



YouTube Video Analytics for Health Literacy and Chronic Care Management: An Augmented Intelligence Approach to Assess Content and Understandability



Video sharing social media platforms, such as YouTube, offer an effective way to deliver medical information that may be more understandable for the public, with the potential to improve health literacy, patient-physician interactions, self-care and outcomes. Few studies have identified scalable, replicable and efficient technology-enabled interventions, delivered as evidence-backed digital therapeutics, to improve the ease with which patients and health professionals can retrieve understandable medical information to manage chronic conditions. We propose an augmented intelligence approach that synthesizes annotations from domain experts, deep learning and co-training methods from machine learning and a systematic approach to extract patient education constructs on understandability and encoded medical information to develop an automated, generalizable video classification solution. We further examine the simultaneous impact of understandability and validated medical information in a video on several dimensions of collective engagement by conducting a multiple-treatment propensity score based matching approach that allows us to implement a quasi-randomization research design. While confirming common assessments of the relationship between user engagement and patient education materials, our analysis quantifies the nuanced effects using actual viewing data in the specific context of understandability of complex medical information encoded in patient education videos found on YouTube, with implications for research and practice.

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Faculty host: Yu Ding, ISEN

Biography

Dr. Rema Padman is Trustees Professor of Management Science and Healthcare Informatics in the Heinz College of Information Systems and Public Policy at Carnegie Mellon University and Adjunct Professor of Biomedical Informatics at the University of Pittsburgh School of Medicine. She directs Healthcare Informatics research at iLab and Healthcare Operations and Analytics at the Center for Health Analytics at Heinz College. Her research investigates predictive and prescriptive analytics for data-driven decision support in the context of clinical and consumer-facing information technology interventions in healthcare delivery and management, such as e-health, m-health, chronic and infectious disease management and workflow analysis. More recently, she has been developing and evaluating technology-enabled health literacy solutions that leverage Artificial Intelligence, machine learning and gamification. She has published extensively, serves on editorial boards of major academic journals, and advises healthcare informatics projects for provider, payer, pharmaceutical, consulting, and nonprofit organizations. She has received several Best Paper awards, the IBM Faculty Award, and CMU Teaching Excellence awards. Becker's Hospital Review recognized her as one of the top 110 women in MedTech, and she was nominated for the 2018 HIMSS Most Influential Women in Health IT Award. She is an elected Fellow of the American Medical Informatics Association.

