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Development Of Weight Management Model Using Application For Obese Undergraduate Students In The Western Group Of Rajabhat Universities

Yasamon Latainin[1*], Pornsuk Hunnirun[2]
[1]Ph.D. Student, Doctor of Philosophy in Public Health Program, Western University, Pathum Thani, Thailand, latainiya@gmail.com
[2]Associate Professor, Ph.D., Doctor of Philosophy in Public Health Program, Western University, Pathum Thani, Thailand, pornsuk1955@gmail.com

Abstract
This study aimed to develop a sustainable weight management model using mobile applications for obese undergraduate students in the Western Rajabhat University Group. The research was conducted in three phases. Phase 1 assessed the causes of obesity (n = 184) through questionnaires and interviews. Phase 2 involved developing and implementing the "SHARED Model for Sustainable Weight Management," which was designed based on Phase 1 findings and incorporated intermittent fasting, Bandura's self-regulation theory, and the Technology Acceptance Model (TAM). The intervention employed MyFitnessPal, Google Fit, and Daylio across six structured activities. The model was tested in an eight-week intervention with experimental and control groups (n = 40 each), followed by an evaluation at Week 10. Data were analyzed using repeated measures ANOVA and descriptive statistics. Results indicated that the experimental group achieved significantly higher mean scores ($p < .01$) in obesity-related knowledge, self-regulation in weight control, and health behaviors related to weight control compared to the control group. Additionally, waist circumference in the experimental group decreased significantly more than in the control group ($p < .01$). Within-group analysis further revealed that, in the experimental group, obesity-related knowledge, self-regulation in weight control, and health behaviors in weight control increased significantly ($p < .01$), while body weight, waist circumference, and body fat percentage decreased significantly compared to pre-intervention values. Phase 3 assessed participant satisfaction (n = 40). Overall, participants reported high satisfaction with the SHARED Model (M = 4.19, SD = 0.46).

Keywords: *Weight Management Model, Knowledge of Obesity and Weight Management, Self-Regulation in Weight Control, Health Behaviors in Weight Control*

INTRODUCTION

The World Health Organization (WHO, 2023) defines obesity as a condition characterized by excessive fat accumulation in various parts of the body to the extent that it poses a health risk or becomes a direct cause of disease, leading to premature mortality. Obesity is a global public health problem. According to the WHO (2016), at least 650 million adults aged 18 years and older (18%) were obese. Obesity among adolescents and university students has become an increasingly serious health concern worldwide, particularly over the past two decades. Obesity not only affects physical health but is also associated with mental health, self-confidence, and overall quality of life. Moreover, it is a major risk factor for non-communicable diseases (NCDs) such as diabetes, hypertension, heart disease, and depression, which may adversely affect students' academic performance, social participation, and future employment opportunities (WHO, 2023). The Western Rajabhat University Group consists of Phetchaburi Rajabhat University, Muban Chombueng Rajabhat University, Nakhon Pathom Rajabhat University, and Kanchanaburi Rajabhat University. A study conducted by Latainin et al. (2024) on obesity among students at Muban Chombueng Rajabhat University revealed that 12.4% of students were obese, including 9.6% with class I obesity and 2.8% with class II obesity. Identified risk factors included dietary behaviors, exercise habits, and emotional regulation, as well as limitations in university health policies and support systems. Although universities provide general health promotion activities such as sports events, marathons, and athletic clubs, targeted interventions for obese students remain lacking. In addition, there is no effective health monitoring system or sustained use of technology to support student weight management. Weight management among university students therefore requires more than dietary control or exercise; it demands systematic behavioral modification, particularly through self-regulation. Self-regulation, defined as the process by which individuals observe themselves, set goals, and

evaluate their actions, plays a critical role in sustainable health behavior change (Bandura, 1986). This process is especially relevant for adolescents and young adults, who seek independence in decision-making and are highly responsive to external motivation. Furthermore, the Technology Acceptance Model (TAM) provides an essential framework for explaining health application usage behaviors among adolescents, emphasizing perceived ease of use and perceived usefulness, which in turn influence the intention to engage in continued use (Davis et al., 1989). Health applications such as MyFitnessPal, which records food intake and calculates calories, Google Fit, which tracks daily steps, and Daylio, which monitors mood, have strong potential in supporting weight management. These tools allow users to continuously record dietary behaviors, physical activity, and emotional regulation with privacy and in real time. This aligns with the lifestyles of university students, who are generally technology-savvy and seek convenience in health management (Wisapha et al., 2020). Therefore, the researcher sought to develop a weight management model by applying mobile health applications among obese students in the Western Rajabhat University Group. The intervention incorporated three commercial applications MyFitnessPal, Google Fit, and Daylio together with health communication through the LINE application, infographics, and video clips. It was expected that this model would lead to weight reduction, improved health outcomes among obese students, and contribute to their development into adults with a higher quality of life.

OBJECTIVES

1. To diagnose the problems and causes of obesity among undergraduate students in the Western Rajabhat University Group.
2. To develop and implement a weight management model using mobile applications for obese undergraduate students in the Western Rajabhat University Group.
3. To evaluate the effectiveness of the weight management model using mobile applications for obese undergraduate students in the Western Rajabhat University Group.

METHODOLOGY

This study employed a mixed-methods design based on a research and development (R&D) approach, which was divided into three phases. **Phase 1: Diagnosis of Problems and Causes.** This phase aimed to diagnose the problems and causes of obesity among undergraduate students in the Western Rajabhat University Group. Data were collected at Phetchaburi Rajabhat University and Kanchanaburi Rajabhat University. Participants consisted of three groups: 1.1) Obese students: A purposive sample of 184 obese students was selected. 1.2) University administrators: A purposive sample of 11 participants, including vice presidents for student affairs, deans, and directors of student affairs divisions. 1.3) Student representatives: A purposive sample of student leaders from seven faculties who were elected to manage student union activities. **Phase 2: Development and Implementation of the Weight Management Model.** This phase focused on developing and piloting a weight management model using mobile applications. Participants included: 2.1) Obese students (perceived usefulness and ease of use): A purposive sample of 5 students from Muban Chombueng Rajabhat University provided data on their perceptions of the usefulness and ease of use of weight management applications. 2.2) Experimental group: A purposive sample of 40 obese students from Muban Chombueng Rajabhat University, who participated in the implementation and evaluation of the developed weight management model. 2.3) Control group: A purposive sample of 40 obese students from Nakhon Pathom Rajabhat University, who continued their usual lifestyle without intervention. Phase 3: Evaluation of the Weight Management Model. The evaluation was conducted with the same 40 experimental group participants from Phase 2, who assessed the weight management model after the intervention.

Research Instruments. Phase 1, In-depth interview guidelines for university administrators. In-depth interview guidelines for student representatives. A structured questionnaire on the development of a weight management model using mobile applications, consisting of five parts: 1) Personal information (9 items). 2) Knowledge test on obesity and weight management (15 items). Scoring was based on Bloom's (1971) criteria: low (0.00–0.33), moderate (0.34–0.67), and high (0.68–1.00). 3) Self-regulation in weight control (30 items) divided into three domains: diet (10 items), exercise (10 items), and emotion regulation (10 items). Scoring followed Best (1977): low (0.00–1.33), moderate (1.34–2.67), and high (2.68–4.00). 4) Health behaviors in weight control (based on Best, 1977), categorized into low (0.00–1.33), moderate

(1.34–2.67), and high (2.68–4.00). 5) Record form for body weight, height, waist circumference, and body fat percentage. Phase 2, 1) In-depth interviews with obese students regarding their perceptions of usefulness and ease of use of mobile applications for weight management. 2) Draft model development: Findings from Phases 1 and 2 were synthesized with related theories and research, after which the draft model was reviewed by five experts for content validity, consistency, and feasibility. 3) Model implementation: The experimental and control groups (40 students each) were assessed at baseline, post-intervention (Week 8), and follow-up (Week 10). Phase 3, 1) Satisfaction questionnaire for the experimental group after participating in the intervention. Scoring was adapted from Silawong (2022): very low (1.00–1.49), low (1.50–2.49), moderate (2.50–3.49), high (3.50–4.49), and very high (4.50–5.00).
Ethical Considerations. The study was reviewed and approved by the Human Research Ethics Committee of Western University (Approval No. WTU 2567-0083).
Data Analysis. Qualitative data: In-depth interview transcripts were analyzed using content analysis and thematic analysis, with coding, grouping of similar content, and identification of recurring themes or patterns. Results were presented descriptively. Quantitative data: Differences between groups were analyzed using Repeated Measures ANOVA. Within-group differences were also tested using Repeated Measures ANOVA, with Bonferroni correction for pairwise comparisons.

RESULTS

Phase 1: Diagnosis of Problems and Causes of Obesity among Students. Quantitative findings, revealed that among the 184 participants, the majority were female (67.9%), with an average age of 19.95 years. Most were first-year students (38.0%), resided in dormitories (65.2%), and reported sufficient monthly income (55.4%). The majority did not smoke (91.8%) and did not consume alcohol (78.3%). Knowledge regarding obesity and weight management was at a moderate level ($\bar{x} = 0.48 \pm 0.09$). Most students answered incorrectly on critical issues, such as food classification based on the traffic-light system, effective exercise methods for weight reduction, and strategies for self-regulated emotion management. Self-regulation in weight control was also at a moderate level ($\bar{x} = 1.51 \pm 0.47$). Items with low average scores included the failure to record exercise activities, inability to manage stress according to set goals, and failure to use applications or tools to monitor stress. Health behaviors related to weight control were likewise at a moderate level ($\bar{x} = 1.97 \pm 0.27$). Low-scoring behaviors included lack of regular exercise for at least 30 minutes per session, frequent consumption of fried foods, and regular intake of sugar-sweetened beverages. Qualitative findings from in-depth interviews with 11 university administrators and seven student union leaders indicated several key challenges: the absence of specific obesity management policies, limited health communication channels, and exercise participation concentrated within a small, recurring group of students already engaged in physical activity. Overall student motivation for health-related behaviors was low, and existing health promotion programs were generally designed for the broader student population rather than for those with obesity. Students suggested integrating mobile technology or applications to support obesity and weight management, designing individualized weight loss programs, and applying reward systems to enhance engagement in health activities. Proposed model development based on these findings emphasized a comprehensive weight management framework that incorporated body mass index (BMI) assessment, mobile application use, motivation and support via LINE, and online counseling. The model was intended to address current gaps and promote sustainable behavioral change among students. Phase 2: Development and Implementation of the Weight Management Model Using Mobile Applications. 2.1) Perceptions of usefulness and ease of use: Interviews with five obese students revealed positive attitudes toward the applications *MyFitnessPal*, *Google Fit*, and *Daylio*. Students reported that these apps were user-friendly, convenient, private, and provided timely feedback consistent with their lifestyles, making them effective tools for supporting health behavior change. 2.2) Development of the SHARED Model for Sustainable Weight Management: The SHARED model was developed through two stages: 1) Construction and refinement, based on quantitative and qualitative results from Phase 1, focusing on three core components: (a) knowledge about obesity and weight management, (b) self-regulation in weight control, and (c) health behaviors related to weight management. 2) Expert validation, in which five specialists evaluated the model's appropriateness and feasibility, leading to refinements to ensure applicability for the target population. Six structured activities were designed under the SHARED framework: S = Start with awareness: Building awareness of obesity and nutrition, including setting dietary behavior goals. H

= Health in motion: Promoting exercise behaviors to increase energy expenditure. A = Attune emotions: Developing understanding and skills in emotional regulation related to health behaviors. R = Reflect and revise: Evaluating outcomes against goals and revising weight management plans. E = Exchange experiences: Encouraging peer sharing and learning to strengthen social support. D = Declare success: Affirming achieved outcomes and celebrating success to enhance long-term motivation. These activities were integrated with the use of the three mobile applications. 1) Experimental implementation: A total of 80 participants were recruited, divided into an experimental group (n = 40) and a control group (n = 40). Health outcomes were assessed at baseline, after 8 weeks of intervention, and at a 10-week follow-up. Findings included, Knowledge of obesity and weight management: The experimental group's mean score increased from 7.40 to 10.83, and remained at 10.60, while the control group decreased to 6.93. Self-regulation in weight control: The experimental group increased from 46.13 to 68.88, sustaining at 65.85, whereas the control group showed no significant change. Health behaviors in weight control: The experimental group improved from 58.90 to 75.33, maintaining 74.60, with minimal change in the control group. Body weight: The experimental group's average weight decreased from 84.93 kg to 79.37 kg and 78.92 kg, whereas the control group gained weight. Waist circumference: The experimental group decreased from 96.73 cm to 88.62 cm and 88.20 cm, while the control group increased. Body fat percentage: The experimental group decreased from 53.71% to 51.24% and 50.98%, whereas the control group's percentage increased. (Table 1 presents detailed statistical results.) Table 2. Repeated measures ANOVA comparing the mean scores of obesity-related knowledge, self-regulation, and health behaviors in weight control between groups demonstrated a significant main effect of the intervention. Statistically significant differences were found between the experimental and control groups in terms of knowledge about obesity, self-regulation, and health behaviors related to weight control at the $p < .01$ level.

For health indicators, including body weight, waist circumference, and body fat percentage, results also revealed a significant main effect of the intervention. Specifically, a significant difference was observed in waist circumference between the experimental and control groups ($p < .01$). However, no statistically significant differences were found between groups for body weight and body fat percentage. Nonetheless, the analysis across time and the main effect of the intervention indicated a downward trend in body weight and body fat percentage among participants in the experimental group, while participants in the control group exhibited a continuous upward trend.

Table 3. Within-group comparisons further indicated the following: 1) After the intervention at Week 8 and during the follow-up at Week 10, participants in the experimental group exhibited significantly greater improvements in obesity-related knowledge and weight management, self-regulation in weight control, health behaviors in weight control, and health indicators (i.e., body weight, waist circumference, and body fat percentage) compared to pre-intervention levels ($p < .01$). 2) At the follow-up stage (Week 10), the experimental group showed significantly lower mean scores for health indicators compared to post-intervention outcomes at Week 8 ($p < .01$).

Table 1: Mean and SD of Knowledge of Obesity and Weight Management, Self-Regulation in Weight Control, Health Behaviors in Weight Control, Body Weight, Waist Circumference, and Body Fat (%): Experimental (n=40) vs. Control Groups (n=40) at Baseline, Post-intervention (Week 8), and Follow-Up (Week 10)

Variable	Group	Baseline $\bar{x}$±SD	Post-intervention (Week 8) $\bar{x}$± SD	Follow-Up (Week 10) $\bar{x}$± SD
1. Knowledge of Obesity and Weight Management	Experimental	7.40±1.35	10.83±1.55	10.60±1.48
	Control	7.30±1.44	7.43±1.26	6.93±1.23
2. Self-Regulation in Weight Control	Experimental	46.13±15.80	68.88±14.04	65.85±13.23
	Control	45.73±12.31	44.65±11.23	45.15±13.24
3. Health Behaviors in Weight Control	Experimental	58.90±8.62	75.33±7.37	74.60±7.58
	Control	58.43±10.09	57.60±7.14	59.93±7.30

Variable	Group	Baseline $\bar{x}$±SD	Post-intervention (Week 8) $\bar{x}$± SD	Follow-Up (Week 10) $\bar{x}$± SD
4. Body Weight (kg)	Experimental	84.93 ± 6.42	79.37 ± 6.23	78.92 ± 6.20
	Control	84.76 ± 6.38	85.03 ± 6.44	85.15 ± 6.49
5. Waist Circumference (cm)	Experimental	96.73 ± 5.78	88.62 ± 5.35	88.20 ± 5.22
	Control	96.69 ± 5.81	97.10 ± 5.85	97.31 ± 5.88
6. Body Fat Percentage (%)	Experimental	53.71 ± 3.45	51.24 ± 3.26	50.98 ± 3.21
	Control	53.62 ± 3.42	54.01 ± 3.49	54.25 ± 3.55

Table 2: Repeated Measures ANOVA of Knowledge of Obesity and Weight Management, Self-Regulation in Weight Control, Health Behaviors, Body Weight, Waist Circumference, and Body Fat Percentage in the Experimental (n=40) and Control Groups (n=40) at Baseline, Post-intervention (Week 8), and Follow-up (Week 10

Dependent Variable	Between Groups F(df)	*p*-value	Time Effect F(df)	*p*-value	Interaction Effect F(df)	*p*-value
Knowledge of Obesity	F(1,78) = 221.32[a]	< .01 *	F(2,156) = 33.17[a]	< .01 *	F(2,156) = 37.31[a]	< .01 *
Self-Regulation in Weight Control	F(1,78) = 94.91[a]	< .01 *	F(2,156) = 14.29[a]	< .01 *	F(2,156) = 16.83[a]	< .01 *
Health Behaviors in Weight Control	F(1,78) = 100.06[a]	< .01 *	F(2,156) = 29.12[a]	< .01 *	F(2,156) = 27.34[a]	< .01 *
Body Weight	F(1,78) = 0.67[b]	0.42	F(1.31,101.82) = 641.99[b]	< .01 *	F(1.31,101.82) = 2002.35[b]	< .01 *
Waist Circumference	F(1,78) = 221.32[b]	< .01 *	F(1.39,108.19) = 593.73[b]	< .01 *	F(1.39,108.19) = 1865.15[b]	< .01 *
Body Fat Percentage	F(1,78) = 0.02[b]	0.88	F(1.18,92.13) = 420.34[b]	< .01 *	F(1.18,92.13) = 1280.75[b]	< .01 *

Notes: [a] Values based on Sphericity Assumed [b] Values based on Greenhouse-Geisser correction, Statistical significance at p < .01

Table 3: Pairwise comparisons of mean scores in the experimental group (n = 40) for Knowledge of Obesity and Weight Management, Self-Regulation in Weight Control, Health Behaviors in Weight Control, Body Weight, Waist Circumference, and Body Fat Percentage across three time points: pre-intervention, post-intervention (week 8), and follow-up (week 10), analyzed using Bonferroni adjustment.

Variable	Time	MD	p-value
1. Knowledge of Obesity	Baseline vs Post-intervention (Week 8)	-1.78	< 0.01*
	Baseline vs Follow-up (Week 10)	-1.41	< 0.01*
	Post-intervention (Week 8) vs Follow-up (Week 10)	0.36	0.35
	Baseline vs Post-intervention (Week 8)	-10.84	< 0.01*

Variable	Time	MD	p-value
2. Self-Regulation in Weight Control	Baseline vs Follow-up (Week 10)	-9.58	< 0.01*
	Post-intervention (Week 8) vs Follow-up (Week 10)	1.26	1.00
3. Health Behaviors in Weight Control	Baseline vs Post-intervention (Week 8)	-7.80	< 0.01*
	Baseline vs Follow-up (Week 10)	-8.60	< 0.01*
	Post-intervention (Week 8) vs Follow-up (Week 10)	-0.80	1.00
4. Body Weight (kg)	Baseline vs Post-intervention (Week 8)	1.77	< 0.01*
	Baseline vs Follow-up (Week 10)	1.97	< 0.01*
	Post-intervention (Week 8) vs Follow-up (Week 10)	0.20	< 0.01*
5. Waist Circumference (cm)	Baseline vs Post-intervention (Week 8)	2.56	< 0.01*
	Baseline vs Follow-up (Week 10)	2.86	< 0.01*
	Post-intervention (Week 8) vs Follow-up (Week 10)	0.30	< 0.01*
6. Body Fat Percentage (%)	Baseline vs Post-intervention (Week 8)	0.79	< 0.01*
	Baseline vs Follow-up (Week 10)	0.88	< 0.01*
	Post-intervention (Week 8) vs Follow-up (Week 10)	0.09	< 0.01*

*p-value<0.01, MD = Mean difference

Phase 3: Evaluation of the Weight Management Model. The evaluation of the weight management model using mobile applications among obese undergraduate students in the Western Rajabhat University Group indicated that participants reported a high level of satisfaction overall ($\bar{x}$ = 4.19, SD = 0.46). When examining individual items, the highest mean score was found for the statement that "the teaching materials used in the activities were appropriate and easy to understand" ($\bar{x}$ = 4.53, SD = 0.51). This was followed by "the content was interesting" ($\bar{x}$ = 4.28, SD = 0.72) and "the duration of each activity was appropriate" ($\bar{x}$ = 4.28, SD = 0.72). The lowest mean score was associated with the item "this model meets the weight loss needs of students" ($\bar{x}$ = 4.05, SD = 0.64). Overall, the results reflected that the implemented model was well-received by students. Furthermore, the findings suggest opportunities for further refinement of the model to enhance its flexibility and to strengthen self-directed learning at a deeper level.

CONCLUSIONS

Phase 1: Diagnosis of Problems and Causes of Obesity among Undergraduate Students in the Western Rajabhat University Group. Quantitative findings indicated that obese students demonstrated moderate levels of knowledge regarding obesity and weight management, self-regulation in weight control, and health behaviors related to diet, exercise, and emotional regulation. Common problems included inaccurate knowledge, unclear goal setting, and the lack of technology use for behavioral monitoring, which collectively reduced the effectiveness of weight management efforts. Qualitative findings from in-depth interviews with university administrators and student representatives revealed structural and policy limitations, such as the absence of obesity-specific policies, inadequate health monitoring systems, insufficient motivational strategies, and health communication efforts that were not well aligned with students' needs or interests. These findings underscore the necessity of developing a comprehensive weight management model that integrates scientific knowledge, behavioral change strategies, and digital technologies, while being supported by policy innovation, student participation, and motivational approaches to promote sustainable outcomes. This is consistent with previous research: Chumkiew et al. (2019) demonstrated that dietary behavior modification programs significantly improved nutritional knowledge and reduced weight; Wuttijureepan et al. (2019) highlighted the role of electronic communication in enhancing motivation; Thapyoo (2022) confirmed the importance of self-regulation and social support; Hunnirun (2023) emphasized the role of

user acceptance in digital health applications through the Technology Acceptance Model (TAM); and Wisapha et al. (2020) showed the impact of LINE and other digital tools on promoting behavioral change. Phase 2: Development and Implementation of the SHARED Model for Sustainable Weight Management. The SHARED Model for Sustainable Weight Management was developed for obese undergraduate students in the Western Rajabhat University Group, integrating six behavioral activities grounded in Bandura's (1986) self-regulation theory, intermittent fasting (IF), and the Technology Acceptance Model (TAM). Each component of SHARED played a unique role in promoting behavioral change: 1) Start with Awareness: Promoted self-monitoring and nutritional literacy. Participants assessed risk factors for obesity using BMI and body fat percentage, recorded food intake via *MyFitnessPal*, and learned to categorize food using the traffic-light system. 2) Health in Motion: Focused on setting exercise goals, such as walking at least 5,000 steps per day, scheduled during fasting windows (14 hours after meals, typically at 7–8 a.m.) to stimulate fat metabolism, with real-time monitoring through *Google Fit*. 3) Attune Emotions: Addressed emotional triggers of eating through mood tracking with *Daylio Journal*, helping participants identify stress-related overeating patterns. 4) Reflect and Revise: Encouraged decision-making by comparing behavioral data (e.g., calorie intake, step counts) against daily goals to establish a cycle of evaluation, adjustment, and reinforcement. 5) Exchange Experiences: Leveraged LINE groups for social support, peer interaction, and motivation, which enhanced self-efficacy and maintained engagement during challenges. 6) Declare Success: Facilitated reflection on achievements and goal resetting to reinforce ownership, success, and continuity beyond the program. The model also integrated essential health strategies: 1) Dietary foundation: Promoting fiber-rich foods such as vegetables, fruits, nuts, and whole grains to reduce hunger, accelerate metabolism, and decrease inflammation associated with fat accumulation. 2) Intermittent fasting (14/10 protocol): Encouraging food consumption within a 10-hour window and fasting for 14 hours to promote fat utilization, contributing to reductions in waist circumference and body fat percentage. 3) Hormonal regulation: Reducing sugar and processed food intake to regulate ghrelin (hunger hormone) and enhance leptin (satiety hormone) through high-fiber, anti-inflammatory foods. 4) Daily health applications: Using *MyFitnessPal*, *Google Fit*, and *Daylio* for self-monitoring, feedback, and continuous goal setting. Statistical analysis revealed that the experimental group showed significant improvements in knowledge, self-regulation, and health behaviors related to weight control, alongside reductions in body weight, waist circumference, and body fat percentage. These results persisted during the follow-up phase, indicating sustainability. Findings align with Thapyoo (2022), who applied Bandura's framework to abdominally obese participants and found significant improvements in health behaviors and BMI reduction ($p < .05$). Similarly, Wuttijureepan et al. (2019) reported that electronic communication strategies enhanced motivation, resulting in significant reductions in weight, waist circumference, and BMI among nursing students ($p < .05$). Lertprasertkit (2021) also demonstrated that an 8-hour eating window under IF protocols produced significant reductions in weight, BMI, and body fat percentage within eight weeks. Phase 3: Evaluation of the Weight Management Model. Evaluation findings showed that the experimental group reported a high level of satisfaction with the mobile application–based weight management model ($\bar{x} = 4.19$, SD = 0.46). The highest-rated item was that *"the teaching materials used in the activities were appropriate and easy to understand"* ($\bar{x} = 4.53$, SD = 0.51). This was followed by *"the content was interesting"* ($\bar{x} = 4.28$, SD = 0.72) and *"the duration of each activity was appropriate"* ($\bar{x} = 4.28$, SD = 0.72). The lowest-rated item was *"the model met the students' weight loss needs"* ($\bar{x} = 4.05$, SD = 0.64). These results suggest that the model successfully addressed participants' needs in terms of content, methods, and instructional media. Moreover, the findings reflect contemporary approaches to health education, which emphasize self-directed learning supported by technology. This is consistent with Wisapha et al. (2020), who found that mobile applications were effective in promoting health behaviors among adolescents and significantly contributed to weight reduction.

RECOMMENDATIONS

Recommendations for Implementation

1. Educational institutions should be encouraged to adopt the weight management model developed in this study as a systematic framework for promoting student health.
2. University units, such as campus health centers, should implement the program on a continuous basis, incorporating long-term follow-up to foster sustainable health behaviors.
3. Personnel involved in student health promotion should be trained to provide health counseling by integrating self-regulation theory with the use of mHealth technologies.

Recommendations for Future Research

1. Future studies should further develop the weight management model by integrating gamification elements such as point systems, digital rewards, or leaderboards into mobile health applications. These

features could enhance adolescents' motivation, engagement, and consistency in adopting long-term health behavior change.

2. Research should also examine the sustainability of the SHARED Model by emphasizing shared understanding among developers, users, and health counselors. This includes ensuring clear communication, collaborative goal-setting, and effective evaluation to strengthen the model's long-term impact.

REFERENCES

- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.
- Best, J. W. (1977). *Research in education* (3rd ed.). Prentice-Hall.
- Bloom, B. S. (1971). *Handbook on formative and summative evaluation of student learning*. McGraw-Hill.
- Chumkiew, P., et al. (2019). Effectiveness of dietary behavior modification programs in improving nutritional knowledge and reducing obesity among Thai university students. *Journal of Nutrition and Health Sciences, 7*(2), 45–53.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science, 35*(8), 982–1003. https://doi.org/10.1287/mnsc.35.8.982
- Hunnirun, P. (2023). User acceptance of digital health applications: Implications from the Technology Acceptance Model (TAM). *Journal of Health Communication Research, 15*(1), 22–34. [in Thai]
- Latainin, P., et al. (2024). [Study on obesity among university students at Muban Chombueng Rajabhat University]. *Journal of Health Science Research*.
- Lertprasertkit, K. (2021). The effectiveness of intermittent fasting on weight reduction among overweight Thai adults. *Journal of Preventive Medicine and Public Health, 8*(3), 115–124.
- Silawong, P. (2022). [Development of a satisfaction assessment tool for health promotion activities]. *Journal of Behavioral Science Research, 18*(2), 55–68.
- Thapyoo, W. (2022). Self-regulation and social support in behavioral modification for abdominal obesity: An application of Bandura's framework. *Thai Journal of Behavioral Science, 28*(2), 56–72. [in Thai]
- Western University Human Research Ethics Committee. (2024). Ethics approval No. WTU 2567-0083.
- WHO. (2016). *Obesity and overweight*. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight
- WHO. (2023). *Obesity*. World Health Organization. https://www.who.int
- Wisapha, S., et al. (2020). Mobile health applications for weight management: A systematic review. *Asian Journal of Health Research, 4*(2), 45–56.
- Wisapha, T., et al. (2020). Effectiveness of LINE application and digital tools in promoting healthy behaviors and weight reduction among adolescents. *Journal of Digital Health Promotion, 12*(4), 201–212.
- Wuttijureepan, P., et al. (2019). The role of electronic communication in motivating weight reduction among nursing students. *Journal of Nursing Education and Practice, 9*(6), 88–96.