ORIGINAL ARTICLE

Where the Minds Fail to Function: Effects of Short-Form Videos on Executive Function among Medical Students in KSA, Executive Function Index Applied

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Abstract

Introduction: Executive function (EF) is what drives us toward our goals, and it includes skills such as working memory, attention, and problem-solving. Furthermore, it is essential for academic success and day-to-day living among medical students. Recent uprise in the short video application field led to the increased consumption of short-form clips, particularly on platforms like TikTok. These videos work under the mechanism of engaging attention within seconds by exposing people to visual stimulation, leading to outbursts of dopamine waves through the brain. Thus, brief videos have raised concerns about their potential negative impact on the EFs by disrupting attention, increasing addictive behavior, reducing motivation, blurring focus, and poor planning ability. **Objectives:** The objective of the study is to determine the association between both the duration and frequency of short-form video (SFV) use and their impact on executive dysfunction among medical students in Saudi Arabia. **Methodology:** A cross-sectional study conducted through an online questionnaire during the period of July 2025–December 2025 in Saudi Arabia. The study included medical students who agreed to participate from all years of study, including internship, and across Saudi Arabia. Those who did not consent or were not medical students were excluded. A minimum sample size of 384 students was calculated using a 95% confidence level and a 5% margin of error. **Results:** A total of 462 students were included. High-risk SFV addiction was identified in 18.4% of participants, while 26.8% were classified as moderate risk. Overall, executive dysfunction was prevalent, with 37.0% classified as having low EF and 52.4% at moderate risk. A significant association was observed between the short video addiction scale category and overall EF ($P < 0.001$), with higher addiction risk corresponding to poorer EF. Significant associations were also found for planning/prioritization, flexibility, time management, emotional control, goal-directed persistence, and stress tolerance ($P \leq 0.05$). **Conclusion:** SFV addiction symptoms are common among Saudi medical students and are significantly associated with impairments in several EF domains critical for academic success and well-being. These findings highlight the need for awareness and preventive strategies targeting digital media use in medical education.

Key words: Executive function, medical students, Saudi Arabia, short-form videos

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Received: 20-05-2026
Revised: 20-06-2026
Accepted: 26-06-2026

INTRODUCTION

Executive function (EF) is defined as the goal-directed behavior and skills that affect medical students' immediate life and future outcomes such as working memory, attention, and problem-solving.[1] As mobile devices and internet technologies are greatly popular, the industry of short-form video (SFV) has grown dramatically in recent years.[2] In general, videos under 15 min – often between 1 and 5 min – containing a clear idea and a quick rhythm fall under the criteria for SFVs.[3] Although brief video apps add color to life, they have turned into "sweet poisons,"[4] short videos are a serious cause of distraction and executive dysfunction due to their visual stimulation through techniques such as sound, light, and images that work on attracting attention within seconds.[5]

As of February 2025, over 5 billion people – about 60% of the global population – used social media.[6] TikTok has achieved the ability of being the most popular social media platform with 4 billion downloads during the period of January 2018–November 2022.[7] Opposed to other social media platforms, apps presenting short videos have more reachability and personalization, making it more amusing.[8] SFVs, particularly on TikTok, overstimulate the brain's pleasure center, triggering dopamine surges that can lead to addiction.[9] This drives instant gratification and social media addiction among college students, leading to poor focus, procrastination, brain rot, bed rot, and low motivation.[10]

Understanding the impact of excessive digital media consumption on cognitive abilities has become important to researchers due to the outburst of short videos. According to a recent study conducted in 2025, social media addiction was significantly predicted by executive dysfunction, specifically low motivation and poor self-inhibition.[11] In a similar vein, researchers found that excessive screen time was strongly associated with a high prevalence of executive dysfunction symptoms among college students.[12] In the meantime, the study "Reels to Remembrance" showed that the association between SFV addiction and memory degradation is partially mediated by attention.[13] Consequently, in more previous research, they attributed the problematic use of smartphones to four domains counted as: compulsive behaviors, tolerance, withdrawal, and functional impairment.[14] These results open the door to highlighting the detrimental effects of excessive usage of digital media on cognitive processes. Upon reviewing past literature, it came to our attention that with the tremendous amount of research regarding SFVs, they focused on specific mental or physical effects of prolonged hours such as attention deficit or depression. However, the present study focuses on the association between short-form video addiction and executive dysfunction. Furthermore, there was a lack of research on medical students in Saudi Arabia.

Objectives

The objective of the study is to associate whether duration and frequency of SFV use are associated with specific domains of executive dysfunction (impulse control, planning, and working memory).

METHODOLOGY

Study design and setting

This study was a cross-sectional questionnaire-based study that was conducted between July 2025 and December 2025 in the Kingdom of Saudi Arabia.

Study population, recruitment, and sampling procedure

The study population consisted of medical students studying in Saudi Arabia across all 6 academic years, in addition to 7th-year medical interns.

Sample size

Data collection was carried out between July 2025 and December 2025. The targeted minimum sample size was 384 medical students. This number was calculated using a 95% confidence level and a 5% margin of error.

The following formula was used to calculate the sample size:

$$n = \frac{Z^2 \cdot P \cdot (1-P)}{d^2}$$

Where:

- n = calculated sample size
- Z = Z-value for a 95% confidence interval (1.96)
- P = estimated population proportion (0.5)
- Q = (1−P) = 0.5
- d = acceptable margin of error (0.05)

Thus:

$$n = \frac{(1.96)^2 \cdot 0.5 \cdot (1-0.5)}{(0.05)^2} = 384$$

Accordingly, the minimum required sample size was determined to be 384 participants.

Inclusion and exclusion criteria

All medical students studying medicine in Saudi Arabia from various social backgrounds who were aged 18 years or older

were included in the study. Students who did not meet the age criteria, were enrolled in non-medical fields of study, or declined participation were excluded.

Data collection method and instrument

Data were collected using a structured questionnaire. The questionnaire was adapted from two previously published studies related to short video addiction and EFs. It consisted of four sections with a total of 46 questions.

The first section included a brief description of the study and an informed consent question. The second section comprised four demographic questions, such as age and gender. The third section assessed participants' addiction to short videos using the SVAS.[6] Participants were asked questions related to behaviors such as losing track of time while using short-video applications, using short-video platforms during free time, and the impact of short-video use on sleep schedules.

The fourth section assessed EFs using a questionnaire developed by Dawson and Guare.[15] Participants rated how well each statement described them. This section evaluated multiple domains, including response inhibition, working memory, emotional control, cognitive flexibility, sustained attention, task initiation, planning and prioritization, time management, organization, goal-directed persistence, and metacognition.

Scoring system

A total of 48 questions were used to examine the relationship between excessive short-video exposure and cognitive dysfunction. These included six questions related to demographic data.

The SVAS consisted of six items, with response options ranging from "never" (0 points) to "always" (4 points). Scores were categorized using Bloom's cut-off points into three levels: High (80–100%), moderate (60–79%), and low (<60%). A high level indicated a high risk of short-video addiction characterized by frequent use. A moderate level indicated a moderate risk with regular use that may suggest emerging addictive tendencies, while a low level indicated limited use with no signs of addiction.

EF was assessed using a 36-item questionnaire with responses ranging from "strongly disagree" (1 point) to "strongly agree" (5 points). Bloom's cut-off points were also applied to categorize EF into high (80–100%), moderate (60–79%), and low (<60%). Participants in the high category were considered to have intact EF, those in the moderate category were considered at risk, and those in the low category were classified as having executive dysfunction.

Pilot study

A pilot test was conducted by distributing the questionnaire to 20 participants to assess clarity, reliability, and feasibility. Feedback obtained during this phase was used to refine the questionnaire. Data collected during the pilot study were excluded from the final analysis.

Data entry and statistical analysis

Data were initially recorded using Microsoft Excel (2016 edition for Windows) and were subsequently imported into IBM Statistical Package for the Social Sciences Statistics (Version 20.0, Armonk, NY) for statistical analysis.

RESULTS

A total of 462 medical students from Saudi Arabia were included in the final analysis. Table 1 summarizes participants' sociodemographic characteristics. Females represented 62.3% of the sample (n = 288) and males 37.7% (n = 174). Most respondents were aged 21–23 years (52.6%), followed by 18–20 years (29.2%) and 24–32 years (18.2%). The most represented academic phases were 5th-year (21.0%), 3rd-year (20.8%), and 4th-year students (18.0%). The Central region was the most common area of residence (34.2%), followed by the Western (27.7%) and Eastern regions (21.4%), with smaller proportions from the Southern (10.2%) and Northern regions (6.5%).

Figure 1 presents item-level frequencies for the 6-item SVAS. Daily engagement with short-video applications was prominent: for "I use short video apps every day when I have free time," 45.9% responded "Always," and 22.3% responded "Often." Forgetting time while using short-video apps was also common, with 55.0% selecting "Often/Always." Sleep disruption was frequently endorsed (48.9% "Often/Always"), and 41.1% answered "Often/Always" that they tried to reduce time on short-video apps but were unsuccessful. Using short videos for relaxation was also prevalent (73.0% reported "Sometimes/Often/Always"). Thinking about freeing more time to spend on short-video apps was less intense overall, as nearly half selected "Never/Rarely" (49.1%).

A full summary of the response distribution for the 36 EF questionnaire items is provided in the Supplementary Data section.

In Table 2, participants were categorized using Bloom's cut-off–based thresholds for SVAS and the EF index (EFI), and sub-scores were computed for each EFI subdomain (3 items per subdomain). For the overall EFI (range 36–180; higher scores indicate more intact executive skills), 37.0% were classified as Low (executive dysfunction), 52.4% as Moderate (at risk), and 10.6% as High (intact) (mean

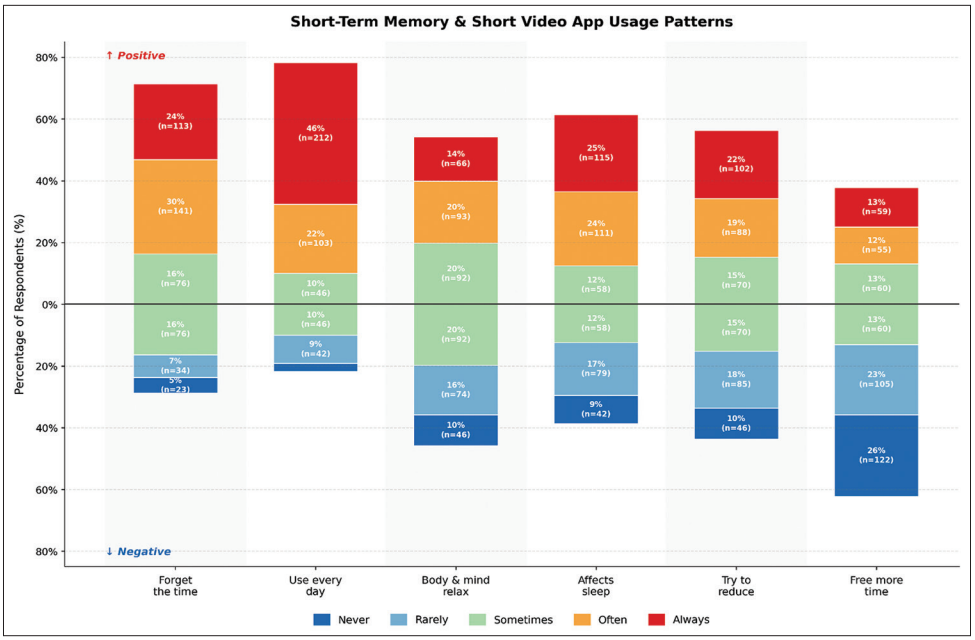

Figure 1: Frequency distribution of responses to the short video addiction scale items (n = 462)

Table 1: Sociodemographic characteristics of participants (n=462)

Parameter	No.	Percentage
Gender		
Female	288	62.3
Male	174	37.7
Age group (years)		
18–20	135	29.2
21–23	243	52.6
24–32	84	18.2
Academic phase		
Preparatory year	16	3.5
1st year in medicine	56	12.1
2nd year in medicine	52	11.3
3rd year in medicine	96	20.8
4th year in medicine	83	18.0
5th year in medicine	97	21.0
Internship	62	13.4
Residential region		
Central region	158	34.2
Western region	128	27.7
Eastern region	99	21.4
Southern region	47	10.2
Northern region	30	6.5

EFI score 112.9 ± 25.3). For SVAS (range 0–24), 54.8% of students were classified as Low, 26.8% as Moderate, and 18.4% as High (mean SVAS score 14.0 ± 4.9). At the subdomain level, the highest prevalence of low scores was observed for task initiation (50.6%) and sustained attention (48.7%), followed by emotional control (40.9%), working memory (38.1%), time management (37.7%), and flexibility (37.4%).

Table 3 evaluates associations between SVAS categories and EFI (overall and subdomains) using Chi-square tests. A statistically significant association was detected between SVAS level and overall EFI category (P = 0.0004). Students in the High SVAS group demonstrated a markedly higher proportion of low overall EFI (56.5%) than those in the low SVAS group (32.4%), indicating a gradient of poorer EF with higher short-video addiction risk. Significant associations were also observed for planning/prioritization (P = 0.0009), flexibility (P = 0.0022), time management (P = 0.0136), goal-directed persistence (P = 0.0186), emotional control (P = 0.0259), and stress tolerance (P = 0.0379). For example, the proportion classified as low in planning/prioritization increased from 33.6% in the low SVAS group to 51.8% in the high SVAS group; low flexibility increased from 37.2% to 54.1%, and low time management increased from 33.6% to 52.9%. Other subdomains (e.g., response inhibition, organization, and metacognition) did not show statistically significant associations with SVAS category (P > 0.05).

Table 4 examines sociodemographic variables in relation to SVAS categories. Gender was significantly associated with SVAS level (P = 0.013): females comprised 74.1% of the high SVAS group, and the within-gender prevalence of high SVAS was higher among females than males (21.9% vs. 12.6%). The residential region was also significantly associated with the SVAS category (P = 0.0037); descriptively, the Northern region showed the highest within-region prevalence of high SVAS (36.7%), whereas the Eastern region showed the

Table 2: Distribution of participants by scoring system proficiency levels (*n*=462)

Parameter	Percentage
Short video addiction scale	
Low	54.8
Moderate	26.8
High	18.4
Executive function - response inhibition	
Low	23.2
Moderate	40.0
High	36.8
Executive function - working memory	
Low	38.1
Moderate	40.0
High	21.9
Executive function - emotional control	
Low	40.9
Moderate	35.7
High	23.4
Executive function - task initiation	
Low	50.6
Moderate	34.0
High	15.4
Executive function - sustained attention	
Low	48.7
Moderate	34.0
High	17.3
Executive function - planning/prioritization	
Low	34.8
Moderate	37.9
High	27.3
Executive function - organization	
Low	31.0
Moderate	35.9
High	33.1
Executive function - time management	
Low	37.7
Moderate	36.8
High	25.5
Executive function - flexibility	
Low	37.4
Moderate	40.0
High	22.5
Executive function - metacognition	
Low	24.7
Moderate	45.0
High	30.3
Executive function - goal-directed persistence	
Low	24.7
Moderate	48.1
High	27.3
Executive function - stress tolerance	
Low	23.8
Moderate	49.1
High	27.1
Executive function index (Overall)	
Low	37.0
Moderate	52.4
High	10.6

lowest (12.1%). Age group ($P = 0.605$) and academic phase ($P = 0.631$) were not significantly related to SVAS category.

Table 5 assesses sociodemographic variables in relation to overall EFI categories. No statistically significant relationships were detected for gender ($P = 0.680$), age group ($P = 0.566$), academic phase ($P = 0.0677$), or residential region ($P = 0.384$).

Figure 2 illustrates the SVAS category distribution, emphasizing that nearly one in five participants fell into the high (high-risk) short-video addiction group.

Figure 3 depicts overall EFI categories, highlighting that only a small minority (10.6%) had high (intact) EF while most students were moderate or low.

DISCUSSION

The present study aimed to find out the level of short-form video addiction symptoms among Saudi medical students and to investigate the relationship between the symptoms and the EF. In this multicenter cross-sectional sample ($n = 462$), short - form video addiction symptoms were common: The mean of the SVAS score was 14.0 ± 4.9; 47.8% were considered moderate risk of video addiction, and 18.4% were considered at high risk of video addiction. EF difficulties were also common (mean EFI (112.9 ± 25.3) with 37.0% being considered as having low EF and 52.4% in a moderate risk range, showing that a significant proportion of students exhibit some level of executive vulnerability.

These findings are clinically plausible because the use of EFs in cognitively demanding settings assists goal-directed behavior. EFs include inhibitory control, working memory, cognitive flexibility, and higher-order planning that enable individuals to maintain goals, resist distraction, and adapt

Table 3: Association between SVAS categories and executive function categories (subdomains and overall) (*n*=462)

Parameters	SVAS level			Total (*n*=462)	*P*-value*
	Low (%)	Moderate (%)	High (%)		
Response inhibition					
Low	60	27	20	107	0.746
	23.7	21.8	23.5	23.2	
Moderate	100	55	30	185	
	39.5	44.4	35.3	40.0	
High	93	42	35	170	
	36.8	33.9	41.2	36.8	
Working memory					
Low	89	50	37	176	0.611
	35.2	40.3	43.5	38.1	
Moderate	108	48	29	185	
	42.7	38.7	34.1	40.0	
High	56	26	19	101	
	22.1	21.0	22.4	21.9	
Emotional control					
Low	94	47	48	189	**0.026***
	37.2	37.9	56.5	40.9	
Moderate	97	48	20	165	
	38.3	38.7	23.5	35.7	
High	62	29	17	108	
	24.5	23.4	20.0	23.4	
Task initiation					
Low	123	58	53	234	0.092
	48.6	46.8	62.4	50.6	
Moderate	86	50	21	157	
	34.0	40.3	24.7	34.0	
High	44	16	11	71	
	17.4	12.9	12.9	15.4	
Sustained attention					
Low	114	59	52	225	0.134
	45.1	47.6	61.2	48.7	
Moderate	90	44	23	157	
	35.6	35.5	27.1	34.0	
High	49	21	10	80	
	19.4	16.9	11.8	17.3	
Planning/prioritization					
Low	85	32	44	161	**<0.001**
	33.6	25.8	51.8	34.8	
Moderate	90	58	27	175	
	35.6	46.8	31.8	37.9	
High	78	34	14	126	
	30.8	27.4	16.5	27.3	

(*Contd*...)

Table 3: (*Continued*)

Parameters	SVAS level			Total (*n*=462)	*P*-value*
	Low (%)	Moderate (%)	High (%)		
Organization					
Low	73	36	34	143	0.285
	28.9	29.0	40.0	31.0	
Moderate	92	44	30	166	
	36.4	35.5	35.3	35.9	
High	88	44	21	153	
	34.8	35.5	24.7	33.1	
Time management					
Low	85	44	45	174	**0.014**
	33.6	35.5	52.9	37.7	
Moderate	103	48	19	170	
	40.7	38.7	22.4	36.8	
High	65	32	21	118	
	25.7	25.8	24.7	25.5	
Flexibility					
Low	94	33	46	173	**0.002**
	37.2	26.6	54.1	37.4	
Moderate	104	56	25	185	
	41.1	45.2	29.4	40.0	
High	55	35	14	104	
	21.7	28.2	16.5	22.5	
Metacognition					
Low	67	26	21	114	0.360
	26.5	21.0	24.7	24.7	
Moderate	104	65	39	208	
	41.1	52.4	45.9	45.0	
High	82	33	25	140	
	32.4	26.6	29.4	30.3	
Goal-directed persistence					
Low	58	26	30	114	**0.019**
	22.9	21.0	35.3	24.7	
Moderate	125	69	28	222	
	49.4	55.6	32.9	48.1	
High	70	29	27	126	
	27.7	23.4	31.8	27.3	
Stress tolerance					
Low	62	22	26	110	**0.038**
	24.5	17.7	30.6	23.8	
Moderate	117	75	35	227	
	46.2	60.5	41.2	49.1	
High	74	27	24	125	
	29.2	21.8	28.2	27.1	

(*Contd...*)

Table 3: (*Continued*)

Parameters	SVAS level			Total (*n*=462)	*P*-value*
	Low (%)	Moderate (%)	High (%)		
Executive function index (overall)					
Low	82	41	48	171	**<0.001**
	32.4	33.1	56.5	37.0	
Moderate	145	71	26	242	
	57.3	57.3	30.6	52.4	
High	26	12	11	49	
	10.3	9.7	12.9	10.6	

SVAS: Short video addiction scale. **P*-value was considered significant if ≤0.05. Percentages represent column percentages within SVAS categories

Table 4: Association between sociodemographic variables and SVAS categories (Chi-square test) (*n*=462)

Parameters	SVAS level			Total (*n*=462)	*P*-value
	Low (%)	Moderate (%)	High (%)		
Gender					0.013*
Female	56.9	65.3	74.1	62.3	
Male	43.1	34.7	25.9	37.7	
Age group (years)					0.605
18–20	26.1	33.1	32.9	29.2	
21–23	54.5	50.0	50.6	52.6	
24–32	19.4	16.9	16.5	18.2	
Academic phase					0.631
1st year in Medicine	13.0	12.1	9.4	12.1	
2nd year in Medicine	9.1	14.5	12.9	11.3	
3rd year in Medicine	24.1	14.5	20.0	20.8	
4th year in Medicine	18.6	16.9	17.6	18.0	
5th year in Medicine	20.2	23.4	20.0	21.0	
Internship	11.5	14.5	17.6	13.4	
Preparatory year	3.6	4.0	2.4	3.5	
Residential region					0.004*
Central	32.8	33.1	40.0	34.2	
Eastern	23.3	22.6	14.1	21.4	
Northern	2.8	9.7	12.9	6.5	
Southern	13.0	4.8	9.4	10.2	
Western	28.1	29.8	23.5	27.7	

SVAS: Short video addiction scale. **P*-value considered significant if≤0.05. Values represent column percentages within SVAS categories

strategies in response to changes in demands.[16] The EFI is a short self-report measure aimed at capturing everyday EF across different domains of non-clinical populations.[17] In the present sample, the most common subdomains of impaired functioning were task initiation (50.6% classified as low), sustained attention (48.7%), emotional control (40.9%), working memory (38.1%), and time management (37.7%), which may indicate that problems are concentrated in getting started, attention, and emotion regulation under academic pressure.

The important finding was the association between short-form video addiction symptoms and EF; the SVAS risk category was significantly associated with overall EFI classification ($P < 0.001$). This pattern is commensurate with the view that addictive or compulsive involvement with digital content can be self-regulating. The Interaction of Person-Affect-Cognition-Execution (I-PACE) model conceptualizes problematic engagement in a particular online activity as a dynamic process where repeated reinforcement leads to increasing affective and cognitive responses (e.g.,

Table 5: Association between sociodemographic variables and overall EFI score categories (Chi-square test) (*n*=462)

Parameters	Overall executive function index			Total (*n*=462)	*P*-value
	Low (%)	Moderate (%)	High (%)		
Gender					0.680
Female	64.9	60.7	61.2	62.3	
Male	35.1	39.3	38.8	37.7	
Age group (years)					0.566
18–20	31.0	26.9	34.7	29.2	
21–23	53.2	52.5	51.0	52.6	
24–32	15.8	20.7	14.3	18.2	
Academic phase					0.068
1st year in Medicine	17.0	9.1	10.2	12.1	
2nd year in Medicine	12.3	9.5	16.3	11.3	
3rd year in Medicine	14.6	24.4	24.5	20.8	
4th year in Medicine	21.6	17.4	8.2	18.0	
5th year in Medicine	19.9	21.5	22.4	21.0	
Internship	11.1	14.0	18.4	13.4	
Preparatory year	3.5	4.1	0.0	3.5	
Residential region					0.384
Central region	37.4	31.4	36.7	34.2	
Eastern region	17.5	24.8	18.4	21.4	
Northern region	4.1	7.4	10.2	6.5	
Southern region	12.3	9.5	6.1	10.2	
Western region	28.7	26.9	28.6	27.7	

EFI: Executive function index. **P*-value considered significant if ≤0.05. Values represent column percentages within EFI categories

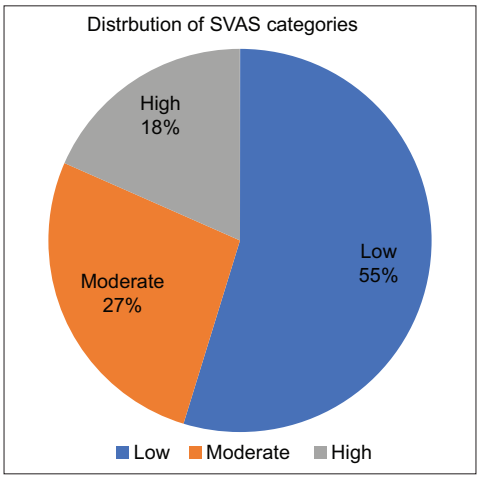

Figure 2: Distribution of SVAS categories (*n*=462)

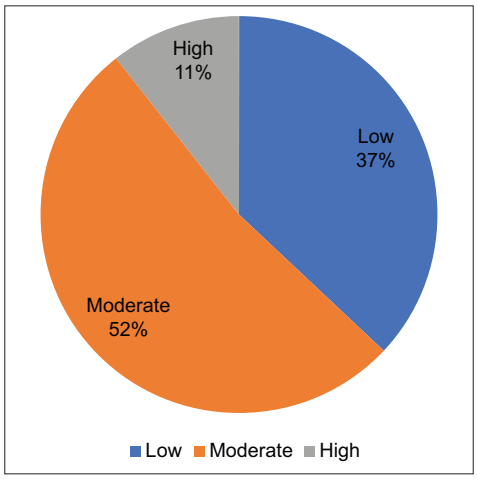

Figure 3: Distribution of overall executive function index categories (*n*=462)

craving and attentional bias) and decreasing executive control over the process, leading to increasing engagement and functional impairment.[18] Short-form video platforms may be particularly powerful in this regard given that they provide quick novelty and intermittent reinforcement, which can lead to habit formation and make it challenging to disengage from the platform even when the academic demands are sustained concentration.

At the component level, SVAS risk was significantly linked with planning/prioritization, flexibility, time management, goal-directed persistence, emotional control, and stress tolerance, while, in general, response inhibition, working memory, task initiation, sustained attention, organization, and metacognition were not found to be statistically different across categories of SVAS. This partially dissociated pattern

may suggest that the strengths of the association between compulsive short-form video use and the higher-order self-management and emotion regulation capacities are stronger than with all aspects of cognitive control. From an EF perspective, the planning, prioritization, and time management are "top-down" processes that integrate multiple basic skills and are subject to competing rewards and stress. Stress and negative affect may restrict the breadth of attention and limit the ability to exert flexible, goal-oriented control, which may contribute to the finding in the current study that emotional control and stress tolerance were among the domains that were associated with SVAS risk.[16]

Neurocognitive research suggests a link between inappropriate engagement with short videos and executive control. In an EEG study with the attention network test, Yan *et al*. found that higher scores of short video addiction tendency were negatively correlated with a theta power index, an index of executive control in the prefrontal region ($r = -0.395$, $P = 0.007$) and with self-control ($r = -0.320$, $P = 0.026$).[19] Although our study was conducted using self-report instruments as opposed to laboratory indices, both lines of evidence seem to converge on the notion that the tendency toward short video addiction is accompanied by lower levels of executive control or self-regulation. At the same time, our failure to detect significant between-group differences for response inhibition and sustained attention may reflect differences in terms of operationalization (self-perceived difficulties vs. performance-based measures) and possible ceiling effects in a high-achieving sample. Furthermore, the I-PACE model makes a special point of emphasizing that the repeated exposure to activity-related cues could lead to automatic approach tendencies and attention capture, and the ability to down-regulate these impulses relies on executive control resources.[18] In medical students, this mechanism may be enhanced by medical student fatigue and stress, which is known to be taxing on EFs and limits the ability to sustain long-term goals in the face of immediately rewarding distractions.[16] Accordingly, SFV use may serve as an easily accessible coping mechanism, but as time goes on may displace restorative activities and study time, reinforcing a cycle of stress, reduced self-control, and further use.

A number of limitations should be taken into consideration. The cross-sectional design does not allow for causal inference and cannot determine if executive dysfunction is a precursor to, consequence of, or reciprocal to problematic short video use.[18] Both SVAS and EFI are self-report measures and are potentially vulnerable to common-method variance and reporting bias; future investigations should include objective app-use logs and performance-based EF testing. In addition, the use of categorical cutoffs may misclassify risk in some individuals, and unmeasured factors (e.g., sleep quality, mental health symptoms, and academic workload) may confound observed associations. Despite these limitations, the current study identifies SFV addiction symptoms as a common illness among medical students and as a correlative of impaired EF in domains of particular importance to academic performance and well-being.

CONCLUSION

This study demonstrates that SFV addiction symptoms are prevalent among medical students in Saudi Arabia and are significantly associated with poorer EF. Higher levels of SFV addiction were linked to impairments in key executive domains, particularly planning, time management, flexibility, emotional control, stress tolerance, and goal-directed persistence. These domains are central to effective learning, self-regulation, and professional development in medical training. Although causality cannot be inferred due to the cross-sectional design, the findings underscore the potential cognitive and behavioral consequences of excessive engagement with SFV platforms. Addressing problematic digital media use and promoting executive skill development may be important components of student support and wellness initiatives in medical education.

ACKNOWLEDGMENT

We acknowledge all volunteers who provided samples for this research.

ETHICAL APPROVAL

The study was fully explained to all participants, and it was emphasized that participation was voluntary. Written informed consent was obtained from each participant before enrollment. All collected information was securely stored and used exclusively for research purposes.

INFORMED CONSENT

Written informed consent was obtained from all study participants.

DATA AND MATERIALS AVAILABILITY

All data generated or analyzed during this study are included in this published article.

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Source of Support: Nil. **Conflicts of Interest:** None declared.

SUPPLEMENTARY DATA

Table S1 shows that across many items, "Neutral" responses were frequent, reflecting variability in perceived executive functioning within the sample. Item patterns were consistent with domain-level scoring, with relatively weaker endorsement of statements related to initiating tasks promptly and sustaining attention, compared with items reflecting response inhibition and metacognitive self-monitoring.

Table S1: Frequency distribution of responses to the executive function questionnaire items (*n*=462)

Executive Function item	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
I don't jump to conclusions	43 (9.3)	94 (20.3)	152 (32.9)	132 (28.6)	41 (8.9)
I think before I speak	20 (4.3)	43 (9.3)	134 (29.0)	155 (33.5)	110 (23.8)
I don't take action without having all the facts	25 (5.4)	63 (13.6)	121 (26.2)	140 (30.3)	113 (24.5)
I have a good memory for facts, dates, and details	56 (12.1)	104 (22.5)	128 (27.7)	133 (28.8)	41 (8.9)
I am very good at remembering the things I have committed to do	28 (6.1)	92 (19.9)	128 (27.7)	138 (29.9)	76 (16.5)
I rarely need reminders to complete tasks	49 (10.6)	117 (25.3)	146 (31.6)	107 (23.2)	43 (9.3)
My emotions rarely get in the way when performing on the job	41 (8.9)	107 (23.2)	155 (33.5)	117 (25.3)	42 (9.1)
Little things do not affect me emotionally or distract me from the task at hand	50 (10.8	135 (29.2)	128 (27.7)	97 (21.0)	52 (11.3)
I can put aside my personal feelings until after a task has been completed	52 (11.3)	95 (20.6	144 (31.2	109 (23.6)	62 (13.4)
No matter what the task, I believe in getting started as soon as possible	48 (10.4)	90 (19.5)	135 (29.2)	124 (26.8)	65 (14.1)
Procrastination is usually not a problem for me	117 (25.3)	119 (25.8)	148 (32.0)	53 (11.5)	25 (5.4)
I rarely leave tasks to the last minute	81 (17.5)	128 (27.7)	115 (24.9)	88 (19.0)	50 (10.8)
I find it easy to stay focused on my work	59 (12.8)	141 (30.5)	171 (37.0)	63 (13.6)	28 (6.1)
Once I start an assignment, I work persistently until it's completed	44 (9.5)	113 (24.5)	125 (27.1)	102 (22.1)	78 (16.9)
Even when interrupted, I find it easy to get back and complete the job at hand	65 (14.1)	137 (29.7)	135 (29.2)	93 (20.1)	32 (6.9)
When I plan out my day, I identify priorities and stick to them	56 (12.1)	84 (18.2)	122 (26.4)	134 (29.0)	66 (14.3)
When I have a lot to do, I can easily focus on the most important things	50 (10.8)	103 (22.3)	113 (24.5)	128 (27.7)	68 (14.7)
I typically break big tasks down into subtasks and timelines	38 (8.2)	97 (21.0)	141 (30.5)	126 (27.3)	60 (13.0)
I am an organized person	45 (9.7)	58 (12.6)	154 (33.3)	130 (28.1)	75 (16.2)
It is natural for me to keep my work area neat and organized	34 (7.4)	85 (18.4)	129 (27.9)	134 (29.0)	80 (17.3)
I am good at maintaining systems for organizing my work	41 (8.9)	72 (15.6)	150 (32.5)	132 (28.6)	67 (14.5)
At the end of the day, I've usually finished what I set out to do	61 (13.2)	107 (23.2)	148 (32.0)	107 (23.2)	39 (8.4)
I am good at estimating how long it takes to do something	66 (14.3)	110 (23.8)	115 (24.9)	127 (27.5)	44 (9.5
I am usually on time for appointments and activities	33 (7.1)	84 (18.2)	98 (21.2)	136 (29.4)	111 (24.0)
I take unexpected events in stride (without getting stressed or overly upset)	59 (12.8)	119 (25.8)	178 (38.5)	77 (16.7)	29 (6.3)
I easily adjust to changes in plans and priorities	35 (7.6)	103 (22.3)	144 (31.2)	131 (28.4)	49 (10.6)
I consider myself to be flexible and adaptive to change	35 (7.6)	68 (14.7)	146 (31.6)	140 (30.3)	73 (15.8)

(*Contd*...)

Table S1: (*Continued*)

Executive Function item	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
I routinely evaluate my performance and devise methods for personal improvement	42 (9.1)	86 (18.6)	139 (30.1)	128 (27.7)	67 (14.5)
I am able to step back from a situation in order to make objective decisions	24 (5.2)	63 (13.6)	170 (36.8)	152 (32.9)	53 (11.5)
I "read" situations well and can adjust my behavior based on the reactions of others	38 (8.2)	48 (10.4)	135 (29.2)	157 (34.0)	84 (18.2)
I think of myself as being driven to meet my goals	31 (6.7)	48 (10.4)	160 (34.6)	136 (29.4)	87 (18.8)
I easily give up immediate pleasures to work on long-term goals	68 (14.7)	115 (24.9)	160 (34.6)	78 (16.9)	41 (8.9)
I believe in settings and achieving high levels of performance	29 (6.3)	52 (11.3)	130 (28.1)	139 (30.1)	112 (24.2)
I enjoy working in a high demanding, fast-placed environment	45 (9.7)	65 (14.1)	160 (34.6)	119 (25.8)	73 (15.8)
A certain amount of pressure helps me to perform at my best	30 (6.5)	44 (9.5)	119 (25.8)	156 (33.8)	113 (24.5)
Jobs that include a fair degree of unpredictability appeal to me	47 (10.2)	77 (16.7)	189 (40.9)	94 (20.3)	55 (11.9)