HARVARD MEDICAL SCHOOL

NURSES' HEALTH STUDY II

HARVARD SCHOOL of PUBLIC HEALTH

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NURSES' HEALTH STUDY II Newsletter No. 2, June 1992

This second edition of our Newsletter will bring you up-to-date on the progess of our study. As you know, 116,686 registered nurses, originally living in 15 US states, participate in this, the largest study of lifestyle practices, nutritional factors and the occurrence of breast cancer and other major illnesses specifically in young women. Some participants are no longer in active nursing, but the continued participation of all study members is critical regardless of current employment.

Much has happened since you received our first newsletter in the summer of 1990. We are just completing our second questionnaire mailing, which updated information on use of oral contraceptives, births during the follow-up period, cessation of menstrual cycles, postmenopausal hormone therapy, and cigarette smoking. The follow-up questionnaire also contained an extensive diet assessment section, which included 116 individual food items plus vitamin and mineral supplements. The scientific validity of the findings depends on achieving a very high rate of follow-up. We have received 99,661 responses to date, for a follow-up rate of 85.4%. Returned questionnaires are coded, optically scanned to enter responses into our computer, and validated with a computer program to assure that information was completely and accurately recorded.

The following tables present some statistics that describe the cohort in terms of physical activity, intake of certain food items, and the prevalence of selected health practices and conditions. The overall objective of this study is to see how these and other lifestyle factors relate to health and disease in the future.

TABLE 1: Current Weekly Physical Activity (Percent of Women by Duration)

	0 min	1-19 min	20 min-1.5 hr	2+ hr
Walking/Hiking outdoors	8.1	16.7	41.6	31.2
Jogging	77.6	5.7	4.8	1.6
Running	82.7	2.9	2.1	1.8
Bicycling	52.7	14.6	18.1	6.3
Aerobics/Rowing machine	54.8	8.4	15.5	13.0
Tennis/Squash/Racquetball	81.8	2.1	3.0	1.5
Lap Swimming	76.0	5.9	5.1	1.6
Other aerobic recreation	38.4	11.8	29.4	11.9

TABLE 2: Mean Body Weights and Heights

Age	26-30	31-35	36-40	41-45
Weights (pounds)	143	146	149	153
Heights (inches)	65.1	64.9	64.9	64.8

TABLE 3: Intake of Selected Foods & Beverages

	Levels of Current Intake %		
	never-3/m	1/wk-6/wk	1/d-6+/d
Cold Cereal	40.0	52.6	11.5
Eggs	47.0	52.1	0.9
Margarine	24.7	48.8	26.4
Butter	76.0	18.1	5.9
Ice Cream	71.8	27.4	0.9
Yogurt	71.9	25.7	2.4
Chocolate	63.2	33.7	3.2
Whole Milk	89.1	7.9	3.1
Skim Milk	21.6	31.8	46.6
Decaf Coffee	72.2	12.9	14.9
Regular Coffee	41.3	11.6	47.1
Beer	78.8	19.5	1.7
Wine	78.3	20.1	1.6
Liquor	91.1	7.2	0.7

	<4/wk	4-6/wk	1/day	2+/day
Fruits	10.4	21.0	33.8	34.8
Vegetables	1.0	6.0	22.3	70.8
Fruits + Vegs	0.2	1.5	7.8	90.5
Red Meat	31.6	42.2	23.1	3.2
Poultry	51.1	45.1	3.6	0.3
Fish	81.0	17.5	1.4	0.2

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TABLE 4: Current Contraceptive Method (Percent Using Each Method)

	Age			
	26-30	**31-35**	**36-40**	**41-45**
None	22.0	22.3	23.9	27.0
Condom	28.6	22.9	15.8	11.0
Oral Contraceptives	32.1	15.9	6.2	1.8
IUD	0.6	1.3	1.9	2.4
Norplant	0.2	0.1	0.1	0.1
Rhythm/NFP	7.6	7.3	5.3	3.8
Diaphragm/Cervical Cap	9.7	12.6	9.4	6.4
Vasectomy	5.2	13.8	19.6	20.4
Tubal Ligation	3.9	12.1	23.0	29.9
Sponge	4.3	3.6	2.6	1.8
Foam or jelly	8.3	7.9	5.6	4.3
Other	1.5	1.5	1.3	1.2

The percent of NHS II participants who are currently pregnant is 4.4%.

TABLE 5: Percent Use of Selected Health Practices in Past Two Years

	Age			
	26-30	**31-35**	**36-40**	**41-45**
Mammogram	6.1	18.0	55.3	76.6
Breast exam by physician	84.2	84.3	84.5	85.0
Colonoscopy/ Sigmoidoscopy	2.0	2.6	3.5	5.0
NonSmoker	89.4	88.3	87.0	85.8

TABLE 6: Percent Use of Vitamin Supplements

Single Supplements			
Vitamin A	2.1%	Selenium	1.0%
Vitamin C	19.7%	Iron	9.0%
Vitamin E	6.6%	Zinc	2.6%
Vitamin B_6	5.8%	Calcium	17.1%
Multivitamins	42.6%		

We have begun to document several illnesses and conditions reported on the baseline and follow-up questionnaires (including cancer and various cardiovascular diseases). First, we send letters to participants requesting permission to review copies of the relevant medical records. The records are then carefully reviewed to extract the necessary detailed information. All data, of course, are kept strictly confidential. We are grateful for the extremely high rates of cooperation in this critical aspect of the study.

We are currently conducting several substudies to obtain more detailed information on selected topics reported on the baseline questionnaire. In the oral contraceptive substudy, we have obtained detailed lifetime reproductive and contraceptive histories by telephone interview, and medical records of oral contraceptive prescriptions from 200 nurses participating in the study. In our preliminary analysis, the correlation for duration of oral contraceptive use between the self-administered questionnaire and detailed personal interview was 0.93, demonstrating the validity of the self-reported questionnaire data. We are now comparing the medical records to the self-reported oral contraceptive brand and dose information from the baseline questionnaire.

The physical activity study includes 325 nurses who completed a past-week activity recall diary plus seven daily activity diaries four times during the past year. Another substudy involves Massachusetts nurses who gave us permission to obtain physical examination data regarding height and weight at age 18. We are presently correlating this data to the self-reported data collected at baseline.

We assessed adolescent determinants of ovulatory infertility in another substudy; we found that adolescent menstrual characteristics, such as delayed menarche, irregular cycle pattern, and long cycle length, were predictive. Women who were at or above average weight, assessed at age 18, were at higher risk. No associations with ovulatory infertility were seen for adolescent alcohol use, cigarette smoking, strenuous physical activity, or oral contraceptive use before age 22.

We extend our sincere thanks to all of the nurses who participated in these auxiliary studies. Your efforts are essential to the conduct of the overall project, and we are most grateful for your help.

In this newsletter, we've also included some newspaper clippings of noteworthy reports from our companion Nurses' Health Study I, which began in 1976. Many of the reports received widespread national and international media attention.

Study: Sweaty Exercise Cuts Risk of Diabetes

THE ASSOCIATED PRESS

VIGOROUS EXERCISE at least once a week significantly reduces the risk of non-insulin-dependent diabetes, says a study of more than 87,000 women recently reported in the British journal, Lancet.

Women who exercised at least once a week were 33 percent less likely to get diabetes. Although the vast majority of exercisers were lean, investigators said even those who didn't lose weight had a 16 percent lower risk of diabetes.

"We certainly hope this will be a promising approach to preventing adult-onset diabetes," said Dr. JoAnn Manson, the leading investigator from Harvard University. "It's been notoriously difficult to get people to lose weight. The other major risk factor, family history, is unchangeable."

The 87,253 women, ages 34 to 59, are part of the Nurses Health Study at Brigham and Women's Hospital in Boston. This is the largest study of its kind to focus on women's health.

None of these women had diabetes, heart disease, stroke, or cancer when the investigation began.

The Nurses Health Study, launched in 1976, includes 121,700 nurses who have been answering questionnaires about health, diet and exercise every two years and getting regular checkups.

After eight years, 1,303 women developed non-insulin-dependent diabetes, which is a defect in the hormone, insulin, that regulates sugar.

Vigorous exercise is physical activity — jogging, fast-walking, biking — that leads to a sweat, Manson said. Women who exercised every day reduced the risk of diabetes by the same amount as those who exercised once a week.

Manson added that even women with a family history of diabetes reduced the likelihood of getting diabetes by exercising.

There's Lots of Life After the Pill

Oral contraceptives are terrific at preventing pregnancy, but they do pose well-established health hazards. Women who use them run an increased risk of strokes and heart attacks, especially if they are smokers, over 35 or have a family history of cardiovascular disease. The important question of whether these elevated risks persist after a woman stops taking the Pill has never been resolved. Now a new, large and well-designed study of 119,061 women reports good news: those who don't currently take birth-control pills but used them in the past seem to have no more likelihood of developing cardiovascular problems than women who have never been on the Pill.

The new study, published in last week's New England Journal of Medicine, was conducted by a team of Harvard medical researchers. The subjects were part of a broader project called the Nurses' Health Study. It involved 121,700 female registered nurses, 30 to 55, in a prospective survey of known and suspected risk factors for cancer and coronary heart disease. Starting in 1976, the nurses filled out detailed questionnaires about their past and current health, including information on diabetes, hypertension, smoking, blood-cholesterol levels and use of oral contraceptives. The data was updated with follow-up questionnaires every two years through 1984.

The Harvard study included only those nurses who had never had a stroke, heart attack or episode of angina before 1976. The researchers monitored this group for eight years and then examined past use of oral contraceptives in every woman who suffered a stroke, heart attack or serious coronary heart disease between 1976 and 1984.

"Past users of oral contraceptives had no material increase in their risk of cardiovascular diseases, as compared with women who had never used oral contraceptives," the authors concluded. Especially reassuring was the finding that even women who had not been off the Pill for very long had no elevated risk; nor did women who had taken it for 10 years or more. And because the oral contraceptives that have been prescribed in recent years contain lower doses of hormones than the pills taken by the nurses, they are probably even less likely to cause cardiovascular problems for women who have taken them.

JEAN SELIGMANN

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'Thin' called best bet to avoid heart attack

BOSTON (AP) — The thinner the better.

That's the conclusion of a study released recently on U.S. women and their risk of heart attack.

"Average weight is overweight when it comes to heart attack risk, and being even mildly to moderately overweight substantially increases the risk in women," said Dr. JoAnn E. Manson, who directed the study at Boston's Brigham and Women's Hospital.

In fact, the study blames 40 percent of all heart disease among women on the consequences of being too heavy. Carrying just a little extra weight or even being average size makes people more vulnerable to heart trouble.

Manson's findings were part of the Nurses' Health Study, an eight-year review of 115,886 healthy U.S. women, aged 30 to 55. The researchers divided the women into five weight categories and counted the number who had heart attacks or developed chest pain. The results were published in today's New England Journal of Medicine.

The leanest one-fifth of the women in the study weighed in at 5 percent or more below the 1983 Metropolitan Life Insurance Co. tables of desirable weights. A 5-foot-4 woman in this category weighed less than 125 pounds. These slim women suffered the fewest heart attacks.

Those considered in the tables to be average weight — about 130 pounds for a 5-foot-4 woman — had 30 percent more heart disease than did the thinnest women.

Mildly obese women fared substantially worse. Those who were 15 percent to 29 percent above their desirable weights had 80 percent more heart disease. And the heaviest women — those 30 percent or more over their ideal weights — had more than three times the lean women's risk.

Putting on weight during middle age appears to be especially risky. The study found that women who gained more than 20 pounds since age 18 doubled their risk of heart attacks.

Although the report is not the first to suggest that being chubby is bad for the heart, it suggests that the hazard may be greater than previously thought, especially for women.

"Obesity is a major cause of heart attacks in U.S. women," said Manson. "The risks of obesity have been underestimated and underappreciated."

Estrogen may cut women's heart risk

BOSTON (AP)—Taking estrogen pills after menopause cuts in half the risk of serious heart disease, the leading killer of older women, according to the largest study ever conducted on the subject.

Although already widely recommended, the use of estrogen supplements is still controversial, in part because the treatment also increases the risk of two forms of cancer.

However, the new study supports the belief of many specialists that the benefits of estrogen after menopause far outweigh its hazards.

About 20 percent of postmenopausal U.S. women use estrogen. If more took the hormone, "there is a potential for a very large public health impact in reducing heart disease," said Dr. Meir Stampfer. "It would translate into many tens of thousands of premature deaths that could be postponed."

Diseases of the heart and circulatory system kill nearly 500,000 U.S. women annually, twice as many as die of cancer.

Stampfer's findings were based on the Nurses' Health Study at Brigham and Women's Hospital in Boston, which is following the health and habits of 48,470 postmenopausal nurses. The study was published in Thursday's New England Journal of Medicine.

Most major studies have found that estrogen helps keep women's hearts healthy. But some doubt remains, largely because of a report released six years ago by the long-running Framingham Heart Study. The Framingham researchers concluded that estrogen raises the risk of heart trouble.

However, Dr. Peter Wilson, who directed the Framingham research, now concedes that those findings don't apply to the estrogen pills currently in use. His study was based on women who took estrogen in the late 1960s and early 1970s, when typical doses were much higher.

He said most heart specialists believe "that modern use of low-dose postmenopausal estrogen is probably cardio-protective."

In the latest study, doctors followed the health of nurses for 10 years. They compared those who took estrogen after menopause to those who did not. Among the findings:

■ Women who currently take estrogen are half as likely as those who never used the supplements to suffer non-fatal heart attacks or to die from heart disease.

■ The death rate from all causes was 19 percent lower among the estrogen users.

■ The benefits of estrogen wore off quickly when women stopped taking the supplements.

■ Using estrogen did not appear to increase the risk of strokes.

Estrogen probably works by its effect on cholesterol. The hormone increases levels of high-density lipoprotein cholesterol, HDL, the so-called good cholesterol, while lowering levels of dangerous low-density lipoprotein cholesterol, LDL.

Estrogen also prevents bone loss that leads to hip fractures and crushed vertebrae, and eases hot flashes.

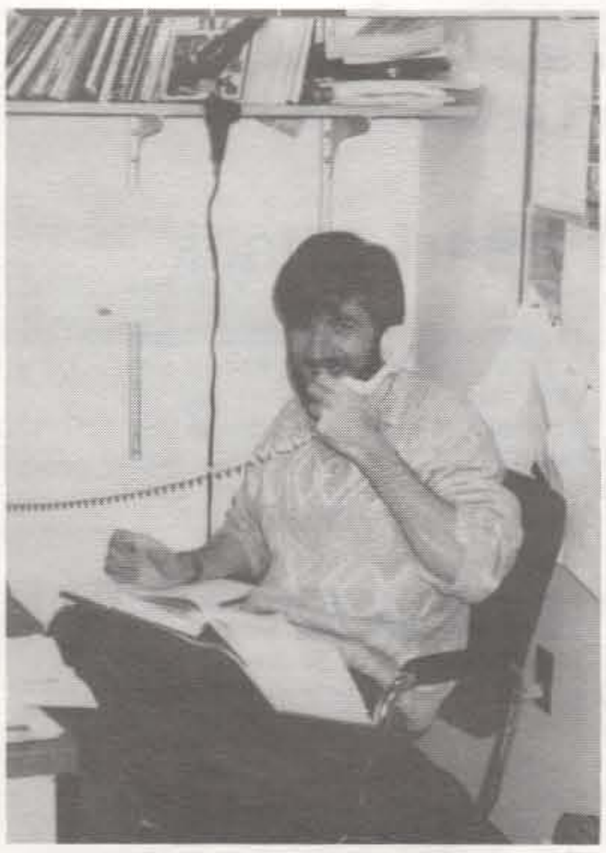
Several studies have shown show that postmenopausal estrogen reduces the risk of hip fractures by 60 percent, raises the risk of breast cancer 30 percent and increases the chance of uterine cancer sixfold.



Walter C. Willett, Principal Investigator



The Research Group



David Hunter talks with a nurse.



Stefanie Bechtel prepares the study newsletter.



Sue Hankinson and Frank Speizer discuss findings.



Forms are prepared for optical scanning by Gary Chase.



Programmers Mark Shneyder and Sue-Wei Chiang identify newly diagnosed diseases.

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