



Effective Science Communication: the Master Key

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ABSTRACT

Hospitals flooded with patients of dengue, chikungunya, swine flu, etc is a common scene in Delhi and National Capital Region (NCR). Panicked people rush to hospitals even if they suffer from viral fever, run for platelets and store injections sans requirement. Ignorance leads to more blunders, as happened during Bhopal Gas tragedy in 1984 when people ran towards the same direction the wind was blowing. Similarly, when arsenic contamination in drinking water was detected in 30 districts of Uttar Pradesh in 2014, some people in several villages of Sahajahanpur district started boiling the water before drinking, which turned more poisonous. Effective science communication is the key to eradicate ignorance and arm people with scientific knowledge. Media—print, electronic and digital including mobile phones, WhatsApp, Facebook, Twitter, etc—play a big role in this Endeavour.

KEYWORDS

Communication, Dengue, Chikungunya, Swine flu, Ebola, Zika, New Media

Introduction

From July to November hospitals in Delhi and NCR, both government and private, are flooded with patients of dengue, chikungunya, swine flu. Panicked people rush to hospitals even if they suffer from viral fever and insist for admission no matter it is not required at all. Irresponsible coverage by a section of media, both print and electronic, further aggravates the problem. A study of newspapers' coverage on health issues conducted from August 1 to December 30, 2015 in Delhi by the researchers reveals that most leading newspapers, both Hindi and English, paid scant attention to educating the people and aggravated the panic by highlighting minor incidents out of proportion. The similar panic was seen during the outbreak of Ebola and Zika in several countries. However, no patient of Ebola or Zika was reported in India the panic people were panicked as if the diseases are at their doors.

Referring to dengue panic, Director General of Indian Council of Medical Research (ICMR) Dr Soumya Swaminathan¹ repeatedly said "no new virus of dengue has been detected, which does not respond to the treatment. If people take some precaution, the disease can be curbed permanently". She stressed on public education and adopting preventive measures. "According to international guidelines, unless a patient's platelet count is below 10,000 and there is spontaneous and active bleeding, no platelet transfusion is required. But people are seen running around in search of platelets for transfusion. What most people do not realise is that the first line of treatment for dengue is not platelet transfusion. Giving unnecessary platelet transfusion can make the patient more unwell. The risk of complications is less than 1 per cent of dengue cases and if warning signals are known to the public, all deaths from dengue can be avoided," says Prof RS Tonk², Head of Nursing Home Section in Ram Manohar Lohia Hospital of Delhi. He laments that by crying dengue round the clock the media contribute to the collapse of public health system. Instead, if the media take a lead in educating people throughout the year about various health issues focusing more on prevention, there will be no outbreak of disease like dengue, chikungunya, malaria, swine flu, plague or any other similar diseases. It is as necessary, as educating people about the precautions to be adopted during earthquake or any other natural calamity.

The awareness among people about health issues and science is so poor that ignorance sometimes turns a minor problem into a disaster. In July 2014, drinking water in 30 district of Uttar Pradesh contaminated with arsenic³. Seeing the water colour red and yellow some people in several villages of Shahjahanpur district started boiling it before drinking, which made the water more poisonous. In this case, large number of people suffered because of ignorance, which could have been curbed through proper science communication. How ignorance and panic cause havoc and lead to high casualty was also witnessed during Bhopal Gas catastrophe⁴ in 1984 when smelling the gas leakage the horrified people ran to the direction of the wind. Scientists say if they had run in opposite direction of the wind, causality would have been low. The tragedy had claimed the lives of 8,000 people instantly and more 8000 died after related diseases. Over 5,58,129 people injured.

Adverse effects of incessant negligence to science communication are seen throughout the year in the form of accidents, ill-conceived projects, unplanned and unscientific development of cities, towns unleashing environmental misery on large scale. Many ill-effects can be curbed effectively, if not eradicated totally, if the media, common people and the policymakers act collectively. "Science literacy entails empowering the members of the civil society to take informed decisions and express positions that are scientifically and technologically informed rather than being swayed by empty rhetoric and faulty arguments. Equally important is the fact that the policymakers, administrators and politicians too be brought up-to-date with issues such as climate change, GM crops and the like. Science communication can play a big role here also," says Hasan Jawaid Khan⁵, editor of 'Science Reporter', the CSIR-NISCAIR publication since 1964. Khan exhorts the science communicators also saying they should realise that by engaging in science communication they are shouldering the responsibility of a very important societal function. "More than the urge to get published and see their names in print, science communicators need to aim at bringing about a change in the understanding of people," he adds.

Science permeates every facet of life. An understanding of scientific process and its products not only ensures smooth adoption of new techniques, but also allays unfounded fears in the

minds of people and prevents them from getting swayed by mischievous, false or untrue propaganda. This can be brought about by science communication. "There is very little realisation, especially in India, that science communication can perform a very important role in development. In a democratic setup, where people's power makes and breaks governments and also often decides the fate of critical national projects, science communication seeks to empower citizens with information, thus further strengthening the democracy," Khan adds.

The Role of New Media

The role and influence of media in communication is unquestionable. Apart from 1,05,443 registered newspapers⁶ (as on March 31, 2015) and 813 television channels⁷ (as on September 19, 2014), over 100 crore people in India have mobile phones⁸. Around 25% of them use Smart Phones. This figure is expected to rise up to 37 per cent by 2017. Google India claims around 94% Indian smart phone users use the device to access internet and 56% of them access internet multiple times a day (in US, the number stands at 53%). Today, India has over 375 million internet users⁹ (as of October 2015) and by the year 2017 almost half the country will be connected through internet. Even at the current growth rate, India will have 500 million Indians on Internet by 2017. India has become larger than the U.S. in terms of number of internet users. Apart from it, India has 132 million (as on June 2015) Facebook users¹⁰—second largest market worldwide. Similarly, for LinkedIn, India is the second-largest market, while Twitter India is set to be the third-largest market in terms of user base. According to research firm e-Marketer, India will account for third-largest user base on micro-blogging site Twitter at 18.1 million by the end of this year. Not only this, there are over 1 billion WhatsApp¹¹ global users as on January 2016. Since Twitter is now the top source of breaking news¹² its potential should be used at the fullest.

These statistics show the potential of media. It is up to the people and the policymakers how to tap it. "The scientists and media houses should collectively generate a pool of information through web portals, which can act as storehouse of scientific information useful in day-to-day life," suggests Prof Vinay Kumar Pathak¹³, Vice Chancellor of Uttar Pradesh Technical University (UPTU). Former President of India Dr APJ Abdul Kalam stressed heavily on the potential of new media. "Science has the potential to remove the imbalances and bring happy and prosperous order in the nations and societies across the world. Communication has advanced so much that we could transfer knowledge from the experts to the least empowered citizen without the concern of distance and time taken. So, time is most apt today for the usage of giga-bandwidth and eloquent capabilities of scientist to explain complex concepts with absolute ease to the common man."¹⁴

Barriers in Science Communication and Solution

Poor literacy rate, language, low R&D budget, hurdles in laboratories, lack of scientific temperament among people, poor coverage of science related issues in media, etc are some of the major barriers in science communication in India. There is also huge gap between the scientists and the public. Most scientists avoid mingling with the public or sharing information about their work. Complicated mechanism in majority scientific institutions also restricts scientists or mediapersons sharing information with each other. "Untill we remove such barriers, we cannot popularise science communication," says Dr BP Singh¹⁵, Head, National Council of Science and Technology Communication (NCSTC), the national body dedicated to promote science communication.

A study conducted in 2014 jointly by US based Pew Research Center and American Association for the Advancement of Science (AAAS)¹⁶ reveals some other barriers—connection between public interest and public knowledge about science. A total of 84% AAAS members surveyed cited "limited science knowledge of public as a major problem for science". Three-quarters of them said too "little K-12 science, technology, engineering and mathematics education (STEM) was

major reason for people's limited science knowledge". Some 57% cited lack of public interest in science news as major reason for limited knowledge of people. Fewer, by comparison, considered limited media interest (43%) or too few scientists communicating findings (40%) to be a major reason for people's limited knowledge about science.

Dr K Vijay Raghvan¹⁷, Secretary, Department of Biotechnology (DBT) points out another barrier—contradictory information provided by media on important issues. "A newspaper or a news channel belies what is being claimed by another newspaper or channel. It is time to mainstream science reporting in the media. For it, there is a need to bring scientists and journalists closer so that they regularly share information about the work or the mediaperson can crosscheck any information. That is why we are in the process of establishing some science media centres, where the scientists and journalists meet and discuss science on regular basis. There is also the need to promote science communication in all Indian languages," Dr Raghvan said. Union Minister of Science and Technology Dr Harsh Vardhan¹⁸ underlines the need to start science fellowship for preparing dedicated journalists to promote science communication. About language barrier, senior Journalist Dr NK Trikha¹⁹ says: "If we do not communicate in the language, which the laymen understand, all our efforts will prove to be futile. Simple language and humour are must for perfect science communication."

It is also necessary that science events like science seminars, science Congresses and science exhibitions, etc are given wider publicity. People ought to be encouraged to attend such events in every possible manner even if it might mean providing them free access to such events or science museums. Dr. Kalam²⁰ gave three tasks to the experts engaged in science communication. One, make all citizens, particularly those in remote and rural areas to feel excitement about science. Two, make all citizens know about the advances of science and their role in the society in economic and health development and to bring more and more of fruits of science within the reach of their daily lives while being sensitive to the sustainability of the planet and responsibility towards it. Three, motivate the students and entice them to embrace science as a profession.

Today general public look at science with either awe or fear. Studies reveal that newspapers, which are flooded with rape, crime and scam news every day, carry an average 8 per cent science-related stories and the portion that educates people is just 3-4 per cent. Effective science communication can go a long way in bringing people closer to science and eradicating ignorance. The science communicators should highlight both the brighter and adverse aspects of science so that people have proper knowledge of all. Biased approach is bound to breed the air of suspicion, mistrust, confusion and hostility towards science in case of any untoward eventuality.

References

- PTI. (2015, September 20). No new mutant strain in Delhi dengue outbreak: ICMR DG. [www.timesofindia.indiatimes.com](http://timesofindia.indiatimes.com). Retrieved on September 22, 2015 from <http://timesofindia.indiatimes.com/India/No-new-mutant-strain-in-Delhi-dengue-outbreak-ICMR-DG/articleshow/49032201.cms>
- Tonk, RS (2015). Interview at Ram Manohar Lohia Hospital in New Delhi on 3.00 pm, September 22, 2015
- Sinha, Arunav. (2014, July 14). 30 UP districts in grip of arsenic poisoning. [www.timesofindia.indiatimes.com](http://timesofindia.indiatimes.com), Retrieved on February 7, 2015 from <http://timesofindia.indiatimes.com/city/lucknow/30-UP-districts-in-grip-of-arsenic-poisoning/articleshow/38339052.cms>
- Bhopal Disaster. www.wikipedia.org. Retrieved on September 22, 2015 from https://en.wikipedia.org/wiki/Bhopal_disaster
- Khan, Hasan Jawaid. (2015, September 22). Email response received on Tuesday, September 22, 2015 1:56 PM
- Jha, Lata. (2015, December 29). Print media publications in India increase 5.8%: report. www.livemint.com. Retrieved on February 7, 2016 from <http://www.livemint.com/Consumer/tOUnNyYANZx60LpzXau6wM/Print-media-publications-in-India-increase-58-report.html>
- Team. (2014, September 19). Total number of TV channel goes up to 813.

- [www.indiantelevision.com](http://www.indiantelevision.com/regulators/i-and-b-ministry/total-number-of-tv-channel-goes-up-to-813-140919). Retrieved on September 22, 2015 from <http://www.indiantelevision.com/regulators/i-and-b-ministry/total-number-of-tv-channel-goes-up-to-813-140919>
- 8 Baidya, Amritya. (2015, September 4). Mobile Phone subscribers in India Q2 2015: 6.71% growth to 980 M Users. [www.dazeinfo.com](http://dazeinfo.com). Retrieved on September 23, 2015 from <http://dazeinfo.com/2015/09/04/number-mobile-phone-subscribers-india-q2-2015-growth-airtel-vodafone-bsnl-broadband-trai/>
 - 9 PTI. (2015, November 20). India to surpass US with 402 million Internet users by 2016: IAMAI. [www.indianexpress.com](http://indianexpress.com). Retrieved on February 7, 2015 from <http://indianexpress.com/article/technology/tech-news-technology/india-to-have-402-mn-internet-users-by-dec-2015-will-surpass-us-iamai-report/>
 - 10 Choudhary, Vidhi. (2015, October 7). Half of online Indians use Facebook, WhatsApp daily: report. www.livemint.com. Retrieved on February 7, 2016 from <http://www.livemint.com/Industry/vU55FbKdlz9vffkxJb0EoL/Facebook-tops-networking-WhatsApp-in-message-apps-in-India.html>
 - 11 Gibs, Samuel. (2016, February 2, 2016). WhatsApp and Gmail join the 1 billion user club. www.theguardian.com. Retrieved on February 7, 2016 from <http://www.theguardian.com/technology/2016/feb/02/whatsapp-gmail-google-facebook-user-app>
 - 12 PTI. (2015, September 3). Twitter top source of breaking news: Study. [www.timesofindia.indiatimes.com](http://timesofindia.indiatimes.com). Retrieved on September 22, 2015 from <http://timesofindia.indiatimes.com/tech/tech-news/Twitter-top-source-of-breaking-news-Study/articleshow/48790422.cms>
 - 13 Interview over telephone on September 22, 2015
 - 14 Bhattacharya, Kapil Kumar. (2013). Science Communication as a Tool for Development, *Global Media Journal*, 4, 1-17
 - 15 Singh, BP (2015). Comment made while speaking at Science Workshop organised by CISR-NISCAIR in at CSIR NISCAIR, Satsang Vihar Marg, New Delhi on September 1, 2015
 - 16 Kennedy, Brian & Funk, Cary. (2015, December 11). Public Interest in Science and Health Linked to Gender, Age and Personality. www.pewinternet.org. Retrieved on February 7, 2016 from <http://www.pewinternet.org/2015/12/11/public-interest-in-science-and-health-linked-to-gender-age-and-personality/>
 - 17 Raghvan, K. Vijay. (2015). Comment made while speaking at Science Workshop organised by CISR-NISCAIR at CSIR Science Centre, Lodhi Estate, New Delhi on September 1, 2015
 - 18 Vardhan, Harsh. (2015). Comment made while speaking at Science Workshop organised by CISR-NISCAIR at CSIR Science Centre, Lodhi Estate, New Delhi on September 3, 2015
 - 19 Trikha, N.K. (2015). Comment made while speaking at Science Workshop organised by CISR-NISCAIR at CSIR Science Centre, Lodhi Estate, New Delhi on September 3, 2015
 - 20 Bhattacharya, Kapil Kumar. (2013). Science Communication as a Tool for Development, *Global Media Journal*, 4, 1-17