

# Digital Diets and Real Consequences: Influence of Social Media on Nutritional Behaviour and Lifestyle of College Students in Chennai

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## ABSTRACT

Social media food posts and trends significantly influence dietary behaviours among college students, yet in India few studies have tested structured programmes to counter these effects. This study aimed to evaluate the effectiveness of a Nutritional Counselling Programme (NCP) in improving healthy lifestyle behaviours and physical fitness among students influenced by social media food vloggers. A quasi-experimental design was employed with 200 undergraduate students from five arts and science colleges in Chennai, randomly assigned to an Experimental Group (n = 100) and Control Group (n = 100). The experimental group received six fortnightly NCP sessions over three months, while the control group continued regular social media use without intervention. Data on eating habits, dietary choices, nutritional intake, physical activity, and health-related challenges were collected before and after the intervention using a validated questionnaire. Analyses included t-tests, ANOVA, correlation, and effect size estimation. Baseline pre-test scores showed no significant differences between groups across lifestyle variables. Post-intervention, the experimental group demonstrated significant improvements in eating habits, food choices, nutritional intake, and physical activity, with a reduction in health-related challenges. Improvements were consistent across demographic groups, although age showed some variation. Nutritional intake was positively correlated with physical activity levels. Findings suggest that structured nutritional counselling effectively promotes healthier dietary behaviours, physical activity, and reduces health challenges among college students.

**Keywords:** Nutritional Counselling, Healthy Lifestyle, College Students, Social Media Influence, Intervention Study

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## INTRODUCTION

Over the past decade, social media has become an integral part of the daily lives of young adults, shaping their communication, self-expression, and lifestyle choices (1). Platforms such as Instagram, YouTube, TikTok, and Facebook have redefined how information is shared, often blurring the lines between entertainment, marketing, and education (2). Almost all college students today use social media, and most of them spend several hours a day scrolling, watching, and interacting with online content (3).

Food-related content ranks among the most consumed and shared topics on social media, appealing to users through high-quality visuals, engaging captions, and relatable narratives (4). Videos showcasing recipes, restaurant reviews, and street food hunts generate substantial engagement, particularly among young viewers (5). Many

influencers and vloggers serve as trendsetters, inspiring their followers to explore certain foods, visit particular restaurants, or experiment with popular cooking styles (6).

The success of food content on social media is often driven by influencer marketing, where creators strategically promote products in exchange for sponsorship or brand partnerships (7). These promotions rely heavily on visual appeal and emotional storytelling, which research shows can significantly influence consumer behaviour, particularly in younger audiences (8).

Exposure to social media food content has been linked to increased preference for calorie-dense, nutrient-poor foods (9). Seeing this kind of food content over and over can make someone suddenly feel hungry and grab something to eat without thinking, especially when the video is made to look extra tempting with smart advertising tricks (10). Young people are even more at risk because they love

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trying new things but often don't know enough about healthy eating (11).

Frequent engagement with food content can alter meal timings, increase snacking, and promote late-night eating habits (12). Research shows that young adults who get into food trends often start eating larger portions, drinking more sweetened beverages, and snacking more on packaged junk foods (13). Over time, this habit can shift their eating patterns toward quick and easy options instead of healthier, more balanced meals (14).

The dietary behaviours encouraged by online food content are associated with increased risk of weight gain, poor nutrient balance, and metabolic disorders such as type 2 diabetes and hypertension (15). Being constantly exposed to perfectly styled and highly appealing food images can create unrealistic expectations about body appearance, which in some cases may contribute to unhealthy eating patterns or disordered behaviours (16).

Across the world, research has consistently found that people who spend a lot of time on social media tend to make less healthy food choices (17). In Western countries, media literacy programmes have been developed to help young people think critically about online food advertising (18). However, such structured interventions remain scarce in many developing countries (19).

India has witnessed an unprecedented rise in internet access and smartphone usage, especially among young adults in urban and semi-urban areas (20). A lot of college students follow popular Indian food vloggers who showcase everything from classic regional dishes to fast food favourites and the latest viral recipes (21). While these trends celebrate cultural diversity in cuisine, they may also normalise the frequent consumption of high-calorie, low-nutrient foods (22).

Despite the high prevalence of social media use among Indian youth, there is limited empirical evidence examining the direct impact of such content on dietary behaviours (23). Moreover, very few studies have assessed structured interventions aimed at counteracting these influences (24). Addressing this gap is crucial for developing culturally relevant, evidence-based health promotion strategies (25).

In light of these gaps, there is a clear need to examine how structured interventions can support college students in adopting healthier lifestyle behaviours despite the influence of social media food trends. University life marks a turning point where students start making most of their own food choices, moving away from the habits shaped by their families (26). This new independence often coincides with spending long hours on social media, where food trends are easy to follow and rarely questioned (27). Popular vloggers and influencers play a big role in shaping these trends, and many students admit they have tried dishes or recipes after seeing them online (28). Over time, this steady stream of tempting, visually striking food content can reshape what feels normal to eat, leading to

frequent indulgence in high-calorie meals and snacks while pushing healthier options to the background (29).

In India, research on nutrition counselling has mostly looked at giving people general healthy eating tips, but has rarely focused on how to deal with the strong influence of food trends seen on social media (30). This study aimed to address this gap by evaluating the effectiveness of a structured Nutritional Counselling Programme (NCP) that helps students eat healthier, be more active, and avoid food-related health problems, despite being regularly exposed to food trends on social media. The programme shares simple, practical advice on healthy eating and trains students to be more mindful about the food-related posts and videos they come across on social media. The insights from this study can help teachers, health professionals, and policymakers create more effective ways to promote healthy habits among young people in today's digital world.

## METHODOLOGY

We carried out this study with students from five arts and science colleges in Chennai, Tamil Nadu, including those from the city and nearby towns. In total, 200 undergraduates aged 18 to 22 took part. Students were eligible to participate if they used social media for two or more hours each day and frequently viewed food content online.

Information was gathered using a questionnaire designed for this research, which asked about personal background, social media habits, food choices, diet patterns, physical activity, and any health issues. Experts in nutrition and behavioural science reviewed the questionnaire to ensure it was clear and relevant. A reliability test showed strong consistency in the responses, with a Cronbach's alpha score of 0.82.

A quasi-experimental pre-test–post-test control group design was employed. Participants were selected using disproportionate stratified random sampling and then randomly assigned to either an Experimental Group ( $n = 100$ ) or Control Group ( $n = 100$ ).

The Experimental Group joined a three-month Nutritional Counselling Programme (NCP) made up of six sessions, held once every two weeks, with each session running for about 60–75 minutes. The sessions taught students about maintaining a balanced diet, assessing food content on social media with a critical eye, planning their meals, practising mindful eating, keeping physically active, and developing long-term healthy lifestyle habits. Activities included individual discussions, visual presentations, and students were given printed materials to take home for reference.

The Control Group continued their usual social media engagement without intervention. Pre- and post-intervention data were collected and analysed using SPSS. Descriptive statistics summarised participant characteristics. Inferential tests included paired and independent t-tests, one-way ANOVA, Pearson's

correlation, and effect size estimation using Cohen’s d. A p-value of <0.05 was considered statistically significant.

**RESULT**

This section shares the findings of the analysis, looking at differences across demographic factors and the connections between healthy lifestyle habits and physical fitness in the Experimental Group (EG) before and after the programme. Taking part in the Nutritional Counselling Programme (NCP) showed noticeable changes within the group based on gender, age, and education level, as well as clear links between eating habits and levels of physical activity both at baseline and after the intervention.

The gender analysis explores if there were any changes in scores between male and female students from the start to the end of the programme. The age-related analysis considers how the results changed among three different

age ranges, while the educational qualification analysis explores whether students from various academic disciplines showed varying degrees of improvement as a result of the programme. The correlation analysis examines how strongly and in what way healthy lifestyle habits are linked with physical fitness, helping to understand how eating patterns and activity levels relate to each other before and after the intervention.

By focusing on these aspects, this analysis moves beyond average group effects to explore patterns of behavioural change influenced by demographic factors and variable interrelationships. This approach not only adds depth to the interpretation of the NCP’s effectiveness but also addresses gaps in previous literature where subgroup and correlational findings are often underreported.

**Table 1:** Impact of intervention by gender on lifestyle and fitness

F	Gender	Before Treatment				After Treatment			
		Mean	SD	t Value	P Value	Mean	SD	t Value	P Value
EH	Male	37.84	14.77	1.267	<0.001**	59.60	6.58	1.349	<0.001**
	Female	34.56	14.58			56.64	7.89		
DF	Male	40.12	14.26	1.233	<0.001**	65.76	6.28	1.458	<0.001**
	Female	36.76	13.73			62.44	8.58		
NC	Male	29.40	8.61	1.179	<0.001**	48.32	5.91	1.111	<0.001**
	Female	27.08	8.52			44.44	4.82		
PA	Male	39.40	14.19	1.549	<0.001**	48.92	5.82	1.349	<0.001**
	Female	30.76	11.43			45.48	6.77		
HRC	Male	42.24	5.82	1.304	<0.001**	15.28	5.04	1.435	<0.001**
	Female	38.96	6.56			18.80	6.79		

Note: p <0.001\*\* Denotes significant at 1% level, F- Factor, EH- Eating Habits, DF- Dietary Factor, NC- Nutrition Consumption, PA- Physical Activity, HRC- Health Related Challenges

As shown in **Table 1**, before the intervention programme, male respondents consistently exhibited higher mean scores across all measured factors Eating Habit (EH), Dietary Food (DF), Nutritional Consumption (NC), Physical Activity (PA), and Health-Related Challenges (HRC) compared to females. Specifically, males scored 37.84 (EH), 40.12 (DF), 29.40 (NC), 39.40 (PA), and 42.24 (HRC), while females recorded lower means of 34.56, 36.76, 27.08, 30.76, and 38.96, respectively.

This difference might be because males tend to take part more in health and fitness activities, even though they may also experience more health issues linked to stress or irregular daily routines. Following the structured nutritional counselling and physical activity sessions, students of both genders showed clear improvements in all areas. Male respondents continued to have slightly higher

mean values EH (59.60), DF (65.76), NC (48.32), PA (48.92), and a notably reduced HRC score of 15.28 compared to females, whose post-intervention means were EH (56.64), DF (62.44), NC (44.44), PA (45.48), and HRC (18.80).

The significant reduction in health-related challenges, especially among males, suggests the intervention’s positive impact. These outcomes support earlier evidence that nutritional counselling combined with physical activity can bring about notable positive changes in lifestyle habits and health across different groups (31). In general, the results show that the programme successfully improved healthy eating habits and physical fitness while lowering health problems for both male and female students, with males achieving slightly higher improvements.

**Table 2:** Impact of intervention on age, lifestyle, and physical fitness

F	Gender	Before Treatment				After Treatment			
		Mean	SD	F Value	P Value	Mean	SD	F Value	P Value
EH	18 – 19	39.29	17.93	6.738	0.007**	61.29	3.25	7.003	0.001**
	19.1 - 20	34.93	10.94			58.36	6.74		
	Above 20	33.07	12.08			55.13	10.08		

DF	18 – 19	40.95	16.44	7.669	0.004**	66.52	3.76	6.563	0.002**
	19.1 - 20	38.50	11.06			63.07	7.72		
	Above 20	34.87	12.40			60.00	10.82		
NC	18 – 19	30.62	9.61	6.866	0.003**	46.86	2.01	9.175	<0.001**
	19.1 - 20	28.07	7.41			43.00	4.88		
	Above 20	25.07	7.22			42.20	7.40		
PA	18 – 19	32.90	13.45	6.833	0.014*	50.19	4.59	7.082	<0.001**
	19.1 - 20	29.50	8.59			47.64	7.88		
	Above 20	26.67	9.23			47.60	6.45		
HRC	18 – 19	38.27	6.26	5.291	0.007**	14.33	4.22	6.818	<0.001**
	19.1 - 20	37.64	6.95			15.79	7.36		
	Above 20	41.86	4.92			17.00	6.41		

Note:  $p < 0.001^{**}$  Denotes significant at 1% level,  $p < 0.005^{*}$  Denotes significant at 5 % level, F- Factor, EH- Eating Habits, DF- Dietary Factor, NC- Nutrition Consumption, PA- Physical Activity, HRC- Health Related Challenges

Since the p-values falls below both 0.01 and 0.05 it indicates significant differences in age, healthy lifestyle, and physical fitness among the experimental group before and after the intervention (Table 2). Before the programme began, students aged 18–19 scored the highest in important behaviour areas like eating habits, food choices, nutrient intake, and physical activity, while those above 20 showed weaker behaviours and faced more health-related challenges. Following the intervention, the youngest age group continued to show the greatest improvement across all dimensions, including a marked reduction in health-related challenges, suggesting that they responded most positively to the structured nutritional counselling and

physical activity sessions. Other age groups also demonstrated meaningful progress, affirming the effectiveness of the programme in fostering healthier eating habits and reducing lifestyle-related risks. These results support previous research showing that giving young adults clear and early health related education helps them develop better habits that last and improves their well-being (32). This study also finds that nutrition programs are more effective when designed for specific age groups, allowing people to gain the greatest benefits and maintain better health.

Table 3: Influence of education on lifestyle and fitness

F	EQ	Before Treatment				After Treatment			
		Mean	SD	F Value	P Value	Mean	SD	F Value	P Value
EH	BA	30.00	7.26	10.085	0.004**	53.45	10.41	8.264	0.001**
	BSc	40.45	10.27			61.13	3.39		
	BCom	36.31	18.84			56.82	7.77		
	BCA	40.83	10.82			61.67	3.55		
DF	BA	32.64	8.10	9.427	0.008**	58.55	11.96	8.142	0.001**
	BSc	43.73	10.21			67.42	3.53		
	BCom	38.19	16.98			60.82	8.18		
	BCA	42.25	11.62			66.13	3.42		
NC	BA	24.00	5.03	8.145	0.029*	40.18	8.07	10.991	0.003**
	BSc	31.36	6.16			46.75	2.05		
	BCom	28.00	10.56			42.82	4.95		
	BCA	31.58	7.05			46.50	2.19		
PA	BA	24.27	15.51	9.771	0.046**	48.31	7.14	8.227	0.003**
	BSc	33.00	7.71			54.45	6.48		
	BCom	31.13	14.01			49.09	7.10		
	BCA	33.33	8.51			54.17	6.17		
HRC	BA	42.58	6.63	9.358	0.006**	19.64	5.31	8.110	0.029*
	BSc	36.56	8.67			14.00	6.62		
	BCom	40.09	5.56			17.94	6.41		
	BCA	36.43	8.41			14.42	5.56		

Note:  $p < 0.001^{**}$  Denotes significant at 1% level,  $p < 0.005^{*}$  Denotes significant at 5 % level, F: Factor, EQ – Educational Qualification, BA- Bachelor of Arts, BSc- Bachelor of Science, BCOM- Bachelor of Commerce, Administration, and Management, BCA- Bachelor of Computer Applications, Artificial Intelligence, and Information Technology, EH- Eating Habits, DF- Dietary Factor, NC- Nutrition Consumption, PA- Physical Activity, HRC- Health Related Challenges

Because the p-values are below 0.01 and 0.05, the results are statistically significant indicating a significant improvement in healthy lifestyle behaviour and fitness levels among participants with various educational qualifications before and after the intervention program. As shown in **Table 3**, before the intervention, participants enrolled in Bachelor of Science (BSc) and Bachelor of Computer Application (BCA) programs had higher average scores across all behavioural areas: Eating Habits [BSc (40.45), BCA (40.83)], Dietary Food [BSc (43.73), BCA (42.25)], Nutritional Consumption [BSc (31.36), BCA (31.58)], and Physical Activity [BSc (33.00), BCA (33.33)] compared to students pursuing Bachelor of Commerce (BCom) and Bachelor of Arts (BA), with BA students consistently showing the lowest scores, indicating less healthy lifestyle habits. Health-Related Challenges were highest among BA respondents (42.58), suggesting greater lifestyle-related difficulties, whereas BSc and BCA groups reported fewer challenges (36.56 and 36.43, respectively). Following the intervention, all groups showed notable improvement. Those in the BSc and BCA programs maintained the top scores in behavioural measures and had the fewest Health-Related Challenges, indicating a strong response to the nutritional counselling and physical activity sessions. On the other hand,

participants in the BA group showed moderate but significant improvement. Meanwhile, BA respondents showed moderate but significant gains. These findings imply that educational background, especially science and technology streams, may influence participants' engagement and responsiveness to health interventions, potentially due to greater exposure or interest in health-related knowledge. Overall, the intervention effectively fostered healthier habits and reduced health challenges across all academic disciplines, underscoring the value of tailored health education programmes in diverse educational contexts. Similar results were reported by Smith et al., who found that health education interventions yielded more significant lifestyle improvements among students in scientific disciplines compared to those in humanities and commerce (33).

In this section, we take a closer look at how social media food vloggers and the nutritional counselling programme each influence the healthy lifestyle habits and physical fitness of the respondents. Using Canonical Correlation Analysis (CCA), we explore these two factors separately to understand how people's views of food vloggers and their involvement in the counselling sessions work together to bring about positive changes in their behaviour and fitness levels.

**Table 4:** Impact of social media food vloggers on lifestyle and fitness (CCA Results)

Dependent Variables	Mean	SD	F value	P value	Partial Eta <sup>2</sup>	Effect Size
Eating Habit	58.62	7.30	3.921	0.051	0.038	Small
Dietary Food	63.60	8.00	0.586	0.446	0.006	None
Nutritional Consumption	44.38	5.37	0.418	0.519	0.004	None
Physical Fitness	48.70	6.28	0.415	0.521	0.004	None
Health-related Challenges	15.54	5.95	17.831	0.000**	0.154	Large
Overall Multivariate Test (Wilks' λ)	–	–	1.844	0.109	0.070	Small

p<0.001\*\*Denotes significant at 1% level. As per Cohen's (1988) convention, Partial Eta Squared ( $\eta^2$ ) values indicate effect size [Small = 0.01; Medium = 0.06; Large = 0.14]

From the above **table 4**, it can be inferred that social media food vloggers did not have a statistically significant overall influence on the combined set of dependent variables, including eating habits, dietary food intake, nutritional consumption, physical fitness, and health-related challenges. The Wilks' Lambda value of 0.930 (F = 1.844, p = 0.109) indicates that the overall effect was not statistically significant. However, the partial eta squared value of 0.070 points to a small but meaningful effect size, indicating that while the statistical evidence is limited, social media food vloggers may still have some practical impact on these health and lifestyle measures.

Looking closer at the individual variables, Health-Related Challenges showed the strongest and statistically significant effect (F = 17.831,  $\eta^2$  = 0.154, p < 0.001), highlighting that exposure to food vloggers significantly impacted respondents' health concerns such as increased snacking, irregular eating patterns, and exposure to unhealthy food trends. Eating Habit showed a borderline effect (F = 3.921,  $\eta^2$  = 0.038, p = 0.051), which, although not statistically significant by strict standards, suggests a

potential practical influence on how respondents' general eating routines might be shaped by food content on social media.

On the other hand, there weren't any noticeable changes in Dietary Food, Nutritional Consumption, or Physical Fitness, which means social media food vlogging didn't have much impact on these parts of people's health.

These findings align with existing literature emphasizing the complex role of social media in shaping eating behaviours and health perceptions. A study done by Turner and Lefevre found that social media platforms like Instagram can contribute to increased symptoms of disordered eating by influencing users' food choices and body image. Similarly, this study shows that while social media food vloggers may not impact all areas of lifestyle and fitness, they do have a clear effect on specific health-related concerns. This emphasizes the importance of targeted nutritional counselling programs to help counteract any harmful influences from online food content (34).

**Table 5:** Effect of nutritional counselling on lifestyle and fitness (CCA Results)

Dependent Variables	Mean	SD	F value	P value	Partial Eta <sup>2</sup>	Effect Size
Eating Habit	58.62	7.30	24.469	0.003**	0.200	Large
Dietary Food	63.60	8.00	30.222	0.002**	0.236	Large
Nutritional Consumption	44.38	5.37	23.919	0.002**	0.196	Large
Physical Fitness	48.70	6.28	19.431	0.001**	0.166	Large
Health-related Challenges	15.54	5.95	18.203	0.005**	0.157	Large
Overall Multivariate Test (Wilks' $\lambda$ )	–	–	8.912	0.001**	0.318	Large

*p* < 0.001 \*\*Denotes significant at 1% level. As per Cohen's (1988) convention, Partial Eta Squared ( $\eta^2$ ) values indicate effect size [Small = 0.01; Medium = 0.06; Large = 0.14]

From the above **table 5**, it is clear that the nutritional counselling programme had a statistically significant positive influence on all five measured variables: eating habit, dietary food intake, nutritional consumption, physical fitness, and health-related challenges. The high F-values combined with p-values below 0.001 provide strong evidence supporting the reliability of these results. Notably, Dietary Food ( $F = 30.222$ ,  $\eta^2 = 0.236$ ), Eating Habit ( $F = 24.469$ ,  $\eta^2 = 0.200$ ), and Nutritional Consumption ( $F = 23.919$ ,  $\eta^2 = 0.196$ ) showed the largest effect sizes, indicating the programme had a pronounced impact on improving participants' dietary patterns and food-related behaviours. Similarly, Physical Fitness ( $F = 19.431$ ,  $\eta^2 = 0.166$ ) and Health-Related Challenges ( $F = 18.203$ ,  $\eta^2 = 0.157$ ) showed significant improvements with substantial effect sizes, emphasizing the program's effectiveness in enhancing physical well-being and reducing lifestyle-related health concerns.

The overall multivariate test, Wilks' Lambda = 0.318 ( $F = 8.912$ ,  $p < 0.001$ ), further confirms that the nutritional counselling programme significantly influenced the combined set of healthy lifestyle and physical fitness measures. The partial eta squared value of 0.318 reveals a substantial proportion of variance explained by the intervention, underscoring its strong practical impact.

In conclusion, these findings provide robust statistical evidence that the nutritional counselling programme was highly effective in improving multiple dimensions of healthy lifestyle and physical fitness among respondents. The large effect sizes reinforce the importance of such structured interventions in fostering healthier behaviours and overall well-being. These findings align with earlier studies showing that customized nutritional counselling and exercise programs can greatly enhance dietary habits and physical fitness in young adults (35). Smith and colleagues also observed that personalized interventions bring about lasting improvements in eating behaviours and physical activity, highlighting the essential role of education and behaviour-focused approaches in public health.

## DISCUSSION

This study looked at how social media food vloggers and a planned nutritional counselling program affected people's healthy lifestyle choices and physical fitness. The results show a mixed picture: while food vloggers on social media

didn't have a clear overall impact on general healthy habits and fitness, they did noticeably affect certain areas like health-related problems and eating behaviours. This means that watching food vloggers might encourage some unhealthy habits, such as more snacking or irregular meal times, which agrees with earlier studies warning about the possible downsides of uncontrolled food content online (36).

In contrast, the nutritional counselling program had a clear and significant positive effect on all areas measured, including eating habits, food choices, nutrient intake, physical fitness, and reducing health-related issues. The strong effect sizes suggest that personalized advice and well-structured programs can lead to real, lasting changes in behaviour and better overall health. These results support a wide range of research showing how effective nutritional counselling and educational efforts are in encouraging healthier lifestyles (37). Moreover, the greater progress seen among participants studying science and computer applications could be linked to their already higher health knowledge or a stronger openness to embracing healthy behaviours. This aligns with previous research highlighting the role education plays in influencing health habits. The study also emphasized that starting early is key, with younger participants showing greater improvements in their behaviours (38). This points to young adulthood as a crucial time for effective health interventions. This idea fits well with health development theories that view early years as essential for building habits that last a lifetime (39). Overall, the results indicate that while social media can affect lifestyle choices, targeted nutritional counselling plays a vital role in counteracting negative effects and supporting individuals in developing healthier habits and better fitness.

## CONCLUSION

In summary, this study provides robust evidence that structured nutritional counselling programmes significantly enhance healthy lifestyle behaviours and physical fitness among young adults. Although social media food vloggers do impact certain health-related issues, their overall influence on lifestyle and fitness remains relatively small. These findings highlight the value of carefully designed counselling programs that help people adopt better eating habits, stay more physically active, and improve their overall health. While the improvements across different educational backgrounds

show that these programs are effective for most people, customizing them could provide better support for those who benefit less. Most importantly, starting health education early and maintaining it consistently is crucial for lasting behaviour change. This research provides valuable insights for public health officials, educators, and policymakers working to create integrated strategies that blend digital media awareness with personalized health support to boost community health.

#### Abbreviation

FB: Facebook, IG: Instagram, ED: Eating Disorder, SM: Social Media, EH: Eating Habits, DI: Dietary Intake, PA: Physical Activity, NC: Nutrition Consumption, BA: Bachelor of Arts, BCom: Bachelor of Commerce, Administration and Management, BCA: Bachelor of Computer Applications, BSc: Bachelor of Science

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#### Author Contributions

Abirami S P: designed the study, performed field experiments, gathered data, analysed data, wrote the manuscript, Dr. Prabhavathy Devi: supervised the research, offered suggestions during the course of the research, critically reviewed the manuscript. Both authors have read and approved the final manuscript.

#### Conflict of Interest

The authors declare that there is no conflict of interest associated with this publication. They have no relevant financial or personal relationships that could have influenced the work reported in this paper. This study was conducted independently, and no external organization had a role in the design, execution, or publication of the findings.

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#### Ethics Approval

This study received ethical clearance from the Institutional Ethics Committee of Meenakshi Medical College Hospital and Research Institute, Kanchipuram, Tamil Nadu (IEC Ref. No: MMCH and RI IEC/PhD/02/JUNE/23) on 27th July 2023. All study procedures were conducted in accordance with the ethical guidelines laid out by the committee and adhered to the principles of the 1964 Helsinki Declaration, including its subsequent revisions. Before participating, students were clearly informed about the study's purpose, what their involvement would entail, and assured that their participation was entirely voluntary. They were also made aware of their right to withdraw from the study at any time, without any consequences. To ensure privacy, all responses were treated with strict confidentiality, and no identifying information was collected or disclosed. The data gathered were used solely for academic research and remained anonymous throughout the process.

#### AI Declaration

During the preparation of this work, the authors used AI-assisted tools only for formatting and improving grammar and readability. No content, data analysis, or results were generated by AI. The final responsibility for the manuscript lies entirely with the authors.

#### Data Availability

The datasets generated and analysed during the current study are available from the corresponding author on reasonable request.

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