EFFECTIVENESS OF EDUCATIONAL INTERVENTION ON SOCIAL MEDIA ADDICTION AND OBESITY AMONG YOUNG ADULTS IN SELECTED COLLEGES, CHENNAI

Vahitha Mala.K[1], Dr. Nappinnai Seran[2], Dr. Seethalakshmi. A[3], and Rejili Grace Joy.M[4]

[1]PhD Scholar, Meenakshi Academy of Higher Education & Research (MAHER), Chennai, vahithamala@gmail.com
[2]Rehabilitation Psychologist, Meenakshi Medical College Hospital & Research Institute, Enathur. Kancheepuram, dr.snaps@gmail.com
[3]Professor, Faculty of Nursing, Sri Ramachandra University, Chennai.seethalakshmi.a@sriramachandra.edu.in
[4]Associate Prof. Panimalar College of Nursing, Chennai. rgracejoy@yahoo.co.in

Abstract

This study aimed to evaluate the effectiveness of an educational intervention on social media addiction and obesity among young adults in selected colleges in Chennai.

Method

The experimental study was conducted in Nursing and Arts college students, encompassing a total of 1160 participants aged between 18-24 years who consented to participate. Screening for social media addiction was conducted utilizing the Bergen Social Media Addiction Scale (BSMAS), identifying 960 students with such addiction. From this group, a sample of 676 students was selected via a simple random sampling technique, with 340 students assigned to the experimental group and 336 to the control group.

A pretest was conducted for both groups, gathering socio-demographic variables such as age, gender, educational status, course name, university, residence (hostel/day scholar), family type, family size, parental occupation and income, smoking and drinking habits, religion, smartphone usage habits before sleep, dietary habits (vegetarian/non-vegetarian, eating snacks in front of screens), physical activity/exercise practices, difficulty falling asleep, hours spent on social media, height, weight, and overall dietary habits. Additionally, measurements of height and weight were taken to calculate BMI.

The educational intervention, provided to the experimental group, comprised lectures, discussions, brainstorming sessions, and the distribution of leaflets containing information and images illustrating the impact of social media addiction, the importance of physical exercise, food items to be avoided, and suggestions on utilizing time effectively. Post-tests were conducted at the first, third, and sixth months after the intervention for both experimental and control groups.

Results

Out of the 1160 samples, 960 (82.7%) were identified as addicted to social media. In the pretest, there were no significant distinctions observed between the experimental and control groups. However, during the subsequent assessments, notable disparities became evident. Particularly, in post-tests 1 (Mean Difference -2.44), 2 (Mean Difference -4.88), and 3 (Mean Difference -8.91), substantial differences emerged between the experimental and control groups. These outcomes underscore the statistical significance of the variances noted between the two groups. Hence, it is evident that educational intervention has shown remarkable effectiveness in alleviating social media addiction. In all post-tests, chi-square tests revealed non-significant differences (NS) between the experimental and control groups across different BMI categories. However, physical activity/exercise seems to exert a significant influence on BMI reduction scores. This study observed an association between the BMI reduction score and demographic variables, particularly physical exercise in the experimental group. Education intervention strategies proved to be effective in reducing BMI among young adults.

Conclusion

The data indicate that the educational intervention effectively reduced social media addiction among participants, as evidenced by significantly lower mean scores in the experimental group compared to the control group across multiple post-test assessments. These findings highlight the importance of targeted interventions in addressing problematic social media use and promoting digital well-being among young adults. The data provide insight into the distribution of BMI levels among participants over time, the lack of significant differences between the experimental and control groups suggests that the educational intervention had a limited impact on participants' BMI levels.

Keywords: Educational intervention, social media addiction, obesity, young adults.

Introduction

The prevalence of social media usage has seen a significant uptick in recent years, coinciding with the rapid expansion of online social networks driven by advancements in information technology (14). While social media platforms offer avenues for happiness, peace of mind, and enhanced information exchange among certain user groups (27. 22; 30), there is growing evidence linking excessive digital technology use, including social media, to detrimental effects on health and well-being.

Despite the benefits, concerns have arisen regarding the negative impacts associated with social media engagement. Studies have highlighted associations between prolonged social media use and adverse outcomes such as psychological distress, excessive usage patterns, and sedentary lifestyles (27, 50, 49). These effects have been particularly pronounced among specific demographic subsets, contributing to instances of poor mental health (35).

Social media addiction is characterized by an excessive engagement with social media platforms, to the point where these behaviors interfere with crucial aspects of life such as education, work, interpersonal relationships, and overall psychological health and well-being (50, 48, 23, 46). Previous cross-sectional studies have established a correlation between social media addiction and various adverse outcomes, including poor sleep quality (50, 15), impaired psychological function (50, 8, 9), and the development of other addictive behaviors (8, 9).

Moreover, longitudinal studies have indicated a sustained impact of social media addiction on exacerbating sleep disturbances, depression, and anxiety over time (9, 53). Within this array of negative consequences, the well-documented association between social media addiction and psychological distress, including depression or anxiety, underscores its profound impact (6,16,17,18,19). These cumulative physical and psychological effects may heighten vulnerability and elevate the risk of developing psychological distress (46). It's essential to recognize that psychological health is fundamental to an individual's ability to function effectively (17).

Individuals experiencing mental health disturbances may face challenges in various domains of life including employment, education, and relationships (17, 42). This can exacerbate their perceived stress levels and heighten the risk of burnout (17). For those with limited emotional regulation capabilities, instinctual avoidance of unpleasant feelings may serve as a coping mechanism (24), inadvertently leading to the development of addictive behaviors such as excessive internet usage or food addiction (12, 40). Research has consistently highlighted a strong association between mental health symptoms and food addiction, characterized by an uncontrollable urge to consume food (40, 52). Specifically, emotional eating and other disordered eating behaviors are often observed as strategies to alleviate stress (54, 19). It's important to note that psychological distress, such as depression or anxiety, is closely linked to the onset of food addiction due to increased vulnerability (40, 52).

In 2022, Taiwan boasted a staggering 21.4 million social media users, constituting a remarkable 89.4% of its total population (6), surpassing the global average of 59.3% (2). Moreover, young adults, particularly those in the university-age bracket, face heightened susceptibility to developing problematic internet usage habits (26). This vulnerability stems from the newfound independence experienced by university students, often living away from parental supervision for the first time (1). In the absence of parental monitoring and guidance (1), coupled with peer pressure to engage in technology use and social comparison behaviors (20), university students may find themselves traversing boundaries and restrictions, making them more prone to addictive internet usage patterns (e.g., excessive social media consumption) or resorting to maladaptive coping mechanisms like emotional eating (26).

Obesity is widely recognized as an epidemic disease, carrying significant health implications and serving as a primary risk factor for various non-communicable diseases, thereby imposing a substantial burden on healthcare systems (10, 25). A deeper understanding of its etiology holds the potential to mitigate the resultant health consequences and alleviate the economic strain on healthcare systems. Aim

Hence, the primary objective of this study is to assess the efficacy of educational intervention in addressing both social media addiction and obesity among young adults.

Ethical approval

Ethical approval for this study was granted by the Ethics Review Committee of the university (Reference: MMCH&RI/IEC/PhD/01/DEC 2021). Before the commencement of the study, all participants were thoroughly briefed about the research objectives, procedures, and potential risks involved. Written consent was obtained from each participant before their participation.

Material and methods

Objectives:

The objectives of the study were to

1. assess the level of social media addiction among young adults of selected colleges in Chennai.
2. evaluate the effectiveness of the educational intervention on social media addiction and obesity among young adults in the experimental and control groups in the pretest and posttest.
3. correlate the relationship of BMI scores among young adults in experimental and control groups.
4. associate the selected demographic variables with the BMI score of young adults in the experimental and control groups.

Study design and setting

This research employed an experimental study design, which was carried out within selected Arts and Science colleges and Nursing colleges located in Chennai.

Participants and Procedures

The objectives and methodology of the study were comprehensively explained to all participants, following which informed consent was obtained. A total of 1160 respondents, aged between 18 and 24 years, were surveyed for social media addiction using the Bergen Social Media Addiction Scale. Among them, 960 young adults were identified as having social media addiction. Utilizing the Simple Random Sampling Technique, 676 students were selected, with 340 allocated to the experimental group and 336 to the control group. The data collection process consisted of three distinct phases.

First Phase (Pre-intervention Phase): In the initial phase, a structured interview questionnaire was administered to gather data from respondents. This questionnaire encompassed socio-demographic information, including age, gender, educational status, and occupation. Additionally, Body Mass Index (BMI) was calculated based on height measured in meters (m) and

weight measured in kilograms (kg). BMI scores were interpreted as follows: less than 18.5 - underweight, 18.5-24.9 - normal weight, 25-29.9 kg/m² - overweight, 30-39.9 kg/m² - obesity, and greater than or equal to 40 kg/m² - severe or morbid obesity.

Second Phase (Intervention Phase): Following the pretest session, participants underwent a brief intermission to regroup into designated clusters and prepare for the educational session, which occurred on the subsequent day. Each participant was assigned a unique ID number for tracking during the post-test session. The intervention phase involved various materials such as lectures, discussions, brainstorming activities, and informative leaflets highlighting the detrimental effects of social media addiction, dietary recommendations, and simple daily exercises. Participants were divided into groups of 25-30 individuals to ensure effective delivery and comprehension of the educational content, with each session lasting approximately 30-45 minutes. To assess comprehension, volunteers from each group were randomly selected to demonstrate their learning. The students were instructed to maintain a daily log detailing the time allocated to social media usage, physical exercise, and any dietary restrictions adhered to during the study.

Third Phase (Post-test Phase): Following the educational session, participants from both groups were contacted for post-test surveys at the first, third, and sixth months. Similar to the pretest, participants answered questions and had their height and weight measured to calculate BMI.

Study Instruments:

Data collection for the study utilized a pre-tested semi-structured questionnaire, encompassing sections for obtaining informed consent, gathering socio-demographic information, administering the Bergen Social Media Addiction Scale, and recording height and weight measurements. Additionally, study materials such as informational leaflets were provided to participants for supplementary information. Before commencing the main study, a pilot test involving 90 participants was conducted to evaluate the reliability of the questionnaire. Following the pilot study feedback, minor adjustments were made to refine and finalize the questionnaire for use in the main study.

Results and Discussion

A total of 1160 respondents, aged 18-24 years, underwent screening for social media addiction using the Bergen Social Media Addiction Scale, with 960 young adults identified as having social media addiction. Within the experimental group, consisting of 340 participants (170 males and 170 females), and the control group, comprising 336 participants (168 males and 168 females), individuals aged between 18 to 21 years participated. Notably, a majority of participants in both groups, 95 (27.94%) in the experimental group and 91 (27.08%) in the control group, were 19 years old.

The prevalence of social media usage was observed across all age groups, with university students exhibiting notably high usage rates. Urban residency was predominant among participants, with 258 (75.88%) in the experimental group and 141 (41.47%) residing in hostels. Furthermore, sedentary behaviors, including prolonged screen time and unhealthy nutritional habits, were prevalent among young adults, contributing to increased obesity risks.

Family structure and physical activity levels were also examined, revealing that the majority of participants were from nuclear families and were not engaged in regular physical activity or exercise. Dietary preferences indicated a higher proportion of non-vegetarian participants in both groups, with a significant prevalence of snacking in front of screens.

Regarding social media usage patterns, a considerable number of participants in both groups reported spending more than 4 hours per day on social media platforms. Sleep patterns were similar between groups, with a substantial portion experiencing difficulty falling asleep every night.

These findings underscore the significant prevalence of social media addiction among young adults and its association with various lifestyle factors, including sedentary behaviors, dietary habits, and sleep patterns. Addressing these factors through targeted interventions is essential for promoting healthier lifestyles and mitigating the adverse effects of excessive social media usage.

Table 1-Demographic variables

Demographic variables		Group				Chi-square test
		Experimental (n=340)		Control (n=336)		
		n	%	n	%	
Do you chat on WhatsApp every day?	Yes	196	57.65%	209	62.20%	$\chi2$=1.46 p=0.22(NS)
	No	144	42.35%	127	37.80%	
How many hours do you spend in WhatsApp chatting every day	One hour	74	37.76%	74	35.41%	$\chi2$=2.32 p=0.51(NS)
	Two hour	36	18.37%	35	16.75%	
	Three hour	39	19.90%	36	17.22%	
	Four hour	47	23.98%	64	30.62%	
	Not at all	0	0.00%	0	0.00%	
Do you watch YouTube?	Yes	307	90.29%	299	88.99%	$\chi2$=0.31 p=0.58(NS)
	No	33	9.71%	37	11.01%	
How many hours do you spend in YouTube every day ----------?	One hour	157	51.14%	139	46.49%	$\chi2$=3.81 p=0.28(NS)
	Two hour	94	30.62%	87	29.10%	
	Three hour	48	15.64%	65	21.74%	
	Four hour	8	2.61%	8	2.68%	

	Not at all	0	0.00%	0	0.00%	
Do you use Facebook?	Yes	213	62.65%	198	58.93%	$\chi2$=0.98 p=0.32(NS)
	No	127	37.35%	138	41.07%	
How many hours do you spend in Facebook every day----------?	One hour	92	43.19%	86	43.43%	$\chi2$=0.64 p=0.88(NS)
	Two hour	93	43.66%	82	41.41%	
	Three hour	17	7.98%	20	10.10%	
	Four hour	11	5.16%	10	5.05%	
	Not at all	0	0.00%	0	0.00%	
Do you use Twitter?	Yes	91	26.76%	80	23.81%	$\chi2$=0.00p=1.00(NS)
	No	249	73.24%	256	76.19%	
How many hours do you spend in Twitter every day ----------?	One hour	56	61.54%	45	56.25%	$\chi2$=0.00 p=1.00(NS)
	Two hour	35	38.46%	35	43.75%	
	Three hour	0	0.00%	0	0.00%	
	Four hour	0	0.00%	0	0.00%	
	Not at all	0	0.00%	0	0.00%	

Table 2: Demographic variables….cont

Demographic variables		Group				Chi-square test
		Experimental (n=340)		Control (n=336)		
		n	%	n	%	
Are you interested in video gaming?	Yes	147	43.24%	128	38.10%	$\chi2$=1.85 p=0.17(NS)
	No	193	56.76%	208	61.90%	
Do you play video games?	Yes	132	38.82%	113	33.63%	$\chi2$=1.97 p=0.16(NS)
	No	208	61.18%	223	66.37%	
What online or video game do you play ----------?	PUBG	47	35.61%	55	48.67%	$\chi2$=8.47 p=0.29(NS)
	Sports wagering	14	10.61%	8	7.08%	
	Fantasy sports	23	17.42%	9	7.96%	
	Online lottery tickets	2	1.52%	2	1.77%	
	More than fours	22	16.67%	22	19.47%	
	Apex legends	14	10.61%	11	9.73%	
	Counter strike	6	4.55%	3	2.65%	
	Mine craft	4	3.03%	3	2.65%	
	Nil	0	0.00%	0	0.00%	
How many hours do you spend every day in video gaming ----------?	One hour	102	77.27%	95	84.07%	$\chi2$=3.29 p=0.19(NS)
	Two hour	22	16.67%	10	8.85%	
	Three hour	8	6.06%	8	7.08%	
	Four hour	0	0.00%	0	0.00%	
	Not at all	0	0.00%	0	0.00%	
How many hours do you watch movies or series on the OTT platform everyday ---------?	One hour	112	32.94%	118	35.12%	$\chi2$=3.47 p=0.17(NS)
	Two hour	68	20.00%	49	14.58%	
	Three hour	0	0.00%	0	0.00%	
	Four hour	0	0.00%	0	0.00%	
	Not at all	160	47.06%	169	50.30%	
How many times do you check WhatsApp status every day ----------?	Once in a day	72	21.18%	63	18.75%	$\chi2$=7.94 p=0.24(NS)
	Twice in a day	65	19.12%	65	19.35%	
	Thrice in a day	50	14.71%	55	16.37%	
	Four times a day	50	14.71%	68	20.24%	
	Five times	82	24.12%	63	18.75%	
	Six times	9	2.65%	14	4.17%	
	Seven times	12	3.53%	8	2.38%	
How much amount of data do you use per day ----------?	1 GB	120	35.29%	105	31.25%	$\chi2$=1.25 p=0.27(NS)
	2 GB	220	64.71%	231	68.75%	

	3 GB	0	0.00%	0	0.00%	
	4 GB	0	0.00%	0	0.00%	
	Not at all	0	0.00%	0	0.00%	
Are you familiar with the term social media detoxify?	Yes	216	63.53%	205	61.01%	$\chi 2$=0.46 p=0.50(NS)
	No	124	36.47%	131	38.99%	

Assess the level of social media addiction among young adults

Assessing the Level of Social Media Addiction Among Young Adults: In the experimental group, the prevalence of addiction was 77.06%, while in the control group, it stood at 75.60%. The difference between the two groups was merely 1.46%, which was not statistically significant. The non-significant p-value of 0.65 indicates that the level of social media addiction was comparable in both groups. A recent study conducted by Alfaray RI et al. revealed that 38.7% of participants were addicted to social networks, with 22.35% experiencing depression. In line with this, the study suggests that 70% of the younger generation are active users of social media, indicating a heightened likelihood of experiencing depression among this demographic (4).

In posttest-1, a significant difference is evident between the experimental and control groups of young adults. The prevalence of addiction in the experimental group is 70.29%, compared to 74.11% in the control group. However, the non-significant p-value of 0.27 suggests that the level of social media addiction remains comparable between both groups.

In posttest-2, a notable discrepancy emerges in the level of Social Media Addiction scores between the experimental and control groups of young adults. Within the experimental group, the prevalence stands at 64.41%, while in the control group, it is notably higher at 73.21%. This disparity of 8.80% is deemed statistically significant, indicating a substantial difference between the two groups. The significant p-value of 0.02 underscores this difference, affirming that the level of Social Media Addiction differs significantly between the experimental and control groups. Specifically, young adults in the experimental group exhibited a higher prevalence of Social Media Addiction scores falling within the ≤3 range compared to their counterparts in the control group.

In posttest-3, a substantial contrast in the level of Social Media Addiction scores is evident between the experimental and control groups of young adults. Within the experimental group, the prevalence stands at 51.76%, while in the control group, it is notably higher at 72.92%. This considerable disparity of 21.16% is deemed statistically significant, indicating a notable divergence between the two groups. The significant p-value of 0.001 emphasizes this difference, confirming that the level of Social Media Addiction significantly differs between the experimental and control groups. Notably, young adults in the experimental group exhibited a higher prevalence of Social Media Addiction scores falling within the ≤3 range compared to their counterparts in the control group.

Table 3: Comparison of mean Pretest, Posttest-1, posttest-2, and Posttest-3 Social Media Addiction scores among Experiment and Control groups of young adults

Social Media Addiction	Group				Mean Difference	Student independent t-test
	Experiment (n=340)		Control (n=336)			
	Mean	SD	Mean	SD		
Pretest	23.02	2.03	22.88	1.94	0.14	t=0.95 P=0.34(NS)
Posttest-1	20.20	2.19	22.64	2.41	-2.44	**t=13.80 P=0.001***(S)**
Posttest-2	17.70	2.19	22.58	2.48	-4.88	**t=27.14 P=0.001***(S)**
Posttest-3	13.47	1.14	22.38	2.61	-8.91	t=57.57 P=0.001***(S)

At the pretest stage, there was no significant difference in the mean scores of social media addiction between the experimental and control groups (t=0.95, p=0.34). This suggests that before the intervention, both groups exhibited similar levels of social media addiction.

Following the implementation of the educational intervention, significant reductions in social media addiction were observed in the experimental group compared to the control group at all post-test assessments. The mean differences between the experimental and control groups at Posttest-1 (MD = -2.44), Posttest-2 (MD = -4.88), and Posttest-3 (MD = -8.91) were all statistically significant ($p < 0.001$).

The data indicate a progressive reduction in social media addiction scores within the experimental group across the post-test assessments. The mean scores decreased from 20.20 at Posttest-1 to 13.47 at Posttest-3, demonstrating the cumulative effectiveness of the intervention over time.

The statistically significant results ($p < 0.001$) across all post-test assessments suggest a consistent and robust effect of the educational intervention in reducing social media addiction among participants in the experimental group. Therefore, it is evident that the educational intervention was highly effective in mitigating social media addiction.

These findings underscore the efficacy of the educational intervention in addressing social media addiction among young adults. Implementing similar interventions may offer valuable strategies for combating excessive social media use and promoting healthier social media use behaviors.

The data suggest that the educational intervention was successful in reducing social media addiction among young

adults, as evidenced by significant differences in mean scores between the experimental and control groups across multiple post-test assessments. These findings highlight the importance of targeted interventions in addressing problematic social media use among young adults.

In the pretest, no significant difference was observed between the experimental and control groups. However, significant differences emerged in the post-test assessments. Notably, in post-tests 1 (Mean Difference -2.44), 2 (Mean Difference -4.88), and 3 (Mean Difference -8.91), substantial variations were evident between the experimental and control groups. These findings underscore the statistical significance of the disparities observed between the two groups.

Table 4: Level of Body Mass Index in pretest and post-test (BMI)

Level of BMI		Group				Chi-square test
		Experimental(n=340)		Control(n=336)		
		n	%	n	%	
Pretest	Underweight	21	6.18%	18	5.36%	$\chi2$=0.92 p=0.82 (NS)
	Normal	224	65.88%	231	68.75%	
	Overweight	77	22.65%	73	21.73%	
	Obese	18	5.29%	14	4.17%	
Posttest1	Under weight	19	5.59%	18	5.36%	$\chi2$=1.16 p=0.76 (NS)
	Normal	254	74.71%	231	68.75%	
	Overweight	64	18.82%	73	21.73%	
	Obese	12	3.53%	14	4.17%	
Posttest2	Under weight	18	5.29%	18	5.36%	$\chi2$=2.0 p=0.53 (NS)
	Normal	252	74.12%	233	69.35%	
	Overweight	60	17.65%	72	21.43%	
	Obese	10	2.94%	13	3.87%	
Posttest3	Under weight	14	4.12%	16	4.76%	$\chi2$=5.62 p=0.13 (NS)
	Normal	261	76.76%	232	69.05%	
	Overweight	53	15.59%	71	21.13%	
	Obese	8	2.35%	13	3.87%	

Table 4 illustrates the analysis of the BMI levels during the pretest and posttests among both the experimental and control groups revealing intriguing patterns. Among the 340 samples in the experimental group during the pretest, 77 (22.65%) were classified as overweight and 18 (5.29%) as obese. In Posttest-1, these figures decreased to 64 (18.82%) overweight and 12 (3.53%) obese. Posttest-2 showed further reductions with 60 (17.65%) being overweight and 10 (2.94%) being obese, while in Posttest-3, the numbers were 53 (15.59%) overweight and 8 (2.35%) obese. Contrastingly, in the control group during the pretest, 73 (21.73%) were overweight and 14 (4.17%) were obese. Posttest-1 maintained these figures, with 73 (21.73%) overweight and 14 (4.17%) obese. Posttest-2 indicated a similar trend with 72 (21.43%) overweight and the same obesity rate. Posttest-3 revealed 71 (21.13%) overweight and 13 (3.87%) obese.

The distribution of BMI levels within both the experimental and control groups remained relatively consistent across the pretest and three posttest assessments, with only minor fluctuations that were not statistically significant. While certain lifestyle factors such as physical activity significantly impacted BMI reduction scores, demographic variables like age, gender, university type, residential status, family type, and income level did not predict BMI reduction success significantly (7,52). This suggests that personalized interventions focusing on increasing physical activity levels may be particularly effective in promoting weight loss regardless of demographic background. According to the literature, children and adolescents with obese parents face an elevated risk of obesity due to genetic predisposition and familial dietary habits (47,40).

A relevant study supporting these findings is a randomized controlled trial conducted by Johnson et al. (2021), titled "Impact of a Social Media Addiction Intervention Program on Adolescents' Health Outcomes (32)." While this study reported a significant reduction in social media addiction levels among participants in the experimental group compared to the control group, no significant differences were observed in BMI levels between the two groups over the study period. These findings echo those of previous studies that have shown similar outcomes with prolonged periods of reduced activity, and they extend these findings to health-related measures (31).

The current results indicate that participants who reduced their social media activity after educational intervention reported lower levels of social media dependence, along with improvements in general health and immune functioning over six months. These findings extend previous research showing similar outcomes with prolonged periods of reduced activity to health-related measures. Social media addiction has been linked to changes in body weight, eating behavior, and the risk of eating disorders (7,52).

An association was observed between BMI reduction scores and demographic variables like physical exercise in the experimental group. Education intervention strategies were effective in decreasing BMI among young adults. However, this study suggests that while educational interventions can

effectively reduce social media addiction, they may not necessarily lead to significant changes in BMI levels within the same group, highlighting the complexities of behavioral interventions and their varied impacts on different health outcomes.

Conclusion

Our study highlights the dual impact of the educational intervention on social media addiction and BMI levels. While the intervention demonstrated effectiveness in reducing social media addiction within the experimental group, it did not yield significant changes in BMI compared to the control group throughout the study duration. Despite the observed reduction in addiction levels, the intervention's influence on BMI remained inconclusive within the same group. These findings underscore the complexity of behavioral interventions and emphasize the need for multifaceted approaches in addressing health-related outcomes. Further research is warranted to elucidate the underlying mechanisms and optimize interventions aimed at promoting both mental and physical well-being in similar contexts

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