

Research in Brief

Balanced Journalism Amplifies Minority Positions: A Case Study of the Newspaper Coverage of a Fluoridation Plebiscite

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ABSTRACT

Background Public opinion surveys usually report majority support for fluoridation in North America. Yet many local plebiscites produce opposite results. One possible reason is the nature of local media coverage.

Analysis This article reports on a content analysis of news coverage and letters to the editor about a fluoridation plebiscite in Waterloo, Ontario. Qualitative research suggested that the groups opposed to fluoridation were more motivated and better organized than those in support. The net effect was news coverage more neutral toward fluoridation than supportive or critical, predominantly framed in terms of risks rather than benefits.

Conclusion and implications The findings here emphasize the reactive nature of contemporary journalism. In local fluoridation plebiscites, champions are required to produce news coverage that better conveys the benefits to the public.

Keywords Fluoridation; Plebiscites; Campaigns; Direct democracy; Public opinion

RÉSUMÉ

Contexte Normalement, dans les sondages d'opinion publique en Amérique du Nord, la majorité des répondants appuie la fluorisation. Pourtant, au niveau local, plusieurs référendums obtiennent des résultats contraires. Une raison possible pour ce contraste est la couverture médiatique locale.

Analyse Cet article présente une analyse de contenu effectuée sur la couverture médiatique et les tribunes libres concernant un référendum sur la fluorisation tenu à Waterloo (Ontario). Cette recherche qualitative suggère que, dans ce cas, les groupes opposés à la fluorisation étaient plus motivés et mieux organisés que ceux qui appuyaient celle-ci. En

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conséquence, la couverture de la fluorisation tendait à être neutre plutôt que positive ou négative, avec un accent mis sur les risques plutôt que les bienfaits.

Conclusions et implications Les résultats de cette recherche soulignent le caractère réactif du journalisme contemporain. En conséquence, dans les référendums locaux, les partisans de la fluorisation auront intérêt à se mobiliser afin d'encourager des reportages plus axés sur les bienfaits de celle-ci.

Mots clés Fluorisation; Référendums; Campagnes; Démocratie directe; Opinion publique

Introduction

Water fluoridation is witnessing renewed opposition. As reported by the *New York Times*, opposition is widespread, involving hundreds of jurisdictions in the United States alone and a fair number in Canada as well (Alvarez, 2011). In many jurisdictions, plebiscites are a prerequisite for authorities to begin or cease fluoridation. One peculiar feature about these campaigns is that, generally, the population is initially not opposed to water fluoridation. But the campaign leads to a reversal of public opinion.¹ This suggests that the discourse surrounding the water fluoridation debate often plays a key role in changing people's minds.

This article focuses on this reversal, paying particular attention to the role of local media, which is often the main vehicle to communicate information about fluoridation and adjudicate between competing claims. Mazur (1981) studied the relationship between national support for fluoridation and levels of national coverage in the United States between 1945 and 1980. He showed that opposition to fluoridation remained stable (and low) even as levels of news coverage decreased. From this, he inferred, but did not demonstrate, that high levels of news coverage would not improve support for fluoridation. More recently, Lowry (2000) examined the tone of news stories and letters to the editor in a sample of British national newspapers and found that most articles and letters were opposed to fluoridation. All this suggests that news coverage about water fluoridation may tilt the balance of opinion during a plebiscite. But the role the media plays in a fluoridation plebiscite or referendum has not yet been studied. To understand more fully the role newspapers play in this debate, and the role they may play in tilting public opinion, this study focused on a particular water fluoridation plebiscite.² Our focus is on the Canadian city of Waterloo, Ontario, which narrowly voted to end fluoridation in 2010.

The controversy over fluoridation began in January 2008, when the leading opponent of fluoridation on Waterloo council introduced a motion, supported by presentations from three citizens opposed to fluoridation, to stop the practice. This was defeated in a 6–2 vote. However, immediately after defeating this motion, the majority of councillors who supported fluoridation passed a motion calling for a plebiscite. This move was, in turn, opposed by those who were originally trying to stop fluoridation altogether (City of Waterloo, 2008). In the ensuing plebiscite campaign, voters narrowly voted 50.3 percent to 49.7 percent to end fluoridation in the city. This result was surprising for several reasons. First, fluoridation had been successfully conducted in the City of Waterloo for 44 years. Second, there was majority support on the local city council for fluoridation, providing pro-fluoridation forces with an important resource. By

contrast, political pressure to cease fluoridation came from a small group of anti-fluoridation activists organized into a group called WaterlooWatch and one city councillor (WaterlooWatch, 2010). Thus the question presents itself: How is it possible that a community can support a practice but then, almost immediately, see that support wither away? As noted, a small group mobilized opposition to water fluoridation. But how is it possible for such a small group to succeed? It is possible media coverage played a part.

News coverage

In some ways, newspaper coverage of water fluoridation should be straightforward. After all, professional journalists pride themselves on objective and accurate reporting (Griffin, Regnier, Griffin, & Huntley, 2007; Health Canada, 2010; Pritchard, Brewer, & Sauvageau, 2005). Moreover, the state of scientific knowledge about capacity for fluoridation to accomplish an uncontested public policy goal (i.e., good dental health) safely and efficiently is shared—indeed, nearly uniformly shared—across a wide range of scientists and members of health organizations (Brown & Poplove, 1965). As such, one might expect truly objective journalists to report such information, leading to news coverage that was supportive of fluoridation. However, the reality of science and health journalism is much more complex (Nelkin, 1987; Nisbet, Brossard, & Kroepsch, 2003; Nisbet & Lewenstein, 2002). First, scientific information is highly technical, but journalists often lack formal training in science, math, and statistics (Viswanath, Blake, Meissner, Saiontz, Mull, Freeman, Hesse, & Croyle, 2008). Second, journalists depend heavily on sources to provide information (Franklin & Carlson, 2011; Gandy, 1982). This means sources can intervene strategically to shape news (Cottle, 2003; Davis, 2003a, 2003b; Sumner, Vivian-Griffiths, Boivin, Williams, Venetis, Davies, Ogden, Whelan, Hughes, Dalton, Boy, & Chambers, 2014), particularly to frame facts in a particular way (on framing, see below). Third, when journalists are confronted with conflicting claims from news sources, they tend to satisfy the demands of the objectivity norm by resorting to a competing norm of balance, providing equal access to competing news sources (Boykoff & Boykoff, 2004; Jackson, 2011; Nelkin, 1987). This tendency to provide balance for competing claims forms a deep structure to modern journalistic practice. For example, Dearing (1995) examined how American newspapers covered three cases of “maverick” science, where scientists advocating fringe, and ultimately false, positions were given prominent news coverage. In each case, and on multiple measures, maverick scientists and their positions were accorded favourable, rather than negative, coverage. Importantly, Dearing followed up this study with a survey of each journalist who wrote those stories; it showed that most of the journalists felt that the maverick scientists they had accorded positive coverage lacked credibility. This implies that even when journalists personally doubt the credibility of maverick scientists they are covering, the demands of their profession (such as a reliance on sources and the pressure to produce news stories) compel them to report questionable claims. The net effect of these competing norms and the reality of the news production process means that even facts that are uncontested within expert domains—such as the efficacy and safety of community water fluoridation—can be reported in ways that are confusing, conflicted, and even false.

News coverage is important because it can play an integral role in shaping people's attitudes. For example, by selecting certain images or words in its content, news coverage produces and reproduces particular and meaningful frames of events at the expense of others (Entman, 1993). For instance, news coverage of a public demonstration can frame the event as a violation of law and order or an expression of freedom of speech (Nelson, Clawson, & Oxley, 1997; Nelson & Oxley, 2009). It is particularly important to study how journalists cover fluoridation plebiscites because in such campaigns, media coverage can play a greater role in shaping public opinion than in regular election campaigns. One of the reasons this is the case is because in nearly all election campaigns around the world, voters can rely on shortcuts such as candidates' party affiliation or the state of the economy to influence how they should vote (Adams, Merrill, & Grofman, 2005). But in a local fluoridation plebiscite (which, like almost all municipal election campaigns in Canada, is non-partisan), candidates lack both these labels. Research on decision-making in the context of referendum campaigns shows that low-information voters often rely on endorsements by interest groups and politicians when deciding how to cast their ballot (Christin, Hug, & Sciarini, 2002; Lupia, 1994), which voters often learn about through media coverage. Examining the tone of the news coverage toward fluoridation, the sources quoted, and the overall frames that predominated before and during Waterloo's 2010 plebiscite can help to explain whether and how news media coverage is at all implicated in the result that narrowly led to the cessation of fluoridation in this affluent Canadian city, whose population has high levels of formal education and which has a long history of successful fluoridation (Statistics Canada, 2017).

In addition to the news coverage, we can also learn a great deal by studying the letters to the editor in the same time period. Obviously, individuals are free to reject scientific evidence, and so we should not expect letters to the editor to reflect scientific evidence in the way that we might expect the same of news coverage. Because of their voluntary nature, we can also not expect letters to the editor to be a useful reflection of public opinion (Grey & Brown, 1970). However, letters can be informative in other ways. In the context of campaigns, letters to the editor can reveal elite actors' tactics. For example, Elmelund-Præstekær (2008, 2011) used letters to the editor to measure the level and nature of negative campaigning in a Danish parliamentary election. Richardson and Franklin (2004) showed that during election campaigns, parties mobilize letter-writing campaigns to try to shape public debate to their advantage. As a result, a study of the letters to the editor might tell us what types of arguments the different groups active in a plebiscite mobilize and to what extent. Lastly, comparing the frequency of letters to the editor over time with the frequency of newspaper articles might reveal the extent to which the local letters page was the site of proactive, strategic activity by local campaigns or the site of a diverse range of citizens.

Given the foregoing, the following analysis seeks to answer the following research questions. First, was the news coverage in the *Waterloo Region Record* supportive of, neutral, or opposed to fluoridation? If the objectivity norm prevailed, one would expect coverage to be largely supportive of fluoridation, given its efficacy in contributing to a widely held goal of public policy. However, if the balance norm predominated, then

one would expect to see largely neutral coverage, because of the pressure on journalists to provide a forum for voices—even mistaken ones—so as not to be criticized for bias. Yet because of journalists' dependence on sources, one might also expect to see news coverage flatly opposed to fluoridation, if groups opposed to fluoridation were more active and more organized than groups supportive of fluoridation. Here, both the coverage of the letters to the editor and the sources of the news coverage will be informative. Finally, given the importance of frames for attitude formation, this article investigates how activists and supporters of fluoridation framed the issue in letters to the editor.

Methodology

We conducted a content analysis of letters to the editor, news articles, and editorials published in the *Waterloo Region Record* from January 1, 2007, to October 25, 2010, the day of the election. The *Record* is the only daily newspaper for the Region of Waterloo, which includes the City of Waterloo, which hosted the 2010 plebiscite. Although the local news radio station and local television station covered the plebiscite, these media have no readily available archives to search. As such, a content analysis restricted to the local newspaper will reflect much of the news available to voters about fluoridation for the 2010 plebiscite. The *Record's* archives were searched in the Canadian Newsstand Complete database for articles containing the terms “fluoride” OR “fluoridation.” The search returned 129 articles, of which 31 were excluded because of only tangential references to fluoridation. This left 98 news articles, editorials, and letters to the editor for content analysis.

All articles and letters to the editor were coded for general tone toward fluoridation. Each was coded to be either supportive of, neutral, or critical of fluoridation. Then, within news stories, each quotation was coded for its source (i.e., who was quoted) and the tone toward fluoridation expressed in the quotation, be it supportive of, neutral, or critical of fluoridation. Although the tone and source coding was conducted by hand, the research team used computer-assisted content analysis to extract story dates to allow for an analysis of how news coverage and letters to the editor evolved over time. In addition, computer-assisted content analysis was used to conduct a frame analysis of news coverage of the fluoridation plebiscite. This technique offers a number of advantages over human-conducted analysis, particularly by minimizing the possibility of human bias in coding textual content. To accomplish the frame analysis, we developed frame dictionaries made up of meaningful terms that, we argue, comprise distinct frames of the plebiscite. Based on the authors' close reading of the news articles and familiarity with the case, five frames were deemed to be most important: benefits of fluoridation (benefits), risks of fluoridation (risks), procedural aspects of the plebiscite (procedure), authoritative support for fluoridation (authority), and fluoridation's infringement of personal liberty (liberty).

In addition to the quantitative content analysis, researchers conducted five interviews with various actors familiar with the plebiscite, including a journalist at the *Waterloo Region Record* who covered the story, two local politicians, and a local municipal official. Where appropriate, quotations from these interviews are included to supplement findings from the quantitative analysis.

Results

Table 1 reports basic frequency counts for the main variables collected at both the article and the quotation level. Three editorials have been coded as news articles; two were published by the newspaper's editorial board and one by a columnist with the newspaper. Two of the editorials explicitly advocated fluoridation, and one was neutral. This suggests that, internally, the newspaper was mostly pro-fluoridation.

There are three findings to be emphasized. First, the *Record* printed roughly similar numbers of news articles and letters to the editor. This suggests that there was a very vigorous debate about the issue on the paper's letters page. Second, we see that the three most frequently quoted sources, in descending order, were politicians, scientists, and activists. Lastly, at both the article and quotation level, the tone tended to be either neutral or critical of fluoridation.

Table 1: News article variables

Type	<i>n</i>	Tone	<i>n</i>	Source	<i>n</i>	Tone	<i>n</i>
Letter	48	Critical	35	Activists	31	Critical	42
News articles (including editorials)	49	Neutral	35	Citizens	9	Neutral	117
		Supportive	27	Officials	5	Supportive	34
				Politicians	84		
				Scientists	51		
Totals	97		97		180		180

When the article type and tone and the quotation tone and source type are cross-tabulated, differences become apparent (see Tables 2 and 3). (Table 2, chi-squared = 22.9, 2 df, $p < 0.00001$; Table 3, chi-squared = 62.23, df = 4, $p < 0.01$.)³

Table 2 shows that news stories were overwhelmingly neutral and letters were more polarized; half of the published letters to the editor were opposed to fluoridation. Table 3 shows that most politicians overwhelmingly offered neutral quotations, activists were mostly opposed to fluoridation, and scientists offered slightly more supportive quotations than neutral quotations.

Figure 1 shows the evolution of tone in both news articles and letters to the editor over time. There are three basic findings. First, in general, news stories were predominantly neutral, whereas letters to the editor were more likely to take a position vis-à-vis fluoridation. This finding reflects journalists' tendency to adopt a balanced perspective to avoid criticisms of bias. Second, there were overall more letters to the editor critical of fluoridation, and they appeared far earlier than did supportive letters. This suggests that while opponents to fluorida-

Table 2: Tone of news articles (N = 97)

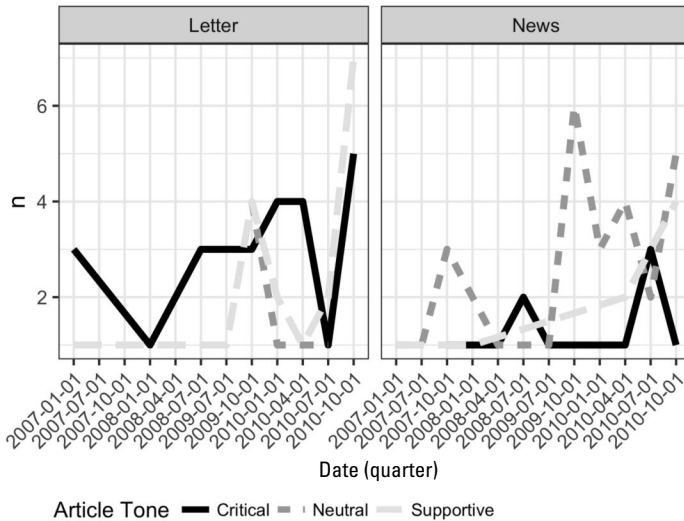
	Critical	Neutral	Supportive
Letter	24	6	18
News	11	29	9

Table 3: Tone of quotations (N = 180)

Source	Critical	Neutral	Supportive
Activist	17	13	1
Citizen	6	3	0
Official	0	4	1
Politician	14	63	7
Scientist	3	23	25

tion were a minority on city council, they were more organized and more active earlier in the election. The journalist with whom we spoke to supplement our quantitative findings argued that one particular individual (unnamed here) led the opposition to fluoridation in the community: “He is the key player in all of this: he was committed to ending the practice, he was effective at organizing opposition to it, rallying people to the cause, organizing the events and contacting the media. He was front and centre and he’s a pretty capable guy” (Personal communication, July 22, 2015). By contrast, the mayor of Waterloo was lukewarm in her support of fluoridation, declining to say how she would vote in the plebiscite in an interview published September 21, 2010, and confirming that she would vote for fluoridation on October 9, just two weeks before the vote. In addition, the other three mayoralty candidates in the 2010 campaign were all publicly opposed to fluoridation. Third, and lastly, both the letters to the editor and the news coverage were ambivalent in tone toward such an important public health intervention. Pro-fluoridation letters only outnumbered anti-fluoridation letters toward the very end of the plebiscite campaign; and pro-fluoridation news stories were outnumbered by a combination of anti-fluoridation and neutral news stories.

Figure 1: Evolution in tone of news articles over time



What kind of news coverage did the local newspaper provide in a context of a highly organized citizens lobby working with a minority on city council to lobby against fluoridation? The journalist interviewed from the *Record* recalled relying on a “political model” to cover the contest.

I’m pretty sure I covered the thing as a tug-of-war between two opposing sides ... The science of it I would sometimes just sum up by saying, ‘the public health department says it’s safe, the bulk of scientific evidence says it’s safe, but critics disagree.’

In much the same way that Dearing (1995) showed how journalists end up providing significant coverage to scientists they acknowledge are marginal or questionable, this

journalist ended up providing a significant platform for activists espousing questionable or false assertions about fluoridation, knowing that this was the case. “I never thought it was my job to dismantle the anti-fluoridation people in any significant way” (Personal communication, July 22, 2015).

Beyond the tone of each article, the distribution of sources, quotations, and frames support this description of a cautious, divided political class facing an organized minority opposed to fluoridation. Figure 2 shows the distribution of sources quoted by tone. The most frequent type of quotation was neutral toward fluoridation and came from politicians. By contrast, scientists provided the bulk of quotations that supported fluoridation, whereas activists provided the bulk of critical quotations. It is worth pointing out, however, that in general there were more critical than supportive quotations, and the critical quotations appeared early in the process of establishing the procedures for the 2010 plebiscite and were sustained over a longer period of time. Supportive scientists only appeared in the news coverage late, primarily during the actual campaign period, in the fall of 2010.

Figure 2: News sources grouped by article tone and date

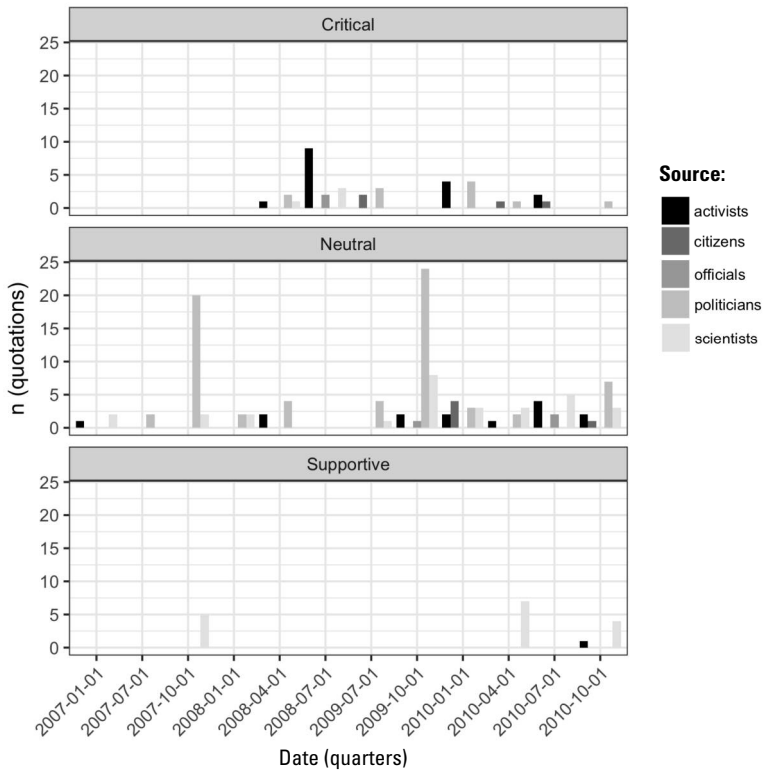
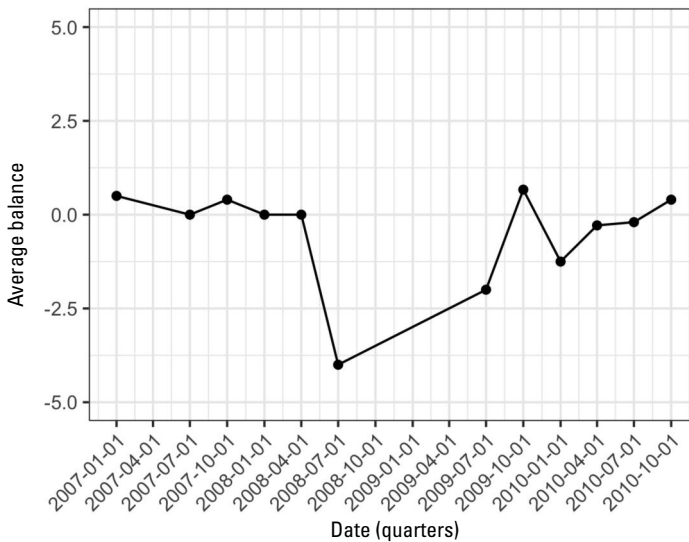


Figure 3 provides an overall measure of the *Waterloo Region Record's* reliance on sources in the fluoridation plebiscite. It displays the number of pro-fluoridation minus the number of anti-fluoridation quotations in the *Record's* news coverage. Overall, it

is clear the newspaper tried to provide equal balance to critics and supporters, although there was a slight tendency to provide more negative quotations than positive quotations. In addition, in the two quarters where the newspaper significantly deviated from a stance of careful neutrality, the articles were dominated by quotes opposed to fluoridation. This tendency was a product of at least two forces. First, the small anti-fluoridation campaign was more active and more visible, meaning they were both physically easier to reach and also provided greater newsworthiness. Second, most of the pro-fluoridation quotes came from dentists and public health professionals, who by the nature of their professions tend to shy away from providing colourful quotations.

Figure 3: Averaged balance of supportive and critical sources by date

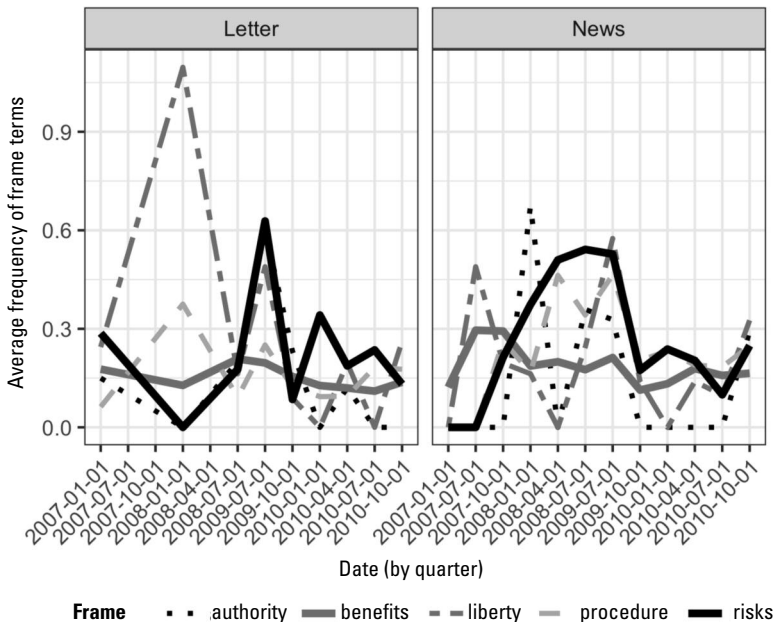


Lastly, here is an analysis of the frames in the news coverage and letters to the editor. As shown in Figure 4, letters to the editor initially tended to emphasize violations of personal liberty and, later, the possible risks to personal health. Letter writers emphasized the latter by invoking a wide range of potential health risks from fluoridation. These included the risks of both dental and skeletal fluorosis. The former is a cosmetic staining of the teeth that can occasionally occur, and the latter is a more serious condition that occurs at levels of exposure higher than what is used in municipal fluoridation. In addition, this frame consists of words and phrases used to emphasize fluoride's chemical properties. For example, letter writers often used words such as "toxic" and "chemical" and frequently emphasized the fact that the municipal fluoridation process in Waterloo added fluoride to the water by adding the compound hydrofluorosilicic acid, which hydrolyzes into fluoride and hydrogen gas, fluoride ions, and hydrated silica (Haneke & Carson, 2001).

Most notably, in general, frames critical of fluoridation—liberty and risks—were far more frequent in letters to the editor than frames explicitly supportive of fluoridation—authority and benefits—with the latter frame appearing the least frequently.

This finding reflects the defensive nature of the campaign to support fluoridation, in that supporters were responding to criticisms by those opposed.

Figure 4: Frequency of supportive and critical frames over time



The news stories show a somewhat different pattern. At first, news stories were framed to emphasize the procedural aspects of the issue. This included the convoluted relationship between the legislation governing fluoridation and Waterloo's two-tiered government, which complicated the referendum process. Because the responsibility for fluoridating the City of Waterloo's water supply had been transferred to the upper-tier, regional municipality of the Region of Waterloo, and because the Region only fluoridated the City of Waterloo's supply, the plebiscite had to be held outside the scope of the provincial *Fluoridation Act*. This generated a protracted debate about the mechanisms by which the plebiscite could be conducted, which the newspaper duly covered. As a result, there was less incentive and opportunity for the local newspaper to provide coverage about the benefits of fluoridation.

The prevalence of this frame can also be explained by journalistic norms. Journalists often face time constraints to file stories, and they are embedded in physical workspaces of official offices (e.g., courts, city halls), leading to a common tendency to rely on official sources. Reflecting this, the municipal affairs journalist for the *Record* noted:

I almost never seek out a source that I can't put in a story ... I don't recall going to universities in North America. I quoted some research and did some research through the Centers for Disease Control and the World Health Organization. They had websites pointing to research, and I read

some research. But I don't believe I ever called up a professor at some university far away to talk to him about defending fluoride. One or two scientists showed up, dental experts, and others showed up at public meetings, and I would quote them. (Personal communication, July 22, 2015)

This reliance on official sources may also explain the frequency of the authority frame, in which the story focused on and reported reputable public health organizations' positions on fluoridation. This frame was common for news stories in the first two-thirds of the time period under study. However, the fact the authority frame was more frequent than the benefits frame in both news articles and letters to the editor suggests supporters of fluoridation also adopted a rhetorical strategy of citing credible public health organizations such as the World Health Organization and Health Canada to reassure critics that the practice of fluoridation was safe and effective. In both letters to the editor and news stories, the benefits frame was not prominent, often appearing far less frequently than the risks frame.

Conclusions

In an important local plebiscite on municipal water fluoridation in the City of Waterloo, the city's newspaper relied heavily on the balance norm of professional journalism, giving competing positions about an issue roughly equal weight within individual news stories and at the aggregated level of coverage. However, this was done in the context of an organized coalition of anti-fluoridation activists who showed a high level of commitment to public communication, including the use of rhetorical strategies that catered to widespread suspicion of chemicals but that were ultimately false and misleading. The defining characteristic of the newspaper coverage on the issue of fluoridation was a commitment to a balanced quoting of sources both for and against. This tendency arose from multiple causes. It is rooted in journalistic norms of objectivity and journalism's reliance on active sources as opposed to portrayal of facts based on evidence. In a context where there was a highly organized anti-fluoridation campaign and a minimally organized supportive campaign, local news media in this case, at worst, contributed to the distribution of misinformation and, at best, failed to provide a corrective. Public health professionals cannot be confident that newspaper journalists will automatically convey the scientific evidence undergirding the safety and benefits of important public health interventions such as fluoridation. Rather, public health professionals have to engage with journalists and, where necessary, hold them to account. Failing this, public health professionals may have to take an increasingly leading role in providing sound scientific information to the public about the merits of public health interventions.

Notes

1. Although public opinion surveys specifically about fluoridation are rare, those that do exist routinely show majority support for fluoridation (Mazur, 1981; Perrella & Kiss, 2015; Quinonez, 2009).
2. The data and code used to produce these results are available at doi:10.5683/SP/V2VPZ4 for the purposes of evaluation and replication.
3. Because of the few number of citizens and official quotations, the chi-square test was conducted on a table including only activist, politician, and scientists.

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