

in Andhra Pradesh, and found that daily tamarind ingestion corresponded to lesser incidence of dental and skeletal fluorosis (the prevalence of fluorosis was found to be 58.9% among daily tamarind users compared to 79.1% among occasional tamarind users)<sup>15</sup>.

Different authors have suggested different mechanisms by which tamarind acts to reduce fluorosis. Some suggest that fluoride binds through hydrogen bonding to tartaric acid in tamarind, and thus the presence of fluoride ions in the body is decreased<sup>16</sup>. Others suggest that increased levels of fluoride in the body increases the level of free radicals. Crude tamarind pulp is a natural antioxidant due to the presence of high concentrations of polyphenols and flavonoids<sup>17</sup>, which scavenge oxygen free radicals and thus exert a beneficial effect on the body<sup>18</sup>. Khandare *et al.*<sup>14</sup> speculate that the increase in alkalinity of urine due to tamarind ingestion (pH  $7.6 \pm 0.3$  in people who consume tamarind versus pH  $6.7 \pm 2.5$  in others) might be linked to increased renal clearance of fluoride. Tartarate present in tamarind is not metabolized by the body, and it inhibits the action of carbonic anhydrase, leading to the increased pH of urine<sup>17</sup>. Though the exact mechanism by which tamarind acts against fluorosis is as yet unknown, the positive effects that have been seen have led to the development of a new defluoridation technique using tamarind seeds<sup>16</sup>.

Controlling fluorosis by exploiting the indigenous use of beneficial ingredients like tamarind in everyday food is an attractive option. But there might be other factors that act in the opposite direction, and thus make it difficult to

rely on dietary control of fluorosis alone. For instance, Khandare *et al.*<sup>15</sup> found that even though tamarind had a beneficial effect on fluorosis, practices such as the use of aluminium utensils for cooking and storage, and smoking aggravated the problem. Studies have also shown that fluoride retention is greater in jowar and sorghum-eating populations compared to those with rice and wheat-based diets<sup>14</sup>. In fact, a recent community-based controlled study carried out in a village in North Karnataka showed that children who consumed jowar had 2.7 times greater risk of getting severe dental fluorosis compared to those who did not<sup>19</sup>.

People in the villages of India have been living with fluorosis for generations. Despite many decades of work to mitigate fluorosis, the problem persists. As an Editorial in this journal says, '... tackling some of the problems faced by the rural poor demands as much scientific and technical creativity and know-how as needed by those working at the forefront of mainstream science. India, with its large rural and poor population has the dubious distinction of providing many such challenges'<sup>20</sup>. Fluorosis is an example.

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## Indian media coverage of climate change

### I. Arul Aram

India should be concerned about climate change since this will have adverse socio-economic impacts on its people. The three main impacts are: those on agriculture, sea-level rise leading to submergence of coastal areas, and increased frequency of extreme events. This study has analysed the media text of *The Hindu*, *The Times of India*, *The New Indian Express*, *Deccan Chronicle*, NDTV and CNN-IBN for a year and interviewed 25 journalists covering climate change.

The interview brought forth the following problems regarding climate change:

- It is abstract, not connected with day-to-day reality; it is too broad a topic and mostly a technical matter.
- Journalists ignore climate change as they do not know the technicalities involved; they hardly receive in-service training on climate change and fail to link ground realities with existing policies and politics.

- Scientists do not give climate change literature in a jargon-free language.

### False sense of balance

Given that stories about climate change are steeped in scientific details, communicators should convey the scientific consensus and limitations to current knowledge according more to scientific norms of evidence rather than journalistic

norms of ‘balance’. Communicators should help increase the scientific literacy of their mass audience by explaining how scientists become more confident about knowledge claims, rather than balancing it with contrary bleak opinion by a few scientists<sup>1</sup>.

The false balance that has been a problem appears to be declining. But it does pose a problem when the topic is covered balancing climate change scientists with climate change skeptics. This is particularly so in the print media. Those supplying the media with information – scientists, politicians and NGOs – share some of the blame. The way they and the media frame climate change will affect how audiences respond to it. The defaming of Rajendra Pachauri, Chairman of the Intergovernmental Panel on Climate Change (IPCC) for IPCC documentation on Himalayan glaciers is a classic example. The media ‘balanced’ the remarks of the IPCC Chairman with those of skeptics without giving the former due space for explaining.

The Himalayan glaciers arouse passion as they have long been a central icon of climate change. Like polar bears to the West, the Himalayan glaciers have been important to the East. Al Gore mentioned in his Oscar-winning documentary ‘An Inconvenient Truth’ that the vast Himalayan ice feeds seven of the world’s major river systems. The IPCC based its offending paragraph of wrongly predicting the Himalayan glaciers would melt by 2035 on an interview Syed Hasnain gave to the popular science magazine, *New Scientist* in June 1999. It was during the same year that Michael Mann, USA, launched the ‘hockey stick’ graph, to

show that temperatures had risen faster in the late 20th century than ever before in the earth’s history. The graph was the centrepiece of the IPCC’s 2001 report. Hasnain’s interview was quoted in a 2005 report by the environmental campaigning group, the Worldwide Fund for Nature (WWF). IPCC’s 2007 report cited this as its authority without peer review: ‘Glaciers in the Himalaya are receding faster than in any other part of the world and, if the present rate continues, the likelihood of them disappearing by the year 2035 and perhaps sooner is very high if the Earth keeps warming at the current rate’.

The year after the IPCC report was published, Hasnain was recruited by Pachauri to run a new glaciology unit at The Energy Research Institute (TERI), also headed by the latter. In a matter of months, TERI got a share in an US\$ 500,000 study of melting Himalayan glaciers by a US charity, the Carnegie Corporation. A key part in winning this contract was played by Hasnain’s assertion that most glaciers in the Himalaya will vanish by 2035 due to climate change. The error is attributed to a typo and it should be 2350. Or, it is a case of a scientist succumbing to media pressure to gain popularity? This controversy gave chance for vested interests, particularly carbon-based industries, to create doubts about science itself. The fact is that the Himalayan glaciers are melting/receding in the terminal areas, though not to a level of scare the IPCC report created. Dramatization of an error in assessing the melting of glaciers in the Himalaya has defamed science and scientists.

Indian newspapers, by and large, supported Pachauri in his hour of crisis. Let us see how the newspapers covered the issue of glacier meltdown in the beginning of 2010.

*The Deccan Chronicle*: ‘For the average Ladakhi, water supply from glacial melt is on the decline. Ninety-two year old Phuntchok Namgyal from Stakmo said that he did not need a scientist to tell him about global warming.’

*The Times of India*: ‘While these cases prove that supranational agencies are not without flaws, science itself is not the villain. Most scientists accept that Himalayan glaciers are melting. It is only the degree of the recession that is under dispute.’

*The Hindu* (reprinted *The Guardian* story): ‘The fact that Himalayan glacier is less studied because the region falls in the conflict zone between countries and scientists are not used to such high altitude low temperature to gather data, can be excuses for the error. The Himalayan glaciers are a little explored area. It is difficult to find sources and one cannot get concrete facts.’

**Interacting journalistic norms**

Figure 1 depicts the public arena of mass media production, where journalistic norms interact. These complex and dynamic factors take place between and within (as well as feedback into) a larger context of political, social, cultural and economic norms and pressures.

Besides balancing and dramatization as discussed earlier, other aspects of journalistic coverage include personalization (saying how the issue will affect people, such as frequent occurrences of floods), novelty (like the Maldivian Cabinet meeting under the sea), and authority (what an environment ministry has to say).



**Figure 1.** Interacting journalistic norms. Source: Boykoff and Boykoff<sup>2</sup>.

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