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Full Length Research Paper

Avian influenza news from China and Hong Kong

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We compared avian influenza coverage in two English-language newspapers from China and Hong Kong, and a third from the United States as a control. We collected bird flu stories for one year between July 1, 2006 and June 30, 2007 from China's government-sanctioned *China Daily* (*CD*) and Hong Kong's *South China Morning Post* (*SCMP*). *The New York Times* (*NYT*) was the control. We quantified five media characteristics: (1) Number of stories; (2) Use of full articles or briefs; (3) News sources; (4) Story outlook, and (5) geographic focus. Of 236 bird flu stories, 79 were from CD, 111 from SCMP and 46 from NYT. Compared with SCMP, CD produced significantly more briefs, non-local reports and government sources (Pearson's Chi-square test, P=0.01, P<0.001 and P=0.01, respectively). Compared with the NYT, CD produced significantly more reports from government sources (P=0.001), and SCMP produced significantly more local reports (P=0.006). Avian influenza coverage is significantly different between newspapers from China and Hong Kong. This has implications to the international community when considering public health news reports of emerging disease outbreaks from this region.

Key words: Avian influenza, bird flu, H5N1, infectious diseases, media, news coverage, news stories.

INTRODUCTION

Bird flu or H5N1 avian influenza, has become a hot topic. A preliminary search for "bird flu" using Google News Archives revealed a total of 163,885 article hits, with 2,355 (1%) articles from the 1990 to 1999 timeline and 161,530 (99%) articles from 2000 to May 2009. The highest number of articles occurred between January 2005 and December 2007 with 119,000 (73%) hits. Hence, in recent years, the media have increasingly reported and repeatedly reinforced the message of bird flu being the next big emerging public health risk. This message is generally accepted by public health specialists and medical organizations (such as the World Health Organisation), with the international consensus being the world is "due another flu pandemic" and "the occurrence of the next pandemic is just a matter of time" (WHO, 2005).

The media play a critical role in communicating public health issues to the community, and thus influence the perception of risk and alertness.It is accepted that the mass media such as newspapers are commonly the initial outlet of medical knowledge and public health developments for many medical professionals and the community at large (Nelkin, 1995).Even more relevant is the increasing online presence of newspapers, which facilitates accessto local news by international audiences. In the context of public health and disease outbreaks, governments are relied upon to provide information freely, transparently and promptly to the media, as well as to the World Health Organisation (WHO) and other international health agencies. And the media are expected to report freely and to use a variety of sources of medical and scientific news (Wilkie, 1996).In 2006, there were concerns that China's government ministries may not have been as willing to provide up-to-date information on bird flu cases (Normile, 2006) compared with Hong Kong's government departments that had a track record of good cooperation with the media, WHO and other health agencies during times of disease outbreaks, mostly notably during the 1997 H5N1 and 2003 severe acute respiratory syndrome (SARS) outbreaks (Normile, 2003; Saw et al., 1997). Note, since 1997, Hong Kong is

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officially a part of China and is formally known as the Hong Kong Special Administrative Region; although in reality, Hong Kong is still relatively autonomous due to it having its own government and administration. To acknowledge this special geo-political situation between China and Hong Kong, the two main English-language newspapers from China and Hong Kong were used in this study.

In light of the different approaches to pandemic influenza preparedness between the health authorities in China and in Hong Kong (Mounier-Jack and Coker, 2006; Sellwood et al., 2007), this study compared media coverage of bird flu in two major English-language newspapers from China and Hong Kong: The *China Daily* and the *South China Morning Post (SCMP*). Specifically, in November 2006, a news report published in Science asked: "Is China coming clean on bird flu?" (Normile, 2006). As media researchers, we regard this as a legitimate research question to consider by investigating how two main English-language newspapers from China frame the issue of bird flu. A third newspaper, The New York Times, was used as a control.

To help address this question, we quantified five media characteristics which, based on framing analysis, were the: (1) Total number of stories; (2) Use of full articles or briefs; (3) Use of news sources; (4) Story outlook, and (5) Use of geographic focus.

This content analysis study is based on the assumption that the two selected regions of China (i.e. southern China defined by the neighbouring provinces immediately north of Hong Kong, and Hong Kong) will have similar rates of bird flu outbreaks. This is supported by the regions' similarities in: (a) Geographic origin and endemic nature of bird flu; (b) Climate and environments, given the geographic proximity; (c) Populations and population densities, and (d) Social, cultural and ethical conditions.

MATERIALS AND METHODS

Newspaper selection

The newspapers selected were the 'China Daily' for mainland China, and 'South China Morning Post' (SCMP) for Hong Kong (which is officially a Special Administrative Region that is part of China), which are both English-language daily papers whose target audiences are expatriate communities, local leaders and decision-makers, and international news watchers. They were selected because they are representative of how local and national issues are publicised and presented to international communities. Also, these newspapers are "windows" into their respective political systems and hence demonstrate access to available information and levels of transparency in the reporting of bird flu stories, with implication on other topical issues. A third newspaper, the New York Times (NYT) was used as a control.

The China Daily is mainland China's only national English-language newspaper. According to its website (http://www.chinadaily.com.cn), its average daily circulation is about 200,000, one-third of which is abroad in more than 150 countries and regions. It is a government-sanctioned publication, and the Hong Kong edition has its origins with the New China News Agency (Xinhua News), the official press agency of the government of the People's Republic of China.

The SCMP is Hong Kong's leading English-language newspaper (http://www.scmp.com). According to the Hong Kong Audit Bureau of Circulations, its average weekday daily circulation is 106,054 and its average Sunday circulation is 80,865 in 2007, about 7% of which is paid circulation overseas.

The New York Times is a leading national newspaper in the US (http://www.nytimes.com). According to the Audit Bureau of Circulations, its largest reported daily circulation was 1,627,062 in 2007.

According to Reporters Without Borders, the media in Hong Kong is generally considered to be relatively free. For instance, in the 2006 'Reporters Without Borders' worldwide press freedom ranking list (http://en.rsf.org/spip.php?page=classement&id_rubrique=35), Hong Kong is ranked 58 and China is 163 out of 168 countries. The United States is ranked 53.

Content analysis

Using the '*LexisNexis*' newspaper database, the search criteria were "bird flu", or "H5N1", or "avian flu" in the full text of the articles, for the period between July 1, 2006 and June 30, 2007. Although this one-year period was not a heightened time of outbreaks, such as in 1997 (when avian influenza H5N1 first emerged) and 2005, it suitably reflects the amount of stable reporting done when the issue of bird flu is not at the forefront of the public eye and thus carries an inherently limited sensationalized appeal.

Our inclusion criteria for bird flu stories pertained to three major categories: Stories relating to outbreak of bird flu in birds and humans; stories dealing with economic, political and social consequences of an outbreak or the potential thereof; and stories mentioning the actions, or lack thereof, taken by governments and organizations to prepare for and prevent outbreaks. We excluded editorials, commentary pieces, surveys or opinion polls, interviews and letters in the SCMP and NYT for reasons of compatibility because China Daily does not typically run such sections or articles. Once selected, the stories' date, word length, article type, news source, outlook, and geographic or country focus were coded using a standardized coding sheet.

Article type was coded as either "full" or "brief" articles. A story was considered a brief when it was below 100 words in length.

The news source of the stories was coded as either "government" or "non-government" sources. Non-government sources were defined as non-governmental organizations (NGOs), news organizations, international agencies, universities, hospitals, companies, and individuals not representing any government departments.

The outlook of stories was coded as depending on whether the main source (or angle) of the story was positive or negative. For example, if a story was reporting the closure of a bird market due to an outbreak, and the main source was the stall owners, this was viewed as a negative story as the "angle" for the story was the loss of revenue. Conversely, if the same story focused on the government's perspective, this was viewed as a positive as it focused on the government's preventative action to avoid further outbreaks. In more general terms, positives consisted of drops in outbreaks, recovery from outbreaks, positive steps taken by the government to prevent bird flu, increased cooperation between government branches or at an international level and positive scientific breakthroughs in the fight against bird flu. Negative stories consisted of increases in outbreaks, warning of possible increases in outbreaks, deaths due to avian flu, foot dragging by governments to take identified preventative measures, perceived lack of cooperation at local, national or international levels, criticisms of methods employed, and adverse economic consequences of an

outbreak such as inflation or job loss.

The geographic or country focus was coded as "local" or "non-local" with respect to the geographic origin of the newspaper. Stories based in Hong Kong and reported in the *SCMP* would be coded as "local", as would stories based in China and reported in the China Daily. Conversely, stories based outside of Hong Kong and reported in SCMP would be coded as "non-local", as would stories based outside of China and reported in the China Daily. Also, stories reported in NYT would be coded as "local" if the origin of the outbreak was domestic (that is, inside the US), and "non-local" when outside the US.

Coding and statistical analysis

Interrater reliability (kappa) was performed using SPSS version 15.0 (SPSS Inc, Chicago, Illinois), and Pearson's Chi-square tests were calculated on categorical data using JMP version 5.1 (SAS Institute, Cary, North Carolina). A kappa score of >0.7 indicated an acceptable degree of interrater reliability. A P value of <0.05 was considered statistically significant.

Two trained coders each reviewed all stories. Coding involved reviewing news stories with a coding form that limited subjective judgments: The key coding items being whether the news source was government or non-government; and whether the outlook was positive or negative, and whether the geographic focus was local or non-local with respect to the newspaper's origin. The rates of agreement between coders were high: Was the news source government or non-government (kappa=0.906); was the outlook positive or negative (kappa=0.940); and was the geographic focus local or non-local with respect to the newspaper's origin (kappa=0.981).

RESULTS

In total, 236 news stories about bird flu from three English-language newspapers were coded. Our study revealed that between July 1, 2006 and June 30, 2007, the China Daily had 79 stories on bird flu, the South China Morning Post (SCMP) had 111, and The New York Times had 46 (Table 1). The results, using the New York Times (NYT) as the control, show China Daily produced relatively fewer media reports about bird flu than SCMP.

For article type, China Daily produced 50 news articles and 29 briefs that were less than 100 words in length; whereas SCMP had 89 news articles and 22 briefs. Therefore, China Daily is more likely to run a brief and less likely to have full news coverage on bird flu, whereas SCMP is more likely to run a full news story and less so to run a news brief (Pearson's Chi-square test, P=0.01). Furthermore, the average word length of an article about bird flu in China Daily was 265 words while in SCMP it was 309. Hence, China Daily had relatively shorter stories, perhaps implying less thorough reporting of bird flu than SCMP. The control newspaper NYT had 35 news articles and 11 briefs, with an average word length of 511 (NYT is known for its comprehensive articles).

In terms of news source, the relationship between government and non-government is also significantly different (Pearson's Chi-square test, P=0.0001).This highlights the fact that China Daily is considerably more likely to use the government as its main source of provenance and less likely to use non-government sources, whereas SCMP is relatively more likely to use non-government as its main source of provenance and less likely to use government sources.

Similarly, there is a significant difference regarding geographic focus (Pearson's Chi-square test, P=0.0103). China Daily is less likely to cover local bird flu events and more likely to provide non-local coverage, whereas SCMP is more likely to have local coverage of bird flu events and less likely to cover non-local bird flu events. Of additional interest, SCMP's 41 non-local stories (that is, non-Hong Kong stories) included 25 (61.0%) that reported on China; whereas China Daily's 44 non-local stories (that is, non-China stories) included 2 (4.5%) from Hong Kong.

In fact, CD and NYT performed similarly (that is, both newspapers produced more reports of bird flu outbreaks from regions other than their own; Pearson's Chi-square test, P=0.57), which is significantly different when compared to SCMP (Pearson's Chi-square test, P=0.01 and P=0.006, respectively); the critical difference being that bird flu outbreaks in China and Hong Kong were more frequent than in the US during the period under analysis.

The only analysis that did not yield a significant difference between the two newspapers was that of story outlook (Pearson's Chi-square test, P=0.56). This shows that the two newspapers and the control were not significantly different in their coverage in terms of news outlook or sentiment.

DISCUSSION

This study presents data showing clear differences in how two English-language newspapers from China(China Daily and South China Morning Post)report news about bird flu, specifically in terms of the total number of stories, use of full articles, news sources, and local geographic focus. These differences have important implications to the international community for future public health reporting of disease outbreaks from this region.

How these newspapers give report on bird flu is important. Firstly, because public health experts acknowledge the South China region as a natural reservoir of emerging influenza viruses that can potentially lead to a pandemic, government departments and health authorities should be transparent, and seen to be trans-parent, when communicating public health information to the media (Lowrey et al., 2007).Secondly, because international media organizations often take their cues from the local media or foreign correspondents stationed in the region, steps should be taken to recognize variations among different local media outlets to help minimize biases. The emergence of SARS at the end of 2002 from South China is generally taken as a warning of the region's role in harbouring new emerging health risks, and even then the China government's failure to report the initial SARS outbreak in November 2002 was a concern

Table 1. Characteristics of bird flu (H5N1) news from Three English-language Newspapers between July 1, 2006 and June 30 2007.

	South China Morning Post (SCMP) No. (%) [n=111]	China Daily (CD) No. (%) (n=79)	New York Times (NYT) No. (%) [n=46]	*P (SCMP v CD)	*P (NYT v SCMP)	*P (NYT v CD)	**P
Article type							
Full article	89 (80.2)	50 (63.3)	35 (76.1)	0.01	0.57	0.14	<0.001
Brief (<100 words)	22 (19.8)	29 (36.7)	11 (23.9)				
News source							
Government	70 (63.1)	69 (87.3)	29 (63.0	<0.001)	0.99	0.001	<0.001
Non-government	41 (36.9)	10 (12.7)	17 (37.0)				
Outlook							
Positive	39 (35.1)	31 (39.2)	14 (30.0)	0.56	0.57	0.32	0.61
Negative	72 (64.9)	48 (60.8)	32 (70.0)				
Geographic focus							
Local	70 (63.1)	35 (44.3)	18 (39.1	0.01)	0.006	0.57	<0.001
Non-local	41 (36.9)	44 (55.7)	28 (60.9)				

* P-value for Pearson's Chi-square test. **P-value for Cochran-Mantel-Haenszel.

(Ashraf, 2003). Instead, news of SARS was first reported in Hong Kong even though this emerging infectious disease originated from China. Therefore the implications of the China government's willingness, or lack thereof, to provide up-to-date and transparent information, as well as sharing of biological samples on bird flu cases and of other disease events to the WHO should not be ignored.

The only media characteristic that was not significantly different between the two newspapers was story outlook. We speculate this is related to the inherent nature of bird flu stories that make it difficult for organizations (media, government or otherwise) to put either a contrary positive or negative spin on a news story. Therefore, instead of trying to affect or change the outlook of a bird flu story, the China Daily and/or the government may have merely made a conscious effort to limit the number of local news stories and increase the number of non-local stories they presented (as our data on news source and geographic focus show). Hence on the whole, China Daily compared with SCMP reported a similar number of negative and positive stories, even though the geographic focus is significantly different. Additional research into this media practice or strategy can provide confirmation and further insight.

Conclusions

These significant differences in media characteristics indicate that the China Daily is relatively less independent and forthcoming than the SCMP in terms of bird flu coverage, and may also reflect how the two newspapers generally cover other topical issues in their respective regions. Thus, the question: "Is China coming clean on bird flu?" may be answered with: "It depends on which media outlet is used to reflect reports and information released by the region's health authorities and various experts".

Public health information reported by the media can only be as reliable, prompt and transparent as its source. In times of public health crises, accessibility of up-to-date, transparent public health information is crucial to help prevent or minimize public uncertainty and anxiety (Lowrey et al., 2007).

What this study reveals is that of the two English-language newspapers from China that reach an international audience, China's government-sanctioned China Daily is relatively less forthcoming than Hong Kong's South China Morning Post when reporting about bird flu outbreaks from their respective regions. Thus, this has implications to the international community when considering public health news reports of significant disease outbreaks from this region. This study provides empirical evidence detailing how different newspapers can frame news about bird flu, depending on how they wish to mediate their public health messages with political or government agendas in mind.

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