Biomedical research coverage in English-language Indian newspapers

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ABSTRACT

The present paper explores biomedical research coverage in the Indian English-language newspapers. Science and technology coverage in the Indian English-language newspapers revealed dominant representation of biomedical research. The research reported was mainly from foreign sources, mostly performed in US, UK and other developed countries of Europe. Plausibly, this was the major reason that areas of medical concerns in foreign countries such as Neuroscience, Oncology, Genetics and Cardiovascular research constituted more than one-third of the total space whereas neglected tropical diseases have almost been neglected in the coverage. This is despite the fact that tropical and other neglected diseases constitute the greatest health problem in India. The study discusses the significance of this research for policy planners, media, health information dissemination and those concerned about informed and science literate citizenry in the country.

Keywords: Biomedical Research, Biomedical and Media, Newspaper, India.

INTRODUCTION

Public communication of science and technology (S&T) has assumed increasingly greater importance in all societies across the globe. Newspapers constitute a major source of information, about issues of science, technology and medicine, to general public (Johnson, 1998; Jordan, 1993). The media are peoples' only contact with what is going on in rapidly changing fields of S&T, as well as a major source of information about the implications of these changes in their lives (Nelkin, 1995). Moreover, access to scientific knowledge is critical to democratic societies (Greco, 2008) and there is importance of news to democratic citizenship (Lewis, 2006). A survey of the Indian masses regarding their interest in science (through media) suggested that the top priority of the people was health and medicine (Salwi and Dutt, 2001). Similarly, in the US context, people welcome science news that relates to health, disease and waste disposal suggesting that science news is mainly valued in terms of its relationship to the problems of daily life (Nelkin, 1995). Moreover, an awareness of the latest developments in biomedical research is important when people are confronted with making choices regarding healthcare.

The advent of electronic media has not belittled the role of newspapers. Besides, the ephemeral nature of electronic media makes print media more important. Moreover, the power of the printed word has its own perceived significance and authenticity in peoples' view in addition to its retainability (Rajghatta, 2011). The circulation of newspapers in India is increasing and the total circulation of registered newspapers/periodicals during 2008–2009 was 257,953,373 copies per publishing day. As literacy grows in India, the newspaper industry has a huge opportunity of looking beyond the urban centers where newspaper readership has been growing in tandem with consumption (Das, 2010; Times of India, 2007).

CONTEXT OF THIS STUDY

In India non-communicable diseases like diabetes, cardiovascular diseases, chronic obstructive pulmonary diseases, and cancers are rising due to rapid changes in lifestyle. Despite the onslaught of lifestyle diseases, tropical and

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other neglected diseases constitute the utmost health problem in India (National Commission on Macroeconomics and Health [NCMH], 2005). Several communicable diseases like tuberculosis, leprosy, vector-borne diseases (for example 105,000,000 cases of malaria were registered in India in 2009 and caused 15,000 deaths in that year; WHO, 2010), water-borne diseases, zoonotic diseases, and vaccine-preventable diseases are endemic in the country. In addition, there is threat of new emerging and re-emerging diseases. About 25% of all deaths in the country are due to tuberculosis, malaria, diarrhoeal diseases and respiratory infections (Ministry of Health and Family Welfare, 2011). *India epitomizes to a large extent the situation prevailing in developing countries.*

No study has been reported in literature that has dealt with the representation of biomedical research in Indian English-language newspapers. However, a few studies have looked into various aspects of S&T coverage in Indian newspapers. In the Indian context, the coverage of S&T has been estimated to be less than one percent in English-language dailies (Dutt and Garg, 2000) and three percent of the total coverage by the Indian mass media (Mazzonetto, 2005) respectively. *The former study, however, had excluded health and biomedical research coverage, as that required a separate study.* Another study looked into the overall gamut of science in Indian media, traced its historical evolution and made several recommendations for more science representation in Indian media (Salwi, 2002). A few other studies have also looked at coverage of S&T but their samples were very small and for short durations (Kumar, 2005; Puri, 2006; Arya, 2007). Recently, Dutt and Garg (2012) looked into the structure of S&T coverage in English-language newspapers for the same period as that of the present study.

Outside India, however, a number of researchers have examined various aspects of the coverage of S&T in newspapers. For instance, Bauer et al. (1995) carried out an extensive study that looked into S&T in the British Press from 1946 to 1990 analyzing the coverage from various aspects. Pellechia (1997) looked into the science coverage in three American newspapers pointing out that methodological and contextual accounts are omitted from the science news. A few other studies on S&T coverage from other countries are also available in literature (Hyde and King, 2006; Buchchi and Mazzolini, 2003; Einsiedel, 1992; Metcalfe and Gascoigne, 1995; Clayton, Hancock-Beaulieu and Meadows, 1993; Evans and Priest, 1995; Hijmans et al., 2003; Clark and Illman, 2006; Massarani et al., 2005; Meadows, 1991).

Another set of studies focused on various facets of the life sciences/biomedical/health research coverage in newspapers. Some of these were general in nature while others dealt with particular diseases. Bauer (1998) has tested the thesis of medicalization of science news and showed that the medicine is the core of the representation of science in newspapers. These studies have examined various facets of health and biomedical research coverage in newspapers (Entwistle and Hancock-Bealieu, 1992; Cassady, 2005; Weingart and Worman, 2008; McGrath and Kapadia, 2009; Weitkamp, 2003; Barlett, Sterne and Egger, 2002; Logan, Zengjun and Wilson, 2000; Peng and Tang, 2010; Manganello and Blake, 2010) including those on specific disease research (Ankney, Heilman and Kolff, 1996; Besley, McComas and Trumbo, 2008; Reis, 2008; Desilva, Muskavitch and Roche, 2004; Smith, Singer and Kromm, 2010; Brechman, Lee and Cappella, 2009; Williams et al., 2008**;** Camus, 2009; Greenberg and Wartenberg, 1991; De Brun et al., 2012). In the Indian context, a few researchers, with their limited sample sizes, have demonstrated that under the science coverage in newspapers biomedical/health research forms the most frequent and dominant part (Kumar, 2005; Puri, 2006; Arya, 2007). However, there is no study available that looks into the structure of this biomedical/health research coverage based on a sample of a wide array of newspapers and adequate time period. The present study aims to bridge this gap, looks into biomedical research coverage in the Indian English-language newspapers and its structure thereof.

OBJECTIVES OF THIS STUDY

The objectives of this study are:

- To identify sub-disciplines within biomedical research that attracted maximum attention in *English-language* Indian newspapers.
- Identification of the sources/news agencies and the expert sources quoted by each item.
- Implications of these findings particularly in the context of biomedical research visibility in India and developing countries in general.

DATA AND METHODOLOGY

The primary motive behind the data collection for this study was to select a sample that captures a pan-Indian representative sample of English-language dailies. In 2008–2009 there were 8475 registered dailies in India, out of which 1291 were of English-language (Indiastat). Based on close reading, 37 English-language newspapers were selected as the source of data for the study, i.e., this constituted the sample from the population of 1291 English-language

newspapers. The rationale behind this selection was that they are prominent, have high circulation and have a wide representation and are being published from metropolitan cities and state capitals. Moyer and colleagues have pointed out the advantages of selecting the prominent and popular dailies (Moyer et al., 1995).

The selected 37 newspapers carry news items on S&T. Authors identified the relevant S&T stories and articles (hereafter called "Items") using the keywords in the title of the item. Further analysis of the 37 newspapers showed that only 31 among them carried news items on biomedical research. This sample of 31 newspapers constituted the final selected set for this study.

The analysis of 37 English-language newspapers was undertaken to draw the broad representative picture of the S&T coverage in the country. Only those items formed the data for the study which reported research and development in S&T irrespective of the performing country. In the context of the study on biomedical research it was found that there were a large number of popular health-related items visible in the newspaper coverage particularly during weekends but they did not emerge from scholarly peer-reviewed research. These types of items were not covered in the present paper. The six papers that were not selected were also because they did not fulfill the above criteria, i.e., they did not contain peer-reviewed Biomedical research. Pellechia (1997) and Bader (1990) have used almost similar definition of S&T or medicine. All such items (peer-reviewed research) formed the data for analysis.

The selected items were marked and cut from the newspapers and pasted on separate sheets recording the name of the newspaper, date and day of publication of the item and page number on which it was published. Each of the items was classified into appropriate sub-discipline based on the headline and/or the content. The items classified in various sub-disciplines were cross-checked by both the authors. Authors have undertaken similar newspaper-based research study (see for example Dutt and Garg, 2000, 2012) and have developed their methodology over the years. Further, as the classification carried out by the authors was obvious and broad; it was felt that further verification was not required. The content of the item was studied wherever the headline was ambiguous. Also, on each clipping the type of item (story or article), visual(s), if any, number of column spread and quantum of space measured in cm^2 (including the size of photo(s) or other illustrations), was recorded. Wherever available, the name of the institution(s), journal(s) and the country of the workplace where the research was undertaken were also noted. Biomedical research and development items were selected from this set which formed the data for the present study.

The data were collected for a period of six months (April 1, 2008 to September 30, 2008). The chosen period was normal in the sense that no extraordinary public health scare, or research finding, or medical emergency pertaining to any celebrity or political leader was witnessed during this period as in such eventualities there is a proliferation of news relating to such events. The data was fed into Fox-Pro for analysis.

RESULTS

There were 5385 items of S&T covered in the selected set (37 newspapers). Figure 1 shows the items covered in different sub-disciplines.

Out of the 37 newspapers, a set of 2565 items pertained to biomedical research encompassing 31 newspapers. These 2565 items on various sub-disciplines of biomedical research constituted more than one-third of the space (358,924 cm^2) occupied by all S&T related items.

The average space of the items was 140 cm^2 (with a median value 104). About half the items had a space of less than 100 cm^2. About two-thirds of the items had a column spread of one (37.6%) or two columns (26.4%). The percentage of items gradually declined with an increasing number of column spread. Only 4.5% of the items were positioned on the first to third page, and only 1.3% could find a slot on the first page, however, in the entire gamut of S&T coverage, 2.4% of the items were positioned on the front page. About 90% of the front-page items had a column spread of three or more columns and about

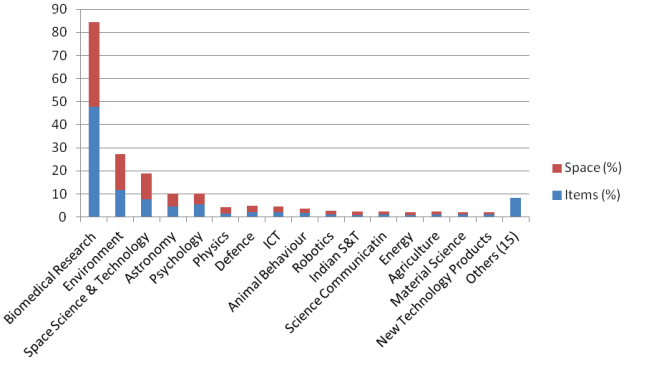

Figure 1. Distribution of S&T coverage in various sub-disciplines.

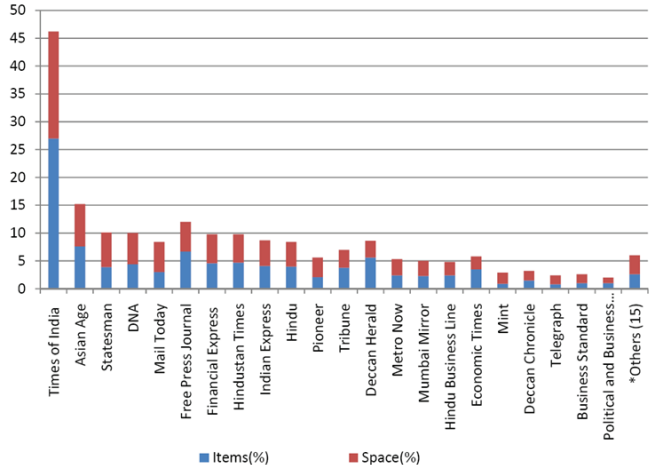

Figure 2. Distribution of newspapers covering S&T items.

70% had more than average space. Only about 9% items appeared on Sundays, whereas the maximum about 20% were reported on Wednesdays.

The maximum space among all the sub-disciplines was occupied by items relating to neurosciences (15.13%) followed by oncology (8.92%), genetics (6.85%) and cardiovascular (5.4%) science. About 37% of the total space has been allocated to these four sub-disciplines. The remaining space was occupied by 28 other sub-disciplines, excluding miscellaneous disciplines (Table 1) arranged in descending order of space.

The above table implies that the coverage is largely towards lifestyle diseases. There is a low coverage of neglected diseases like malaria, tuberculosis which are prevalent largely in low-income populations. This may be due to the bias of English-language newspapers whose readership is largely the rich and middle-class population. It may also be due to the fact that majority of the newspapers depend on their coverage from foreign sources. Thus, tropical diseases which are predominant in India would not find attention in the health research of advanced countries. Therefore, it is not surprising that this important health area of concern to Indian population is not adequately reflected in the Indian English language press.

Around one third of the items referred to the expert sources like journals and conferences. The most frequently quoted journals were prestigious journals like *Nature* (UK), *Proceedings of National Academy of Sciences* of the USA, *Lancet* (UK), *Journal of American Medical Association* (USA), *Nature Genetics* (UK), *Science* (USA), *Archives of Internal Medicine* (USA), *New England Journal of Medicine* (UK), *New Scientist* (UK), *PLOS One* (USA), and *Cell* (USA). About 80% of the items had referred to the institution/university where the research had been carried out. The geographical location of research reported was scattered among a wide spectrum of 52 countries, however, the majority of the items reported research originating from the United States (~ 42%) followed by that from the UK (16%) and India (8%). Around 87% of the items originated from research conducted in the top 20 countries which included the developed countries of Europe with a few exceptions like Israel, China and South Korea. Many other items also reported collaborative research work of USA and the UK, their research partners mainly being the developed countries of Europe.

Times of India, a national daily dominated the other 30 newspapers in allocating space (~ 20%) to biomedical research items followed by Hindu and Asian Age (each ~9%), Free Press Journal (~8%) and Indian Express (~6%). These five newspapers together accounted for more than half of the total space allocated by all the newspapers, and more than half of the total number of items (Table 2).

Of all the items ~ 45% did not mention their sources. Among those that cited the news agency, Press Trust of India (PTI), Indo-Asian News Service (IANS), Reuters, Asian News International (ANI), Agence France-Presse (AFP), New York Times (NYT), Associated Press (AP), Times News Network (TNN) were dominant. About half of the items were supported by visuals. These included mostly a single-coloured photograph. Around 6% items had sketches and diagrams, graphs and tables, etc.

DISCUSSION AND CONCLUSION

The major focus of Indian English-language newspapers is on local, national and international political developments followed by sports. A minimum of two to three exclusive pages are dedicated to sports news. This phenomenon does not seem to be peculiar to the Indian media only as the press in other countries accords priority to sports over S&T as well (Dimopoulos and Koulaidis, 2002). The celebration of science is non-existent in the Indian English language press whereas the celebration of sports exists with aplomb. Events like Shanti Swarrop Bhatnagar annual award distribution ceremony (this is akin to Nobel Prize in science in India) hardly gets front page priority treatment inspite of the prestige of the prize awarded by the Prime Minister of India in the heart of the national capital. The most prestigious event in Indian science, 'The Indian Science Congress' too does not get the attention an event of this magnitude deserves. Only

Table 1. Sub-disciplines Covered by Newspapers in Biomedical Research

#	Sub-disciplines	Space cm²	% space	# of Items	% Items
1	Neuroscience	54343	15.13	385	15.1
2	Oncology	32045	8.92	285	11.1
3	Genetics	24617	6.85	146	5.7
4	Cardiovascular	19372	5.40	161	6.27
5	Reproductive Science, Gynecology & Obstetrics	15605	4.34	134	5.2
6	Diabetes	15114	4.21	111	4.3
7	Obesity	13732	3.82	119	4.6
8	Dietetics & Nutrition	12797	3.56	76	3.0
9	HIV / AIDS	10483	2.92	62	2.4
10	Orthopedics & Rheumatology	9180	2.55	56	2.2
11	New Technology Products	9107	2.53	47	1.8
12	Side Effects	9057	2.52	51	2.0
13	Stem Cell Res. & Cellular Biology	8216	2.28	52	2.0
14	Dermatology	8045	2.24	50	1.9
15	Respiratory Diseases	7618	2.12	73	2.8
16	Gerontology	6438	1.79	53	2.1
17	Sexology	6359	1.77	49	1.9
18	Ophthalmology	6138	1.71	31	1.2
19	Fitness	5036	1.40	35	1.4
20	Tuberculosis & Malaria	5019	1.39	28	1.1
21	Alcoholism, Drug Abuse & Smoking	4722	1.31	34	1.3
22	Dentistry	4246	1.18	33	1.3
23	Lifestyle Problems	3916	1.09	16	0.6
24	Immunology & Vaccine	3757	1.04	38	1.5
25	Drug Development & Trials	3687	1.02	18	0.7
26	Pediatrics	3679	1.02	25	1.0
27	Gastroenterology	3109	0.86	38	1.5
28	Virology	2987	0.83	20	0.8
29	Alternative Medicine	2941	0.81	20	0.8
30	Urology & Nephrology	2932	0.81	21	0.8
31	Diagnostics	2161	0.60	22	0.9
33	ENT	2157	0.60	20	0.8
33	Miscellaneous	40019	11.14	256	10.0
	Total	358924		2565	

those science stories that have political connotations and are fraught with national and international ramifications get front-page slots.

Times of India topped the rank by contributing one fifth of space and one fourth of the number of items published on biomedical research. This was followed by The Hindu, Asian Age, Free Press Journal, and Indian Express (Table 2). These five newspapers accounted for more than half of the total space covered. About half the items incorporated visuals and half had a space of less than 100 cm². Only one third of the items were spread in three or more columns and only 4.5% were positioned on the first, second and third pages thereby rendering them liable to attract more attention. A front-page slot was allocated to only 1.3% of items.

More than one third of the front-page stories related to neurosciences, oncology, genetics, stem cell research & cellular biology and diabetes and two thirds had their workplaces outside India. Sunday is not a science day for the Indian English-language press as revealed by the minimum number of items published on Sundays. Newspapers on Sundays are much larger in size in terms of the number of pages and content covered. Readers look forward to items that are different than the typical coverage on other days. Popular health-related items and lifestyle improvement items are liberally seen in weekend newspapers. Scholarly biomedical research reporting is considerably less on Sundays. The plausible reason might be the difference in readership pattern on weekends.

The probable reason for the overwhelming representation of biomedical research in the coverage of S&T in the Indian English-language press may be 'that topics that concern individuals in their daily lives are always better understood than more remote subjects: medicine is always better understood than basic physics' (Lewenstein, 1995). To some extent, it may not be fallacious to term this as medicalization (Bauer, 1998) of science coverage in the

Table 2. Newspapers that Covered Biomedical Research

#	Newspaper	Space cm²	% Space	# Items	% Items
1	Times of India	72,850	20.29	678	26.4
2	Hindu	34,787	9.69	46	1.8
3	Asian Age	33,401	9.30	218	8.5
4	Free Press Journal	29,331	8.17	224	8.7
5	Indian Express	23,426	6.52	141	5.5
6	DNA	21,649	6.03	104	4.1
7	Mail Today	20,598	5.73	77	3.0
8	Hindustan Times	19,584	5.45	109	4.2
9	Deccan Herald	17,216	4.79	238	9.3
10	Tribune	12,564	3.50	111	4.3
11	Financial Express	12,701	3.53	121	4.7
12	Statesman	11,870	3.30	71	2.8
13	Mumbai Mirror	11,198	3.11	60	2.3
14	Metro Now	8893	2.47	47	1.8
15	Mint	8387	2.36	19	0.7
16	Telegraph	7277	2.02	20	0.8
17	Economic Times	6419	1.78	101	3.9
18	Pioneer	6195	1.72	31	1.2
18	Deccan Chronicle	6112	1.70	41	1.6
18	Hindu Business Line	5622	1.56	36	1.4
21	Bangalore Mirror	3729	1.03	18	0.7
23	Political and Business Daily	2191	0.61	13	0.5
22	Sentinel	1812	0.50	14	0.5
24	Others (9)	6318	1.76	27	1.1
	Total	**358,924**		**2,565**	100.0

Indian English-language press in the present context under investigation. This trend of overwhelming biomedical research coverage in the press is not incongruent to what is observed in other countries like US, UK and South Africa (Bauer et al., 1995; Bauer, 1998; Nelkin, 1995; van Rooyen (n.a.)). A wide spectrum of sub-disciplines and under them a wide range of topics have been covered. The biomedical research coverage in the Indian English-language press reflected research that mostly happened in US, UK and other West European countries with the exception of a few items from Israel, South Korea and China. Most of the research originating from universities and institutions in the western world and published in highly acclaimed international peer-reviewed journals getting reflected in the Indian English-language press accords credence in the public mind about the authenticity and credibility of the matter reported.

The predominant coverage of the neurosciences and genetics reflected the powerful information emerging out of research in these sub-disciplines which might subsequently form the foundations for developing diagnostics and thereby creating markets (Nelkin and Tancredi, 1994). Only about 8% items constituted Indian research and even this coverage did not show any departure from the world pattern, where the coverage of research in neglected tropical diseases was either conspicuous by its absence or almost negligible while these diseases cost India dearly (Times of India, 2010). For example, dengue is a fast spreading vector-borne disease affecting almost all tropical and sub-tropical regions of the world, and USA followed by India is more or less active in dengue research (Dutt, Kumar, Garg, 2010**)** but it could not meaningfully register its presence in the coverage. Similar is the case with other neglected tropical diseases.

Another reason for meager coverage of neglected tropical diseases could be a lack of funding and support for research and hence a lack of research output (Ella, 2011, Down to Earth, 2004). And even among the pool of neglected diseases afflicting India, the three diseases AIDS, malaria and TB constitute 71% of the research output in comparison to other prevalent diseases (Bhattacharya and Pushkaran, 2011). According to the Human Development Report (2001), out of the 1223 drugs introduced during 1975–1996, only 13 were aimed at tropical diseases. Thus, the neglect of research in neglected diseases is apparent which is reflected in their lack of coverage. At the same time, it cannot be surmised that the overall research reported was irrelevant in the context of India's health scenario. Indian medical fraternity and policy planners are very much alive to the concern about diseases relating to cancer, diabetes, and cardiovascular system which substantially afflict the Indian populace today.

India is undergoing a rapid health transition with a rising burden of non-communicable diseases which are emerging as the leading cause of death in India accounting for over 42% of all deaths, bearing substantial loss in the potentially productive years of life. This situation has led to the launch of the National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) by the Ministry of Health and Family Welfare, Government of India (Ministry of Health and Family Welfare, 2010–2011; Sharma, 2010; Times of India, 2011). Despite all this, it was obvious that the representation of biomedical research in the newspapers was not in consonance with the disease burden in India.

Dengue, malaria, tuberculosis are typical communicable diseases where proper hygiene and awareness can be very important in preventing the disease and from it leading to epidemic proportions. Newspapers can play a key role in this regard because of their reach. Newspapers played an important role in the Polio campaign for the control and eradication of this disease from the major parts of the world. Health authorities need to bring out syndicated news columns to create general health awareness among the lay public and provide a platform for researchers through newspapers to reach out to them. The above study had focused on the Indian context and pointed out the key concerns that need to be addressed. However, this would be the typical scenario particularly in emerging countries where the health concerns are not properly addressed by the media and corrective actions are required. Thus, this study has wider implications.

LIMITATIONS OF THE STUDY

A similar study on coverage of biomedical research by Indian Hindi-language press may probably yield altogether different results in terms of the nature and structure of coverage as the clientele of Hindi-language press may not necessarily be embedded in the same socio-cultural and economic milieu as that of the English-language press. The comparison drawn would provide more meaningful insights into the entire gamut of biomedical coverage by the press in the two dominant languages in the Indian context. Further study also needs to cover newspapers in regional languages which have large populations and have distinct health problems typical to their respective regions. This would be the case in other countries also where there would not be uniform language. A further study also needs to examine the proportion of science items with respect to overall coverage in each newspaper.

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