker: Gender Distribution

Gender	n =	Smoker 102	Ex-Smoker 78	Non-Smoker 306	Totals 486
Male	R%	21.8	15.7	62.5	100.0
	C%	12.0	8.0	31.9	51.9
Female		20.2	16.4	63.4	100.0
		9.0	8.0	31.1	48.1
C Totals		21.0	16.0	63.0	100.0

Table 5

Smoker: Age Distribution

Age	n =	Smoker 102	Ex-Smoker 78	Non-Smoker 306	Totals 486
15 - 19	R%	9.6	9.6	80.8	100.0
	C%	1.4	1.4	12.1	14.9
20 - 24		22.0	15.0	63.0	100.0
		10.9	7.4	31.1	28.7
25 - 29		27.7	17.5	54.8	100.0
		5.1	3.3	10.3	18.7
30 - 39		25.0	17.5	57.5	100.0
		2.1	1.4	4.8	10.2
40 - 49		20.8	29.2	50.0	100.0
		1.0	1.4	2.5	4.9
50 - 59		16.7	25.0	58.3	100.0
		0.4	0.6	1.4	2.4
60+		0.0	33.4	66.7	100.0
		0.0	0.4	0.8	1.2
C Totals		21.0	16.0	63.0	100.0

Table 6

Smoker Versus Marital Status

Status	n =	Smoker 102	Ex-Smoker 78	Non-Smoker 306	Totals 486
Single	387 (R%)	21.1	12.7	65.1	100.0
Married	79	16.5	25.3	58.2	100.0
Separated	6	50.0	16.7	33.3	100.0
Widowed	1	0.0	0.0	100.0	100.0
Divorced	10	30.0	20.0	50.0	100.0
Other	3	33.3	66.7	0.0	100.0
C Totals	486	21.0	16.0	63.0	100.0

The question about cessation of smoking refers to cigarettes. The number of cigar and pipe smokers is insignificant and hence no details are presented in this report. It reveals that 53.8% of the subjects who had stopped smoking, had done so within the past one year of the study. Overall, 15.7% males and 16.4% females who stopped smoking had done so during the past 7 years of the study. Eighty-one point two percent (81.2%) of the single ex-smokers had quit smoking within the past one to three years of the study, and 18.8% had quit four or more years before the study. Sixty percent (60%) of the married ex-smokers had quit within the last three years and 40% had done so four or more years before the study. One hundred percent (100%) of the divorced subjects quit smoking within the last two years of the study.

According to the 1978-79 Canada Health Survey (CHS) (1981, p.50), 40% of Canadians are active smokers. This includes 41.3% of all males and 33.5% of all females. Both the U of W study and the CHS show the 20-24 age group as having the highest percentages of active smokers.

Fielding (1982, p.9) writes that analysis of smoking trends suggests that the anti-smoking advertising in the electronic media in the late 1960's contributed to significant annual declines in cigarette consumptions in the U.S.A. Per capita tobacco consumption from 1960 to 1970 declined 10.5%, compared to an increase of 4.2% in Canada. Smoking cessation clinics in U.S.A. have achieved a 12 to 18 month success rate of 13% to 37%, and about a 20% success rate in 4 to 5 year follow up studies.

McIntosh (1984, p.141), reports that, according to the 1965-1979 survey on smoking habits of Canadians, smoking among Canadian women of child bearing age has only fallen from 38% in the mid 60s to 35% in the late 70s, with the latest evidence suggesting an increase in smoking among the 15 to 19 year old women. The proportion of light smokers among Canadian women of child bearing age has decreased, and that of moderate and heavy smokers has increased. Thus, a fall in smoking prevalence may be counterbalanced by higher relative risks among the remaining and likely heavier smoking population. Lee (1983, p.12) reports that the study done by McMaster University's Urban Air Environment Group detected that the most deleterious effects on the respiratory health of children are caused by smoking mothers.

Alcohol consumption

Around 75% of the sample population consumes alcoholic beverages. Overall, the differences between male and female subjects in the number of drinkers and in the volume of consumption of alcohol per week are marginal, except in the beer drinking profile. Of the 232 beer drinkers 72.4% are males. Six point six percent (6.6%) of the male beer drinkers consume more than 12 bottles of beer per week, whereas none of the females drink in that range. Females show a preference for wine (Tables

7, 8, 9 & 10). Lamphier (1983, p.16) reports that a recent three-part study of post secondary drinking habits in Canada confirmed a pattern that has already been identified in the U.S.A.: that alcohol use increases significantly once students enter

Table 7
Alcohol Consumption: Versus Gender

Gender n=	Drinks 363	Ex-Drinkers 19	Non-Drinkers 104	Totals 486
Male R%	79.1	4.0	16.9	100.0
C%	40.3	2.1	8.6	51.0
Female	70.2	3.8	26.0	100.0
	34.4	1.8	12.8	49.0
C Totals	74.7	3.9	21.4	100.0

Table 8
Bottles Of Beer/Week Versus Gender

Gender n=	1-3 132	4-6 54	7-9 10	10-12 25	13-15 3	16-20 6	21-24 2	Totals 232
M R%	50	27.8	3.0	13.1	1.8	3.6	1.2	100.0
C%	36.2	19.8	1.8	9.5	1.3	2.6	0.9	72.4
F	75.0	12.5	7.8	4.7	0.0	0.0	0.0	100.0
	20.7	3.5	2.2	1.3	0.0	0.0	0.0	27.6
C Totals	56.8	23.3	4.3	10.8	1.3	2.6	0.9	100.0

Table 9
Glasses Of Wine Versus Gender

Gender n=	1-2 112	3-4 30	5-6 4	7-8 9	9-10 5	11-12 2	Totals 162
Male R%	70.3	11.0	6.2	4.7	6.2	1.6	100.0
C%	28.8	4.4	2.4	1.8	2.5	0.6	39.5
Female	68.3	23.5	0.0	6.2	1.0	1.0	100.0
	41.3	14.2	0.0	3.8	0.6	0.6	60.5
C Totals	69.1	18.6	2.4	5.6	3.1	1.2	100.0

Table 10
Shots Of Spirits Versus Gender

Gender n=	1-2 109	3-4 21	5-6 9	7-8 5	9-10 4	11-15 2	16-21 5	Totals 155
Male R%	65.4	11.6	8.9	3.9	5.1	0.0	5.1	100.0
C%	32.9	5.8	4.5	1.9	2.6	0.0	2.6	50.3
Female	75.3	15.6	2.6	2.6	0.0	2.6	1.3	100.0
	37.4	7.8	1.3	1.3	0.0	1.3	0.6	49.7
C Totals	70.3	13.6	5.8	3.2	2.6	1.3	3.2	100.0

university. For example, only 24.1% of grade 13 students in 1981 reported drinking once a week or more frequently, compared to approximately 70% of students in the University of Guelph and the Wilfred Laurier University studies in 1977 and 1982 respectively. CHS (1981, p.23) reports that 65% of Canadians in general and 77% of the working population in particular take alcoholic beverages at least once a month. At every age, Canadian men who are current drinkers outnumber women in the same category by a considerable margin. The survey notes that the proportion of the population who are current drinkers, and who have seven or more drinks per week, is generally greater in higher levels of education.

The age variable shows that the 25-29 age group has the highest percentage (84.6%) of subjects who consume alcoholic beverages. The 20-24 and the 15-19 age groups are second and third highest respectively (Table 11). When age and types of drinks are examined, it is noted again that the three younger age groups (15-29) have consistently higher percentages of beer, wine, and spirit drinkers. It is of even greater significance to note that the 20-24 age group tops each of the three beverage lists. With the exception of one person in the 60 or over category, no one above the age of 30 drinks more than 7 bottles of beer a week. In the wine and spirit drinking lists, the small numbers of students in the 50-60+ age groups have proportionately higher percentages of subjects who consume more than 7 drinks a week.

Across the marital status variable, the differences in the numbers of students who drink are marginal. When profiles of types and amounts of drinks are examined, it is found that 30% of the single students and 40% of those in other categories drink 7 or more bottles of beer a week, compared to only 9.6% of married students. However, the opposite pattern of 23.3% of the married students and only 10.8% of the single students is noted to consume seven or more shots of spirit per week. However, when the total alcohol consumption is examined, it is noted that 22.2% of the single subjects take more than 7 drinks per week, in comparison with 11.4% of married students and 15% of other categories of subjects who drink in that range (Tables 12 & 13).

Driving and seat belt use

Of the 447 students who responded to the question, "Miles driven annually", 76.2% drive one to 10,000 miles, 20.7% drive 11 to 30,000 and 3.1% drive more than 31,000 miles per year. The highest percentage of subjects, both men and women (39.6% and 21.7% respectively), drive one to 4,000 miles annually. The number of males who drive 11 to 15,000 miles is more than twice the number of females (7.8% compared to 3.4% females).

Across the marital status variable, 80% of the combined categories of widowed, divorced, separated, and other drive one to 10,000 miles annually. Single subjects are second highest (77.6%), and married students are the lowest (60.9%) in driving this

Table 11
Total Alcohol Consumption: Age Distribution

n =		Drinks 363	Ex-Drinkers 19	Non-Drinkers 104	Totals 486
15 - 19	R%	68.5	2.7	28.8	100.0
	C%	10.3	0.4	4.3	15.0
20 - 24		75.4	3.8	20.8	100.0
		37.3	1.9	10.3	49.4
25 - 29		84.6	1.1	14.3	100.0
		15.8	0.2	2.7	18.7
30 - 39		70.0	15.0	15.0	100.0
		5.8	1.2	1.2	8.2
40 - 49		66.7	0.0	33.3	100.0
		3.3	0.0	1.6	5.0
50 - 59		58.4	8.3	33.3	100.0
		1.4	0.2	0.8	2.4
60+		66.7	0.0	33.3	100.0
		0.8	0.0	0.4	1.2
C Total %		74.7	3.9	21.4	100.0

Table 12
Alcohol Consumption: Marital Status Distribution

Status	n	Drink %	Ex-Drinkers %	Non-Drinkers %	Total %
Single	387	75.5	2.5	22.2	100.0
Married	79	74.7	5.0	20.3	100.0
Other	20	60.0	25.0	15.0	100.0

Table 13
Total Drinks Per Week: Marital Status

Status	n	- 1	1 - 6	7 - 24	25 - 39	Total
Single	387	24.8	53.0	21.2	1.0	100.0
Married	79	25.3	63.3	8.9	2.5	100.0
Other	20	40.0	45.0	15.0	0.0	100.0

distance. The age variable reveals that no one in the 50+ age group drives more than 15,000 miles annually, whereas 21.6% of the 30-39 age group, 13.6% of the 40-49 age group, 10.1% of the 20-29 age group, and 4.7% of the 15-19 age group drive 16,000 to 40,000+ miles annually.

Seat belt use has been mandatory in the Province of Ontario for some time; therefore 100% of the population should be wearing seat belts. Of the 407 subjects who responded to the question only 35.8% use seat belts 100% of the time, and 20.3% use them only 1-25% of the time. Twenty percent (20%) of the females and 15% of the males use seat belts 100% of the time. CHS reports that a slightly larger proportion of women use seat belts all or most of the time.

Among the marital status categories, 53.5% of the married subjects, 32.9% of the singles, and 14.2% of the other combined categories use seat belts 100% of the time. On the lowest range of usage (1-25% of the time), the singles have the highest percentage (23.6%), whereas only 8.5% of the married subjects use seat belts in this range.

Among the various age groups, the lowest percentage (29.0) of subjects who use seat belts 100% of the time is the 20-24 age group. The second and third lowest ranking are the 25-29 and the 15-19 age groups respectively. It is again notable that the older the group, the greater the percentage of subjects who use seat belt 100% of the time (Table 14).

Table 14
Percentage of Time Seat Belt Used: Age Variable

		1 - 25 83	26 - 50 52	51 - 75 38	76 - 99 88	100 146	Total 407*
Age							
15-19	R%	23.7	6.8	10.2	16.9	42.4	100.0
	C%	3.4	1.0	1.5	2.5	6.1	14.5
20-24		24.5	13.0	9.0	9.0	29.0	100.0
		12.0	6.4	4.4	12.0	14.3	49.1
25-29		19.2	15.4	11.5	21.8	32.1	100.0
		3.7	2.9	2.2	4.2	6.1	19.2
30-39		9.1	13.2	3.0	21.2	48.5	100.0
		0.7	1.5	0.2	1.7	4.0	8.1
40-49		9.5	9.5	9.5	9.5	16.0	100.0
		0.5	0.5	0.5	0.5	3.2	5.2
50-59		0.0	9.1	18.2	27.3	45.4	100.0
		0.0	0.2	0.5	0.7	1.3	2.7
60+		0.0	20.0	0.0	0.0	80.0	100.0
		0.0	0.2	0.0	0.0	1.0	1.2
C Total		20.4	12.8	9.3	21.6	35.9	100.0

*79 SUBJECTS DID NOT RESPOND TO THE QUESTIONS

According to CHS (1981, p.25) there are no statistically significant differences in the frequency of reported seat belt use in relation to the kilometers travelled annually, for either driver or passengers. However, the number of kilometers travelled annually in automobiles and the failure to wear seat belts both increase the risk of death and injury from motor vehicle accidents (MVAs). MVAs are a leading cause of death and injury in Canada, especially for young adults. The provinces of Ontario, Quebec, Saskatchewan, and British Columbia have laws requiring seat belt use. They report that 60% of drivers and passengers use seat belts all or most of the time. Where seat belt use is not mandatory, only 16% report that they wear seat belts all or most of the time.

Disabling depression and family history of suicide

This is a greatly hidden mental health problem in society. If a campus is seen as a micro-society, it seems possible that depressive, despondent behaviours or symptoms would be possible as an element of normal adaptation to contemporary stress, or to the hassles and uplifts of university student life.

Of the male students, 7.7% and 5% of the female students responded that they suffer from disabling depression. Of these 31 students (6.2% of the total sample), 19.4% are in the 15-19 age group, 54.8% are in the 20-24 age group, and 12.9% are in the 25-29 age group. These three age groups together constitute 87.1% of the total number of subjects who suffer from this condition.

Single students seem most prone to disabling depression. The findings show that 83.9% of the single group, 3.2% of the married group, 3.2% of the separated group, 3.2% of the divorced and 6.5% of other marital status groups experience disabling depression.

Of the total sample population, 2.1% give a family history of suicide. Again, it is highly important to note that 90% of these subjects are from the 15-29 age group of students. The remaining subject is from the 50-59 age group. Do these two profiles of disabling depression and family history of suicide among the 15-29 age group raise the question of a link between these two conditions?

Parent heart attack

Coronary heart disease seems to play a relatively minor role in the HHA profile for younger students.

Diabetes

The Diabetic Association of Canada states that one in ten (10%) Canadians has the potential for diabetes Mellitus. Various studies have shown a definite genetic pattern of inheritance associated with the tendency for and manifestation of the disease. It is

disturbing to note that 20.6% of the U of W sample population has a family history of diabetes. Does this mean that a genetic pool twice the norm for the population at large exists on the campus?

Seventy-nine percent (79%) of the 100 subjects with a family history of diabetes are single, 18% are married and 2% are separated students. Age and sex show no bearing upon family history of diabetes.

In this study 7.3% of the male subjects and 9.2% of the female subjects have controlled diabetes. Only one student (female) has uncontrolled diabetes, making a total of 41 students (8.4% of the sample) with active diagnosed insulin-dependent diabetes. The fact that 40 out of 41 students have controlled diabetes (97.6%) speaks well of the contemporary health education and self-care responsibility assumed by these individuals. Age distribution shows that 80% of the 40 controlled diabetics are in the 15-24 age group, 7.5% in the 25-29 age group, 10% in the 30-59 age group and 2.5% in the 60+ age group.

Rectal disorders

Of the 2.5% who have rectal disorders other than hemorrhoids, 75% are in the 15-29 age groups, 16.8% are in the 30-39 age group, and 8.3% are in the 60+ age group. It is worth noting that 91.7% of the 12 subjects with the disorder are single students; the remaining 8.3% are married students.

Chronic bronchitis/emphysema

Twice as many females (66.7%) as males (33.3%), a total of 5.6% of the sample population, said that they suffer from chronic bronchitis/emphysema. The age variable shows that the 30-39 age group has the highest percentage (22.5%), the 40-49 age group has the second highest percentage (8.3%), and the 15-29 age group has the lowest percentage (4.0%) of students suffering from this condition. None of the students in the 50+ age group responded positively to this question.

CHS (1981, p.115) reports that, apparently, 2.2% of the general population suffer from chronic bronchitis/emphysema. Sex distribution shows an increase of 2.6% in the male population of the "less than 15" age group, an increase of 8.6% in the female population of the 15-64 age group, and a 5.2% increase again in the male population of the 65+ age group. This balances out to minimal significant differences between sexes in the overall Canadian general population. Could it be that hormonal changes and life style changes such as smoking habits, increased stress, etc. make the young and middle aged female population more susceptible to chronic bronchitis/emphysema? Also, does the fact that 5.6% of the U of W sample population, and only 2.2% of the general Canadian population, suffer from this condition confirm its positive relationship with environmental pollution - a condition so

Blood pressure

The impact of high blood pressure (hypertension) is often insidious and can create cardiovascular, cerebral, renal, and other vital organ damage without startling signs or symptoms.

Twice as many males (61.6%) as females (30.8%) have systolic blood pressure readings of above 120 mm Hg. More than four times as many males (13.8%) as females (3.4%) have diastolic blood pressure readings of above 90 mm Hg. Since over 90% of the sample population is below 40 years old, blood pressure readings of 120 mm Hg. systolic and 90 mm Hg. diastolic are mentioned arbitrarily as upper normal limits.

Across the age variable, the higher the age of the group, the higher is the percentage of subjects with higher blood pressure readings. The findings indicate that 100% of the 60+ age group, 68.5% of the 40-59 age group, 44.6% of the 20-39 age group, and 41.1% of the 15-19 age group are above the 120+ mm Hg. systolic readings. A similar pattern of direct correlation between age and diastolic readings is noted. This trend also corresponds with trends among the general population (CHS, 1981, p.143).

A higher percentage of married students have high blood pressure readings. Could this be due to the higher proportion of older students in the married group?

Cervical cancer risk

The highest percentage (41.0) of subjects who have never had a pap smear is among the single women. It is encouraging to note that a higher proportion of women who are in the married and other marital status categories have had three or more pap smear tests, with negative results, in the last five years of this study. It is also noted that the younger the age group, the higher the proportion of women who have never had the test done. (Table 25).

Of the 236 female students who responded to the question, 22% began regular sexual intercourse in the teen years, 40.3% at age 20-25, and the remaining 37.7% at age 26+, or never. Of the 41 students in the 15-19 age group, 75.6% indicated that they do not have regular sexual intercourse. Of the single subjects, 20.3% began intercourse in the teen years, and 30.8% at age 20-25 years.

Seventy-three point five (73.5%) of the married and 75% of the separated subjects began regular sexual intercourse at age 20-25 years.

The researchers wonder why this question is only addressed to the female population. Is there a relationship between female sexual intercourse practices and cervical cancer?

Breast cancer risk

Three point eight percent (3.8%) of the female students had a mother or sister with breast cancer. The researchers wonder why this question is addressed only to the female population. Though comparatively rare, males do suffer from breast cancer. There may have been some hidden male subjects not assessed due to this sex specificity.

The older the group age, the higher the percentage of subjects who do monthly Breast Self examination (BSE). Thirty point two percent (30.2%) of the 15-19 age group, compared to 58.6% of the 30-39 age group (the highest percentage of all groups), do monthly BSE. The married, separated, and other marital status categories indicate that higher percentages of these subjects do monthly BSE than of single females.

Discussion and Conclusion

The findings of the HHA study of the sample population of U of W undergraduate students support the data used for the development of the **Health Field Indicators**, by the DNH&W, to create the broader perspective of health risks experienced by Canadians (Ouellet, 1979). These risk factors are further highlighted briefly below.

MVAs account for more than one-third of deaths of young men of up to 35 years of age. There are twice as many men as women killed across Canada by MVAs (Statistics Canada, 1983, p.21). The sample student population profile indicates a higher risk of MVAs for the younger males, due to a greater amount of driving, and to driving with less compliance with laws regarding seat belt use and blood alcohol levels.

Motor vehicle safety, "Don't drink and drive" and seat belt compliance campaigns should be aspects of on-going media reminders.

Suicide is an important cause of death in those as young as 15 years old (Ouellet, 1979, p.18). Morris (1982, p.95) lists suicide as the third leading cause of death in the 15-24 age group. The prevalence seems to be increasing from year to year in industrialized nations. Marks (1979, p.305) points out that for every successful suicidal death, 200 unsuccessful attempts can be estimated.

Ouellet (1979, pp.22 & 23) says that, while not as distressing as numbers found in western provinces, Ontario campuses should not become complacent with their slightly fewer numbers. When the student suicide profile is combined with that of disabling depression, the U of W campus has a significant problem in the area of mental health.

Greater quantity, quality, and duration of collaborative interventions by campus medical officers, by psychologists and the psychological centre, and by other interested counsellors and professionals need to be planned.

Clarke, Krieger, Marrett, and Saskolne (1983) report that malignant neoplasms are the second major cause of all deaths, in 1982 in Ontario, for those above 15 years of age. As has been true for nearly three decades, malignant neoplasms of trachea, bronchus, and lung rank first among cancers as a cause of death in males, across all ages, and within each five year group from 35 years and older. In those dying before age 35, leukemia is ranked first among the cancer causes of death.

For the last 50 years, the most frequent cause of cancer deaths in females has been cancer of the breast; with second being cancer of trachea, bronchus, and lung. Nearly 800 deaths are due to malignant neoplasms of the major female reproductive organs, with cancer of ovary being fourth as a cancer cause of death (Clarke et al., 1983, p.182).

Cigarette smoking as a cause of cancer, especially of the respiratory organs, has long been established. It is also considered to be a cause of cardiovascular and gastrointestinal problems. Wigle, Mao, and Michael (1980, pp.274 & 275), state that the rate of increase of lung cancer mortality and incidence rates during recent years have been greater among females than among males. Furthermore, it has been found that life expectancy decreased with amount smoked. The results of their Alberta study indicate that substantial proportions of several common cancers were attributable to smoking.

Seventy seven point three percent (77.3%) of the active student smokers are in the 20-29 age group. Marital problems such as divorce and separation seem to be linked with an increase in the number of cigarettes smoked per day. While there is no significant difference between sexes as far as the numbers of smokers are concerned, female students are found to be heavier smokers.

Control programs to reduce smoking should have a substantial impact on the burden of several major cancers, in addition to a reduced risk of cardiovascular and other diseases (Wigle et al, 1980, p.275).

The pap smear test is considered beneficial in the detection of cervical cancer. Thirty two point seven percent (32.7%) of the female students have never had pap smear tests.

Only 41.2% of the female students do monthly Breast Self examination. Miller (1983, pp.99 & 101) reports that screening by mammography and physical examination of breasts reduced mortality from breast cancer in women over the age of 50 but not in younger women. Almost one-half of the women in the National

Breast Screening Study are doing BSE 12 times a year - a frequency that is much better than the general population. A number of women have attributed to early detection of cancers between screening examinations to their practice of BSE.

Alcohol has been linked with almost all of the top twelve major causes of death in Canada. Seventy point two percent (70.2%) of the female and 79% of the male students consume alcoholic beverages. It is interesting that Lapierre (1984, p.15) reports similar findings from a Canada-wide survey. He writes that women are more likely to abstain from alcohol than men (29% compared to 19% for men). Yet, it is also among women that the greatest increase in the number of drinkers has occurred. For women, the proportion of drinkers varies between 67% and 74%, while it is between 74% and 84% for men.

Eight men and three women students in the present study population indicated an alcohol consumption of nine to 21+ shots per week. Gilbert (1983, p.5) asserts a preventive effect of optimal alcohol use on MVA and heart disease of an average one drink per day.

In the prescription aspect of the students' HHA profile, 14% of the students who consume alcohol are asked to reduce their consumption by more than 15 drinks, and the remaining 86% are asked for a reduction of seven to 15 drinks per week. These ranges of reduction will enable each student who drinks to stay within the safe margin of six drinks per week.

Lack of physical activity, being overweight, and improper nutritional concerns are linked with many of the major causes of death in Canada.

In spite of the excellent facilities at the Faculty of Human Kinetics, it is astonishing that nearly 60% of the sample population, particularly the younger age groups of students, do not engage in regular physical exercise. Is this because of the time constraints of studies and, in some cases, of studies and work combined, or is it because of a lack of understanding of the importance of physical activity to one's health and well-being? Could it be that the facilities at the Faculty of Human Kinetics are "too far away" (1 km) to conveniently fit into the tight student schedule?

Overweight status among the student population (8% of the sample) seems to be less of a problem than several other risk factors that are appraised. For 94% of the overweight subjects, the prescription table asks for a ten to 20 pound weight reduction. More than 20 pounds weight reduction is prescribed for the rest of the overweight subjects.

On the other hand, several of the students in the 15-29 age group have lower appraised ages, ranging nine to 14 years. It is

possible that most of these students are of Asian background with normal small builds. There may also be cases of anorexia nervosa and other nutrition/diet related risks that are not assessed in this part of the total study.

Conditions such as rectal disorders and chronic bronchitis are also more common among the younger age groups. The reverse is noted in relation to elevated blood pressure readings and age.

It is also noted that many students have appraised ages ranging from 10 to 22 years higher than their actual ages. Some of these students show the potential to achieve ages lower than their appraised ages by one to ten years. A few individuals have the potential to achieve ages lower than their chronological ages by three to ten years. These desirable lower achievable age targets can be attained only if the individuals comply with prescriptions: stopping smoking, reducing alcohol consumption, using seat belts 100% of the time, taking regular physical activity, and so forth.

Recommendations

These will be incorporated at the conclusion of the Stage Three. Although Stage Three is essentially the development of a wholistic lifestyle assessment tool, this pilot study casts further light on the health behaviour profiles of the students.

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RÉSUMÉ

Identification des facteurs de risque de maladie chez les étudiants de premier cycle universitaire - Stade 2: Évaluation des risques médicaux

Un échantillon commode de 486 étudiants de premier cycle a été soumis à une évaluation des risques médicaux (ERM), deuxième volet d'une étude en trois temps sur l'identification des facteurs de risque chez les étudiants d'université. A cette fin, on a utilisé la trousse d'évaluation des risques médicaux Evalu*life fournie par le ministère fédéral de la Santé et du Bien-être social. Les résultats indiquent que les étudiants célibataires âgés de 15 à 29 ans sont les plus vulnérables aux risques médicaux, compte tenu de leurs habitudes personnelles liées à la consommation d'alcool, au tabagisme, au port de la ceinture de sécurité, à l'activité physique etc. Soixante-quinze pour cent de la population de l'échantillon consomment des boissons alcooliques et il n'y a que peu de différences d'ensemble entre les deux sexes. Près de 21 pour cent étudiants de l'échantillon sont des fumeurs et, ici encore, il n'existe qu'une différence négligeable entre les sujets masculins et les sujets féminins. Toutefois, davantage de femmes que d'hommes sont de gros fumeurs. Seulement 36 pour cent de la population utilisent systématiquement la ceinture de sécurité et environ 20 pour cent ne l'attachent que de 1 à 25 pour cent du temps. Dans l'ensemble, les hommes utilisent un peu moins souvent que les femmes la ceinture de sécurité. Les hommes sont deux fois plus nombreux que les femmes à conduire et à parcourir chaque année des distances plus importantes. Environ 59 pour cent des étudiants n'ont aucune activité physique régulière ou ne se livrent que rarement à ce genre que l'on retrouve le plus grand nombre d'étudiants souffrant de dépression invalidante, de diabète (équilibré), de troubles rectaux et d'antécédents familiaux de suicide. C'est également chez les plus jeunes et célibataires que l'on retrouve les étudiantes qui n'ont jamais eu de frottis de Papanicolaou et qui ne pratiquent pas systématiquement chaque mois l'auto-examen des seins.