

Media Coverage of a Global Pandemic in Japan: Content Analysis of A/H1N1 Influenza Newspaper Articles

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Abstract

A/H1N1 emerged in Mexico in the spring of 2009, rapidly and globally spread, and was classed as a pandemic on June 11, 2009. In Japan, national newspapers are trusted by the public and have large subscription rates and play a major role in crisis communication. During crisis, it is for readers to receive information on not only factual data like prevalence or death but also the preventive measures which each individual can take. This research aims to explore what topics and how much the Japanese national newspapers covered the global pandemic and whether they provided the preventive measures for individuals. We analyzed Japanese newspaper coverage of the A/H1N1 pandemic using content analysis of 2,237 articles published in three national newspapers between March 2009 and May 2010. The articles peaked in May 2009 when the first possible case was found in Japan. In this period, most articles cited health authorities as the information source. The number of articles did not correspond to prevalence or number of deaths. Content analysis found that the national newspapers reported more factual information, while information about preventive measures was less frequently reported despite its importance for the public.

Keywords: Content analysis; Influenza; News coverage; Japanese national newspapers; Risk communication

Introduction

Mass media are crucial players in the construction of and communication about risk [1-3]. Media coverage is a powerful factor in determining reaction to a perceived health crisis [4]. Much of the information many people access about health crises comes from mass media [5,6]. One of the goals of crisis communication is to lessen potential damage by having the target groups of both high-risk and general take appropriate actions. The risk managing authority directly and indirectly, via mass media, communicates with those groups. The content of information by mass media during risk communication varies from damage report from particular risks to preventive or counter-measures against the risks. News coverage is likely to influence public perception and understanding of public health risks as the mass media are a key source for health-related information. Often the media is accused of exaggerating risks and contributing to public worry, misunderstanding health research evidence, which can lead to a decrease in the public trust in scientific evidence. Cultivation theory, one of the theories in effect research of mass communication, explains the more people are exposed to the media content, the more they are influenced by the media content. Thus, it is important to assess what and how much the contents of health risk are covered by the mass media. We examined what contents of health risk have been reported by the Japanese nation-wide newspapers during the H1N1 pandemic in 2009 as a global (global and local) case.

H1N1 pandemic in 2009

A case with influenza A/H1N1 in Veracruz, Mexico was first reported to the World Health Organization (WHO) on April 12, 2009. The disease quickly spread across the world through international transportation, infecting people in more than 213 countries and territories and causing at least 18,449 deaths [7]. In the last week of April, 2009, the WHO declared Pandemic Phases 4 and 5 across 2 days. On June 11, the WHO finally declared Pandemic Phase 6. The Japanese government first implemented quarantine measures in all international ports. In Japan, three high school students who returned from Canada were confirmed as being infected with influenza A/H1N1

at Narita Airport on May 9, 2009. On May 16, 2009, the first domestic case involving a person who had never been abroad was confirmed. Following this, the infection rapidly spread, including to high school students in Hyogo and Osaka, on the west side of Japan. By August 15, 2009, there were 9,776 cases in Japan [8]. The first death was found on August 15, 2009, and 201 deaths had been confirmed by March 30, 2010.

Literature Review

News media reporting on the 2009 H1N1 pandemic in the world

Hilton and Hunt conducted content analysis of news articles in serious and tabloid newspapers in the UK and found that the news articles were based on the facts at the time and were not scientifically incorrect [9]. The number of news articles in the early pandemic outbreak stage was high and skewed. Goodall, Sabo, Cline and Egbert conducted content analysis of six national and online papers during the first 5 months of the pandemic outbreak in the US, and proposed a process of threat appraisal message-forming [10]. In Australia, Forgy et al. conducted content analysis of the Australian television news and found that about 63% of news concerned the seriousness of the pandemic, about 13% was advice for viewers, and about 24% was assurances by the government [11]. Internationally, the volume of news coverage was consistently high during the pandemic, especially in the spring and summer of 2009. In Europe, proactive engagement with mass media by both international and local public health authorities resulted in factual, non-alarming reporting during the early stages of

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the pandemic [12]. In the UK, the news coverage reflected genuine scientific uncertainties about the future course of the pandemic; there was little evidence of the newspapers and magazines distorting the risks of A/H1N1 [9]. In the US, a content analysis of print and electronic news during the first 5 months of the pandemic suggested that most stories referred to the threat of the A/H1N1 virus; sometimes over emphasizing and sensationalizing virus-related death. Approximately half of the news items mentioned actions that individuals or organizations/communities could take to protect themselves from the virus, but almost none provided evidence that such methods were effective, with some explicitly questioning their effectiveness [10].

News media reporting on the 2009 H1N1 pandemic in Japan

As today, the literature review found no paper on the Japanese newspapers reporting on 2009 H1N1 outbreak in scientific journals in English.

Purpose

The aim of this research is to examine what health risk topics were reported when the H1N1 pandemic started overseas and the trend of each topic until the closure of pandemic in Japan.

Methods

Newspaper article selection

We selected the three national newspapers in Japan that had the highest circulation figures and a range of readership profiles [13]. Our research period was March 1, 2009 to May 30, 2010. This time frame started just before the initial emergence of the new type of influenza (A/H1N1) in Mexico and the pandemic ending in Japan. The databases used to select the relevant articles were Asahi Shimbun Digital News Archives KIKUZOU II Visual (Asahi Shimbun), Mainichi News Pack (Mainichi Shimbun) and YOMIDAS REKISHIKAN (Yomiuri Shimbun). The search criteria were as follows. The search keywords were 'new influenza' and 'swine flu' in Japanese. We included swine flu, as that terminology was initially used in newspaper articles. The articles were in the nationwide morning editions, published in Tokyo and distributed throughout Japan. Our search identified a total of 3,344 articles (Asahi 1,123, Mainichi 1,091, Yomiuri 1,130). All articles were exported into Microsoft Word files. Each article was scrutinized by MK to establish whether it met two inclusion criteria. The first inclusion criterion was that new type influenza was the primary focus of articles, defined as more than 50% of an article being about the new type influenza. The second criterion was that the articles were written by newspaper journalists. Therefore, letters from readers, contributed articles, poetry, and company advertisements and announcements were excluded. Using these criteria, 2,237 articles were classed as eligible for further detailed coding and analysis.

Coding

We adopted the coding frame developed by Hilton and Hunt [9] and used this to compare the difference in news topics between UK and Japanese nationwide newspapers. Additional topics were added to adjust for the news articles by the Japanese national newspapers. The coding manual was translated into Japanese by the author, MK, and validated by HI. Articles were coded by three coders. MK checked and validated each coder's work. The coding framework recorded the name of the newspaper, publication date, section, word count, and whether there was a table, graph, or photo. The tones of the headline and text were categorized into 'alarmist', 'reassuring' or 'neither'. To test the inter-coder reliability, 247 of 2237 articles (11%) were independently

double coded by MK. Using Cohen's kappa coefficient we found an inter-rater agreement of $k = 0.685$. This corresponds to a substantial level of agreement as found in the previous study ($k = 0.62$) [9].

Analysis

Newspaper articles were analyzed for manifest content. Manifest content refers to what was explicitly stated and draws on the objective and replicable qualities of quantitative methods. A coder read each article line by line and indicated whether or not each of the 54 thematic categories in the coding frame was mentioned. These data were analyzed with SPSS software (IBM SPSS Statistics for Windows, Version 20.0 Armonk, NY: IBM Corp). Chi-square tests were used to determine whether any particular topics were emphasized or less represented.

Results

During the period from March 2009 to May 2010, 2,237 news articles referred to the influenza A/H1N1 outbreak and its related events. The peak was May 2009 with 705 articles (31.5%). The number of articles decreased over time with the lower point ($n = 92$, 4.1%) in July 2009. The articles increased again in August ($n = 243$, 10.9%) and September 2009 ($n = 238$, 10.6%), and gradually decreased to the lowest point of 10 articles in May 2010 (0.4%) (Figure 1). Reported case numbers at point were also plotted. Reported case numbers at point represent the average reported case numbers per medical institution. Overall, the topics covered more often were 'the Japanese national and local government actions' ($n = 992$, 44.3%), followed by 'transmission of H1N1 flu' ($n = 366$, 16.4%), 'WHO or CDC actions' ($n = 339$, 15.2%), 'symptoms (coughing, fever)' ($n = 285$, 12.7%), 'number of cases in Japan' ($n = 240$, 10.7%), 'H1N1 can cause death' ($n = 234$, 10.5%), and 'people with health problems are at higher risk' ($n = 216$, 9.7%) (Table 1). However, the well-covered topics changed over time during the months studied. In April 2009 when the WHO officially reported the emerging flu in Mexico, the most covered topics were 'Japanese national and local government actions', 'WHO or CDC actions', 'transmission of H1N1 flu', 'H1N1 flu can cause death,' and 'the deaths worldwide'. In May 2009, the topics 'Japanese national and local government actions', and 'WHO or CDC actions' were more dominant along with 'transmission of H1N1 flu'. At the same time, messages about symptoms (coughing, fever) and facial masks were also disseminated. In addition to Japanese and local government actions, the number of cases in Japan received more coverage in June 2009. At this time, H1N1 was labeled as a pandemic. In August, September, and October

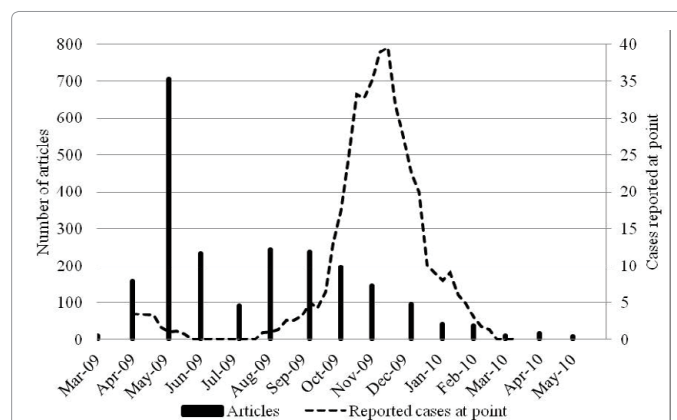


Figure 1: Japanese newspaper coverage and A/H1N1 flu cases from March 2009 to May 2010.

	2009/3-5		2009/6-8		2009/9-11		2009/12-2010/2		2010/3-5		total	χ ²	p*
	N%	N%	N%	N%	N	%N	%N	%N					
Total number of articles	875	39.1	567	25.3	581	26	174	7.8	40	1.8	2237		
EPIDEMIOLOGY													
No. JP deaths	1	0.1	27	4.8	66	11.4	12	6.9	3	7.5	109	131.32	<0.01
No. JP cases	76	8.7	104	18.3	37	6.4	20	11.5	3	7.5	240	142.71	<0.01
No. deaths worldwide	92	10.5	44	7.8	22	3.8	11	6.3	3	7.5	172	148.17	<0.01
No. cases worldwide	118	13.5	50	8.8	5	0.9	4	2.3	0	0	177	288.11	<0.01
Predicted epidemic in JP	28	3.2	43	7.6	23	4	2	1.1	0	0	96	68.9	<0.01
Predicted epidemic worldwide	30	3.4	8	1.4	0	0	0	0	0	0	38	88.84	<0.01
Symptoms are usually mild	54	6.2	22	3.9	16	2.8	0	0	1	2.5	93	103.61	<0.01
H1N1 not as bad as predicted	29	3.3	21	3.7	1	0.2	1	0.6	3	7.5	55	71.46	<0.01
NATURE OF DISEASE													
H1N1 can cause death	85	9.7	56	9.9	81	13.9	10	5.7	2	5	234	129.8	<0.01
H1N1 as pandemic	53	6.1	37	6.5	5	0.9	11	6.3	5	12.5	111	84.9	<0.01
Modes of transmission	158	18.1	120	21.2	66	11.4	19	10.9	3	7.5	366	236.32	<0.01
Symptoms(fever, cough)	134	15.3	69	12.2	69	11.9	8	4.6	5	12.5	285	198.63	<0.01
GROUPS AT HIGHER RISK													
Pregnant women	23	2.6	55	9.7	77	13.3	5	2.9	0	0	160	137.13	<0.01
People with health problems	38	4.3	68	12	97	16.7	11	6.3	2	5	216	145.16	<0.01
Children	6	0.7	34	6	97	16.7	18	10.3	6	15	161	179.4	<0.01
VACCINES&VACCINATION													
New vaccine is being developed	28	3.2	18	3.2	11	1.9	5	2.9	3	7.5	65	32.15	<0.01
Importance of vaccination	3	0.3	9	1.6	18	3.1	5	2.9	0	0	35	27.71	<0.01
vaccine volume for JP people	3	0.3	12	2.1	16	2.8	14	8	5	12.5	50	13	<.05
H1N1 vaccine import	2	0.2	15	2.6	54	9.3	27	15.5	8	20	106	79.76	<0.01
Relief System for Injury to Health with Vaccination	0	0	3	0.5	20	3.4	7	4	1	2.5	31	43.03	
Adverse events	5	0.6	8	1.4	47	8.1	14	8	2	5	76	88.34	<0.01
H1N1 vaccine is safe	2	0.2	0	0	1	0.2	1	0.6	1	2.5	5	2	0.74
ANTIVIRALS in H1N1 flu treatment													
Helpful	77	8.8	44	7.8	42	7.2	11	6.3	0	0	174	106.17	<0.01
Effective	34	3.9	10	1.8	18	3.1	7	4	0	0	69	49.04	<0.01
Side effects	6	0.7	4	0.7	3	0.5	3	1.7	0	0	16	5.88	0.21
Resistance	9	1	16	2.8	11	1.9	5	2.9	2	5	43	13.63	<0.01
AUTHORITIES													
JP national and local governments actions	419	47.9	179	31.6	279	48	92	52.9	23	57.5	992	492.05	
WHO or CDC actions	209	23.9	70	12.3	31	5.3	21	12.1	8	20	339	399.16	<0.01
INFECTION CONTROL													
School closure	60	6.9	41	7.2	55	9.5	12	6.9	3	7.5	171	76.34	<0.01
Workplace actions	92	10.5	64	11.3	33	5.7	4	2.3	5	12.5	198	147.71	<0.01
Event or sport games restriction	61	7	12	2.1	16	2.8	6	3.4	0	0	95	123.79	<0.01
Travel restriction	45	5.1	10	1.8	1	0.2	2	1.1	0	0	58	125.62	<0.01
Facial masks	130	14.9	36	6.3	19	3.3	3	1.7	1	2.5	189	302.19	<0.01
Personal prevention behaviors (e.g. cover mouth sneezing, wash hands)	78	8.9	31	5.5	30	5.2	4	2.3	0	0	143	135.36	<0.01
PERSONAL STORIES & CELEBRITIES													
Alarming personal stories	20	2.3	17	3	23	4	3	1.7	1	2.5	64	31.94	<0.01
Reassuring personal stories	4	0.5	2	0.4	1	0.2	0	0	0	0	7	8	0.09
Celebrities contracting H1N1	0	0	36	6.3	15	2.6	2	1.1	0	0	53	62.09	<0.01

*χ²-test to show the difference in the number of news articles among the quarters.

Table 1: Key aspects of Japanese newspaper covering H1N1 flu by quarter of publication.

2009, news coverage directed attention to higher risk people (those with health problems, pregnant women, and children). In November 2009, the alarming message ‘H1N1 can cause death’ appeared more in daily news coverage. In December 2009, the news coverage focused on importation of H1N1 flu vaccine and related events. In January, February, March, and April 2010, more news articles were on the H1N1 vaccine and vaccination. In May 2010, the news articles tended to summarize the 2009 outbreak.

Topics

(1) **Japanese national and local government actions:** The reporting trend was similar to that of total news articles. Articles focused on covering WHO or CDC actions during the 2 months after the first case was found in Mexico. Alarming phases of counter measures against influenza were also covered more often. However, Japanese national government actions, including the quarantine at international airports,

were covered more frequently in April and May 2009, especially in the Golden Week (the long holiday season in Japan). Those articles usually started ‘The Ministry of Health, Labor and Welfare said,’ or ‘According to the Ministry’. These phrases show that the news sources for the newspaper journalists were MHLW.

(2) **H1N1 flu cases and deaths in Japan and internationally:** The number of cases throughout the world as well as in Japan was covered in May 2009. After this, coverage decreased gradually over time with the lowest point in July 2009. In August 2009, the number of deaths in Japan was covered for the first time while international deaths received the most attention in May 2009.

(3) **People at higher risk:** News articles giving cautions or stating H1N1 flu risk factors were more frequent in August, September, and October 2009 (about 20%). This corresponded to the fact that the number of cases actually increased in August. During the outbreak in May 2009, the news coverage focused on people with health problems and pregnant women being at higher risk, although the proportion to the total articles of May 2009 was much smaller (4.7% and 3.3%, respectively).

(4) **Vaccine- or vaccination-related topics:** In total, 337 articles mentioned vaccine or vaccination. The peak was in October 2009 (n = 75) followed by September 2009 (n = 70). In this category, importation of vaccines (n = 106, 4.7%) and adverse vaccination events (n = 76, 3.4%) were more often covered. This trend was also observed in October 2009 when the Japanese government contracted with overseas companies for vaccine importation and vaccination started for the priority groups including people at higher risk. News articles about vaccination being safe (n = 5, 0.2%) and the importance of vaccination in the H1N1 flu pandemic (n = 35, 1.6%) were less reported. Overall, the risk of vaccination received more coverage than its benefit.

(5) **Antiviral drugs:** In contrast to vaccines and vaccination, there were more news articles on treatment with antiviral drugs. There were more news articles on ‘antiviral drugs help in the treatment of H1N1 flu’ (n = 174, 7.8%) and ‘antiviral drugs are effective’ (n = 69, 3.1%) than ‘side effects’ (n = 16, 0.7%) and ‘resistance to antiviral drugs’ (n = 43, 1.9%). Product names such as Tamiflu® and Relenza® were mentioned in the news articles. Overall, the benefit of antiviral drugs received more coverage than their risks.

(6) **Personal stories to alarm or reassure:** Newspapers sometimes stated their opinions in stories concerning a personal situation. In total, alarming stories (n = 64, 2.9%) received more coverage than reassuring stories (n = 7, 0.3%). The journalists should have interviewed with the patients themselves or should have contacted with the celebs’ managing companies.

Discussion and Limitation

This is the first in-depth examination of the content of Japanese major nationwide newspaper articles concerning the 2009 A/H1N1 influenza pandemic. In Japan, nationwide newspapers are highly trusted and have large subscription rates. Their combined circulation is approximately 50,437,000, and there are around 459.1 newspapers per 1,000 adults (Japan Newspaper Publishers and Editors Association, 2010). Newspapers are the most representative and trusted form of mass media in Japan, although public health crises are reported by television, radio, magazines, and internet news as well as by newspapers. There are also sports newspapers (tabloids) which are quoted and explained on televised news programs on a daily basis. Those newspapers usually cover the top stories of the day as well as

sports and entertainment. Our study did not include those newspapers because they are usually sensational and their target readers are limited. The 2009 A/H1N1 influenza was an infectious disease with a global influence that had not previously been seen. The development of an international transport system moving people and goods placed every country in a similar situation, where a new influenza with unknown severity and contagiousness might spread from one country to another. A unique feature of mass media is their influence on how an event is reported in each country. The number of articles per daily paper, the word count per article, the inclusion of photos, illustrations, figures, and tables, and the newspaper format all shaped the image of A/H1N1 influenza and its status as a pandemic in readers’ minds. Our study aimed to explore how the Japanese representative newspapers presented the A/H1N1 influenza pandemic to their readers. There were four main findings. First, information transmission was the main role of the newspapers in the early stage of the pandemic. They conveyed information from the MHLW, WHO and CDC to readers with photos of the MHLW Minister, the Japanese-American WHO spokesperson, and people wearing facial masks at Narita Airport. This is one of the key roles of mass media: to widely disseminate current events in society. The newspapers transmitted the information from the authorities without validation/verification, which is another role of mass media. Our second finding was the high volume of news articles during the early stage of pandemic, from the overseas outbreaks to the domestic outbreak. From April 25, to May 31, 2009, 18.2% of the 675 front-page articles were about A/H1N1 influenza. Events during this period had lower appearance than the flu. This highlighted two issues. One issue is that people refrain from taking precautions due to fear saturation and reduction of optimism through repeated information presentation. A study with 79 college students found that they tended to refrain from taking preventive measures even when they were clearly informed about risks when the related information was repeatedly presented [14]. The other issue is the importance and priority of events: while one event is dominantly reported, people have less opportunity to learn about other events [15]. Our third finding was that there was little coverage of specific preventive measures. An Internet survey with 1016 Japanese people in 2008 (prior to the 2009 A/H1N1 influenza pandemic), revealed people wanted to know ‘What I should do if my family and/or I get infected?’ (70.5%) and ‘What should my family and I do before epidemic occurs?’ (68.0%) [16]. We found that there were 189 articles (8.4% of total articles) on wearing a facial-mask and 143 articles (6.4%) covering other personal precautionary behaviors such as cough etiquette, gargle, and hand-washing. Social precautionary behaviors including measures at schools and workplaces, and cancelation of events and sport games were reported in less than 10% of the total A/H1N1 news articles. This indicates that specific social and personal precautionary behaviors were promoted less when people perceived the vulnerability of an increasing number of patients. In addition, there were few news articles targeted to people at higher risk (7.2%). This group included people with underlying medical problems, pregnant women, and children. In the coverage trend, news articles to discussing cautions were mainly posted in the middle of May (the first case in Japan), August (start of the pandemic), and October (just before the pandemic peaked). This shows that the newspaper articles included the necessary cautions for the target group, even when fewer articles were published overall. Our fourth finding was the differences in media approach to the antiviral drugs and the vaccine. In the early stage of the pandemic, it was highlighted that the vaccine was in development and would take several months to be available in the market. However, people wanted to know what treatment was available if they became infected. Newspaper articles had the most

coverage about antiviral drugs as the only solution available at that time. When neuropsychiatric adverse events were found in Japanese pediatric patients who received Tamiflu in 2005, the MHLW advised healthcare professionals in Japan not to use the drug for pediatric patients. At that time, the Japanese newspapers reported Tamiflu paired with side effects of neuropsychiatric adverse events. In the 2009 A/H1N1 influenza pandemic, the newspapers mainly reported efficacy and only 16 articles reported on the side effects, partially due to the overseas examination and validation of its efficacy. In the late stage of the pandemic, the A/H1N1 influenza vaccine was the dominant topic reported. Other major topics were the volume of vaccine needed for all Japanese people to be secured, the need to import vaccines due to the shortage of locally-manufactured vaccines, and the safety of imported vaccines. There were 106 articles on imported vaccines (4.7% of vaccine articles), with a majority of 76 articles (71.7% of imported vaccine articles) on the safety of the imported vaccines. This suggests that the Japanese media showed a high level of interest on the imported vaccines. Our results cannot easily be compared to those found in the UK [9]. Hilton and Hunt collected news articles from eight newspapers ranging from serious papers to tabloids, while we collected articles from three major nationwide newspapers. The UK had about 400 articles in May 2009 while Japan had more than 700, approximately 1.7 times more. The comparison of overall coverage trends found three peaks in the UK coverage: May (the outbreak), July, and October. In July, the UK experienced their first peak of patients, with about 550 articles, followed by the second peak in October with 200 articles, fewer articles than in the first peak. Japan had only one peak in November 2009, with a relatively small number of news articles. There was a threshold of articles in May, from the overseas outbreak to the first case in Japan. The total number of articles decreased by one third in June 2009 and by one seventh in July. A comparison of news topics found that the UK reported 'H1N1 flu may cause death' twice as often as Japan (23.4% in the UK, 10.5% in Japan). One of the similarities between news articles in the UK and Japan was that the number of articles did not automatically increase along with an increase in the number of patients. Another similarity was the focus on cases and deaths in that country once the first domestic case was found. This may limit the opportunity to see a global epidemic as an internationally shared problem.

Conclusions

In the case of the A/H1N1 influenza pandemic, Japanese newspapers reported more factual information, although information about preventive measures was less frequently reported despite its importance for the public. Reporting personal and societal preventive measures from April to August of 2009 could have contributed to people's motivation to adopt precautionary behaviors, as there were fewer patients. However, at the same time, fear may have promoted precautionary behaviors due to a large volume of reporting on flu cases. There is a widely held belief that mass media often exaggerates

factual events and scares their audiences. It is important to explore how stories reported in mass media influence public perception of risk and subsequent precautionary behaviors.

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