

The Association between Alcohol and Breast Cancer: Popular Press Coverage of Research

ABSTRACT

Objectives. This study was undertaken to examine popular press reports of the association between alcohol and breast cancer.

Methods. Articles from scientific journals and stories from newspapers and magazines published from January 1, 1985, to July 1, 1992, were retrieved from six on-line databases. Lay press stories were analyzed to determine which medical articles were publicized and what information was reported.

Results. Fifty-eight scientific articles on the relationship of alcohol and breast cancer were found, and 64 newspaper and 23 magazine stories were retrieved. The press cited 11 studies, 19% of those published during the study period. Three studies were featured in 77% of popular press stories. No scientific review articles were reported. Behavioral recommendations were given to the public in 63% of stories.

Conclusions. The vast majority of scientific studies on alcohol and breast cancer were ignored in press reports. We encourage researchers and the popular press to give the public a broader understanding of public health issues. (*Am J Public Health*. 1995;85:1082-1086)

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Introduction

The scientific community has deep concerns about how well the American public receives news about medicine and public health from newspapers, magazines, television, and radio.¹⁻⁴ Some who produce the news share these concerns.⁵ The situation could be improved if scientists and media understood one another better, yet studies of press coverage of biomedical science are uncommon. From the handful that have been published, it can be concluded that there may be a bias against negative studies in the media⁶ similar to the bias found in medical journals,^{7,8} and that some important issues, such as national reports on Medicare, are nearly ignored.⁹ Yet single events, such as the National Institutes of Health Consensus Development Conferences, appear to be adequately covered.¹⁰

How well the media report on public health issues that emerge over time is unknown. The relationship between moderate alcohol consumption and breast cancer is a good example. This is an important issue for American women; breast cancer is the second leading cause of cancer death,¹¹ and the lifetime risk of developing an invasive lesion is one in eight.¹² Furthermore, according to the National Health Interview Survey, well over 60% of American women drink at least moderately.¹³ If alcohol causes breast cancer, an estimated 14% of cases could be prevented with effective interventions.¹⁴

More than 50 studies of the alcohol-breast cancer relationship have been reported in the medical literature since 1974, and at least a dozen reviews and editorials have appeared since 1985, summarizing and commenting upon those studies. But while some investigators have

made public health recommendations, no consensus has emerged on causation. In short, the issue is controversial, timely, and above all important to public health. The purpose of this paper is to examine how well the print media have covered this issue.

We examined newspaper and magazine stories about alcohol and breast cancer between January 1985 and July 1992 and compared them with articles appearing in the medical literature during the same period. To address how well the popular press covered this public health issue, we asked the following research questions: which medical articles were cited by the media and which were not? Is there a bias against reporting on negative studies? Is there a bias for citing specific journals? Is a historical context of the controversy presented? How is risk portrayed? Are behavioral recommendations made to the public, and if so, what recommendations are made?

Methods

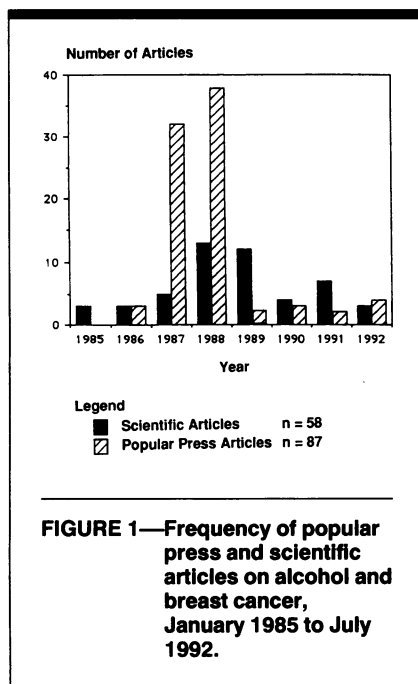
Search Method

Popular press articles published from January 1, 1985, to July 1, 1992, on breast cancer and alcohol were retrieved with (1) the *National Newspaper Index*, which indexes all stories, news reports, and editorials

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als published in the *New York Times*, *Wall Street Journal*, and *Christian Science Monitor*; (2) the *Magazine Index*, which indexes all stories, news reports, and editorials published in 368 popular US and Canadian magazines; (3) *Nexus*, which contains 175 full-text newspaper files and 53 full-text wire services; and (4) *Newspaper and Periodical Abstracts*, which contains abstracts of 25 newspapers and 450 periodical titles. News wire service stories appearing in local papers that are not indexed in the databases were excluded from the search.

Relevant stories in the four sources were identified by computer search using the headings "breast cancer" and "alcohol" within 30 words of each other, as well as title searches with the words "breast cancer" and "alcohol" together. Scientific articles were retrieved using *Medline* by searching the headings "alcohol drinking" and "breast neoplasms" from January 1, 1985, to July 1, 1992. Animal and in vitro studies were excluded. All popular print and medical articles were reviewed, and all relevant articles were entered into the study.

Abstraction Method

An abstraction form was created to collect information from popular press stories on the type of source, date, title, specific scientific studies discussed, and specific experts quoted; on whether the scientific studies and experts supported, did not support, or were neutral about a relationship between breast cancer and

TABLE 1—Frequency of Citations in the Popular Press of Scientific Articles on Alcohol and Breast Cancer, by Source, Author, and Date, January 1985 to July 1992

Source, Author, and Year ^a	Frequency	Methodology	Results
<i>New England Journal of Medicine</i>			
Willett (1987) ¹⁷	54	Cohort	Positive
Schatzkin (1987) ¹⁶	53	Cohort	Positive
Graham (1987) ¹⁸	16	Editorial	Positive
<i>Journal of the American Medical Association</i>			
Longnecker (1988) ¹⁹	13	Meta-analysis	Positive
Harris (1988) ²⁰	7	Case-control	Negative
<i>Journal of the National Cancer Institute</i>			
Harvey (1987) ²¹	4	Case-control	Positive
Schatzkin (1989) ²²	1	Cohort	Negative
O'Connell (1987) ²³	1	Case-control	Positive
La Vecchia (1985) ²⁴	1	Case-control	Positive
<i>Lancet</i>			
Begg (1983) ²⁵	1	Case-control	Positive
Paganini-Hill (1983) ²⁶	1	Case-control	Negative
Webster (1983) ²⁷	1	Case-control	Negative
Byers (1982) ²⁸	1	Case-control	Negative
Rosenberg (1982) ²⁹	1	Case-control	Positive
<i>American Journal of Epidemiology</i>			
Hiatt (1984) ³⁰	3	Cohort	Positive
Le (1984) ³¹	1	Case-control	Positive
<i>International Journal of Cancer</i>			
Rohan (1988) ³²	1	Case-control	Positive
<i>Cancer Research</i>			
Hiatt (1988) ³³	1	Cohort	Positive

^aNot included is Chu et al. (1989), which was cited 26 times by the press as a paper given at an American Cancer Society conference.

alcohol; on whether the study design and its merits were discussed; on how risk was described; and on what recommendations, if any, were given. This form was piloted and revised by the authors. Four articles were abstracted by all authors as a check for qualitative interobserver agreement. Popular print stories were randomly assigned to four of the authors (FH, EH, SH, SL) and abstracted.

In stories that used researchers' institutional affiliation to report on scientific studies, such as "a Harvard study in 1987" or "the National Cancer Institute study in 1987," authorship of those studies was assigned if further descriptions of design or results made attribution possible.

Scientific articles were also abstracted. Information included the design of the study, the results, and the journal in which it was published. A study was considered positive if the article's authors concluded that there appeared to be a relationship between alcohol and breast cancer, negative if the authors concluded that there did not appear to be a relationship, and neutral if the authors stated that no conclusions could be drawn.

SAS statistical program¹⁵ was used for univariate analysis. Counts were obtained of the number of times studies or experts were cited in the popular press as supporting, denying, or being neutral about a relationship between alcohol and breast cancer. Tukey's test was used to compare differences in more than two means with differing sample sizes to reduce multiple comparison problems. The significant differences between proportions were assessed with chi-squares.

Results

From January 1, 1985, to July 1, 1992, 58 scientific articles and 87 popular press stories (64 in newspapers and 23 in magazines) were published on alcohol and breast cancer (see Figure 1). The total number of news stories published in the study period may actually have been greater because wire services were not searched. The distribution of scientific articles and popular press stories by year shows that 84% of popular press stories appeared in 1987 and 1988 whereas 74% of scientific articles were published between 1988 and 1992.

TABLE 2—Published Scientific Articles on Alcohol and Breast Cancer Not Cited by the Popular Press, January 1985 to July 1992

Type of Article	Number	Positive	Negative	Neutral
Review article	15	7	3	5
Case-control	22	14	6	2
Cohort	4	4	0	0
Meta-analysis	0	0	0	0
Editorial	3	2	0	1
Ecological	3	1	2	0

TABLE 3—Number of Recommendations Given to the Public by the Popular Press, by Source

Recommendations	Source			Total
	Study Author	Expert	Story Author	
Drink less	5	4	5	14
If at high risk, drink less	5	27	1	33
Drink moderately	3	6	1	10
No change	14	5	1	20
Weigh risk and benefits	3	4	1	8

Table 1 presents the frequency and selected characteristics of 18 published scientific articles mentioned in the popular press during the study period by source. These comprise 1 editorial, 11 case-control studies, five cohort studies, and 1 meta-analysis.¹⁶⁻³³ Since 7 of these had been published prior to 1985,²⁵⁻³¹ only 11 of them—4 of the cohort studies, 5 of the case-control studies, 1 of the editorials, and the only published meta-analysis reported by the press—had been published during the study period. No ecological study and none of the reviews were cited. Three scientific studies—Schatzkin et al. (1987),¹⁶ Willett et al. (1987),¹⁷ and Chu et al. (presented at the American Cancer Society Conference in 1988 and published in 1989³⁴)—were featured in 77% of the 87 popular press stories. All scientific articles and editorials published in the *New England Journal of Medicine* and the *Journal of the American Medical Association* were reported by the press. In all, however, the press reported scientific articles from only 7 journals (see Table 1) although studies published during the study period appeared in 29 scientific journals, including 9 international journals. Table 2 reveals selected characteristics of 47 scientific articles not cited in any popular press story, 81% of those published during the study period.

Across all years studied, the popular press reported positive studies 129 times

(75%), negative studies 31 times (18%), and neutral studies 11 times (6%), excluding 44 times in which scientific studies were mentioned in the press story but were not identifiable by author or year. The scientific literature published positive articles 37 times (64%), negative articles 13 times (22%), and neutral articles 8 times (14%). There was no difference between the proportions of times positive, negative, and neutral studies were cited in press stories compared with scientific publications ($P = .132$). Titles of popular press stories were also evaluated: 39% of them supported the association, 24% denied it, and 37% were neutral. Conflicting results from previous research were noted in 48% of the press stories. Expert opinion, which usually came from authors of the scientific studies reported, was included in 72% of the stories; 30 experts provided 136 quotes, 55% of which came from just 4 experts. Experts supported, denied, or were neutral about the controversy in proportions of 3:1:1, respectively.

Analysis of stories for descriptions of study methodology revealed that the case-control, cohort, or meta-analysis design appeared 37% of the 171 times study design types were mentioned in press stories. The actual use of the words "case-control," "cohort," or "meta-analysis" appeared in only 4% of descriptions. Merits of the study design, although brief, were given 11% of the time.

Analysis of words used to describe the risk of alcohol on breast cancer showed that "chance" and "risk" were used in 71% of stories, "percent increase/decrease of risk or chance" was used in 63%, and "link" or "association" was used in 58%. These words were defined about one fifth of the time. A baseline risk was given in 47% of stories that used "percent increase/decrease of risk or chance"; the baseline given was usually stated as a "one in ten" or a "one in nine" chance of developing breast cancer, depending on when the story was published. Epidemiological terms used in scientific articles, such as "incidence," "relative risk," or "risk ratio," were used three times in the 87 stories, and only once was the term explained. Comparisons with other risks such as heart disease, the risk of cigarette smoking and lung cancer, or other more familiar risks were provided in 29% of stories. The risk of heart disease was used in 64% of stories providing risk comparisons.

Sixty-three percent of the stories gave behavioral recommendations to the public. Table 3 shows the source and frequency of the different types of recommendations. Scientific study authors and experts were the major source. The study authors who advised women that there was no need to change their current alcohol drinking patterns given the present data and that they should await further studies were given more coverage, as were the experts who cautioned women at high risk for developing breast cancer to drink less. Most popular press story authors refrained from making recommendations. The difference in frequency of recommendations by source was significant ($P = .0012$). The actual number of drinks per week regarded as safe was only given eight times in the 87 popular press stories. One popular press author recommended that no alcohol is safe and another recommended 7 drinks per week, while one scientific study author recommended 1 drink per week; two scientific study authors and two experts gave 14 drinks a week as a maximum.

Discussion

Our study examined popular press coverage of ongoing research on alcohol and breast cancer. Just over three fourths of the stories featured the results of three research studies; the vast majority of scientific studies apart from those published in the *Journal of the American Medical Association* and the *New England*

Journal of Medicine were ignored by the press. These results confirm other reports of piecemeal press coverage for scientific topics of public health import.³⁵ In addition, the epidemiological concept of risk was presented in a confusing manner; popular press stories often did not adequately explain risk increases. Finally, recommendations for behavioral change were contradictory.

Selection by the press of a small fraction of the total body of scientific work available and the potential impact of this selective reporting on the public's awareness and understanding of the alcohol-breast cancer link deserve comment. The focus on three studies, one of which was presented at a meeting, is instructive. Two of the studies appeared in the same issue of the *New England Journal of Medicine* with an accompanying editorial, the only editorial or review paper included in any press report. The press may have recognized the importance placed on this topic by "the nation's oldest and most respected medical journal."³⁹ The press may also have been influenced by advance access to the journal; since before 1985, this journal has circulated embargoed copies to the press prior to publication. For its part, the *Journal of the American Medical Association* has provided press releases since 1932. Indeed, many journals have added similar features to their operations in recent years. Efforts by the scientific community to alert the press to upcoming newsworthy research may be effective in generating news stories. Consider, for example, the coverage given to the study by Chu et al. (1988)³⁴ prior to its publication. A talk given at a scientific conference seems an unlikely candidate for extensive press coverage until it is realized that the conference is the annual American Cancer Society Science Writers' Workshop, specifically designed as a forum for media science writers.

The public impact of highly selective press reporting is a concern, well illustrated by the problem of conflicting results. Inconsistencies across studies may appear in the scientific literature as hypotheses that were examined in different populations using different methods. Investigators often mention these discordant results in brief literature reviews provided in published studies, as well as in editorials and review articles summarizing the current state of knowledge. Yet all but one of the many review articles and editorials were ignored by the press, as were the majority of published studies. Thus, despite the fact that 48% of popular

press stories informed the reader that there were conflicting results in previous research, the public has nevertheless received an incomplete and contradictory picture of the state of knowledge on this issue, being told one year that moderate drinking can increase the risk of breast cancer³⁶⁻³⁸ and the next year that there is no increased risk with moderate alcohol consumption.^{39,40} Under these circumstances, the public not only is confused but may even feel betrayed, but not as much by the press as by medical science itself.⁴¹

Nevertheless, our findings also show that, across all years studied, the proportions of positive, negative, and neutral studies published in the scientific literature and reported by the press were similar enough to fail a standard significance test of differences. We suspect this result is a coincidental finding inasmuch as the proportions from press stories were overwhelmingly dominated by highly selective reporting, emphasizing the two medical journals cited above and the single report from a Science Writer's Workshop.

The lack of press coverage of review papers is noteworthy. It can be partly explained here by the fact that neither the *Journal of the American Medical Association* nor the *New England Journal of Medicine* published a review article on alcohol and breast cancer. Reviews often provide public health recommendations made in the light of all available evidence. These may be more important to the public than recommendations made within descriptions of single studies, however prestigious the journals in which they appear. Journals need to place a greater emphasis on increasing the press' attention to the findings and recommendations of review articles.

The results of our study suggest that the epidemiological concept of risk may be difficult for the reading public to understand. The terms used by the popular press are not those used by epidemiologists. Furthermore, epidemiologists have no consensus on how best to convey risk. These factors contribute to what others have identified as an overall confusing portrayal of breast cancer risk.⁴⁰ Importantly, many press stories provide no explanation for findings such as a 50% to 60% increase in women drinking one or more drinks per day. When an explanation is provided, its depth is variable. One expert is quoted as saying, "Sixty percent is a big-sounding effect, but a small number in epidemiological terms."⁴² In contrast, another paper writes, "An

American woman faces a 10% chance of developing cancer at some time in her life; a 50% increase in that risk would mean her chances of developing the disease were 15%."⁴³ Infrequently, comparisons are made to give the reader a perspective on the added risk of breast cancer from alcohol. For example, one magazine states, "The increased risk in breast cancer found is roughly comparable to the elevated risk associated with having a first baby after age thirty rather than before age twenty."^{44(p 86)}

Our study is one of the first to examine how the popular press covers a public health issue emerging in the scientific literature over an extended period. This coverage may represent an isolated example, or it may reflect a more general phenomenon that is characteristic of how the press handles controversial public health issues. In this instance, we have concentrated on three major players: the scientists, the public, and the press. From the scientist's perspective, the controversy stems from modest estimates of relative risk subject to confounding, unusual dose-response gradients, and an elusive biological mechanism.⁴⁵ From the public's point of view, the controversy is important because moderate alcohol consumption is so pervasive and breast cancer so feared. The press, in turn, reports on the issue because it *is* of interest to the public, because the science *is* controversial, and because those who own and run newspapers and magazines believe that such stories will help sell their product.⁴⁶ There is also another potential player: the alcohol industry. As far as we can discern, only one published scientific paper had direct ties to the industry; it was a review published in 1992 and supported in part by the Scotch Whiskey Association.⁴⁷ Like all reviews, however, it was not cited by the press. In addition, only one of the 87 popular press stories included a quote from an alcohol industry spokesperson.

Newspapers and magazines supply much of the public's health and science information,⁴⁸ and how the press translates scientific reports into news has many facets. Ideally, there should be more emphasis on reporting trends in research rather than on the isolated reporting of single studies.² Furthermore, when a single study is covered, its significance and limitations relative to previous research should be presented. Changes such as these may be difficult given the limitations of time and space in the print media and the barriers to effective communication in the scientific community. The responsibil-

ity for progress lies not only with the press but also with scientists⁴⁹ and the public itself.⁴¹ Scientists should do more research on how public health research is reported by the media. They should also take a more active role in ensuring responsible reporting of important scientific findings. Wider coverage of issues of public health significance would better serve the public, who in turn should be cautious in its response to news of potential importance to its health.⁴¹ □

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