

IN-DEPTH REVIEW

A Cross-Sectional Analysis of Melanoma-Related Content on TikTok

Shaliz Aflatooni, B.S.¹, Kaylee Stankiewicz, B.S.¹, Emily Coughlin, M.P.H², Monica Khadka, B.A., B.S.¹, Paul Rodriguez-Waitkus, M.D.³

¹ University of South Florida Morsani College of Medicine

² University of South Florida Morsani College of Medicine, Department of Medical Education

³ University of South Florida Morsani College of Medicine, Department of Dermatology and Cutaneous Surgery

ABSTRACT

Introduction: The increasing prevalence of social media has a profound impact on the dissemination of melanoma awareness and preventative behaviors. In this study we aimed to evaluate the understandability and actionability of melanoma-related content on TikTok.

Methods: The hashtag #melanoma was searched on TikTok on March 1st, 2023. The videos were reviewed independently by 3 reviewers and descriptive and quantitative metrics were collected. Videos were categorized as either containing educational melanoma information, describing patient experience, or entertaining in nature. The videos were analyzed using the Patient Education Materials Assessment Tool for Audiovisual Materials (PEMAT-A/V) to score the understandability and actionability of the videos.

Results: A total of 100 videos were included, 47% were posted by influencers, 42% by healthcare providers, and 11% by other creators. Healthcare professionals produced mostly prevention/screening content (76.2%), while influencers produced a more patient experience content (74.5%, $P<.001$). Content uploaded by healthcare professionals had higher average understandability score ($P<.001$). There was no statistically significant difference in actionability score by source. Prevention/screening content had the highest average actionability score ($P<.001$).

Conclusions: Overall, prevention/screening videos had a significantly greater average understandability score and actionability score. Dermatologists need to ensure that their content conveys clear, step-by-step actions for audience members to promote photoprotective habits. Influencers, also, should consider using their platform to encourage their audience to engage in safe skin habits and recognize signs of melanoma lesions. Further research is needed to evaluate the information accuracy of the melanoma content on TikTok.

INTRODUCTION

As of March 2023, TikTok has had over 1 billion users and is available in over 150 countries.¹ Sharing videos on TikTok has

allowed people to make connections with others, learn new skills, and disseminate information on a wide range of topics, like dermatological conditions. Though the number of board-certified dermatologists on TikTok is growing, there remains a need for

increased presence to combat the spread of misinformation.²

Melanoma is the sixth most common cancer among men and women in the United States and has shown an increase in incidence worldwide in recent decades.³ In early stages, melanoma can be treated successfully with surgery, however once distance metastasis has occurred there is no effective treatment. Preventive and screening methods must be relayed to the public, including children and adolescents, as exposure to UV radiation at these ages contributes to the risk of developing skin cancer in the future.^{4,5}

The cutaneous nature of melanoma provides the advantage of non-invasive screening with skin examinations.⁶ Both skin self-examinations (SSE) of nevi and routine checks by a healthcare professional are both critical in monitoring for melanoma.^{4,6} It is very common for a patient to detect their own lesions either through a purposeful SSE or incidentally.⁶

Dermatologists can use TikTok to deliver educational content to younger demographics. Younger generations are more likely to seek medical information online and be more receptive to information they acquire through social media.⁷ For these reasons, TikTok can play a pivotal role in helping to spread awareness about sun safety habits and melanoma prevention, and ultimately reduce rates of melanoma later in life.

METHODS

The term “melanoma” was searched in hashtags on TikTok on March 1st, 2023. The top 143 videos from the search were screened until 100 videos were finalized for

review. 43 videos were excluded according to the following criteria: non-English, repeat video, irrelevant to melanoma. 100 videos were included in the study. The exclusion process is detailed in **Figure 1**. The number of likes, comments, and video length of each included video were extracted. Videos were categorized by upload source: health care providers (HCP), influencers defined as having >5,000 followers, and others. The content of each video was categorized as describing patient experience, prevention and/or screening, or entertainment.

Quality Assessment

We measured the understandability and actionability of melanoma-related videos on TikTok using the Patient Education Material Assessment Tool for Audio-Visual Material (PEMAT-A/V) tool.⁸ PEMAT is a systematic method of scoring the understandability and actionability of patient education materials. The PEMAT-A/V tool consists of 13 items measuring understandability and 4 items measuring actionability. Three reviewers rated each item either 1 point (Agree), 0 points (Disagree) or Not Applicable (N/A). The sum was divided by the total possible points in the understandability category and multiplied by 100 to get a percentage. The same procedure was repeated for the actionability category. Scores under 70% indicated that the information had poor understandability or actionability.

Statistical analysis

SPSS 28.0 statistical software (SPSS, Inc., Chicago, USA) was used for data analysis. Kruskal-Wallis tests were used to identify any differences by content creator type (health care professional, influencer, other) or by video category (prevention/screening, patient experience, entertainment). Spearman’s Rho correlation was used to evaluate the

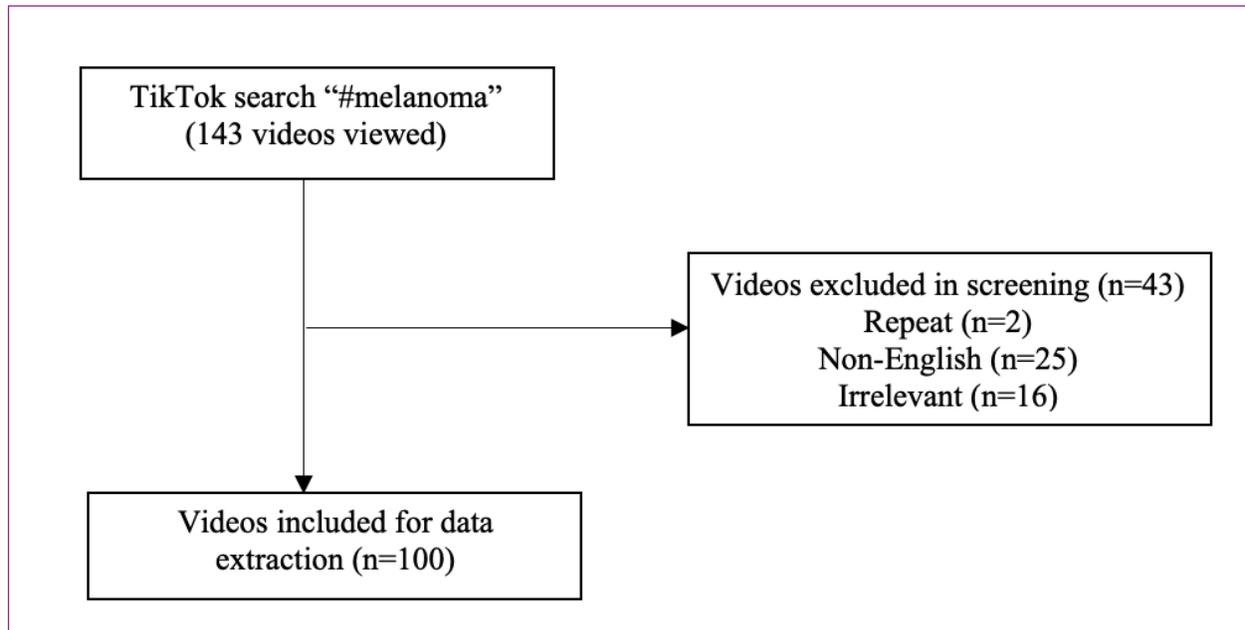


Figure 1. Video Selection Process.

relationships between continuous variables including PEMAT scores, number of likes and comments, and video length. Pearson's chi-square test was used to determine if there is an association between source type and content type. $P < 0.05$ was considered significant for all analyses.

RESULTS

Video Characteristics

The 100 melanoma-related videos analyzed were created by 42 (42%) health care professionals (HCPs), 47 (47%) influencers (defined as non-health care professionals with > 5000 followers), and 11 (11%) other creators. HCPs included 34 dermatologists and 8 non-dermatologists.

The mean duration of all videos was 51.90 ± 47.4 seconds. There was a significant difference in video length by source ($P = 0.007$). Influencers uploaded the longest videos (70.39 ± 56.93 seconds), then others (38.82 ± 26.79 seconds), then finally HCPs

(34.64 ± 29.5 seconds). Overall, the 100 videos garnered an average of $44,743 \pm 61,657.06$ likes and an average of 1053.76 ± 2888.27 comments. There was no difference in the number of likes by source ($P = 0.422$). However, there was a significant difference in the number of comments by source ($P = 0.015$) with the highest among others, then influencers, and then HCPs. Characteristics of videos by source are shown in **Table 1**.

The number of patient experience videos ($n = 43$) and prevention/screening videos ($n = 43$) was the same followed by entertainment videos ($n = 14$). Types of video content included 43 (43%) prevention/screening videos, 43 (43%) patient experience, and 14 (14%) entertainment videos. There was no difference in likes by content type ($P = 0.524$). There was a significant difference in comments by content type ($P < 0.001$) with patient experience videos having the highest number of comments (1888.72 ± 4259.57). There was a significant difference in length by content type with patient experience

Table 1. Summary of video characteristics by source.

Source				
	HCP (N=42)	Influencer (N=47)	Other (N=11)	p-value
Content				<0.001
Prevention/Screening	32 (76.2)	8 (17.0)	3 (27.3)	-
Patient Experience	2 (4.8)	35 (74.5)	6 (54.5)	-
Entertainment	8 (19.0)	4 (8.5)	2 (18.2)	-
Understandability	83.12 ± 15.14	68.55 ± 18.76	72.17 ± 13.68	<0.001
Actionability	37.10 ± 40.08	26.95 ± 37.20	36.36 ± 43.35	0.359
Length	924.64 ± 29.5	70.39 ± 56.92	38.82 ± 26.79	0.007
Comments	35,725.90 ± 40,426.71	48,941 ± 7,360.55	61,235.45 ± 56,561.61	0.015
Likes	35,725.90 ± 40,426.71	48,941.49 ± 76,630.55	61,235.45 ± 56,561.61	0.422

videos being the longest ($P<0.001$). The characteristics of the videos and average PEMAT-A/V scores are shown in **Table 1**.

HCPs produced significantly more prevention/screening content (76.2% of HCP videos). Influencers were most likely to have patient experience content (74.5% of influencer videos). The content category of the videos is shown in **Figure 2**.

Understandability and Actionability

Understandability and actionability were assessed using PEMAT-A/V. There was a significant association between source and understandability ($P<0.001$). Videos published by HCPs had the highest understandability score (83.12 ± 15.14), followed by others (72.17 ± 13.68), and then influencers (68.55 ± 18.76). Only 15 videos were considered to be “actionable”, having an actionability score greater than 70%.

There was no difference in actionability by source ($P=0.359$). The difference in understandability and actionability scores across the different video sources is seen in **Table 1**.

Prevention/screening content had significantly higher understandability scores (83.93 ± 14.19), followed by entertainment videos (68.63 ± 20.91), and lastly patient experience videos (68.31 ± 17.05), $P<0.001$. Prevention/screening content also earned a significantly higher average actionability score (54.85 ± 38.11), followed by patient experience videos (20.16 ± 33.44), and lastly entertainment videos (0 ± 0), $P<0.001$. The difference in understandability and actionability scores across the different content types is seen in **Table 2**.

There was a significant positive correlation between understandability and actionability ($\rho=0.352$, 95% CI 0.161-0.517, $P<0.001$).

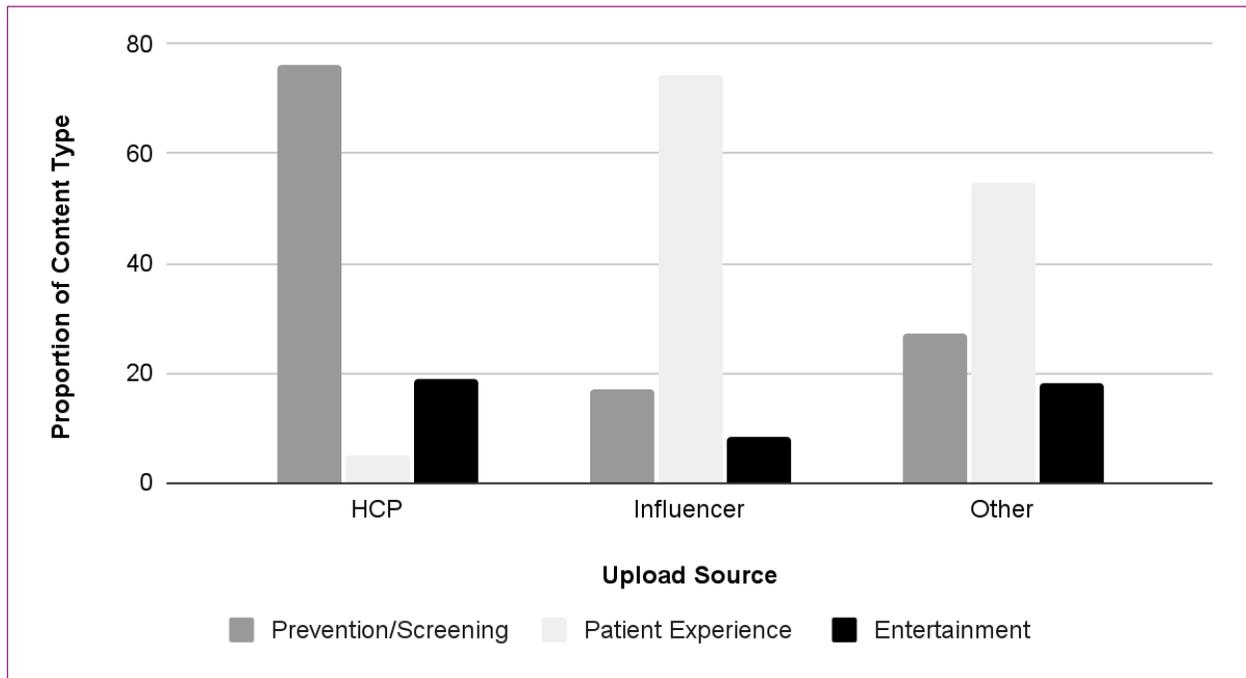


Figure 2. Summary of type of content uploaded to TikTok by source.

Table 2. Average PEMAT A/V scores and video characteristics stratified by content type.

	Content Type			p-value
	Prevention/Screening (N=43)	Patient Experience (N=43)	Entertainment (N=14)	
Understandability	83.93 ± 14.19	68.31 ± 17.05	68.63 ± 20.91	<0.001
Actionability	54.85 ± 38.11	20.16 ± 33.44	0 ± 0	<0.001
Length	40.60 ± 36.80	70.59 ± 55.53	29.21 ± 25.41	0.002
Comments	464.53 ± 482.13	1888.72 ± 4259.57	299.00 ± 300.62	0.001
Likes	40.60 ± 36.80	70.59 ± 55.53	29.21 ± 25.41	0.524

Number of likes was not correlated with understandability or actionability.

DISCUSSION

UV exposure during early childhood and adolescence elevates the lifetime risk of developing skin cancer more so than exposure in adulthood.⁹ Since the largest proportion (25%) of TikTok users in the United States are 10 - 19 years old, and almost half of TikTok users are under 30 it is critical that sun-protection knowledge and behaviors are disseminated amongst a vulnerable population.¹⁰ As the incidence of melanoma increases worldwide, we aimed to further understand whether the TikTok videos related to melanoma were effective sources of educational content.

A closer look at 100 melanoma-related videos on TikTok revealed that the top posters were influencers (47%), followed by health care professionals (42%). A large majority of influencers were also patients, which helps to explain why influencers uploaded significantly more patient experience videos than other sources. Influencers mostly discussed their diagnosis story, symptoms, and life updates. With a substantial following, influencers can reach a larger audience and are highly encouraged to also utilize their platform to create more prevention and screening videos to not only spread awareness of melanoma, but also increase sun safety habits.

Overall, HCPs were significantly associated with uploading the most prevention/screening content thus, they should increase their presence on social media to promote educational melanoma content and prevent melanoma incidence. Their videos also were significantly clearer and more organized, which was noted by the highest

understandability score. Luckily for users, more and more dermatologists are choosing to share their medical knowledge within social media platforms; this increased interaction will inevitably lead to a greater likelihood that platform users will be exposed to more high-quality information in the future.

The average PEMAT-A/V actionability scores across all sources were less than 70%. This suggests that few videos urged the audience to take a specific action. The videos that rated highly in actionability score told users to “Wear your sunscreen”, “Get your skin checked”, and “Check your body for abnormal moles”. Some users even walked through a systematic way to identify the warning signs of melanoma - also known as the ABCDE criteria. Since the majority of melanomas are detected by the patient, it is essential that more videos on TikTok teach users how to properly perform a deliberate SSE. In a recent content analysis of 338 skin cancer videos on TikTok, it was found that only 28.1% of videos aimed to raise awareness through recommending sunscreen and physician skin examination; these videos were viewed 7.6 times more than others ($P<.001$) highlighting that educational videos are popular amongst the public and thus could also be a way for dermatologists to build a platform on TikTok.¹²

Overall, a thorough and accurate SSE performed by TikTok users holds the power to detect and treat melanoma early in its course.¹³ Though HCPs made a significantly greater number of prevention/screening videos that were significantly higher in understandability, very few broke down exactly how the user can prevent and/or detect melanoma. HCPs and Influencers could increase their PEMAT-A/V score by including clear, specific steps to guide

adolescents and young adults on sun safety behavior and melanoma prevention.

Limitations

Our study does not evaluate the accuracy of melanoma-related videos. Further studies are needed to investigate the possibility of misinformation of top melanoma content posted on TikTok. Further, this study only analyzed content that was tagged with #melanoma which may not have captured all the melanoma-related content. Future studies should consider looking at a broader range of hashtags and incorporating greater than 100 videos.

CONCLUSION

Undoubtedly, TikTok has become a popular platform for dermatologic content; thus, providing dermatologists with the unique opportunity to disseminate medical information on a wide scale. This study evaluated the information quality of 100 melanoma-related videos on TikTok. The results show that influencers should utilize their platform to create more prevention/screening videos that break down steps on how to protect and detect melanoma. HCPs should not only increase their presence on TikTok but should also consider leveraging TikTok to bring forth impactful conversations on sun protection. Together, HCPs and influencers can help educate a vulnerable population on photoprotective behaviors.

Conflict of Interest Disclosures: None

Funding: None

Corresponding Author:

Shaliz Aflatooni
USF Health Morsani College of Medicine

560 Channelside Drive
Tampa, FL 33602
Phone: 715-862-9810
Email: aflatooni@usf.edu

References:

1. TikTok Statistics - Everything You Need to Know [Mar 2023 Update]. Accessed May 14, 2023. <https://wallaroomedia.com/blog/social-media/tiktok-statistics/>
2. Villa-Ruiz C, Kassamali B, Mazori DR, Min M, Cobos G, LaChance A. Overview of TikTok's most viewed dermatologic content and assessment of its reliability. *J Am Acad Dermatol*. 2021;85(1):273-274. doi:10.1016/j.jaad.2020.12.028
3. Breslow A. Thickness, Cross-Sectional Areas and Depth of Invasion in the Prognosis of Cutaneous Melanoma: *Ann Surg*. 1970;172(5):902-908. doi:10.1097/00000658-197011000-00017
4. Balch CM, Buzaid AC, Soong SJ, et al. Final Version of the American Joint Committee on Cancer Staging System for Cutaneous Melanoma. *J Clin Oncol*. 2001;19(16):3635-3648. doi:10.1200/JCO.2001.19.16.3635
5. Horváth Z, Evelin CA, Oláh P, Gyulai R, Lengyel Z. Results of a Primary Skin-Cancer-Prevention Campaign in Early Childhood on Sun-Related Knowledge and Attitudes in Southern Hungary. *Cancers*. 2021;13(15):3873. doi:10.3390/cancers13153873
6. Brady MS, Oliveria SA, Christos PJ, et al. Patterns of detection in patients with cutaneous melanoma: Implications for secondary prevention. *Cancer*. 2000;89(2):342-347. doi:10.1002/1097-0142(20000715)89:2<342::AID-CNCR19>3.0.CO;2-P
7. Jia X, Pang Y, Liu LS. Online Health Information Seeking Behavior: A Systematic Review. *Healthc Basel Switz*. 2021;9(12):1740. doi:10.3390/healthcare9121740
8. Shoemaker SJ, Wolf MS, Brach C. Development of the Patient Education Materials Assessment Tool (PEMAT): A new measure of understandability and actionability for print and audiovisual patient information. *Patient Educ Couns*. 2014;96(3):395-403. doi:10.1016/j.pec.2014.05.027
9. Oliveria SA. Sun exposure and risk of melanoma. *Arch Dis Child*. 2005;91(2):131-138. doi:10.1136/adc.2005.086918
10. TikTok User Age, Gender, & Demographics (2023). Exploding Topics. Published October 12, 2022. Accessed May 20, 2023.

<https://explodingtopics.com/blog/tiktok-demographics>

11. Tsao H, Olazagasti JM, Cordero KM, et al. Early detection of melanoma: Reviewing the ABCDEs. *J Am Acad Dermatol*. 2015;72(4):717-723. doi:10.1016/j.jaad.2015.01.025
12. Doyon VC, Liu C, Bailey K, Beleznyay K. 33348 When tanning is trending: A content quality study of skin cancer on TikTok. *J Am Acad Dermatol*. 2022;87(3):AB220. doi:10.1016/j.jaad.2022.06.910
13. Hamidi R, Peng D, Cockburn M. Efficacy of skin self-examination for the early detection of melanoma. *Int J Dermatol*. 2010;49(2):126-134. doi:10.1111/j.1365-4632.2009.04268.x