Full Length Research Paper

Celebrity and health promotion: How media can play an active role in cancer prevention and early detection

Priscila Biancovilli, Gabriel de Oliveira Cardoso Machado and Claudia Jurberg*

Federal University of Rio de Janeiro, Brazil.

It is well-known that celebrities can influence the mass public, helping to shape behaviours and attitudes. The goal of this research is to understand the impact of a celebrity's cancer news on Brazilian society. Our hypothesis is that news about celebrities with cancer attracts much public attention, but the media squander the chance to educate, inform and enlighten the public about this disease. We studied the news published in online newspapers about the Brazilian actor Reynaldo Gianecchini, who was diagnosed with lymphoma in 2011. We selected news published during specific periods – those during which there was a surge in searches on Google, according to Google Trends tool. This study shows that the public is interested in seeking information about cancer when a celebrity is diagnosed with the disease. Although the public has shown interest in knowing more about the disease, the media gave greater focus on celebrity itself. Journalists provide content with a more emotional and dramatic bias – especially when it comes to celebrities.

Key words: Cancer, media, social media, twitter, celebrities.

INTRODUCTION

A public person is promoted from the status of 'ordinary person' to 'celebrity' from the time when the media starts not only to show interest in his or her professional accomplishments, but also to investigate the individual's private life (Turner, 2004). The American historian Daniel Boorstin originated one of the most famous aphorisms on the subject: 'The celebrity is a person who is well-known for his well-knownness' (Boorstin, 1961).

More than just entertaining the masses, celebrities can influence masses, helping to shape certain behaviours and attitudes (Mashable, 2006; Turner, 2004). For exam-

ple, 'organized health promotion has long understood that by engaging a celebrity with a health issue … coverage of the issue de jour can be increased to levels that would otherwise require stratospheric campaign budgets' (Chapman and Leask, 2001; Chapman and Lupton, 1994).

Likewise, when celebrities become ill or die, they are able to generate massive nationwide or even worldwide mobilization. Some remarkable cases include basketball player 'Magic' Johnson's contraction of HIV (Kalichman and Hunter, 1992), musician Kurt Cobain's suicide

*Corresponding author. E-mail: cjurberg@bioqmed.ufrj.br.

Author agree that this article remain permanently open access under the terms of the Creative Commons Attribution License 4.0 International License

(Martin and Koo, 1997), Michael Jackson's death (Sanderson and Cheong, 2010) after the indiscriminate use of prescription drugs, former US President Ronald Reagan's colorectal cancer (Martin and Potosky, 1990), and Australian singer Kylie Minogue's breast cancer. In the last case, news coverage of Kylie Minogue's breast cancer diagnosis caused an unprecedented increase in mammography bookings in Australia (Chapman et al., 2005); and more recently, in 2013, the case of Angelina Jolie, a worldwide famous actress, which published a letter on The New York Times detailing what she called "My Medical Choice". She explained that she inherited a faulty BRCA gene and decided therefore to undergo a double mastectomy.

In general, it is observed that these episodes direct the media coverage of related health and medical issues, raising awareness and encouraging public debate on the subject matter (Levy et al., 2012; Martin and Potosky, 1990; Metcalfe et al., 2010; Sanderson and Cheong, 2010).

In August 2011, Brazilian soap opera's actor Reynaldo Gianecchini was diagnosed with lymphoma, a type of blood cancer; the revelation of his illness caused great national concern (Nascimento et al., 2012). Throughout August, all Brazilian media covered the actor's illness extensively. It is important to emphasize that television is the dominant means of communication in the country. According to Brazilian Media Research (2015), 95% of the Brazilians watch TV regularly and 74% watch TV programs every day. "In Brazil, soap operas – broadcast firstly in radio and later in TV – became one of the most popular TV programs, reaching huge audiences, sometimes overcoming the index of 50% of the whole population" (Massarani and Moreira, 2002). It is common that soap opera's actors, such as Gianecchini, become national idols.

Considering this phenomenon, our hypothesis is that news about celebrities with cancer attracts much public attention, but the media squander the chance to educate, inform and enlighten the public about this disease, because they instead focus on glamorizing the personal life of the individual.

To investigate our hypothesis, we have employed the theory of media framing (Goffman, 1974; Tuchman, 1978; Gitlin, 1980; Entman, 1989, 1993, 2004; Reese, 2001; Crawley, 2007) to analyse the most popular news on Gianecchini's case, seeking common aspects among them. 'Framing' suggests that news media are not impartial, as they make certain public issues more noticeable than others, while also providing a specific news angle that characterizes those events (Crawley, 2007). Frames call attention to some aspects of reality while obscuring other elements, which might influence audiences' reactions (Entman, 1993). Jurberg et al.

(2009), when studying Brazilian media framing approach concerning stem cells, state that "Brazilian media analyzed […] presented evidence for and against research with stem cells, but it was biased in the selection of letters for publication and in the choice of scenes included in newscasts".

METHODOLOGY

News selection criteria

The sample period ranges from August 2011, when the disease of Gianecchini was first diagnosed, to March 2012, when it was announced in the news that his cancer was in remission.

We selected news published during specific periods – those during which there was a surge in searches on Google, the most accessible search engine in Western countries (Haucap and Heimeshoff, 2013). To this purpose, we used the Google Trends tool, which shows – within a specific time period– the search frequency of particular terms. This tool does not provide absolute numbers, but it builds a graph showing relative measures of Internet activity. According to Segev and Baram-Tsabari:

Google Trends (GT) (www.google.com/trends) first became available to the public in May 2006 to assist research on searches in Google Search and news articles collected in Google News. GT analyzes and displays the proportion of searches for terms compared to the total number of searches made on Google over a defined period of time (between 2004 and the present). GT also shows how frequently topics have appeared in Google News stories and in which geographic regions people have searched for them the most. (Segev and Baram-Tsabari, 2010)

On Google Trends, we searched for the terms 'Gianecchini' and 'linfoma' ('lymphoma' in English). During the period of data collection, there were four points of sudden increase in searches for the first term, and two for the latter. Each point represents a period of one week. We started from the assumption that these points resulted from times when the media had published news about the actor that had caught the public's attention and consequently, more people had searched for these terms on Google. We restricted our analysis to the news published in these peak periods.

Analysis of the social network Twitter

In addition, we decided to only look at news that reached a minimum level of popularity on the social network Twitter. Twitter is a microblogging platform whose main goal is to let people know what is happening 'right now'. In rankings by country, Brazil has the fifth-highest number of active users in this social network (Statista, 2014). Moreover, Portuguese is the fifth most spoken language on this platform (Mashable, 2006).Twitter allows users to share messages of up to 140 characters, which their followers can read immediately. The profile displays a user's posts – or 'tweets' – in chronological order, with the latest additions appearing at the top of the profile. Users can follow one another's content without recipro-cal obligation (Marwick and Boyd, 2011). Twitter is used extensively by major newspapers and magazines as a complementary way to publish news. In general, this takes the form of short news headlines followed by a hyperlink that directs the reader to the corresponding newspaper or magazine's website, where the full

story is available.

As Twitter's search engine is very limited, as one can only search back in a period of one week, we used a tool called Topsy (www.topsy.com), which shows the 'tweets' (messages on Twitter) published over a period of time defined by the user. It also shows the number of shares that a 'tweet' has achieved to date.

Most of the Brazilian newspapers have Twitter accounts. Twitter users have the possibility to 'retweet' – that is, to share through their own Twitter account news, which they have read and judged interesting. We decided to analyze news items that had achieved a minimum of 30 shares. This number seemed practical for three reasons: first, because it would be enough to give us an overview of what was published about the actor in a specific period; second, because it would limit the amount of stories to be analyzed and makes the study plausible, since the amount of news found by Topsy on the topic was very large – approximately 10,000 news stories were published during the selected period; third, and finally, because the most shared news stories were precisely those which had greater visibility on Twitter, thus the stories themselves became more relevant to our investigation.

Two researchers studied the news for the selected period. An observation guide was created to support the researchers' analysis of the news content. The criteria were established after all news had been read, and our subsequent aim was to categorize the news stories published on Gianecchini's illness. We set up a table containing the following columns: Number of retweets; Title of the news; Newspaper; Section; Have infographic? What are the topics covered? Quote experts? Explain the disease? Have metaphor?

Regarding the items, we included the "Have infographic?" column because "the main advantage of infographics is to transmit a large volume of information in very little space and time, communicating in seconds what a text would take minutes" (Tabakman, 2013). For this reason, infographics are a powerful tool to transmit health information to readers.

Columns "Quote experts?" and "Explain the disease?" were included so we can investigate if news stories seek to explain the disease in a more scientific way, in contrast to news reports that only address the personal aspect of celebrities.

We decided to include "Have metaphor" column because using words such as war, fight and battle when talking or writing about cancer is recurrent (Sontag, 1978), and this can have negative consequences. "When people think of cancer as an enemy, this may hurt the intention to engage in preventive behaviors that are less associated with fighting enemies" (Hauser and Schwarz, 2015).

Note: when a news story does not provide clarification of what lymphoma is in the body text but includes hyperlinks that redirect the reader to other pages containing explanations, we consider that it explains the disease.

These results were duly compiled, and formed the basis for the investigation of the news content selected for our study.

RESULTS AND DISCUSSION

The graph produced by Google Trends shows time periods during which there is a sudden rise in searches for the terms 'Gianecchini' and 'linfoma'. These searches were conducted in Brazilian Portuguese (Figure 1).

News items included in Table 1 were those that had achieved more than 30 shares on Twitter. These periods are those of sudden increase in searches for the terms 'lymphoma' and 'Gianecchini' on Google.

First surge in searches – 'Gianecchini' and 'linfoma'

The first peak occurred in the period of 6–12 August 2011. On 10 August, the actor was officially diagnosed with lymphoma. In this period, 777 news stories were found on the subject, 55 of which reached more than 30 shares on Twitter. The highlights of the period are stories that reveal the diagnosis and the support of friends and family, and especially the dissemination of a statement in which he claims to be 'ready for the fight'. This quote, which became a catchphrase of the period, appears in 32 of the 55 news stories analysed.

In considering this sample, we discovered that three news stories offered infographics explaining the nature of lymphoma and its symptoms; 11 stories explained the disease (including the three in this group with infographics) and nine of them quoted specialists or physicians in general. In this period, 35 news stories featured some metaphor related to cancer: 32 reproduced the catchphrase 'I'm ready for the fight'; one said 'Gianecchini's father also fights against cancer'; another said that the actor was 'ready to fight against cancer' and another pointed out that friends had 'posted encouraging messages to support his combat against the disease'. That is, the 35 metaphors refer to the fight against the disease.

Second surge in searches – 'Linfoma'

The second surge in searches for lymphoma, in the period 11–17 September 2011, does not relate directly to Gianecchini. On 11 September, the Australian actor Andy Whitfield, who played one of the protagonists of the series 'Spartacus', died from lymphoma.

Second surge in searches – 'Gianecchini'

The second surge occurred over 17–23 September 2011. It is noteworthy that this was when the actor had appeared in public with a shaved head for the first time. Moreover, some newspapers highlighted the spiritual surgery Gianecchini was about to undergo. A spiritual surgery is a complementary/alternative therapeutic method carried out by mediums. The technique consists of touching the patient with hands and transferring spiritual fluids to him. The efficiency of this method has not been scientifically proven. The use of complementary/alternative medicine is common in Brazil. Samano et al. (2004) studied this use among a group of Brazilian cancer patients and Almeida et al. (2000) tried to verify the veracity of spiritual surgery. In this period, 80 pieces of news were found, 11 of which had 30 or more shares on Twitter.
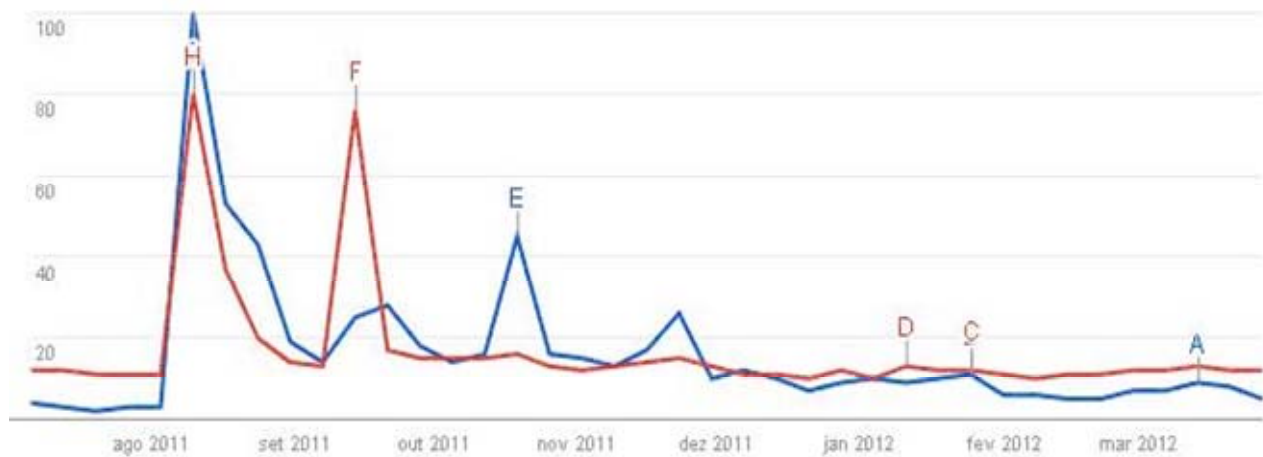
Figure 1. Google Trends graph showing surges on searches for the terms 'Gianecchini' (in blue) and 'linfoma' (in red). Source: *http://www.google.com.br/trends/* .

None of these news stories contained infographics; two quoted experts; two explained the disease and seven included metaphors on cancer, all of them including the word 'fight'.

The two stories that explain the disease have the following titles: 'Cover of magazine "Veja" shows Gianecchini bald', from the Internet "Portal Terra" (often accessed by those seeking information on celebrities), and 'Magazine shows Reynaldo Gianecchini's head shaved'. Importantly, the weekly magazine "Veja" has the largest national circulation in Brazil. In both cases, the explanation of lymphoma is not contained within the body of the text but in a hyperlink that redirects the reader to another page on the same site, where it is possible to find more detailed information about the nature of lymphoma and how it is treated.

Third surge in searches – 'Gianecchini'

The third stage refers to the period from 16 to 22 October 2011. From the 323 news items found, 27 had more than 30 shares on Twitter. Of these, only one included an infographic; another one quoted a specialist; five explained the disease (three of them very briefly) and 16 used metaphors, 14 of them with the word 'fight', one with the words 'fight' and 'battle' and one with the term 'battle'.

This surge occurred in the week in which the actor's father, also named Reynaldo Gianecchini, died of liver and pancreatic cancer. However, not all selected news refers to his death. During this period, the actor gave an interview to the Brazilian Association of Lymphoma and Leukemia, his first interview since the diagnosis, in which

he declared he had 'a very rare and complicated cancer'. The interview was entirely recorded on video and posted on the website YouTube, causing great commotion because he cries several times (numerous copies of this video are available on YouTube, the most popular of which has about 80,000 views). Of the 27 stories, three discussed this interview.

Another highlight of the period related to rumors that Gianecchini had once again been hospitalized. In fact, such news was released by a fake Twitter profile of the actor, and was immediately contradicted by his press office. Three of the news stories from this period refer to this fact.

Fourth surge in searches - 'Gianecchini'

The fourth period is the week between 20 and 26 November, 2011. Of 187 news items including the term 'Gianecchini', seven were shared 30 or more times on Twitter. Of these, one included an infographic and explained the disease but did not speak to a specialist. Five metaphors related to cancer, all of them citing the word 'fight'. One of the stories repeats the term three times.

The surge in Google searches is explained by the fact that Gianecchini had given an interview to the TV programme "Fantástico", on Globo Television Network; this has the largest audience on Brazilian television on a Sunday. In a long conversation, the actor recounted his entire career from the onset of symptoms until the cancer chemotherapy, passing through the death of his father and the unconditional support he received from relatives,

Table 1. Characteristics of surges in searches.

	Period	What happened	News with more than 30 retweets	Have infographic	Explain the disease	Have metaphor on cancer	Quote experts
1st surge 'Gianecchini' + 'linfoma'	6-12 August 2011	The actor was diagnosed with cancer	55	3	11	35	9
2nd surge 'Gianecchini'	17-23 September 2011	The actor had appeared in public with a shaved head for the first time	11	0	2	7	2
3rd surge 'Gianecchini'	16-22 October 2011	The actor's father, also named Reynaldo Gianecchini, died of liver and pancreatic cancer.	27	1	5	16	1
4th surge 'Gianecchini'	20-26 November 2011	The actor gave a long interview to a TV show, in which he spoke about his life after the disease.	7	1	1	5	0

friends and even strangers.

Google Trends and interests of the audience

Analysis of the graph produced by Google Trends shows that the public interest in Gianecchini's lymphoma tended to decrease over subsequent months. This is probably because the actor's health condition had steadily improved over the months, showing no relapse.

The first surge in searches for the term lymphoma (6–12 August 2011) showed that the public wanted more information on the disease, not only on the celebrity. The point of a celebrity's cancer diagnosis is, therefore, the best moment to clarify details of the disease, showing how to prevent it, what the symptoms are and how the treatment works, among other things. Celebrity cancer cases generate extreme public awareness of the disease; at this time more than any other, the media has great

power to shape habits and health behaviour among the general public. According to Hoffman and Tan (2013), the influence of a celebrity's status is a deeply rooted process that can be harnessed for good or abused for harm, especially with regard to health issues.

Considering the most popular news on Twitter about Reynaldo Gianecchini's lymphoma, in the week of the diagnosis, we found that 11 of the 55 studied news items provided explanations of the disease, and nine quoted experts, which shows that media framing in that week did not have a prominent scientific and informative bias. Furthermore, none of the articles, even those that explain the disease, cover the topic of cancer prevention. Some measures can be taken to decrease the possibility of being affected by certain types of cancer. Diets rich in fruits and vegetables, for example, may have a protective effect against non-Hodgkin lymphomas. Exposure to certain chemicals, including pesticides, solvents, fertilizers, herbicides and insecticides, are related to the

development of lymphomas (Instituto Nacional do Câncer, 2013).

Some studies show that the media could contribute greatly to disseminating preventive behaviours (Goffman, 1974; Kalichman and Hunter, 1992; Martin and Potosky, 1990; Chapman and Leask, 2001; Chapman et al., 2005; Metcalfe et al., 2010; Bhatti and Redelmeier, 2014). Theories of health information acquisition consider information-seeking to be an important mediator between a stimulating event and a subsequent initiation or change in behaviour (Griffin et al., 1999; Niederdeppe et al., 2008). According to Bhatti and Redelmeier (2014), the case of Angelina Jolie:

"…there was a large temporary surge in queries about genetics and treatment, a modest increase in queries about general information and risk assessment, and a rapid return to baseline after about one week. The implication is that Angelina Jolie spurred significant information-seeking about breast cancer genetic testing for a short time." (Bhatti and Redelmeier, 2014)

Moreover, when the Australian singer Kylie Minogue was diagnosed with breast cancer in 2005, at the age of 36, the media in her country covered the event massively, generating in the process a 'Kylie effect' (Chapman et al., 2005): a 40% increase in the amount of appointments for mammograms in the two weeks after the diagnosis was made public, plus a 101% increase in mammograms for previously unscreened women in the eligible age group of 40–69 years. This effect was boosted by the way in which the media presented the theme: Minogue was repeatedly reported to have a good prognosis because the cancer had been detected early, which boded well for her recovery and survival (28%). The importance of early detection was often stressed in news stories (8%), and 26% of news items gave a more general prevention message. Journalists emphasized explicitly that vigilance and mammograms were relevant for all women (Chapman et al., 2005).

A similar approach, focusing mainly on lymphoma, appeared prominently in the period in which Gianecchini was diagnosed with the disease, then faded with the passage of time. Infographics appeared three times among 55 news items in the first period: once in the third period (among 27 stories) and once in the fourth period (among seven stories). This tool should be used with more emphasis by health journalists in order to hold readers' attention once it has been captivated by the subject (Tabakman, 2013). Another point of interest we consider is the investigation of one aspect of the second period studied (between 17 and 23 September 2011), when Gianecchini had appeared in public with a shaved head for the first time. It is noteworthy that his photo was

on the cover of the magazine "Veja", which is the most popular magazine in Brazil. The third surge of searches occurred for various reasons, but the interview with the actor, which was widely publicized on social networks, drew widespread public attention. These events show that Gianecchini's case continued to stigmatize the negative aspects of cancer, such as physical changes (hair loss) and distress (he cried a lot in his first interview). Also, the disclosure of the Gianecchini's spiritual surgery achieved prominence in the media. A spiritual surgery is a complementary/alternative therapeutic method carried out by mediums (De Almeida et al., 2000). This reveals strong potential for sensationalism in coverage of such methods. Accordingly, none of the news discussing this spiritual surgery told the story in a skeptical way, or explained that it was not the correct medical procedure of treating lymphoma. In short, this news does a disservice to the population, because it opens up the dangerous possibility that some might be encouraged to think that spiritual surgery could suffice for medical procedures.

Another highlight is the large number of metaphors found in all periods analyzed – from the 100 news items studied in total, 60 used metaphors, especially those containing the terms 'struggle' and 'battle'. Until now, no Brazilian study set out to investigate the war metaphors in discourse about cancer. Studies on cancer by Sontag (1978), Clarke and Robinson (1999), Grant and Hundley (2009), Seale (2001a, 2001b), Hauser and Schwarz (2015) came to important conclusions. When relating cancer to war metaphors and imagery, for example, 'fight against the enemy', and 'battle to be won', media tends to strengthen an extremely negative stereotype of the disease. According to Sontag (1978), cancer is spectacularly overloaded with trap metaphors, and this has cost many lives in the past. Many years after the Sontag studies, we still note that cancer is referred to by media as a sort of punishment (Verjovsky and Jurberg, 2012), instead of a relatively common disease that can affect anyone. Moreover, according to Hauser and Schwarz (2015), Framing cancer in terms of bellicose enemy metaphors has unintended side-effects that may impair efficient prevention strategies. Many behaviors that reduce the risk of cancer require one to limit enjoyable activities, from sunbathing to drinking alcohol and eating red meats. Yet, limiting and constraining oneself is not a concept closely associated with fighting enemies. Hence, a bellicose message frame that emphasizes fighting an enemy may render these protective behaviors less compelling than they might otherwise be.

Although the use of war metaphors when writing and talking about cancer is quite common, it is important that journalists acquire a greater awareness of the negative consequences that the use of this figure of speech can

bring to the audience.

Conclusion

This study shows that the public is interested in seeking information about cancer when a celebrity is diagnosed with the disease. The graph produced by Google Trends shows that, especially during the first peak searches. Although the public has shown interest in knowing more about the disease, the media gave greater focus on celebrity itself.–Journalists provide content with a more emotional and dramatic bias – especially when it comes to celebrities.

This is proven by the large number of metaphors of battle and war, used repeatedly in such news stories, as well as the exploration of themes such as spiritual surgery. Despite some limitations of our study, we believe that our results may contribute to the improvement of the scientific journalism currently practiced in Brazil. New health communication strategies must be sought in order to transform media into a non-formal educational tool that assists to inform the population about cancer, and other medical and health conditions, in a clear and objective way.

Acknowledgments

Conflict of Interests

The author has not declared any conflict of interests.

REFERENCES

Boorstin DJ (1961). The image: A guide to pseudo-events in America. New York: Vintage.

Chapman S, Holding S, Mcleod K, Wakefield M (2005). Impact of news of celebrity illness on breast cancer screening: Kylie Minogue's breast cancer diagnosis. Med. J. Australia, 183(5):247-250.

Chapman S, Leask J (2001). Paid celebrity endorsement in health promotion: A case study from Australia. Health Promotion International, 16: 333-338.

Chapman S, Lupton D (1994). The fight for public health: Principles and practice of public health media advocacy. London: Brit. Med. J. Books.

Clarke J, Robinson J (1999). Testicular cancer: Medicine and machismo in the media (1980-94). Health, doi:10.1177/136345939900300302. 3: 263-282.

Crawley CE (2007). Localized debates of agricultural biotechnology in community newspapers: A quantitative content analysis of media frames and sources. Science Communication, doi:10.1177/1075547006298253. 28:314.

De Almeida AM, De Almeida TM, Gollner AM (2000). Cirurgia espiritual: Uma investigação. Revista da Associação Médica Brasileira, doi:10.1590/S0104-42302000000300002. 46(3):194-200

Entman RM (1989). Democracy without citizens: Media and the decay of American politics. New York: Oxford University Press.

Entman RM (1993). Framing: Toward clarification of a fractured paradigm. J. Commun, 43(4):51-58.

Entman RM (2004). Projections of power: Framing news, public opinion, and U. S. foreign policy. Chicago: University of Chicago Press.

Gitlin T(1980). The whole world is watching: Mass media in the making and unmaking of the new left. Berkeley, CA: University of California Press.

Goffman E (1974). Frame analysis: An essay on the organization of experience. New York: Longman.

Grant JA, Hundley H (2009). Images of the war on cancer in the associated press: Centering survivors and marginalizing victims. Am. Commun. J. 11(4). Retrieved from http://acjournal.org/journal/2009/Winter/Articles/110405%20Images%20of%20the%20War%20on%20Cancer%20in%20the%20Associated%20Press.pdf

Griffin RJ, Dunwoody S, Neuwirth K (1999). Proposed model of the relationship of risk information seeking and processing to the development of preventive behaviours. Environmental Research, 80: 230-245.

Haucap J, Heimeshoff U (2013). Google, Facebook, Amazon, eBay: Is the internet driving competition or market monopolization? DICE Discussion Retrieved from https://www.econstor.eu/dspace/bitstream/10419/68229/1/73435858X.pdf. Pp.83.

Hauser D, Schwarz N (2015). The War on Prevention: Bellicose Cancer Metaphors Hurt (Some) Prevention Intentions. Personality and Social Psychology Bulletin, Retrieved from http://psp.sagepub.com/content/41/1/66.full.pdf+html Pp.41.

Hoffman SJ, Tan C (2013). Following celebrities' medical advice: Meta-narrative analysis. Brit. Med. J. 347:7151f.

Instituto Nacional do Câncer (2013). Linfoma Não-Hodgkin. Retrieved from http://www.inca.gov.br/conteudo_view.asp?id=457

Jurberg C, Verjovsky M, Machado GOC, Affonso-Mittidieri OR (2009). Embryonic stem cell: A climax in the reign of the Brazilian media. Public Understanding of Science, 18(6):719-729.

Kalichman SC, Hunter T (1992). The disclosure of celebrity HIV infection: Its effects on public attitudes. Am. J. Public Health, doi:10.2105/APJH. 82(10):1374-1376.

Levy I, Petra T, DE Castro V (2012). Politica e Saúde ne blogosfera: a polêmica sobre o câncer de Lula. Intercom – Sociedade Brasileira de Estudos Interdisciplinaires da Comunicação.

Martin G, Koo L (1997). Celebrity suicide: Did the death of Kurt Cobain influence young suicides in Australia? Archives of Suicide Research, 3:187-198.

Martin L, Potosky AL (1990). The presidential effect: The public health response to media coverage about Ronald Reagan's colon cancer episode. Public Opinion Quarterly, 54(3):317-329.

Marwick A, Boyd D (2011). To be and be seen: Celebrity practice on Twitter. Intl J. Res. Into New Media Technologies, doi:10.1177/1354856510394539 17(2):139-158.

Massarani L, Moreira I (2002). Human cloning: A soap opera as a science communication tool. Paper presented at 7th Conference on the Public Communication of Science and Technology, Cape Town, South Africa, December. Pp.4-7.

Metcalfe D, Price CL, Powell J (2010). Media coverage and public reaction to a celebrity cancer diagnosis. Journal of Public Health, 33:80-85.

Nascimento P, Aguas R, De Lima D, Kong X, Osiek B, Xexéo G, De Souza J (2012). Análise de sentimento de tweets com foco em notícias. Paper presented at XXXII Congresso da Sociedade Brasileira de Computação, Curitiba, Brazil, 16-19 July.

Niederdeppe J, Frosch D, Hornik R (2008). Cancer news coverage and information seeking. Journal of Health Communication,

doi:10.1080/10810730701854110 13: 181-199.

Pesquisa Brasileira de Mídia (2015, January). Retrieved from: http://www.abradi.com.br/wp-content/uploads/2015/01/Pesquisa-Brasileira-de-M%C3%ADdia-PBM-2015-1.pdf

Reese SD (2001). Prologue. In S. D. Reese, O. H. Gandy & A. E. Grant (Eds.), Framing public life: Perspectives on media and our understanding of the social world. Mahwah, NJ: Lawrence Erlbaum.

Samano E, Goldenstein P, RIbeiro ., Lewin F, FIlho E, Soares H, Del Giglio A (2004). Praying correlates with higher quality of life: results from a survey on complementary/alternative medicine use among a group of Brazilian cancer patients. São Paulo Med. J. Retrieved from: http://dx.doi.org/10.1590/S1516-31802004000200005. 122(2):60-63.

Sanderson J, Cheong PH (2010). Tweeting prayers and communicating grief over Michael Jackson online. Bulletin of Science, Technology and Society, 30(5):328-340. doi:10.1177/0270467610380010

Seale C (2001a). Cancer in the news: Religious themes in news stories about people with cancer. Health, 5(4), 425-440. doi:10.1177/136345930100500402.

Seale C (2001b). Sporting cancer: Struggle language in news reports of people with cancer. Sociology of Health and Illness, doi:10.1111/1467-9566.00254 23(3):308-329.

Segev E, Baram-Tsabari A (2010.) Seeking science information online: Data mining Google to better understand the roles of the media and the education system. Public Understanding of Science. Doi:10.1177/096366251038756.

Sontag S (1978) Illness as metaphor. London: Penguin.

Statista – The Statistics Portal. (2014, March.) Retrieved from http://www.statista.com/statistics/261402/distribution-of-twitter-traffic-by-country/

Tabakman R (2013). A saúde na mídia. São Paulo: Summus Editorial.

Tuchman G (1978). Making news: A study in the construction of reality. New York: Free Press.

Turner G (2004.) Understanding celebrity. London: Sage.

Verjovsky M, Jurberg C (2012). Spotlight on the news: A critical review of cancer disclosure. J. Med. and Comm. Stud. doi:10.5897/JMCS12.020 4(8):150-158.