

The Use of Supplements among Adults in Selected Gymnasium in Kuala Lumpur, Malaysia

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Abstract

The use of supplement is prevalent among Malaysians especially athletes and gym users. However, the study on the use of supplements among people exercising in the gym is rarely carried out in Malaysia. The aim of this study was to assess supplement use among adults who exercise in gyms in Setapak, Kuala Lumpur. This study also aimed to compare sociodemographic characteristics between supplement users and non-users. A total of 315 gym users (79.0% male and 21.0% female), with a mean age of 27.1 ± 7.8 years participated in this study. Data collection was carried out in five gyms located in Setapak, Kuala Lumpur. Anthropometric measurement of body weight and height of the respondents were taken. Sociodemographic information and supplement use were obtained using questionnaires. This study found that 66.3 % of respondents were supplement users. Protein shake (73.7%), vitamin C (72.4%) and whey protein (68.3%) were the most popular choices among supplement users. Internet (76.2%), friends (47.9%) and coaches (35.2%) were primary sources of supplement information. There were significant association between body mass index category ($p=0.020$), age group ($p=0.037$), gender ($p<0.001$) and race ($p=0.027$) with supplement use status. In conclusion, prevalence of supplement use among gym users was high. Therefore, it is crucial to disseminate precise and scientific based on information on the health benefits and risks of supplement to the s gym users to avoid inappropriate use of supplement.

Keywords: Adult; Gyms; Supplements

Introduction

The supplement industry is considered as one of the growing industries in the world that contribute

significantly to the global economy. One of the biggest trends in the healthcare industry is that now focuses on health and look for alternative medicines including supplements, Nutraceutical and functional foods to

improve their lifestyle [1]. In Malaysia, supplements are categorized under the pharmaceutical industry as a health supplement and dietary supplement that includes traditional medicines. Supplements are usually available in a variety of forms including tablets, capsules, powders, or pills.

According to the Dietary Supplement Health and Education Act of 1994 (USA 1994) [2], the term dietary supplement is a product (other than tobacco) intended to supplement the diet that contains one or more dietary ingredients such as vitamin, mineral, herb or other botanical, amino acid, a dietary substance to supplement the diet by increasing the total dietary intake, metabolite, constituent, extract, or combination of any ingredient. There is no regulation on supplements in Malaysia. Supplements are widely available in various places such as pharmacy and most of the supplements are sold without a prescription. Some studies have shown that most people that use supplements not get medical advice before taking. Individuals who consume supplements are often those involved in sports and physical activities [3]. Besides that, supplements can increase daily intake of vitamins and minerals and prevent chronic diseases [4]. Among the main causes of active individuals taking supplements are to build muscles, increase strength, prevent future illness and improve performance in sports [5,6]. Proteins are the most widely used supplements taken by those who exercise in commercial gyms [7].

There are various studies that report on the use of supplements among athletes. However, the study on the supplement use among people exercising in the gym is rarely carried out in Malaysia. This study can be used by the health professionals to educate the population and provide information on supplements intake among gym members. This is because some individuals may obtain information on the use of supplement from less qualified and non-healthcare sources. The aim of this study is to assess the use of supplements and identify the sources of supplement information among adults who exercise at gymnasium in Setapak, Kuala Lumpur. This study is also aimed to determine the association between socio-demographic characteristics, body mass index (BMI) with the status of use of supplements.

Materials and Methods

Sampling and Study Location

This cross-sectional study was conducted at five-selected gymnasium in Setapak, Kuala Lumpur that was selected randomly. This study involved a total of 344

respondents aged between 19 and 60 years old, respondents exercise at gymnasium at least twice a week. Estimated sample size was calculated by using Daniel method (1999) [8].

Data Collection

Anthropometric measurements included weight and height. Body weight was measured to the nearest 0.1 kg using Tanita HD-312 Digital Balance (Tanita Corp., Tokyo, Japan). The height of the respondents was measured to the nearest 0.1 cm using SECA 208 body meter (SECA, Hamburg, Germany). Body mass index (BMI) was determined by dividing weight (kg) by height (m²). A questionnaire was used to collect the data on socio-demographic information of respondents included age, gender, race, education level and household income as well as to collect data on the use of supplements including types of supplements and sources of supplements.

Ethical Approval

This study obtained an ethical approval from Universiti Kebangsaan Malaysia Research Ethical Committee with references number UKM PPI/8/JEP-2017-628.

Statistical Analysis

Data was analyzed using Statistical Package for Social Sciences (SPSS) version 22.0 (SPSS Inc, Chicago, IL, USA). Statistical test used were descriptive statistics, independent t-test and chi-square test. Descriptive statistics including mean, frequency, percentages, and standard deviation were tabulated. Independent t-test was used to determine significant differences of mean of anthropometric measurements between male and female. Chi-square test was used to determine the association between socio demographic characteristics and BMI with supplements use status. Differences were considered statistically significant at $p < 0.05$ for all analysis.

Results and Discussion

Anthropometric Characteristics

Three hundred and fifteen respondent respondents were involved in this study. Anthropometric measurement included weight, height and BMI. (Table 1) shows the physical characteristics of the respondents by gender. Independent t-test shows that mean of weight, height and BMI for male was significantly higher than female.

Anthropometric characteristics	Mean \pm SD				P value
	Male (n=249)		Female (n=66)		
Weight (kg)	74.2 \pm	11.8	59.6 \pm	12.7	<0.001***
Height (m)	1.7 \pm	0.1	1.6 \pm	0.1	<0.001***
Body mass index (kg/m ²)	24.9 \pm	3.6	22.9 \pm	4.8	<0.001***

Table 1: Physical characteristics of respondents by gender.

*** There are significant differences between male and female (p <0.001)

Table 2 shows distribution of respondents according to classification of BMI and supplements used status. Overall, according to classification of BMI, majority of respondents were normal (55.6%) followed by overweight (33.0%), underweight (4.1%) and obese (7.3%). The prevalence of overweight or obese was high because some individual have a BMI above 25 kg/m² may be due to high muscle mass but not due to the weight of excess fat. Chi-square test shows that there was a significant association between classification of BMI and supplements use status (p=0.020). A total of 38.5 % of

respondents that categorized as underweight were less likely to take dietary supplements. While, 62.9% respondents that categorized as normal, 76.0% overweight and 65.2% obese were likely more tend to take dietary supplements. The prevalence of normal, overweight and obese that use dietary supplements in this study are much higher compared to the results of the National Health and Nutrition Examination Survey (NHANES) 2003-2006 in United States that shows 56% respondents categorized as normal, 57% overweight and 48% obese use dietary supplements [9].

BMI Classification (kg/m ²)	Supplement users (n=178)		Non supplement users (n=71)		Overall (N=315)		χ^2	P value
	n	%	n	%	n	%		
	Underweight (<18.5)	5	38.5	8	61.5	13		
Normal (18.5-24.9)	110	62.9	65	37.1	175	55.6		
Overweight (25.0-29.9)	79	76	25	24	104	33		
Obese (\geq 30.0)	15	65.2	8	34.8	23	7.3		

Table 2: Distribution of respondents according to classification of body mass index (BMI) and supplements use status.

* There are significant association between BMI classification with supplements use status at (p<0.05)

Supplements Use According to Socio-Demographic Characteristics of Respondents

The supplements used status based socio-demographic characteristics of the respondents are described in Table 3. A total of 315 respondents were involved in this study. Overall, 66.3 % of the respondents in this study are supplement users. As supplements aim to improve physical performance or body composition, the

tendency of supplements used by gym users increases and becoming a common practice. The prevalence of supplements used in this study were higher compared to study on respondents that exercise at gymnasium in Lembah Klang, Malaysia (41%) and Pulau Pinang, Malaysia (51.2%) but lower compared to study at gymnasium in Tehran, Iran (66.7%) [10] and New York (84.7%) [11].

Demographic profile	Supplement users (n=209)		Non supplement users (n=106)		Overall (N=315)		χ^2	P value
	n	%	n	%	n	%		
Overall	209	66.3	106	33.7				
Ages (years)							4.356	0.037*
< 30	140	62.8	83	37.2	223	70.8		
\geq 30	69	75	23	25	92	29.2		

Gender							14.045	<0.001***
Male	178	71.5	71	28.5	249	79		
Female	31	47	35	53	66	21		
Race							7.224	0.027*
Malay	110	73.8	39	26.2	149	47.3		
Chinese	79	59	55	41	134	42.5		
Indian	20	62.5	12	37.5	32	10.2		
Education level							0.308	0.857
Secondary school	27	62.8	16	37.2	43	13.7		
College or university students	77	66.4	39	33.6	116	36.8		
College or university graduate	105	67.3	51	32.7	156	49.5		
Household income (RM)							4.123	0.127
<3000	113	62.8	67	37.2	180	57.1		
3000-5999	65	67.7	31	32.3	96	30.5		
≥6000	31	79.5	8	7.5	39	12.4		

Table 3: Supplements use status according to Socio- demographic characteristics.

* There are significant association between ages and race with supplements use status at $p < 0.05$

*** There are significant association between gender with supplements uptake status at $p < 0.0$

A total of 223 respondents were age less than 30 years old (70.8%) and 92 respondents aged 30 years and above (29.2%) were involved in this study. It was observed that percentage of supplement users with age of 30 years and above (75.0%) was higher compared to supplement user's age less than 30 years old (62.8%). Chi-square test shows that there are significant association between age with supplements use status ($p = 0.037$). The study of Goston and Correia (2010) [12] reported inconsistent results where supplement users are younger than non-supplement users ($p < 0.01$).

Besides that, 249 male (79.0%) and 66 female (21.0%) were involved in this study. Comparison between gender shows that male respondents (71.5%) were more likely to consume supplements than female respondents (47.0%) were. The result shows that there is a significant association between gender and supplements used status ($p < 0.001$). The study of Goston and Correia (2010) [12] reported similar result where male use more supplements compared to female (44.6%, 28.1% respectively; $p < 0.01$). However, the results of this study was different from study reported by Mazlan (1990) [13] who found that prevalence of supplements users among students at Universiti Putra Malaysia was higher among female (14.9%) compared to male (9.7%).

The respondents comprised three race, whereby 149 are Malays (47.3%), followed by 134 Chinese (42.5%) and India (10.2%). The result shows that there is a significant association between race and supplements use status ($p = 0.027$). Prevalence of supplement users among the Muslims (73.8%) was higher compared to Chinese respondents (59.0%) and Indian respondents are (62.5%). Nevertheless, the study by Al - Nagggar and Chen (2011) [14] reported contrasting results where race do not influence the practice of consuming vitamin-mineral supplements significantly among students of Management and Science University, Malaysia.

Majority of the respondents (57.1%) had household income of less than RM 3000 in a month, followed by household income between RM 3000 to RM 6000 in a month (30.5%) and over RM6000 in a month (12.4%). The results show that there were no significant association between supplements use status with household income ($p > 0.05$). However, the study by Al - Nagggar and Chen (2011) [14] reported there was significant association between household income with intake of vitamin- mineral supplements status among students of Management and Science University, Malaysia.

Types of Supplements

Figure 1 shows several types of supplements consumed by the respondents. Overall, there are ten types of supplements that are most popular choices among supplement users including protein shake (73.7%), vitamin C (72.4%), whey protein (68.3%), energy drink (67.0%), multivitamin (65.1%), branched chain amino acid (BCAA) (64.1%), Vitamin E and protein powders (63.2% respectively) as well as protein bar and Vitamin B complex (59.7% respectively). Protein is a supplement

that is widely consumed as reported in previous studies such as 28% of gymnasium users use protein in Sevilla, Spanish [15], 42.3% in New York City [11] and 58% in Belo Horizonte, Brazil [12]. Study at gymnasium in Pulau Pinang, Malaysia reported similar result whereby protein supplements are the most popular choice (76.2%) [16]. Nevertheless, study at the Klang Valley, Malaysia (Wong & Mohd Nasir 2010) [17] shows that vitamin supplements was most consumed by fitness club members (59.4%) and only 28.1% subject consumed protein supplements.

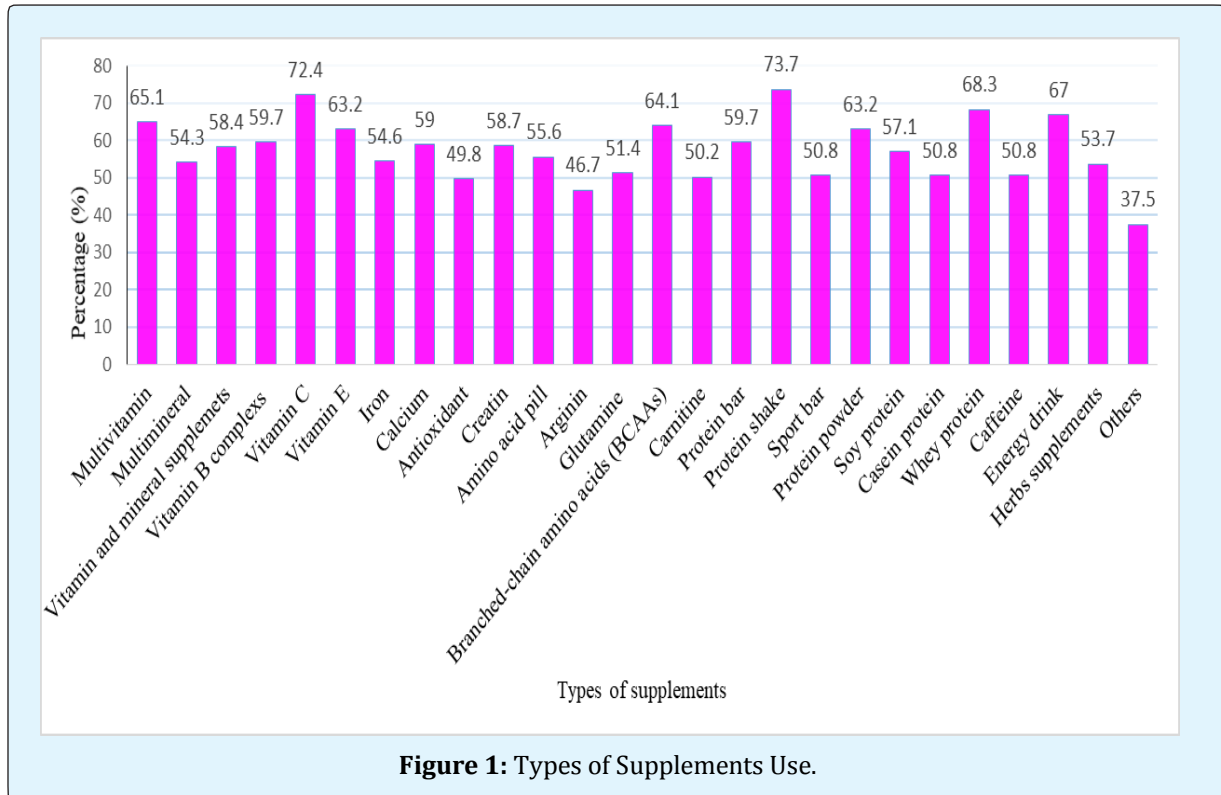


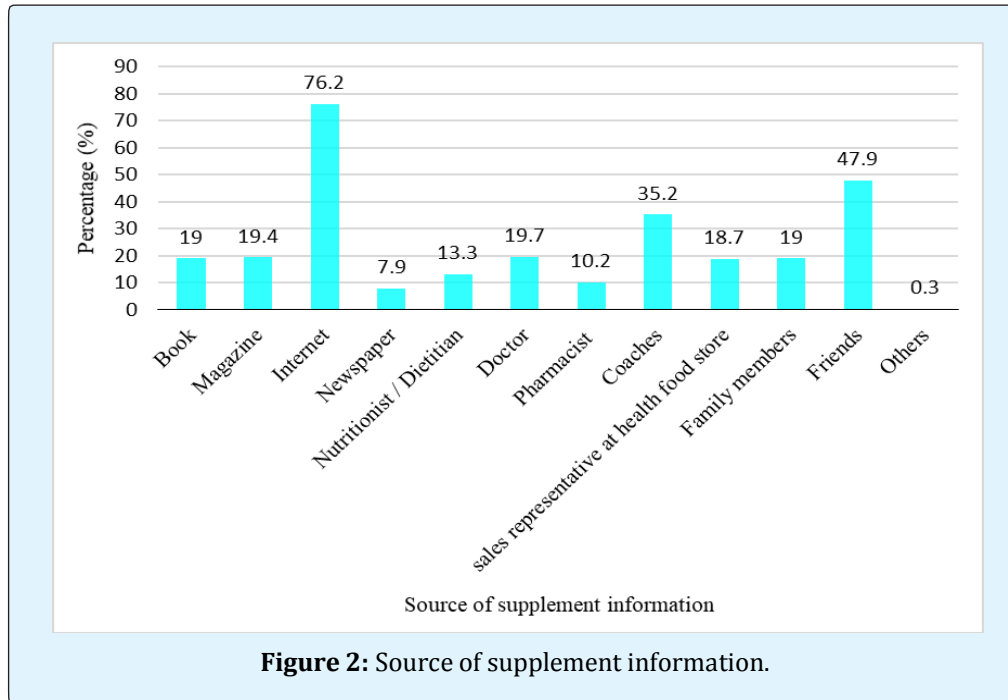
Figure 1: Types of Supplements Use.

Apart from that, respondents in this study also commonly used multivitamin and multi-mineral supplements such as vitamin C (72.4%), multivitamin (65.1%) and vitamin E (63.2%) were Multivitamin-mineral supplements were also widely used among respondents in the previous studies [10]. Furthermore, vitamin and mineral supplements are often used in training [18,12].

Sources of Supplement Information

Figure 2 shows sources of supplement information. Internet (76.2%), friends (47.9%), coaches (35.2%),

doctors (19.7%) and magazines (19.4%) were primary sources of supplement information. The study of Bianco et al. (2014) [19] at a gymnasium in Palermo, Italy shows that 37.0% of respondents refer to coaches as sources of supplement information and 11.0% refers to friends. According to Fox and Rainie (2000) [20], almost 80% athlete obtained information about supplements from "questionable" sources including media, internet, friends and coaches. Although media information cannot be clinically confirmed, 52% of users are found to believe that health information on the internet is credible through Pew Internet and the American Life Project Report.



In another studies, coaches are described as the most trusted professional for the sources of supplement information [21,22]. However, advices provided by coaches usually are inaccurate, inappropriate, or may potentially damage because most of the coaches have minimal knowledge in sports nutrition. Consultation with medical professionals, including medical and dietitian experts, are practiced at a lower level in the sport environment including in this study at 13.3%. Apart from that, the study by Rocha and Pereira (1998) [23] shows that most athletes (78%) do not get their supplements information from nutritionists.

Conclusion

In conclusion, prevalence of supplement use among gym users was high. There were significant association between BMI category, age group, gender and race with supplements use status. Besides that, protein shake, vitamin C, whey protein and energy drink were the most popular choices among the supplement users. Internet, friends and coaches were primary sources of supplement information.

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