The Infodemic in Cancer in Brazil: A Critical Look at Impacts of Disinformation and Combat Strategies

https://doi.org/10.32635/2176-9745.RBC.2026v72n1.5464EN

A Infodemia em Câncer no Brasil: Um Olhar Crítico sobre Alguns Impactos da Desinformação e Estratégias de Combate

La Infodemia del Cáncer en el Brasil: Una Mirada Crítica sobre Algunos Impactos de la Desinformación y Estrategias de Combate

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INTRODUCTION

Cancer control in Brazil faces a diffuse and fast-spreading adversary: cancer infodemics. The World Health Organization (WHO)[1] defines infodemics as an overwhelming of information – false or misleading – during a disease outbreak and emergencies, causing confusion, inducing risk-taking behaviors and mistrust in health authorities. In case of cancer, fear, urgency and hope fuel misleading narratives. Oncologic treatment disinformation in social media has great engagement and turns informational overload in clinical threat[2].

Disinformation is an acknowledged barrier to consolidated policies in Brazil, as, for instance, vaccination against human papilloma virus (HPV) and cervix screening[3]. The recent experience in governmental disinformation during COVID-19 showed the destructive power of fake messages spread in official channels – a precedent not to be ignored in oncologic care[4]

This article discusses that cancer infodemics is a systemic emergency partially derived from digital incentives and social vulnerabilities. Within a syndemic perspective through interaction mechanisms of the disease itself and social inequalities that potentialize one another, cancer and inequalities feedback and infodemics tends to escalate[5].

Primarily, given the limitations of opinion articles, it is proposed to see cancer infodemics through some punctual and illustrative examples. The problem of functional health literacy in the country[6] is an observable fact.

Any intentionally effective response, therefore, needs to be systemic: since regulation of platforms through strengthening of institutional responses in clinical practice, education and management up to empowerment of individuals through fair epistemically health communication.

DEVELOPMENT

DIGITAL ARCHITECTURE OF DISINFORMATION

The digital ecosystem monetizes engagement, not veracity. Therefore, disinformation is not accidental. In times of informational surveillance capitalism, platforms are designed to maximize screen time and hits, awarding contents that trigger intense emotions – as fear and outrage – regardless of its epistemic quality[7]. Infodemiology has already warned: formal characteristics of online environment shape what is seen, recalled and shared[8].

Empirical results show that in large scale, false news spread farther, faster and deeper than true news, mostly by human action, not robots[9]. Simply considering sharing a post reduces the ability to check its veracity, thus sabotaging discernment[10]. In cancer control, the design of the algorithm is an informational risk factor, disseminates rumors, promises miracles and smothers checked facts creating health risks.

IMPACTS ON THE JOURNEY OF THE ONCOLOGIC PATIENT IN BRAZIL

Infodemics crosses the line of care. Patients exposed to promises and rumors can delay, abandon or replace proven evidences therapies by unproven alternatives which is associated with decreased survival[11]. The analysis of popular contents on cancer found in the social media revealed that 32.5% had disinformation and 30.5% were potentially damaging – and the latter received more engagement than reliable contents[2].

Although the problematic is still wider, while focusing on a specific aspect of prevention, misinformation weakens public policies in cervical cancer, myths about HPV vaccine, for instance, sabotaging goals of elimination and aggravating inequities[3]. Therapeutic trust declines: patients bring planted links and doubts, rumors convert

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legitimate discrepancies into a feeling that "nothing is reliable". In the system, mappings in Brazil point out migration of the fact-checking focus to mediatic literacy and dialogue with the individual – yet with low capillarity and fragile integration to the National Health System (SUS)[12].

Within this scenario, infodemics installs and thrives in the gap created by massive unmet necessities of informational support by part of the individuals and particularly by patients and families, making the search for responses a new health risk[13] – cancer infodemics.

HEALTH LITERACY AS RISK FACTOR

The impact of infodemics is commensurate to the vulnerability of who receives the information. Health literacy – the ability to access, understand and use health to make well-informed health decisions – is a key determinant[14,15]. Nearly half of the patients in outpatient chemotherapy in Brazilian oncologic services have but scarce or borderline literacy[6], requiring more "informational care" to avoid understanding difficulties and health communication gaps[13]. Among the candidates to hematopoietic stem-cells, for instance, this percent is even greater, strongly associated with age, low education and income[16].

The mechanism is linear: due to limited literacy, clinical instructions are opaque, results become indecipherable and credibility of online sources are difficult to judge. National-based data show that low education multiplies the likelihood of limited literacy and beginning of treatment is the most vulnerable moment, requiring clear communication expressed in common language and systematic fact-checking for understanding[6].

On the other hand, treat low literacy as clinical, educational and management variable – and not as "individual failure" – is the condition to reduce informational damage on care and mitigate "epistemic unfairness", i.e., damages to the ability of the individual to know, understand and communicate, most of all in what refers to "hermeneutic capacities" of the patient and his/her family originated from a structural deficit to be corrected by practices of "informational care", epistemically more fair to the society by healthcare professionals, managers and health literacy agents[13].

THE HORIZONS OF AN INFORMATIONAL SYNDEMICS RESPONSES TO CANCER

The syndemics perspective sheds light to what happens when disease, inequality and misinformation interact: the worst outcomes emerge where these lines cross with more strength[5], making "informational care" more necessary[13]. The response, therefore, can't be restricted to correcting punctual rumors, it should reduce the exposure to danger (architecture of the platforms), increase informational resilience (literacy and mediatic education) and strengthen the integrity of the care system (institutional ability to listen and respond).

Therefore, it is suggested, based on the referential, a minimal strategic structure to be widened and validated in future studies to fight health disinformation that can be organized in three axes of complementary information: (1) bases – regulation, data intelligence and education; (2) actions in lines of care – for example, vaccination against HPV and oncologic follow-up; (3) metrics to monitor efficacy, results and impact on the patient (Chart 1[1-3,6,7,11,13,17-20]).

Based on some suggestions, Chart 1 illustrates that cancer infodemic requires an integrated ecosystem that goes beyond fact-checking. It is necessary to align regulation, intelligence and education with actions of informational care[13] and evaluation metrics. This dynamic integration allows to anticipate risks, strengthen governance, clinical trust and consolidate science as a reliable guide. Make disinformation a long-lasting public health protects patients, strengthen SUS and the truth.

Infodemics cancer cost is far more than metrics; shortens lives, delays diagnosis and overburden budgets with misleading, ineffective or hazardous therapies and reveals a mismatch: complex system, too many protocols, technology and jargons, population with low health literacy to decode them. Invest in infodemics management and health literacy is not only a technical strategy but an intervention of social and epistemic fairness: protects the most vulnerable, reduces inequities of access to qualified information and strengthen civil autonomy in face of tough clinical decisions and opens space for more reliable domain of health governance[12,13,19-22].

CONCLUSION

Fight cancer infodemics means to sustain evidence-based care in the digital era requiring regulatory courage, institutional intelligence and education. With definitions, taxonomy, listening platforms and guides it is possible to reconnect science, clinic and trust. It is a fine-tuned office: give back care the grammar of the encounter and the evidence intelligible voice. The idea of infodemics shows that data alone do not address the decision-making process, it is necessary to populate them collectively.

As such, teams should be guided through listening to map fear and gaps in the territory, in the waiting room, networks and as expanded diagnosis – each

Chart 1. Suggestion of a response structure to disinformation: pillars, applications and indicators

AXIS	DETAILS	ACTIONS AND DESCRIPTIONS
Pillars of action	Regulation	Autoregulation of the platforms is not enough. Extensive algorithm transparence, prioritize accredited sources in high risk themes and accountability by systematic expansion of health damage[7]
	Intelligence	Institutions as the Ministry of Health, National Cancer Institute (INCA) and Fiocruz (Fundação Oswaldo Cruz) should move from reaction to active infodemiology with continuous social listening, risk analysis and agile insights report that transform data in responses[1,17,18]
	Education	In the long term, the structural response against rumors is to expand the initiatives and health literacy policies and media integrated to schools and SUS, aligned with national strategy of mediatic education and initiatives of community literacy[19,20]. This axis encompasses professionals as clinical communicators able to adjust the language to the reality of the patients[13]
Immediate applications in lines of care	Primary attention	Local campaigns with tested messages through social listening, partnerships with schools and primary attention, priority and narratives of tangible benefits and family protection[3,17]
	Oncologic outpatient	Brief screening health literacy at the reception; discharge instructions with "three key points": unique QR of the official source; call line for critical doubts in the first week[6], application of strategies of "informational care"[13]
	Digital environment	Monitor high risk narratives; response time as indicator; clear and repeated countermeasures; involve oncologists and scientific societies in authorship and curatorship[2,17,18]
Indicators to govern the response	Process-related	Time up to the first response to high risk narratives; number of insight reports issued; proportion of services of literacy screening[17,18] and adoption of strategies of epistemically fair health communication[13]
	Intermediate result	Variation of key-beliefs (pre/post), adherence to vaccination and tracking of priority areas[17]
	Outcome	Diagnostic delays, therapeutic interruptions attributable to rumors and adverse events due to unproven therapies[2,11]

question indicates necessity; each silence exposes barriers, through translation, to prevent science to get lost in jargons – transform protocols in clear pathways, risks in understandable proportions, benefits in promises, simplify without simplism, preserving rigor and humanity. And, eventually, by acting promptly to respond to noxious narratives before they lay roots, incorporate literacy screening into assistance flow, implement materials in common language. In addition, regulate platforms, operate informational intelligence, educate for literacy and offer informational support are means that need to be applied in clinic, education and management to mitigate the effects of cancer infodemics and expand the quality and credibility of the care.

CONTRIBUTION

Giovani Miguez da Silva participated of all the stages of the construction of the article since its conception through the approval of the final version to be published.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

DATA AVAILABILITY STATEMENT

All the content underlying the text is contained in the manuscript.

FUNDING SOURCES

None.

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Recebido em 8/9/2025
Aprovado em 20/10/2025

Associate editor: Mario Jorge Sobreira da Silva. Orcid iD: https://orcid.org/0000-0002-0477-8595
Scientific-editor: Anke Bergmann. Orcid iD: https://orcid.org/0000-0002-1972-8777