A B S T R A C T

Mass media can inform health beliefs and shape cancer control behaviours. This study surveyed cancer coverage in 309 issues of Canadian women's magazines for the period 1991-1997. Magazines were selected if 1996 revenue >\$10 million and circulation >500,000; *Canadian Living*, *Chatelaine*, *Flare* and *Homemaker's* met these criteria. The volume of cancer coverage varied significantly by year and by magazine. However, coverage of specific cancers did not reflect their contribution as a cause of cancer death in Canadian women. The percentage of articles on lung cancer was lower and on breast cancer was higher than the percentage of deaths due to these cancers. All magazines had decreased coverage of lung cancer in 1997 compared to 1991. National cancer resource agencies and research initiatives on breast cancer were infrequently mentioned. These results argue for greater partnerships between the media and health educators to enhance balanced dissemination of cancer control information to Canadian women.

A B R É G É

Les médias peuvent influencer ce que l'on sait sur la santé ainsi que les comportements de lutte contre le cancer. Cette étude a examiné la couverture médiatique du cancer dans 309 numéros de magazines féminins canadiens de 1991 à 1997. Les magazines sélectionnés étaient ceux dont les recettes de 1996 étaient supérieures à 10 millions de dollars et le tirage supérieur à 500 000 exemplaires; *Canadian Living*, *Châtelaine*, *Flare* et *Homemaker's* répondaient à ces critères. Il apparaît que la couverture du cancer varie énormément selon l'année et le magazine. Toutefois, la couverture de cancers spécifiques ne correspondait pas à la place qu'ils occupent comme cause de décès par cancer chez les Canadiennes. Ainsi, le pourcentage d'articles sur le cancer du poumon était inférieur et celui sur le cancer du sein supérieur aux pourcentages de décès par ces cancers. Tous les magazines avaient diminué leur couverture du cancer du poumon en 1997 par comparaison à 1991. Les organismes nationaux de ressources contre le cancer et les initiatives de recherche sur le cancer du sein étaient rarement cités. Ces résultats plaident en faveur d'un plus grand partenariat entre les médias et les éducateurs en santé pour accroître la diffusion équilibrée de l'information sur la lutte contre le cancer auprès des Canadiennes.

Cancer Coverage in Mass-circulating Canadian Women's Magazines

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Mass media can shape health beliefs and inform individual decision making. It is particularly effective in promoting knowledge and increasing awareness of health messages.¹ Mass media also has the potential to impact health behaviours from the societal level and from an individual risk perception level.^{2,3} For example, entertainment television coupled with a public service announcement (PSA) significantly increased audience members' knowledge, attitudes, and behavioural intentions related to bone-marrow testing.⁴ An emotional anti-smoking mass media campaign using newspapers and PSAs was associated with positive affective reactions in adolescent boys and contributed to positive behavioural outcomes (decision to remain a non-smoker).⁵

Magazines are an important channel for cancer information dissemination. In the U.S. 1987 NHIS Cancer Control Supplement, magazines were mentioned by 22% of respondents as a useful source of information about disease prevention; in comparison, physicians were mentioned by almost 40% and television by 17% of respondents.⁶ Meischke and Johnson⁷ found that magazines were the second most frequently mentioned source for breast cancer information in a sample of 300 middle-aged U.S. women. Murray and McMillan⁸ reported gender differences in perceived usefulness of sources of cancer information, with women rating family physician, magazines, and leaflets as more

important than did men. These findings suggest that magazines can be an important channel for disseminating cancer information to women.

Although the media's dissemination of cancer information can have implications for health promotion,⁹ the accuracy and completeness of coverage are questionable. In women's magazines, 88% of articles on breast cancer and mammography with traceable scientific citations had inaccuracies including misleading titles, erroneous information, or shift in emphasis.¹⁰ The volume of cancer coverage relative to coverage of other health issues affecting women (e.g., HIV/AIDS) has been limited. For example, the amount of magazine coverage devoted to colon and tobacco-related cancers did not reflect their contributions to cancer mortality in U.S. women.¹¹⁻¹³ Content analysis showed that risks and treatment options were not presented as factual knowledge: certain cancers were trivialized or risk and treatment were framed in religious and fatalistic terms.¹⁴

Although there have been studies about media images of women in Canadian magazines,¹⁵ only limited analysis of cancer coverage in Canadian magazines has been published. Clarke¹⁶ reported that cancer was portrayed as medicalized or as a disease of lifestyle in a sample of magazines that included *Maclean's*. Cancer was a disease associated with hopelessness, with an uncertain cause and outcome¹⁷ and, for breast cancer, as a threat to femininity and sexuality.¹⁸ However, none of these studies quantitatively determined the extent of cancer coverage or had an exclusive sample of Canadian women's popular magazines.

The purpose of this study was to determine the volume of cancer coverage in

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popular magazines which targeted Canadian women over the time frame 1991-1997. In addition, we wanted to determine whether the volume of coverage on breast cancer reflected national policy and research initiatives that occurred over this time frame. In this report we present the percent of coverage of the common cancers in Canadian women and compare this coverage with incidence and mortality statistics for those cancers.

METHODS

Canadian women's magazines with an annual revenue of >\$10 million and circulation of >500,000 for 1996 were identified through the Canadian Magazine Publishers Association.¹⁹ The magazines which met these criteria were *Canadian Living*, *Chatelaine* (English-language), *Flare*, and *Homemaker's*. Although other magazines had a larger readership than some of the four chosen for this study, these were excluded because the target audience was not primarily female (e.g., *Maclean's*, *T.V. Guide*). Magazines which targeted women but which did not have Canadian content (e.g., *Ladies Home Journal*, *Vogue*) were also excluded.

The demographic profiles of the four magazines overlap. *Canadian Living* and *Homemaker's* target women 25-54 years with children under 18, and with > 50% of readers working full or part-time. *Chatelaine* has a somewhat wider distribution in age of readership, attracting women from 25-65+ years, and with about half employed full-time and one third not employed. *Flare* targets younger Canadian women, ages 18-49 years, with > 70% employed. Copies of each issue of *Canadian Living* (88), *Chatelaine* (84), *Flare* (84), and *Homemaker's* (56, 3 missing) for January 1991-December 1997 were manually searched for specific cancer articles and for general health articles mentioning cancer. These years were selected to bracket a major national cancer initiative affecting Canadian women, namely the National Forum on Breast Cancer (November 1993). A total of 309 issues were analyzed.

After several pre-testing iterations, a coding procedure was used to provide infor-

Figure 1. Number of articles on cancer in Canadian women's magazines by year of publication (1991 to 1997). General health articles refer to health articles mentioning cancer; cancer articles refer to articles exclusively on cancer; breast cancer articles refer to articles exclusively on breast cancer.

Figure 2. Number of articles on cancer in Canadian women's magazines by magazine for the time frame of 1991-1997. General health articles refer to health articles mentioning cancer; cancer articles refer to articles exclusively on cancer; breast cancer articles refer to articles exclusively on breast cancer.

TABLE I
Coverage of Seven Cancers in Four Canadian Women's Magazines (1991)

	Canadian Living	Chatelaine	Flare	Homemaker's	Total (%)
Lung Cancer					
# articles discussing lung cancer/ # articles discussing cancer	1/10	2/14	1/5	0/3	4/32 (12.5%)
Mortality 19.3%* incidence 11.1%†					
Breast Cancer					
# articles discussing breast cancer/ # articles discussing cancer	6/10	3/14	2/5	1/3	12/32 (37.5%)
Mortality 19.6% incidence 29.7%					
Colon Cancer					
# articles discussing colon cancer/ # articles discussing cancer	1/10	1/14	0/5	0/3	2/32 (6.3%)
Mortality 11.0% incidence 12.9%					
Ovarian Cancer					
# articles discussing ovarian cancer/ # articles discussing cancer	0/10	0/14	0/5	0/3	0/32 (0%)
Mortality 5.1% incidence 4.0%					
Body of Uterus					
# articles discussing uterine cancer/ # articles discussing cancer	1/10	0/14	0/5	0/3	1/32 (3.1%)
Mortality 2.3% incidence 5.6%					
Cervical Cancer					
# articles discussing cervical cancer/ # articles discussing cancer	0/10	2/14	1/5	0/3	3/32 (9.4%)
Mortality 1.9% incidence 2.8%					
Skin Cancer‡					
# articles discussing skin cancer/ # articles discussing cancer	2/10	2/14	1/5	0/3	5/32 (15.6%)
Mortality 0.9% incidence 2.6%					

* Mortality, 1991, age-standardized, expressed as percentage distribution of cancer deaths in Canadian women. Source: National Cancer Institute of Canada: Canadian Cancer Statistics 1991, Toronto, Ontario, Canada, 1991

† New cases, 1991, age-standardized, expressed as percentage distribution of new cases of cancer in Canadian women. Source: National Cancer Institute of Canada: Canadian Cancer Statistics 1991, Toronto, Ontario, Canada, 1991

‡ Melanoma only

Note: numerators may not total denominators because some cancers are not listed or some articles discuss more than one cancer.

mation about: a) length and format of cancer article, b) type and focus of cancer discussed, and c) number of cancer articles per issue. Mentions of Canadian cancer agencies (Canadian Cancer Society), research agencies or programs (National Cancer Institute, Canadian Breast Cancer Research Initiative) or cancer policy/advocacy initiatives (National Forum on Breast Cancer) were also identified in the coding scheme.

Articles were considered health related if they discussed topics on acute or chronic diseases. Cancer 'specific' articles focused on one cancer only (e.g., breast cancer), on more than one cancer (e.g., cancers of the female reproductive tract), or on no specific cancer (e.g., diet and cancer). Health-related articles in which cancer was mentioned but for which cancer was not the

primary focus were categorized as 'health article mentioning cancer'. Cancer mentions in non-health articles (e.g., recipes and cookbooks) and in letters to editors were not included in the analysis. Frequencies, cross-tabulations, and chi-square analyses were performed using SPSS.²⁰

RESULTS

As shown in Figure 1, there were 415 health-related articles mentioning cancer published in the four magazines over the seven years surveyed, with significant variation by year χ^2 (6, n=415) =28.53, $p<0.001$. Of these 415 articles, 204 articles specifically focused on cancer with a significant variation in distribution by year χ^2 (6, n=204) =17.529, $p<0.001$. There were 90

articles exclusively on breast cancer, with no significant variation in distribution of breast cancer articles by year. Nevertheless, there were more breast cancer articles published in 1997 (n=19) compared with 1991 (n=6).

The volume of coverage of articles focused on cancer varied by magazine χ^2 (3, n=204) =51.333, $p<0.001$, with *Chatelaine* having the greatest coverage (93 articles on cancer) and *Homemaker's* having the fewest number of articles (25 articles on cancer); *Canadian Living* (48 articles) and *Flare* (38 articles) were intermediate in volume of cancer coverage (Figure 2). Not unexpectedly, there was significant variation by magazine in the frequency of breast cancer articles χ^2 (3, n=90) =25.644, $p<0.001$. Again, *Chatelaine* had the greatest number of articles exclusively on breast cancer (n=41) and *Homemaker's* the fewest (n=10).

The coverage of specific cancers did not reflect their contribution as a cause of cancer death in women. Tables I and II show the number of health-related articles discussing specific cancers for 1991 and 1997 (numerator = number of health-related articles discussing specific cancer; denominator = number of health-related articles discussing cancer). The percentage of articles on lung cancer was lower in 1997 than in 1991 for each magazine analyzed despite an increase in the percentage of estimated lung cancer deaths in women. The absolute number of articles discussing lung cancer was virtually unchanged in 1997 relative to 1991. Moreover, one magazine (*Homemaker's*) did not have any articles discussing lung cancer for either 1991 or 1997.

In contrast, the coverage that 'female' cancers received relative to the leading causes of new cases from cancer among Canadian women was also greater than was expected. The percentage of articles mentioning breast cancer was considerably higher than the percentage distribution of actual and estimated new cases for 1991 and 1997, respectively. The reporting of cervical and skin cancers for 1991 and 1997 were also in excess of the percentage of new cases attributed to these cancers. Lung cancer coverage for 1997 did not reflect the proportions of new cases for this

cancer among Canadian women; only 7% of health-related articles discussing cancer included lung cancer.

There were significantly more short < 1 page articles on cancer (n=146) than long articles of ≥ 1 page (n=58) $\chi^2(1, n=204) = 37.961, p < 0.001$. Similarly, there were more short articles exclusively on breast cancer (n=65) than long articles of ≥ 1 page (n=25) in the seven years of magazines surveyed $\chi^2(1, n=90) = 17.778, p < 0.001$.

The four magazines analyzed in this study had limited identification of national cancer agencies and research initiatives. The Canadian Cancer Society was mentioned 18 times in seven years in either cancer-specific articles or in general health articles which included some discussion of cancer. Other cancer agencies and initiatives were also infrequently mentioned in the seven years of magazines surveyed: National Forum on Breast Cancer, 3 times; Canadian Breast Cancer Research Initiative, 6 times; and National Cancer Institute of Canada, 5 times.

DISCUSSION

This study analyzed the volume of cancer coverage in four mass-circulating Canadian women's magazines from the period January 1991 to December 1997. This analysis describes the pattern of cancer coverage in relation to the overall contribution to the actual and estimated new cases and deaths for selected cancer sites in Canadian women. We compared the pattern of cancer coverage in magazines to standard epidemiologic indicators because such indicators 1) provide an objective measure of population cancer burden and 2) are often a basis of national policy formation and allocation of health resources. Nevertheless, the factors leading to editorial decisions about cancer coverage may have little to do with national statistics and more to do with decision makers' first-hand experience with cancer. Hence, the intent of this study was to provide a descriptive starting point for enhancing cancer information dissemination partnerships with the popular media.

We report a relative emphasis on breast cancer and a relative paucity of coverage of

TABLE II
Coverage of Seven Cancers in Four Canadian Women's Magazines (1997)

	Canadian Living	Chatelaine	Flare	Homemaker's	Total (%)
Lung Cancer					
# articles discussing lung cancer/ # articles discussing cancer	1/25	2/27	2/13	0/7	5/72 (7%)
Mortality 22.7%* incidence 13.1%†					
Breast Cancer					
# articles discussing breast cancer/ # articles discussing cancer	12/25	14/27	3/13	3/7	32/72 (44.4%)
Mortality 18.8% incidence 31.6%					
Colon Cancer					
# articles discussing colon cancer/ # articles discussing cancer	4/25	3/27	3/13	1/7	11/72 (15.3%)
Mortality 9.4% incidence 11.4%					
Ovarian Cancer					
# articles discussing ovarian cancer/ # articles discussing cancer	0/25	3/27	2/13	0/7	5/72 (6.9%)
Mortality 5.0% incidence 3.7%					
Body of Uterus					
# articles discussing uterine cancer/ # articles discussing cancer	0/25	1/27	0/13	0/7	1/72 (1.4%)
Mortality 2.0% incidence 5.0%					
Cervical Cancer					
# articles discussing cervical cancer/ # articles discussing cancer	0/25	3/27	1/13	0/7	4/72 (5.5%)
Mortality 1.5% incidence 2.2%					
Skin Cancer‡					
# articles discussing skin cancer/ # articles discussing cancer	0/25	2/27	2/13	0/7	4/72 (5.5%)
Mortality 0.9% incidence 2.6%					

* Mortality, 1997, age-standardized, expressed as percentage distribution of estimated cancer deaths in Canadian women. Source: National Cancer Institute of Canada: Canadian Cancer Statistics 1997, Toronto, Ontario, Canada, 1997

† New cases, 1997, age-standardized, expressed as percentage distribution of estimated new cases of cancer in Canadian women. Source: National Cancer Institute of Canada: Canadian Cancer Statistics 1997, Toronto, Ontario, Canada, 1997

‡ Melanoma only

Note: numerators may not total denominators because some cancers are not listed or some articles discuss more than one cancer.

lung cancer in Canadian women's magazines. Female gynecological cancers (ovarian, uterine, cervical) were also emphasized in Canadian women's magazines in excess to their actual contribution as a cause of cancer deaths (i.e., in 1991 combined coverage was 12.5% of health-related articles discussing cancer).

There are a number of factors that likely contribute to the emphasis on breast cancer in Canadian women's popular magazines. This emphasis may reflect specific editorial mandates to promote certain health or medical issues. For example, "Homemaker's" magazine empowers women with information" and serves as a "tool for change in the community" on such issues as "the war on breast cancer".²¹ Chatelaine routinely includes an annual supplement in October that focuses entirely on breast cancer.

The focus on breast cancer in these magazines may be due to the influence of advocacy groups. Lay advocacy groups have stigmatized the topic of breast cancer and various media events on breast cancer have helped to increase public awareness of and action on this disease. Although the number of articles exclusively on breast cancer increased from 6 articles in 1991 to 19 in 1997, the variation over the seven years was not significant. That breast cancer coverage was relatively flat over the seven years suggests limited penetration of national breast cancer agendas into the public domain as reflected by popular magazines. Indeed, major breast cancer initiatives in Canada – the National Forum on Breast Cancer (NFBC) and the Canadian Breast Cancer Research Initiative (CBCRI) – were not well cited in these magazines.

This finding was surprising given the recommendation of the NFBC to "determine how information on breast cancer risk and prevention can be effectively communicated between ...researchers and the media, and the media and the Canadian public."²²

Although lung cancer accounted for an estimated 22% of cancer deaths²³ among Canadian women in 1997, 3 of the 4 magazines had sparse coverage of this cancer. *Flare* magazine was the noted exception, with 2 of 13 articles in 1997 and 1 of 5 articles in 1991 mentioning lung cancer. All four magazines showed a reduction in the coverage of lung cancer in 1997 compared with 1991. This reduction occurred despite an increase in the proportion of deaths due to lung cancer among Canadian women from 1991 to 1997.

This study does not provide a complete description of all sources of cancer information for Canadian women. Rather, the study dealt with the volume of cancer coverage in women's popular magazines; these magazines provide only one channel for dissemination of cancer information. Cancer information from other media sources, including broadcast (television, film, radio) and print media (newspapers, leaflets), were certainly available to the readership of the four magazines surveyed during the time frame 1991-1997.

There are other potential limitations of this study. Despite the breadth of this survey of cancer coverage in 309 issues of *Canadian Living*, *Chatelaine*, *Flare* and *Homemaker's* magazines, other Canadian women's magazines (e.g., *Elle Quebec*) which were not included may have presented greater information about cancers than these four magazines. Second, this study included only English-language magazines; cancer information presented in French-language women's magazines may not reflect the pattern of cancer coverage reported here. Third, we did not weight cancer articles by length. Because brief arti-

cles (< 1 page) were counted equivalently with longer articles (≥ 1 page), this may have inflated our observation of an increase in cancer coverage.

We did not evaluate the scientific content presented in the articles and, therefore, the accuracy of the risk communication in the 415 articles mentioning cancer cannot be determined. Of salience, however, is the observation that inaccuracies in print media reports on breast cancer occur frequently.¹⁰ Reader misunderstanding of health content disseminated through the popular press has also been demonstrated.²⁴

The findings here argue for greater partnerships between the media and cancer educators to enhance balanced dissemination of cancer information to Canadian women. An overemphasis in the coverage of one cancer (e.g., breast cancer) to the conspicuous lack of coverage in other cancers (e.g., lung cancer) may influence risk perceptions and, indirectly, cancer control behaviours. Greater efforts are needed to ensure that magazine editors and science writers are stakeholders in the dissemination of cancer control information.

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