DOI：https://doi.org/10.68249/aoshss.2026.0003

Article

Predictors and Intervention Implications of Weight Management KAP Among University Students in the Digital Age:A Survey from Zhejiang

Mengna Ye [1], Yiting Ma [2], Xiaoxue Wang [3],Wenmin Li [4] and Xiaoruo Ye[5]

[1] School of Education, Zhejiang Normal University, Jinhua, Zhejiang, China; 1733672573@qq.com
[2] School of Education, Zhejiang Normal University, Jinhua, Zhejiang, China; 3154224399@qq.com
[3] School of Computer Science and Technology, Zhejiang Normal University, Jinhua, Zhejiang, China; 2068132634@qq.com
[4] School of Education, Zhejiang Normal University, Jinhua, Zhejiang, China; 3438472668@qq.com
[5] School of Education, Zhejiang Normal University, Jinhua, Zhejiang, China; 1226673205@qq.com

Abstract: In the digital age,university students face dual challenges in weight management:information overload and the gap between knowledge and action.Guided by the Knowledge–Attitude–Practice(KAP)framework,this study surveyed 762 undergraduates from four universities in Zhejiang Province.Data were analyzed using hierarchical regression and the bootstrap method.Results showed that students'knowledge and attitudes toward weight management were moderately high,but their behavioral performance was significantly lower,indicating a pronounced knowledge–behavior gap.Attitude emerged as the core driver of behavior,and both frequency of digital device use and social support positively predicted weight management behaviors.In contrast,perceived information overload not only negatively predicted behaviors but also weakened the positive effect of attitude on behavior.Additionally,KAP scores differed significantly across gender,grade,major,and BMI groups.The findings suggest that the primary bottleneck lies in translating attitude into behavior,and that the digital environment exerts both empowering and interfering effects.Universities should implement differentiated interventions by strengthening nutrition education systems,innovating teaching models,optimizing digital support infrastructure,and enhancing peer support to bridge the knowledge–behavior gap.

Keywords: weight management; Knowledge–Attitude–Practice; digital age; information overload; university students

Academic Editor: Kenta Sato

Received: 2026.08.27
Revised: 2026.08.31
Accepted: 2026.09.05
Published: 2026.09.15

Copyright: ©2026 by the authors. Licensee TASP,HongKong. This article is an open access article distributed under the terms andconditions of the Creative CommonsAttribution (CC BY)license

1. Introduction

The steady advancement of the Healthy China initiative,as outlined in the Healthy China 2030 Planning Outline and the National Nutrition Plan,emphasizes the improvement of youth health literacy and the implementation of campus- based nutrition and health education.These policies advocate that schools at all levels should provide nutrition and health education and guide adolescents toward developing a scientific perception of weight.University students are at a critical stage of physical and mental development;they face high academic pressure and enjoy considerable personal autonomy,making this period crucial for the formation of personal health concepts and lifestyle habits.

With the rapid proliferation of digital media,short-video platforms and health-related mini-programs have become primary channels through which university students obtain weight management information.Digital tools have broadened access to health knowledge,but online information varies widely in quality.The sheer volume of fragmented content can easily lead to information overload,fostering misconceptions about weight and prompting irrational behaviors such as extreme dieting.Existing surveys indicate that although university students possess a certain level of health knowledge and hold positive attitudes toward weight management,they find it difficult to translate these into long-term,stable health practices[1–3].Knowledge,attitudes,and actual behavior often remain misaligned.

The Knowledge–Attitude–Practice(KAP)model is one of the most widely applied theoretical frameworks in health behavior research.The model posits that health behavior formation follows a progressive path:individuals first acquire scientific knowledge about a health issue;after internalizing this knowledge,they form positive or negative attitudes;and finally,these attitudes drive them to adopt or reject a certain health behavior[1].Owing to its clear structure and strong operability,the model has been extensively applied in investigations across nutrition and health,chronic disease prevention,infectious disease control,and other fields[2].In recent years,some scholars have also used KAP theory as an analytical framework to examine the formation mechanisms and optimization pathways of university students'health behaviors in the new media environment[3].

In the field of university student weight management,existing studies have revealed the basic contours of each KAP component.Regarding knowledge levels,students generally demonstrate a moderately high level of mastery of weight-management knowledge,but their grasp of in-depth knowledge—such as estimating food calories and understanding macronutrient functions—remains insufficient[4].In terms of attitudes,most students hold positive attitudes toward maintaining a healthy weight,with female students showing more positive attitudes than males[5].However,at the behavioral level,the phenomenon of"knowing but not doing"is widespread.Although students possess certain health knowledge and positive attitudes,their adherence to weight-management behaviors such as dietary control and regular exercise remains low[6].This knowledge–behavior gap constitutes the most prominent contradiction in the field of university student weight management[7].

The advent of the digital age has introduced new variables to this contradiction.The proliferation of mobile internet,wearable devices,and health-related applications has profoundly changed the ways university students obtain information and engage in health management practices[8].On the one hand,health apps and smart bracelets provide new tools for weight monitoring and management.Studies have found that the use of fitness apps is positively correlated with healthy lifestyles among university students[9];diet-tracking apps help users achieve weight loss or healthy eating goals by quantifying food calories[10].On the other hand,digital technologies also bring negative effects such as information overload.Surveys show that 78.6%of university students obtain weight-management information via the internet,and 41.3%of them perceive conflicting information[11].The popularity of social media and smartphones exposes students to a vast amount of health information;the excessive volume,diverse sources,and conflicting claims can easily trigger cognitive confusion and decision-making difficulties[12].In addition,social support has been confirmed as an important facilitating factor for university students'health behaviors,but in the digital age,the sources and forms of social support are also undergoing structural changes[13].

In summary,existing studies have the following shortcomings.First,research on university students'weight-management KAP has mostly focused on traditional environments and has not systematically incorporated digital-age characteristic variables such as digital device use and perceived information overload into the analytical framework[14].Second,discussions on each KAP component have been relatively independent,lacking an overall examination of how the knowledge–attitude–practice transmission pathway changes in the digital age.Third,there is a lack of large-sample empirical studies specifically targeting university students in Zhejiang Province.Therefore,this study takes students from multiple universities in Zhejiang Province as survey respondents,integrates the KAP model with digital-age variables,and systematically examines the current status and influencing factors of university students'weight-management KAP.

2. Materials and Methods

2.1. Research Design and Approach

This study follows a progressive research path:problem formulation,theoretical inquiry,empirical investigation,factor analysis,and conclusions with recommendations,aiming to investigate the current status of university students'weight-management KAP in the digital age,identify core influencing factors,and explore feasible optimization strategies.

2.2. Participants and Sampling

Full-time undergraduate university students from four universities in Zhejiang Province were taken as survey subjects,covering comprehensive,science-engineering,and medical/normal universities,and taking into account different grades,majors,and BMI levels.

Stratified cluster sampling was used:Step 1–stratification by university type(comprehensive,science-engineering,normal/medical);Step 2–randomly selecting 1–2 universities from each stratum,totaling 4 universities;Step 3–randomly selecting 2–4 classes from each university and conducting cluster surveys.

Considering a design effect(Deff=1.8)and 20%invalid questionnaires,we determined to distribute 860–960 questionnaires,with a target of 700–800 valid responses.

2.3. Survey Instrument

Based on literature review,expert consultation,and pre-survey testing,we developed the Questionnaire on University Students'Weight Management Knowledge,Attitude,and Practice in the Digital Age as a standardized survey tool.The Delphi method was adopted,inviting eight authoritative experts from the fields of public health,health education,and university student affairs.After two rounds of consultation and indicator screening,we finalized the three first-level dimensions of knowledge,attitude,and practice and their corresponding second-and third-level indicators.

The questionnaire consists of two parts:basic information and formal items.Basic information covers gender,grade,major,place of origin,BMI level,and use of digital health tools;formal items include three dimensions(knowledge,attitude,and practice),using a Likert five-point scale ranging from 1(completely disagree)to 5(completely agree).

We used a combination of paper and electronic questionnaires,strictly adhering to the principles of anonymity and informed consent to ensure data authenticity and validity.

2.4. Statistical Analysis

We used SPSS 26.0 and Amos 24.0 for data processing and analysis.

- Descriptive statistics:Frequencies,percentages,means,and standard deviations were calculated for demographic characteristics and KAP dimension scores.
- Difference analysis:Independent-samples t-tests and one-way ANOVA were used to compare KAP scores across gender,grade,major,and BMI groups.
- Hierarchical regression:Multiple linear regression with practice score as the dependent variable was conducted to screen core influencing factors.Variables were entered in three steps:(1)demographic controls,(2)KAP main effects(knowledge,attitude),and(3)digital environment variables(frequency of digital device use,perceived information overload,social support).
- Mediation and moderation:Using Amos,we constructed structural equation models and used the bias-corrected bootstrap method(5,000 resamples)to test the moderating role of perceived information overload on the attitude–practice relationship.

3. Results

3.1. Sample Characteristics

A total of 860 questionnaires were distributed.After excluding invalid ones,762 valid questionnaires were obtained,with an effective response rate greater than 88%.Among them,193 were males(25.33%)and 569 were females(74.67%);the majority were sophomores(45.67%);the predominant major category was humanities and social sciences(44.36%);442 had normal BMI(58.01%),131 were overweight(17.19%),109 were obese(14.30%),and 80 were underweight(10.50%).Details are shown in Table 1.

Table 1. Demographic characteristics of the survey sample (N= 762).

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	193	25.33
	Female	569	74.67
Grade	Freshman	132	17.32
	Sophomore	348	45.67
	Junior	146	19.16
	Senior	97	12.73
	Postgraduate	39	5.12
Major Category	Humanities & Social Sciences	338	44.36
	Science & Engineering	241	31.63
	Medical	85	11.15
	Physical Education	60	7.87
	Other	38	4.99
BMI Group	Underweight (<18.5)	80	10.50
	Normal (18.5–23.9)	442	58.01
	Overweight (24.0–27.9)	131	17.19
	Obese (≥28.0)	109	14.30

3.2. Overall KAP Levels and Gaps

Paired-sample t-tests were conducted to compare the scores of the three dimensions pairwise.The results showed that the mean difference between knowledge and attitude

was 0.21($p<0.05$);between attitude and practice was 0.64($p<0.001$);and between knowledge and practice was 0.43($p<0.001$).

Table 2. Distribution of scores on each dimension of university students'weight-management KAP(N=762).

Dimension	Mean±SD	Score rate(%)	High level n(%)	Medium level n(%)	Low level n(%)
Knowledge	3.47±0.52	69.40	145(19.03)	482(63.25)	135(17.72)
Attitude	3.26±0.58	65.20	98(12.86)	455(59.71)	209(27.43)
Practice	2.62±0.61	52.40	41(5.38)	284(37.27)	437(57.35)

Thus,university students'weight-management practice scores were significantly lower than their knowledge and attitude scores,indicating a pronounced"knowledge–behavior"gap within the population.Comparing the two mean differences,the attitude–practice gap(0.64)was larger than the knowledge–attitude gap(0.21),suggesting that the main bottleneck lies in the transition from positive attitude to actual behavioral implementation.

3.3. Difference Analysis of Demographic Variables

Independent-samples t-tests and one-way ANOVA were used to examine differences in KAP scores across genders,grades,major categories,and BMI groups.

Table 3. Gender differences in KAP scores (Mean ± SD).

Dimension	Male (n= 193)	Female (n= 569)	t	p
Knowledge	3.44±0.54	3.48±0.51	−0.87	0.384
Attitude	3.15±0.60	3.30±0.57	−3.02	0.003
Practice	2.51±0.63	2.66±0.60	−2.84	0.005

Table 4. ANOVA results by grade, major, and BMI (F-values).

Variable	Knowledge F	Attitude F	Practice F
Grade	3.27*	1.84	2.16
Major Category	2.93*	2.78*	1.62
BMI Group	5.42***	4.16**	3.85**

[1] *p<0.05,**p<0.01,***p<0.001.

The results indicated that gender significantly affected attitude and practice($p<0.05$);grade significantly affected knowledge($p<0.05$);major category significantly affected knowledge and attitude($p<0.05$);and BMI group significantly affected all three dimensions($p<0.05$).

3.4. Screening and Comparison of Core Influencing Factors

To identify the independent predictive effects of various variables on university students'weight-management behaviors,we constructed a hierarchical multiple linear regression model.Practice score was set as the dependent variable,and independent variables were entered in three steps:Step 1 demographic controls(gender,grade,major,BMI group);Step 2,KAP main effects(knowledge score,attitude score);Step 3 digital environment variables(frequency of digital device use,perceived information overload,social support).Results are shown in Table 5.

Table 5. Hierarchical multiple linear regression results.

Predictor	Model 1β	Model 2β	Model 3β

Step 1: Control variables			
Gender	0.112*	0.074	0.058
Grade	0.086*	0.053	0.041
Major(ref:Humanities)	0.065	0.042	0.033
BMI group(ref:Normal)	0.143**	0.097*	0.082*
Step 2:Main effects			
Knowledge		0.185**	0.146*
Attitude		0.321***	0.257***
Step 3:Digital variables			
Frequency of digital device use			0.125*
Perceived information overload			−0.173**
Social support			0.214***
Model fit			
R^2	0.058	0.164	0.247
ΔR^2	—	0.106	0.083
F-value	11.63***	24.81***	31.56***

[1]β=standardized regression coefficient;*p<0.05,**p<0.01,***p<0.001.

First,in Model 2,the standardized coefficient for attitude(β=0.321,p<0.001)was higher than that for knowledge(β=0.185,p<0.01),indicating that within the KAP chain,subjective health willingness has stronger predictive power for actual weight-management behaviors than does the level of health knowledge.

Second,in Model 3,the frequency of digital device use showed a significantly positive coefficient(β=0.125,p<0.05),confirming the empowering effect of digital tools;perceived information overload had a significantly negative coefficient(β=−0.173,p<0.01),indicating that overwhelming and conflicting online health information suppresses behavioral implementation;social support showed a significantly positive coefficient(β=0.214,p<0.001),confirming that external social support significantly facilitates university students'weight-management behaviors.

Third,the R^2 increased from 0.058 in Model 1 to 0.247 in Model 3,with each step's ΔR^2 being statistically significant(p<0.01).Over and above demographic and KAP variables,digital-age variables explained an additional 8.3% of the variance in weight-management behaviors.

3.5.Negative Moderating Effect of Information Overload

To test whether perceived information overload weakens the positive effect of attitude on practice,we constructed an interaction term between attitude and perceived information overload and conducted moderation analysis using the bootstrap method(5,000 resamples).Results are presented in Table 6.

Table 6. Moderating effect of perceived information overload on the attitude–practice relationship.

Predictor	β	SE	t	p
Attitude	0.251	0.044	5.705	<0.001
Perceived information overload	−0.164	0.039	−4.205	<0.001
Attitude × Overload	−0.160	0.045	−3.556	0.004

The moderation test showed that attitude positively predicted practice(β=0.251,p<0.001),perceived information overload negatively predicted

practice(β=-0.164,p<0.001),and their interaction was significant(β=-0.160,p<0.05),indicating a negative moderating effect.Simple slope analysis revealed that for the low-overload group,the slope of attitude on practice was 0.47(p<0.001),whereas for the high-overload group it was 0.22(p<0.01),and the facilitating effect of attitude on practice was considerably weaker under high overload.

Thus,perceived information overload is a significant trigger for the attitude-behavior disconnect.The excessive,conflicting,and heterogeneous online weight-management information causes cognitive confusion,making it difficult for students to translate positive attitudes into concrete actions,even when they hold strong intentions.This explains why the knowledge-behavior gap is particularly prominent in the digital age,as information overload exacerbates the difficulty of behavioral translation.

4. Discussion

This study,grounded in the Knowledge – Attitude – Practice(KAP)framework and augmented with digital-age contextual variables,provides a systematic empirical examination of the current status and determinants of weight-management behaviors among university students in Zhejiang Province.Several findings merit particular attention.

First,the pronounced knowledge – behavior discrepancy observed in this sample replicates and extends the well-documented " knowing – doing " gap reported in prior investigations[6,7].Critically,our results locate the primary point of attenuation not at the knowledge–attitude interface,but rather at the attitude–practice transition.This distinction carries important theoretical implications:it suggests that health knowledge and favorable attitudes,though necessary,are jointly insufficient to guarantee behavioral enactment.Effective interventions,therefore,must move beyond informational or motivational enhancement and instead address the specific cognitive,environmental,and volitional barriers that impede the conversion of intention into sustained action.

Second,the findings corroborate the dual-edged nature of the digital environment in shaping health behaviors.Consistent with earlier work highlighting the salutary effects of fitness applications and online health resources[9,10],frequent engagement with digital devices emerged as a positive predictor of weight-management practices.However,perceived information overload not only exerted a direct negative effect on behavioral performance but,more critically,attenuated the facilitative influence of attitude on practice.This moderating mechanism offers a novel explanatory pathway for the attitude – behavior gap in the digital era:exposure to an excessive volume of conflicting,low-quality,or otherwise unverified health information depletes cognitive resources,thereby undermining individuals'capacity to translate positive dispositions into consistent behavioral routines.In doing so,our analysis provides empirical support for and extends the theoretical frameworks advanced by Willmott et al.[12]and Zhang et al.[11],by explicitly modeling the interactive relationship between information overload and attitudinal efficacy.

Third,the robust predictive effect of social support reaffirms the critical role of interpersonal and institutional facilitators in health maintenance.Peer monitoring,family counsel,and campus-led wellness initiatives appear to function as both motivational catalysts and practical enablers,reinforcing adherence to dietary and exercise regimens.This observation is consistent with the narrative synthesis offered by Bajpai et al.[13],which underscores the importance of relational dynamics in the success of digital health interventions.

Fourth,the observed heterogeneity across gender,grade,major,and BMI strata underscores the imperative for differentiated intervention strategies.Of particular

note,overweight and obese participants demonstrated heightened subjective concern regarding body weight,yet concurrently exhibited greater susceptibility to distorted weight perceptions and ill-informed weight-loss behaviors.This pattern suggests that educational programming should not only prioritize high-risk populations but also actively redress prevailing misconceptions about healthy weight standards.

Collectively,these findings indicate that effective weight-management interventions in the digital age must pursue a multi-pronged approach:harnessing the empowering potential of digital tools,counteracting the deleterious effects of information overload,fortifying social support infrastructures,and tailoring strategies to the distinctive profiles of diverse student subgroups.

5. Conclusions

Based on the empirical findings, this study draws the following conclusions and recommendations.

University students in Zhejiang Province exhibit a significant knowledge–behavior gap in weight management, with the primary bottleneck located in the attitude–practice transition. The digital environment exerts both empowering effects (via digital tools) and interfering effects (via information overload), with the latter significantly weakening the positive impact of attitude on behavior. Social support serves as a crucial facilitating factor, while demographic characteristics (gender, grade, major, BMI) are associated with notable differences in KAP scores.

To bridge the knowledge–behavior gap, we propose the following strategies:

1. Strengthening university nutrition education systems:Universities should establish on - campus official weight - management information service platforms to systematically integrate,screen,and disseminate authoritative dietary and exercise guidance,thereby counteracting misleading online content and reducing information overload.
2. Improving the digital support infrastructure:Health app developers should introduce a“campus mode”that tailors dietary plans and exercise guidance to the realities of student life(e.g.,canteen dining,dormitory workouts),lowering the behavioral implementation threshold.
3. Innovating teaching models:Shift from one-way theoretical instruction to practical projects such as check-in challenges and dietary experience camps.Differentiated teaching should be implemented based on students ’ gender,grade,and BMI characteristics,while correcting extreme dieting and blind adherence to online weight -loss fads.
4. Enhancing self - assessment and peer support:Establish a dual - dimensional evaluation logic of“cognitive literacy+behavioral practice,”encouraging students to use digital tools rationally and form peer support communities for mutual supervision and positive reinforcement.

These recommendations provide actionable references for university health education and youth health promotion under the Healthy Zhejiang initiative.

Author Contributions: Conceptualization, M.Y. (Mengna Ye) and X.Y. (Xiaoruo Ye); methodology, Y.M. (Yiting Ma) and X.W. (Xiaoxue Wang); software, W.L. (Wenmin Li); validation, M.Y., Y.M., X.W. and W.L.; formal analysis, X.W.; investigation, M.Y., Y.M., X.W., W.L. and X.Y.; data curation, X.W.; writing—original draft preparation, M.Y. and Y.M.; writing—review and editing, X.Y.; supervision, X.Y.; project administration, M.Y.; funding acquisition, X.Y. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the National Undergraduate Training Program on Innovation and Entrepreneurship(grant number 202610345037).The project title is"Qingqing Zijin:Feasibility and Optimization Strategies of a Multimodal Large Model-Driven Weight Management Model in Universities."

Abbreviations

The following abbreviations are used in this manuscript:

KAP	Knowledge–Attitude–Practice
BMI	Body Mass Index

References

1. Li, S. Q. (2019). Research on the optimisation of university students' health behaviours from the perspective of "Knowledge-Attitude-Practice". Caixie Bian, (4), 168-171.
2. Chen, J. Q. (2019). The impact of new media communication on university students' behaviours: Taking health information as an example. Caixie Bian, (4), 175-177.
3. Wei, Y. Y. (2024). The influence of media technology on university students' mental health. China Press Industry, (20), 150-151.
4. Qiu, L. F., & Xiao, S. (2018). Correlation between nutritional knowledge, attitude, practice and body mass index among university students in Henan. Chinese Journal of School Health, *39*(8), 1144-1146+1149. doi:10.16835/j.cnki.1000-9817.2018.08.007
5. Chen, H. F., & Huang, X. (2025). Analysis of self-weight management effects and influencing factors among university students of different genders in a Guizhou university. In Proceedings of the 17th National Nutrition Science Conference (p. 90). Chinese Nutrition Society.
6. Lyu, H. (2025). Survey on weight management practices and health awareness among university students. In Proceedings of the 17th National Nutrition Science Conference (p. 247). Chinese Nutrition Society.
7. Tang, L., He, K. H., & Yuan, S. R. (2025). Study on cognitive behaviour and health promotion pathways of weight management among young students in Zhaotong City. In Proceedings of the 2025 Weight Management Forum (Abstracts) – Poster Exchange (pp. 55-56). Shaanxi Sports Science Society et al.
8. Tu, J., & Zhang, C. (2023). "Recreating anxiety": Dietary management and bodily practices among youth groups under the embedding of digital technology. Fujian Tribune (Humanities and Social Sciences Edition), (9), 132-148.
9. Ma, G. B., Shi, Y. L., Ju, H. X., et al. (2024). Usage of mobile fitness apps among university students and its relationship with healthy lifestyles. Chinese Journal of School Health, *45*(8), 1131-1135.
10. Li, K. Y., & Wang, H. (2023). Calorie traps: Self-tracking practices in diet recording applications. Youth Journalist, (18), 67-70.
11. Zhang, L., Li, J. H., Kong, X., et al. (2017). Effects of psychosocial factors on dietary behaviours and BMI among medical students in Changchun. Medicine and Society, *30*(11), 33-36. doi:10.13723/j.yxysh.2017.11.010
12. Willmott, T. J., Pang, B., Rundle-Thiele, S., et al. (2019). Weight management in young adults: Systematic review of electronic health intervention components and outcomes. Journal of Medical Internet Research,*21*(2), e10265. doi:10.2196/10265
13. Bajpai, S., Kashyap, N., & Singh, S. (2025). The role of digital and wearable based exercise programme in weight management and cardiorespiratory fitness in college students: A narrative review. Journal of Clinical and Diagnostic Research,*19*(3), 1-6.
14. Liu, X., Liu, T., Chen, T., & Ma, R. (2026). Efficacy of a digital peer support program on weight management and mental health in university students with preobesity: Randomized controlled trial. JMIR mHealth and uHealth, *14*, e78960. doi:10.2196/78960

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of TSAP and/or the editor(s). TSAP and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.