ONLINE SURVEY OF SLIMMING PRODUCTS USE AMONG THE THAIS

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ABSTRACT:

Background: Slimming products are available for sale on the internet without a prescription. Some slimming products have side effects such as headaches, constipation, nausea, dizziness, dry mouth, insomnia; and in some cases, death. The purpose of this study was to survey the factors influencing slimming products usage among Thais via an online questionnaire.

Method: This was a cross-sectional study. The participants were 400 Thai people who used social networks. The questionnaire was constructed based on a survey website and then distributed online. Descriptive analysis and Chi-square test were used. All statistics were performed by SPSS statistical package version 21, licensed for Mae Fah Luang University.

Results: A total of 60.75% of participants were dissatisfied with their body shape; even though most of them had normal BMI (63.00%). There were 173 participants (43.25%) who took slimming products for weight loss, 90 participants (52.02%) perceived the products as quite safe and approved by the Thai Food and Drug Administration (FDA) (114 participants, 65.90%). Most slimming product users searched for product information prior to use (84.97%) and purchased products through the internet (50.29%). Results indicated that 227 participants (56.75%) never used slimming products because they were concerned about the side effects. However, 85 participants of non-users tended to use the slimming products and 87.06% of these (74 participants) tended to use safe products. In addition, gender, income, attitude towards body shape, body satisfaction and BMI were significant factors influencing slimming products use.

Conclusions: The findings indicated that attitude towards body shape and body dissatisfaction led to slimming product use among Thais who were active on social networks. Most were concerned about product safety and FDA regulation before actual use; and they tended to use products which were considered safe.

Keywords: Body shape; Slimming products; Weight loss

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INTRODUCTION

Overweight and obesity are defined as excessive fat accumulation that may impair health. The World Health Organization uses Body Mass Index (BMI) calculated by the weight in kilograms divided by the square meters of the body height (kg/m^2) to classify adults as underweight (BMI<18.50), normal (BMI=18.50-24.99), overweight (BMI≥25) and obesity (BMI≥30) [1]. The prevalence of overweight and obesity is associated with many chronic diseases including diabetes mellitus, cardiovascular disease, strokes, hypertension and certain cancers [2].

Successful weight loss requires long-term lifestyle changes to decrease caloric consumption and increase physical activity [3]. Long-term lifestyle changes showed great results in weight loss; however, such changes are difficult and required considerable effort. Many people who seriously want to lose weight also look for other ways to achieve fast weight loss.

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Slimming products are promoted in online advertisements with claims of effectiveness. These are easily available without a prescription. They include weight loss supplements, natural supplements, herbal products and dietary supplements which contain many ingredients such as herbs, fiber and minerals in different amounts and in many combinations [4]. Examples of some of these ingredients include L-carnitine, chitosan, chromium, seaweed, green tea, guarana (*Paullinia cupana*), hydroxyl citric acid (HCA), conjugated linoleic acid and lecithin. These ingredients are thought to act by increasing satiety, decreasing in absorption, increasing fat oxidation, increasing metabolic rate and reducing lipogenesis [5]. They are sold in forms such as capsules, tablets, liquids and powders. Previous studies have shown that slimming products are popularly used among Thai late-adolescents aged between 18-21 years, particularly females who have body image dissatisfaction [6]. Most of them attempt to maintain slim body shape and low body weight to increase their physical attractiveness. They turn to weight-loss products with harmful side-effects and long-term consequences [7]. Moreover, they report the reason to consume because the products are available and easy to purchase without prescription. These non-prescribed weight-loss products are aggressively marketed, often with little or no scientific proof of efficacy and safety in humans. Some products have several ingredients that have not been tested in combination with one another; and their combined effects are unknown. They might interact or interfere with medications and be linked to harmful side-effects and other serious health risks [8]. Slimming products are widely promoted as easily available through the internet without prescription; and the quality is hard to control. Increased reports of harmful effects of slimming product have raised concerns regarding their adverse health effects. This study, therefore, aimed to survey slimming products use, the factors influencing products use, as well as perceptions about safety, efficacy and the regulation of these products. In addition, factors hypothesized to be influenced on slimming product use such as gender, age, occupation, income, attitude towards body shape, body satisfaction and BMI were also explored. The results from this study might be used to find the proper way to reduce the slimming product use among the Thais.

METHODS

Population and sample group

This research was a cross-sectional study. The inclusion criterion was Thai people who used social networks from October 2013 to January 2014. The sample size was determined using Taro Yamane formula [9] at 95% confidence level, $\alpha = 0.05$ from the total number of internet users in Thailand. In 2013, the number of internet users in Thailand was 26,140,473 [10]. Therefore, the sample size for this study was 400.

Research instrument design

The questionnaire used in this study consisted of three parts: (1) general information of participants such as gender, age, occupation, income, attitude towards body shape, body satisfaction, BMI (calculated by researchers from height and weight of each participant) and slimming products use; (2) information about slimming products use such as using time, dosage form, purchasing place, products cost, objective and incentive for use, information about product safety, results and side effects after actual use; (3) information about participants who had never used slimming products such as non-use reasons and the qualifications of slimming products they required. The content validity index (CVI) of the questionnaire was 1.00 determined by three experts [11] which revealed a good content validity [12]. All questions were agreed upon by experts with IOC (index of item objective congruence) more than 0.5 [13]. The questionnaire was pretested to evaluate the clarity and sequence of content before the actual survey among 50 persons whose characteristics were reasonably similar to the survey participants.

The questionnaire was developed by the researcher and constructed based on the survey website (http://www.surveycan.com) and distributed via link (https://www.surveycan.com/survey/1e1451b1-85b4-4f5c-9903-e611aaec16f9) during the 3 month period from October 2013 to January 2014.

Data collection

Participants were completed the questionnaire online and submitted to transmit the survey responses. The data were collected automatically by the survey program and exported to Microsoft Excel format for further analysis.

Data analysis

Descriptive statistics were used to describe general information and slimming products use among participants. Chi-square test with 0.05

Table 1 Demographics of participants

Characteristic	n=400	%
Gender		
Men	120	30.00
Women	280	70.00
Age (years)		
≤20	61	15.25
21-30	268	67.00
31-40	56	14.00
≥41	15	3.75
Occupation		
Student	250	62.50
Government officer	26	6.50
Private employees	56	14.00
Business owner	40	10.00
Other	28	7.00
Income (baht)		
<10,000	230	57.50
10,001-20,000	120	30.00
20,001-30,000	38	9.50
>30,000	12	3.00
Attitude towards body shape		
Underweight	36	9.00
Normal	185	46.25
Overweight	179	44.75
Body satisfaction		
Satisfaction	157	39.25
Dissatisfaction	243	60.75
BMI		
Underweight	77	19.25
Normal	252	63.00
Overweight	71	17.75
Slimming products use		
Use	173	43.25
Non-use	227	56.75
Reasons were (n=227): (more than one answer can be chosen)		
Worried about side effects	128	56.39[a]
Don't want to lose weight	114	50.22[a]
Uncertain about the products	56	24.67[a]
Concerned about products safety	28	12.33[a]
The required qualification of slimming products (n=85) (more than one answer can be chosen)		
Safe	74	87.06[b]
No side effect	67	78.82[b]
FDA approval	62	72.94[b]
Product effectiveness	51	60.00[b]
Inexpensive	49	57.65[b]
Equipped with medical advisor	48	56.47[b]

[a] Calculated from n=227
[b] Calculated from n=85

statistical significance level was used to determine the relationship between BMI, body satisfaction and slimming products use. SPSS version 21 licensed for Mae Fah Luang University was employed for all data analyses.

RESULTS

General information

The demographic of participants are shown in Table 1. Out of 400 participants, 120 (30.00%) were men and 280 (70.00%) were women. Most were students (250 participants, 62.50%) and aged between 21-30 years (268 participants, 67.00%). There were 179 participants (44.75%) who considered their body as overweight, but only 71 participants (17.75%) had overweight BMI. Furthermore, 243 participants (60.75%) were dissatisfied with their body shape, 173 participants (43.25%) had used slimming products before while 227 participants (56.75%) had not. Among non-use participants (n=227), 128 participants (56.39%) were worried about the side effects; 114 participants (50.22%) did not want to lose weight; 56 participants (24.67%) were uncertain about the

Table 2 Information on slimming products use

Details	n=173	%
Using time		
< 1 month	27	15.61
1-3 months	120	69.36
4-6 months	14	8.09
7-12 months	5	2.89
> 12 months	7	4.05
Dosage form (more than one answer can be chosen)		
Tablet	105	60.69
Liquid	75	43.35
Topical	38	21.97
Purchasing place (more than one answer can be chosen)		
Internet	87	50.29
Department store	53	30.64
Drug store	42	24.28
Cosmetic shop	33	19.08
Clinics	28	16.19
Products cost (Baht)		
< 500	59	34.10
501-1,000	86	49.71
1,001-2,000	23	13.30
> 2,000	5	2.89
Objective of products use (more than one answer can be chosen)		
Weight loss	150	86.71
Firm body	69	39.88
Self-confidence	54	31.21
Products trial	1	0.58
Incentive for slimming products use (more than one answer can be chosen)		
Product effectiveness	97	56.07
Quick weight loss	55	31.79
Referral	35	20.23
Safety	33	19.08
Media influence or reception to media	12	6.94
Perceived levels of product safety		
High	71	41.04
Quite safe	90	52.02
Low	12	6.94
FDA approval		
Yes	114	65.90
No	11	6.36
Not observed	48	27.74
Study product information before actual use		
Yes	147	84.97
No	26	15.03
Result after actual use (more than one answer can be chosen)		
Weight loss	142	82.08
Firm body	63	36.42
No improvement	27	15.61
Side effects		
No	105	60.69
Yes	68	39.31
Such as (more than one answer can be chosen)		
Thirsty	61	89.71[a]
In appetence	31	45.59[a]
Palpitation	29	42.65[a]
Sweating	25	36.77[a]

[a] Calculated from n=68

Table 3 Relationship between demographics of participants and slimming products use

Factors	Slimming products use (%)		Chi-square	*P-value*
	Use (n=173)	Non-use (n=227)		
Gender				
Men	24.85	33.92	3.84	0.050
Women	75.15	66.08		
Age (years)				
≤20	17.34	13.66		
21-30	61.27	71.37	4.87	0.182
31-40	17.34	11.45		
≥41	4.05	3.52		
Occupation				
Student	60.12	64.32		
Government officer	5.78	7.05		
Private employees	16.76	11.89	4.98	0.289
Business owner	12.14	8.37		
Other	5.20	8.37		
Income (baht)				
<10,000	49.13	63.88		
10,001-20,000	35.84	25.55	8.99	0.029
20,001-30,000	10.98	8.37		
>30,000	4.05	2.20		
Attitude towards body shape				
Underweight	0.58	15.42		
Normal	35.84	54.18	55.33	<0.001
Overweight	63.58	30.40		
Body satisfaction				
Yes	27.17	48.45	18.66	<0.001
No	72.83	51.54		
BMI				
Underweight	11.56	25.11		
Normal	63.01	63.00	19.50	<0.001
Overweight	25.43	11.89		

products and 28 participants (12.33%) were concerned about the products safety. Nevertheless, 85 participants of non-users tended to use the slimming products if they were safe (74 participants, 87.06%), no side effects (67 participants, 78.82%), approved by the FDA (62 participants, 72.94%), effective (51 participants, 60.00%), inexpensive (49 participants, 57.65%) and equipped with medical advisors (48 participants, 56.47%).

Slimming products use among participants

Out of the 400 participants, 173 used slimming products. The information on slimming products use is shown in Table 2.

Most participants had used slimming products for a period of 1 to 3 months. There were 105 participants (60.69%) who consumed slimming products in tablet form. The products were purchased via the internet (87 participants, 50.29%) with the cost of 501-1,000 baht (86 participants, 49.71%). Most of them (150 participants, 86.71%) used slimming products for weight loss purpose. In addition, their incentive for slimming products use was product effectiveness (97 participants, 56.07%). Moreover, 90 participants (52.02%) perceived the products as quite safe and approved by the FDA (114 participants, 65.90%). There were 147 participants (84.97%) who studied the products information before actual use. The results found that 142 participants (82.08%) lost weight, while 27 participants (15.61%) showed no improvement. There were 68 participants (39.31%) who suffered side effects after products consumption such as thirsty (61 participants, 89.71%), in appetence (31 participants, 45.59%), palpitation (29 participants, 42.65%) and sweating (25 participants, 36.77%).

Factors related to slimming products use

The relationship between factors including gender, age, occupation, income, attitude towards body shape, body satisfaction, BMI and slimming products use were tested by the Chi-square test. The

results are shown in Table 3 that gender, income, attitude towards body shape, body satisfaction and BMI significantly related to slimming products use. It can be concluded that women and people who had high income tended to use slimming products. Additionally, people who considered their body as overweight, had body dissatisfaction or high BMI (overweight) tended to use slimming products more than people who considered their body as underweight, had body satisfaction or low BMI (underweight).

DISCUSSION

From this survey, it was found that many participants took slimming products because they were dissatisfied and perceived their body shape as overweight; even if they were in a normal weight range as determined by their BMI. The hypothesis test found that gender, income, attitude towards body shape, body satisfaction and BMI influenced the decision to use slimming products. This finding was in accordance with previous studies that people who have body dissatisfaction tend to use slimming products more than people who have low BMI or body satisfaction [14]. Adolescent females who have body image dissatisfaction attempt to lose weight even if they have normal BMI [15]. Thus, BMI is strongly and positively correlated with body dissatisfaction for men and women. The higher the BMI, the more likely the individuals will be dissatisfied with their body with a desire to be slimmer [16]. In this study, the objectives of slimming products use were for weight loss, firm body and increased self-confidence. Nevertheless, many adolescents who were dissatisfied with their body always found improper weight loss methods such as fasting and using medication. These might be harmful with adverse health effects. Although the participants studied the product information before actual use and chose the quite safe products approved by the Thai FDA, they suffered side effects after consumption of slimming products such as thirsty, in appetence, heart palpitations and sweating [17]. In fact, the FDA regulates weight-loss supplements differently from prescription or over-the-counter drugs. Weight-loss products can be sold without being tested or approved by The FDA. Once the FDA finds an unsafe product on the market, it can recall that product [4]. Some slimming products sold online are cocktail formulas and contain controlled substances such as sibutramine, bisacodyl, chlorpheniramine, fluoxetine, thyroxine, frusemide and hydro-chlorothiazide. Sibutramine increases the risk of myocardial ischemia and cerebrovascular disease by 16%, while also often causing high blood pressure, headache, constipation, nausea, dizziness, dry mouth and insomnia [18]. In addition, some of the over the counter slimming products adulterated with anti-obesity drug analogues such as N-nitrosofenfluramine (an analogue of fenfluramine) associated with hepatotoxic effect. N-desmethyl-sibutramine and N-bisdesmethyl-sibutramine (analogue of sibutramine), with more severe adverse effects including psychoticism, panic attacks and mood changes [17]. Moreover, the products may contain unsafe compounds that have not been adequately studied in humans; and they have been shown to have drug interactions. Some slimming products are classified as risk product groups and as the wrong ways to lose weight, however, they are still widely used among Thai adolescents. As evidence in the present findings, those using slimming products believed in the effectiveness of the products. Other factors that related to slimming products use were affordable price, FDA approval, provable weight loss outcome and no side effects. These are the main factors for users to continue to use the products, especially adolescents. Moreover, most purchased the products through the internet without prescription. Most participants in this survey were aged between 21-30 years (67%) and categorized in Generation Y (18-34 years) which is technologically advanced, entertainment driven and shops online. They use the internet for 15% of their purchasing and their purchasing decisions are more affected by social media than other generations [19]. Hence, the internet is becoming an increasingly important sales channel which is hard to control regarding product quality and dosage form of slimming products [20]. Slimming products can be expensive and they might not work. To reduce the risk of slimming products it is, highly recommended to study the product details before use. Education is also necessary concerning the side effects of the products. Those attempting to lose weight must be encouraged to use proven safe and effective treatments. In addition, they must seek alternative methods under a physician's supervision such as diet control, self-monitoring and fat treatment using innovative equipment [21]. Additionally, topical slimming products were also effective for losing weight and do not have any side effects [22]. Moreover, healthier behaviors such as a healthy eating plan, reduced calorie consumption,

regular exercise and increased physical activity should be promoted for long-term weight management and overall health improvement [23]. Furthermore, both adolescents and adults should feel satisfied with their body weight and shape to enhance their self-esteem and diminish slimming products use [24]. Similarly, messages from television and magazines are more likely to lead to decrease in body satisfaction such as thin body trend, white skin and facial beauty should be disregarded [25]. Thus, a change of attitude towards weight and appearance is the best way forward, since people value should be determined by their internal qualities rather than physical appearance [26]. Finally, self-acceptance is important to promote psychological and physiological well-being [27].

LIMITATIONS

This study categorized the gender of participants as male and female. However, future studies should be conducted for unidentified sexes who might rely on slimming products use to obtain more comprehensive information.

CONCLUSIONS

The attitude towards body shape and body dissatisfaction has led to increasing slimming products use among Thai people. Although many used FDA approved slimming products some still suffered side effects. It is important to encourage people to be more concerned about the side effects of the products and to use proven safe and effective treatments when making a weight-loss attempt.

CONFLICT OF INTERESTS

The authors declare that they have no conflict of interests.

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