



Nanotechnology framing in the Canadian national news media



Michael G. Tyshenko

Institute of Population Health, University of Ottawa, 1 Stewart Street, Room 316, Ottawa, Ontario, Canada

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ABSTRACT

News media remains one of the foremost communication portals for information regarding the risks and benefits of new technologies. News media content provides information which helps to shape public attitudes toward emerging technologies. An analysis of national news media content from May 2008 to May 2012 was conducted for nanotechnology content in Canada using three different frames. The results show that the framing has been “nano-optimistic” and narrowly focused on university research, scientific innovations, near term applications, and university-business collaborative research efforts, all which are dominated by subject-matter experts. There has been negligible media coverage of public discussions surrounding nanotechnology developments, scant reporting of non-governmental organization activities, and few reports of international nanotechnology developments. In Canada, it is still relatively early in the nanotechnology development cycle. To increase public knowledge in Canada the news media content should go beyond its current narrow framing of scientific innovation and near term research applications. Media content in other countries has provided more information on broader societal, ethical, legal, policy, regulatory and international issues over time. Regulators and stakeholders should follow the Council of Canadian Academies 2008 expert panel advice to incorporate early risk communication, public outreach and include the public in nanotechnology policy development.

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1. Risk perception surveys of nanotechnology internationally and in Canada

Risk perception is defined as, “beliefs, attitudes, judgments and feelings, as well as the wider social or cultural values and dispositions that people adopt, towards hazards and their benefits” [1]. While expert risk assessments and formal measures of risks tend to focus on narrow outcomes (injury, death, or expected losses) individuals perceive risks to be broader, context-sensitive and multidimensional. Often experts neglect the gap between their knowledge and that of the public who may focus on other consequences beyond formal risk assessments [2]. This discrepancy has led to a greater focus on understanding public

perception of risk towards emerging technologies [3,4] and a deconstruction of why the public has rejected previous emerging technologies such as nuclear power and genetically modified foods [5].

Public attitudes for nanotechnology have been surveyed and reported on in several published studies [6–8]. These studies describe that despite research investments for nanotechnology research spanning 30 years in some countries that public attitudes are still not well formulated and knowledge about this technology is quite narrow; a result of the cross-cutting, wide applications of nanotechnology to a large number of research areas.

The studies are mainly designed to determine either the public perception of nanotechnology’s risks and benefits or to determine the knowledge levels about nanotechnology. Telephone surveys from different countries, completed in the mid-2000s, found that the majority of respondents had

E-mail address: mtyshenk@uottawa.ca.

heard “nothing” or only “a little” about nanotechnology [6,9].

Einsiedel (2005) reported that knowledge and familiarity of nanotechnology by Canadians was relatively low with 40% of focus group participants who were not familiar with the technology [10]. Americans were more likely to have heard of nanotechnology with 42% of those surveyed responding they were familiar or had knowledge of nanotechnology. Despite this low awareness the survey results indicated that the public perception of nanotechnology is much more positive than negative. For example, an American Internet survey by Bainbridge, (2002) indicated that only 9% of the participants agreed that new technologies (including nanotechnology) would pose a substantial risk to humans [11]. Cobb and Macoubrie’s (2004) telephone survey corroborated Bainbridge’s research regarding risk perception with about 40% of the respondents who thought that nanotechnology would produce more benefits than risks, and 38% considered the risks and benefits to be about equal, only 20% expressed worry about nanotechnology producing negative effects [6].

The positive attitude to nanotechnology is based not on knowledge of nanotechnology itself but on its potential, innovation and optimism. Attitudes are also greatly influenced by the context in which nanotechnology is embedded [12]. The perceived risk is low because of a lack of concrete hazards or actual harm [13].

2. News media analysis of nanotechnology in Canada and internationally

Mass media, such as newspapers, television and Internet news are the most easily accessed and often the primary resource for the public to obtain information of new scientific breakthroughs and innovation. Previous studies on nanotechnology have established that respondents gained knowledge of this technology primarily through television, radio and news print media [14,15]; although, more recent work by Devereaux et al. (2009) shows the internet and blogosphere is being used to find information about nanotechnology and other emerging technologies [16]. A number of criteria can affect public perception and opinion such as volume of mass media reporting on emerging technology, the issues content that is presented, the context of the issue and the frequency of reporting.

Research studies have revealed that the mass media is important in distributing information about the environment, science, technology and health medicine to the majority of adult Canadians [17]. Newspapers often focus on the risks involved and act to influence of public perceptions regarding risks. A measure of public concern over specific risk issues can be garnered from news media coverage and its content. The role of mass media in alerting the public to new risks or highlighting the uncertainty of existing risks is significant and risk perception may be distorted through the process of social amplification or attenuation of risk [18–20].

Numerous studies conducted in various countries have investigated print media coverage of nanotechnology focusing on the number of news stories, the overall tone,

and the thematic characteristics [14,21,22]. Analyses of media coverage give a reasonable view of how the mass media have depicted nanotechnology as an emerging technology [23].

The U.S. news print media tends to focus predominantly on business and market news concerning nanotechnology with a high proportion of coverage in the financial pages that reach a more restricted business-oriented audience [24]. Analysis of 20 years of U.S. nanotechnology newspaper coverage (1988–2009) for content, issues, distribution and volume of reporting revealed that nanotechnology content increased during this time period but attention to this issue has decreased in recent years. The reporting emphasized only a few areas including businesses involved with nanotechnology, research development of nanotechnology, and nanotechnology’s impact on health and medicine. The analysis also revealed that a substantial proportion of the journalistic coverage of nanotechnology has been authored by a small and diminishing group of specialized journalists [25].

A Spanish case study that analyzed national press coverage in Spain from 1997 to 2009 found positive attitudes towards nanotechnology innovation with thematic clusters related to economic opportunities, business development and national policies. In Spain, the discussion of risk has occurred early on but has decreased over time [26]. In this case it appears that the discourse surrounding nanotechnology has been marginalized over time.

In contrast, the reporting of nanotechnology in Dutch newspapers from 1992 (the appearance of the first article on nanotechnology) to the end of 2005 showed that the depiction of nanotechnology in news print media included scientific contexts and the reporting has evolved over time becoming more articulated to include broader ethical views, social concerns, and discussions about risk [27,28].

In Denmark [29] and Germany [30] news media framing appears skewed and demonstrates a remarkably positive tone with the majority of articles in favor of benefits outweighing risks. The information about the risks of nanotechnology is covered but only minimally compared to benefits.

Still in other countries, while giving positive representations of nanotechnology the news content does not include broader issues. For example, Italian national newspaper content regarding nanotechnology has been positive with reports of the progress being made in research with little reference to the risks of nanotechnology [31]. And similarly, nanotechnology representations and framing in Slovenian national newspapers from 2004 to 2009 revealed reporting of nanotechnology issues is at an early stage since they emphasized mainly positive aspects and scientific interpretations [32].

Analysis of fifteen Canadian print newspapers published during 2004 revealed that the most notable characteristic of news media coverage in Canada pertaining to nanotechnology was the lack of coverage compared to other areas of scientific research, such as biotechnology. The majority of the content consisted of profiling new technologies, reporting on research in which nanotechnology was being used, interviews with researchers, and focus on business news involving companies specializing in or using

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