

Attention-Deficit/Hyperactivity Disorder (ADHD) on TikTok: A cross-sectional study on the quality and perception of ADHD-content on TikTok

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Abstract

Background: Social media platforms are increasingly used for both sharing and seeking of health-related information online. Especially TikTok has become one of the most widely used social networking platforms over the last few years. One health-related topic trending on TikTok recently is Attention Deficit/Hyperactivity Disorder (ADHD). However, the accuracy of health-related information on TikTok remains a significant concern. Misleading information on ADHD on TikTok can increase stigmatization and lead to false "self-diagnosis", pathologizing normal behavior and overuse of care.

Objective: This study aims at investigating the occurrence of misleading information in TikTok videos about ADHD and at exploring the amount of potential self-diagnosis among viewers based on an in-depths analysis of the video comments.

Methods: We scraped data from the 124 most liked ADHD-related TikTok videos uploaded between March 2022 and November 2023 using a commercial scraping software. We categorised videos based on the usefulness of their content as "misleading", "personal experience" or "useful" and used the Patient Education Materials Assessment Tool for Audiovisual Materials (PEMAT-A/V) to evaluate the video quality regarding understandability and actionability.

By purposive sampling we selected six videos and analyzed the content of 100 randomly selected user comments per video to understand the extent of self-identification with ADHD-behaviour among the viewers.

All qualitative analyses were carried out independently by at least two authors, disagreement was resolved by discussion. Using SPSS 27, we calculated the interrater reliability between the raters and descriptive statistics for video and creator characteristics. We used one-way ANOVA to compare the usefulness of the videos.

Results: We assessed 51% of the videos as misleading, 30% as personal experience, and 19% as useful. The PEMAT-A/V scores for understandability and actionability are 79.5% and 5.1%, respectively, with the highest scores observed for useful videos (92.3% for understandability, 8.3% for actionability).

Viewers resonated with ADHD-related behaviours depicted in the videos in 36.7% and with ADHD in 5.3% of the comments. The self-attribution of behavioural patterns varied significantly, depending on the usefulness of the videos, with personal experience videos showing the most comments on self-attribution of behavioural patterns (102/600, 17% of comments, $P < .001$). For the self-attribution of ADHD, we found no significant difference depending on the usefulness of the videos ($P = .359$).

Conclusions: A high proportion of ADHD-related TikTok videos are misleading and a high percentage of viewers seem to self-identify with the symptoms and behaviours presented. Self-identification is most common in videos on personal experiences, but also occurs in misleading videos, potentially increasing misdiagnosis. This highlights the need to critically evaluate health information on social media and for healthcare professionals to address misconceptions arising from these platforms.

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Original Paper

Attention-Deficit/Hyperactivity Disorder (ADHD) on TikTok: A cross-sectional study on the quality and perception of ADHD-content on TikTok

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Abstract

Background

Social media platforms are increasingly used for both sharing and seeking of health-related information online. Especially TikTok has become one of the most widely used social networking platforms over the last few years. One health-related topic trending on TikTok recently is Attention Deficit / Hyperactivity Disorder (ADHD). However, the accuracy of health-related information on TikTok remains a significant concern. Misleading information on ADHD on TikTok can increase stigmatization and lead to false “self-diagnosis”, pathologizing normal behavior and overuse of care. This study aims at investigating the occurrence of misleading information in TikTok videos about ADHD and at exploring potential self-diagnosis among viewers based on an in-depths analysis of the video comments.

Methods

We scraped data from the 124 most liked ADHD-related TikTok videos uploaded between March 2022 and November 2023 using a commercial scraping software. We categorized videos based on the usefulness of their content as "misleading", "personal experience" or "useful" and used the Patient Education Materials Assessment Tool for Audiovisual Materials (PEMAT-A/V) to evaluate the video quality regarding understandability and actionability.

By purposive sampling we selected six videos and analyzed the content of 100 randomly selected user comments per video to understand the extent of self-identification with ADHD-behavior among the viewers.

All qualitative analyses were carried out independently by at least two authors, disagreement was resolved by discussion. Using SPSS 27, we calculated the interrater reliability between the raters and the descriptive statistics for video and creator characteristics. We used one-way ANOVA to compare the usefulness of the videos.

Results

We assessed 51% of the videos as misleading, 30% as personal experience, and 19% as useful. The PEMAT-A/V scores for understandability and actionability are 79.5% and 5.1%, respectively, with the highest scores observed for useful videos (92.3% for understandability, 8.3% for actionability).

Viewers resonated with ADHD-related behaviors depicted in the videos in 36.7% and with ADHD in 5.3% of the comments. The self-attribution of behavioral patterns varied significantly, depending on the usefulness of the videos, with personal experience videos showing the most comments on self-attribution of behavioral patterns (102/600, 17% of comments, $P < .001$). For the self-attribution of ADHD, we found no significant difference depending on the usefulness of the videos ($P = .359$).

Discussion and Conclusions

The high number of misleading videos on ADHD on TikTok and the high percentage of users that self-identify with the symptoms and behaviors presented in these videos, can potentially increase misdiagnosis. This highlights the need to critically evaluate health information on social media and for healthcare professionals to address misconceptions arising from these platforms.

Key words:

Attention deficit/hyperactivity disorder (ADHD); social media; health information; TikTok

Introduction

Social media usage is continuously rising and by the beginning of 2024, the number of social media users has reached over 5 billion worldwide, with users on average spending approximately 2.5 hours on social media every day [1]. Besides the popular platforms Facebook, YouTube, WhatsApp and Instagram, the relatively new social media platform TikTok has seen a rise in popularity and users in the last few years. In 2024 it ranked 5th in the most popular social networks worldwide, with approx. 1.6 billion users per month [1] and was the most downloaded social media application in the last years [2]. TikTok differs from other social media or social networking platforms in the sense that users can publish posts only in the form of pictures or short videos, and that it is mainly used for entertainment. Additionally, video descriptions are rather short. While it is possible to search for specific videos, hashtags or creators, TikTok's main feature is its algorithm, which creates a so called "For You Page" for the user, by making personalized recommendations based on the analyzed previous engagement with videos [2,3]. Originally, TikTok primarily targeted Gen Z, but has expanded and diversified its user base during the COVID-19 pandemic [3]. Still, according to data from 2023, 71% of its user base is aged 18 to 34 years old and therefore younger than the user base of many other popular social media platforms [4–6].

TikTok is mainly used for networking and entertainment, but increasingly also both for sharing and searching for health-related information online [7–9]. Social media offers the possibility to connect with other patients or a community with similar health conditions, seek emotional support and obtain information in an easily understandable format, such as pictures and short videos. Users can also share their personal experiences with a disease, with medical treatment, etc [7,10].

On TikTok, the popularity of health-related content has primarily started with the COVID-19 pandemic, but now there is a variety of health information to be found, for example information on diabetes, dental care, cancer, and mental health issues including depression, Autism Spectrum Disorder and Attention Deficit / Hyperactivity Disorder (ADHD) [8,9]. Especially the topic of ADHD has gained popularity on TikTok in the last years. The growing interest is evident from the increase in content under the hashtag #adhd in 2023 from two million to over three million videos within only 12 months [11].

Many TikTok videos about ADHD show creators that share their own personal experiences with the disorder. This can have many benefits for people with ADHD, as it can raise awareness about the disorder, help people understand symptoms and behavior typical for ADHD, and decrease stigmatization [12]. Additionally, getting more information on the disorder and see and hear people tell their experiences with it, can lower the threshold for seeking a diagnosis and potential treatment for individuals suffering from ADHD. A diagnosis is important to receive appropriate treatment and to target symptoms [13].

However, health information on social media and particularly TikTok should be viewed with caution, as several studies have shown so far that there is a high percentage of misinformation on different health issues on social media [14,15]. In regard to ADHD and TikTok, Yeung et al. (2022) have shown that content about ADHD on TikTok is predominantly misleading (52%), which includes inaccurate and overgeneralized information, whereas only 21% of the analyzed videos are considered useful and the rest showing a personal experience only [16]. With the increased "popularity" or "virality" of ADHD-related videos on TikTok in the last years, and with the rapidly increasing number of videos on that topic, a repeated and updated analysis about misleading information tied to ADHD is needed.

Misleading information about ADHD on TikTok can, among other things, lead to misunderstanding ADHD symptoms and its diagnostic criteria, false self-identification with symptoms and behaviors that are described as typical for ADHD in the video, and over-pathologizing of behaviors that are common in the general population [12,17]. This can in turn cause stress in presumably affected

people, can be the cause that comorbidities go unrecognized and therefore delay receiving appropriate treatment, and can even increase stigmatization by minimizing the effects that ADHD can have on affected people [12,18,19]. However, the effect of TikTok videos about ADHD on the viewers has not been studied yet and it is unclear, how often recipients identify themselves with the information on ADHD shared on TikTok and maybe even “diagnose themselves”.

The objective of this study is to analyze the quality and usefulness of the most popular videos about ADHD on TikTok (study part 1) and to explore how content about ADHD is received by conducting an in-depth analysis of the viewers comments to these ADHD-related TikTok videos (study part 2).



Methods

Part 1: Video analysis

Video inclusion and search strategy

The methods used for the video analysis were based on Yeung et al. [16]. In accordance with this, we aimed at including at least 100 videos on ADHD in the analysis. Our inclusion criteria were videos that addressed ADHD and contained the word “adhd” in either the title or the hashtags. We excluded videos uploaded before March 2022, videos other than in English language, videos that did not include audio or written text, videos that had the comment function disabled, videos that contained advertisement for products or services, or videos that primarily dealt with other diseases or comorbidities instead of ADHD.

We searched the TikTok mobile phone application on the 28th and the 29th of November 2023 with the hashtag “#adhd” for videos about ADHD. The results were sorted for likes count, with the most popular videos (the videos receiving the most “likes”) displayed at the top of the search.

Data extraction

We downloaded or screen-recorded the 130 most-liked videos and extracted video data automatically using a commercial scraping software (“clockworks/free-tiktok-scraper”, provided by Apify) [20]. Extracted meta data on the video creators included the username of the creator, follower count, creator account type (private or public account, verified account, business account), how many accounts the creator follows, origin of the creator, and the creator’s bio (biography). Furthermore, meta data on the videos included the weblink of the video, number of likes/views/shares/saves/comments, time of video upload, hashtags, title, duration, and country of origin.

Business accounts are public profiles for brands, companies, or anyone who wants to promote their business (products or services) and use TikTok’s marketing tools. Verified accounts are accounts with a blue checkmark, which helps distinguish if the creator’s identity was confirmed and it is not a copycat, fan account, etc., indicating authenticity and credibility.

All videos were assessed for inclusion according to the beforementioned inclusion criteria via a checklist.

Rating of usefulness

Following the methodology of Yeung et al. [16], all included videos’ contents were categorised as either “misleading”, “personal experience”, or “useful”. Videos were considered misleading if they contained false information on ADHD, if they showed symptoms not considered typical for ADHD (based on the German S3 guideline on ADHD and the ICD-11 [21,22]), or if displayed symptoms or behaviors were over-generalizing. The category “misleading” therefore included for example videos claiming to provide a diagnostic test for ADHD, misleading point of views or a wrong depiction of symptoms. We considered videos “personal experience” if they described the creator’s personal experience with ADHD without being over-generalizing, and videos as “useful” if they contained correct information on ADHD or correctly depicted symptoms and behaviors.

Three members of the research group rated the usefulness of the videos independently, based on the German S3 guideline on ADHD and the ICD-11 [21,22] and resolved disagreements by discussion.

Quality Assessment

We assessed the informational quality of the videos using the Patient Education Materials

Assessment Tool for Audiovisual Materials (PEMAT-A/V), a systematic method to assess the understandability and actionability of audiovisual patient education material. Its goal is not to rate the quality of the information provided, but to assess if patients or users will be able to understand and to act on the provided information. The PEMAT-A/V consists of 13 items measuring understandability and four items measuring actionability [23,24].

Quality assessment was conducted by two members of the research group independently and disagreement was resolved by discussion.

Part 2: Comment analysis

Data extraction

By purposive sampling we selected six videos, including two misleading videos, two useful videos and two videos categorized as personal experience, and scraped a minimum of 900 first-level comments of these videos using a commercial scraping software (“clockworks/tiktok-comments-scraper”, provided by Apify) [20]. From the retrieved comments a random sample of 100 comments per video was drawn using SPSS. Scraped data on the comments included the comment text, the username of the person commenting, the time the comment was made, and the number of likes the comment received. We translated comments that were written in languages other than English, French, Spanish, Italian or German using DeepL Translate.

Content analysis

We analyzed the content of user comments to investigate how often self-identification with ADHD-related behavioral patterns and self-diagnosis of ADHD among viewers occurred. The comments were categorized into ten distinct categories directly regarding ADHD, such as the (self-)attribution of behavioral patterns or ADHD, acknowledgement of being affected by ADHD, and statements regarding diagnosis, as well as into six rather technical categories, including comments that were not interpretable, comments unrelated to ADHD, and comments tagging other users, etc. For further details and explanations of all categories see Table 3.

Multiple categories could be ascribed to one single comment; for instance, a comment might both tag another user and include self-attribution of behavioral patterns (e. g. “@Kate this is me”). However, a comment cannot self-attribute behavioral patterns and additionally say that behaviors do not apply, and since the use of irony alters the meaning, for our analysis a comment also cannot self-attribute behavioral patterns of ADHD and use irony. Similarly, a comment could not simultaneously assert that the commenter both suffers from and does not suffer from ADHD.

Two members of the research group conducted the comment categorization independently and disagreement was resolved by a third researcher and by discussion in the research group.

Statistical analysis

For both parts of this study (part 1: video analysis and part 2: comment analysis), we calculated the interrater reliability (IRR) and descriptive statistics.

Fleiss kappa was calculated to IRR between the three raters for the video categorisation, and Cohens kappa for the PEMAT-A/V assessment and the comment categorisation.

To compare video characteristics and PEMAT-A/V scores between the useful, misleading and personal experience videos, we used one-way ANOVA. For data with variance heterogeneity, the Welch ANOVA was used. We conducted post-hoc analyses using Games-Howell post-hoc analysis. To compare the comments between useful, misleading and personal experience videos we used chi-

square tests of independence. We considered a P -value of $P < .05$ as significant for all analyses. Statistical analyses were performed using SPSS 27.

Results

130 videos were scraped for information and after assessing inclusion and exclusion criteria, 124 videos were included in the final analysis, and six videos were selected and included in the comment analysis. The methodological approach of the video search and selection is illustrated in the flow-chart in Figure 1.

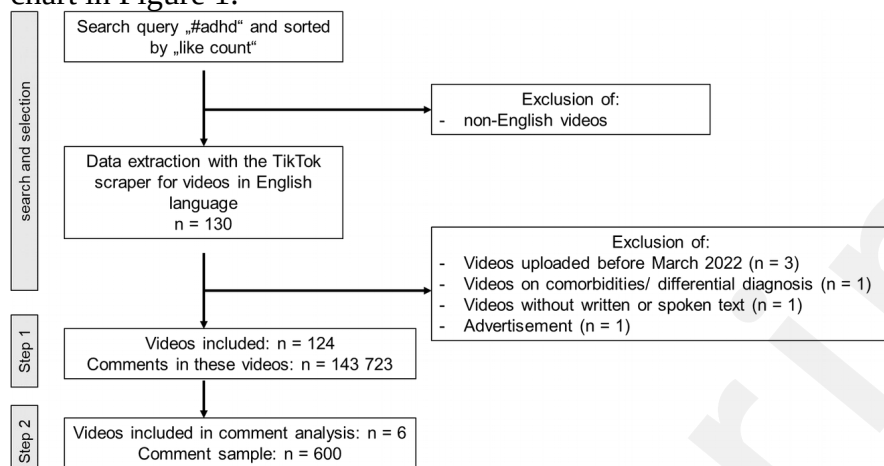


Figure 1: Flow chart of video and comment inclusion

Video and creator characteristics

The 124 included videos were uploaded by 73 different creators from 13 different countries. Most videos were created in English-speaking countries, the highest percentage in the United States of America (47/124, 37.9%). Most creators only had one video in the included 124 most-liked videos (54/73, 74%), but on average creators had 1.7 videos in the most liked videos (range: 1-8, SD 1.52). The videos had a mean duration of 44 seconds, with the shortest video only lasting seven seconds and the longest video nine minutes and 47 seconds. On average, the videos had a total of 10.18 million views and 1.21 million likes.

For more information on the creators and videos see Table 1 and column “Total” in Table 2.

Table 1: Characteristics of creators (N=73) and videos (N=124)

Creator characteristics	n/N, %	Video characteristics	mean (SD)
English-speaking countries of origin ^a	51/73, 70.3%	Views	10 180 000 (9 785 375)
Verified account	7/73, 9.6%	Likes	1 210 000 (1 160 789)
Business account	3/73, 4.1%	Saves	112 813 (94 779)
Healthcare Professional (self-proclaimed)	3/73, 4.1%	Shares	29 728 (31 355)
ADHD- or life-coach (self-proclaimed)	6/73, 8.2%	Comments	13 986 (23 817)
	mean (SD)	Duration (in seconds)	44 (60)
Followers	923 077 (1 741 347)		n/N, %
Uploaded videos	668 (723)	English-speaking countries of origin ^b	104/124, 83.9%

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^a other countries: Cyprus, Germany, Israel, Japan, Morocco, the Netherlands, Poland

^b other countries: Poland, Japan, Morocco, the Netherlands, Germany, Greece, Israel, Korea, Malaysia

Usefulness and quality of videos

Of the 124 included videos, 50.8% of videos (63/124) were rated misleading, 29.8% (37/124) showed a personal experience, and 19.4% (24/124) were useful. Agreement between raters was moderate, with a kappa statistic of 0.524 ($P<.001$).

The 124 videos score on average 79.5% (SD 18.9) in the PEMAT-A/V understandability domain, and 5.1% (SD 18.1) in the actionability domain. For four PEMAT-A/V items the agreement between raters could not be calculated, but for the items with a significant agreement (10/17) the mean agreement was moderate, with a mean kappa statistic of 0.507.

Video characteristics and quality for useful, misleading and personal experience videos are described in Table 2.

Useful videos had the highest PEMAT-A/V Understandability score, with an average score of 92.3% (SD 10.4, $P<.001$). Post-hoc analysis revealed significantly lower PEMAT-A/V Understandability scores of the misleading and personal experience videos compared to the useful videos (mean difference 18.2%, $P<.001$ for misleading and 12.0%, $P=.002$ for personal experience videos). There was no statistically significant difference between the personal experience and the misleading videos (mean difference 6.2%, $P=.213$), and in the PEMAT-A/V Actionability scores for useful, misleading and personal experience videos ($P=.433$) (for details see Table 2).

Misleading videos were more popular than useful videos, as they had significantly more likes, views and comments than useful videos (mean difference 476 113 likes ($P=.047$), 5 091 667 views ($P=.012$) and 11 733 comments ($P=0.016$)). They also had more comments than videos on personal experiences (mean difference 11 032, $P=0.031$, respectively).

Table 2: Video characteristics for all videos and divided into misleading, useful, and personal experience videos.

		Total	Misleading	Personal Experience	Useful	P value
	n	124	63	37	24	
Likes (in million)	mean SD range 95% CI	1.21 1.16 0.35–7.70 1.00–1.41	1.31 1.35 0.36–7.70 0.97–1.65	1.28 1.09 0.35–5.40 0.91–1.64	0.83 0.50 0.37–2.50 0.62–1.04	0.020
Views (in million)	mean SD range 95% CI	10.18 9.79 1.70–67.50 8.44–11.92	11.67 11.71 2.10–67.50 8.72–14.61	9.97 8.11 1.90–36.80 7.27–12.68	6.58 4.47 1.70–23.20 4.69–8.46	0.008
Saves (in thousand)	mean SD range 95% CI	112.81 94.78 12.71–580.71 95.97–129.66	128.09 112.05 25.08–580.71 99.87–156.31	91.83 77.17 12.71–363.60 66.10–117.56	105.06 58.85 28.56–249.96 80.21–129.91	0.168
Shares (in thousand)	mean SD range 95% CI	29.73 31.36 1.33–184.00 24.16–35.30	27.68 29.10 2.13–182.50 20.35–35.01	32.84 38.54 4.54–184.00 19.99–45.69	30.31 24.96 1.33–97.80 19.77–40.85	0.764
Comments (in thousand)	mean SD range 95% CI	13.99 23.82 0.61–214.00 9.75–18.22	19.55 31.63 1.67–214.00 11.58–27.52	8.52 9.24 1.49–44.10 5.44–11.60	7.82 5.48 0.61–23.30 5.50–10.13	0.022
Duration (in seconds)	mean SD range 95% CI	44 60 7–587 33–55	35 23 7–100 29–40	50 93 7–587 19–81	59 59 10–222 34–84	0.108
Hashtags	mean SD range 95% CI	6 4 0–38 5–6	5 3 1–18 5–6	6 7 0–38 4–8	6 3 0–11 4–7	0.884
PEMAT-A/V Actionability (in %)	mean SD range 95% CI	5.1 18.1 0–100 1.9–8.3	5.3 19.1 0–100 0.5–10.1	2.7 9.2 0–33 -0.4–5.8	8.3 24.6 0–100 -2.0–18.7	0.433
PEMAT-A/V Understandability (in %)	mean SD range 95% CI	79.5 18.8 29–100 76.1–82.8	74.1 20.3 29–100 69.0–79.2	80.3 16.0 33–100 75.0–85.7	92.3 10.4 67–100 87.9–96.7	<0.001

Comment analysis

On average, comments were assigned to 1.4 categories each, leading to a total of 840 assigned categories. Comments were most often assigned to ‘self-attribution of behavioral patterns’ (220/600, 36.7%), followed by ‘personal experience’ (93/600, 15.5%), regarding the categories directly related to ADHD. Regarding technical categories, most frequently the commenting persons ‘tagged other users’ (115/600, 19.2%). For an overview of the frequency of all categories, see Table 3.

To assess the prevalence of viewers “self-diagnosing” in the comments, we looked further into the categories ‘self-attribution of behavioral patterns’ and ‘self-attribution of ADHD’. Agreement between raters for the category ‘self-attribution of behavioral patterns’ was substantial, with a kappa statistic of 0.638 ($P < .001$) and agreement for the category ‘self-attribution of ADHD’ was moderate, with a kappa statistic of 0.544 ($P < .001$). Examples of comments assigned to these categories include “*wait so ur saying I might have adhd?*”, “*Does that mean I have ADHD cause I do that*” and “*me 100% of the time*”, showing a varying degree of self-identification with the shown behavior or the disorder. 220 comments (36.7%) solely indicated a self-attribution of ADHD-related behavioral patterns, and 32 comments (5.3%) a self-attribution of ADHD. In combination, 252 comments (42%) indicate some sort of “self-diagnosis” with ADHD, which is shown in Table 3 under the comment category ‘Self-diagnosis’.

The number of comments indicating a possible self-diagnosis varied between misleading, useful and personal experience videos and the statistical analysis showed a significant association between the usefulness of the videos and the number of comments indicating a possible self-diagnosis. The strength of association was small ($\chi^2(2)=21.55$, $P < .001$, $V=0.190$). Comments indicating a possible self-diagnosis were most common in videos categorized as personal experience (109/200, 54.5%), followed by useful (79/200, 39.5%) and misleading videos (64/200, 32%).

If differentiated between self-attribution of behavioral patterns and the self-attribution of ADHD, there was a significant association between the usefulness of the videos and the number of comments indicating a self-attribution of behavioral patterns. The strength of association is small ($\chi^2(2)=29.3$, $P < .001$, $V=0.221$). Comments indicating a self-attribution of behavioral patterns were most common in videos categorized as personal experience (102/200, 51%), followed by useful (67/200, 33.5%) and misleading videos (51/200, 25.5%). The association between usefulness and number of comments indicating a self-attribution of ADHD was not statistically significant ($\chi^2(2)=2.05$, $P=.359$, $V=0.058$).

Besides the comments hinting towards a potential self-diagnosis, the frequency of other comments was also found to be associated with the usefulness of the videos. The attribution of behaviors typical for ADHD to others was also most common in personal experience videos (7/200, 3.5%), followed by useful and misleading videos (2/200, 1% and 0/200, 0% respectively, $\chi^2(2)=8.799$, $P=.012$, $V=0.121$). Questions on ADHD, comments with personal experiences and joking or ironic comments were most common in useful videos ($\chi^2(2)=7.795$, $P=.02$, $V=0.114$; $\chi^2(2)=25.654$, $P < .001$, $V=0.207$; $\chi^2(2)=14.198$, $P < .001$, $V=0.154$, respectively, for more information see Table 3.). Comments on how the shown behavior is not typical for ADHD, comments on the video content but unrelated to ADHD, as well as not interpretable comments were most common in misleading videos ($\chi^2(2)=21.797$, $P < .001$, $V=0.191$; $\chi^2(2)=10.767$, $P=.005$, $V=0.134$; $\chi^2(2)=13.264$, $P=.001$, $V=0.149$, respectively, for more information see Table 3.).

Table 3: Frequency of comments for all videos and divided into misleading, useful, and personal experience videos.

	Comment category	Explanation	Total (n=600, 100%)	Useful (n=200, 100%)	Misleading (n=200, 100%)	Personal Experience (n=200, 100%)	P
			n (%)	n (%)	n (%)	n (%)	
	Self-diagnosis	<i>Either Self-attribution of behavioral patterns or self-attribution of ADHD</i>	252 (42%)	79 (39.5%)	64 (32%)	109 (54.5%)	<.001
1	Self-attribution of behavioral patterns	<i>The person commenting attributes the shown behavioral patterns to themselves</i>	220 (36.7%)	67 (33.5%)	51 (25.5%)	102 (51%)	<.001
2	Self-attribution of ADHD	<i>The person commenting attributes ADHD to themselves</i>	32 (5.3%)	12 (6%)	13 (6.5%)	7 (3.5%)	.359
3	Attribution of ‘ADHD typical behavioral patterns’ to others	<i>The person commenting attributes the shown behavioral patterns to another person</i>	9 (1.5%)	2 (1%)	0	7 (3.5%)	.012
4	The attribution of ADHD to others	<i>The person commenting attributes ADHD to another person</i>	1 (0.2%)	1 (0.5%)	0	0	.367
5	Behaviors don’t apply	<i>The person commenting does not relate to the shown behavioral patterns</i>	8 (1.3%)	5 (2.5%)	3 (1.5%)	0	.090
6	“I personally suffer from ADHD”	<i>The person commenting states that they have ADHD</i>	28 (4.7%)	14 (7%)	5 (2.5%)	9 (4.5%)	.102
7	“I personally do not suffer from ADHD”	<i>The person commenting states that they do not have ADHD</i>	25 (4.2%)	9 (4.5%)	5 (2.5%)	11 (5.5%)	.311
8	Questions on ADHD	<i>The person commenting asks a question on ADHD topics</i>	15 (2.5%)	10 (5%)	3 (1.5%)	2 (1%)	.020
9	Personal experience	<i>The person commenting shares a personal story</i>	93 (15.5%)	51 (25.5%)	15 (7.5%)	27 (13.5%)	<.001
10	Shown behaviors are not typical for ADHD	<i>The person commenting states that the shown behavioral patterns are not specific to people with ADHD, but that everybody behaves like that</i>	58 (9.7%)	14 (7%)	35 (17.5%)	9 (4.5%)	<.001
11	Comments on video content	<i>The person comments on an aspect of the video that is not related to ADHD</i>	71 (11.8%)	14 (7%)	35 (17.5%)	22 (11%)	.005
12	Tagging of other users	<i>The person commenting tags another user</i>	115 (19.2%)	33 (16.5%)	40 (20%)	42 (21%)	.486
13	Jokes / Irony	<i>The person commenting makes a joke or uses irony</i>	53 (8.8%)	27 (13.5%)	20 (10%)	6 (3%)	<.001
14	Others	<i>Comments that do not fit the other categories</i>	23 (3.8%)	7 (3.5%)	5 (2.5%)	11 (5.5%)	.282
15	Not interpretable	<i>The comment can either not be translated appropriately into English or the true meaning of the comment cannot be understood</i>	27 (4.5%)	8 (4%)	17 (8.5%)	2 (1%)	.001

	Comment category	Explanation	Total (n=600, 100%)	Useful (n=200, 100%)	Misleading (n=200, 100%)	Personal Experience (n=200, 100%)	P
			n (%)	n (%)	n (%)	n (%)	
16	Empty comments	Comments that were empty (no text, emojis, etc.). The mechanism behind the scraping process did not explain why comments appeared empty.	8 (1.3%)	3 (1.5%)	0	5 (2.5%)	.09

Discussion

Principal Results

Many users use TikTok for health information or even health advice [8,25]. However, many studies have shown that health-related information on social media and especially TikTok is often inaccurate or misleading [14–16]. Given that the number of TikTok videos on ADHD has increased substantially over the last years, we analyzed the most popular TikTok videos on ADHD regarding their quality as health information and additionally explored the perception of these videos by analyzing responses of viewers in the comments.

The most popular videos on ADHD between March 2022 and November 2023 were viewed an average of 10.2 million times, which is a considerable increase to the 2.8 million views that Yeung et al. reported in their study in 2022 [16], showing that TikTok videos on ADHD seem to be trending more than ever. We classified a high proportion of these ADHD-related TikTok videos as misleading (63/124, 50.8%), in line with Yeung et al.'s results from 2022, where 52% of the included videos had been found to be misleading [16]. Depending on the health topic, the prevalence of misleading information varies [14], but many studies have found high numbers of misinformation, e. g. Aragon-Guevara et al., who found 73% of videos providing informational content on autism to be either inaccurate or overgeneralizing [15].

The findings of this study provide evidence that the information provided in TikTok videos on ADHD is easily understandable. The PEMAT-A/V Understandability scores were high with an average score of 79.5%, and even though videos classified as useful scored significantly higher than misleading and personal experience videos, even misleading videos achieved an Understandability score of 74%. Since the PEMAT-A/V does not assess the accuracy of the information, this indicates that also potential misinformation was presented in an easily understandable way, possibly facilitating the distribution of false information. PEMAT-A/V Actionability scoring was generally low. TikTok videos might give information that is easy to understand, but rarely give recommendations or describe actions for the viewers to take, e. g. “see your health care provider”, “take this medication”, etc. In the study by Yeung et al. the Actionability scores were also low compared to the Understandability scores, but higher than we found in this analysis. Especially the useful videos in the study by Yeung et al. showed higher Actionability scores (27.8%), which could be due to the fact that a higher percentage of useful videos in their study was created by health care professionals (7/21, 33.3%), who might be more inclined to recommend appropriate action compared to private individuals [16]. In comparison, only one of the useful videos in our analysis was created by a health care professional (1/24, 4.2%).

Our study found that misleading videos were most popular, since they received the most engagement through likes, views and comments, even though for likes and comments, the difference between misleading videos and videos on personal experience was not significant. This is surprising, as other studies found that first-person and personal experience videos receive the most engagement, suggesting that social media users are drawn to videos they can relate to, and that are created by individuals that are personally affected by ADHD [16,26]. However, we have categorised videos that depicted a personal experience or a point of view as misleading, if the symptoms or behaviors shown were not typical for ADHD or if they were overgeneralizing and therefore subsequently could also be considered misleading. A substantial number of misleading videos were therefore also showing a personal experience, and this can be one of the reasons why misleading videos in our analysis showed the highest engagement rates.

A survey in the US showed that the most common reasons for using TikTok for health-related information are to receive advice from other people who are themselves affected by the same

disorder or health condition, to receive support or to get information on their disorder. Communicating with physicians and health care professionals was rather low on the list of reasons [8], explaining why personal experience videos might be so popular and why videos from health care professionals might not have made the cut in our sample of the most popular videos.

Since TikTok is primarily used for entertainment, it is not surprising that the explorative comment analysis revealed that quite a few comments were either joking or (supposably) ironic in meaning (53/600, 8.8%). Many comments were also tagging other users (115/600, 19.2%), which can be understood as a form of online communication. Tagging of users is one way of sharing the video and many viewers were communicating with friends or acquaintances in the comments to the videos. Without further information, the interpretation of these comments is difficult, as the meaning of tagging another user can vary. Besides for sharing of the video, it can also be interpreted as a “that’s you” or even “that’s me”, or just to show that one might find this video interesting.

Viewers resonated with the behaviors depicted in the videos in a substantial number of comments. The prevalence of comments indicating a possible self-diagnosis are highest in the videos classified as personal experience. Personal experience videos included “Point-of-view”-videos that showed people with ADHD in everyday situations. Many viewers attributed these allegedly ADHD-typical behaviors to themselves, by commenting on these videos “*I’m so her*”, “*I do this all the time*” or “*It’s like watching myself*”. However, users also related to the depicted behaviors in the useful and misleading videos. Regarding the actual self-attribution of ADHD in the comments (e. g. “*I think I have ADHD*”, “*I really need to get evaluated*” or “*Ok I counted and this is the 12th sign that I have ADHD*”), the prevalence was a lot lower and we found no significant difference between useful, misleading and personal experience videos. These comments about relating to the behavior labelled as typical for ADHD in the video does not necessarily mean that the person commenting believes that they are really affected by ADHD. But if many people that are not affected by ADHD relate to the shown behavior, this can lead to an oversimplification of the disease and therefore increase stigmatization of affected people and reinforce existing stereotypes instead of the intended improvement of understanding mental health [12,18,19].

Falsely believing to have ADHD might mean that more people might seek a professional diagnosis, potentially leading to longer wait-times for diagnosis and an increased risk of overdiagnosis [27]. On the other hand, some individuals might just accept their self-disgnosis and therefore not seek a professional diagnosis, meaning that comorbidities and differential diagnoses could be overlooked. Additionally, believing to suffer from a disorder without getting the proper care and treatment can lead to a lot of stress and anxiety [18,19]. Some individuals might even try to treat themselves without consulting a health care professional, possibly with inappropriate treatment options, and medication.

TikTok is a platform where everyone can share videos and where the information in these videos is not fact-checked. Users therefore need to be careful when watching videos on health-related topics and critically assess the provided information. Media and health literacy are needed for this, and it is important that children and teenagers are educated in this, as they are the main users of TikTok. Even if TikTok users do not intentionally search for health information on TikTok, the probability of unintentionally being exposed to health information is high [8]. Users also underestimate their own susceptibility to misinformation, which poses a higher risk for following false health information consciously as well as subconsciously [8]. Furthermore, TikTok’s algorithm is designed to promote content based on the viewer’s previous interactions with similar content. Continuous exposure to content that focuses on certain diseases/disorders can lead to distorted perceptions of the viewer’s own health and can worsen their mental health, especially for more impressionable viewers such as children and teenagers.

It could be helpful if more health care professionals step up and upload videos on health-related topics, to counterbalance the vast amount of misleading information currently available on the platform. Here it is important for health care professionals to make more engaging videos, as we see that popular videos are rarely uploaded by health professionals. Content by health professionals is often considered more boring, as they lack often engaging strategies, the use of trending sounds, and the overall entertainment aspect that many other creators provide [25]. Additionally, it is important for health professionals to address misconceptions and correct misinformation that potentially originate from social media, when dealing with patients.

Limitations

We used the PEMAT-A/V to assess the informational quality of the videos. This tool can be used to assess the understandability and actionability of audiovisual patient education material. However, the TikTok-videos included in this analysis were on average 44 seconds long, and for three of the 13 Understandability-domains of the PEMAT-A/V, videos under 60 seconds cannot be rated. The PEMAT-A/V provides an overview of the quality of the included videos as informational/educational material; however, it is generally not ideally suited for such short videos, whose intended goal is more towards entertainment than education. However, the PEMAT-A/V does not only assess understandability but also actionability of the health information, and is considered one of the better online health assessment tools [28].

Due to the purposive sampling strategy used for the comment analysis, generalization of the results to other videos on ADHD on TikTok is not possible. The videos included in the comment analysis were selected based on the categories of usefulness assigned beforehand and the analysed engagement rate of the videos, but other videos could have yielded different results and therefore would have led to different conclusions regarding the self-identification of viewers with the disorder.

Additionally, the categorizing of the comments on TikTok proved difficult. Many viewers don't speak English as their first language, some viewers post comments in other languages, abbreviate words or phrases and use emojis and slang. The researchers therefore differed in the interpretation of some comments and discussion was necessary to reach a consensus. It is possible, that despite extensive discussion between 5 different researchers, some comments were categorized wrong and that the number of viewers potentially "self-diagnosing" therefore differs. However, the analysis gives a good first impression on how TikTok users view and react to videos that to a big extent contain false and misleading information.

Conclusions

ADHD is a popular topic on TikTok and videos on the topic are viewed by millions of users. While social media and TikTok have the potential to be an easily accessible and free source of health information for the population, the high prevalence of misleading and overgeneralizing content on TikTok among other things carries the risk of false self-identification and misdiagnosis, and can cause unnecessary stress, delayed appropriate treatment, unrecognized comorbidities and increased stigmatization. It is important for viewers to critically evaluate health information on social media and to assess the source or creator of this information. For healthcare professionals it is important to address misconceptions arising from such platforms.

Abbreviations

ADHD: Attention Deficit / Hyperactivity Disorder

PEMAT-A/V: Patient Education Materials Assessment Tool for Audiovisual Materials

ANOVA: Analysis of variance

SPSS: Statistical Package for Social Science

Gen Z: Generation Z

SD: Standard Deviation

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