



ISSN: 2230-9926

Available online at <http://www.journalijdr.com>

# IJDR

International Journal of Development Research

Vol. 14, Issue, 01, pp. 64652-64658, January, 2024

<https://doi.org/10.37118/ijdr.27716.01.2024>



RESEARCH ARTICLE

OPEN ACCESS

## STORYTELLING AND PUBLIC ENGAGEMENT IN BRAZIL: TV COVERAGE ON REGENERATIVE MEDICINE

\*Liliana Acero

Postdoctoral Fellow from the National Council of Scientific and Technological Development (CNPq) and Research Project Coordinator at the National Institute of Science and Technology, Brasil

### ARTICLE INFO

#### Article History:

Received 25<sup>th</sup> October, 2023

Received in revised form

02<sup>nd</sup> November, 2023

Accepted 18<sup>th</sup> December, 2023

Published online 30<sup>th</sup> January, 2024

#### Key Words:

Public Understanding of Science; Public Engagement in Science; TV Science News; Storytelling; Regenerative Medicine; Journalism; Sense-making; Meaning-making; You Tube videos; Scientific news coverage.

\*Corresponding author: Liliana Acero,

### ABSTRACT

Public access to media contributes to public understandings of science and medicine. This paper explored patterns in television coverage on Brazilian regenerative medicine, as presented in YouTube videos that reproduce some of the main recent scientific and medical news in TV national or regional programmes regularly broadcast at peak times. The study built upon the coproduction approach to civic epistemologies in an emerging economy – i.e. the way the wider public makes sense of public policies and demands proof of their validity, as well as, verification of their implementation. The coproduction approach was discussed in relation to two of its main analytical concepts: the public understanding of science and public engagement in science. Using textual analysis, the article chose selected narratives on scientific sense-making processes according to the representations of reporters, scientists, as well as patients and their families. Among other, similarities were found between global and local reporting of scientific and medical news in the videos studied: news segments validated benefits while downplayed uncertainties and legal, ethical and social concerns. Sense-making in TV news coverage was based on reductionist imaginaries of science and medicine. Also, news contents transmitted a top-down communication model that influenced the shaping of public understandings.

Copyright©2024, Liliana Acero. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Liliana Acero. 2024. "Storytelling and Public Engagement in Brazil: TV coverage on Regenerative Medicine". International Journal of Development Research, 14, (01), 64652-64658.

## INTRODUCTION

The public accesses the media as a source of privileged information in science and medicine. Mass media coproduces information with 'characters' in the news in culturally specific ways; and news is processed within civic epistemologies, patterns of meanings that the 'publics' use to verify data and act within the social sphere (Jasanoff, 2004). However, the effects of science information on individual and collective opinions largely depend on how it is organized and presented in written texts and visual icons. Mass media contribute substantively to the 'public understanding of science' (PUS), especially in emerging economies that lack other channels of scientific communication that command public attention (Nguyen, Tram, 2019). Whether we adopt a 'deficit' public participation model (as in much early PUS analysis) or one of 'public engagement in science and technology' (PEST), TV news plays a key role for people's comprehension of medicine, as much as for informed decision-making concerning personal health. RM changes conventional medical practices, focusing upon the repair and regeneration of cells, tissues and genes. Research into RM is accompanied by narratives of hopes for new cures; stem cell and

gene-based therapies have been mainly used to treat fatal and rare diseases. While presented as promising, these therapies are raising key matters of concern on risk and uncertainty as well as the need for new forms of regulation. This essay is based on a science and technology in society (STS) coproduction and PUS approach applied to the study of one sector of 'peripheral' science/medicine in an emerging economy (Rodriguez Medina *et al.*, 2019). It explores TV news items, rebroadcasted in video format and hosted in YouTube, on regenerative medicine (RM) in Brazil, and sets out to answer the following two questions:

1. What are the main characteristics of Brazilian TV science communication in the context of PUS/PEST (in RM in particular)?
2. Which are the main RM-associated meanings, experiences and emotions transmitted by recent Brazilian television news segments published as videos?

### Context

**Trends in Latin American TV Science Communication:** While the public communication of scientific findings has received more

academic attention in recent decade, it remains under-studied in Latin America (Patiño *et al.*, 2017). In this region, science communication takes place mainly through TV programmes, the printed press and social media resources (Massarani *et al.*, 2017), though other scientific-oriented activities have been promoted through public policies for ‘the popularization of science’. Television news is often accorded second-class status due to the ‘superficiality’ and ‘sensationalism’ of content transmission. The preconceptions of journalists about the public – their ‘presumed audiences’ – have also been identified as hindrances to accurate TV reporting (Halpern, O’Rourke, 2020). A number of empirical studies on television news at a regional level or in the larger Latin American countries have been published. Carvalho (2016), basing his analysis on data from the National Science Council [CNPq] in Brazil, determines the local academic relevance of public media because it is the object of study of 9 research groups with a total of 15 lines of research – only two of them dealing with TV science communication. Moreover, only a few studies on Brazilian science and health TV programmes have been published (e.g. Ramalho *et al.*, 2012; Castelfranchi *et al.*, 2014; Reznik *et al.*, 2014; Ramalho *et al.*, 2017).

As the ‘democratic opening’ unfolded in Brazil towards the end of the 1980s, there was heterogeneous growth of national and regional news channels. The *Globo* channel lost its monopoly, though it still has the highest audience share, especially at peak hours. *Globo* also changed its editorial concept or publishing strategy (Ardèvol-Abreu, Gil de Zúñiga, 2016), distanced itself from simply reporting official versions of affairs, and introduced science segments within daily newscasts. The new line of coverage placed limits on the freedom of journalists to determine agenda-setting, news content and programme characteristics. The daily national news produced by the private channel *O Globo, Jornal Nacional (JN)* is broadcast at peak times and has an audience of more than a fourth of national households (O Globo, 2019); it dedicated 7.3% of its time to cover scientific news between April 2009 and March 2010; the news items deal mostly with health and typically only have a duration of less than two minutes (Ramalho *et al.*, 2012). The channel lacks a specialized section on science, nor does it have scientific reporters in its team, as local science journalism has not established its legitimacy. News programmes praise novelty and scientific progress, though the reporting lacks critical interpretation. Reznik *et al.* (2014), who analyzed one year of science news coverage of the programme *Repórter Brasil*, as shown on the national channel *TV Brasil*, identified 72 television news segments that took up, on average, 3.8% of daily airtime and usually covered national scientific breakthroughs. Meanwhile, Ramalho *et al.* (2017), comparing TV science news in Brazil and Colombia in 2009–2010, observed that *JN*’s coverage was double that of the Colombian programme *Noticias Caracol*, and more frequently presented longer segments, with better visuals. To date, no Brazilian studies of TV news concerning RM have been published<sup>2</sup>, indeed these are lacking across the Latin American region<sup>3</sup>.

**Public Perceptions of Science and Technology and Regenerative Medicine in Brazil:** The first national opinion poll evaluating social perceptions on science and technology (S&T) in Brazil was carried out in 1987, with subsequent surveys being conducted in 2006, 2010 and 2015, and 2019 (the last not having yet been fully processed) (Centro de Gestão e Estudos Estratégicos (CGEE), 2020). The 2019 national survey showed that general interest in S&T was high and very high (62%), especially on topics related to health and medicine (79%). Paradoxically though, 90% of the respondents stated that they did not know the name of any well-known local scientist and 88% could not recall the name of a Brazilian research centre. The survey also found that TV news was the main source of information on science for 48% of interviewees, and secondly, the internet/ social media (39%) that has been increasing. The number of people who frequently consulted the internet and social media regarding science was almost double the number who consulted printed newspapers. In 2015, more than half of the survey participants considered the quality of internet and TV news to be satisfactory; those unsatisfied mentioned the following reasons: (a) coverage of an insufficient

number of scientific topics, (b) frequent use of untrustworthy sources, (c) low-quality content, (d) biased reports, (e) omissions of the risks caused by S&T, and (f) difficulties in understanding the news contents. These results contrast strongly with almost two-thirds of interviewees’ expressed contentment with internet/social media news quality. Also, in 2019, 54% of participants considered scientific progress in Brazil to be lagging due to scarce investment in research, most especially in medicine. These survey results will be now compared with findings of our research (beginning in 2009)<sup>4</sup> and largely based on interviews with key stakeholders. These projects have shown limited understanding among interviewees on RM: hardly any knowledge of standardization of desirable stem cell lines, security protection equipment at laboratories and manufacturing facilities or on the retraining of teams at hospitals for the handling of stem cells (The author, 2023). Interviewees complained about scarce public revelation of S&T risks and considered the communication of specialized RM knowledge to be unintelligible. Otherwise, RM elicited relatively wide social support, though this was closely conditioned to the implementation of bioethical standards in relation to patients’ care. Interviewees also held in high regard the prestige and quality of local scientists and medical doctors. But an unrealistic pride about national RM capability permeated interviewees’ narratives, a finding that seems to contradict the public’s general evaluation of Brazilian S&T progress as backward (The author, 2021a). This work suggests that RM governance in Brazil is hindered at present by: (a) a poorly articulated formulation of national strategic aims, and (b) the extremely selective inclusion of civil society groups based on techno-deterministic social imaginaries on science. These realities run somewhat counter to the 2015 surveyed population’s willingness “to engage in key decisions on S&T trajectories”. RM scientists and policy-makers interviewed either emphasize the need to make the public more aware of participation or else, reject or underestimate any form of lay public engagement, in contrast to global trends.

## MATERIALS AND METHODS

**Conceptual Framework:** In the last few decades, scholars have developed multiple approaches to the analysis of science communication and associated public attitudes with two contrasting theoretical models being predominant. This dichotomy, as established by Kamenova (2017, p. 2), who studied stem cell research media controversies, in terms of early PUS versus PEST. The first is based on a ‘deficit’ theory of the public understanding of science (common in the early PUS approach), according to which the public is misinformed and needs to be educated. The second considers dialogue its main tool; the public is seen as an active participant and lay knowledge as valuable. In the early PUS model, the media are conceived of as the primary vehicle for increasing scientific literacy via ‘objective’ narratives that advocate for science, as present in earlier debates. In contrast, the PEST model encourages scientific debate from different critical perspectives, assumes the validity of lay knowledge, and integrates it democratically into policy-making (e.g. Bussu *et al.*, 2014). The two approaches have influenced specific frames and public expectations concerning science communication by the media (Kamenova, 2017). In emerging countries, state-led processes of public inclusion in ‘peripheral’ biosciences have been less frequent and there is scarcely any research on this topic within the media. The two models characterized also impact differentially the shaping of ‘tacit civic modes of knowing’ or civic epistemologies. In such civic epistemologies, scientific knowledge, power and social processes mutually influence each other, as well as representing complex culturally-specific frames of meaning that are significantly influenced by media coverage. In emerging countries, the construction of civic epistemologies takes distinctive forms, mainly due to the more rigid separation between scientific and medical experts and other concerned stakeholders, the centralization of power within scientific institutions of excellence and the relative suppression of public participation. This also applies in the case of RM (The author, 2023). In Brazilian RM, novel phenomena are redefined with the contribution of mass media. The present study intends to characterize

the types of representations of ‘peripheral’ science that predominate in TV news narratives about Brazilian RM. Although people’s perceptions are not exclusively shaped by the media, inadequate reporting of news can prevent lay publics from acquiring an accurate understanding of science and use it to take informed decisions on personal health (De Semir, 2010). They have a significant effect on audience comprehension and attitudes, given lower science literacy levels, deficient schooling attainment, few venues of science communication and limited settings for democratic expression (Nugyen, Tram, 2019). In the present study, science communication is approached as a process of sense making intimately linked to culturally-specific representations “as always entangled within, and itself shaping, cultural stories and meanings” and reformulates science, technology and society (STS) approaches to the shaping of civic epistemologies (Davies *et al.*, 2019, p. 4). However, findings in the present research should be validated by other qualitative studies or surveys, as an in-depth analysis of wider public attitudes to TV news on RM is beyond the scope of this paper. Our focus is solely upon how aspects of the theoretical approaches mentioned above are articulated in practice in the Brazilian media context. The present analysis investigates how the coproduction of science, power and values in media coverage influence each other and how PUS/PEST shapes representations, narratives and identities. The experiential and emotional dimensions transmitted in the creation of meanings within media storytelling are interwoven with public culture (Caulfield & Fahy, 2016). Critical sense-making interconnects the socio-psychological processes of meaning-making to the structural issues of power (Helms Mills, Mills, 2000).

(Wellbourne, Grant, 2015). Publics may identify with the values embodied in certain story characters and become more receptive to selected scientific topics. The oral and visual credibility of news is closely related to ‘authenticity’, which improves public trust about messages.

## METHODOLOGY

A qualitative case study was developed to analyze scientific news on Brazilian TV on RM as reflected in video excerpts. These are usually rebroadcast as YouTube videos; a practice that tends to increase news viewership. The unit of analysis was each individual video on the recent phase in RM: the translation of research results into clinical practice. The research is based upon a discourse analysis of the contents of 16 of these videos, as produced by the *OGlobo* network and presented on the YouTube platform between 01/01/2012 and 30/05/2019 [Table 1]. Videos were located by searching the website of the *Globo Play* channel, <https://globoplay.globo.com/busca/>, using the keywords “cell therapy” and “stem cell therapy”. In this platform, the news of both the main national TV channels and Brazilian regional and community-level channels is usually documented. The choice of the *Globo Play* channel is based on the national impact of the *OGlobo* television broadcasting network, which transmits scientific news programmes in peak times. YouTube is the second most consulted site globally, after Google, being visited by 2,000 million individuals every month (You Tube, 2019).

**Table 1. Videos based on Brazilian TV news on cell-based therapy (2012-05/2019)**

| Name   | Date            | TV Channel                     | Duration           | Reporter/Gender ( F/M)         |
|--|-----------------|--------------------------------|--------------------|--------------------------------|
| 1. Brazilian scientists advance in stem cell studies   | 18/03/2013      | <i>Jornal Nacional</i>         | 4 min.             | Sandra Passarinho (F)          |
| 2. Stem cell research tries to cure disease  | 19/01/2019      | <i>Como Será?</i>              | 11 min.            | Helena Lara Resende (F)        |
| 3. Stem cells give hope for the treatment of horses  | 12/05/2019      | <i>Globo Rural</i>             | 14 min.            | Helen Santos (F)               |
| 4. Stem Cell Research at PUC- PR can help those with knee-problems                                 | 30/03/2018      | <i>Meio Dia Parana-Maringá</i> | 3 min.             | Vanessa Rumor (F)              |
| 5. Parents continue campaigning to pay for the stem cell treatment of their son abroad             | 09/07/2017      | <i>JÁ 1ª Edição</i>            | 2 min.             | ----                           |
| 6. A young man recovers walking after a stem cell treatment in Thailand                            | 18/05/2017      | <i>MTTV 1ª Edição Cuiabá</i>   | 3 min.             | Tiago Terciotti (M)            |
| 7. A mother asks again for help for a boy with a rare disease: ‘Affliction’                        | 28/05/2015      | <i>JÁ 1ª Edição</i>            | 2 min.             | Anderson Conrado (M)           |
| 8. JN exhibits a series of reports on stem cell research   | 17/01/2013      | <i>Jornal Nacional</i>         | 5 min.             | Sandra Passarinho (F)          |
| 9. Parents fight for a therapy for their son who is almost blind and cannot walk or talk, in Góias | 22/07/2015      | <i>Bom Dia GO</i>              | 2 min.             | Renata Rocha (F)               |
| 10. Parents campaign in Goiania to pay for the treatment of a child abroad                         | 27/08/2015      | <i>JÁ 1ª Edição</i>            | 3 min.             | John William (M)               |
| 11. Research project promises to revolutionize stem cell treatment                                 | 19/01/2014      | <i>Jornal Nacional</i>         | 1 min.             | Elaine Bast (F)                |
| 12. A medical doctor explains his experience in the use of stem cells with animals                 | 04/05/2013      | <i>Mais Você</i>               | 2 min              | -----                          |
| 13. Stem cell tests may revolutionize the treatment of disease                                     | 02/08/2013      | <i>Bom Dia Brasil</i>          | 27 sec.            | -----                          |
| 14. Learn how stem cell banks work   | 05/09/2013      | <i>Bem Estar</i>               | 12 min.            | Phelipe Siane (M)              |
| 15. São Paulo Congress shows studies for the cure of MS  | 04/10/2012      | <i>Jornal da Globo</i>         | 2 min.             | Michelle Barros (F)            |
| 16. A technique that uses stem cells contributes in the recovery of animals                        | 22/04/2013      | <i>Jornal do Almorço-SC</i>    | 2 min.             | -----                          |
| Total of Videos: 16  | News peak: 2013 | Regional/local videos: 12      | Average: 4.26 min. | Female: 8; Male: 4 No info.: 4 |

Source: The research

This earlier framework on sense making is complemented in our study by the analysis of the relationship between power and knowledge, as in Jasanoff (2004). Sense-making is based upon experience, narrative and images, identity and affection. It contextually explores the relationship between scientific facts and the promotion of these other dimensions in language and images. The articulation of experience evolves into social imaginaries, in an individual as well as in a collective sense. Communication about science contributes to the building of professionally-oriented social imaginaries about scientists, the institutions to which they belong and about scientific activity itself (Joubert *et al.*, 2019). Since visualizations also communicate viewpoints in tangible ways, they can also strongly impact audiences’ perceptions and emotions

The following categories were used for video classification: title, date, duration, gender and profession of the main reporter, geographical origin of the story (national or international), topic areas (scientific or social), institutions involved (public or private), stakeholders quoted and central characters of the news (factual or testimonial). These categories were independently checked by a peer researcher for relevance. First, the RM videos located were manually classified and, in the few cases when there were uncertainties, coding results were cross-evaluated with a second peer researcher. In the second stage, a qualitative textual analysis was developed based on Mulkay’s (1993, pp. 723–724) concept of “discursive regularities [ . . . ] whose form and content are shown to be constructed according to pre-existing socio-cultural beliefs that reveal the speakers’

interrelated set of background assumptions". This analysis prioritized analytical themes such as the nature of science/medicine transmitted, the visions and values inherent to the key characters, the emotions promoted and the scientific identities portrayed – themes selected according to a modified version of Davies *et al.* (2019). References are made along the article to selected visual aids if they either support or contradict significantly the main arguments presented in the stories, however, the author lacks the methodological tools for an in-depth analysis of visuals.

**Sample Description and Video Structure:** The 16 videos analyzed in RM, listed in Table 1, are from a variety of news programmes, with the majority being broadcast at community and regional levels (12 videos) in the morning or at midday. They combine brief information on daily news with reports by different type of specialists, e.g. *BemEstar*, a health and food programme that aired daily between 2011 and 2019. Three videos reproduce scientific news from *Jornal Nacional* and from *Jornal da Globo*, both belonging to the *O Globo* network, with national coverage and live reporting at peak times.

The titles given to the videos tend to emphasize RM as transforming medical practices for the better: for example, "Research promises to make a revolution in stem cell treatments" (*JN*, January 29, 2014). Scientific achievement is portrayed as developing through qualitative breakthroughs, a frequent association in the international RM literature (Lynch *et al.*, 2014). Only three videos have neutral titles, with one example being "A medical doctor explains the experience of stem cell applications in animals" (*MaisVocê*, May 4, 2013). Videos range in length from 27 seconds to 14 minutes with the average being 4.26 minutes, almost at the level of the average YouTube video globally - 4.4 minutes long. Specific diseases form the majority of the topics reported on the videos, three videos discuss some of the sources of human stem cells, and three other show animal therapies.

The reporters are all professional journalists and the ratio of women to men is 2:1, frequently found in gender stereotyped professions, while gender bias is reproduced in the contents of science videos in different contexts (Amarasekara, Grant, 2019). Women reporters in the videos mainly appear live, but sometimes female narrators are used only as background to images broadcast. In contrast, the specialists interviewed are mainly men and the double of time is dedicated to their arguments than to those of female specialists. Only a third of the female scientists interviewed reported on a scientific discovery, while they mainly commented on a technical or physiotherapy outcome.

More than 81% of the therapies reported on have been developed in Brazil, possibly because news is directed at a massive 'presumed audience' and many videos transmit community-level or regional news. Scientific facts are communicated in little more than half of the videos analyzed, with narratives in the rest based mainly or exclusively on testimonials. Research sources are not usually identified: less than half of the video narratives make references to local public research institutions, and in only two cases are international institutions cited. In two videos, civic society organizations are quoted, though they are not used as sources.

Video stories tend to unfold in a predetermined sequence. Firstly, the reporter very briefly describes the main technical characteristics of the discovery. This is followed by the projection of a certain type of images, mainly cell/organ visualizations with microscopes, photographs of biological materials and/or explanatory animations. Secondly, one or more scientists are succinctly interviewed and a longer patient's testimony is presented revealing the cure of a disease. This repetitive structure suggests a certain lack of creativity that could be attributed either to the channel's belief on how to engage the viewers, to decisions made by the journalists, or to the video designers' skills.

Stories are quite evenly distributed between those that feature only scientists (over one-third of the videos), and those focusing exclusively on patients and/or their families (just under one-third). Videos presenting a mixture of conversation account for the last third.

Strikingly, more than a third of this sample's videos include interviews with patients and family members searching for neuromuscular treatments in experimentation in Thailand, due to the lack of officially approved advanced therapies in Brazil. Such medical tourism may be a response to marketing campaigns of specific Thailand hospitals or of managers/local associations and also the result of personal contacts between former patients.

Visual aids such as graphs, tables and photos are included in all of the videos, with animation used in only four videos. Graphs and tables are frequently

explained by reporters *in vivo*, while animations often have brief commentaries in the background.

## RESULTS AND DISCUSSION

### Meaning-Making in Videos

Videos usually explain the central aspect of the discovery/novelty at stake, show which treatments are available and appeal to collective compassion. Cures are often described as "almost magical" (*JA 1ª*, July 9, 2017) or, put another way, "it seems like fiction, but it is a reality" (*Jornal Nacional*, January 17, 2013). Audio-visuals transmit very positive messages on RM, such as "the research data is very promising" (*MaisVocê*, May 4, 2013). Video messages emphasize local scientific successes and pride in those accomplishments. In almost half of the videos, the techniques discussed are portrayed as "the first in the world", but no evidence to substantiate these claims is provided. References to arguments from key policy-makers, political leaders or well-known public figures are absent from videos. This contrasts with trends found in RM global media coverage, as well as in the Brazilian RM press, where their participation has been prominent. Meanings in narratives by different social actors involved will be shown next, in relation to specific topics: views on the RM field, building empathy, patient portrayal and community support.

### Topics of Narratives

The narratives to be commented upon influence the shaping of messages in which a culturally-specific induction of the audiences' emotional engagement predominates, in relation to therapeutic solutions, and national scientific identity. Narratives and visual aids are designed to invoke among spectators a strong resonance with the characters involved in the testimonial stories. The place of a discovery within the advancements, ambivalences and controversies of scientific development, plays a secondary role within sensemaking messages.

### Views on the RM field

An 'epic' and universal style predominates in the language used by reporters, i.e. one that celebrates discoveries and therapies without establishing their validity and how they are "able to replace conventional treatments; this is very good because they have lower costs and less adverse effects" (*Jornal Nacional*, March 18, 2013), a statement without any scientific or economic basis. Advanced therapies are presented as part of an undefined 'personalized medicine'; "they will revolutionize treatments for illnesses like cancer" (*Bom Dia Brasil*, August 2, 2013), medicines developed with 'apparently' little human mediation: "Avatars from patients' cells are created at the laboratory; these are like living models of the human brain [...] Each patient has his own avatar [...] Thus, it could be said that one works directly with the patient at the laboratory" (*Jornal Nacional*, January 19, 2014).

Reporters describe specific diseases, mentioning a few scientific or technical facts and using visual elements – graphics, animation, photographs – to support this explanation. However, explanations tend to be marked by errors, omissions, incoherence and sheer carelessness, a distinct form in the Brazilian "adaptation of scientific data to a new space or device" (Ramalho *et al.*, 2012, p. 6).

Only four reporters inform viewers about the potential future costs of local RM treatments, which might range between USD 5,000 and 10,000, costs that are highly underestimated and calculated in relation to only one intervention, while treatments have to be repeated on average 3 to 16 times (Cona, 2020). The presentation of treatments as analogies for pretended "public gifts" permeates narratives, defined as "symmetric exchanges" between actors, following the logic of considering health as a public good – which does not actually apply to RM. Reporters communicate social imaginaries about scientists' identities, portraying them as "dedicated", "persevering" and "searching for a definite solution to the population's health problem" (e.g. *MeioDia Parana-Maringá*, March 30, 2018); similarly to the findings from the national surveys about the Brazilian population's perceptions on S&T.

In contrast, scientists sound much more cautious than reporters when they announce discoveries, reminding the audience that further research is needed to validate them: "The technique's application is being followed up closely and checked by many different professionals" (*MaisVocê*, May 4, 2013). Along these lines, a female scientist explains with the aid of computer images the standard procedure on stem cell selection: "Each sample for transplant has to be tested before approval...If any of them have any chromosomal alterations, they are discarded" (*Jornal da Globo*, October 4, 2012). However, the use of professional jargon in media coverage distances the audience from the topics presented and has been shown to hinder public comprehension and increase risk perception. Scientists contextualize research more precisely, even though they omit scientific details and estimates on when locally-produced therapies will be approved. However, often innovation is presented as the result of a "sudden revelation" (e.g. *Jornal Nacional*, January 17, 2013).

Scientists' descriptions of the laboratories and hospital rooms in videos are aided by images of the protection equipment in use: gloves, masks and uniforms, testifying to the existence of dangers. However, their reflection on global concerns about risks and uncertainties in RM, such as propensity levels to tumour formation, is almost absent from discourse and thus, inconsistencies and negative results of local research projects and clinical trials, become invisible to video audiences. Reporters and scientists have in common a tendency to deal with these therapies as potentially available to the vast majority of people in the near future. One researcher says, "This technique will, undoubtedly, have a steady evolution towards a therapy that, in the short term, will heal a vast amount of people" (*Bom Dia Brasil*, August 8, 2013). Meanwhile, patients and their families mainly express their hopes on RM, though based upon very limited information. They talk about their life experiences in testimonials, discussing their health challenges, positive health evolution, hopes and dreams. They express authentic human reactions that legitimate message authenticity (Vissek, 2011). By sharing their experience-based information, parents help promote public awareness of the diseases themselves, as well as of disease prevention.

**Empathy Building:** Video storytelling acts as a way to induce empathy among audiences towards the characters (including animals) in the unfolding plot, through a description of their positive qualities and repeated references to their unique experiences. Reporters refer to patients by their first names or nicknames and discuss their emotional relationships and professional and personal accomplishments together with the favourable evolution of their health. Several emotionally moving images are also found in videos, e.g. a mother who cries and pleads for financial support for her son's experimental treatment in a foreign country (*JA 1ª Edição*, May 28, 2015). These 'sensationalist' kinds of messages are too often used to draw in financial collaboration. When the patients who benefit from treatment are adults, the video sequence changes significantly. The reporter introduces the individual, who only testifies when there has been a significant health improvement or a total recovery. Often breathtaking images are shown of that individual with past physical and emotional impediments. Positive phrases appealing to the audiences' sense of identification with the patient are then deployed: "Whoever sees [patient's nickname] today cannot imagine how discouraged he had felt and with a very low self-esteem" (*MTTV 1ª Edição Cuiabá*, May 18, 2017). This marketing technique associated with medical journalism is used extensively (Sumner *et al.*, 2014).

**Patient Portrayal:** Reporters often highlight the patients as exemplars of culturally dominant qualities in the social imaginary of Brazilian national identity, emphasizing the patients' happiness, smiles, dedication, courage and beauty; with some phrases used recurrently: "she/he is very beautiful", "hugs and kisses form part of her", and "in fact, smiling is an inborn, registered feature in her" (e.g. *Bom Dia Go*, July 22, 2015). Patients who decide to undergo experimental therapies developed locally are described as exhibiting the culturally valued qualities of courage and spontaneity: "Patients took the risk", they "bet on them" and "[he] threw himself into it" (e.g. *MTTV 1ª Edição Cuiabá*, May 18, 2017). Narratives encourage the audience to identify with the children's suffering and with the parents bearing the emotional and economic costs of caring for them, as in a third of the videos the central characters are children. For example, a low middle-class mother of a child states, "I had to stop working to dedicate my time to him" (*JA 1ª Edição*, May 28, 2015). When patients are adults, reporters usually ask interviewees to elaborate in greater detail on their experience, asking questions about what activities he/she could not perform before his/her recovery. This tends to be the only moment when interviewees make any extended reference to their previous pain and suffering, possibly reflecting a culturally-specific social imaginary on health, that prioritizes health improvements instead of difficulties. Alternatively, several patients are interviewed very briefly, mainly in hospitals' admission offices (shortly before receiving treatment) or in recovery rooms. Often, high-impact images are shown together with narratives, such as those of severely-impaired patients.

**Community support:** Long stories are told about families' informal access to financial resources, often obtained through family-organized public campaigns, community-level donations and charity activities. Community-level informal funding pathways are relied upon locally in many other cases of health-related treatments for the poor (Hilfinger-Mesias, 2002). In the light of the low incomes of many Brazilians and significant socioeconomic inequalities, the costs of a private treatment locally or abroad – between USD 40,000 to 100,000 for an experimental therapy – are largely made invisible and only sometimes made explicit only by journalists. One father comments, "Any form of help is welcome [to access treatment in a foreign country], independently of whether it involves money donation or participation in a raffle. They promised [at the Thailand hospital] 99% of life-quality improvement. Hopes never die" (*JA 1ª Edição*, August 27, 2015). Through calls for collective help and search for therapies abroad, public agencies are implicitly summoned to invest more substantively in RM research, develop therapies locally and make them widely available within the public health system. The justice sector is openly challenged to defend health rights more adequately and to take action on legal demands for local access to international RM. The messages communicated as trustworthy testimonials are conveyed in highly emotional tones, where audiences witness concrete forms of life and modes of work, and become unquestionably credible. Selected parallels can be drawn between this form of communication on RM and the emotional ethos and/or group climate created during the public dialogue processes supported by contemporary PEST (Irwin *et al.*, 2013). Storytelling tries to generate social imaginaries of shared meanings built upon community-level values as well as testimonials. However, these are interwoven within a linear approach to RM "modernity founded upon a myth of perfection" (Hegan, 2005, p. 52). Culturally-specific visions of desirable futures include the notion that these treatments will be massively available and "viable for most people".

**Concluding Remarks:** The research findings reveal the need to further develop science, technology and society (STS) analytical constructs, so as to enable closer examination of how the constitutive dynamics of television RM news narratives are shaped by a number of contextual factors, most especially in a developing country. These include: (a) the location of the country in the global S&T and RM scene; (b) the specific topic/sector under study and the ethical, cultural and emotional issues associated with it; and (c) the legitimization of forms of PUS/PEST that are partially reproduced or possibly reinforced through storytelling within TV news. Future topics that could be further investigated could be: (a) the legitimization of international scientific sources in the shaping of news in an emerging economy; (b) the specifics of power relations as reflected in media coverage, e.g. stories based upon the narratives of Brazilian scientists, mainly men, used as almost exclusive sources of news; (c) the decision-making process behind the high number of stories addressing experimental treatments abroad; and (d) the selection of patients and families for news coverage from the lower middle class or else extremely poor. The study discusses the integration of cultural specificities into an analysis of what the science media's implicit PUS/PEST approach is like. For example, the videos analyzed show revealing lacunae, e.g. the exclusion of large social sectors from consultation (early PUS) and dialogue (PEST) or else, their inclusion as merely 'satisfied' individual consumers. News neither name associated civic organizations as sources nor are they mentioned as key actors in the video narratives. This does not do justice to the prominent role these associations often play in the local RM scene (The author, 2021). Empirical findings allude to similarities and differences between international and Brazilian reporting on RM. In both cases, news optimistically validates RM benefits and relegates therapy uncertainties, as well as shows a dearth of legal, ethical and social reporting. But accounts differ significantly in terms of the quality of critical reporting on scientific debates and therapy regulations. Local journalistic characteristics, such as, deficient scrutiny of data veracity and validity, are illustrated as they play out in this country's cultural environment. TV news appeals strongly to viewers' emotions; this can contribute to the shaping of the audiences' civic epistemologies or tacit forms of knowledge.

The overall Brazilian population positioning show a relatively high interest in S&T. However, the public engagement context in Brazil is limited by real access to quality scientific information and the presentation of very few RM reports. Videos also try to incentivize different forms of community support for individual citizens' medical treatments. The open calls for community involvement may indirectly function as 'eye-openers' with regard to short-term RM policy requirements, showing the importance of PEST-type public engagement in this area. In this sense, science journalists could play a key social role; they could become active participants and engagement facilitators or promoters given the general population's trust in them, as well as their wide access to viewers.

## Notes

<sup>1</sup>An earlier version of this paper, based on the same empirical data, though not analyzing popular scientific perceptions, as well as using a very different conceptual approach, interpretation and organization of materials, was first published in Portuguese as: The author (2020). *Uma análise de matéria televisiva em ciência: o caso da medicina regenerativa no Brasil*. *Revista Tecnologia e Sociedade*, 16 (45): 76-91.

<sup>2</sup>Based on a search in the platform google academic, using the keywords "cell-based therapy" and "stem cell therapy" and of selected articles in Brazilian journals on science and health: *Ciência e Saúde Coletiva*, *Physis-Revista de Saúde Coletiva*, *Tecnologia e Sociedade*, *História, Ciência e Saúde – Manguinhos*, *Saúde e Sociedade* and *RECIIS*.

<sup>3</sup>Based upon a search of the regional website *RELACYT* and of international academic journals on S&T media: *Brazilian Journalism Review*, *Tapuya*, the *Journal of Science Communication*, *Social Studies of Science* and *Science Communication*.

<sup>4</sup>These research projects have studied RM in Brazil, using as reference point developments in the United Kingdom, conducting interviews with a sample of 30 Brazilian scientists, policy-makers and representatives of civic society, as well as with 15 Brazilian, 15 British and 7 USA RM leaders. Projects mainly address social representations of innovation, regulation, governance and social inclusion.

**Acknowledgements:** I thank the financial support of the National Council for Scientific and Technological Development (CNPq) of its Postdoctoral Fellowship Programme and in my role as research project coordinator at The National Institute of Science and Technology of the Postgraduate Programme of Public Policy, Strategies and Development (INCT/PPED) at the Federal University of Rio de Janeiro (UFRJ).

## REFERENCES

- Amarasekara I, Grant W. 2019. Exploring the YouTube science communication gender gap: A sentiment analysis. *Public Understanding of Science* 28 (1): 68-84.
- Ardévol-Abreu A, Gil de Zúñiga H. 2016. Effects of Editorial Media Bias Perception and Media Trust on the Use of Traditional, Citizen, and Social Media News. *Journalism & Mass Communication Quarterly* 94 (3): 703-724.
- Bussu S et al. (eds.) 2014. *The best of Sciencewise reflections on public dialogue*. London: Sciencewise.
- Carvalho G. 2016. A picture of the public media research in Brazil. *Intercom: Revista Brasileira de Ciências da Comunicação* 39 (3). Available at: <https://doi.org/10.1590/1809-5844201638> (accessed 11.5.2020).
- Castelfranchi Y et al. 2014. Guerra, ansiedade, otimismo e triunfo: um estudo sobre a ciência no principal telejornal brasileiro. *Journal of Science Communication* 13(03): A01.
- Caulfield T, Fahy D. 2016. Science, celebrities and public engagement. *Issues in Science and Technology* 32 (4): 24-26.
- CGEE. 2020. *Percepção Pública C&T no Brasil 2019*. Available at: <https://www.cgee.org.br/web/percepcao> (accessed 22.4.2020).
- Cona L. 2020. *The Cost of Stem Cell Therapy in 2020*. Available at: <https://www.dvcstem.com/post/stem-cell-therapy-cost-2020> (accessed 25.4.2020).
- Davies S et al. 2019. Science stories as culture: experience, identity, narrative and emotion in public communication of science. *Journal of Science Communication* 18 (5).
- De Semir V. 2010. *Science Communication & Science Journalism. Media For Science Forum*. Science Communication Observatory Barcelona: Pompeu Fabra University.
- Fahy D, Lewestein B. 2014. Scientists in popular culture: the making of celebrities. In Bucchi M and Trench B (eds.) *Routledge Handbook of Public Communication of Science and Technology*. London and New York: Routledge, pp.57-77.
- Hegan S. 2005. The Myth of Perfection: The Image of TV-Globo Newscasters. *Brazilian Journalism Research* 2 (1): 97-120.
- Helms Mills, J. and Mills, A. 2000. Rules, Sensemaking, Formative Contexts, and Discourse in the Gendering of Organizational Culture. In Ashkanasy, N.M., Wilderom, C.P.M. and Peterson, M.F. (eds.), *Handbook of Organizational Culture and Climate*. Thousand Oaks, CA: Sage, pp. 55-70.
- Hildreth C. 2020. Cost of Stem Cell Therapy and Why It's So Expensive. *BioInformant*. Available at: <https://bioinformant.com/cost-of-stem-cell-therapy/> (accessed 15.4.2020).
- Horst M. 2013. A Field of Expertise, the Organization, or Science Itself? Scientists' Perception of Representing Research in Public Communication. *Science Communication* 35 (6): 758-779.
- Irwin A et al. 2013. The good, the bad and the perfect: Criticizing engagement practice. *Social Studies of Science* 43(1): 118-135.
- Jasanoff S. 2004. *States of knowledge: The co-production of science and social order*. Milton Park: Routledge.
- Joubert M et al. 2019. Storytelling: the soul of science communication. *Journal of Science Communication* 18 (5).
- Kamenova K. 2017. Media portrayal of stem cell research: towards a normative model for science communication. *Asian Bioethics Review* 9 (3): 199-209.
- Massarani L et al. 2017. Aproximaciones a la investigación en divulgación de la ciencia en América Latina a partir de sus artículos académicos. *Red de Popularización de la Ciencia y la Tecnología en América Latina y el Caribe (RedPOP)*. Available at: [https://www.researchgate.net/profile/Mariana\\_Rocha4/publication/319165852](https://www.researchgate.net/profile/Mariana_Rocha4/publication/319165852) (accessed 25.3.2023).
- Mulkay M. 1993. Rhetorics of hope and fear in the great embryo debate. *Social Studies of Science* 23 (4): 721-742.
- Nguyen A, Tram M. 2019. Science journalism for development in the Global South: a systematic literature review of issues and challenges. *Public Understanding of Science* 28 (8): 973-990.
- O Globo. 2019. Alvo de políticos, "Jornal Nacional" ganha fôlego e público em 2019. Available at: <https://tvefamosos.uol.com.br/noticias/ooops/2019/11/11/alvo-de-politicos-jornal-nacional-ganha-folego-e-publico-em-2019.htm> (accessed 15.1.2024).
- Patiño M et al. 2017. Diagnóstico de la divulgación de la ciencia en América Latina: Una mirada a la práctica en el campo. *RedPOP e Fibonacci*. León: México.
- Ramalho M et al. 2017. A cobertura de ciência em telejornais do Brasil e da Colômbia: um estudo comparativo das construções midiáticas. *História, Ciência e Saúde - Manguinhos* 24 (1).
- Reznik G et al. 2014. *Ciência na Televisão Pública: uma análise do telejornal Repórter Brasil*. ALEXANDRIA: Revista de Educação em Ciência e Tecnologia 7 (1): 157-178.
- Rodriguez-Medina, L. et al. 2019. International ties at peripheral sites: Co-producing social processes and scientific knowledge in Latin America. *Science as Culture* 28 (4) : 562-588.
- Sumner P et al. 2014. The association between exaggeration in health-related science news and academic press releases: retrospective observational study. *British Medical Journal*, 349: g7015.
- The author. 2020. *Enquadramentos na medicina regenerativa: os relatos recentes na imprensa brasileira*. *Revista Eletrônica de Comunicação, Informação e Inovação em Saúde (RECIIT)*, Rio

- de Janeiro, 14, (4): 942-959, <http://dx.doi.org/10.29397/reciis.v14i4.1966>.
- The author 2021a. Framing regenerative medicine: culturally specific stories of an emerging techno-science. *Biosocieties*. Online first June 16. <https://doi.org/10.1057/s41292-021-00236-6>.
- The author 2021b. Brazilian Patient Organizations and Regenerative Medicine: Selective Comparisons with the Experience of the United Kingdom. *Global Journal of Medical Research Interdisciplinary K*, 21 (4) 9-24.
- The author 2023. Structural trends and State capacities in regenerative medicine in Brazil: Science, innovation, regulation, governance and social inclusion *Issues in Social Sciences*. 11 (2):29-48. <https://doi.org/10.5296/iss.v11i2.21552>
- Veneu F et al. 2008. Science journalism in Latin America: how the scientific information from a scientific source is accommodated when it is transformed into a journalistic story. *Science Communication* 7 (1): 1-9.
- Welbourne D, Grant W. 2016. Science communication on YouTube: Factors that affect channel and video popularity. *Public Understanding of Science* 25 (6): 706-718.
- You Tube 2019. You Tube Statistics 2020. Available at: <https://www.youtube.com/about/press/> (accessed 15.5.2023)

\*\*\*\*\*