MEDINFO 2023 — The Future Is Accessible
J. Bichel-Findlay et al. (Eds.)

doi:10.3233/SHTI230993

A Human-Centered Approach to Measuring the Impact of Evidence-Based Online Resources

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Abstract. Evidence-based online resources aim to combat vulnerabilities associated with health misinformation, evidence misalignment, and science illiteracy. Yet, it is a challenge to measure and demonstrate their impacts beyond looking at proxies for success (e.g., numbers of followers and likes). Addressing this gap, we introduce an emerging evaluation and verify its functionality in delivering optimal impact and sustainability measures for an evidence-based video resource on frailty.

Keywords. Evaluation, digital health, knowledge translation, science communication

1. Introduction

Evidence-based online resources are crucial for disseminating scientific literature knowledge to inform consumers and practitioners' healthcare decisions. These resources address health misinformation, evidence misalignment, and science illiteracy. Knowledge translation and science implementation aim to optimize the use of knowledge in healthcare and improve consumer and knowledge-producer experiences. While various research methods are used in knowledge translation and science implementation for developing and evaluating online health resources, many metrics for success rely on superficial indicators like website visits and follower counts. To address this limitation, we developed an innovative evaluation framework, PROLIFERATE[7,8,11], to comprehensively assess the impact of evidence-based online resources. This paper evaluates the impact of an evidence-based frailty video using the PROLIFERATE framework, shedding light on the multidimensional effects of such resources in healthcare decision-making.

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2. Methods

This study was approved by the Flinders University Human Research Ethics Committee (Project No. 8474). Our interdisciplinary team employed the PROLIFERATE framework, including health researchers, consumer co-researchers, mass communicators, artists, and nurses. We used this framework to evaluate the impact of a co-designed evidence-based video, initially employing a learning, evaluation, and planning questionnaire for co-design purposes. Our objective was to assess the video's impact on raising awareness, improving frailty management, reducing misconceptions, and promoting preventive strategies[1,11]. To ensure objectivity, we involved knowledge users who were not part of the video creation team, maintained a separation between the video's lead author and data analysis, and used the results to inform awareness strategies. Figure 1 illustrates the PROLIFERATE framework.[1,9,10]

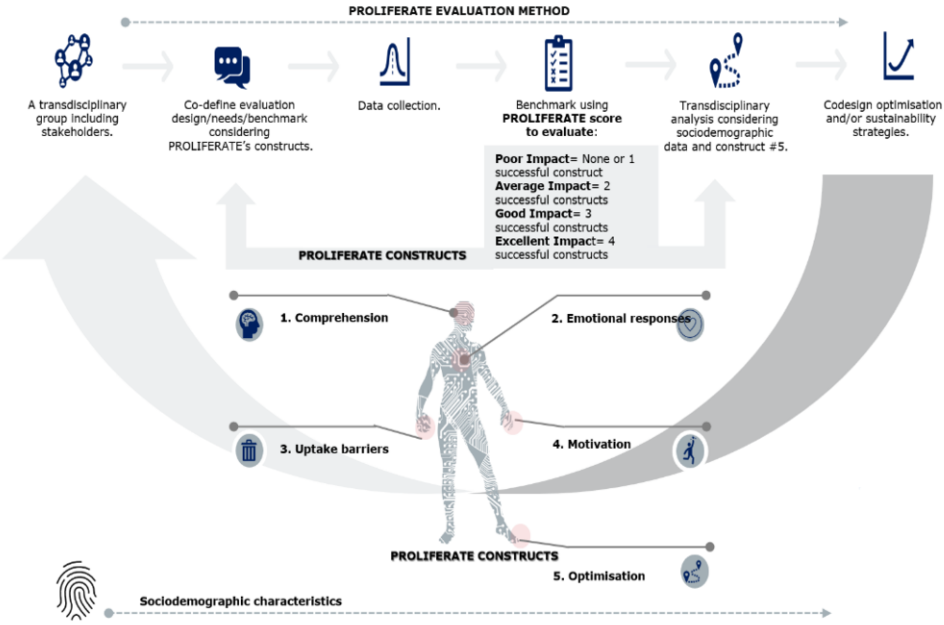

Figure 1. PROLIFERATE: an adaptable framework with tools to evaluate different processes, outputs, and products via participatory research [7, 8, 11]. https://doi.org/10.3389/frhs.2023.1154614

Participants included two South Australian cohorts: local community members attending a Research Showcase (n=31, age ≥ 65 years) and first-year Nursing diploma students primarily of Nepalese or Indian origin at Torrens University (n=11, ages 18 - 35 years). Data collection involved presenting the frailty video and administering a co-adapted body map questionnaire.[11] This questionnaire captured responses related to PROLIFERATE constructs using a gender-ambiguous human figure with questions under the five PROLIFERATE constructs. The data analysis adopted a human-driven qualitative summative approach, aggregating responses by themes and reporting percentages under each PROLIFERATE construct. A passing score of one was assigned if positive sentiments exceeded 50%, while the opposite resulted in a Zero score, as indicated by PROLIFERATE SCORE in Figure 1.[12,13,14]

3. Results

Benchmarking PROLIFERATE's Constructs:

- Construct #1 (Q1) Comprehension: The video was widely appreciated for its clarity and informativeness among both older adults (66%) and students (55%). It enhanced understanding of frailty prevention strategies and physical abilities, especially for older individuals with sensory impairments (17%). Construct #1 scored = 1, exceeding the 50% benchmark.
- Construct #2 (Q2) Emotional Responses: Although most participants responded positively to the video, older individuals (48%) had some reservations. Students (36%) found the video valuable, recognizing its relevance to various age groups. Some older viewers (31%) found it fast-paced, while a few (7%) questioned its accuracy. Construct #2 scored = 1, surpassing the 50% benchmark.
- Construct #3 (Q3) Uptake Barriers: The video effectively raised awareness about frailty and encouraged reflection on prevention strategies among all students (100%) and most older adults (69%). It prompted consideration of personal circumstances and misconceptions in both groups (35% older adults, 27% students). Construct #3 scored = 1, exceeding the 50% benchmark.
- Construct #4 (Q4) Motivation: The video influenced behavioral change intentions for a significant proportion of older individuals (66%) and students (91%). Students also recognized the possibility of preventing frailty and increasing awareness (81%). Construct #4 scored = 1, surpassing the 50% benchmark.
- Construct #5 (Q5) Optimization: Opportunities exist for promoting the video in various settings, such as community venues, healthcare settings, and online platforms, as suggested by older adults (41%) and students (73%). Construct #5 scored = 1, exceeding the 50% benchmark.

4. Discussion

The results underscore the importance of a human-centered approach in evaluating evidence-based online videos. Incorporating participatory research principles and flexible assessment tools adds significant value to the evaluation process. The video achieved an 'Excellent impact' across comprehension, emotional response, reduced uptake barriers, and motivation for frailty prevention. Additionally, it provided insights into optimizing video utilization, including targeted placement for sustainability. These findings align with the societal effects observed in participatory research[15, 16, 17, 18, 19, 21, 22], highlighting how our frailty video enhanced comprehension, reduced uptake barriers, and motivated behavioral change. While participatory research is gaining traction, it often remains limited to data collection, with limited community control over research design or interpretation[20, 21, 22]. PROLIFERATE addresses these limitations by actively involving consumers as co-researchers and co-authors. To fully harness participatory research's potential, genuine community involvement throughout the research process is crucial[21, 22]. Tools designed for effective participatory research[23, 24] play a pivotal role. These tools seamlessly complement our evaluation process, emphasizing the 'Excellent impact' achieved by the co-designed frailty video, with its benefits in knowledge dissemination and behavioral change motivation. Regarding PROLIFERATE's adaptability, including quantitative tools[15], as seen in its application

for interdisciplinary learning[16] and assessing stakeholders' views on RAPIDx AI[7, 8, 11, 17, 18], it highlights the framework's potential for broader applications in knowledge translation and science implementation.

5. Conclusions

Our innovative approach to evaluating evidence-based online resources, exemplified by the frailty video, bridges a critical gap in impact assessment. Unlike conventional methods reliant on superficial metrics, our human-centered approach offers more profound insights into the video's real-world implications. The 'Excellent impact' achieved across comprehension, emotional responses, and reduced uptake barriers underscores the transformative potential of human-centered approaches. Additionally, the video's effectiveness in raising awareness and driving behavioral change intentions signifies its potential for constructive health-related decisions. PROLIFERATE's optimization construct reveals numerous avenues for promoting the video, enhancing its versatility. This work showcases the value of a holistic, human-centered approach enriched by participatory research principles, enhancing the impact of evidence-based online resources. In conclusion, these person-centered attributes, combined with adaptable tools, position PROLIFERATE as a promising method for improving the effectiveness of evidence-based online resources, advancing science implementation, and enhancing knowledge translation efforts[15, 16, 17, 18], benefiting healthcare practice, consumers, and science communication.

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