

## Teachers and Breast Cancer: Understanding the Knowledge and Perceptions of a Population at Risk

*Collaborative research project involving BCERF, Cornell's Department of Communication, and the National Education Association presents some results at the Society for Risk Analysis annual meeting*

**Carmi Orenstein, M.P.H., Editor**

*In 2003, Cornell University's Department of Communication, in collaboration with BCERF and the National Education Association (NEA), received a three-year grant from the Cooperative State Research, Education and Extension Service of the US Department of Agriculture, to research New York State (NYS) teachers' knowledge and perceptions of breast cancer risk. Carmi Orenstein serves as Project Coordinator for the study, under the direction of Cornell Department of Communication faculty members, Drs. Bruce Lewenstein and Cliff Scherer. The New York State Departments of Health and Environmental Conservation provide additional funding to support Carmi's work. Cornell student researchers working on this project include: Sukriti Issar (currently of Brown University), Santhi Gollapalli, Zheng Yang, and Cecilia Lum.*

### **Teachers and breast cancer: what do we know?**

Over 25 studies in the US and internationally have documented the increased incidence of breast (and

some other) cancers amongst teachers. Teachers represent just over four percent of the US workforce, and almost 75 percent of teachers are female. California's Department of Health Services has initiated a study of 133,000 current and retired teachers and administrators to better understand the increased rates they identified in their state for invasive breast (Risk Ratio = 1.51), in situ breast (RR = 1.67), endometrial (RR = 1.72) and ovarian (RR = 1.28) cancers.

The California Teachers Study (CTS), as described in its most recent outreach newsletter (<http://calteachersstudy.org/newsletter.html>), asks teachers "questions about their lifestyles, exposures, and health, and, over time, (looks) for significant relationships between those factors." Using periodic surveys, as well as other techniques such as geographic information systems (GIS) and genetic samples from a sub-group of the study population, the CTS has the potential to advance our understanding of risk factors for this population, as well as the population in general. See [calteachersstudy.org](http://calteachersstudy.org) for studies

published to date on California teachers and breast cancer risk.

### **Why study teachers' knowledge and perceptions of breast cancer risk?**

It will still be many years until the risk factors for breast cancer for teachers, as well as for the general population, are better understood. In fact, many of the studies published to date by the CTS have not shown clear relationships between the specific factor under study and breast cancer risk – this is the case with its studies on residential proximity to pesticide use, second-hand smoke exposure, and recent diet. These factors remain controversial with regard to their impact on breast cancer risk. Other CTS studies have provided additional support for a relationship, such as between alcohol consumption and breast cancer risk. Much of the information available to women, whether they actively seek it out or simply hear various fragments by chance, remains indeterminate. There is also the issue of women's exposure to misinformation on the risks for breast cancer.

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As health educators and scholars of science and risk communication, the Cornell members of the study team were interested in how an at-risk population such as this deals with scientific uncertainty and possibly confusing health risk-related messages in an area so presumably relevant to them. We were interested in a communications study that would help describe what teachers knew and felt about breast cancer risk, and the role of social networks and other external influences in processing those understandings and perceptions. Ultimately, it is only by having this kind of data about a target population that a health risk information intervention can be effective. When we approached the NEA as potential study partners, their profound concern for their membership's information needs and health was apparent, and they agreed to participate.

### **What kinds of other research are relevant to this study?**

While breast cancer knowledge and risk perception have not previously been studied in a population of teachers, our study builds on research in other populations. Much of the existing breast cancer risk perception research has focused on understanding women's predisposition toward a specific activity, for example, mammography screening or genetic counseling.

A more broadly conceptualized study in this area (Robertson, 2000) identified four key themes in women's accounts of breast cancer risk: cancer as a constant underlying concern, uncertainty in an area of emerging science, a feeling of individual responsibility with limited personal control, and the need to manage individual risk at the collective level. These themes have turned out to resonate well with many of our findings to date.

Other relevant areas of research include that of Trumbo and McComas (2003), and McComas and Trumbo (2001), who have examined how people process information and how they subsequently perceive risk in

suspected cancer clusters. Their work suggests that credibility of information sources plays a key role in increasing or lowering perceived risk. Other factors are also likely to influence how information flows, changes, and is incorporated into the knowledge structures within work-related social networks. Dr. Cliff Scherer, a principal investigator on our study, has worked with a "social network contagion" theory of risk perception (Scherer and Cho, 2003). This theory suggests that social linkages – such as those shared by a community of teachers – play an important role in focusing risk perceptions.

There are other related areas of research, beyond the scope of this article, found largely in the areas of health education and risk communication. Robertson mentions several in her article; for example those which look at lay perceptions of environmental health risks, and differences between lay and "expert" concepts of risk. The Society for Risk Analysis (SRA), an interdisciplinary professional organization devoted to risk assessment, risk management, and risk communication, proved to be an appropriate venue for presenting some of our project's results this past year (more on this below).

### **Cornell Teachers Study activities to date**

In the first year of our study, we conducted focus groups with NEA/New York teachers and education support professionals (ESPs). (ESPs are other school employees belonging to the NEA, such as teacher's assistants, some types of school therapists, nurses and some administrative

professionals.) Our research suggested that teachers' and ESPs' general perceptions of cancer and environmental risk are similar to that of other groups of women, including a tendency to emphasize personal responsibility. But the elevated risk, unique exposures, close social environment at work, and special community roles perceived by these educators presented important distinctions. Study participants described their perceptions against a backdrop of "critical incidents" – memorable local and regional environmental and health events – that had made a large impression on them. We presented these results at the 2004 Annual Meeting of the American Public Health Association.

We wanted to study these perceptions and tendencies in further detail in the second year. We designed, pre-tested, and administered – with the help of forty NEA/NY volunteer "recruiters" – a broader survey to test the frequency and distribution of the initial findings. The questionnaire included attention to: perceived risk of cancer (for the individual and specific groups); perceived control over risk (personal and environmental); perceptions about and trust in the science linking cancer and environmental risk; information sources; individual versus societal responsibility for personal and group risk reduction; self-efficacy related to risk reduction (individual and collective); and, ties to social networks in the occupational and other settings.

We had a 70 percent response rate for this detailed questionnaire, which we distributed to 1,600 NEA/NY teachers and ESPs. This all-female sample had an average age of

### **Within the SRA: Risk Communication**

The Risk Communication Specialty Group (RCSG) focuses on the communication of risk information between technical and lay audiences. Membership represents a variety of theoretical and practical perspectives on risk communication. Members' interest areas include the perception of risk, public participation, mass media coverage of risk, trust and credibility, social influence, and evaluation related to risk communication activities. See: <http://www.sra.org/rcsg/>

45.3 years, and was composed of 63% teachers and 35% ESPs.

### **Cornell group presents at SRA**

The Cornell group presented two papers on our second-year research at the 25th Annual Meeting of the SRA in December 2005. The papers were:

- **Perceptions of Risk Factors for Breast Cancer: The Case of NYS Teachers**, presented by Santhi Gollapalli
- **Predicting Place-Based Enviro-Health Concern: The Case of NYS Teachers**, presented by Sukriti Issar

(Note: the titles of these papers were changed after initial submission of abstracts to the SRA, to better reflect our analyses and results.) This overview only briefly describes the research questions and general results of the SRA presentations; please watch *The Ribbon* for announcements of other presentations and publications.

**Perceptions of Risk Factors for Breast Cancer: The Case of NYS Teachers.** The primary research question in this analysis was: what predicts the attribution of environmental risk factors for breast cancer in this population? In the survey, we asked respondents an open-ended question: “what are the most important things for increasing the risk for developing breast cancer?” We analyzed the results in terms of county of residence, other environmental health concerns, perceived risk of breast cancer for various groups, information sources, and other variables. We found that the attribution of environmental factors to breast cancer risk seems to be related to concern about the environment in the community and school building environments, as well as to attributions of responsibility for risk reduction. Our findings enable us to theorize a model of environmental attributions, in which a constellation of beliefs amongst many of the teachers takes shape. We were also able to develop a comparative model


that looks at reproductive risk factor attribution.

**Predicting Place-Based Enviro-Health Concern: The Case of NYS Teachers.** In this analysis we sought information on the ability of certain individual, social and place-based factors in predicting what we have termed, “place-based enviro-health concern.” This measure is a composite of seven potential community environmental health concerns. Factors that turned out to be predictors of place-based enviro-health concern included various aspects of community involvement – such as a greater history of talk with family and friends about breast cancer diagnoses as well as participation in various organizations, ecological attitudes, and experience with certain environmental conditions. These predictors, as well as those factors that did not turn out to be predictors in our analysis – such as age, years in the community, or local media use – have implications for developing more context-specific environmental health risk communications.

The Cornell research was very well received at the SRA meeting, and project researchers were able to continue their discussions with other conference participants at a full afternoon session chaired by Dr. Scherer entitled, “Past, Present and Future of Risk Communication.”

### **Looking toward effective breast cancer risk communication with teachers**

The study team for “Teachers and Breast Cancer: Understanding the Knowledge and Perceptions of a Population at Risk,” looks forward to developing and disseminating the ongoing results of our project. As we monitor results from epidemiologic studies such as the CTS, we are optimistic about our communications study contributing toward the development of effective breast cancer communication efforts with teachers. We at BCERF hope to be able to provide future educational programs

on breast cancer risk, tailored to teachers. Although we still do not know why teachers have these elevated rates, we do now know that the enthusiasm and motivation of this group will go far toward reducing risk. We thank all participating teachers and the NEA for bringing us this far in the research process. 

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