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An exploratory assessment of weight loss videos on YouTube™

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ABSTRACT

Objective: To describe the variation in contents between different video sources on YouTube™ regarding weight loss.**Study Design:** The 100 most widely viewed weight loss videos on YouTube™ were selected for manual coding.**Methods:** Videos were manually coded based on sources and contents, we also identify themes for each of the videos. Univariate logistic regression was used to assess difference in contents between videos from different sources.**Results:** After excluding two videos, a sample of 98 videos remained. Among them, there were 74 consumer-generated videos, 12 news videos, and 12 from commercial television and companies. Collectively, the 98 videos were viewed more than 365 million times. The odds of mentioning ongoing lifestyle that includes long-term changes in daily eating was 90% less in commercial and company videos compared to consumer videos (odds ratio [OR] = 0.10, 95% confidence interval [CI] 0.01–0.85, $P = 0.03$). The odds of showing a female talking in the video about weight loss was 81% less in news videos compared to consumer videos (OR = 0.19, 95% CI 0.05–0.68, $P = 0.01$). In addition, commercial and company videos were found to be 18 times as likely to carry a theme on workout as consumer videos (OR = 18.13, 95% CI 3.60–91.22, $P < 0.01$).**Conclusion:** Public health professionals need to be more creative to make their videos popular if they want to reach a wide audience.

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Introduction

Obesity remains a public health concern in the United States. Currently, approximately 16.9% of youth and 34.9% of adults in the United States are obese.¹ Overweight and obesity are associated with a myriad of health issues including heart disease, type 2 diabetes, and cancer.²

People who are looking to lose weight may use the Internet as a way of obtaining information for weight loss workouts, diets, and personal stories. YouTube™ is one such popular video sharing site, which generates billions of views on a daily basis.³ YouTube™ has local versions in 88 countries and can be navigated in 76 different languages.³ Despite the fact that information is abundant, other studies looking at reliability of general health information on the Internet,^{4,5} and on YouTube™ videos in particular,^{6,7} have demonstrated that there is great variability in the reliability of the content conveyed.

Consumers are using information from the Internet to make health-related decisions for themselves or those they care about.⁸ Therefore, it is important that health practitioners be aware of the type of information available. We did not identify any articles in the current literature related to weight loss on YouTube™. Therefore, the purpose of this study was to describe the content available in the most widely viewed YouTube™ videos related to weight loss.

Methods

Study Design

The study design was adopted from prior studies of YouTube™.^{6,7}

Data retrieval

In order to select our sample, the search term ‘weight loss’ was used on YouTube™. All videos in English were sorted by number of views and examined for specific content. The aim of the study was to include the 100 most watched videos. The title, URL, date of upload, length of the video, number of thumbs-up and thumbs-down, and number of views were recorded. The data collection for this study occurred in New Jersey, USA on June 8, 2016.

Coding of video sources

The source of upload (who uploaded the video) was determined manually. Categories of classification of the source of upload included the following: consumer (including individual weight loss programs/videos); professional; commercial television; television-based news; Internet-based news of any kind; and uploaded by a company promoting a product or workout video. Consumer was defined as any individual or individuals who uploaded their own content, such as health tips, workouts, or personal stories. This category also included verified accounts if the source was a consumer. Professional included an individual with a background in health care. Commercial television consisted of any major stations aside

from news. Television-based news included any news network. Internet-based news was any type of news from online sources. Company-based videos included those promoting a product or workout video including any professionally made or commercial video that attempts to influence the viewers. All of the videos fell into one of these categories.

Coding of video contents

In addition to the source of upload, the following information related to the content of the video was collected. It was determined if the video mentioned the following information: weight loss gradually and steadily (about 1–2 pounds per week as per the Centers for Disease Control and Prevention (CDC) recommendation);⁹ ongoing lifestyle that includes long-term changes in daily eating; ongoing lifestyle that includes long-term exercise habits; prevention of obesity; and benefit of even modest weight loss. Additional categories included highlights fat burning product; highlights weight loss pill; focuses on rapid weight loss; highlights weight loss in females; refers to a specific weight loss method as safe; highlights a body transformation due to weight loss; and gives a disclaimer. For the themes of the videos, they are coded as a free-text description. A video can be coded under multiple themes.

Inter-rater reliability

In order to assess the inter-rater reliability of the manual coding, i.e. to determine whether or not the manual coding of the videos from the rater of this study are valid, another independent rater (a faculty, whom can be considered as the gold standard) selected a random sample of 10 videos from the 100 most watched videos to recode. Then we compared the manually coded results between the two raters based on the percentage of agreement and Cohen's unweighted kappa. For the 10 randomly sampled videos, the manual coding of source and content of the videos are compared between the rater of this study and the rater considered as the ‘gold standard’. All manually coded variables reached 100% agreement with kappa values equal to one. This suggests the manual coding of the rater of this study are reliable and valid.

Statistical analysis

Analysis was conducted in R 3.2.3.¹⁰ The length of videos, number of views, thumbs-up and thumbs-down, given that the distributions of these types of variables were generally rather skewed, we analyzed them using non-parametric methods, i.e. we performed the Kruskal–Wallis H Test (a non-parametric alternative of analysis of variance test based on ranks) across the three source categories and if the overall test suggested there is a difference, we continued to compare pairwise using Nemenyi test (a non-parametric alternative, based on ranks, of Tukey–Kramer approach for multiple testing). The correlations between the length of videos, number of views, thumbs-up and thumbs-down were analyzed based on Spearman's rho (a non-parametric alternative of Pearson correlation based on ranks). For all the manually coded themes (description), since one video can

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