A Retrospective Study of the Accuracy of Cancer Information in Ontario Daily Newspapers

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ABSTRACT

Context: Studies suggest that the mass media is a common source of cancer information for the public. However, the quality of cancer information through various print outlets has not been extensively investigated.

Objectives: To assess the accuracy of cancer information in a retrospective sample of Ontario daily newspapers as well as to determine the amount of mobilizing (enabling) information about community resources for cancer.

Methods and Results: Of 1,027 articles on cancer for 1991, drawn from the 5 highest and 5 lowest circulating newspapers, a random 30% sample (306 articles) was obtained. Only 40 articles had traceable citations (journal name, name of researcher, name of educational institution, or direct quotes from identifiable sources). Of these, 47.5% had misleading titles and 55% included erroneous information or omitted important study results. Only 13 (6.9%) included mobilizing information regarding prevention, diagnosis, treatment or support.

Interpretation: Cancer information in newspapers contain frequent inaccuracies and fail to provide mobilizing information. Inaccurate newspaper information about cancer is of concern if the public relies on this channel for at least part of their health knowledge.

The translation of the Abstract appears at the end of the article.

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Acknowledgements: The authors thank Drs. J.N. Clarke and P. McDonald for helpful suggestions during the planning stages of this project. Research support by the Social Sciences and Humanities Research Council of Canada.

Newspapers are an important source of health information for a large segment of the population.^{1,2} Newspapers have been ranked second only to television current affairs programs as sources of information about genetics over research publications, television, news programs, government leaflets, and friends.³ The highest level of self-reported interest in the news is for new medical and scientific discoveries, well ahead of news about sports and politics.⁴

The mass media not only is a common source of health and cancer information but also has a central role in informing the public and influencing the health attitudes and actions of the audience. For example, the rise in opposition to a specific technology coincides with a parallel increase in the amount of media coverage of that specific technology, regardless of whether such coverage is positive or negative.⁵ Mass media can shape, influence and explain public opinion.⁶

Although information alone cannot change behaviour, when information is linked to community resources, information can play an important role in promoting healthier communities.⁷ Inclusion of recommended actions, sources of additional information or assistance were identified as key components of best practices in cancer communication to the public.⁸ Intentions to perform detection behaviours were stronger after receiving a media message with performance information than after a merely information-based message.⁹ Unfortunately, as was observed more than twenty years ago, the media often fail to provide mobilizing health information.¹⁰

For health actions to be appropriate, information presented by the media must be accurate. A study of American newspaper health reports indicated that the press is accurate in distinguishing research from opinion;¹¹ however, misuse of words such as research, study, survey and experiment, and limited attention to scientific methodology, were characteristic. A study of 232 magazines indicated that errors of omission were more common than errors of commission in magazine coverage of health and safety issues.¹² Lupton¹³ reported extensive dramatization and hyperbole in Australian press coverage of breast cancer and screening issues, suggestive of possible inaccuracies and bias. Popular press reports on breast cancer and mammogra-

phy had frequent translation errors between the scientific reference and the popular reports.¹⁴ Molitor¹⁵ compared the accuracy of information in leading U.S. newspapers with the scientific report on the relationship between aspirin and heart attacks published by the *New England Journal of Medicine*; frequent inaccuracies included omission of important scientific information, sensationalizing scientific results, and making incorrect generalizations. The tendency to emphasize the dramatic over the mundane and new risks over old ones often occurs when reporting on cancer in the news media.¹⁶

The purpose of this study was to determine whether cancer articles in Canadian newspapers provide accurate cancer information relative to the original scientific sources of the information and the extent of mobilizing information about cancer prevention and treatment. A second objective was to determine whether newspaper circulation size influenced the accuracy of reporting of cancer information.

METHODS

A list of daily newspapers serving Ontario was compiled from the Canadian Newspaper Association and Bowden's Media Directory. From a total of 38 newspapers, the top 5 and bottom 5 newspapers in terms of circulation were identified for extreme group comparisons.¹⁷ The time frame of 1991 was the latest year in which archives of the small Ontario newspapers were available at the National Library of Canada. The top 5 newspapers (in descending circulation from 3,477,157 to 464,768 copies) were: *The Toronto Star*, *The Ottawa Citizen*, *The Hamilton Spectator*, *The London Free Press* and *The Windsor Star*. The bottom 5 newspapers (in descending circulation from 40,452 to 21,290 copies) were: the *Pembroke Daily Observer*, *Lindsay Daily Post*, *Northern Daily News* (Kirkland Lake), *Cobourg Daily Star*, and *The Daily Miner & News* (Kenora). The circulation size, the population size of the community served, income measures, and the percent penetration of the two largest newspapers (one national, one provincial) into areas served by the smaller newspapers are described elsewhere.¹⁸

Newspapers were searched for articles that included 'cancer' in the headline.

TABLE I

Distribution of Newspapers from Sample for Content Analysis Relative to Distribution of Newspapers from Population

	Total	Sample
Toronto Star	218 (21.2%)	63 (20.6%)
Ottawa Citizen	157 (15.3%)	49 (16.0%)
Hamilton Spectator	177 (17.2%)	53 (17.3%)
London Free Press	144 (14.0%)	42 (13.7%)
Windsor Star	99 (9.6%)	30 (9.8%)
Pembroke Daily Observer	44 (4.3%)	12 (3.9%)
Lindsay Daily Post	62 (6.0%)	20 (6.5%)
Northern Daily News	45 (4.4%)	12 (3.9%)
Cobourg Daily Star	38 (3.7%)	10 (3.3%)
Daily Miner & News	43 (4.2%)	15 (4.9%)
TOTAL	1027 (100%)	306 (100%)

Medical advice columns, obituaries, letters to the editor, and recipes were excluded. From 1,027 articles collected, a random sample of articles, with a sampling fraction of 30%, was drawn for an in-depth content analysis. The sampling method involved first assuming a total sample of 300 (i.e., ~30% of 1,027 articles) and dividing these 300 articles among the 10 newspapers according to their relative contribution to the total 1991 sample. For each newspaper, this number was then divided by the number of days the newspaper is published per week. Articles were then randomly selected until the required number for each day of the week was obtained. Table I shows the distribution of the 306 articles from the sample drawn for content analysis relative to the distribution of articles from the population of 1,027 newspaper articles.

Articles were read in their entirety by the researchers and were grouped into two broad categories: those that should have a scientific citation for the cancer information being described and those that should not have a scientific citation. Articles in the *should not have a scientific citation* category included anecdotal or human interest stories, stories focusing on cancer fund-raising efforts, and stories about researchers winning awards or the opening of new cancer centres. Articles in the *should have a scientific citation* were categorized as: (i) *probably traceable* (journal name provided), (ii) *potentially traceable* (specific name of a researcher and/or an educational institute provided), (iii) *authoritative source* (direct quotations from medical sources or survey results from governmental or non-governmental cancer organizations) and (iv) *nothing traceable* (findings from unnamed researchers or which stated "results of scientific studies show"). These categories were not mutual-

ly exclusive and articles could contain more than one potentially traceable citation; therefore, the number of citations was not always equal to the number of articles.

Attempts were made to identify the specific citation correlating with the reference(s) in the probably and potentially traceable categories. This involved a systematic search of multiple electronic databases (e.g., MedLine). Comparisons with the topic of the newspaper articles facilitated the search. In most cases, there was a single scientific article that corresponded to the newspaper report; occasionally several articles were retrieved to more accurately determine the source of the scientific content being discussed in the newspaper articles. Literature searches were restricted to articles published in English, between 1989-1991 inclusive.

The accuracy of each article was assessed using published criteria:¹⁴ misleading title, treating speculation as fact, erroneous information, omitting important results and, omitting qualifications or caveats to findings. These criteria are important for assessing accuracy for several reasons. First, people often read only the title or first couple of paragraphs of newspaper articles^{19,20} and hence, a misleading title can compromise accuracy. Second, a common concern by scientists is that the media often fail to explain the complexities and uncertainties associated with research.²¹ Thus, treating speculation as fact, omitting important results or omitting qualifications to study findings also impact on the ability of the reader to obtain accurate cancer information.

Each article was evaluated for the inclusion of mobilizing information that provided additional cancer information for the community served by the newspaper. Mobilizing information was defined as the inclusion of a phone number or address for contact and/or

TABLE II

Accuracy of the Cancer Information Found in Daily Newspapers Serving Ontario (1991)

Newspaper Category	Misleading Title	Treating Speculation as Fact	Erroneous Information	Omitting Important Results	Omitting Qualifications
Large Newspapers	14/34 (41.2%)	6/34 (17.6%)	19/34 (55.9%)	17/34 (50%)	18/34 (52.9%)
Small Newspapers	5/6 (83.3%)	1/6 (16.7%)	3/6 (50%)	5/6 (83.3%)	4/6 (66.7%)

Values in parentheses are the percent of the total number of articles evaluated for that newspaper category

further information or the location of screening centres in the local area; similar to enabling factors,²² mobilizing information facilitates health action by identifying available and accessible resources.

The articles were coded separately by the researchers using the identified criteria. Where discrepancies occurred in coding results, these were discussed until a consensus was met. Consensus discussions occurred early in data collection to allow this process to inform and direct future coding. This approach to inter-rater reliability has been used extensively in qualitative research.²³ Data are reported as means and frequencies, and were analyzed by cross-tabulations and chi-square.

RESULTS

There was little mobilizing information about cancer in the 306 articles. Only 13 of the 306 articles (6.9%) contained any mobilizing information (i.e., telephone number or contact name for further information such as support services).

From the sample of 306 articles identified for content analysis, 168 articles met the criteria for being included in the '*should not*' category (i.e., articles not expected to contain a scientific citation). These articles were not considered for further analysis. The remaining 138 articles met the criterion for inclusion in the '*should*' category (i.e., articles expected to contain information relating to scientific research and which should be traceable). The 5 large newspapers (circulation >400,000) had a total of 117 articles (59.4%) and the small newspapers (circulation <40,000) had 21 articles. There were 83 articles in the '*probably traceable*' and '*potentially traceable*' categories (71 articles from the larger newspapers, 12 from the smaller newspapers). There were 8 articles in the '*nothing traceable*' category and 47 articles (15.4%) in the '*authoritative source*' category.

Of the 83 articles in the '*probably* and '*potentially traceable*' categories, attempts were made to trace 91 citations. A total of 40 citations were traced to their original scientific source (34 citations from the large newspapers, 6 from the small newspapers) and coded for accuracy of results. The remaining 51 citations could not be traced for a variety of reasons including the newspaper articles identified the wrong journal name, the article did not contain enough information to link it with a citation in the specified journal, or the identified expert in the newspaper article did not publish an article listed in Index Medicus for 1989-1991.

Table II shows the results of accuracy of the citations by newspaper using the criteria of Moyer et al.¹⁴ and as a function of newspaper size. Just under half of the articles (47.5%) had misleading titles. Treating speculation as fact was the least common type of error (17.5%). Erroneous information, omitting other important results and omitting qualifications to findings, each occurred in 55% of articles. Examples of these inaccuracies and errors include the failure to specify the study population (i.e., animal or human), failure to state when the scientific study reported only preliminary findings, failure to discuss the side effects of cancer treatments, stating risk statistics that were not found in the original scientific citation, and failure to state when the scientific results were based on studies involving tumour cell lines.

None of the articles contained all five inaccuracy categories. A total of 8 of 40 articles (20%) contained 4 errors, 10 of 40 articles (25%) had 3 errors, 9 of 40 articles (22.5%) had 2 errors, 12 of 40 articles (30%) had 1 error, and only 1 article (2.5%) had no inaccuracies according to the five criteria identified above.

The most common type of error was misleading titles. For example, the title "Cancer vaccine shows promise" (*Lindsay*

Daily Post, May 22, 1991, pg. A14) was identified as misleading because the scientific study described 24 patients with metastatic melanoma for whom over half experienced progressive tumour growth (despite an experimental vaccine). The newspaper title also failed to identify that the vaccine was effective only against melanoma and not cancer in general.

Many newspaper articles treated speculation or caveats in scientific articles as factual items. For example, "People who suffer a major traumatic event, such as a serious illness or the death of a family member, are more likely to get bowel cancer" (*The Ottawa Citizen*, Feb. 2, 1991, "Personal trauma may lead to bowel cancer") failed to inform readers that the traumatic event itself was not associated with the increased risk of cancer, but rather the "degree of upset" was correlated with cancer risk. The original source noted that while recent life changes could be risk factors for the later development of colorectal cancer, there were other factors involved in colorectal cancer.

DISCUSSION

An important finding of this retrospective study was the lack of mobilizing cancer information in the newspaper articles. Only 13 of 306 articles contained information about venues for local screening, phone numbers or addresses of local cancer agencies, or other locations where information could be obtained. As only 6.9% of the articles contained any mobilizing information, it was not possible to evaluate the results by newspaper size. This finding supports previous research showing that little mobilizing information was provided about psychological, financial or organizational resources in a sample of cancer articles from 50 major U.S. daily newspapers.²⁴ A lack of mobilizing information would make it difficult for those contemplating behaviour change to take personal action.

Inaccurate information may contribute to the formation of erroneous beliefs about cancer, which can in turn lead to inappropriate prevention and treatment-seeking behaviours.²⁵ Alternatively, inaccurate reporting about health can generate false hopes and unwarranted fears.²⁶ How information is framed can affect individual decision-making and health outcomes.²⁷

The number of errors in the present study was considerable and is of concern if the public relies on these articles for at least part of their health knowledge. Our results show slightly less than half of the articles had three or more assessed errors, in agreement with the work of Singer²⁸ using U.S. data on media reports of hazards. We found a higher percent (83%) of articles omitted important results from the small newspapers. The reasons for the higher error rate in small compared with large newspapers may include: 1) differences in staff resources, 2) differences in community resources, and 3) effect of a small sample size. Despite differences in the percent of articles with misleading titles and omission of important results, both large and small newspapers had frequent errors of accuracy in the translation of cancer information from the original source. While it is difficult to estimate the public health impact of inaccurate cancer information, at the very least it will not enhance public health knowledge. Exposure to high-quality cancer-related information, on the other hand, can provide the consumer with new information and effective support.²⁹ Nevertheless, inaccuracies in newspaper reporting are not the only type of error that occur with respect to translation of health information. There are also errors in how the public reads media reports of health issues. For example, the rate of reader misunderstanding of media coverage of popular health issues approached 40% in one study.³⁰

There are limitations with this study. In determining accuracy, we did not adjust for articles with multiple errors in one category. Moreover, the concept of accuracy relies on the ability to trace the original citation and the accuracy of non-traceable articles could not be estimated, introducing potential bias. The ten newspapers represent only a small portion of Canadian newspapers and the results may not be generalizable to other provincial jurisdictions. Additionally, the data are historical and temporal changes in reporting accuracy were not considered.

Newspapers are only one channel through which the public receives health information. Additional research is needed to determine if inaccuracies in newspapers of health information translate to health status consequences for the population.

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Received: May 22, 2001

Accepted: November 15, 2001

RÉSUMÉ

Contexte : Des études ont prouvé que les mass-média sont une source d'information sur le cancer communément utilisée par le public. La qualité de cette information n'a cependant pas été étudiée à fond.

Objectifs : Évaluer la précision de l'information sur le cancer publiée dans un échantillon rétrospectif de quotidiens ontariens et déterminer la quantité de renseignements mobilisateurs (incitateurs) qu'ils contiennent au sujet des ressources communautaires sur le cancer.

Méthode et résultats : Sur 1 027 articles sur le cancer publiés en 1991 dans les cinq quotidiens à plus fort tirage et les cinq quotidiens à plus faible tirage de la province, nous avons sélectionné un échantillon aléatoire de 306 articles (30 %). Seuls 40 articles citaient leurs sources (nom d'une revue, d'un chercheur, d'un établissement d'enseignement ou citation directe d'une source identifiée). De ce chiffre, 47,5 % portaient des titres tendancieux, et 55 % comportaient des erreurs ou omettaient les résultats d'études importantes. Seuls 13 articles (6,9 %) donnaient des renseignements mobilisateurs sur la prévention, le diagnostic, le traitement ou le soutien.

Interprétation : L'information sur le cancer publiée dans les journaux est souvent émaillée d'erreurs et contient peu de renseignements mobilisateurs. Les inexactitudes publiées dans la presse au sujet du cancer sont préoccupantes, car le public se fie aux journaux pour obtenir au moins une partie de ses connaissances en matière de santé.