

Original Article

DEMOGRAPHICS AND FACTOR ASSOCIATED WITH FOOD SUPPLEMENTS USE AMONG YOGYAKARTA POPULATION

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ABSTRACT

Objective: The aim of this study was to explore the prevalence of food supplement use and the association between foods supplement use and sociodemographic factors among Yogyakarta population.

Methods: A cross-sectional online questionnaire was developed and validated. A number of 933 participants completed the survey during September-December 2016. A convenience sampling technique was used. The sociodemographic characteristics and use of dietary supplements were collected. Frequency distributions were used to explore the use of food supplement. The relationship between demographic factors and dietary supplement use was conducted using pearson correlation analysis.

Results: Food supplement daily use was reported by 63% of participants. A mean number of the supplement was 2.3 (SD 2.1). The advertisement was commonly the source of information about food supplement. Age, sex, monthly income, exercise, and smoking status were associated with food supplement use.

Conclusion: Use of food supplements in this population was relatively high reflects that of other countries. Participants were using unreliable source of information of the benefits and risks associated with supplement consumption. Health professionals should account for dietary supplements when assessing medication. Regulating bodies and public health officers need to be aware to ensure safe practices.

Keywords: Food supplement, Vitamin, Use, Yogyakarta

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INTRODUCTION

Food supplements are defined as any product intended to supplement the diet that contains one or more of the a vitamin, a mineral, an herb or other botanical, an amino acid, to supplement the diet by increasing the total dietary intake [1].

Numerous surveys have reported on health-related characteristics of supplement use prevalence, finding that supplement use is associated with a variety of habits or characteristics considered to be components of a healthy lifestyle, including trying to make better food choices. Several studies have examined lifestyle and demographic associations with dietary supplement use, finding greater use among women, older adults, and those whose levels of education or socioeconomic status are higher [2, 3].

Although the use of food supplements is increasing in popularity, patterns of use for these supplements are not well known, and what is available is not always consistent, clear, or easily accessible. Many studies revealed that the taking of nutritional preparations has not consistently indicated advantages other than a placebo effect or one resulting from the treatment of concurrent nutritional deficiencies [4, 5]. Consequently, according to The United States Commission on Dietary Supplement Labels, it is important for health professionals to become more attention about the use and types of supplements in order to help consumers make appropriate choices [6].

To our knowledge, no data is available either concerning use in Indonesian or Yogyakarta population. We consider Yogyakarta population' supplement consumption to fit into the prevalence patterns for developing countries. For this reason, the objective of this survey was to quantify the prevalence of food supplement usage among Yogyakarta community members; to identify supplements consumed and rationale for usage; to identify sources of supplement information, and to relate usage to selected demographic characteristics.

MATERIALS AND METHODS

A cross-sectional online questionnaire was conducted among Yogyakarta population. In all, 933 participants were involved during the period of July-September 2016.

Questionnaire

The online questionnaire was developed using Google Forms® after a review of the current literature and visits to local pharmacies, supermarkets, and health food stores to identify commonly available dietary supplements. A 26-item questionnaire was developed using a combination of multiple-choice questions and Likert scale questions. A tailored layout allowed participants to move through the questionnaire only answering relevant questions.

Data collection

Researcher contact details of respondents via social media (Facebook, Twitter, Whatsapp, Line, Instagram and a link to the questionnaire was sent to respondents in July 2016. A summary of the questionnaire, ethics approval, and inferred consent was included on the first page of the questionnaire. The questionnaire was comprised of four sections. Section 1 included information on sociodemographic and personal characteristics, including age, sex, gross monthly expenses, BMI, smoking status, and physical activity. Section 2 focused on the use of food supplements. Participants were asked if they had taken any vitamin/mineral supplements in the previous 6 mo. This was identified as an appropriate time frame to capture both daily dietary supplement use and non-daily dietary supplement use, which may be infrequent or seasonal.

The questionnaire was pretested among 30 pharmacy students. Recommendations for changes to question-wording for the purposes of maximizing interpretation and understanding of questions were completed before data collection. The final survey was anticipated to take 10 min to complete and was only available in Bahasa Indonesia.

The study was conducted according to the guidelines in the Declaration of Helsinki and approved by the Gadjah Mada University Human Research Ethics Committee.

Data analysis

Univariate analysis consisted of the frequency of distribution of all sociodemographic and personal characteristic variables. The proportions for the categorical variables were calculated. Additionally, mean and SD were calculated for open numerical questions and calculated numerical questions. Descriptive statistics were used to investigate the frequency of dietary supplement use.

Responders were categorized as either regular users or occasionally use (non-daily use). Pearson correlation test was conducted to identify differences in frequency of consumption for age, sex, and income. Frequency distributions were calculated for each reason for use of the food supplements investigated.

The statistical analysis was performed using SPSS statistical software (SPSS for Windows, version 20.1, SPSS Inc, Chicago, IL, USA).

RESULTS AND DISCUSSION

An estimated response rate was 30.9%, where 933 participants completed the full questionnaire.

Table 1: Characteristics of study population

Characteristics	Daily users	Occasionally users
	n=592 (%)	n=341 (%)
Gender		
Male	130 (21.96)	97 (28.45)
Female	462 (78.04)	244 (71.55)
Age group (y)		
<21	187 (31.59)	133 (39.00)
21-30	365 (61.66)	159 (46.63)
31-40	18 (3.04)	20 (5.87)
41-50	13 (2.20)	22 (6.45)
>50	9 (1.52)	7 (2.05)
Monthly expenses (thousand IDR)		
<500	34 (5.74)	25 (7.33)
500-1,499	160 (27.03)	100 (29.33)
1,500-2,999	158 (26.69)	89 (26.10)
3,000-5,000	125 (21.11)	83 (24.34)
>5,000	115 (19.43)	44 (12.90)
Education level		
Less than Junior high school	7 (1.18)	8 (2.35)
Junior high school	31 (5.24)	19 (5.57)
Bachelor degree	346 (58.45)	199 (58.36)
Master degree	182 (30.74)	94 (27.57)
unknown	26 (4.39)	21 (6.16)
BMI (kg/m²)		
<24.9	75 (12.67)	49 (14.37)
normal	428 (72.30)	251 (73.61)
25-29.9	80 (13.51)	30 (8.80)
>30	9 (1.52)	11 (3.23)
Smoking status		
Non-smoker	524 (88.51)	293 (85.92)
Former smoker	13 (2.20)	17 (4.99)
Passive smoker	34 (5.74)	21 (6.16)
Current smoker	21 (3.55)	10 (2.93)
Amount of exercise (min/week)		
>60	19 (3.21)	13 (3.81)
30-60	139 (23.48)	78 (22.87)
0-30	434 (73.31)	250 (73.31)
Perceived health		
Healthy	385 (65.03)	255 (74.78)
With minor illness	168 (28.38)	72 (21.11)
With chronic disease (s)	6 (1.01)	6 (1.76)
With severe disease (s)	3 (0.51)	2 (0.59)
Pregnant/breastfeed	20 (3.38)	3 (0.88)
Others	10 (1.69)	3 (0.88)

Table 2: Characteristics of supplement used

Characteristics	Users (592)	
	n	%
Primary source of information		
Health professionals	211	35.64
Advertisement	407	68.75
Family/peers	303	51.18
others	11	1.86
Supplement purchased from		
pharmacy	446	75.34
supermarket	306	51.69
Online shop	16	2.70
others	32	5.41

Table 1 outlines the sociodemographic and personal characteristic variables of the participants. The majority of participants were aged <30 y old, female, with a normal BMI, monthly expenses about 200 USD, high education level, non-smoker, low physical activity, and reported healthy status.

Overall, 592 (63.45%) of the 933 participants reported having used at least one food supplement in daily use in the previous 6 mo (table 2). The most popular vitamin/mineral supplement reported was a vitamin and multivitamin/mineral with a prevalence of 82% and 40% of the total population respectively (table 3).

Table 3: Types of supplement consumed

Types of supplement consumed	Daily users	
	n=592	%
Vitamin	489	82.60
Multivitamin	241	40.71
Fish oil	88	14.86
Herbal product	217	36.66
Supplement for lose weight	60	10.14
Supplement for anaemia	177	29.90
High protein milk	28	4.73
Calcium	96	16.22
Supplement for pregnancy	19	3.21
Others supplement	90	15.20

The mean number of vitamin/mineral supplements used by any participant was 2.3 (SD 2.1) with a range of 1 to 8 supplements used over the previous 6 mo (table 4).

Table 5 shows the odds ratios for demographic and lifestyle factors that were associated with the use of any food supplement.

Younger age, female, high-income people, and not engaging in regular physical activity were positively associated with food supplement use. Use of any type of food supplements was 2.06 times in age <30 y old, 2.27 times in women, 2.21 times among high-income people, and 3.2 times among respondent with a low level of exercise.

Table 4: Number of supplement used

Number of combination in supplement used	n	%
Single type	144	24.32
Combination of 2	192	32.43
Combination of 3	130	21.96
Combination of 4	73	12.33
Combination of 5	34	5.74
Combination of 6	10	1.69
Combination of 7	7	1.18
Combination of 8	2	0.34
Mean number	2.3 (2.1)	

Table 5: Relationship for selected sociodemographic factors toward the use of supplement

Independent factors	Adjusted odds ratio (95% CI)	P value
Age <30 vs >30	2.06 (1.31-3.24)	0.018*
Sex, female vs male	2.27 (1.03-2.67)	0.037*
BMI, <30 vs >30	1.23 (0.46-3.32)	0.564
Monthly expense, high vs low	2.21 (1.65-3.69)	0.047*
Exercise, Never vs frequent	3.20 (2.18-4.72)	<0.001*
Health status, healthy vs unhealthy	0.79 (0.65-0.98)	0.786
Smoking, smoker vs non smoker	1.67 (1.08-2.88)	0.021*

*significant at $p < 0.05$

To our knowledge, this is the first survey on food supplements use conducted in Yogyakarta province, Indonesia. This study used a cross-sectional online survey to investigate the prevalence of supplement used, types of supplement used among Yogyakarta population. Current estimates show more than half (63%) of Yogyakarta population use a dietary supplement infrequent basis. Most frequently reported supplements were a vitamin, multivitamins/multiminerals, herbal product and iron supplement for anemia. These results are more closely aligned with prevalence estimated from other developed countries [2, 4, 7]. Use of dietary supplements in the previous 6 mo was considered in this study rather than the previous 24 hour, as in many literature suggested may more accurately reflect prevalence and frequency of dietary supplement use in Indonesia.

Based on our result, food supplement use by the participants was different according to sex, age, monthly expenses, exercise, and smoking

status. This finding shows that the rationale for supplements use changes according to subjects' general characteristics. Sex and age produced independent associations with vitamin and mineral supplement use. Women were two times more likely than men to use an iron supplement, and participants aged <30 y were more likely to use vitamin and multivitamin due to high activity. The difference of vitamin and mineral use by age and sex may be influenced by the recognition that there are different nutritional requirements for different sexes and at during different life stages [3, 8, 9]. Alternatively, these differences could be due to targeted marketing of specific dietary supplements [8-11].

For example, calcium is often marketed to improve bone health in older people, and iron is commonly marketed specifically to women. Future research in this area might help to direct public health messages around healthful food choices for different subpopulations, and to ensure health practitioners consider the likelihood of their patients consuming specific dietary supplements [4, 12].

This study expanded on previous literature to find that information source from advertisement are still the majority source to justify the use of specific dietary supplements [10, 13]. This may suggest that many dietary supplement users perceive supplements to be healthy, but are uncertain as to how they influence the functioning of their body systems. For example, the most frequently reported reason for use of calcium was for bone strength. Still, many participants reported only using such dietary supplements when sick, indicating that they may believe dietary supplements can assist in the recovery from ill health. These results may indicate that marketing of dietary supplements influences the perceptions and reasons for use of particular dietary supplements. However, the marketing messages may not always be aligned with the available scientific literature [14]. The consumer perceptions of these claims and their perceived validity are unclear. We are aware of the limitations of the present survey. Firstly, it was performed in a single setting, and therefore the sample may not be representative of all Indonesian population. Another limitation on the data was the use of the self-reporting system employed in this survey. This may have given rise to bias.

CONCLUSION

The findings of the present study show a high prevalence of food supplement use, similar to those reported in other developed countries. Various demographic characteristics include age, sex, economic status, exercise, and smoking status were shown to have an independent association with vitamin/mineral supplement use. This suggests that dietary supplements contribute to the overall dietary intake of individuals within this population. Furthermore, the broad health-related information on the benefits and risks associated with the use of dietary supplements are come from advertisement rather than from health professionals. Further research, monitoring the use of food supplements within the community should be of interest because these substances may affect health or interact with other medications. Pharmacists along with other health professionals need to consider evaluating food supplement use when assessing overall nutrient and medication use by patients. These results also warrant consideration by regulating bodies, public health officers, and educational organizations to ensure and promote safe practices.

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AUTHORS' CONTRIBUTION

Data collection process was performed by Rusyda Dyah Utari Aditya, while Chairun Wiedyaningsih conducting a review on questionnaire and data analysis.

Susi Ari Kristina contributed on the design of the questionnaire, supervising data analysis process and writing manuscript.

CONFLICT OF INTERESTS

The author(s) declare that they have no competing interests

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