The MECA Matrix: A New Framework for Analysing Media Appearances of Healthcare Professionals

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Abstract

Background: The increasing media presence of healthcare professionals significantly influences public health perception, trust in healthcare systems, and the spread of health information, necessitating a systematic approach to evaluate and optimize their communication strategies.

Aim: To develop and present an innovative methodological framework—the MECA (Media Exposure Content Analysis) matrix—for the systematic analysis of media appearances of healthcare professionals, integrating both qualitative and quantitative approaches to assess verbal, nonverbal, and paraverbal communication elements.

Methods: A total of 181 statements made by healthcare professionals—including physicians, nurses, medical technicians, pharmacists, and psychologists—were analysed. Statements by the Minister of Health were also included, given their systemic relevance. The dataset was compiled from television news reports aired on TV chanels between January 1 and January 31, 2024. A comprehensive review of existing content analysis methodologies was conducted to inform the analytical framework. The MECA matrix was validated through rigorous procedures to ensure its reliability and consistency.

Results: The MECA matrix was designed and implemented to categorise and code media appearances. It integrates both qualitative and quantitative approaches to systematically assess communication elements across these dimensions to assess verbal, nonverbal, and paraverbal communication elements.

Conclusion: The MECA matrix offers a novel, multidimensional approach for evaluating healthcare communication in media settings, addressing a crucial gap in existing methodologies by including ethical criteria and enabling cross-modal analysis. While the model has limitations—such as the need for linguistic competence and the inability to analyse purely visual or non-contextual audio content—it significantly advances the systematic evaluation of public health communication, supporting professional development, trust-building, and public health policy formation.

Keywords: media appearances of healthcare professionals, content analysis, public appearance, rhetoric analysis

Introduction

Healthcare professionals (HCPs) occupy positions of great responsibility, and the way they communicate in public carries significant weight for individuals, families, society, and even the state. The media presence of HCPs has far-reaching implications (1). On one hand, it helps raise awareness about key health issues, improves health literacy, and combats misinformation (2). On the other hand, poor communication can spread inaccurate information or reduce public trust in the healthcare system.

Because their media presence directly influences healthcare outcomes, HCPs—especially physicians—must communicate responsibly and clearly. Their public statements are not just informational; they shape public perception, trust, and health-related behaviours (3, 4).

Given their responsibility and the sensitive nature of their messages, it is essential to systematically analyse how HCPs appear in the media. Such analysis can:

1. Evaluate communication effectiveness – Identify which strategies promote healthy behaviours and which may unintentionally spread misinformation or reduce trust, especially during crises (5).
2. Improve public perception – Shape a positive and trustworthy image of both individual professionals and the healthcare system through clear, evidence-based communication (6).
3. Strengthen crisis communication – Provide insights into how HCPs can effectively inform and mobilize the public during emergencies, using traditional and digital media (7).
4. Counter misinformation – Reveal common pitfalls and support the development of strategies to address false health information effectively (5).
5. Inform policy and guidelines – Offer evidence for creating professional communication standards that are ethical, clear, and impactful (8).
6. Promote professional development – Help HCPs improve their media and public speaking skills, enhancing communication with both the public and patients (9).

Therefore, systematic analysis of healthcare professionals' media appearances helps evaluate communication strategies, improve public perception, and develop clear professional guidelines. It also helps identify and counter misinformation, providing a basis for policy and standard development.

Content analysis is a systematic method used in communication science to identify patterns and trends in textual, visual, or audio content from various media formats. It involves coding data based on a predefined matrix (10, 11). Unlike discourse analysis, which examines meaning and context, content analysis focuses on what appears in the content—such as term or theme frequency (12). Although widely applicable, it can be time-consuming due to manual coding.

Several established methods are used to analyse media content and communicative interactions, each offering specific strengths: Media Content Analysis (MCA) focuses on the accuracy of reporting, which is useful in journalism, but is costly and timeconsuming, limiting broader use (13); Video/Qualitative Content Analysis (VCA/QCA) explores deeper meanings in video content, offering rich insights but requiring expert interpretation and significant time investment (14); Visual-Verbal Video Ana-lysis (VVVA) combines visual and verbal cues to study multimodal communication. Though supported by modern technology, it remains interpretative and time-intensive (15); Conversation Analysis (CA) examines spontaneous communication, especially turn-taking and nonverbal behaviour, with high precision but also high resource demands (16).

The MECA matrix introduces a new, multidimensional approach. It integrates communication and ethical elements into one structured and adaptable framework. This model fills important gaps in existing methods, offering a clear and reliable tool for analysing media appearances—especially

in ethically sensitive or persuasive health communication. Table 1 presents a detailed comparison between traditional models and the MECA matrix.

Table 1. *Comparison between traditional models and the MECA matrix*

Method		**New Model for Media Content Analysis**	**Video Content Analysis**	**Visual-Verbal Video Analysis (VVVA)**	**Conversation Analysis (CA)**	**Media Exposure Content Analysis (MECA)**
Application purpose		Improve accuracy and alignment of media coverage with public relations objectives	Analyses textual, visual, or audio data in media, social sciences, and communication research	Qualitative framework for analysing visual, verbal, emotional, and discursive elements in video	Focuses on interaction structure and speaker strategies in communication	Media analysis tool that combines qualitative and quantitative methods for video content evaluation
Parameters taken into account	Verbal	Included	Included	Included	Included	Included
	Non-verbal	Not mentioned	Not mentioned	Included	Included	Included
	Paraverbal	Not mentioned	Not mentioned	Included	Included	Included
	Rhetoric	Included	Not mentioned	Included	Not mentioned	Included
	Medical ethics	Not mentioned	Not mentioned	Not mentioned	Not mentioned	Included
Validation and reliability, verification mechanics		Rigorous training of human coders; reliance on subject matter experts for accurate coding	Techniques such as inter-coder agreement and statistical validation, use of triangulation	Systematic data collection, transcription, and coding procedures, predefined extraction matrices	Natural data analysis, transcription, "unmotivated looking", "next-turn proof procedure"	Defining theoretically grounded criteria with clear indicators, employing multiple independent evaluators and confirming coding consistency through systematic comparison
Method limitations		High cost; dependency on human expertise; inability to automate due to complexity of context-based analysis	Subjectivity in coding, challenges with large datasets, bias in category selection, and difficulty capturing context and deeper meaning	Limitations include the time-intensive process of transcription and coding, and the potential subjectivity in interpreting visual and verbal data despite the systematic approach	It is difficult to achieve complete neutrality; transcription methods require detail and precision	Limited to video content, requires coders to be proficient and neutral in the language used, and may be less applicable in contexts involving other media forms or unfamiliar languages
Measuring instrument (index, scale)		No fixed scale; coding based on qualitative evaluation of message accuracy and omissions	Software tools (e.g. NVivo, ATLAS.ti) for textual analysis, coding frames and structured data sheets, statistical test for reliability and validity	Structured extraction matrices, coding frameworks, transcription systems, and multimedia analysis tools to capture and analyse visual and verbal data	Jefferson transcription system, qualitative analysis of speech and gestures	The MECA Matrix and accompanying codebook are designed to enable both qualitative and quantitative analysis through a structured, comprehensive, and methodologically robust framework

While these methods contribute valuable perspectives, they have notable limitations. Many focus narrowly on factual accuracy, rely on subjective interpretation, or lack clear coding frameworks. They are often time-consuming, overlook nonverbal and emotional nuances, and are mostly developed within English-speaking contexts, limiting cross-cultural applicability. Recognising these limitations, the MECA matrix was developed as an integrative tool that unifies key communication dimensions into a coherent framework. This study aims to present the development of this analytical instrument and to introduce the MECA matrix as a methodological framework for the systematic analysis of healthcare professionals' appearances in the media.

Materials and methods

The MECA matrix was developed following a detailed review of established content analysis methods. It codes media appearances across five dimensions. First three dimensions are common in communication analysis: verbal, nonverbal, and paraverbal communication. The analytical framework incorporated the medical ethics point of view. It is a logical and necessary approach when examining the consequences of media exposure involving healthcare professionals. The persuasion dimension emerged during the creation of the matrix and the realisation that all categories included in the matrix affect persuasiveness.

A coding framework was developed based on three primary dimensions of communication:

- Verbal Communication: Evaluated in terms of structure (introduction, main points, conclusion), clarity, logical argumentation, and use of evidence.
- Non-verbal Communication: Assessed via the speaker's posture, gestures, facial expressions, and overall appearance.
- Paraverbal Communication: Considered elements such as pronunciation, tone, speed of speech, and emphasis.

Additional parameters such as stage fright, empathy, sex, and somatotype (categorised as endomorph, ectomorph, or mesomorph) were also coded. It is aligned with established perspectives that ethical analysis in public health often requires a broader, applied approach beyond traditional biomedical ethics. Using parameters and indicators derived from established theoretical frameworks in communication sciences, rhetoric, public relations, and media studies (17–29), we developed a set of coding anchors that facilitated a systematic and replicable content analysis. These indicators provided a structured foundation for identifying, categorising, and interpreting relevant patterns within the material, ensuring methodological consistency and analytical reliability.

Validation Process and Data Sources

The validation process was carefully designed to ensure the credibility, clarity, and reliability of the analytical matrix. For each parameter, theory-based criteria and indicators were clearly defined in alignment with established frameworks in communication, media, and ethics. These criteria served as anchors for coding and guided the systematic evaluation of media content.

To assess inter-coder reliability, multiple independent evaluators applied the defined criteria to identical media segments. Discrepancies in coding were then analysed to identify potential sources of inconsistency. In cases where categories were ambiguous or overlapping, they were further clarified, consolidated, or, if necessary, removed. This iterative refinement process contributed to the enhanced discriminative power and internal coherence of the matrix.

Key validation steps included: the operationalisation of theoretical constructs into measurable indicators, engagement of independent coders, resolution of coding disagreements through consensus, and confirmation of coding consistency. The evaluation was carried out by a panel of three communication experts and two ethics specialists—none of whom had been involved in the development of the matrix—to ensure objectivity and methodological rigour. The overall approach was grounded in methodological principles drawn from foundational works on content analysis (10).

For empirical validation, a total of 181 statements made by healthcare professionals were analysed. These statements encompassed contributions from physicians, nurses, medical technicians, pharmacists, and psychologists. In addition, statements by the Minister of Health were included and specially marked, recognising their systemic importance and inseparable connection to the healthcare system as a whole. The dataset was drawn from audio-visual news reports aired on three major Croatian television channels—HRT1, RTL, and Nova TV—within the time frame of January 1 to January 31, 2024.

As a result of this comprehensive and systematic validation process, the matrix emerged as a robust and tested analytical tool capable of supporting reliable, reproducible, and insightful evaluations of media communication—particularly in contexts where ethical dimensions and persuasive strategies are of critical importance.

Results

Additionally, the MECA matrix enables categorisation and numerical coding of speech elements, allowing both qualitative assessment and quantitative analysis. Unlike traditional models focused primarily on textual data, it provides detailed, theory-based categories suitable for manual and AI-assisted coding, ensuring systematic and replicable evaluation (Table 2).

Table 2. *MECA matrix: components, parameters, and coding scheme*

Parameter	Description	Possibility
Video is accepted	Does the video fit the criteria?	YES/NO
Type of statement	What is the type of statement?	Scientific or imposed
Sex	Sex of the speaker?	M/F
Verbal component		
Verbal level of persuasiveness	Is persuasiveness recognised in the verbal part of the speech?	Clear argumentation, consistency in messages, emotional connec-tion with the audience, credibility
Structure	How is the speech organised (introduction, body, conclusion), and is the structure logical?	Clearly defined introduction, developed main points, logically connected arguments, conclusion that summarises key messages
Soundbite	Is a soundbite used?	YES/NO
Argumentation	What arguments are used and how are they presented?	Statistics, scientific evidence, practical examples, personal experiences, authoritative sources, analogies, logical constructions, unnecessary use of complex medical terminology, is there enough information, tone (negative, neutral, and positive)
Political connotation	Does the statement have a political connotation?	YES/NO
Instils confidence in the system	Does the speaker instil confidence in the system?	YES/NO
Technical level of persuasion	Does the person seem empathetic?	YES/NO and was it needed?
	Does the person appear prepared to give a statement?	YES/NO
	Who is speaking?	It is not mentioned or person does represent an institution, department
Rhetoric	How does the speaker use rhetorical figures and techniques to persuade or motivate the audience?	Use of metaphors, anecdotes, rhetorical questions, repetition of key terms, appeal to emotions, use of authoritative speech

The role of public speaking	What is the purpose of the public performance, and how is communication with the audience achieved?	Informing the audience, education, motivation, promoting ideas or practices, building trust, establishing authority
	Does the speaker achieve its goal?	Accurate public information, giving the impression of a competent and professional individual, contributing to calming the public, enhancing reputation (personal, institutional, and professional reputation), showing readiness for such situations, presenting the patient's perspective while protecting the right to confidentiality and privacy
	The reason for giving the statement.	Accident, emergency, positive news, state of the profession, crisis in the institution, politics
	Additional objectives*	YES/NO; if yes they can be written down on the side
Emphasis	Which words or phrases does the person emphasise and why?	Key words, key phrases, emphasis on relevant information, emphasis on emotional importance - emphasises the essential/non-essential, does not emphasise
Non-verbal component		
Posture	What is the speaker's posture like during the speech?	Upright, leaning forward, leaning backward, overly relaxed, relaxed, tense (swaying from one foot to the other?), open, closed (e.g., arms crossed, hands while waiting for a question, no crossed fingers), dominant, subordinate
Frame	What is included in the shot?	Passers-by, hospital, hospital sign, flag... Are they content-wise and thematically connected or not?
Position	Where is the person positioned in the shot during the performance?	In the centre, on the side, at the beginning, at the end, in the foreground, in the background, among other people, in front of or behind a table
Gestures	What kind of gestures does the person use and how do they affect communication?	Strong, overly aggressive, non-existent, restrained
	Does the gesture align with the speech?	Temporally and content-wise - YES/NO
Signs of performance anxiety	Are there clear signs of performance anxiety?	YES/NO
Non-verbal persuasiveness	Is persuasiveness recognised in the non-verbal part of the speech?	Confident posture, self-assured gestures, relaxed facial expression, eye contact with the audience, minimal signs of discomfort, somatotype, appearance
Facial expression	What are the person's facial expressions like and how do they contribute to communication?	Smile, serious facial expression, surprise, interest, doubt, concern, confidence, discomfort, determination (adapted to the topic or not)
Paraverbal component		
Pronunciation	How does the person pronounce words?	Clearly, unclearly, fast, slow, dynamics (monotone, expressive, emphasised)
Speech level of persuasion	Does intonation, articulation, and energy affect the persuasiveness of the speech?	Variation in intonation, clear articulation, energetic tone, emotional sincerity, authoritative voice without any distractions (buzzwords, pauses...), paraverbal signs of empathy (slower speech, lower tone, softer and more calming voice...)
Medical ethics		
Professional relationship with colleagues	Is professional relationship with colleagues present?	YES/NO
Professional relationship with the institution	Is professional relationship with the institution present?	YES/NO
Protection of patient privacy	Does the medical professional protect patient privacy?	YES/NO

Statements free from political and commercial influence	Are the statements free from political and commercial influence?	YES/NO
Avoiding the creation of fear	Does the speaker try to instil fear?	YES/NO
Avoiding stigmatization and discrimination	Is the speech free from stigmatization and discrimination?	YES/NO
Preserving the reputation of the profession	Is the profession's reputation preserved?	YES/NO
Care for the well-being of the patient's family	Are there signs of care for the well-being of the patient's family?	YES/NO
Persuasiveness		
	How persuasive is the speaker based on the previous report?	Not persuasive, partially persuasive, completely persuasive

The MECA approach enables a systematic analysis through a structured set of theoretically defined categories (Table 3):

1. Verbal component - assesses the structure, clarity, emotional impact, credibility, and persuasiveness of speech by evaluating argumentation, rhetorical strategies, tone, use of evidence, and the speaker's ability to connect with the audience and convey confidence.
2. Nonverbal component - evaluates posture, gestures, facial expressions, framing, and other visual cues to assess the speaker's confidence, authenticity, and overall impact beyond spoken words.
3. Paraverbal component – examines pronunciation, intonation, tone, and speech dynamics to evaluate how delivery influences persuasiveness, emotional impact, and audience perception.
4. Medical ethics – this parameter evaluates whether communication upholds professional standards, including respect for patient privacy, neutrality, and non-maleficence. Ethical adherence is essential for maintaining public trust and preserving both institutional integrity and the credibility of individual speakers.
5. Persuasiveness - following the assessment of all prior categories, an integrative evaluation is conducted to determine the overall persuasiveness of the communication.

Table 3.

Parameter	Description	Code
Video is accepted		0.
	Cannot be determined	0
	NO	1
	YES	2
Type of statement		0.1.
	Cannot be determined	0
	Imposed	1
	Scientific	2
Sex		0.2
	Cannot be determined	0
	M	1
	F	2
Verbal component		1.
Level of persuasion		1.1.
Clear argumentation		1.1.1.
	Cannot be determined	0
	NO	1
	YES	2
Consistency in messages		1.1.2.
	Cannot be determined	0
	NO	1
	YES	2
Emotional connection with the audience		1.1.3.
	Cannot be determined	0
	NO	1
	YES	2
Credibility		1.1.4.
	Cannot be determined	0
	NO	1
	YES	2
Structure		1.2.
Clearly defined introduction		1.2.1.
	Cannot be determined	0
	NO	1
	YES	2

Elaborated main points		1.2.2.
	Cannot be determined	0
	NO	1
	YES	2
Logically constructed arguments		1.2.3.
	Cannot be determined	0
	NO	1
	YES	2
A conclusion that summarizes the message		1.2.4.
	Cannot be determined	0
	NO	1
	YES	2
Soundbite		1.3.
	Cannot be determined	0
	NO	1
	YES	2
Argumentation		1.4.
Statistics		1.4.1.
	Cannot be determined	0
	NO	1
	YES	2
Scientific evidence		1.4.2.
	Cannot be determined	0
	NO	1
	YES	2
Examples from practice		1.4.3.
	Cannot be determined	0
	NO	1
	YES	2
Personal experience		1.4.4.
	Cannot be determined	0
	NO	1
	YES	2
Authoritative source		1.4.5.
	Cannot be determined	0
	NO	1
	YES	2
Analogies		1.4.6.
	Cannot be determined	0
	NO	1
	YES	2
Logical constructions		1.4.7.
	Cannot be determined	0
	NO	1
	YES	2
Use of complex medical terms		1.4.8.
	Cannot be determined	0
	NO	1
	YES	2

Is there enough information		1.4.9.
	Cannot be determined	0
	NO	1
	YES	2
Tone		1.4.10.
	Cannot be determined	0
	Negative	1
	Neutral	2
	Positive	3
Political connotation		1.5.
	Cannot be determined	0
	NO	1
	YES	2
Instils confidence in the system		1.6.
	Cannot be determined	0
	NO	1
	YES	2
Technical level of persuasion		1.7.
Empathy		1.7.1.
	Cannot be determined	0
	NO, but necessary	1
	NO, but unnecessary	2
	YES	3
Readiness		1.7.2.
	Cannot be determined	0
	NO	1
	YES	2
Identity		1.7.3.
	Cannot be determined	0
	Not mentioned	1
	Person represents an institution/ department?	2
Rhetoric		1.8.
Metaphor		1.8.1.
	Cannot be determined	0
	NO	1
	YES	2
Anecdote		1.8.2.
	Cannot be determined	0
	NO	1
	YES	2
Rhetorical questions		1.8.3.
	Cannot be determined	0
	NO	1
	YES	2
Appealing to emotions		1.8.4.
	Cannot be determined	0
	NO	1
	YES	2

Using authoritative speech		1.8.5.
	Cannot be determined	0
	NO	1
	YES	2
The role of public speaking		1.9.
Reason for the statement		1.9.1.
	Cannot be determined	0
	Accident	1
	Emergency	2
	Positive news	3
	Situation in the profession	4
	Crisis in the institution	5
	Politics	6
Primary purpose (required)		1.9.2.
	Cannot be determined	0
	Informing the audience	1
	Education	2
	Motivation	3
	Promoting an idea or practice	4
	Creating trust	5
	Building authority	6
Primary objective		1.9.3.
	Cannot be determined	0
	Accurate information to the public	1
	Giving the impression of an expert and professional person	2
	Contribution to calming the public	3
	Increasing reputation	4
	Demonstration of readiness for such situations	5
	Presenting the patient's perspective	6
Additional objectives		1.9.4.
	Cannot be determined	0
	NO	1
	YES*	2
Emphasis		1.10.
Generally		1.10.1.
	Cannot be determined	0
	No emphasis	1
	Emphasises irrelevant	2
	Emphasises relevant	3
Emphasis on emotional importance		1.10.2.
	Cannot be determined	0
	NO	1
	YES	2
Non-verbal component		2.
Posture		2.1.
Pose		2.1.1.
	Cannot be determined	0
	Upright	1
	Leaning forward	2
	Tilted backwards	3
Relaxation		2.1.2.
	Cannot be determined	0
	Tense	1
	Relaxed	2
	Overly relaxed	3
Openness		2.1.3.
	Cannot be determined	0
	Enclosed	1
	Open	2
Dominance		2.1.4.
	Cannot be determined	0
	Subordinate	1
	Dominant	2
Frame (substantively/thematically related)		2.2.
	Cannot be determined	0
	NO	1
	YES	2
Position		2.3.
Placement in the frame		2.3.1.
	Cannot be determined	0
	NO	1
	YES	2
In the foreground		2.3.2.
	Cannot be determined	0
	NO	1
	YES	2
Gestures		2.4.
Description of gestures		2.4.1.
	Cannot be determined	0
	Strong	1
	Too aggressive	2
	Non-existent	3
	Restrained	4
Time and content matching of gestures		2.4.2.
	Cannot be determined	0
	NO	1
	YES	2
Signs of performance anxiety		2.5.
	Cannot be determined	0
	NO	1
	YES	2
Persuasion		2.6.
Secure posture		2.6.1.
	Cannot be determined	0
	NO	1
	YES	2

Confident gestures		2.6.2.
	Cannot be determined	0
	NO	1
	YES	2
Appearance		2.6.3.
	Cannot be determined	0
	No work uniform, untidy appearance	1
	No work uniform, neat appearance	2
	In a work uniform, untidy	3
	In a work uniform, neat	4
Eye contact with the audience		2.6.4.
	Cannot be determined	0
	NO	1
	YES	2
Minimal showing of signs of discomfort		2.6.5.
	Cannot be determined	0
	Has signs of discomfort	1
	No signs of discomfort	2
Somatotype		2.6.6.
	Cannot be determined	0
	Endomorph	1
	Ectomorph	2
	Mesomorph	3
Facial expressions		2.7.
Smile		2.7.1.
	Cannot be determined	2
	NO	1
	YES	2
Serious facial expression		2.7.2.
	Cannot be determined	0
	NO	1
	YES	2
Surprise		2.7.3.
	Cannot be determined	0
	NO	1
	YES	2
Interest		2.7.4.
	Cannot be determined	0
	NO	1
	YES	2
Doubt		2.7.5.
	Cannot be determined	0
	NO	1
	YES	2
Concern		2.7.6.
	Cannot be determined	0
	NO	1
	YES	2
Self-confidence		2.7.7.
	Cannot be determined	
	NO	
	YES	
Paraverbal component		3.
Pronunciation		3.1.
Clarity		3.1.1.
	Cannot be determined	0
	NO	1
	YES	2
Speed		3.1.2.
	Cannot be determined	0
	Quick	1
	Slow	2
	Variable speed	3
Dynamics		3.1.3.
	Cannot be determined	0
	Monotonous	1
	Dynamic	2
	Accentuated	3
Speech level of persuasion		3.2.
Variation in intonation		3.2.1.
	Cannot be determined	0
	NO	1
	YES	2
Clear articulation		3.2.2.
	Cannot be determined	0
	NO	1
	YES	2
Energetic tone		3.2.3.
	Cannot be determined	0
	NO	1
	YES	2
Emotional honesty		3.2.4.
	Cannot be determined	0
	NO	1
	YES	2
Authoritative voice		3.2.5.
	Cannot be determined	0
	NO	1
	YES	2
Distractions (buzzwords, pauses...)		3.2.6.
	Cannot be determined	0
	NO	1
	YES	2
Paraverbal signs of empathy		3.2.7.
	Cannot be determined	0
	NO	1
	YES	2
Medical ethics		4.

Professional conduct toward colleagues		4.1.
	Cannot be determined	0
	NO	1
	YES	2
Professional conduct toward the institution		4.2.
	Cannot be determined	0
	NO	1
	YES	2
Protection of patient privacy		4.3.
	Cannot be determined	0
	NO	1
	YES	2
Statements free from political and commercial influence		4.4.
	Cannot be determined	0
	NO	1
	YES	2
Avoidance of fearmongering		4.5.
	Cannot be determined	0
	NO	1
	YES	2
Avoidance of stigmatization and discrimination		4.6.
	Cannot be determined	0
	NO	1
	YES	2
Preservation of the profession's reputation		4.7.
	Cannot be determined	0
	NO	1
	YES	2
Care for the well-being of the patient's family?		4.8.
	Cannot be determined	0
	NO	1
	YES	2
Persuasiveness		5.
	Cannot be determined	0
	Not persuasive at all	1
	Partially persuasive	2
	Completely persuasive	3

Discussion

The MECA matrix is the first systematic model designed to evaluate the quality of public speaking of healthcare professionals. Existing methods for media content analysis offer useful tools, each with specific strengths (13-16). However, they also have notable limitations. Many of them focus mainly on factual accuracy, which is helpful in journalism, but less applicable to other forms of media. These methods often rely on subjective interpretation, lack clear coding frameworks, and are time-consuming due to manual transcription and analysis. They rarely consider nonverbal cues, emotions, or context, and are mostly developed in English-speaking settings, which limits their use across cultures. Michaelson and Griffin critically examined existing approaches to media content analysis, highlighting their methodological limitations. They pointed out that some models rely merely on collecting and counting media clips, while others attempt to assess more complex aspects such as emotional tone or the perceived credibility of the media outlet in which the content appears (13).

The MECA matrix enables systematic qualitative analysis of media appearances across five dimensions: verbal, nonverbal, paraverbal, medical ethics, and persuasiveness. While qualitative analysis allows for the identification of themes, meanings, and contextual interpretations, the quantitative component introduces numeric coding to measure frequency, patterns, and correlations. Each component captures a key aspect of communication—ranging from message clarity and delivery style to ethical standards and overall impact—providing a comprehensive framework for evaluating public speeches. This dual-layered approach enables researchers to examine not only what is being communicated but also how often and in what manner, making MECA particularly valuable in studying patterns of media exposure.

Unlike methodologies that are limited to specific professional groups, types of discourse, or media formats, the MECA matrix is not restricted to healthcare professionals, formal statements, or traditional news reporting. It can be applied to a broad range of disciplines beyond information and library science (ILS), including health and medical research, media and communication studies, and the social sciences. Moreover, its application is not confined to news segments or media interviews, as it can

analyse various forms of public speech, including presentations, lectures, and panel discussions.

Another distinctive feature of MECA is its ability to analyse both audio and video content, whereas methods such as Visual-Verbal Video Analysis (VVVA) often emphasize multimodal interactions without an integrated coding structure for systematic analysis. By focusing on video and audio elements, MECA enables researchers to capture a more nuanced understanding of verbal and nonverbal communication, an aspect that is often overlooked in traditional text-based analyses.

Furthermore, MECA incorporates both positive and negative connotations in its analytical framework. This feature allows researchers to distinguish between constructive and detrimental discourse, facilitating a deeper understanding of the impact of media messages on public perception. This structured polarity assessment sets MECA apart from methodologies like Conversational Analysis (CA), which primarily focuses on the mechanics of interaction rather than on evaluating the semantic and emotional dimensions of communication.

The systematic nature of MECA ensures that its analytical framework is structured, replicable, and adaptable to various research needs. Unlike Qualitative Content Analysis (QCA), which may rely on inductive category development, MECA provides a predetermined coding structure that maintains methodological consistency while still allowing for emergent themes in qualitative analysis. This balance between structure and flexibility enhances its applicability across different media studies.

Limitations

The MECA model exhibits several limitations. Primarily, it is designed exclusively for video recordings, which means that it cannot be applied to still photographs or audio-only materials. In addition, the model relies on the content being in a language known to the coder; therefore, the coder must have sufficient proficiency in that language to accurately interpret and code the material and must remain neutral across all coding categories—a requirement that can be challenging to maintain consistently. Although MECA is versatile in that it is not restricted solely to healthcare professionals or to formal media statements (it can also be applied to speeches and presentations), these constraints regarding the type of media and language proficiency can limit its broader applicability in contexts where multiple media forms or fewer familiar languages are involved. These limitations underscore the need for careful consideration of both the content and the coding environment when employing the MECA model in research.

Implications for future research

The MECA matrix enables researchers to compare media appearances systematically, making it suitable for use in large-scale studies to identify strengths and areas for improvement in communication. Such research could further validate the matrix's capacity to objectively assess media performance and offer evidence-based recommendations for enhancing communication strategies. Future studies should also expand beyond the healthcare sector to include disciplines such as media studies, public relations, and rhetoric. This broader application would offer deeper insights into how media messages are constructed and interpreted, contributing to the advancement of communication analysis across fields.

Conclusion

Previously established methods for media content analysis represent a powerful research toolkit; however, their practical application depends on the specific research objectives and the resources available to researchers. However, MECA stands out as an advanced and comprehensive tool for media content analysis due to its precise coding system, dual qualitative-quantitative framework, broad interdisciplinary applicability, focus

on video content, structured evaluation of positive and negative connotations, and systematic methodology. These attributes make it a superior alternative to traditional methods, offering greater analytical depth, consistency, and adaptability for research in media, communication, and public discourse.

Declarations

Authors' contributions: KS designed the study, contributed to the theoretical framework, and critically reviewed the manuscript. AF developed the theoretical framework and critically reviewed the manuscript. MM developed the matrix, the comparison of communication models, and the coding scheme, and critically reviewed the manuscript.

All authors approved the final version of the manuscript, meet the authorship criteria, and hold rights to the intellectual content.

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