ORIGINAL ARTICLE

The Use of Weight Loss Products Among Overweight and Obese Patients in Malaysia

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ABSTRACT

Introduction: Local profiles on the use of weight loss products are scarce. The study aims to address this together with concerns on the users' misperception of the safety of these products, and the absence of high-quality evidence to support such use. **Methods:** This was a cross-sectional study conducted in overweight and obese patients attending a public primary care clinic in Penang. Selected patients were given a set of self-administered questionnaire that assessed types of weight loss products used, factors that influenced the usage and the users' perception of their own body weight and the diet products they are taking. **Results:** From 332 participants of this study, 18.7% were users. Mean age of users were 44.6 (SD 11.9) years. The majority (66.1%) only used dietary supplements, 11.3% used weight loss medications and the rest (22.6%) used both products. Reasons for its use were for health, a faster result to lose weight and failing dieting and exercise regimes. The average amount spent on this was RM100 per month. Commonest source of weight loss products were friends. Majority (80.6%) did not discuss the use of the products with doctors. Factors associated with the use of weight loss products were being female (AOR=5.59), had tertiary level education (AOR=2.27), being employed (AOR=3.42), self-perceived of overweight (AOR=3.61) and perception that weight loss products as safe (AOR 2.48). **Conclusion:** Users of weight loss products are among highly educated working females who perceived themselves as being overweight and assume the products are safe.

Keywords: Obesity, Anti-obesity agents, Diet, Obesity Management, Perception

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INTRODUCTION

Obesity is a major problem not only in western developed countries but has spread to small Asians nations such as Malaysia. The prevalence of overweight and obese adults worldwide was recorded to be as high as 39% and 13% respectively in 2014 and these numbers are expected to have increased (1)(2). A recent survey showed that one-third of the Malaysian adult population are overweight (2). This is a concern as metabolic diseases such as diabetes are strongly associated with being overweight and obese, therefore weight loss is considered a high priority for health-related reasons (3). In addition, many more are losing weight in the pursuit of achieving a perfect body figure to built up their self-esteem and quality of life (5). While many are advised by the family physicians to lose weight through the conventional diet and exercise routines, compliance to these methods is often varies based on their willpower and motivation to endure rigorous physical and mental challenges.

Weight loss products have therefore become a faster more convenient alternative to lifestyle modification towards achieving the targetted ideal weight. The usage of these products become more popular with the rampant advertisements on social media and influences from public figures and celebrities as their endorsement. Previous surveys reported that the prevalence in using these supplementary products ranges from 37.7% to 58.9%.(6)The marketing of these products mainly target vulnerable younger aged women and those with a negative perception of their body weight (4,5). In addition, in Malaysia, women have a higher prevalence of being overweight and obese when compared to men thus are more likely to use these products (9).

Weight loss products are also commonly marketed as health dietary supplements which do not require any approval from the local drug and pharmaceutical regulating agencies monitoring body, unlike other drug

or medications that need to undergo strict medical testing and clinical trials to assess safety, efficacy and possible drug interaction (6).Nevertheless, it is very difficult to categorise weight loss products as medications or supplements by the responsible regulating agencies. Therefore, it is more convenient for manufacturers to register their products as dietary food supplements to avoid undergoing these vigorous registering processes and being closely monitored by the Drug Control Authority.

As a result, the consumption of these products may warrant safety issues as current studies showed there were conflicting data on the efficacy and safety of these dietary supplements that are widely available in the market (7). Some of these products are linked to adverse side effects such as stroke and other cardiovascular complications especially to people already at risk (8). In another study, the use of these dietary supplements is shown to be associated with a higher risk of developing adverse effects such as psychiatric, autonomic, cardiovascular, and gastrointestinal symptoms (8). Thus, the use of these dietary supplements for weight loss can be risky due to the limited proof of its effectiveness and safety profile (8–10).

Currently, there is insufficient information as not many studies have been done locally to look into the issue of weight loss product usage nor in other obesity interventions for that matter despite the rising prevalence (9). This makes it difficult for healthcare providers to monitor those taking weight loss products that are self-purchased from the open market and plan for intervention when there are complications. There is also a consensus statement made by expert panels from around Asia on the need to educate the public and promote safe and healthy weight management through proper consultation from a health care professionals (2). Therefore, it is justified to conduct a study on this issue and observe the extent of the problem among our overweight and obese patients within our local medical settings.

Hence, this study hopes to provide us with a better perspective of the current situation and hopefully, the findings will guide us, the primary care physicians to plan future strategies and manage overweight and obese patients safely and effectively.

MATERIALS AND METHODS

This was a cross-sectional study conducted among overweight and obese patients attending a public primary care clinic in Penang, northern peninsular of Malaysia. The clinic covers a population of about 370,000 people within an area of 239.1 km2. We used a convenience sampling technique and approached any patients attending an out-patient clinic. Those who were above 18 years old, with a body mass index (BMI) of more than 25 kg/m2 and able to understand Bahasa Malaysia or English were invited to participate in this study. Those who were in acute medical emergency or refused to participate were excluded. This study was carried out once a week over a span of three months from March to June 2016. The sample size was calculated using the single proportion formula and was set at 384 participants.

This study used a self-administered questionnaire which was developed specifically for the purpose of this study. The questionnaire consisted of four parts with 21 items that covered socio-demographic profiles and medical conditions of the participants, use of weight loss products, perception, and satisfaction on weight status as well as perception on safety and effectiveness of weight loss products. Two items were used to assess safety and effectiveness, "Do you think dietary supplement for weight loss is effective in reducing weight?" and "Do you think the products used are safe and have no side effects? With 5-point Likert scale from strongly disagree (1) to strongly agree (5). Those who answered strongly agree, agree and neutral were categorised as agree and thus perceived the weight loss product was safe or effective while those who reported strongly disagree and disagree were categorised as disagree and perceived the weight loss products were unsafe or ineffective. The questionnaire was developed from a comprehensive literature review with additional suggestions by two experts in the field (6,15–17). The questionnaire had undergone a face validation process for comprehensive and feasibility testing and was then pre-tested on 32 patients to check for reliability. The internal consistency for questions on perception of body weight status and perception on the safety and effectiveness of weight loss products measured at 0.69 and 0.82 respectively.

We defined the term "Weight loss products" as any consumable products that are taken orally with the aim to reduce weight. It can be categorised into "dietary weight loss supplement" and "weight loss medication"(18). Weight loss supplements are regulated as food and can be obtained without a medical doctor's prescription (10). They can be available in the form of tablets, capsules, soft gels, gel caps, liquids, tea or powders and is easily available in pharmacies, supermarkets, health food stall, clinics, direct selling or can be purchased online (19). On the other hand, weight loss medications are registered medications that only can be obtained through prescription by a registered medical doctor (7). These include phentermine, diethylpropion, phendimetrazine, and benzphetamine. A weight loss product user is defined as those who are currently using weight loss products or had used weight loss product within the period of one year.

Data Analysis

All data were entered and analysed using IBM statistic

SPSS version 23. Association between the users on the weight loss products and independent variables were analysed using Fisher exact or Chi-square test. Subsequently, all the significant variables with a p-value < 0.25 were subjected to multiple logistic regression analysis.

Ethical approval

The study was approved by the Research and Ethics Committee of Universiti Kebangsaan Malaysia and Malaysia Research Ethics Committee, Ministry of Health Malaysia. Permission to conduct this study at the local government clinic was obtained from Penang Health Department. All sample participants had given their written informed consent. There was no conflict of interest to any party or sponsors in conducting the study. The study was funded via a research grant from the Universiti Kebangsaan Malaysia.

RESULTS

In total, 350 patients agreed to participate in the study, out of 380 patients approached, making the response rate to be 92.1%. Out of this,18 responses were excluded from data analysis due to substantially incompleted questionnaires which made them deemed unsuitable to be analysed. Therefore, the final number of responses that were subjected to statistical analysis was 332.

The sample population in this study ranged from 18 to 76 years old with the mean age was 46.19 (SD 13.5) years. There were more female participants (65.7%) compared to male participants (34.3%). More than three-quarters of the participants were married (77.4%), 68.4% are Malay and 73.5% received a primary or secondary education. About three quarter (74.4%) of the participants had a chronic medical condition that includes hypertension (56.3%), type 2 diabetes mellitus (37.7%), dyslipidaemia (30.1%) and ischaemic heart disease (6.3%). Table I shows the demographic profile of the participants in this study.

This study found that 62 out of 332 (18.7%) of the participants had used weight loss products during the past 1 year and are thus categorised as users. Eight or 2.4% of the total participants were still taking the weight loss products during the study period. 270 (81.3%) of the participants have never used weight loss products and are categorised as non-users of weight loss products.

Most of the weight loss products used were dietary supplements (66.1%). Majority of the users (80.6%) did not seek medical consultation for the use despite having a pre-existing medical condition (75.8%) such as hypertension, diabetes, dyslipidaemia and some with already had a history of ischaemic heart disease (8.1%) (Table II).

Table I: Socio-Demographic Characteristics Of Participants

Variables		**Total (N=332)**
Age (years)	Mean age (SD)	46.19 (13.5)
	18-39	111 (33.4)
	≥40	221 (66.6)
Gender	Male	114 (34.3)
	Female	218 (65.7)
Marital status	Married	257 (77.4)
	Not married	75 (22.6)
Ethnicity	Malay	227 (68.4)
	Non- Malay	105 (31.6)
Education	Primary or secondary	244 (73.5)
	Tertiary	88 (26.5)
Income	≤ RM 1000	170 (51.2)
	> RM 1000	162 (48.8)
Employment status	Employed	204 (61.4)
	Not employed	128 (38.6)
Presence of medical condition	Yes	247 (74.4)
	No	85 (25.6)

Table II: Characteristic Of Weight Loss Products Usage

Variable		**n=62 (%)**
Type of products	Weight loss medication	7 (11.3)
	Dietary supplement	41 (66.1)
	Both	14 (22.6)
Duration used	< 6 months	45 (72 .6)
	< 6 months to 1 year	7 (11.3)
	>1 year	10 (16.1)
Discussed with doctor	Yes	12 (19.4)
	No	50 (80.6)
History of dieting	Yes	55 (88.7)
	No	7 (11.3)

The source of accessing the weight loss products are mainly from friends before doctors. The three most common reasons for using weight loss products were for faster weight loss, to improve general health and after failing to obtain the desired weight loss target through dieting and exercise (Fig.1 & Fig.2).

The mean age of users was 44.6 (SD 11.9) years. Majority of the users are females (82.2%), married (80.6%) and holding a job (80.6%). Majority of users perceived themselves as overweight (95.2%) and were not satisfied with their body weight (91.9%). The amount of total spending for these products ranged from RM20 to RM5,000 with a median of RM100.00 (IQR= RM 73.75 to RM205.00).

We performed a bivariate analysis to determine the factors associated with the use of weight loss products. Female gender (x2= 9.31, p-value= 0.002), higher education level (x2=7.47, p-value= 0.006) , monthly income of more than RM1000 (x2= 6.07, p-value =0.01), being employed (x2=11.86, p-value=0.001), self-perception of being overweight (x2= 11.14, p-value=0.001), dissatisfied with their body weight (x2=8.91, p-value=0.003) and assumption that weight loss products as safe (x2=3.86, p-value=0.04) were factors identified to have statistical significant association with the usage of weight lost products (Table III).

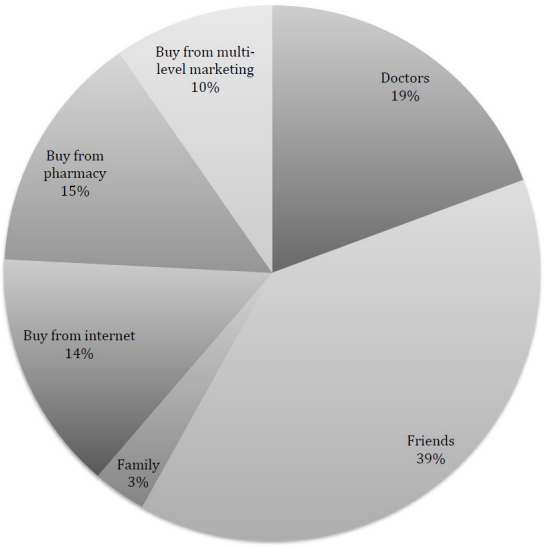

Figure 1: Source of Accesing Weight Loss Products

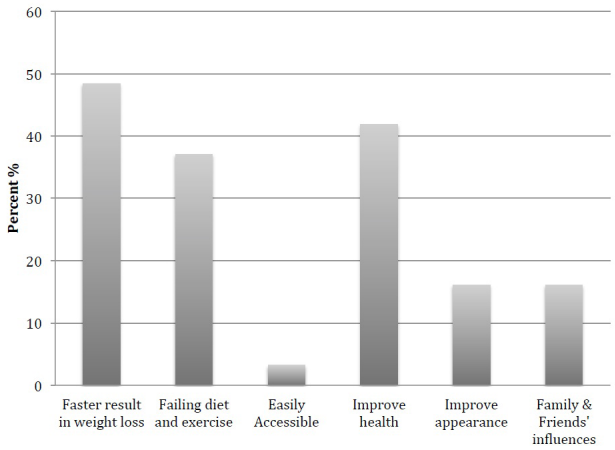

Figure 2: Reasons of Using Weight Loss Products

Table III: The Profiles Of Weight Loss Products Users

Variable		Use of weight loss product		x2 value	p-value
		Yes (n=62)	No (n=270)		
Age	18-39	22(19.8)	89(80.2)	0.14	0.70
	> 40	40(18.1)	181(81.9)		
Gender	Male	11(9.6)	103(90.4)	9.31	**0.002**
	Female	51(23.4)	167(76.6)		
Marital status	Married	50(17.9)	230(82.1)	0.78	0.37
	Not married	12(23.1)	40(76.9)		
Ethnicity	Malay	48(21.1)	179(78.9)	2.88	0.09
	Non-Malay	14(13.3)	91(86.7)		
Education	Primary and Secondary	37(15.2)	207(84.8)	7.47	**0.006**
	Tertiary	25 (28.4)	63(71.6)		
Monthly income	Less than RM1000	23(13.5)	147(86.5)	6.07	**0.01**
	More than RM1000	39(24.1)	123(75.9)		
Employment status	Employed	59(24.5)	154(75.5)	11.86	**0.001**
	Unemployed	12(9.4)	116(90.6)		
Presence ofmedical condition	Yes	45(18.2)	202 (81.8)	0.13	0.72
	No	17(20.0)	68(80.0)		
Perception on body weight	Overweight	59(22.3)	206(77.7)	11.14	**0.001**
	Not overweight	3(4.5)	64(95.5)		
Satisfaction on body weight	Not satisfied	57(22.1)	201(77.9)	8.91	**0.003**
	Satisfied	5(6.8)	69(93.2)		
Perception on effectiveness WLP	Agree	36(22.2)	126(77.8)	2.62	0.10
	Not agree	26(15.3)	144(84.7)		
Perception on safety WLP	Agree	34(23.4)	111(76.6)	3.86	**0.04**
	Not agree	28(15.0)	159(85.0)		

Multiple logistic regression was used to assess independent factors associated with the use of weight loss products. Variables that were selected into the regression model were taken from the bivariate analysis with a p-value of <0.25. The variables were gender, ethnicity, education level, income level, employment status, perception on body weight, satisfaction on body weight, a perception of the effectiveness of weight loss products and perception of the safety of weight loss products (Table IV).

Table IV: Multiple Logistic Regression: Factors Associated With The Use Of Weight Loss Products

Variable		B (SE)	Wald	Adjusted OR (95% CI)	p value
Gender	Female [male]	1.72	17.58	5.59 (2.5, 12.48)	**0.001**
Ethnicity	Malay [non Malay]	0.42	1.4	1.53 (0.76 , 3.09)	0.24
Education level	Tertiary [primary, secondary]	0.82	5.54	2.27 (1.15, 4.49)	**0.02**
Monthly income	> RM1000 [<RM1000]	0.09	0.04	1.09 (0.48 , 2.49)	0.833
Employment status	Employed [not employed]	1.23	6.77	3.42 (1.35, 8.64)	**0.009**
Perception on body weight	Overweight [Not overweight]	1.28	3.77	3.61 (0.97,13.41)	**0.05**
Satisfaction on body weight	Not satisfied [Satisfied]	0.65	1.33	1.92 (0.63, 5.81)	0.25
Perception on effectiveness WLP	Agree [Not agree]	0.07	0.02	0.94 (0.40, 2.18)	0.88
Perception on safety WLP	Agree [Not agree]	0.91	4.31	2.48 (1.05, 5.83)	**0.04**

χ^2 =63.44, p=0.001, R^2 =25.7 , Adjusted OR = adjusted odd ratio, 95% CI= 95% confidence-interval

From this, variables that were significantly independently associated with the use of weight loss products were being female (AOR=5.59, 95% CI= 2.5, 12.48 , p-value=0.001), had higher education level (AOR=2.27, 95% CI=1.15, 4.49, p-value=0.02), those who are employed (AOR=3.42 , 95% CI=1.35, 8.64, p-value=0.009) , self-perceived of overweight (AOR=3.61, 95% CI=0.97, 13.41, p-value=0.05) and assumption that weight loss products to be safe (AOR= 2.48, 95% CI=1.05, 5.83, p-value= 0.04). The model was able to classify correctly 81.9 % of cases.

DISCUSSION

Weight loss products seem to be the more popular and easier option to help in losing weight than the conventional ways of dieting and exercise (20). They are easily purchased in the open market with most not requiring any medical prescription by health professionals. Therefore, we expected that the prevalence of weight loss products used among the public especially in certain groups is relatively high. However, our study shows that the use of any weight loss products among patients who were overweight and obese, attending a local public clinic was only 18.7%. Other studies also reported a variation of prevalences ranging from 13.7% to 52.1%, depending on the group of population and definitions of the weight loss products studied which may include traditional and complementary methods (21,22). Notwithstanding the above, similar to our findings that the user of these products was higher among educated working females is consistent with other studies done around the world (12–15). In this study, women are found to be almost six times more likely to use weight loss products compared to men. This is consistent with other findings that women are generally more self-aware about their appearance, have greater dissatisfaction with their body weight compared to men and tend to perceive themselves as being too fat (16–19). Women are generally known to be more conscious about their physical appearance and are willing to spend their money on weight loss product to achieve their desired figure (10,23,28,29)(25,26,30,31). There are individual reasons why people are turning into weight loss products to help them lose weight. Apart from looking presentable, the majority of patients consumed weight loss products for health-related reasons which were also a finding in this study (6).

One-third of patients in this study with chronic diseases such as hypertension and diabetes used weight loss products to achieve ideal weight for better control of their medical problems as advised by their medical doctors. Most turned to these products after failing conventional ways to lose weight such as joining an exercise program or adopting a dietary regime. This finding was similar to the study conducted in Columbia, US (13). Despite this, our study did not find any statistically significant associations between the presence of chronic medical conditions and the use of weight loss products.

Most patients in our study prefer to purchase the diet supplements over-the-counter or online. This could be influenced by the extensive marketing and recommendation made by friends. Due to the lack of regulation and poor enforcement, the advertisement made to sell these products are often misleading, as they often claim that the weight loss products are natural thus safer alternative than conventional medication (32,33). This is a concern as weight loss products including those categorised as dietary supplements are linked to adverse effects. A study done locally reported that the most common side effect of weight loss products was gastrointestinal tract problems such as diarrhoea and abdominal pain (6).These dietary supplements may also contain hidden ingredients such as sibutramine which

is banned because of its association with cardiovascular complications that may cause palpitation, dizziness, anxious and restlessness (26). Moreover, only a small number (19.4%) of the patients in this study had sought medical advice before consuming weight loss products. This number is relatively lower when compared to a study done in the US, that shows that thirty percent of weight loss products users discussed the use of the weight loss products with their medical doctors (27). In a local study, dieticians are preferred in comparison to doctors and other professions such as fitness instructors and pharmacy to seek consultations on weight loss (20).

There are studies which reported that the use of weight loss products is more common among the younger age group (10,24). However, our study found no significant association between age and the use of weight loss products. This could be explained by the population in our study that is consisted of clinic attendees which mainly middle age or elderly patients coming for the routine medical check-ups. Our study also did not find any statistically significant association between the income level of the patients and the use of weight loss products. In contrast, a US survey among adult population showed that people with lower income groups are more likely to use dietary supplements compared to those with a higher income (6).

Similar to most studies, we confirmed that there was a significant statistical association between the perception of own body weight through the use of weight loss products (10,23,28,29). Majority of the weight loss products users are not satisfied with their body weight and perceived themselves as being overweight. This group is almost four times more likely to use weight loss products when compared to those who do not perceive themselves as overweight which makes them likely target group to market weight loss products. Nevertheless, body weight dissatisfaction was not a significant factor that was associated with the use of the weight loss products. This result can also be seen in a local study done among diabetic patients that showed that body weight dissatisfaction was not a strong factor for the patients to drive them to reduce their weight (29). This relationship can be dynamic as there are many factors that may interact with the person's overall perception of their weight such as their psychological wellbeing that may influence a person's to choose using it for weight loss attempt (16).

Patient's decision in using weight loss product to lose weight also depends on their perception of the safety of the products their consuming (25). They are twice more likely to use the weight loss products when compared to those who think otherwise. This is important because only a small number of participants perceived that the weight loss products they were using were actually effective. This is consistent with another local study that reported exercise training were perceived by their respondents to be more effective than taking weight loss products or other interventions (20). However, this study also found no significant association between the perception of the effectiveness and the usage of these weight loss products. Nevertheless, this study is not without limitations. As this was a cross-sectional study, it cannot show a causal relationship between certain factors towards the use of weight loss products. The data was collected from self-reported questionnaires and we had to use convenience sampling which may be subjected to reporting and selection bias and may not represent the intended population of the study. Therefore, further studies, involving randomly selected participants in multiple health centers are warranted to improve the generalizability of the results.

CONCLUSION

This study found that there is a reasonable number of overweight and obese patients taking weight loss products for a faster alternative to losing weight and for health-related reasons with the perceptions that these products are safe. Nonetheless, this raises concerns as most users do not seek medical advice and there is an still absence of high-quality evidence to support the use of these products.

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