

Research Paper

The Predictive Role of Media Literacy on Internet Addiction Among Turkish Adolescents



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ABSTRACT

Background: The internet has become indispensable for everyone in today's technology world, which makes its responsible usage a crucial concern. Internet use habits and addictions among adolescents are a pressing public health issue because they represent the future adult population. Therefore, this research aims to explore the predictive role of media literacy on internet addiction among Turkish adolescents.

Methods: This cross-sectional study was conducted in Ankara Province, Turkey, and the population included 401 adolescents aged 15-18 years in the academic year of 2020-2021. Since the data were collected during the COVID-19 pandemic, the sample selection was not feasible, and the study included adolescents who volunteered. The data were collected using a "personal information form," "new media literacy scale (NMLS)," and "young's internet addiction test-short form (YIAT-SF)." The data were analyzed using various statistical techniques, including Mann-Whitney U test and Kruskal-Wallis H test, Tamhane's T² post hoc test, Spearman correlation analysis, point-biserial correlation analysis, and multivariate regression analysis.

Results: It has been determined that adolescents have a high level of media literacy ($\bar{x}=126.76$) and are in the risk group in terms of internet addiction ($\bar{x}=39.01$). The average media literacy among girls ($U=153$; $z=-3.851$; 05) and internet addiction among boys is high ($U=163$; $z=-2.961$; 05). The results of regression analysis revealed that media literacy predicts internet addiction in adolescents ($B=-0.151$; $R^2=0.060$), and also emphasizes the importance of media literacy education in enhancing these skills and mitigating internet addiction.

Conclusion: It is evident that media literacy predicts internet addiction. Therefore, it is essential to provide media literacy education to adolescents. Thus, adolescents' awareness of media literacy should be increased, and they should become conscious users.

Keywords: Adolescents, Media literacy, Internet addiction, Media, Digital technology

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Introduction

The distinction between excessive and functional internet use is unclear because the internet is deeply integrated into daily life [1]. Functional internet use in adolescents involves accessing a wealth of information, conducting research, engaging in social communication, and enjoying fast and cheap communication options, such as e-mail and video chat [2]. However, excessive internet use can cause various problems in social, health, and academic domains for adolescents [2]. Due to their immature self-control and easy access to the internet, adolescents are considered vulnerable and at risk of developing internet addiction [3]. Research on internet addiction has been highlighted, especially during the COVID-19 pandemic, and the research results have shown that internet addiction has serious consequences among adolescents, such as anxiety/depression, academic underachievement, and social isolation [4, 5]. Reinforcing behaviors, such as video chatting, messaging, playing video games, watching TV series, using social media, or surfing the internet are often employed to relieve stress, anxiety, or depressive moods [5, 6]. These potentially addictive behaviors can help alleviate the stress of daily life problems and intrusive thoughts [5, 7]. Although these behaviors may serve as non-problematic and potentially beneficial coping strategies, they may also lead to reduced normal social interactions and participation in other daily activities for a small proportion of individuals [8]. As a result, the adoption of such behaviors as coping strategies carries the risk of transforming into habits that are challenging to quit [9, 10].

Media literacy is considered a crucial skill in the 21st century, especially in the era of the internet [11]. It encompasses the competencies and technological knowledge essential for individuals to cultivate long-term learning behaviors and positive contributions to society [12]. Given the impact of the COVID-19 pandemic, media literacy and digital literacy can be considered critical skills for today's internet landscape [13]. Media literacy includes various forms of literacy, such as information literacy, computer literacy, digital literacy, communication literacy, visual literacy, and technological literacy [12]. With such broad coverage, media literacy can empower adolescents to effectively utilize online information resources and develop an awareness of safe internet practices [12]. The most effective approach to protect adolescents from potential negative content on the internet is media literacy education [14]. Media literacy not only enhances youth's information retrieval skills but

also fosters critical thinking skills while using the internet [15]. In other words, functional internet use necessitates certain media literacy skills. Media literacy skills can help adolescents become responsible internet users by teaching them how to deal with internet-related risks [14]. Studies indicate that adolescents with high media literacy skills demonstrate heightened awareness, curiosity, creativity, and proficiency in using social media, e-mail, Skype, and internet browsing [16, 17]. Therefore, the internet age underscores the significance of media literacy education to reduce excessive and problematic internet behaviors and promote safe internet usage.

Since it is impossible to mention the causal relationship between problematic internet use and specific adolescent behaviors or outcomes, it is challenging to establish an obvious understanding of the internet's impact on adolescent behavior [14]. We know that the internet and the content they are exposed to can influence their thoughts and behaviors. Griffiths [18] suggests that excessive internet use in adolescents may cause negative consequences, including problematic or addictive behaviors, as the internet loses its utility. Given the high prevalence of internet use among adolescents, it raises concerns about the potential risks of problematic internet use. As mentioned, media literacy education plays a crucial role in fostering awareness and responsible internet use in adolescents. Therefore, this study was conducted to investigate the relationship between adolescents' media literacy skills and their internet use. In other words, it was conducted to examine internet addiction and media literacy among adolescents.

Methods

Research design

The research was designed as a cross-sectional study, giving a snapshot of the outcome and associated factors at a single time. Cross-sectional studies are typically conducted to investigate the relationships between risk factors and the outcome of interest [19].

Participants

This cross-sectional study was conducted with adolescents aged 15-18 years in Ankara Province, Turkey. Since all public high schools receive the same funding from the state, no socioeconomic classification was made between schools. Consequently, four districts were randomly chosen from 25 districts in Ankara Province, and two state high schools were randomly chosen from the four districts. Eight schools were identified. The re-

search population included students studying in the 9th, 10th, 11th, and 12th grades in eight public high schools in Ankara Province in the academic year 2020-2021. The inclusion criteria included adolescents aged 15-18 years, living in Ankara Province, studying at a public high school, and being volunteers. Adolescents who did not meet these criteria were not included in the study.

Since the data were collected during the COVID-19 pandemic, the sample selection was not feasible, and the study included adolescents who volunteered. G*Power software, version 3.1 was used to determine the sample size, and we found that at least 387 adolescents were sufficient at a power analysis level of 0.95, which shows that the number of our participants is suitable for this study. A total of 401 adolescents voluntarily participated in the study.

Data collection tools

Data collection tools included a personal information form, "NMLS," and "YIAT-SF."

Personal information form

The form was prepared by the researcher to collect demographic information of the participating adolescents.

New media literacy scale (NMLS)

Koç and Barut developed the NMLS to assess individuals' media literacy levels [20]. It consists of 35 items and 4 sub-dimensions, functional consumption (FC), critical consumption (CC), functional prosumption (FP), and critical prosumption (CP). Participants rate each item on a 5-point Likert-type scale, where 5 represents "strongly agree," 4 represents "agree," 3 represents "undecided," 2 represents "disagree," and 1 represents "strongly disagree." High scores on the scale indicate a higher level of new media literacy. The reliability coefficient of the scale is 0.965 [20], and it has no reverse items. The minimum total score that can be obtained on the NMLS is 35, and the maximum total score is 175 [20].

Young's internet addiction test-short form (YIAT-SF)

The YIAT-SF scale was developed by young and its Turkish adaptation was conducted by Kutlu et al. [21]. YIAT-SF comprises 12 items and is a five-point Likert scale (1=never, 5=very often). No reverse-scored item is found on the scale. The scores on the scale range from 12 to 60. High scores on the scale indicate a higher level of internet addiction.

Data collection

Following the approval of the research by the Ethics Committee and obtaining permission from the Ankara Provincial Directorate of National Education for the research, interviews were held with the principals of eight selected schools in the four designated districts. After the principals were informed about the research goals and implementation process, an announcement was made within the schools. The same announcement was also shared with the parent information groups. Since the data collection coincided with school closures due to the COVID-19 pandemic, the data forms were prepared online using [Google Forms](#) and administered to the students. Intermittent announcements were made to encourage participation.

Data analysis

The data were analyzed using the SPSS software, version 25. Before analyzing the scale results, the Shapiro-Wilk normality test was performed, revealing that the data were not normally distributed. Therefore, non-parametric tests were preferred for the analyses. The Mann-Whitney U and Kruskal-Wallis H tests were employed to examine the potential differences in internet addiction and media literacy levels among adolescents based on sociodemographic variables. Subsequently, Tamhane's T2 post hoc test was performed to identify the group responsible for the observed differences. Spearman correlation analysis and point-biserial correlation analysis were performed to determine the relationship between adolescents' internet addiction and media literacy levels considering sociodemographic variables. Multivariate regression analysis was performed for the variables found to be correlated.

Results

The results were presented about the research questions. [Table 1](#) presents the sociodemographic characteristics of the adolescents. [Table 2](#) presents the results of adolescents' internet addiction and media literacy levels.

As shown in [Table 2](#), the NMLS mean score among adolescents is $\bar{x}=126.76$, suggesting high media literacy levels. In terms of the sub-dimensions, the CC sub-dimension has the highest mean score ($\bar{x}=44.38$), while the FC ($\bar{x}=26.12$) and FP ($\bar{x}=26.12$) have relatively low averages. Additionally, the YIAT-SF mean score among the participants is $\bar{x}=39.01$, indicating that they are in the risky group regarding internet addiction.

Table 1. Sociodemographic characteristics of adolescents

Variables	No. (%)			
	Girls	Boys	Total	
Age (y)	15	62(27.2)	101(58.4)	163(40.6)
	16	106(46.5)	44(25.4)	150(37.4)
	17	44(19.3)	14(8.1)	58(14.5)
	18	16(7)	14(8.1)	30(7.5)
	Total	228(100)	173(100)	401(100)
Grade	9 th	64(28.1)	101(58.4)	165(41.1)
	10 th	106(46.5)	44(25.4)	150(37.4)
	11 th	44(19.3)	14(8.1)	58(14.5)
	12 th	14(6.1)	14(8.1)	28(7.0)
	Total	228(100)	173(100)	401(100)
Media literacy education status	I received education	10(4.4)	0	10(2.5)
	I did not receive education	218(95.6)	173(100)	391(97.5)
	Total	228(100)	173(100)	401(100)
Internet usage time (per day)	1-3 h	9(3.9)	7(4)	16(4)
	4-6 h	37(16.2)	29(16.8)	66(16.5)
	7-9 h	107(46.9)	78(45.1)	185(46.1)
	>10 h	75(32.9)	59(34.1)	134(33.4)
	Total	228(100)	173(100.0)	401(100)
Purpose of using the internet	Social media	207(90.7)	8(4.6)	215(53.6)
	Play games	21(9.3)	165(95.4)	186(46.4)
	Total	228(100)	173(100)	401(100)

**Table 2.** Internet addiction and media literacy levels of adolescents (n=401)

Scales and Sub-scales	FC	CC	FP	CP	NMLS	YIAT-SF
Mean±SD	26.12±5.88	44.38±9.19	26.74±6.00	33.23±7.99	126.76±26.20	39.01±4.33
Min	7.00	14.00	7.00	10.00	41.00	29.00
Max	35.00	60.00	35.00	50.00	173.00	60.00



Abbreviations: NMLS: New media literacy scale; YIAT-SF: Young's internet addiction test-short form; FC: Functional consumption; CC: Critical consumption; FP: Functional presumption; CP: Critical presumption.

Table 3. Mann-Whitney u, Kruskal-Wallis h, and Tamhane's T2 post hoc test analysis results between research variables of adolescents' gender, media literacy education status, age, grade, and internet usage time

Gender Scales		No.	\bar{x}	ss	u	z	P
FC	Girls	228	199.95	455	194	-0.209	0.834
	Boys	173	202.38	350			
CC	Girls	228	202.54	461	193	-0.307	0.759
	Boys	173	198.97	344			
FP	Girls	228	202.07	460	194	-0.214	0.831
	Boys	173	199.58	345			
CP	Girls	228	220.39	502	153	-3.851	0.000*
	Boys	173	175.45	303			
NMLS	Girls	228	207.07	472	183	-1.205	0.228
	Boys	173	193.00	333			
YIAT-SF	Girls	228	186.13	424	163	-2.961	0.003*
	Boys	173	220.60	381			

Media Literacy Education Status Scales		No.	\bar{x}	ss	u	z	P
FC	Received	10	143.70	143	138	-1.593	0.111
	Did not	391	202.47	791			
CC	Received	10	96.90	969	914	-2.883	0.004*
	Did not	391	203.66	796			
FP	Received	10	104.50	104	990	-2.676	0.007*
	Did not	391	203.47	795			
CP	Received	10	123.60	123	118	-2.142	0.032*
	Did not	391	202.98	793			
NMLS	Received	10	102.90	102	974	-2.713	0.007*
	Did not	391	203.51	795			
YIAT-SF	Received	10	192.10	192	186	-0.247	0.805
	Did not	391	201.23	786			

	Age Scales	No.	Mean Rank	χ^2	df	P	Difference
FC	15	163	172.64	24.387	3	0.000	15<16<18 17<18
	16	150	218.93				
	17	58	198.53				
	18	30	270.23				
CC	15	163	182.56	22.481	3	0.000	18> all of
	16	150	209.75				
	17	58	185.86				
	18	30	286.70				
FP	15	163	191.39	16.530	3	0.001	18> all of
	16	150	202.41				
	17	58	183.48				
	18	30	280.03				
CP	15	163	163.42	31.254	3	0.000	15< all of
	16	150	221.73				
	17	58	224.31				
	18	30	256.50				
NMLS	15	163	174.59	26.600	3	0.000	18> all of
	16	150	214.55				
	17	58	196.47				
	18	30	285.50				
YIAT-SF	15	163	219.07	6.927	3	0.074	-
	16	150	190.27				
	17	58	182.81				
	18	30	191.63				
FC	9 th	165	173.11	24.719	3	0.000	1<2<4 3<4
	10 th	150	218.93				
	11 th	58	198.53				
	12 th	28	274.43				
CC	9 th	165	184.47	19.287	3	0.000	4> all of
	10 th	150	209.75				
	11 th	58	185.86				
	12 th	28	282.93				

	Age Scales	No.	Mean Rank	χ^2	df	P	Difference
FP	9 th	165	193.20	13.825	3	0.003	4> all of
	10 th	150	202.41				
	11 th	58	183.48				
	12 th	28	275.71				
CP	9 th	165	165.25	28.425	3	0.000	1< all of
	10 th	150	221.73				
	11 th	58	224.31				
	12 th	28	252.36				
NMLS	9 th	165	176.52	23.247	3	0.000	4> all of
	10 th	150	214.55				
	11 th	58	196.47				
	12 th	28	282.07				
YIAT-SF	9 th	165	217.92	6.319	3	0.097	-
	10 th	150	190.27				
	11 th	58	182.81				
	12 th	28	196.50				

	Internet Usage Time Scales (per day)	No.	Mean Rank	χ^2	df	P	Difference
FC	1-3 h	16	175.81	1.591	3	0.662	-
	4-6 h	66	200.17				
	7-9 h	185	197.61				
	>10	134	209.09				
CC	1-3 h	16	160.19	2.099	3	0.552	-
	4-6 h	66	202.45				
	7-9 h	185	203.56				
	>10	134	201.63				
FP	1-3 h	16	148.03	4.022	3	0.259	-
	4-6 h	66	195.26				
	7-9 h	185	202.78				
	>10	134	207.69				

Internet Usage Time Scales (Per Day)	No.	Mean Rank	χ^2	df	P	Difference
CP	1-3 h	16	1.605	3	0.658	-
	4-6 h	66				
	7-9 h	185				
	>10	134				
NMLS	1-3 h	16	1.064	3	0.786	-
	4-6 h	66				
	7-9 h	185				
	>10	134				
YIAT-SF	1-3 h	16	6.254	3	0.100	-
	4-6 h	66				
	7-9 h	185				
	>10	134				



Abbreviations: NMLS: New media literacy scale; YIAT-SF: Young's internet addiction test-short form; FC: Functional consumption; CC: Critical consumption; FP: Functional presumption; CP: Critical presumption.

By examining [Table 3](#), several observations can be made. For example, no significant difference is observed between girls and boys in media literacy levels, while boys' internet addiction levels are higher than girls. Although most adolescents have not received education, their media literacy levels remain high and significant. While the media literacy skills of adolescents increase as their age and grade levels increase, no difference is observed in internet addiction based on age or grade level. The duration of internet use does not make a significant difference in either media literacy or internet addiction ([Table 4](#) and [Table 5](#)).

Discussion

It has been determined that the media literacy levels of adolescents are high, exposing them to the risk of internet addiction. Although they have not received media literacy education, their high media literacy level may suggest that adolescents can be conscious users because it indicates that they use media wisely and purposefully. Besides, based on the results, adolescents are expected to develop a more critical perspective and use the internet consciously. However, their excessive use of social media may raise concerns regarding the reliability of their information sources. Research shows this age group is particularly vulnerable to unreliable internet resources [22]. Additionally, adolescents regularly consume con-

tent on social media, which is their preferred internet platform [23]. However, more research is required to relate social media content consumption with critical thinking skills in real-life contexts.

Another significant result is that most adolescents use the internet for more than 7 hours daily, exposing them to the risk for internet addiction. As known, increased internet use is one of the indicators of a higher likelihood of internet addiction [24]. The results stress that adolescents primarily use the internet for social media and gaming. Adolescents' aimless use of social media can lead to negative consequences in their lives [25, 26]. Researchers indicate that media-literate adolescents are less likely to encounter internet-related risks [27]. Besides, new media literacy enables adolescents to become familiar with the internet and its applications, information types, and models, as well as the ability to critically analyze and evaluate online information [28]. It is noteworthy that CC scores are the highest among the sub-dimensions of the media literacy scale. In this regard, the obtained result is consistent with the existing literature.

The average media literacy of girls and internet addiction in boys is high. Additionally, media literacy increases with age and grade level. The adolescents' media literacy is positively influenced by their age, grade level, and media literacy education. The results of the regres-

Table 4. Correlation between research variables of adolescents' gender, age, grade, media literacy education status, age, internet usage time, and scale and scale sub-dimensions

Variables	1	2	3	4	5	6a	6b	6c	6d	6e	7
1 Gender	1										
2 Age	-0.269**	1									
3 Grade	-0.259**	0.980**	1								
4 Media literacy education	0.139**	0.006	0.004	1							
5 Internet usage time	0.005	-0.015	-0.003	0.024	1						
6a FC	0.010	0.203**	0.203**	0.080	0.050	1					
6b CC	-0.015	0.151**	0.135**	0.144**	0.022	0.698**	1				
6c FP	-0.011	0.098	0.081	0.134**	0.067	0.508**	0.734**	1			
6d CP	-0.193**	0.268**	0.255**	0.107*	0.031	0.500**	0.613**	0.708**	1		
6e NMLS	-0.060	0.203**	0.188**	0.136**	0.037	0.729**	0.882**	0.862**	0.859**	1	
7 YIAT-SF	0.148**	-0.122*	-0.113*	0.012	-0.056	0.115*	0.157**	0.133**	0.146**	0.175**	1

**Correlation is significant at the 0.01 level (2-tailed),*Correlation is significant at the 0.05 level (2-tailed).



Abbreviations: NMLS: New media literacy scale; YIAT-SF: Young's internet addiction test-short form; FC: Functional consumption; CC: Critical consumption; FP: Functional presumption; CP: Critical presumption.

sion analysis support this result. In a study conducted by Üstündağ [29], adolescents' media literacy levels were high. Similarly, other studies examining media literacy levels have concluded that girls have higher averages in skills, such as critical viewing, information seeking, using, and evaluating, as well as media literacy compared to boys [30-33]. Since media literacy requires various cognitive skills, such as understanding, analysis, comprehension, inference-making, and critical thinking, adolescents' high results without any training are considered crucial results. It also suggests that adolescents can become much more conscious media users by receiving a structured media literacy education. Previous studies have shown a significant difference between grade levels and media literacy levels among adolescents [34, 35, 36]. As adolescents' age increases, their cognitive development and critical thinking skills begin to approach to adult level. Thus, it is expected and plausible that a positive impact is observed as the level of media literacy increases with age and progresses through higher grade levels. The obtained results show the importance and impact of cognitive development as well as media literacy education.

Besides, internet addiction in adolescents hurts gender, age, and grade levels. Regression analysis results also confirm this result. Several studies have shown that boys tend to show higher levels of internet addiction [37-41].

This result can be attributed to boys being more prone to use the internet for gaming and having higher positive attitudes and self-efficacy perceptions toward technology use than girls [42]. Boys' online gaming addiction levels are higher than girls [43]. Progression of age and increase in grade level follow a similar pattern. While internet addiction is associated with age by Doğan [44], other studies indicate a significant difference between internet addiction and grade level [45-47]. Therefore, the obtained results are consistent with previous results in the literature.

Lastly, the media literacy of adolescents has a positive impact on internet addiction. Research results similarly indicate that media literacy predicts internet addiction [48, 49]. In addition, Chen et al. [28] stress that an individual with new media literacy skills is more likely to be a critical media user. Therefore, adolescents with high media literacy are expected to show more conscious internet use. It is worth noting that the duration of internet use may have been influenced by the pandemic period during which the research was conducted.

Even though this study produced critical results, it is necessary to mention the limitations. Our sample was limited to Ankara Province. Besides, the research was conducted during the pandemic and curfews, which may

Table 5. Regression analysis results between research variables

Variables	B	SH	β	95% CI for Bound		t	f	R ²	p
				Lower	Upper				
Gender	1.402	0.239		0.932	1.873	5.859			
NMLS	-0.002	0.001	-0.129	-0.004	-0.001	-2.562	3.923	0.019	0.021
YIAT-SF	0.009	0.006	0.076	-0.003	0.020	1.505			
Age	15.565	0.429		14.723	16.408	36.312			
NMLS	.010	0.002	0.276	0.006	0.013	5.680	17.125	0.079	0.000
YIAT-SF	-0.023	0.010	-0.109	-0.043	-0.003	-2.248			
Grade	1.529	0.425		0.692	2.365	3.594			
NMLS	0.009	0.002	0.267	0.006	0.013	5.460	15.698	0.073	0.000
YIAT-SF	-0.021	0.010	-0.101	-0.041	-0.001	-2.068			
Receiving Education	1.877	0.075		1.729	2.024	24.977			
NMLS	0.001	0.000	0.161	0.000	0.002	3.220	5.196	0.025	0.006
YIAT-SF	-0.001	0.002	-0.016	-0.004	0.003	-0.329			
NMLS	91.235	11.755		68.127	114.344	7.762			
YIAT-SF	0.911	0.299	-0.151	0.322	1.500	3.041	9.249	0.023	0.003

NMLS: New media literacy scale; YIAT-SF: Young's internet addiction test-short form.



have influenced the results. Therefore, as a suggestion to researchers, we recommend conducting studies with adolescents living in other provinces to get a more comprehensive understanding.

The strengths of this study are as follows, the results were obtained through adolescents' self-reports, it emphasizes the importance of providing media literacy education to adolescents, and demonstrates that media literacy of adolescents explains internet addictions. When media literacy levels increase, internet addiction decreases and has a rigorous approach to data analysis.

While it may be difficult to counteract the detrimental effects of the rapid flow of information on the internet, it is possible to guide adolescents to use it correctly and optimally through media literacy education. Teachers play a crucial role in assisting adolescents to become conscious users, both by serving as role models and by providing media literacy training. Adolescents can navigate the internet more effectively by addressing the identified deficiencies and receiving support from teachers through training programs.

High-risk internet addiction among adolescents is a worldwide public health problem. From a public health perspective, low media literacy education and high-risk internet addiction may help to recognize the importance and urgency of healthy lifestyles in the adolescent population. Therefore, this research makes a crucial contribution to the literature on the well-being of adolescents worldwide. Based on the results among Turkish adolescents, identifying and addressing early signs of risk in addiction provides an opportunity to enable adolescents worldwide to progress healthier through adolescence.

Conclusion

Internet addiction has become a prevalent issue among adolescents, as shown by the research results. We underscore the importance of media literacy education in enhancing media literacy and reducing internet addiction. The fact that all adolescents are internet users but have yet to receive media literacy training reveals a critical issue that requires intervention and addresses a crucial deficiency. Therefore, it is essential to provide media literacy education to adolescents by making necessary curriculum adjustments.

Considering the results, it is evident that media literacy predicts internet addiction. Given the significant role of the internet in the lives of adolescents and its high usage rates, this study makes a critical contribution to the literature on media and adolescents, emphasizing that media literacy fosters awareness and enables adolescents to become conscious users.

Ethical Considerations

Compliance with ethical guidelines

The permission of the Ethics Committee was obtained from the Research Ethics Committee of [Hamidiye University of Health Sciences](#) for the research (No.: 21/535, Date: 06.08.2021).

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Conflict of interest

The author declared no conflict of interest.

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