Brief Report

Characteristics of reporting diabetes mellitus research results in Japanese newspapers

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Summary **This study aims to characterize the coverage of research on diabetes mellitus by Japanese newspapers. Newspaper articles with the key words diabetes mellitus, diabetes disease, or blood sugar in the headline were selected from four major Japanese newspapers for the period 1988-2007 using the ELNET database and coded by two researchers. Of 152 newspaper articles examined, 92 (60.5%) were based on journal articles, and published in English. The remaining 60 (39.5 %) were based on academic meetings, of which 51 (85.0%) were conducted in Japan. Seventy-two articles covered non-human studies (47.4%), but only 26 used a word such as animal, mouse, or cell in the headline to describe the study subjects. Publications in countries where the native language is not English may have language and geographical barriers that affect the reporting of research results.**

Keywords: Health information, mass media, communication, newspapers, Japanese

1. Introduction

With increase of the interest in evidence-based medicine, both health care professionals and journalists who write health-related articles need to have appropriate health literacy (*1*). This is because the mass media are an important source of information for the general public, who may use the results of medical research as evidence to decide their health care practices (*2*). However, most journalists lack training in assessing the validity of evidence bearing on research, and in translating the results for the general public. In addition to lack of training, competition and commercialism, limited newspaper column space, and a shortage of time have been also identified as obstacles by journalists (*3,4*).

Several researchers have studied the reporting of medical research by newspapers. Their main interests are the quality of reporting and the method of selection of research articles. Regarding the former, inaccuracy and misleading statements are important issues (*5-7*). It is true that some newspaper articles accurately convey the results of scientific journal articles. However, journalists generally prefer sensationalism to scientific objectivity in reporting scientific articles (*8-11*).

The other main interest is how journal articles are selected for news coverage. Medical journal press releases may affect the selection process of medical articles (*12-15*). Bartlett *et al*. reported that the selective process introduced by newspaper journalists was stronger than that operating in the issuing of press releases (*13*). Thus, journalists assume important roles in the process of selecting medical articles. In addition to selection bias of scientific articles, it has been pointed out that the mass media fail to capture disparities in health information availability. Minorities and individuals living in rural communities are subject to disadvantages (*16*). The language issue is an especially important cause for disparities in accessibility of health information. As the English language is used in most academic research, English itself might be an obstacle for non-English speaking journalists. However, it is not

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well known how research results are covered in mass media in non-English countries like Japan and other Asian countries.

This study examined how Japanese newspapers in report medical research. Diabetes mellitus is one of the most common diseases in Japan, yet only a handful of peer-reviewed publications have examined the coverage of diabetes by the mass media (*17*).

2. Methods

We searched for newspaper articles using the ELNET database (*http://www.elnet.co.jp/index.html*), which is the largest electronic database of news articles in Japan. We searched the headlines of four national Japanese newspapers (Asahi, Yomiuri, Mainichi, and Nihon Keizai) for the period January 1988-May 2007 using the keywords: diabetes mellitus, diabetes disease, and blood sugar. We selected articles based on publications in scientific journals, and based on scientific meetings, separately.

The following characteristics of the selected articles were coded: *i*) demographics of the newspaper articles (date published, newspaper company, morning or evening paper, page, article length expressed as the numbers of letters and paragraphs, whether the article contained photographs, tables, or figures, and whether the same article was reported in other newspapers); *ii*) characteristics of the research reported (whether the journal paper/meeting was published/held in Japan or another country, and whether the research subjects included Japanese people); and *iii*) basic study facts and newspaper reporting style based on the methods of Woloshin and Schwartz (*18*) (research topic of type 1 or type 2 diabetes; animal, cell, or human study subjects, if human subjects, the study design and study size, if animal or cell subjects, whether the headline included the words 'animal' or 'cell' when the news report was with regard to a non-human study, and whether the limitations of the study were noted).

Coding was performed independently by two researchers. When there were discrepancies, we discussed the issue until a consensus was reached. Article characteristics were analyzed as frequencies, cross-tabulations, and chi-square tables using SPSS version 13 for Windows.

3. Results

3.1. *Demographics of the newspaper articles*

The keyword searches resulted in 1,073 articles. Of these, 152 (14.2%) articles covering scientific works published in professional journals or presented at scientific meetings were selected manually. The number of articles selected from each newspaper was 47 (30.9%) from Asahi, 42 (27.6%) from Yomiuri, 32 (21.1%) from Nihon Keizai, and 31 (20.4%) from Mainichi. The percentage of articles selected out of all available articles published in each newspaper was 24.4% (47/193), 13.2% (42/318), 9.3% (32/344), and 14.2% (31/218), respectively. The number of articles reported in any 1 year was < 10 until 2000 (except in 1992, when 10 articles were reported). The number of articles tended to increase after 2001 (18 articles were reported in 2002). The number of articles that appeared in morning papers and in evening papers was 87 (57.2%) and 65 (42.8%), respectively. The median number of letters and paragraphs in the articles was 487 (25% = 397.3, 75% = 606) and four (25% = 3, 75% = 6), respectively. Photographs, tables, or figures were included in 17 of the 152 (11.2%) articles.

Four articles appeared on the front page, three of which covered research published in journals (*The American Journal of Human Genetics*, *Nature Medicine*, and *Nature*), and one of which covered a scientific meeting (*The Japanese Diabetes Society*). All articles but the one published in *The American Journal of Human Genetics* involved animal studies. The median number of letters and paragraphs for front-page articles was 752 (25% = 507, 75% = 1,141), and 6 (25% = 3.3, 75% = 10.3).

Four of the research studies/meetings were reported by three newspapers simultaneously, and 13 by two newspapers. Only one study was reported by all four newspapers; it was originally published in the journal *Nature Medicine* (2002, Vol. 8, pp. 1288-1295). The study, which was conducted by a Japanese research group, was titled "Adiponectin stimulates glucose utilization and fatty-acid oxidation by activating AMP-activated protein kinase." All newspaper articles regarding this study appeared in morning papers on 31 July 2001.

3.2. *Characteristics of the research reported in the newspaper articles*

Of the 152 articles, 60 (39.5%) cited presentations at academic meetings, whereas 92 (60.5%) cited findings published in scientific journals. No (0.0%) Japanese scientific journals were cited, whereas 51 (85.0%) academic meetings conducted in Japan were cited ($\chi^2(1) = 117.1$, $p < 0.01$). The major meetings covered were *the Japan Diabetic Society* ($n = 10$), *the American Diabetes Association* ($n = 5$), and *the Japan Society for Transplantation* ($n = 4$). The major journals covered were *Nature Medicine* ($n = 18$), *Nature Genetics* ($n = 10$), *Nature* ($n = 9$), and *Science* ($n = 9$). The name of one (1.7%, 1/60) article from a meeting and 16 (17.4%, 16/92) articles from scientific journals were not clearly identified.

Japanese research was covered more frequently than was foreign research (meetings: 54/60, 90.0%; journals: 25/64, 72.8%). Furthermore, the names of

Japanese researchers (107/121, 88.4%) were more often mentioned than those of foreign researchers (11/31, 35.5%; $\chi^2(1) = 39.8$, $p < 0.001$).

3.3. *Basic study facts and newspaper reporting style*

In general, newspapers tended to cover more articles on type 2 diabetes (22.4%, 34/152) than on type 1 diabetes (5.9%, 9/152). However, more than half of the articles (69.7%, 106/152) did not mention the specific type. Three articles mentioned both types.

Nearly half of the articles (46.1%, 70/152) covered studies of humans (non-human: 47.4%, 72/152; not stated: 6.6%, 9/152). Human studies had a variety of study designs such as case studies (20.0%, 14/70), cross-sectional studies (34.3%, 24/70), cohort studies (35.7%, 25/70), and controlled trials (5.7%, 4/70); three designs were undetermined. The median study size was 1,275.5 subjects (25% = 42, 75% = 14,525). Of the 72 newspaper articles that covered studies of non-humans, 36.1% (26/72) used a word such as animal, mouse, or cell to describe the study subjects in the headline.

Important limitations regarding the study design were rarely noted (19.1%, 29/152). Although articles that covered non-human studies tended to report limitations more than those that covered human studies, the difference was not significant (non-human: 22.2%, 16/72; human: 14.3%, 10/70; $\chi^2(4) = 3.7$, *ns*).

4. Discussion

We analyzed how four major Japanese newspapers reported the results of research on diabetes. Many of our results can be linked to the fact that Japan is not an English-speaking country.

Newspaper articles that covered journal publications focused more on research published in Western countries, whereas most articles that covered scientific meetings focused on meetings conducted in Japan. These results clearly show selection bias. Press releases by scientific journals are not popular in Japan because Japanese journalists cannot easily obtain information from Japanese scientific journals. In addition, Japanese journalists might consider international journals superior to Japanese ones.

Whereas all newspaper articles that reported findings published in scientific journals cited international journals, almost all articles that referred to scientific meetings (85.0%) were based on meetings conducted in Japan. This is because Japanese journalists attend these meetings and collect the news themselves (*19*). This may be because of both a language barrier and a geographical barrier in that it may be difficult for Japanese journalists to attend or gather news from scientific meetings conducted abroad. To confirm these speculations, interviews with Japanese journalists are necessary.

We also found that journalists sought newsworthy medical research that they felt would be appealing to readers. They preferred breakthrough stories such as new medical scientific developments, as well as discoveries by domestic researchers (*1,9*). Our results agree with those of previous studies that indicated that research involving Japanese researchers was frequently covered in Japanese newspaper articles and that Japanese researchers' names were mentioned more often than those of foreign researchers. More interestingly, we found that the majority of newspaper articles (and all front page stories) reported on non-human studies. Overall, there were significant gaps between the basic findings and the application of those findings. It is important for the general public to know that there is a tendency for journalists of the mass media to value sensational stories more than information that is practical to human lifestyles. Without such awareness, the general public may be misled about diabetes.

Few articles mentioned the limitations of the studies. Such reporting may give a favorable impression of the findings to the general public, but may also lead to misinterpretations regarding how research results are used in practice. In medical journals, structured abstracts that facilitate the communication of the contents of research articles in a limited number of words are popular, and these often include a statement of the study's limitations (*20*). Previous studies have also emphasized the importance of describing in media reports the limitations of studies (*18*).

Not all news articles that reported on non-human studies made this clear in the headline. Although further studies are needed to confirm how readers interpret the reported research, our results suggest that articles that cover research should be read critically and carefully. In addition, it is necessary to educate journalists on how to cover medical research, because we found 17 articles that did not clearly mention their sources.

Our study has a few limitations. First, we did not know the total number of studies reported or published in scientific meetings and journals between 1988 and 2007. Second, we may have overlooked articles that did not include words such as journal, meeting, or conference. Despite these limitations, our results indicate some important findings about research reporting in newspapers published in a non-English-speaking country. Further studies are necessary to confirm our findings.

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