

# Misrepresentation of health risks by mass media

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## ABSTRACT

**Background** Mass media are a leading source of health information for general public. We wished to examine the relationship between the intensity of media coverage for selected health topics and their actual risk to public health.

**Methods** Mass media reports in the United States on emerging and chronic health hazards (severe acute respiratory syndrome (SARS), bioterrorism, West Nile Fever, AIDS, smoking and physical inactivity) were counted for the year 2003, using LexisNexis database. The number of media reports for each health risk was correlated with the corresponding death rate as reported by the Centers for Disease Control and Prevention.

**Results** The number of media reports inversely correlated with the actual number of deaths for the health risks evaluated. SARS and bioterrorism killed less than a dozen people in 2003, but together generated over 100 000 media reports, far more than those covering smoking and physical inactivity, which killed nearly a million Americans.

**Conclusions** Emerging health hazards are over-reported in mass media by comparison to common threats to public health. Since premature mortality in industrialized societies is most often due to well-known risks such as smoking and physical inactivity, their under-representation on public agendas may cause suboptimal prioritization of public health resources.

**Keywords** health promotion, mass media, prospect theory

## Background and purpose

Mass media are a leading source of health information for the general public and for health professionals, and their choice of coverage can ultimately drive public policy and healthcare decisions.<sup>1,2</sup> According to the prospect theory, perception is stronger for changing signals than for stable messages.<sup>3</sup> A report on a new illness may therefore elicit a greater perception of risk than well-known existing health dangers. We tested whether media coverage for emerging health hazards might be greater than for chronic risks to public health. We examined the relationship between the intensity of media coverage for selected health topics in the US news media and the actual death rate associated with these conditions.

## Methods

We determined the numbers of newspaper, television and radio reports in the United States on several emerging and chronic health hazards in the year 2003, using the LexisNexis database (US newspapers and transcripts). Search strategies used keywords for SARS ('SARS', 'severe acute respiratory syndrome', 'Coronavirus'), for West Nile

Fever ('West Nile'); for bioterrorism ('anthrax', 'atomic', 'bioterrorism', 'bioterror', 'bio-terror', 'chemical warfare', 'dirty bombs', 'nuclear threat', 'plague and health', 'radiation' and 'smallpox'); for AIDS ('AIDS', 'HIV'); for smoking ('cigarettes', 'smoking and cigarettes', 'tobacco and health') and for physical inactivity ('exercise and fitness', 'physical activity', 'physical inactivity'). Each strategy was tested for accuracy by reviewing the content of at least 400 reports, randomly sampled from the results of two runs on two separate date ranges in the year 2003. For each search strategy, an adjustment factor was derived from the percentage of reports found relevant to the topic and was used to calculate an estimate of the number of media reports on each health hazard. Previous work has shown a high correlation between the number of press reports and their visual prominence in the media: topics that elicit great numbers of

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reports also get coverage with large, front page headlines (2). We therefore used, in the present work, the number of reports on a health hazard as the sole indicator for the intensity of media coverage.

We estimated the death rate for these very same health hazards in North America from the reports by the Centers for Disease Control and Prevention.<sup>4,5</sup> Because these rates range from none to over 400 000 deaths per year, these data were log-transformed to allow easier graphic representation. The frequency of media reports was correlated with the estimated death rate for the various health risks, using a linear regression.

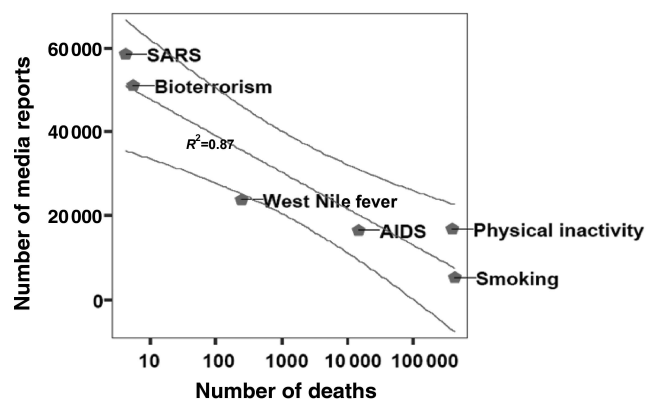
## Results

As shown in Fig. 1, the number of media reports inversely correlated with the corresponding number of deaths for the health risks evaluated ( $r = -0.93$ ,  $P = 0.007$ ). In the United States, SARS and bioterrorism killed fewer than a dozen people in 2003, but together generated over 100 000 media reports. Almost 800 000 people each year die from the consequences of smoking and physical inactivity, but these triggered far less media attention. In the same year, West Nile Fever killed hundreds of people and AIDS killed thousands of people, but both were the subjects of intermediate levels of coverage.

## Discussion

### Main finding of this study

Recent new health hazards were found to have been over-reported by mass media as comparison with common threats to public health. The intensity of media coverage inversely correlated with the actual number of deaths for the health risks evaluated. The current results indicate a bias



**Fig. 1** Number of media reports in the United States on selected causes of death versus actual number of deaths from these causes (4,5) in 2003 (on log scale). Regression line is represented with 95% confidence intervals.

toward over-reporting emerging health hazards, in comparison to their actual impact on public health. The pattern observed suggests that the more commonplace the cause of death, the less likely it is to be covered by the mass media.

### What is already known on this topic

The present finding confirms observations by some<sup>6,7</sup> but not by others<sup>8</sup> and is consistent with the observation that public's perception of risk is often biased by overestimation of small probability events.<sup>9</sup> It is also consistent with psychological theory on cognitive biases, whereby a small change is perceived as more notable than a stable information signal, even if the latter may convey a more significant message – as described by the prospect theory.<sup>3</sup> Perceptual systems are designed to enhance the accessibility of changes and differences: cold water feels colder if our other hand is immersed in warm water because perception is determined by comparison. The magnitude of a stimulus and its perceived significance derive from the contrast between that stimulus and other prior and simultaneous stimuli. The prospect theory extends the principle underlying these perceptual illusions to the explanation of cognitive biases in financial or health-related decisions.<sup>3</sup>

### What this study adds

Our observation suggests that, as expected by the prospect theory, a report on a novel health hazard is perceived with disproportionately greater sensitivity than existing health risks and construed with disproportionately greater concern than known health risks. This bias acts first on journalists and editors, who sense emerging threats as 'newsworthy', then on general audiences, and finally on health professional and policy makers who follow the public agenda set by the mass media. Conversely, the more established the information about a health topic, the less likely it is to be perceived as worth coverage. The strongest evidence, typically obtained by a systematic review of repeated confirmatory observations, is less likely to be reported by the mass media<sup>10</sup>: novel but unproven technologies are promoted in the news media far more than established ones, in a pattern that may contribute to public demand for uncertain therapies, resulting in a spiraling increase in healthcare costs. Similarly, misrepresentation of health hazards in the press might lead to misplaced choices and distorted prioritisation.

### Limitations of this study

Our observation may suffer from selection bias for the health risks surveyed. It would have been preferable to sample conditions at different levels of press coverage and

then examine the corresponding mortality, but the level of media coverage is not directly available from the LexisNexis database. Also, death is a crude indicator when burden of illness may be a more accurate reflection of health concerns. Chronic diseases caused by smoking and physical inactivity (such as lung and cardiac conditions, or obesity and diabetes) are probably associated with a higher burden of illness than acute infectious diseases (such as SARS or anthrax). Yet, the regularity and commonness of these conditions trigger less media interest than unknown and uncertain health risks.

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