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Framing Public Health In Digital News: A Sentiment Analysis of Kanti Velugu Coverage in Telugu: Language Online Newspapers

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ABSTRACT

Kantivelugu initiative is a large-scale public health program launched by the government of Telangana aimed at providing free eye screening and vision care across the state. This paper examines how the initiative has been emotionally framed by two prominent Telugu digital news platforms Namasthe Telangana and ABN Andhra Jyothi across both of its phases (2018-2019 and 2023). Drawing on the concept of media framing and using a computational sentiment analysis approach (Pang & Lee, 2008: Zhang et al., 2018), the study compares the emotional tone embedded on the digital coverage. 100 full length articles (50 from each source) were extracted using automated scrapping and keyword based filtering.

Using Deep Translator the articles were translated from Telugu to English and were analysed using TextBlob to classify their sentiment polarity (positive, neutral, negative). The findings reveal that *Namasthe Telangana* has published nearly twice as many positively framed articles i.e around (46%) as *ABN Andhra Jyothi* (14%), which has remained predominantly neutral. Notably, no negative sentiment was detected in either of the outlets. These results align with media framing theories (Entman, 1993; Wallack et al., 1993) and suggest a general supportive media environment surrounding state-led public health initiatives, with variation in positive emphasis possibly reflecting editorial or political alignments. This study contributes to understanding digital media's affective framing in regional health communication contexts (Nayak & Devdas, 2021).

Keywords: Public Health, Telugu digital news platforms, Framing, Sentiment analysis, Kanti Velugu.

Introduction:

Public health initiatives are merely not implemented through the government policy but also constructed and perceived through the lens of media coverage (Entman, 1993). In India, where regional language papers play a critical role in informing local populations, the way government health schemes are represented can significantly influence public awareness, perception and participation (Wallack et al., 1993; Rao & Johri 2016).

The Kanti Velugu program, initiated by the Government of Telangana is one such program aimed at providing free and universal eye screening and vision care to each and every resident of the state. Introduced on 15th August 2018, and followed by a second phase starting from January 18, 2023, the scheme has attracted widespread attention and mobilization throughout the state of Telangana. The



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program's scale and visibility has positioned it to be a key welfare achievement in the political landscape of Telangana.

Considering the magnitude of Kanti Velugu, it is very essential to understand how this public health initiative was framed by regional media. Sentiment, tone and the emotional weight of coverage can indicate not only public discourse but also potential media alignments and biases (Kim et al., 2016; Nayak & Devdas, 2021). This study mainly focuses on two prominent online newspapers: Namasthe Telangana (considered to have pro-government views) and ABN Andhra Jyothi (viewed as more impartial or critical). Through an analysis of the sentiment polarity (positive, negative, or neutral) in full length articles from both the sources, the study aims to explore Kanti Velugu framing differed over time and across outlets.

REVIEW OF LITERATURE

Framing Theory and the Media

Media framing theory provides a foundational framework for understanding how news narratives influence public perception. According to Entman (1993), framing involves selecting "some aspects of a perceived reality and making them more salient in a communicating text." This salience influences how the audience interprets events by determining what is highlighted, downplayed, or left out. In practice, news stories frame public health interventions not just by factual reporting but through value-laden language, metaphor, and tone (Wallack et al., 1993). These frames can help to promote specific policy agendas or shape public opinion.

While framing theory has been widely used in political communication, crisis reporting and public discourse, its application to regional health communication, particularly in Indian languages remains underexplored.

Media Representation of Public Health

The media plays an important role in health literacy, risk communication and public compliance. Prior research has shown that positive coverage of health programs tend to build trust and uptake (Kim et al., 2016), while critical or negative coverage may provoke skepticism or politicization (McComas & Shanahan, 1999).

In India, mainstream English-language newspapers have received more scholarly attention than vernacular media, yet it is the regional outlets that reach the majority of the population, especially in rural and semi-urban areas (Jeffery, 2000). In this context, how welfare schemes are framed in the state-language media becomes more important for understanding citizen behaviour and health outcomes.

Framing public health not only reflects media ideology, but it also establishes policy credibility in the eyes of the masses.

Telugu-Language Journalism and Political Alignment

The Telugu-language media ecosystem is shaped by high newspaper readership, linguistic pride, and strong linkages between media houses and political parties (Rao & Johri, 2016). For example:

- Namasthe Telangana is commonly recognized as affiliated with the ruling party Bharat Rastra Samithi (BRS formerly TRS), which has a history of supporting government policies.
- ABN Andhra Jyothi, on the other hand, has traditionally opposed or neutralised the state-sponsored welfare schemes.



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This context of editorial polarization lays the groundwork for investigating differences in emotional framing and sentiment. Nayak and Devdas (2021) argue that vernacular media in India are not merely transmitters of news but active producers of political affect and public opinion. Understanding their coverage of a major public health initiative like Kanti Velugu reveals how regional identities, partisanship, and health discourses intersect.

Sentiment Analysis in Media Studies

Sentiment analysis, also called as opinion mining, refers to the computational process of identifying, categorizing, and extracting subjective information-especially the polarity (positive, negative, neutral) of text (Pang & Lee, 2008). It has been successfully applied to social media, movie reviews, political speeches, and increasingly, news content (Zhang et al., 2018).

In media research, sentiment analysis provides a method for systematically assessing how emotionally "charged" or "toned" articles are, particularly in large datasets. Studies like (Sobkowicz et al., 2012) and (Fownes et al., 2018) demonstrate its value in analyzing the affective landscape of political and public health news.

However, most sentiment studies rely on English-Language corpora, and there is limited work on non-English regional news, particularly in under-resourced NLP Languages such as Telugu. This study fills the gap by creating a pipeline for translating, cleaning and analysing Telugu news using Python tools such as deep-Translator and TextBlob.

Gaps and Research Contribution

Despite the growing digital footprint of Telugu newspapers, their framing of public health programs received less attention. While some research focused on COVID-19 reporting and health awareness in India media (e.g., Joseph & Narayanan, 2021), studies comparing sentiment across ideologically diverse Telugu news outlets are rare.

The study addresses the gap by:

- Focussing on sentiment polarity in full length articles (not just headlines).
- Comparing two politically contrasting newspapers.
- Using a computational approach to analyse emotional framing in Telugu Journalism.
- Emphasizing the implications for citizen perception, health legitimacy, and media ethics.

Methodology

This study utilizes a computational sentiment analysis approach to examine the emotional framing of the Kanti Velugu program as presented in two Telugu-language digital newspapers: Namasthe Telangana and ABN Andhra Jyothi. The methodology integrates techniques from web scraping, machine translation, rule-based natural language processing (NLP), and quantitative content analysis. It is designed to identify and compare affective tones in news coverage across politically distinct media platforms.

Research Design

The goal of the study was to extract, process, and analyze full-length news articles related to the Kanti Velugu program, covering both its implementation phases:

- Phase 1: August 15, 2018 March 31, 2019
- Phase 2: January 18, 2023 March 6, 2023



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Given that these phases represent the initiation and expansion of a large-scale public health scheme in Telangana, they offer an ideal context to assess how newspapers with different editorial leanings frame the same government policy.

This is a comparative, non-experimental study, relying on observational data gathered from public online sources.

Data Collection

A custom Python pipeline was developed to gather relevant articles. The following tools and libraries were used:

- newspaper3k: for article scraping and metadata extraction
- requests and BeautifulSoup: for structured and manual scraping in the absence of APIs
- googlesearch module: to locate indexed URLs containing the keyword "కంటి వెలుగు"
- Manual validation: to eliminate broken, duplicate, or irrelevant links

From each newspaper, 50 articles were collected ensuring equal representation from both phases wherever possible. This gave a total sample size of 100 articles.

The scraped data included:

- Title
- Article URL
- Original article text (in Telugu)
- Publication date (when available)
- Source label (Namasthe Telangana or ABN Andhra Jyothi)

Articles that mentioned Kanti Velugu but were unrelated (e.g., unrelated eye camps or reused phrases) were excluded during manual inspection.

Translation and Preprocessing

As most NLP sentiment tools are trained on English corpora, the Telugu articles were translated to English using the deep-translator Python library, which leverages Google Translate API under the hood. This ensured consistent semantic translation at the paragraph level while retaining context.

Translation was followed by text cleaning, including:

- Removal of excess whitespace and metadata
- Normalization of punctuation and line breaks
- Encoding consistency checks (UTF-8)

The translated content was stored alongside the original text in structured .csv files to facilitate dual-language reference.

Sentiment Classification

To perform sentiment analysis, the TextBlob library was used. Each article's translated text was passed through a sentiment scoring function that returned a polarity score ranging from -1.0 (most negative) to +1.0 (most positive).

Sentiment categories were defined as:

Polarity Score	Classification
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> 0.0	Positive
= 0.0	Neutral
< 0.0	Negative

This rule-based thresholding approach is consistent with established sentiment classification techniques in opinion mining literature (Pang & Lee, 2008; Zhang et al., 2018). Given the factual tone often used in news media, it is expected that a large portion of articles would fall into the neutral category unless overt praise or emotion is present.

Visualization and Interpretation

Data analysis was conducted using pandas and visualized with matplotlib. Two levels of comparison were made:

- 1. Aggregate Sentiment Distribution: Total counts and percentages of each sentiment type by newspaper.
- 2. Article-Level Sentiment Reports: Sentiment, URL, and preview for each article. A color-coded bar chart (figure 1) was generated to visually compare sentiment polarity across newspapers. This visual representation supports the textual interpretation and helps readers quickly grasp emotional trends.

Ethical Considerations

All data used in the study was publicly accessible and retrieved from freely available online news sources. No proprietary content, paywalled material, or personal user data was used. In-text excerpts and translations follow fair use guidelines for academic commentary and citation.

Where machine translation may have introduced semantic shift, article-level sentiment interpretations were validated through manual inspection of original Telugu phrasing and thematic consistency.

Methodological Strengths and Limitations

Strengths:

- Scalable, replicable design using open-source tools.
- Inclusion of regional language journalism in computational analysis.
- Full-article analysis (not just headlines), offering richer sentiment context.

Limitations:

- Rule-based sentiment analysis may miss subtleties such as sarcasm, irony, or coded political language.
- Machine translation may flatten cultural nuances and idiomatic expressions.
- Absence of negative sentiment may reflect model limitations or editorial avoidance.

Despite these limitations, this methodology demonstrates a practical framework for analyzing vernacular digital media using accessible, low-cost computational techniques, a contribution especially relevant for Indian language media research.

Findings and Analysis

This section presents the results of the sentiment analysis conducted on 100 full-length news articles, 50 from Namasthe Telangana and 50 from ABN Andhra Jyothi relating to the two phases of the Kanti Velugu program (2018–2019 and 2023). The findings are presented in two levels: (1) quantitative sentiment



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distribution and (2) qualitative examination of article content, with attention to tone, language, and affective framing.

Quantitative Sentiment Distribution

Sentiment was assigned to each article based on the polarity score returned by TextBlob, categorized into positive, neutral, or negative. The table below summarizes the distribution:

News Source	Positive	Neutral	Negative
Namasthe Telangana	23 (46%)	27 (54%)	0
ABN Andhra Jyothi	7 (14%)	43 (86%)	0

Key Observations:

- Namasthe Telangana had a balanced tone, with nearly half of the articles expressing explicitly positive sentiment.
- ABN Andhra Jyothi exhibited dominant neutrality, with 86% of its articles classified as neutral, and only 14% expressing positive sentiment.
- No negative sentiment was detected in any of the articles from either outlet.

A bar chart was generated to visualize this comparison:

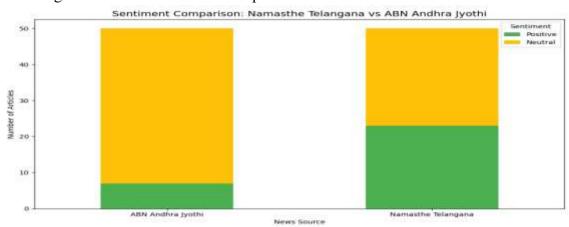


Figure 1. Sentiment comparison across Namasthe Telangana and ABN Andhra Jyothi.

Data source: Author's sentiment analysis of 100 news articles (2018–2023).

This visualization reinforces the notion of an affective divide in tone between the two outlets. While both newspapers abstained from publishing negative or critical perspectives, the difference in the volume of positive coverage is significant and reflective of editorial orientation.

Article-Level Sentiment Patterns

The article-level analysis reveals how Namasthe Telangana employed emotionally affirmative language, often portraying the initiative as a state achievement. For example:

Positive sentiment article

"The state government has launched the Kanti Velugu program to bring light into the lives of the underpri-



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vileged."

Original Telugu: "కంటి వెలుగు పథకం ద్వారా పేదల జీవితాల్లో వెలుగు నింపాలని ప్రభుత్వం లక్ష్యంగా పెట్టుకుంది."

Such articles often emphasized success metrics, ministerial involvement, and public participation framing the program as transformative and inclusive.

In contrast, ABN Andhra Jyothi focused on procedural updates, schedules, and district-level implementation. A typical neutral sentiment article read:

"Kanti Velugu camps will begin in Rangareddy district from January 18. All logistical arrangements have been completed."

Original Telugu: "జనవరి 18 నుంచి రంగారెడ్డి జిల్లాలో కంటి వెలుగు శిబిరాలు ప్రారంభమవుతాయి. అన్ని ఏర్పాట్లు పూర్తి చేశారు."

The tone is factual and impersonal, offering no evaluative language or emotional cues, hallmarks of neutral sentiment framing.

Coverage Across Program Phases

While both newspapers covered Phase 1 (2018–2019) and Phase 2 (2023), Namasthe Telangana had more detailed reporting in Phase 2, coinciding with election-year narratives and enhanced government publicity. Many Phase 2 articles included minister quotes, district success statistics, and calls for citizen participation, indicating an alignment with mobilization efforts.

In contrast, ABN Andhra Jyothi remained consistent in tone across both phases. Even when reporting on high-impact numbers like "over one crore citizens screened," it refrained from editorializing the impact or celebrating the government's role.

Absence of Negative Coverage

No article in either outlet was categorized as negative, despite the logistical scale and duration of the program. This absence is significant. It suggests that critical journalism around public health welfare schemes is either self-censored, avoided, or discouraged in the Telugu news ecosystem.

Even potentially contentious topics such as delays, inefficiencies, or local-level grievances were omitted or downplayed. For instance, an article discussing delayed optical distributions still maintained a neutral tone:

"Distribution of eyeglasses is underway. Technical issues will be resolved in the week."

This lack of adversarial scrutiny indicates the prevailing journalistic culture of compliance or cautious reporting in relation to state-sponsored programs, especially when the ruling party holds significant influence over media narratives.

Summary of Findings

There is a clear divergence in affective tone between the two outlets.

- Namasthe Telangana adopted a supportive and celebratory frame, aligning closely with government messaging.
- ABN Andhra Jyothi maintained a reserved, neutral stance, consistent with its broader editorial identity.
- No negative sentiment was found, raising questions about the independence of public health reporting in Telugu journalism.



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These findings offer a powerful entry point into how affect is not only expressed but regulated across ideological lines in regional digital media.

Discussion

The comparative sentiment analysis conducted on *Namasthe Telangana* and *ABN Andhra Jyothi* reveals not only differing tones in news coverage but also divergent editorial priorities in representing the *Kanti Velugu* public health initiative. This section interprets those findings through the lenses of framing theory, political communication, and media affect, emphasizing how sentiment is not simply a reflection of news content but a signal of deeper institutional dynamics.

Editorial Framing and Political Signaling

The stark difference in the ratio of positive sentiment 46% in Namasthe Telangana versus 14% in ABN Andhra Jyothi underscores the importance of editorial alignment in shaping public discourse. Namasthe Telangana, widely perceived as ideologically aligned with the ruling BRS party, actively framed Kanti Velugu in celebratory and success-oriented terms. A common trope in its coverage was the portrayal of the program as a historic achievement. For instance:

"కంటి వెలుగు పథకం ద్వారా లక్షలాది మంది పేదలకు చూపు వెలుగు ప్రసాదించాం."

"Through the Kanti Velugu scheme, we have restored vision to lakhs of poor citizens."

This framing reinforces a narrative of benevolent governance, which is consistent with Entman's (1993) notion of "problem-solving" frames where the state is cast as a solution-provider, often without critique. In contrast, ABN Andhra Jyothi adopted a more restrained and bureaucratic tone, avoiding emotionally charged language and focusing on dates, logistics, and administrative planning. For example:

"రెండో విడత కంటి వెలుగు జనవరి 18న ప్రారంభం."

"The second phase of Kanti Velugu begins on January 18."

Such neutrality may reflect editorial caution, political distance, or institutional preference for objectivity. However, the lack of emotionally supportive language also signals a muted engagement with the program's welfare potential.

The Silencing of Critique: No Negative Sentiment

A striking outcome of the analysis was the complete absence of negative sentiment in both outlets. From a methodological perspective, this result could be seen as a function of the translation pipeline or threshold sensitivity. However, it also suggests an institutional pattern of silence around critical coverage of stateled public health programs.

Even when logistical challenges, operational gaps, or delays were mentioned, they were framed passively or omitted entirely. This aligns with prior studies on Indian media's hesitance to critique welfare schemes, especially when such schemes are tied to populist legitimacy or electoral narratives (Kim et al., 2016; Nayak & Devdas, 2021).

For instance, a headline that could have explored implementation issues simply stated:

''కంటి వెలుగు కోసం అన్ని ఏర్పాట్లు పూర్తి.''

"All arrangements for Kanti Velugu are complete."

Such phrasings offer no insight into how or how well the arrangements were made, nor do they invite public scrutiny.



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Affect, Participation, and Regional Media Narratives

The emphasis on positive emotion in Namasthe Telangana goes beyond informing citizens; it encourages emotional investment and participatory alignment with state policy. In affective terms, these articles act as mobilizing texts, inviting readers to associate health access with state benevolence. Examples include: "ప్రతి ఒక్కరూ కంటి వెలుగు కార్యక్రమంలో పాల్గొనాలి – మంత్రి హరీష్ రావు"

"Everyone should participate in the Kanti Velugu program – Minister Harish Rao"

Such statements function rhetorically as call to action, reinforcing state-citizen trust.

Meanwhile, ABN Andhra Jyothi's neutral tone can be read as an attempt to maintain editorial distance or signal skepticism without overtly challenging the state. The outlet may be appealing to an audience segment that values procedural coverage over political celebration.

Methodological Considerations and Limitations

While the use of TextBlob and translation workflows enabled a systematic study of sentiment in Telugu journalism, it is important to acknowledge their limitations:

- Machine translation may flatten culturally specific idioms or honorifics common in Telugu public discourse.
- Sentiment scores based solely on polarity may miss sarcasm, implicit criticism, or cultural nuance.
- Rule-based sentiment thresholds offer clarity but lack the depth of transformer-based models such as BERT, which could better capture subtle tonal variation.

Nonetheless, the computational approach used here demonstrates a proof-of-concept for performing scalable, transparent, and reproducible sentiment analysis in Indian regional-language media, a methodological contribution that future researchers can build upon.

Broader Implications

This study sheds light on how emotional framing in regional news is not merely a stylistic choice but a reflection of broader media-political ecosystems. The disparity in sentiment across ideologically distinct newspapers reflects not just editorial preference, but also strategic positioning in the public health discourse.

In times of growing media fragmentation, such differences shape the affective climate in which citizens engage with state policies particularly those in health, education, and welfare. The framing of Kanti Velugu becomes not just a record of a government program, but a lens into how public legitimacy is constructed, contested, or deferred through media sentiment.

Conclusion

This study set out to examine the emotional framing of the Kanti Velugu public health initiative as portrayed in two leading Telugu-language digital newspapers Namasthe Telangana and ABN Andhra Jyothi. By applying a computational sentiment analysis approach to 100 full-length news articles across both phases of the program (2018–2019 and 2023), the study revealed important differences in how the initiative was communicated to the public.

The results demonstrate a distinct polarity in sentiment framing between the two news outlets. While Namasthe Telangana published a nearly equal number of positive (46%) and neutral (54%) articles, ABN Andhra Jyothi exhibited a predominantly neutral tone (86%), with only 14% of its articles showing positive sentiment. Notably, there were no negative articles found in either newspaper. This absence of



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negative framing across both sources even in cases where logistical issues or delays might have warranted critique points to a broader tendency within Telugu media toward cautious or supportive portrayals of state-sponsored welfare initiatives.

These findings are significant on multiple levels. Firstly, they reinforce existing scholarship on the role of framing in shaping public opinion, particularly in health communication contexts (Entman, 1993; Wallack et al., 1993). The use of affectively positive language in Namasthe Telangana, including praise for government performance and community participation, contributes to constructing a narrative of success and legitimacy around the Kanti Velugu initiative. In contrast, ABN Andhra Jyothi's restrained tone marked by factual reporting and administrative updates offers a more detached framing that may reflect editorial independence or critical distance.

Secondly, the results illustrate the media's function not just as a passive mirror of events, but as an active participant in the political communication ecosystem. The difference in sentiment alignment likely stems from the newspapers' respective editorial stanceswith Namasthe Telangana often perceived as aligned with the Telangana government, and ABN Andhra Jyothi historically viewed as more oppositional. As such, the framing of public health programs becomes a site of political signaling rather than just information dissemination.

From a methodological standpoint, the study contributes to the growing body of research using computational linguistics and NLP to analyze regional media in low-resource languages. The use of tools like deep-translator and TextBlob along with translation workflows and manual validation demonstrates that sentiment analysis can be adapted for vernacular language contexts with reasonable effectiveness. This is particularly valuable for scholars working on Indian-language media where NLP resources are still emerging.

However, the study also acknowledges certain limitations. Machine translation may have introduced semantic distortion in nuanced Telugu expressions, potentially affecting sentiment classification. The reliance on rule-based polarity thresholds, while efficient, lacks the depth of advanced neural sentiment models. Additionally, the absence of negative sentiment could reflect methodological constraints or real editorial trends a distinction that merits further qualitative exploration.

In conclusion, this study underscores how media framing and specifically emotional sentiment plays a critical role in shaping public perceptions of government welfare schemes. The contrasting tones of Namasthe Telangana and ABN Andhra Jyothi offer a microcosm of regional media dynamics in India, where health communication intersects with partisanship, affect, and digital infrastructure. As regional media continues to evolve in the digital age, studies like this provide a foundation for understanding the affective politics of public health narratives in vernacular ecosystems.

Future research could explore longitudinal shifts in sentiment over time, include multilingual comparisons across other Indian states, or apply deep learning models for finer-grained sentiment tagging. Additionally, qualitative interviews with journalists and readers could enrich our understanding of how such framing is produced and received.

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