

*“Science becomes dangerous only when it imagines that it has reached its goal.”*

—George Bernard Shaw

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*Nutrition Close-Up* is a quarterly publication of the American Egg Board, written and produced by the Egg Nutrition Center. *Nutrition Close-Up* presents up-to-date reviews, summaries and commentaries on the latest research on the role of diet in health promotion and disease prevention, including the contributions of eggs to a nutritious and healthful diet. Nutrition and healthcare professionals can request a free subscription to the newsletter by visiting the Egg Nutrition Center's website at [www.enc-online.org](http://www.enc-online.org).



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# NUTRITION CLOSE-UP

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## Egg Breakfast Increases Satiety and Reduces Energy Intake

Today's healthcare climate is one of growing concern for the future as the incidence of overweight, obesity, and associated morbidities continues to rise. Government agencies, researchers, and healthcare professionals are increasingly emphasizing weight loss and prevention of overweight and obesity. Methods to reduce and maintain body weight are critical in this effort. Two basic principles of weight management have been stressed in the USDA MyPyramid food guidance system: calorie control and physical activity. Because sustained reductions in energy intake are difficult for most people to maintain, finding effective methods to promote satiety has become an important research priority.

While multiple studies have examined the impact of macronutrient composition on satiety and subsequent energy intake, most have included only non-obese participants and have not always been controlled for the weight of the comparative meals. To determine the impact of a meal's macronutrient composition on satiety and subsequent energy consumption in overweight and obese individuals, Vander Wal and colleagues designed a randomized crossover study in which the satiety effects of an egg vs. a bagel for breakfast were compared.

Thirty overweight women (BMI 25–35 kg/m<sup>2</sup>) between the ages of 18 and 60 years were recruited for participation in this study. Exclusion criteria included a history of diabetes or weight loss of more than 6.82 kg (15 lb) during the preceding 6 months. To prevent bias in this study, the women were informed that the purpose of this research was to determine the effects of breakfast on blood pressure and alertness. The study design included two breakfast intervention days (egg and bagel) separated by a two-week washout period.

The egg breakfast consisted of 2 scrambled eggs, 2 pieces of toast, and 1 tablespoon of reduced-calorie fruit spread. The macronutrient distribution of the egg meal was 20.8% protein, 36% carbohydrate, and 43% fat. The bagel breakfast consisted of a bagel (3.5 inches in diameter), 2 tablespoons of cream cheese, and 3 oz of non-fat yogurt. The macronutrient distribution of this meal was 15.7% protein, 55% carbohydrate, and 29% fat. Both breakfasts were similar in weight and energy content to control for these factors' individual contributions to satiety.

On the first intervention day, the women reported to the clinic at 8:00 AM and were randomly assigned to eat an egg breakfast or a bagel breakfast. Each participant filled out questionnaires

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## Egg Breakfast *continued from page 1*

evaluating hunger and food cravings (Fullness Questionnaire and State Subscale of the State-Trait Food Cravings Questionnaire) prior to beginning the meal. The same questionnaires were completed three more times, at 15, 90, and 180 minutes post-breakfast. (A questionnaire evaluating alertness was also given and blood pressure was measured whenever participants were asked to complete the previous questionnaires.)

Participants ate lunch 3.5 hours after finishing breakfast and were instructed to eat as much as they wanted, but were encouraged not to drink any water during this meal. Breakfast and lunch meals were weighed prior to being served and any leftover food items were again weighed to accurately determine how much was eaten. After lunch, participants were instructed to keep a detailed, 24-hour food and activity journal.

Twenty-eight women completed the study. The total weight of the food consumed was similar between breakfasts (188.7±1.3 g of the egg breakfast vs. 187.0±3.2 g of the bagel breakfast). The volume of water consumed with the meals was also similar between groups. However, following the egg breakfast, participants consumed significantly fewer calories at lunch (575±131 kcals vs. 738±106 kcals,  $P<0.0001$ ) and fewer grams of protein, fat, and carbohydrates than they consumed at lunch following the bagel breakfast (16.8±4.2 g vs. 22.3±3.4 g protein; 83.1±20.2 g vs. 110.9±18.7 g carbohydrate; 19.4±5.1 g vs. 22.8±3.2 g fat;  $P<0.0001$  for all values).

For those who had eaten the egg breakfast, calorie intake for the rest of the day was -264 kcals less than the energy consumed by those who had eaten the bagel breakfast ( $P<0.05$ ). Even more surprising was the finding that the calorie deficit between groups continued for at least 24 hours after the egg breakfast. The 24-hour calorie deficit between egg and bagel breakfast eaters was significant, with participants who had eaten the egg breakfast consuming 420 fewer kcals than those who had not.

Analysis of the satiety rating scales demonstrated that satiety increased significantly following both breakfasts, followed by a gradual reduction. However, the egg breakfast resulted in higher satiety ratings from baseline to 15 minutes post-breakfast ( $P<0.01$ ) and from 15–90 minutes post-breakfast ( $P<0.0001$ ).

Previous research suggests that eggs produce greater satiety than other typically-consumed breakfast foods in non-obese subjects. As predicted, the egg breakfast had a similar effect on this group of overweight and obese women, producing higher satiety scores at least 90 minutes post-breakfast consumption and inducing a total 24-hour deficit of 420 kcals in comparison to the calories consumed in the 24 hours following the bagel breakfast. The researchers conclude that breakfasts similar in weight and energy content with differing macronutrient distributions and satiety values can significantly influence subsequent energy intake. These

findings have important and potentially far-reaching implications in the treatment and prevention of overweight and obesity.

### *Editorial comment:*

Remember that theoretically, a collective deficit of 3500 kcals results in a 1 lb reduction in weight. Therefore, eating an egg breakfast daily (if it lead to a 420 kcal deficit over a 24-hour period) could result in a deficit of 3500 kcals (~1 lb) in just 8 days, compared to an isocaloric breakfast including foods with a combined satiety factor similar to that of the bagel breakfast. ■

Vander Wal JS, Marth JM, Khosla P, Jen C, Dhurandhar NV. Short-term effect of eggs on satiety in overweight and obese subjects. *JACN* 2005;24(6): 510-515.

## KEY MESSAGES

When a group of otherwise healthy, overweight women were fed an egg breakfast and a bagel breakfast on alternate days, the satiety effects and subsequent energy intake were as follows:

- Women consumed fewer calories at lunch following the egg breakfast than they did following the bagel breakfast.
- Women consumed ~264 fewer calories for the remainder of the day following the egg breakfast.
- The calorie deficit between breakfast groups continued for at least 24 hours, resulting in a total deficit of 420 calories following the egg breakfast.
- The egg breakfast was more effective than the bagel breakfast in sustaining satiety.

R

READ IT AGAIN...  
FOR THE FIRST TIME

1982

## The Framingham Heart Study—Eggs Exonerated

In the 1940s and 50s, the climate of healthcare in the United States was much different than it is today. Health concerns in America were based more on dietary deficiencies than their excesses and dietary adequacy seemed to be the ultimate goal for the population at large. *“A Guide to Good Eating,”* published by the USDA during this era, urged Americans to consume at least 3–5 eggs/wk, “one daily preferred.” But by the 1960s, the message would be strikingly different with the discovered link between heart disease and high blood cholesterol levels. Health professionals—who understandably presumed that cholesterol in the blood was a direct translation of cholesterol in the diet—adopted a precautionary stance on the issue, encouraging patients to eat fewer eggs in an effort to reduce cholesterol intake. This promptly transformed the simple egg into an icon for dietary cholesterol, blood cholesterol, and heart disease.

*The Framingham Dietary Study*, published in October, 1982, was among the first to refute the assumption that egg consumption had a significant impact on blood cholesterol levels. Since its inception in 1949, the Framingham Study has examined the influence of various lifestyle and environmental factors on the risk of developing atherosclerotic disease in a free-living population of men and women in Framingham, Massachusetts. Total serum cholesterol was among the risk factors found to be most closely associated with the subsequent development of CHD, however, this study did not investigate the effect of dietary changes on blood lipids. Rather, the Framingham Study investigated the association between serum total cholesterol concentrations and the subsequent risk of CHD. Because dietary factors such as saturated fat and cholesterol intake were presumed to be major determinants of blood cholesterol levels, the investigators included a dietary component early on in the investigation that would allow them to

determine the relationship between usual intake of certain nutrients and the subsequent risk of atherosclerotic disease.

In 1957, a sub-sample of 1049 participants from the original research group was chosen to complete the dietary component of this study. Exclusion criteria included existing heart disease and hypertension. Diet histories were obtained from 912 participants with regard to intake of foods containing the nutrients of concern. Intake of cholesterol-containing foods, such as eggs, was ascertained to estimate daily cholesterol intake. To more accurately assess egg intake, eggs consumed as individual food items were added to eggs consumed in baked goods and other prepared dishes made with eggs or egg yolks. Serum total cholesterol was measured at the time of dietary reporting.

On average, men reported consuming 5.9 eggs per week, while women reported eating 3.8 eggs per week. The average contribution of eggs to total cholesterol intake was 29% for men and 26% for women (267 mg cholesterol/egg). When participants were separated into tertiles of egg intake, men in the lowest tertile consumed 506 mg/day. Women in the lowest tertile consumed 352 mg/day. Notably, mean serum cholesterol levels were virtually identical across all three tertiles of egg consumption in men and across tertiles for women in the 40–49-year age range (This is the only age group for which an association between serum total cholesterol and CHD had been established).

Egg consumption was significantly and positively associated with just two CHD risk factors: total energy intake per day and total cholesterol intake per day ( $P < 0.05$  for both men and women). There were no significant associations between egg intake and total serum cholesterol levels, triacylglycerol levels, blood pressure, smoking, alcohol consumption, or reported physical activity. Because only 5% of the study population

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**The Framingham Heart Study** *continued from page 3*

consumed more than 2 eggs a day, the Framingham Dietary Study did not evaluate the effects of high egg consumption.

When the researchers examined the data for the women, those who had reported a total daily intake of <300 mg cholesterol had an average total serum cholesterol of 244 mg/dl, as compared to the 243 mg/dl average for all women. Therefore, in this study cohort, low cholesterol intakes were not associated with lower-than-average serum cholesterol levels.

The Framingham Dietary Study showed no association between egg intake and CHD incidence, myocardial infarction, angina pectoris, or death from all causes. The authors concluded that their observations were consistent with those seen in research conducted in similar free-living populations, most of which showed no increase in blood cholesterol levels with increased egg intake. Other double-blind studies conducted under circumstances of greater metabolic control have shown an increase of 2 eggs per day to cause blood cholesterol levels

to rise. However, the authors point out that this intake level (14 eggs/wk) is vastly different from the average 5 eggs/week reported in the Framingham Dietary Study. Dawber et al. also concluded that “within the range of egg consumption in this population merely avoiding eggs in the diet will have little or no effect on blood cholesterol level...possibly because the other sources of dietary cholesterol are so widely consumed” and that “no useful purpose is served by oversimplified dietary recommendations.” The authors conclude that although these data do not establish that egg intake has no influence on blood cholesterol levels, they do indicate that the relatively small differences in egg intake within a typical, free-living population likely do not contribute to the larger discrepancies seen in blood cholesterol levels or CHD incidence within the same population. ■

Dawber TR, Nickerson RJ, Brand FN, Pool J. Eggs, serum cholesterol, and coronary heart disease. *Am J Clin Nutr* 1982;36:617-625.

**24-Year incidence rates by tertile of egg consumption**

Tertiles of egg consumption	MALES			FEMALES		
	1	2	3	1	2	3
Eggs/wk	1.4	4.3	10.6	0.7	2.6	7.3
Dietary cholesterol (mg/day)	506	654	802	352	461	651
Plasma cholesterol (mg/dl)	236	239	235	234	234	223
24 yr incidence of CHD	203	263	267	84	145	111
24 yr all-cause mortality	210	148	235	104	182	160

## Influence of Egg Intake on Lipid Profiles and Plasma Carotenoids: Implications for the Elderly

**A**ging adults often face physiological, social, emotional, and financial challenges that leave them at risk for malnutrition and suboptimal nutrient intake. All too frequently, dietary restrictions that might have been appropriate at an earlier stage of adulthood are extended into the later years, when diminished appetite and subsequent reduction in food intake often contribute to debilitating conditions such as unintentional weight loss, anemia, hypotension, impaired wound healing, loss of lean body mass, and mental confusion.

One notable example of this is reduced egg intake seen among the elderly. It is currently recommended that adults consume no more than 300 mg of cholesterol daily. While this level permits one egg a day, many older adults continue to follow outdated health recommendations, limiting their intake of this important and inexpensive source of high-quality protein. However, recent research at the University of Connecticut challenges the thought that older adults need be cautious about including eggs in their diet.

In a randomized crossover study, Greene et al. evaluated the effects of cholesterol from eggs on the lipid profile, LDL size, and LDL susceptibility to oxidation in 42 healthy elderly adults. Eligibility for the study was based on age, health history, and use of medications. Participating men were >60 years of age. There was no age requirement for women, but they were required to have been postmenopausal for at least 1 year prior to the initiation of the study. Individuals with dyslipidemia, egg allergy, a history of diabetes, heart disease, or kidney problems, or who were taking lipid-lowering medications, were excluded from the study. In total, 13 men and 29 women were enrolled.

Participants were randomly assigned to one of two groups for an initial period of 30 days, after which they underwent a 3-week washout phase and switched to the alternate dietary protocol for a second period of 30 days. Participants following the EGG protocol were provided with liquid whole eggs and were asked to consume the equivalent of 3 whole eggs per day. This provided ~640 mg dietary cholesterol. Those following the SUB protocol were provided with a fat-free, cholesterol-free egg substitute and were asked to consume an amount equal in volume to 3 whole eggs each day. These daily portions were provided in separate containers and participants were asked to return any uneaten portions at the beginning of each week. They were also asked to avoid consuming any eggs outside of their assigned diet prescription and to maintain their regular dietary intake as much as possible. At the end of each intervention period, participants underwent 2 fasting blood draws, 2

days apart, for analysis of serum lipids, LCAT (lecithin:cholesterol acyltransferase) and CETP (cholesteryl ester transfer protein), LDL size, LDL oxidation parameters, and classification of hyper- and hyporesponders. Waist-to-hip ratio and weight were also measured at baseline and following each dietary treatment period.

At baseline, there were no differences between the men and women with respect to plasma total cholesterol, LDL cholesterol, TAG levels, blood pressure, or BMI. As expected, there was an increased intake of total fat, monounsaturated fat, and saturated fat during the EGG phase, consistent with the nutritional differences between the egg product and the egg substitute. Overall, the study participants experienced increases in total cholesterol ( $P < 0.05$ ), LDL cholesterol ( $P < 0.05$ ), and HDL cholesterol ( $P < 0.001$ ) following the EGG treatment phase; the LDL:HDL ratio, total cholesterol:HDL ratio, and TAG levels, however, remained steady over both treatment periods.

Plasma apo-B concentrations did not change with the observed rise in LDL cholesterol following the EGG phase, indicating that the LDL particle size, rather than number, increased. Indeed, the researchers saw a significant increase in LDL particle diameter following egg feeding compared with the SUB period ( $P < 0.05$ ).

No differences were seen between treatment groups with respect to plasma LCAT or CETP activities in the groups, overall; however, when stratified into hyper- and hypo-responders, increased LCAT activity was observed in the hyper-responders following the EGG phase [ $42.0 \pm 29.5$  vs.  $31.1 \pm 20.0$  nmol/(h • L plasma),  $P < 0.05$ ]. This reflects an upregulation of the reverse cholesterol transport pathway for this particular group in response to the cholesterol challenge. No differences were observed in any of the measures of LDL oxidation (conjugated dienes and lag time) between dietary treatments, indicating that the cholesterol challenge did not increase LDL susceptibility to oxidation.

In a separate analysis conducted by the same research group (Greene et al., *Nutrition and Metabolism*, 2006), plasma total, LDL and HDL cholesterol levels increased only in hyper-responders following the EGG treatment period [total cholesterol:  $210.6 \pm 43.3$  mg/dl (EGG) vs.  $175.6 \pm 41.4$  mg/dl (SUB); LDL:  $130.8 \pm 45.4$  mg/dl (EGG) vs.  $103.4 \pm 28.0$  mg/dl (SUB); HDL:  $60.3 \pm 13.6$  (EGG) vs.  $54.6 \pm 10.5$  (SUB);  $P$  for all  $< 0.0001$ ]. This reflects an increase of ~5.5 mg/dl total cholesterol per 100 mg difference in cholesterol intake. Hypo-responders exhibited no significant changes in total, LDL, or HDL cholesterol levels across dietary

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treatment periods. TAG levels did not vary significantly by diet or response classification. Additionally, an increase in HDL particle diameter was observed in both hyper- and hypo-responders following the EGG treatment phase.

Egg yolks are rich in the carotenoids lutein and zeaxanthin. These pigments are highly bioavailable from the yolk's lipid matrix, making eggs one of the preferred dietary sources of lutein and zeaxanthin. These carotenoids collect in the macular region of the eye and aid in the prevention of macular degeneration, the leading cause of blindness in the elderly. The analysis by Greene et al. showed that serum carotenoid levels were related to both diet and response classification. Serum concentrations of both lutein and zeaxanthin were higher following the EGG than the SUB diet phase. Intriguingly, hyper-responders experienced the greatest increases in serum lutein and zeaxanthin levels ( $P < 0.05$ ), probably due to their close relationship with serum lipids in distribution and absorption pathways. In addition, the authors observed a significant, positive correlation between HDL size and plasma lutein ( $r = 0.361$ ,  $P < 0.05$ ) and zeaxanthin ( $r = 0.321$ ,  $P < 0.05$ ) concentrations.

These data demonstrate that healthy men >60 years old and post-menopausal women who regularly include whole eggs in their diet do not increase their CHD risk profile. LDL particle susceptibility to oxidation following the cholesterol challenge was unchanged. Participants who experienced increases in LDL cholesterol in response to increased egg consumption also experienced a comparable increase in HDL cholesterol, resulting in a stable LDL:HDL ratio (an important indicator of CHD risk). Since each LDL particle contains just one apo-B, the observation that apo-B concentrations remained stable in this group indicates that the size, not the number, of LDL cholesterol particles increased, yielding a larger, less atherogenic class of LDL in these elderly study participants. Further analysis of this data also suggests that egg intake may help protect against macular degeneration in elderly men and women by increasing serum levels of lutein and zeaxanthin. ■

Greene CM, Zern TL, Wood RJ, et al. Maintenance of the LDL cholesterol:HDL cholesterol ratio in an elderly population given a dietary cholesterol challenge. *J Nutr* 2005;135:2793-2798.

Greene CM, Waters D, Clark RM, Contois JH, Fernandez ML. Plasma LDL and HDL characteristics and carotenoid content are positively influenced by egg consumption in an elderly population. *Nutrition and Metabolism* 2006;3:6.

## Do Genetic Variations Affect Plasma Lipid Response to Dietary Cholesterol?

Dietary cholesterol has long been thought of as a primary predictor of plasma cholesterol levels. While a small increase in plasma total cholesterol (2.2–2.5 mg/dL per 100 mg increase in dietary cholesterol) can be expected following an increase in cholesterol intake, extensive research has been unable to establish an association between dietary cholesterol intake and CHD incidence. Thanks to accelerating research in the area of genetics, we now understand that, in addition to age, gender, ethnicity, physical activity, and hormonal fluctuations, one's genetic make-up can strongly influence physiologic responses to dietary intake. Thus, while some individuals see moderate increases in plasma cholesterol with increased dietary cholesterol intake (hyper-responders), others experience little or no change in plasma lipids in response to the same increase (hypo-responders). Specifically, polymorphisms associated with the APOC3 and APOA4 genes have been shown to modify plasma lipid responses to dietary intake. Herron et al. undertook a randomized crossover egg-feeding study to determine the effect of egg intake on the CHD risk for individuals who are hyper-responsive to dietary cholesterol and whether polymorphisms associated with the APOC3 or APOA4 genes modify the plasma lipid response to cholesterol intake from eggs.

Participants in this study included 40 men and 51 pre-menopausal women with no history of hypercholesterolemia, hypertriglyceridemia, hypertension, or diabetes and who were not taking any lipid-lowering medications. The group was randomly assigned to one of two diet treatments (egg [EGG] or placebo [SUB]) for a period of 30 days. Following a 3-week washout period, they initiated the alternate diet treatment for another 30 days. Body weight, blood pressure, physical activity level, smoking, and alcohol consumption were measured at baseline and again following each treatment period. Two fasting blood draws were performed prior to study initiation to determine baseline plasma lipid levels and characteristics. Two fasting blood samples were again obtained from each participant at the end of the first and second treatment periods.

Participants were expected to adhere to the NCEP Step I diet during both treatment periods. Those in the EGG group were asked to consume three whole eggs (providing a total of 640 mg cholesterol) each day for the duration of the treatment period. Participants in the SUB group consumed the equivalent volume of a fat-free, cholesterol-free egg substitute daily (providing 0 mg cholesterol per day).

At baseline, men and women differed with respect to several variables. The men had higher triacylglycerol (TAG) levels, lower plasma total cholesterol, and lower HDL cholesterol concentrations than the women in this group. However, plasma LDL levels did not differ between men and women in this population. Participants' body weights remained stable for the duration of the study.

As expected, the participants' intake of cholesterol ( $P < 0.0001$ ), total fat, and saturated fat ( $P < 0.01$ ) as a percentage of calories was higher during the EGG period vs. the SUB period. However, the contribution of polyunsaturated and monounsaturated fat to total calorie intake was also higher during the EGG period. Participants successfully followed the guidelines of the NCEP Step I diet throughout the study.

Twenty women and 15 men were identified as hyper-responders (individuals who experienced an increase in total cholesterol of  $> 2.5$  mg/dL per additional 100 mg of cholesterol consumed—or  $> 16$  mg/dL for the purposes of this study) following the 4-week cholesterol challenge (EGG period) while 31 women and 25 men were categorized as hypo-responders. Neither male, nor female hypo-responders experienced any changes in total cholesterol, LDL cholesterol, HDL cholesterol, or TAG levels following either treatment period. Hyper-responders experienced increases in total cholesterol ( $P < 0.001$ ) due to increased LDL and HDL cholesterol levels following the EGG period. TAG levels did not change in response to dietary treatment for either group. The total cholesterol to HDL cholesterol ratio remained stable for all women and for male hypo-responders. This ratio was higher following the EGG period ( $3.90 \pm 0.99$  vs.  $3.50 \pm 0.92$ ) only for male hyper-responders, indicating that this was the only group for which

HDL cholesterol levels did not rise in proportion to the rise in LDL cholesterol following egg feeding. A significant diet by gender interaction ( $P < 0.05$ ) indicated that following the EGG period, TAG levels increased for men, while for women, TAG levels declined.

Genotype distribution did not differ significantly between the hypo- and hyper-responders. Regardless of dietary intake, LDL peak particle diameter was larger for participants with the *APOC3* S1 vs. S2 genotype. Again, regardless of diet treatment, participants heterozygous for the S2 allele demonstrated higher plasma TAG and apo C-III levels, with a significantly higher TAG level after the SUB period ( $P = 0.014$ ). A significant diet, gene, gender interaction ( $P < 0.0001$ ) indicated that for females with the *APOA4*<sup>347</sup> S allele, TAG concentrations were lower than for those with the T/T variant. This difference was not modified by diet intervention. Men exhibiting the S allele, however, had higher TAG concentrations than those with the T/T allele. Men with the T/T allele also experienced increases in TAG levels from baseline during both the EGG and SUB diet phases and TAG levels were higher after the SUB period than after the EGG phase. Differences related to the *APOA4*<sup>360</sup> genotype did not modify any of the parameters measured in this study. The authors conclude that individual polymorphisms within these two genotypes are associated with differences in plasma lipid concentrations and LDL diameter. However, their influence is largely independent of dietary cholesterol intake. ■

Herron HL, Lofgren IE, Adiconis X, Ordovas J, Fernandez M. Associations between plasma lipid parameters and *APOC3* and *APOA4* genotypes in a healthy population are independent of dietary cholesterol intake. *Atherosclerosis* 2005;184:113-120.

## E DITORIAL

### Something Old, Something New (*Nothing Borrowed, Nothing Blue*)

As you can see with this issue of *Nutrition Close-Up*, we have made a few changes. A new design format and a new section entitled, "Read it again...for the first time." The new design is the result of the efforts of the most youthful member of the *Nutrition Close-Up* staff. You can probably guess who gets the credit for the historical section...the oldest member of the team!

I should, at this point, acknowledge a truth I've been forced to recognize. I'm cholesterol obsessed. Yes, I admit it. I've spent way too much of my life with this water-insoluble, essential-for-life, heart-disease-related molecule. Just consider the facts. In 1966 (yes,

that's forty years ago!), I first started paying attention to this little sterol for my doctoral research project. And for the past forty years I've read about it, carried out research on it, lectured about it, dragged graduate students into my addiction, and fought the war of words over the guilt or innocence of dietary cholesterol.

I know way too much about cholesterol.

With that in mind, I thought that a section treating the historical aspects of the sciences of cholesterolology and eggology would be a useful contribution to our younger readers who, thankfully, have

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Editorial *continued from page 7*

not been so similarly obsessed. And in the process we might address that age-old admonition that “Those who cannot remember the past are condemned to repeat it.” (George Santayana, *The Life of Reason*, Volume 1, 1905)

In this issue we reflect upon one of the first studies to show that consumption of eggs (those cholesterol-laden pellets) was not related to either plasma cholesterol levels or heart disease risk. In 1982, Dawber et al. reported data from the Framingham Heart Study showing that “within the range of egg intake in this population, egg consumption was unrelated to either plasma cholesterol levels or heart disease risk.” What makes this study important is that it’s been repeated over and over again in different populations and across populations with identical results.

What also makes this study significant is that it’s been virtually ignored over the past twenty years. The Framingham Heart Study has consistently reported no association between cholesterol intake

and heart disease risk, and yet this is rarely incorporated into discussions of the diet-heart disease relationship. Maybe the study is so old that people forgot about it. (A sin of omission? Maybe...but a sin of commission seems more likely.)

So to assure that good research is not forgotten, and that contrarian opinions still have a place, we will be bringing you a bit of nutrition history for (we hope) your reading and learning enjoyment. So read our history reports, learn something old (Dr. David Kritchevsky refers to these as “unobserved publications” rather than “unpublished observations”), and keep an open mind to what might appear on the surface to be closed issues.

And again, a quote from George Santayana might be appropriate here: “Skepticism, like chastity, should not be relinquished too readily.” ■

*Donald J. McNamara, Ph.D*  
*Executive Editor, Nutrition Close-Up*

# NUTRITION CLOSE-UP

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