



Translation, Cross-Cultural Adaptation, and Validation of the Thai Version of the Six-Factor Questionnaire for Obesity

Chanita Unhapipatpong¹, Pimpisa Sripa², Siriwan Piyawattanametha³,
Nint Polruang⁴, Kanokkarn Chupisanyarote⁵, Chaitong Churuangsuk⁶,
Prapimporn C Shantavasinkul⁷

¹Division of Clinical Nutrition, Department of Medicine, Khon Kaen Hospital, Khon Kaen, Thailand

²Department of Medicine, Khon Kaen Hospital, Khon Kaen, Thailand

³Department of Psychiatry, Faculty of Medicine, Srinagarind Hospital, Khon Kean University, Thailand

⁴Department of Pharmacology, Khon Kaen Hospital, Thailand

⁵Division of Clinical Nutrition, Department of medicine, Thammasat university hospital, Thailand

⁶Clinical Nutrition and Obesity Medicine Unit, Department of Internal Medicine, Faculty of Medicine, Prince of Songkla University, Songkhla, Thailand

⁷Division of Nutrition and Biochemical Medicine, Department of Medicine, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, Thailand

⁸Graduate Program in Nutrition, Faculty of Medicine Ramathibodi Hospital, Mahidol University

Correspondence: Chanita Unhapipatpong, MD, Division of Clinical Nutrition, Department of Medicine, Khon Kaen Hospital, Khon Kaen, Thailand 40000, E-mail: Chanita@kkumail.com

Received: January 2 2026; Revised: March 30 2026; Accepted: April 7 2026

Abstract

Obesity is a global health problem associated with numerous complications. Classification of the psycho-behavioral phenotype of obesity using the 27-item Six-Factor Questionnaire (6-FQ) represents a precision-medicine strategy to improve the effectiveness of obesity counseling. The aim was to conduct a translation and validation study of the Thai version of the 6-FQ, as well as to perform a psychometric evaluation of the instrument. Comprehensibility and item difficulty were assessed using the Item Comprehensibility Index (I-CI) and Item Difficulty Index (I-DI), respectively, following ISPOR principles; results were summarized as the Scale Comprehensibility Index (S-CI) and Scale Difficulty Index (S-DI) for both individuals with obesity ($n = 50$) and healthcare professionals (HCPs; $n = 50$). Relevance was evaluated by 50 HCPs using the Item Content Validity Index (I-CVI) and the Scale Content Validity Index (S-CVI). Subsequently, we validated the Thai 6-FQ by assessing its internal consistency and test-retest reliability in 150 individuals with obesity. Exploratory factor analysis (EFA) was used to assess the questionnaire's

construct validity. Six items were modified to enhance cultural relevance. After synthesis and adaptation, individuals with obesity rated the Thai 6-FQ as having excellent comprehensibility and ease of completion (S-CI = 0.91; S-DI = 0.91). HCPs regarded comprehensibility and difficulty as acceptable (S-CI = 0.84; S-DI = 0.88) and judged relevance acceptable (S-CVI = 0.85). The instrument demonstrated excellent internal consistency (Cronbach's alpha = 0.953) and good test-retest reliability (intraclass correlation coefficient = 0.79). EFA identified five factors that explained 69.19% of the total variance. The Thai translation and cultural adaptation of the 6-FQ preserved the instrument's original meaning and purpose, supporting its use by individuals with obesity and healthcare professionals in the Thai context. In practice, clinicians can use the score from questionnaire at each visit to monitor progress, and both clinicians and adults with obesity can identify remaining barriers that may contribute to unsuccessful weight reduction.

Keywords: Obesity, Precision medicine, Psycho-behavioral phenotype, Six-factor questionnaire, Translation

What was Known

- Prevalence of obesity among Thai individuals is increasing, contributing to a growing economic burden.
- Lifestyle modification is essential for obesity care, especially when drugs or surgery are not affordable.
- Few structured Thai questionnaires exist to identify behavioral phenotypes for tailored obesity counseling.

What's New and Next

- The Thai 6-factor questionnaire is validated and can be used for phenotype-specific counseling.
- Future studies should develop counseling programs based on the Thai 6-factor questionnaire for weight control.

Introduction

Obesity is a major non-communicable disease that poses significant public health challenges in Thailand and worldwide. The prevalence of obesity (body mass index; BMI ≥ 25 kg/m²) among Thai individuals aged ≥ 15 years increased from 42.2% in 2020 to 45.0% in 2024, and the prevalence among school-aged children has tripled over the past two decades^(1, 2). Obesity is associated with severe mechanical, metabolic, and mental health consequences, including type 2 diabetes, hypertension, dyslipidemia, cardiovascular disease, obstructive sleep apnea, various cancers, anxiety, and depression⁽³⁾. Its economic burden in Thailand is substantial, with estimated costs ranging from 0.13% of Gross Domestic Product (GDP) in 2014 to as high as 4.9% of GDP in 2060, driven by direct medical costs, premature mortality, and lost productivity⁽⁴⁾.

The variable response to identical weight-loss interventions and the heterogeneity in obesity-related complications have prompted the application of precision medicine to optimize individual treatment. Nonetheless, lifestyle modification remains the foundation of obesity management, aiming to induce weight loss, maintain weight reduction, and prevent weight regain⁽⁵⁾. Current precision-phenotyping classifies patients into behavioral/pathophysiological phenotypes related to energy balance. Observed distributions include abnormal satiation with larger meal sizes ("hungry brain") 16%; abnormal postprandial satiety with increased hunger between meals ("hungry gut") 18%; low energy expenditure ("slow burn") 12%; and emotional eating driven by hedonic responses 12%; approximately 15% remain unclassified⁽⁵⁾. Patients exhibiting two or more phenotypes have higher BMI than those with fewer phenotypes⁽⁵⁾. A previous study reported that individuals who reduced caloric intake by 500 kcal/day achieved nearly fourfold greater weight loss than those who did not, a statistically significant difference⁽⁶⁾. In addition, individuals who attained $\geq 5\%$ weight loss during treatment engaged in self-monitoring more than twice as often as those who did not⁽⁶⁾. Behavioral modification is particularly important for patients who cannot access pharmacotherapy or bariatric surgery because of financial constraints or contraindications. Standard behavioral approaches include motivational interviewing based on the six stages of the transtheoretical model and cognitive-behavioral therapy; however, these interventions are time-consuming and may be unavailable in many outpatient settings⁽⁷⁾. Moreover, validated Thai-language obesity questionnaires are still lacking in the general Thai population⁽⁸⁾.

The Six-Factor Questionnaire (6-FQ) is based on a psycho-behavioral phenotyping framework that identifies key drivers of obesity which can be measured and targeted for

treatment^(9,10). It assesses unhealthful behaviors, cognitive distortions, and affective lifestyle patterns associated with weight gain, addressing the limitations of viewing obesity solely as a calorie-imbalance issue^(9,10). In 2016, Professor Robert F. Kushner developed the six-factor questionnaire⁽¹⁰⁾. It accurately scores patients to identify lifestyle pattern factors related to weight gain, enabling clinicians to provide targeted treatment recommendations. In 2021, further study examined correlations between the six factor scores and body weight after adjusting for age, sex, and race/ethnicity⁽⁹⁾. Results were statistically significant in both unadjusted and adjusted models, demonstrating a strong positive correlation between factor scores and BMI; for example, a one-point increase in the average score for the “exercise struggler” factor was associated with a 3.85 kg/m² increase in BMI⁽⁹⁾. It is a concise, self-administered instrument that facilitates identification of behaviorally based goals and classification of patients according to psychological-behavioral phenotypes, which may aid clinical assessment and personalized treatment planning^(9,10). In high-volume hospital settings, the 6-FQ enables patients to self-assess prior to consultation, allowing clinicians to provide more effective and targeted recommendations. By identifying maladaptive behaviors that contribute to weight gain, the instrument helps patients recognize problematic patterns, receive individualized dietary and physical-activity advice, and may reduce physician consultation time.

To establish a reliable psychological and behavioral instrument for Thai individuals with obesity, the authors aimed to establish a reliable psychological and behavioral instrument for Thai patients with obesity by: (1) translating and culturally adapting the 6-FQ through expert review and evaluation by native speakers, and (2) assessing the psychometric properties of the resulting Thai version.

Materials and Methods

1. Population Selection and Study design

This study comprised two phases: (1) translation and cross-cultural adaptation, and (2) assessment of internal consistency and reliability. Phase 1 is translation and cross-cultural adaptation process. The translation and adaptation followed the ISPOR Good Practice for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes¹¹ (**Figure 1**). The step procedure was as follows. Step 1 is preparation step. Permission for translation and cross-cultural adaptation of the original English 6-FQ was obtained from the instrument developer, Prof. Robert F. Kushner. Preliminary work was completed prior to initiating the translation. Step 2 is forward translation step. Two independent forward translations from English into Thai were performed by

physicians (C.U. and S.P.), one an internal medicine physician specializing in clinical nutrition and the other a psychiatrist, representing different professional backgrounds. Step 3 was the reconciliation step. The forward translations were compared and reconciled into a single Thai version by consensus among the researchers and the key in-country consultant (Assoc. Prof. Prapimporn C. Shantavasinkul). The reconciled draft was then reviewed by a panel of nine experts, three physicians, three nurses, and three dietitians, with expertise in nutrition and experience in nutrition counseling, academia, and psychosocial aspects. The draft was revised based on the panel's feedback, disagreements were resolved through expert consensus, and the first draft of the Thai 6-FQ was finalized after achieving expert approval. Step 4 is back translation step. The Thai draft was back-translated into English by independent language services to verify equivalence. Back translation was performed by the Translation and Interpretation Services Unit, Chalermprakiet Center for Translation and Interpretation, Faculty of Arts, Chulalongkorn University, and the Translation and Interpretation Center, Faculty of Liberal Arts, Mahidol University. Back translators were blinded to the original 6-FQ to minimize bias (**Supplementary S2**). Steps 5 and 6 are back translation review and harmonization step. The back-translated English versions were reviewed to ensure they reflected the same content as the original instrument. For each item, content validity was evaluated using the Index of Item-Objective Congruence (IOC) on an ordinal scale (+1 = clear agreement, 0 = unclear, -1 = no agreement); an average IOC > 0.5 was considered acceptable¹². Experts provided suggestions to improve cultural relevance and clarity where necessary. The researchers synthesized the findings and submitted the adapted items to the instrument developer for approval (**Supplementary S2**).

Step 7 is cognitive debriefing. The revised Thai 6-FQ (version 2) was administered to 50 individuals with obesity to evaluate alternative wording and to assess item comprehensibility and difficulty. Relevance, comprehensibility, and difficulty were also evaluated by 50 healthcare professionals (HCPs). Step 8 is review and finalization step. Cognitive debriefing results were reviewed to reconcile interpretations by patients and HCPs with the original instrument and to resolve discrepancies. The process concluded with proofreading and preparation of the final report in steps 9 and 10.

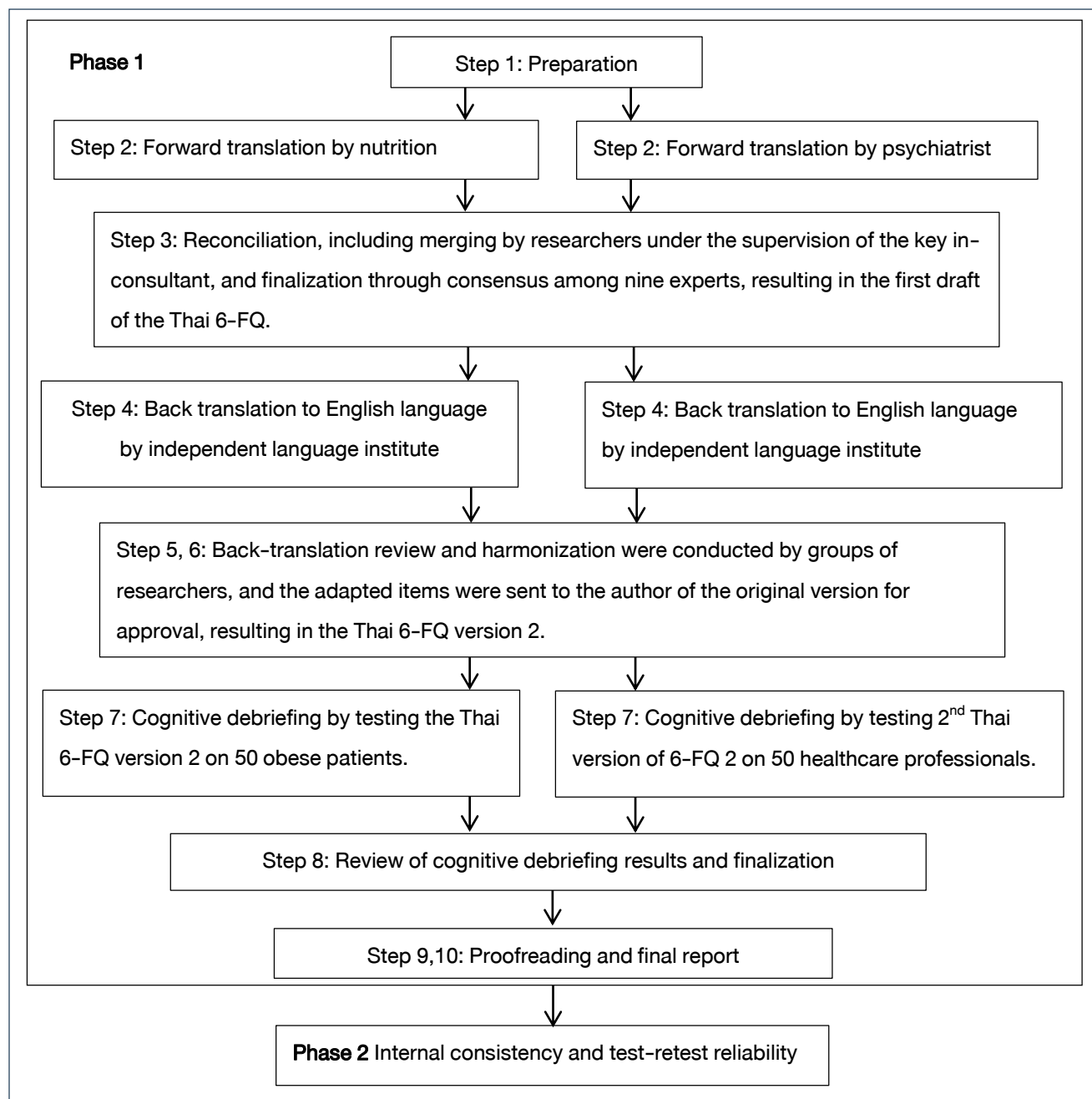


Figure 1 Phase 1 – Translation and cross-cultural adaptation process, and Phase 2 – Consistency and reliability process

Phase 2 is consistency and reliability assessment. Translation validity and reliability testing were conducted from March 2024 to November 2024. The study employed a cross-sectional design. Using a recommended respondent-to-item ratio of 5:1⁽¹³⁾ for the 27-item questionnaire, a minimum sample size of 135 participants was required; allowing for a 10% attrition rate, the target sample was set at 150. A total of 150 adults with obesity, defined according to the WHO criteria for Asian populations ($\text{BMI} \geq 25 \text{ kg/m}^2$), were consecutively recruited from three Thai regions (Northeast, Central, and South) to accommodate potential regional language variation: Songkhla Province and Bangkok in community settings, and Khon Kaen at the obesity clinic of Khon Kaen Hospital. At the community sites, potentially eligible individuals were identified by the research team using non-probability screening of adults who appeared to have overweight or obesity, then screened for $\text{BMI} \geq 25 \text{ kg/m}^2$ and invited to participate if they met the eligibility criteria and provided informed consent. In Khon Kaen, participants were recruited from the obesity clinic. Each site contributed 50 ambulatory, free-living participants with obesity. Inclusion criteria were age ≥ 18 years, $\text{BMI} \geq 25 \text{ kg/m}^2$, ability to understand and complete the questionnaires, and provision of informed consent. Exclusion criteria included secondary causes of obesity, active malignancy, and pregnancy. The study protocol was approved by the Khon Kaen Hospital Institute Review Board in Human Research, Thailand (approval code KEXP67008), and conducted in accordance with the Declaration of Helsinki. All participants provided written informed consent.

2. Outcome assessment

Body weight was measured using digital weighing scales and height was measured with a non-stretchable stadiometer. BMI was calculated.

The 6-FQ comprises 27 items across six factors: Convenient Diner, Fast Pacer, Easily Enticed Eater, Exercise Struggler, Self-Critic, and All-or-Nothing Doer. The item distribution is as follows: Fast Pacer, Exercise Struggler, Self-Critic, and All-or-Nothing Doer each includes four items; Convenient Diner includes five items; and Easily Enticed Eater includes six items. Responses were recorded on a four-point Likert scale (0 = not at all, 1 = somewhat, 2 = agree, 3 = strongly agree). For scoring, the total score for each factor was divided by the number of items in that factor to produce an average factor score⁹. Factor scores were obtained twice for each ambulatory participant to assess test-retest reliability. The questionnaire was self-administered and completed in the clinic at the Khon Kaen site and in the community at the Songkhla and Bangkok sites.

For evaluation of comprehensibility, difficulty, and content validity during cognitive debriefing, responses were dichotomized: scores of 0–1 were considered “not present” and scores of 2–3 were considered “present.” Item Comprehensibility Index (I-CI) and Item Difficulty Index (I-DI) were calculated as the proportion of participants indicating “present” for the respective item. I-CI and I-DI > 0.78 were considered excellent; items with I-CI or I-DI < 0.78 were flagged for further review. Scale Comprehensibility Index (S-CI) and Scale Difficulty Index (S-DI) were computed as the average of item indices; S-CI and S-DI ≥ 0.90 were considered excellent and ≥ 0.80 acceptable^(14,15).

HCPs rated item relevance on a four-point scale for calculation of the Item Content Validity Index (I-CVI) and Scale Content Validity Index (S-CVI). I-CVI > 0.78 was considered excellent and items with I-CVI < 0.78 were reviewed further. S-CVI ≥ 0.90 was considered excellent and ≥ 0.80 acceptable^(14,15).

3. Statistical analysis

All analyses were performed using IBM SPSS Statistics for Windows, version 29 (IBM Corp., Armonk, NY, USA)⁽¹⁶⁾. Categorical variables are presented as counts and percentages and were compared using the chi-square test, Fisher’s exact test, or the McNemar test as appropriate. Continuous variables are reported as means $\pm$ standard deviations (SD) or medians with interquartile ranges (IQR), depending on data distribution assessed by the Shapiro–Wilk test.

Internal consistency was assessed using Cronbach’s alpha, with values > 0.70 indicating acceptable reliability⁽¹⁷⁾. Test–retest reliability was evaluated using the intraclass correlation coefficient (ICC), interpreted as poor (< 0.50), moderate (0.50 – 0.75), good (0.75 – 0.90), and excellent (> 0.90)^(18,19).

Exploratory factor analysis (EFA) was conducted to evaluate the questionnaire’s construct validity. Principal component analysis (PCA) with Oblimin rotation was used. Kaiser–Meyer–Olkin (KMO) and Bartlett’s tests assessed sample adequacy and data suitability for factor analysis, with KMO values of ≥ 0.6 considered acceptable. Factors with eigenvalues > 1 were retained, and items with factor loadings > 0.40 were regarded as important for factor interpretation⁽²⁰⁾. Statistical significance was defined as a two-sided P -value < 0.05 .

Results

1. Translation, cross-cultural adaptation process, and content validity

After obtaining expert approval of the initial Thai draft of the 6-FQ, six items were modified to enhance cultural relevance (**Table 1**). Specific revisions included: item 5 — addition of the phrase “I eat however I want to” to capture maladaptive eating behavior; item 13 — insertion of “might eat it all” to clarify the intended meaning; item 15 — rephrasing as “I will eat until I am stuffed and can continue eating even after I’m full” for greater clarity; item 21 — revision to “I am obsessed with the parts of my body that I don’t like” to better reflect preoccupation with perceived bodily imperfections; and item 24 — addition of “I just get it done and over with” to convey an all-or-nothing approach inconsistent with sustained weight-management efforts. Item 25, which showed lower indices on initial testing, was amended by adding “I tend to go to extremes” to better reflect the All-or-Nothing Doer construct. All adapted items were finalized to align with Thai cultural and linguistic norms (**Table 1**).

Table 1 The original items compared with cultural adapted items in the cross-cultural adaptation of the Thai version of the 6-FQ for Obesity .

Item	Original items	Cross-cultural adapted items
5	I do not have consistent meal patterns from one day to the next.	I don’t have a clear eating plan or diet regimen for each day. I eat whatever I want to.
13	If there is food around me, I’ll probably eat it.	If there is food around me, I might eat it all.
15	I will eat until I’m too full – and may even eat more.	I will eat until I am stuffed and can continue eating even after I’m full.
21	I focus on the things I don’t like about my body.	I am obsessed with the parts of my body that I don’t like.
24	I approach my weight loss like it’s just another project with a clear beginning and end.	I see my weight loss journey as another project with clear beginning and end, and I just need to get it done.
25	I’m either on or off my diet – there’s no middle ground with me.	I either follow a strict diet or no diet at all. I tend to go to extremes and there is no middle ground for me.

All 50 participants with obesity completed the final Thai version of the 6-FQ (**Table 2**). After synthesis and adaptation, participants rated the instrument as having excellent comprehensibility and ease of completion (S-CI = 0.91; S-DI = 0.91). HCPs rated comprehensibility and difficulty as

acceptable (S-CI = 0.84; S-DI = 0.88) (**Table 2**). The overall content validity as assessed by HCPs was acceptable (S-CVI = 0.85), with item-level I-CVI scores ranging from 0.76 to 0.94. Item 25 demonstrated an I-DI of 0.74 among participants and an I-CVI of 0.76, indicating the need for further refinement; the aforementioned modification was applied to address this issue.

Table 2 Comprehensibility, difficulty, and content validity of the Thai version of Six-factor questionnaire as reported by participants living with obesity (n=50) and healthcare professionals (n=50)

Six-factor questionnaire: 6-FQ	Participants living with obesity		Healthcare professionals		
	I-CI	I-DI	I-CI	I-DI	I-CVI
<i>Convenient Diner</i>					
1 I rarely take the time to plan my meals	0.92	0.88	0.86	0.88	0.9
2 A lot of my meals are eaten in restaurants or taken out	0.92	0.94	0.86	0.9	0.88
3 Most foods I eat are convenient, ready-made, packaged, frozen, or microwavable	0.94	0.96	0.86	0.9	0.9
4 I eat a fast-food meal on most days of the week	0.88	0.94	0.8	0.88	0.84
5 I do not have consistent meal patterns from one day to the next	0.92	0.94	0.86	0.88	0.88
<i>Fast Pacer</i>					
6. My fast-paced life leaves me feeling drained and scattered	0.96	0.9	0.86	0.9	0.92
7. I feel like I'm juggling too many things at once	0.88	0.8	0.86	0.86	0.88
8. I usually take care of everyone else and put myself at the bottom of my to-do list	0.92	0.92	0.86	0.9	0.88
9. My hectic schedule makes it hard for me to focus on my health	0.94	0.96	0.86	0.9	0.88
<i>Easily Enticed Eater</i>					
10. I have difficulty controlling my portion sizes	0.94	0.94	0.86	0.9	0.94
11. I often eat out of habit, not because I am hungry	0.92	0.88	0.86	0.9	0.9
12. When I'm stressed, lonely, anxious or depressed, I turn to food for comfort	0.92	0.94	0.86	0.88	0.82
13. If there is food around me, I'll probably eat it	0.90	0.96	0.82	0.9	0.86

Table 2 Comprehensibility, difficulty, and content validity of the Thai version of Six-factor questionnaire as reported by participants living with obesity (n=50) and healthcare professionals (n=50) (Cont.)

Six-factor questionnaire: 6-FQ	Participants living with obesity		Healthcare professionals		
	I-CI	I-DI	I-CI	I-DI	I-CVI
14. I snack throughout the day, hungry or not	0.94	0.94	0.86	0.9	0.84
15. I will eat until I'm too full and may even eat more	0.92	0.96	0.86	0.9	0.84
<i>Exercise Struggler</i>					
16. Of all things, being physically active has never been one of my priorities	0.94	0.9	0.84	0.88	0.86
17. I don't exercise because frankly I don't like it	0.92	0.98	0.82	0.88	0.86
18. I never got "into" exercising, because I am not sure where to start	0.88	0.92	0.8	0.84	0.88
19. I have difficulty exercising	0.94	0.96	0.84	0.86	0.8
<i>Self-Critic</i>					
20. I measure my self-worth by the numbers on the bathroom scale	0.86	0.92	0.84	0.86	0.88
21. I focus on the things I don't like about my body	0.86	0.88	0.84	0.94	0.84
22. I make a habit of saying bad things about myself	0.90	0.88	0.84	0.92	0.8
23. I avoid social situations because of my weight	0.92	0.9	0.84	0.94	0.82
<i>All-or-Nothing Doer</i>					
24. I approach my weight loss like it's just another project with a clear beginning and end.	0.84	0.84	0.84	0.72	0.78
25. I'm either on or off my diet there's no middle ground with me	0.8	0.74	0.82	0.82	0.76
26. When I'm trying to lose weight, I give 100% of my effort but this is hard to sustain	0.94	0.9	0.84	0.94	0.88
27. I am all or nothing when it comes to dieting or exercising to lose weight	0.82	0.84	0.8	0.8	0.82
<i>Summary</i>					
	S-CI	S-DI	S-CI	S-DI	S-CVI
	0.91	0.91	0.84	0.88	0.85

I-CI: Item Comprehensibility Index; I-DI: Item Difficulty Index; S-CI: Scale Comprehensibility Index; S-DI: Scale Difficulty Index; I-CVI: Item Content Validity Index; S-CVI: Scale Content Validity Index

2. Internal consistency and test-retest reliability

A total of 150 participants met inclusion criteria and were included in the analysis. Median age was 35 years (IQR 28–43), and 76.7% of participants were female. Median body weight was 80.0 kg (IQR 70.0–95.0) and median BMI was 29.97 kg/m² (IQR 27.06–34.93). Baseline demographic and clinical characteristics are summarized in **Table 3**.

Table 3 Demographics and baseline characteristics of the participants living with obesity

Variables	n=150
Age (year)	35 [28–43]
Female (%)	115 (76.7%)
Body mass index (kg/m ²)	29.97 [27.06–34.93]
Body weight (kg)	80.00 [70.00–95.00]
Comorbidities (%)	
Diabetes mellitus type II	20(13.3%)
Hypertension	13 (8.7%)
Social history (%)	
Alcoholic drinking	13 (8.7%)
Current smoking	4 (2.7%)
Marital status (%)	
Single	76 (51.4%)
Married	57 (38.5%)
Divorced	15 (10.1%)
Education (%)	
Elementary school	6 (4%)
Secondary school	58 (38.7%)
Bachelor's degree	80 (53.3%)
Higher than bachelor's degree	6 (4.0%)
Household income (%)	
< 10,000 baht	33 (22%)
10,000 – 20,000 baht	69 (46.0%)
≥ 20,000 baht	48 (32.0%)

All data were reported with Median [IQR] and n (%)

The Thai 6-FQ demonstrated excellent internal consistency, with a Cronbach's alpha of 0.953 (**Table 4**). Test-retest reliability was good, with an ICC of 0.79 (95%CI 0.75, 0.84). The interval between the first and second administrations was within 24 hours. The questionnaire had

a KMO value of 0.923, and Bartlett's test showed a Chi-square of 2905.56 ($p < 0.001$). EFA was then performed, identifying five factors that explained 69.19% of the total variance.

Table 4 Mean scores in each item in the Thai version of the 6-FQ for Obesity (n = 150)

Items in Six-factor questionnaire	1 st time Score		2 nd time Score		ICC ^a	
	Mean	SD	Mean	SD		
<i>Convenient Diner</i>						
Item 1	2.52	0.94	2.51	0.96	0.75	(0.67 ,0.81)
Item 2	2.29	1.11	2.24	1.12	0.84	(0.78 ,0.88)
Item 3	2.09	1.06	2.01	1.04	0.84	(0.79 ,0.88)
Item 4	1.76	1.03	1.71	1.03	0.81	(0.74 ,0.86)
Item 5	2.62	0.97	2.55	0.89	0.56	(0.44 ,0.66)
<i>Fast Pacer</i>						
Item 6	2.43	1.06	2.47	1.05	0.82	(0.76 ,0.86)
Item 7	2.35	0.99	2.43	1.04	0.78	(0.71 ,0.83)
Item 8	2.39	1.06	2.34	1.04	0.86	(0.81 ,0.89)
Item 9	2.56	1.06	2.45	1.01	0.77	(0.7 ,0.83)
<i>Easily Enticed Eater</i>						
Item 10	2.70	0.96	2.48	0.95	0.66	(0.56 ,0.75)
Item 11	2.36	1.01	2.25	1.00	0.68	(0.59 ,0.76)
Item 12	2.33	1.22	2.23	1.19	0.86	(0.82 ,0.9)
Item 13	2.09	1.12	2.01	1.04	0.79	(0.72 ,0.84)
Item 14	2.01	1.09	1.94	1.09	0.81	(0.75 ,0.86)
Item 15	1.92	1.05	1.85	1.11	0.78	(0.71 ,0.84)
<i>Exercise Struggler</i>						
Item 16	2.07	1.03	1.99	1.05	0.73	(0.65 ,0.8)
Item 17	2.00	1.10	1.94	1.11	0.82	(0.76 ,0.87)
Item 18	1.95	1.18	1.96	1.15	0.82	(0.77 ,0.87)
Item 19	2.19	1.08	2.23	1.07	0.84	(0.79 ,0.88)
<i>Self-Critic</i>						
Item 20	2.17	1.06	2.13	1.07	0.76	(0.69 ,0.82)
Item 21	1.91	1.15	1.91	1.15	0.84	(0.78 ,0.88)
Item 22	1.68	1.14	1.74	1.16	0.78	(0.71 ,0.84)
Item 23	1.81	1.17	1.85	1.17	0.84	(0.78 ,0.88)
<i>All-or-Nothing Doer</i>						
Item 24	1.95	1.08	1.44	1.07	0.75	(0.68 ,0.82)
Item 25	2.11	1.04	1.5	1.07	0.83	(0.77 ,0.87)
Item 26	2.55	0.97	2.08	0.92	0.71	(0.62 ,0.78)
Item 27	2.28	1.01	1.8	1.01	0.77	(0.7 ,0.83)

^aIntraclass correlation coefficient (ICC3,1) presented with 95%CI

Discussion

In this study, we conducted a translation and cross-cultural adaptation of the original 6-FQ, with harmonization by subject-matter experts and in-country stakeholder. Six items were modified to clarify meaning and better reflect the instrument's original intent within the Thai cultural and linguistic context. Cognitive debriefing with 50 participants and evaluation by HCPs demonstrated excellent comprehensibility and ease of completion from the participants' perspective and acceptable comprehensibility and difficulty from the HCP perspective. The overall content validity as assessed by HCPs was acceptable. Moreover, the Thai 6-FQ showed excellent internal consistency and good test-retest reliability, supporting its psychometric robustness in a Thai outpatient population.

In this study, reliability was examined at item levels, and the results support the internal consistency of the 27 items. Notably, although overall internal consistency was excellent, the high alpha may reflect overlap among some items rather than only strong homogeneity, so the results should be interpreted with caution. Moreover, the 24-hour interval was chosen to minimize real behavioral change, but recall bias may have influenced the ICC results and artificially inflated reliability estimates. In the reliability test, most participants were middle-aged, female, and had a household income of 10,000–20,000 baht, which may have influenced their perceptions of obesity, occupational responsibilities, fast-paced lifestyles, self-criticism, and weight-related behaviors. The Thai 6-FQ showed good suitability for factor analysis, as indicated by a high KMO value and significant Bartlett's test. EFA identified a five-factor structure, providing evidence of construct validity in this sample. The difference from the original six-factor model may reflect overlap among related domains and the influence of cultural, linguistic, and sample-related factors. Although the structure differed from the original version, the factor solution explained substantial variance and supports the scale's construct validity. Future studies should use confirmatory factor analysis to further evaluate construct validity and verify the factor structure.

The pathophysiology of obesity principally reflects an imbalance between caloric intake and energy expenditure⁽²¹⁾. The 6-FQ assesses multidimensional lifestyle patterns associated with BMI across six domains and can inform phenotype-driven counseling. Moreover, the questionnaire is a quick, self-administered tool for individuals to identify their specific behavioral, cognitive, and effective lifestyle patterns that impact weight⁽¹⁰⁾. Prior research has demonstrated statistically significant associations between average factor scores and BMI after adjustment for age, sex, and race/ethnicity⁽⁹⁾, supporting the clinical relevance of these behavioral constructs.

According to the National Health Service, various eating patterns associated with obesity correspond to the factors assessed by the questionnaire and represent recognized contributors to excess weight⁽²²⁾. For example, frequent consumption of processed or fast foods and frequent eating out (items 1–4) correspond to high dietary fat and sugar intake; larger portion sizes (items 10–15) reflect impaired satiation; emotional or comfort eating (items 12, 20–23) aligns with the emotional-eating phenotype; low physical activity (items 16–19) corresponds to the low energy-expenditure or “slow burn” phenotype; and items 24–27 address maintenance behaviors and the prevention of weight regain. Grouping behavioral phenotypes in this manner can help tailor interventions to the underlying drivers of weight gain.

Behavioral modification remains the foundation of obesity management and is appropriate for all BMI categories. Clinicians identify behavioral barriers and target interventions such as dietary modification (caloric deficit, macronutrient adjustments), increased physical activity, and behavioral strategies (e.g., self-monitoring, motivational interviewing)^(23,24,25). Currently, targeted lifestyle therapies have been proposed according to obesity phenotype: patients with the “hungry brain” phenotype may benefit from time-restricted eating; those with the “hungry gut” phenotype from a low-calorie diet with premeal protein supplementation; individuals with the “slow burn” phenotype from dietary restriction combined with high-intensity interval training; and those with emotional hunger from intensive behavioral therapy⁽²⁶⁾. Some patients require pharmacotherapy or surgery. Anti-obesity medications, chosen by phenotype, have varied mechanisms but can cause adverse effects (notably gastrointestinal) and may be unaffordable⁽²⁷⁾. Bariatric surgery provides the most durable weight loss for severe obesity and requires multidisciplinary management; however, it entails procedural risks and, without strict adherence to lifestyle changes, weight regain occurs in up to 49% of patients⁽²⁷⁾. Phenotype-guided approaches that combine behavioral strategies with pharmacotherapy or procedural interventions, when indicated, have demonstrated superior outcomes: a pragmatic study reported substantially greater weight loss in phenotype-guided patients treated with anti-obesity medications versus standard care at 12 months⁽²⁸⁾.

Few studies have focused on developing obesity questionnaires. In 2019, a 42-item knowledge, attitude, and practice (KAP) questionnaire addressing obesity among individuals with obesity was developed and validated; the items were organized into three domains: knowledge, attitude, and practices^(29, 30). Such questionnaires typically assess understanding of what obesity is, its associated health complications, and key components of a healthy lifestyle. They are

commonly used to gauge public awareness and to inform the development of health interventions. Typical items address concepts such as BMI, obesity-related risks, nutrition, and physical activity. A key strength of this instrument is that it covers multiple domains influencing obesity, including dietary habits (e.g., consumption of sweets, refined carbohydrates, and fried foods), eating behaviors (e.g., meal frequency and meal skipping), physical activity (duration and frequency), general lifestyle practices, and motivation for weight loss⁽²⁹⁾. However, it lacks generalizability across different lifestyles, and some items remain oversimplified. Moreover, the Three-Factor Eating Questionnaire (Revised) 18-item (TFEQ-R18), a shortened form of the original 51-item TFEQ, is a widely used psychometric instrument that assesses three dimensions of eating behavior, eating with emotion, cognitive restraint, and compulsive overeating, relevant to eating disorders and obesity. Although the TFEQ-R18 has been translated into multiple languages and is employed in both research and clinical settings, it does not capture the “slow-burn” obesity phenotype, which can contribute to weight regain^(31, 32).

The Obesity Medicine Association Clinical Practice Statement (2022) recommended motivational interviewing techniques alongside obesity management technologies to support physicians in treating obesity and improving metabolic outcomes. The statement also emphasizes behavioral components, particularly allocating time despite time constraints, self-cognition, and self-monitoring, which are also essential components of the 6-FQ⁽³³⁾. Although motivational interviewing, including the “Ask, Assess, Advise, Agree, and Arrange/Assist” framework, is effective in obesity management, it requires clinician skill and is time-consuming⁽³⁴⁾.

In the Thai context, the Health Literacy Development Program (3E.2S: Eating, Exercise, Emotion; Stop smoking; Stop drinking) addresses unhealthy behaviors such as excessive consumption of sweet/salty/fatty foods, physical inactivity, stress, smoking, and alcohol use, and has been shown to improve obesity-prevention behavior scores among late-working adults compared with a control group⁽³⁵⁾. However, the program is lengthy, has limited psychometric evidence in adults with obesity, and may not distinguish between individuals with similar BMI but different behavioral drivers.

Therefore, in this study we developed a Thai-language translation and adaptation of the original 6-FQ for Thai participants living with obesity and validated it by assessing internal consistency. The Thai 6-FQ requires less time for clinicians to administer, allows participants living with obesity to complete the questionnaire privately and comfortably, and promotes self-awareness. It may also enable clinicians to provide phenotype-specific counseling to motivate

patients to lose weight, potentially increasing patients' intention and motivation to reduce weight. Data were collected from three regions in Thailand, enhancing representativeness across different Thai language backgrounds.

We acknowledge several limitations. First, linguistic and idiomatic differences made direct translation of some phrases impossible. To address this, we consulted with experts and the developers of the original questionnaire and selected the simplest appropriate phrasing. Second, data collection at three hospitals in different regions introduced minor language variations, which may have affected item difficulty; we mitigated this by adding clarifying sentences to better reflect the original meaning. Future psychometric validation studies of the Thai version 6-FQ including confirmatory factor analysis should verify whether the translated instrument reproduces the original factor structure. Increasing the sample size would improve the precision and statistical power of the findings.

Conclusion

The translation and cultural adaptation of the 6-FQ into Thai preserved its original meaning and purpose, enabling both participants living with obesity and HCPs to use the instrument to assess and engage individuals with obesity in the Thai context. For future research, we recommend examining correlations between the Thai 6-FQ and baseline characteristics, BMI, and obesity phenotypes, with particular attention to causal relationships between questionnaire scores and BMI. Future work could also develop structured, questionnaire-driven counseling interventions for weight reduction in Thailand.

Ethical Approval Statement

The study protocol was approved by the Khon Kaen Hospital Institutional Review Board for Human Research, Thailand (approval code KEXP67008; initial approval on 22 January 2024; latest renewal on 13 January 2026), and was conducted in accordance with the Declaration of Helsinki. All participants provided written informed consent.

Author Contributions

CU, PS, SP, and NP designed the study and formulated the concept as well as the study methodology and manuscript preparation. CU, PS, KC, and CC were responsible for preparation and distribution of the questionnaire, data collection and data cleaning. CU was responsible for statistical analysis. CU, and PS drafted the manuscript. SP, NP, KC and CC were part of the team that helped with proofreading and manuscript editing and finalization prior to submission for

publication. PCS contributed to critical revision of the work; and approved the final version for publication. All authors read and approved the manuscript prior to submission for publication.

Acknowledgements

We gratefully acknowledge Professor Robert F. Kushner, Department of Medicine, Northwestern University Feinberg School of Medicine, for granting permission to translate the questionnaire into Thai and for reviewing the back-translation to identify discrepancies, thereby helping to ensure alignment with the original version.

Source of Funding

This research was supported by a grant from the Society of Parenteral and Enteral Nutrition of Thailand, a non-profit organization with no role in any stage of the research.

Conflicts of Interest

The authors declare that there are no conflicts of interest relevant to this study.

References

1. World Health Organization. Thailand's leadership in the fight against obesity [Internet]. Geneva: World Health Organization; 2025 Mar 7. Available from: <https://www.who.int/thailand/news/feature-stories/detail/thailand-s-leadership-in-the-fight-against-obesity>. accessed: 24 March, 2026.
2. Pathanavanich R, editor. The 7th Thai National Health Examination Survey, 2024–2025 [Internet]. Bangkok: Faculty of Medicine, Ramathibodi Hospital, Mahidol University; 2025. Available from: https://kkhos.moph.go.th/kkhos/data_workmanual/healthservey_2025.pdf. accessed: 24 March, 2026.
3. Ahmed SK, Mohammed RA. Obesity: Prevalence, causes, consequences, management, preventive strategies and future research directions. *Metabol Open*. 2025; 27: 100375.
4. Okunogbe A, Nugent R, Spencer G, Ralston J, Wilding J. Economic impacts of overweight and obesity: current and future estimates for eight countries. *BMJ Glob Health*. 2021; 6(10): e006351. DOI: 10.1136/bmjgh-2021-006351.
5. Espinosa MA, Rivera Gutierrez RJ, Villamarin J, Acosta A. Precision Medicine for Obesity Treatment. *J Endocr Soc*. 2025; 9(9): bvaf102. DOI: 10.1210/jendso/bvaf102.
6. Carels RA, Young KM, Coit C, Clayton AM, Spencer A, Hobbs M. Can following the caloric restriction recommendations from the Dietary Guidelines for Americans help

- individuals lose weight?. *Eat Behav.* 2008; 9(3): 328–35. DOI: 10.1016/j.eatbeh.2007.12.003.
7. Yearwood L, Masood W. Behavioral Approaches to Obesity Treatment. In: StatPearls. Treasure Island (FL): StatPearls Publishing; January 31, 2024.
 8. Talungjit P. Development of a questionnaire to evaluate knowledge and attitude of obesity and weight loss in Thai overweight/obese medical students: a pilot study. *Siriraj Med J [Internet]*. 2016; 68(6): 323–31. DOI: 10.14456/smj.2016.20
 9. Kushner RF, Hammond MM. Using psycho-behavioral phenotyping for overweight and obesity: Confirmation of the 6 factor questionnaire. *Obes Sci Pract.* 2021; 8(2): 185–9. DOI: 10.1002/osp4.555.
 10. Kushner RF, Choi SW, Burns JL. Development of a six-factor questionnaire for use in weight management counseling. *Patient Educ Couns.* 2016; 99(12): 2018–25. DOI: 10.1016/j.pec.2016.06.022
 11. Wild D, Grove A, Martin M, et al. Principles of Good Practice for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes (PRO) Measures: report of the ISPOR Task Force for Translation and Cultural Adaptation. *Value Health.* 2005; 8(2): 94–104. DOI: 10.1111/j.1524-4733.2005.04054.x.
 12. Waltz CF, Strickland OL, Lenz ER, editors. *Measurement in nursing and health research.* 4th ed. New York: Springer; 2010. DOI: 10.1891/9780826170620
 13. Tsang S, Royse CF, Terkawi AS. Guidelines for developing, translating, and validating a questionnaire in perioperative and pain medicine. *Saudi J Anaesth.* 2017; 11(Suppl 1): S80–S89. DOI: 10.4103/sja.SJA_203_17.
 14. Polit DF, Beck CT. The content validity index: are you sure you know what's being reported? Critique and recommendations. *Res Nurs Health.* 2006; 29(5): 489–97. DOI: 10.1002/nur.20147.
 15. Almanasreh E, Moles R, Chen TF. Evaluation of methods used for estimating content validity. *Res Social Adm Pharm.* 2019; 15(2): 214–21. DOI: 10.1016/j.sapharm.2018.03.066.
 16. IBM Corp. *IBM SPSS Statistics for Windows.* Version 29.0.2.0. Armonk (NY): IBM Corp; 2023.
 17. Gliem JA, Gliem RR. Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. *Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education.* 2003.

18. Koo TK, Li MY. A Guideline of Selecting and Reporting Intraclass Correlation Coefficients for Reliability Research. *J Chiropr Med*. 2016; 15(2): 155-63. DOI: 10.1016/j.jcm.2016.02.012.
19. Sukkam S, Kaensaksiri E, Domthong U. Intraclass correlation [Internet]. 2018. Available from: http://sc2.kku.ac.th/stat/statweb/images/Eventpic/60/Seminar/02_5_Intraclass-Correlation.pdf. accessed: 25 March. 2026.
20. Howard MC. A review of exploratory factor analysis decisions and overview of current practices: What we are doing and how can we improve? *Int J Hum Comput Interact*. 2016; 32(1): 51-62. DOI: 10.1080/10447318.2015.1087664
21. Jin X, Qiu T, Li L, Yu R, Chen X, Li C, et al. Pathophysiology of obesity and its associated diseases. *Acta Pharm Sin B*. 2023; 13(6): 2403-24. DOI: 10.1016/j.apsb.2023.01.012.
22. National Health Service (NHS). Causes of obesity [Internet]. London: NHS;. Available from: <https://www.nhs.uk/conditions/obesity/causes/>. accessed: 24 March, 2026.
23. Lee V. Introduction to the dietary management of obesity in adults. *Clin Med (Lond)*. 2023; 23(4): 304-10. DOI: 10.7861/clinmed.2023-0157
24. National Institute for Health and Care Excellence (NICE). Obesity: identification, assessment and management [Internet]. London: NICE; 2024. Available from: <https://www.nice.org.uk/guidance/ng246>. accessed: 24 March, 2026.
25. Kim JY. Optimal Diet Strategies for Weight Loss and Weight Loss Maintenance. *J Obes Metab Syndr*. 2021; 30(1): 20-31. DOI: 10.7570/jomes20065
26. Szczerbinski L, Florez JC. Precision medicine of obesity as an integral part of type 2 diabetes management – past, present, and future. *Lancet Diabetes Endocrinol*. 2023;11(11): 861-78. DOI: 10.1016/S2213-8587(23)00232-2.
27. Kokkorakis M, Chakhtoura M, Rhayem C, et al. Emerging pharmacotherapies for obesity: A systematic review. *Pharmacol Rev*. 2025; 77(1): 100002.
28. Sacoto D, Hurtado MD, Acosta A. Precision Medicine and Obesity. *Handb Exp Pharmacol*. 2022; 274: 467-85. DOI: 10.1007/164_2021_566.
29. Reethesh SR, Ranjan P, Arora C, et al. Development and Validation of a Questionnaire Assessing Knowledge, Attitude, and Practices about Obesity among Obese Individuals. *Indian J Endocrinol Metab*. 2019; 23(1): 102-10. DOI: 10.4103/ijem.IJEM_487_18.
30. Shi W, Ma C, Zhang G, et al. Knowledge, attitudes, and practices regarding body weight management among patients with overweight or obesity: a cross-sectional study. *Front Public Health*. 2025; 13: 1615478.

31. Almuhammadi N, Alfawaz W. The relationship between the three-factor eating questionnaire (TFEQ) subscales (dietary restraint, disinhibition, and hunger) and the body mass index: A cross-sectional study among female students. *Heliyon*. 2024; 10(24): e40656.
32. Rossi AA, Pietrabissa G, Castelnuovo G, Mannarini S. Cognitive restraint, uncontrolled eating, and emotional eating. The Italian version of the Three Factor Eating Questionnaire-Revised 18 (TFEQ-R-18): a three-step validation study. *Eat Weight Disord*. 2024; 29(1): 16.
33. Freshwater M, Christensen S, Oshman L, Bays HE. Behavior, motivational interviewing, eating disorders, and obesity management technologies: An Obesity Medicine Association (OMA) clinical practice statement (CPS) 2022. *Obes Pillars*. 2022; 2: 100014.
34. Bahri AA. Motivational Interviewing to Promote Healthy Lifestyle Behaviors: Evidence, Implementation, and Digital Applications. *J Multidiscip Healthc*. 2025; 18: 6629–42. DOI: 10.2147/JMDH.S557957
35. Sintao P, Nakagasian P, Meekusol S. Effect of A3E.2S Health Literacy Development Program with the Digital 4.0 Era on the abdominal obesity prevention behavior of working people in the workplace. *J Health Health Manag*. 2025; 11(1): 140–52. Retrieved from <https://he01.tci-thaijo.org/index.php/slc/article/view/275747>

Supplementary S1: Thai Six-factor questionnaire for obesity (final version)

แบบสอบถามแบบ 6 ปัจจัยฉบับภาษาไทยสำหรับโรคอ้วน (Thai Six-factor questionnaire for obesity: Thai 6-FQ for obesity)	ไม่เห็นด้วย (0)	เห็นด้วยเล็กน้อย (1)	เห็นด้วย (2)	เห็นด้วยอย่างยิ่ง (3)
กลุ่มคนที่กินอาหารโดยเน้นความสะดวก	คะแนนรวม _____ ÷ 5 = คะแนนเฉลี่ย _____			
1.ฉันไม่ค่อยใช้เวลาในการวางแผนมื้ออาหารของฉัน				
2.ส่วนใหญ่มื้ออาหารของฉันจะรับประทานที่ร้านอาหารหรือซื้อกลับไปรับประทานที่บ้าน				
3.ส่วนใหญ่ฉันรับประทานอาหารที่เน้นความสะดวก อาหารปรุงสำเร็จพร้อมรับประทาน อาหารสำเร็จรูป อาหารแช่แข็ง หรืออาหารพร้อมรับประทานที่สามารถอุ่นร้อนด้วยไมโครเวฟได้				
4.ฉันรับประทานอาหารจานด่วน (ฟาสต์ฟู้ด) เกือบทุกวัน				
5.ฉันไม่มีรูปแบบการรับประทานอาหารที่ชัดเจนในแต่ละวัน ฉันจะเลือกรับประทานแบบที่ฉันต้องการ				
กลุ่มคนที่ใช้ชีวิตแบบเร่งรีบ	คะแนนรวม _____ ÷ 4 = คะแนนเฉลี่ย _____			
6.ชีวิตที่เร่งรีบของฉันทำให้ฉันรู้สึกเหนื่อยล้าและไม่เป็นระเบียบ				
7.ฉันรู้สึกว่า ฉันกำลังจัดการกับหลายสิ่งหลายอย่างเกินไปในเวลาเดียวกัน				
8.ฉันมักจะดูแลคนอื่นก่อนเสมอ และให้ความสำคัญกับตนเองเป็นลำดับสุดท้าย				
9.ตารางงานที่ยุ่งเหยิงของฉันทำให้ฉันไม่มีเวลาดูแลสุขภาพตัวเอง				
กลุ่มคนที่ถูกชักจูงในการกินได้ง่าย	คะแนนรวม _____ ÷ 6 = คะแนนเฉลี่ย _____			
10.ฉันมีความยากลำบากในการควบคุมปริมาณอาหารที่รับประทาน				
11.ฉันชอบรับประทานอาหารจนติดเป็นนิสัย ไม่ใช่รับประทานเพียงเพราะฉันรู้สึกหิว				
12. ฉันจะรับประทานอาหารเพื่อปลอบประโลมใจเวลาที่ฉันเครียด เหนงา วิตกกังวล หรือเศร้า				
13. ถ้ามีอาหารอยู่รอบตัวฉัน ฉันอาจจะรับประทานอาหารเหล่านั้นทั้งหมด				
14. ฉันรับประทานจุบจิบตลอดทั้งวัน ไม่ว่าจะรู้สึกหิวหรือไม่				
15. ฉันจะรับประทานอาหารจนฉันอิ่มมาก และสามารถรับประทานต่อได้แม้ว่าอิ่มแล้ว				
กลุ่มคนที่มีความยากลำบากในการออกกำลังกาย	คะแนนรวม _____ ÷ 4 = คะแนนเฉลี่ย _____			
16.ในบรรดากิจกรรมต่าง ๆ การขยับเคลื่อนไหวร่างกายไม่เคยเป็นสิ่งที่ฉันให้ความสำคัญ				
17.ฉันไม่ออกกำลังกาย เพราะฉันไม่ชอบ				
18.ฉันไม่เคย “สนใจ” การออกกำลังกาย เพราะฉันไม่แน่ใจว่าจะเริ่มต้นอย่างไร				
19.ฉันมีความยากลำบากในการออกกำลังกาย				
กลุ่มคนที่ชอบวิจารณ์ตนเอง	คะแนนรวม _____ ÷ 4 = คะแนนเฉลี่ย _____			
20.ฉันประเมินคุณค่าของตัวเองด้วยตัวเลขบนเครื่องชั่งน้ำหนัก				
21.ฉันหมกมุ่นกับส่วนต่างๆในร่างกายที่ฉันไม่ชอบ				
22.ฉันมักจะพูดถึงสิ่งไม่ดีเกี่ยวกับตัวเองจนเป็นนิสัย				
23.ฉันหลีกเลี่ยงการเข้าสังคมเพราะน้ำหนักตัวของฉัน				
กลุ่มคนที่ทำอย่างเต็มที่หรือไม่ทำอะไรเลย	คะแนนรวม _____ ÷ 4 = คะแนนเฉลี่ย _____			
24.ฉันมองการลดน้ำหนักของฉัน เป็นเหมือนแค่อีกโครงการหนึ่งที่มีจุดเริ่มต้นและจุดสิ้นสุดที่ชัดเจน ซึ่งฉันก็แค่ทำให้พอเสร็จๆไป				
25.ฉันจะควบคุมการรับประทานอาหารอย่างเข้มงวด หรือ ไม่ควบคุมการรับประทานอาหารเลย โดยฉันมักจะทำอย่างสุดโต่ง และไม่มีจุดสมดุลสำหรับฉัน				
26.เมื่อฉันพยายามลดน้ำหนัก ฉันพยายามลดน้ำหนักอย่างเต็มที่ 100% แต่ฉันยากที่จะทำอย่างต่อเนื่อง				
27.ฉันเป็นพวกที่จะควบคุมอาหาร หรือออกกำลังกายเพื่อลดน้ำหนักอย่างเต็มที่ หรือไม่ทำอะไรสักอย่างเลย เพื่อลดน้ำหนัก				

Supplementary S2: Thai institute translation compared with the original questionnaire

	Original questionnaire	Translation and Interpretation Center, Faculty of Liberal, Arts, Mahidol University	Translation and Interpretation Services Unit Chalermprakiet Center of Translation and Interpretation Faculty of arts, Chulalongkorn University
	Convenient Diner	Individuals who eat with convenience in mind	People who prioritize convenience in their eating
1	I rarely take the time to plan my meals.	I don't have much time to plan my meals.	I don't usually spend time planning my meals.
2	A lot of my meals are eaten in restaurants or taken out.	For most of my meals, I either eat at a restaurant or buy takeaway.	Most of my meals are eaten in restaurants or takeouts.
3	Most foods I eat are convenient, ready-made, packaged, frozen, or microwavable.	I mostly choose foods that are convenient, ready to eat, frozen or microwavable.	Mostly I eat food that is convenient: ready-to-eat food, instant food, frozen food, or ready-to-eat food that can be warmed in a microwave.
4	I eat a fast-food meal on most days of the week.	I have fast food almost every day.	I eat fast food almost every day.
5	I do not have consistent meal patterns from one day to the next.	I don't have a clear eating plan or diet regimen for each day. I eat however I want to.	Each day, I don't have a clear eating pattern. I choose to eat what I want.
	Fast Pacer	Individuals with a rushed lifestyle	People who live a fast-paced life
6	My fast-paced life leaves me feeling drained and scattered.	My hurried life makes me feel exhausted and unorganized.	My fast-paced life makes me tired and unorganized.
7	I feel like I'm juggling too many things at once.	I feel like I am dealing with too many things at once.	I feel I am handling too many things at the same time.
8	I usually take care of everyone else and put myself at the bottom of my to-do list.	I usually take care of others first and put myself last.	I usually take care of others first and myself last.
9	My hectic schedule makes it hard for me to focus on my health.	I don't have time to take care of myself due to my chaotic schedule.	My hectic schedule leaves me no time to take care of my health.
	Easily Enticed Eater	Individuals who are easily persuaded to eat	People who are easily influenced about eating
10	I have difficulty controlling my portion sizes.	I have difficulty controlling the amount of food I eat.	I have difficulty controlling the amount of food that I eat.
11	I often eat out of habit, not because I am hungry.	I like eating so much that I eat more out of habit than out of hunger.	I like eating food out of habit, not just out of hunger.
12	When I'm stressed, lonely, anxious or depressed, I turn to food for comfort.	I eat to console myself when I feel stressed, lonely, worried, or sad.	I will eat food as a consolation when I'm stressed, lonely, anxious, or sad.
13	If there is food around me, I'll probably eat it.	If I'm around any food, I'll probably eat all of it.	If there is food around me, I might eat it all.
14	I snack throughout the day, hungry or not.	I constantly snack all day long whether I'm hungry or not.	I snack all day whether I'm hungry or not.

15	I will eat until I'm too full – and may even eat more.	I eat until I feel very full and can continue eating despite being satiated.	I will eat until I am stuffed and can continue eating even after I'm full.
	Exercise Struggler	Individuals who have difficulty exercising	People who have difficulty exercising
16	Of all things, being physically active has never been one of my priorities.	Out of all the various activities, physical movement has never been important to me.	Out of all activities, being active is something I never placed importance on.
17	I don't exercise because frankly I don't like it.	I don't exercise because I don't like to.	I don't exercise because I don't like it.
18	I never got "into" exercising, because I am not sure where to start.	I've never been "interested" in exercising because I don't know how to get started.	I've never been "interested in" exercising because I'm not sure where to start.
19	I have difficulty exercising.	I find it difficult to exercise.	I have difficulty exercising.
	Self-Critic	Individuals who are prone to self criticism	People who like to self-criticize
20	I measure my self-worth by the numbers on the bathroom scale.	I base my self worth on the number I see when I weigh myself on a scale.	I evaluate my worth with the number on the weighing scale.
21	I focus on the things I don't like about my body.	I'm obsessed with the parts of my body that I don't like.	I am obsessed with the parts of my body that I don't like.
22	I make a habit of saying bad things about myself.	I have a habit of critiquing myself.	I make a habit of saying negative things about myself.
23	I avoid social situations because of my weight.	I avoid social interaction because of my weight.	I avoid socializing because of my weight.
	All-or-Nothing Doer	Individuals who give it their all or do nothing at all	People who do their best or nothing at all
24	I approach my weight loss like it's just another project with a clear beginning and end.	I consider my weight loss as another project with a clear start and end that I just get done and over with.	I see my weight loss journey as another project with clear beginning and end, and I just need to get it done.
25	I'm either on or off my diet – there's no middle ground with me.	I strictly control my diet or do not control it at all. There's no balance for me.	I either follow a strict diet or no diet at all. There is no middle ground for me.
26	When I'm trying to lose weight, I give 100% of my effort but this is hard to sustain.	Whenever I try to lose weight, I try 100% though it is hard to be consistent.	When I try to lose weight, I give it 100%, but it's hard to maintain consistent efforts.
27	I am all or nothing when it comes to dieting or exercising to lose weight.	I'm one of those people who go all out in controlling what they eat or exercising to lose weight or don't lift a finger to lose weight.	I'm one of those people who either intensely control my diet or exercise for weight loss, or I don't do anything at all to lose weight.