

《Original Article》

A Dietary supplement survey of people living in a residential district in Nagoya City

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Summary

The demand for supplements is notably increasing, however there are no regular assessments regarding appropriate usage of such supplements; therefore, some cases exist where consumers may harm their health. For this reason, we researched and analyzed the relationship between type and frequency of usage of supplements along with people's diet considerations to discover what is necessary in order to use supplements in an appropriate way.

Our research target group was 286 residents (109 Male, 177 female) in Showa-ward, Nagoya City. The percentage of males using supplements was 36.7% and females 50.3%. Within the groups using supplements, the highest number was those using supplements daily for more than two years.

The main reasons for using supplements were; nutritional replenishment, sickness prevention, and additionally, for females, beauty treatment and age prevention. Concerning the relation to diet, the number of people who missed meals within the female group (of those taking supplements) was inevitably high. Taking the above into consideration, we understand that further research is required in order to discover the exact relationship between taking supplements and missing meals.

In recent years, the market growth of health food and supplementation (in this thesis, we define supplements as vitamins and minerals in tablet or capsule form i.e. not food form) has been remarkable. According to The Annual Report on the Family Income and Expenditure Survey, Tokyo published in 2005¹⁾, the annual consumption of health food exceeded ¥15,000 for each household.

In addition, in 2003²⁾ the market of health food including food for specific health reasons exceeded 1 trillion yen. According to The National Health and Nutrition Survey in Japan, 2001³⁾ approximately 20% of people were taking more than one type of supplement (vitamin or mineral). The most cited reason being "illness prevention, health improvement" or "nutritional replenishment"

In order to decrease the risk of lifestyle related illnesses, and maintain a good quality of life, it is fundamental to keep a daily and regular well balanced diet. However, it must be said, that due to the reliance of supplements people fail to maintain a fundamentally healthy diet and thus, we have a clear case of "*putting the cart before the horse*". One report⁴⁾ shows that by taking supplements we are more likely to eat healthy food (vegetables, fish and dairy products etc). Conversely according to a survey of female university students taking supplements⁵⁾, those on a diet and the number consuming foods in retort packages is undoubtedly high.

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Thus, in recent years, investigation into the actual conditions relating to supplements has taken place. However, it is not clear whether or not people who need supplements are taking the correct ones and whether those who are taking supplements are actually achieving their goals appropriately. On the other hand, a few cases exist where health is harmed due to health food consumption⁶⁾. Under these circumstances, it is necessary to urgently analyze the usage of supplements.

It is therefore necessary to collect various characteristics from different groups, to allow further understanding of peoples' eating and lifestyle habits, in order to be able to give advice on adequate health food and supplement usage. Therefore, our aim was to focus on one target area to find out the actual conditions of supplement usage and in addition we also considered the relationship between their aim and level of satisfaction and their eating habits. From this study, we can establish some data to ensure appropriate usage of health foods and supplements.

Method

1 Target group and time of research.

Our target group was 286 health conscious residents in Showa-ward, Nagoya City.

For this survey we explained in advance to a representative our aim, methodology and how we will use the data, for which we received agreement. For the participants, we defined our intention in a research paper, and we asked those who agreed to return the research paper. The survey took place in August 2005.

2 Research Method

An anonymous open questionnaire survey was conducted.

The nominated representative was responsible for the distribution and collection of the surveys. The number of questionnaires received was 298 and the retrieval rate was 100%.

Within the 298 returned papers, we removed the spoiled papers and were left with a total sample of 294 questionnaires. The valid response rate was 98.7%.

3 Research content

(1) Concerning eating habits: Looking forward to meals, Food appreciation, Food satisfaction, Tendency to miss meals, cooking pleasure, food type often eaten, nutritive content interest etc Total 14 headings.

(2) Condition of use of supplement: Supplement usage, Frequency of use, purpose of use, place of purchase etc Total 7 headings

4 Method analysis: Bivariate analysis was carried out by chi-square test to determine the statistical difference between the two groups. Analysis was performed using the SPSS(Statistical Package for the Social Sciences)14.0J for Windows. The level of significance was set at $p < 0.05$.

Results

1 Condition of use of supplement

The total number of those surveyed was 286.

As shown in Table 1 gender and age distribution; the number of males under 39 years was 13 and the number of females was 27. Between 40-49 years old, the number of males was 13 and females 17. Between 50-59 years old, the number of males was 21 and females 34. Between 60-69 years old, the number of males was 26 and females 45. Over 70 years old, the number of males was 36 and females 54.

The number of participants using supplements was 40 males and 89 females – as a percentage 36.7%

(males) and 50.2% (females) including those who have used in the past is hereinafter the same. The tendency for females was higher, however, for both males and females there was no marked difference depending on the age range.

There is no noticeable difference between the sexes when we consider the duration time of using supplements, however, for both male and female more than half of them have been using them for two years. As people age, the proportion of those using supplements increased.

TABLE 1 Condition of use supplements by sex, by age

	male					female				
	Number	persons using supplements (%)	duration	frequency	kind of supplements	Number	persons using supplements (%)	duration	frequency	kind of supplements
			more than 2 years	every day	1 or 2 sorts			more than 2 years	every day	1 or 2 sorts
less than 39 years	13	5 (38.5)	3	4	4	27	18 (66.7)	8	12	12
40–49 years	13	6 (46.2)	1	6	6	17	10 (58.8)	3	5	10
50–59 years	21	5 (23.9)	2	3	4	34	18 (52.9)	8	12	13
60–69 years	26	9 (34.6)	2	8	7	45	15 (33.3)	11	12	13
70 years and over	36	15 (30.1)	8	11	12	54	28 (51.9)	13	19	21
total	109	40 (36.7)	16	32	33	177	89 (50.2)	43	60	79

No. of people

Concerning the frequency of using supplements; there was no major distinction between the different age groups. For all age groups within the supplement users, the rate of people taking supplements daily was 80% for males and 67% for females.

For both gender and age, once again, there was no major difference concerning the number of supplements they take. For both sexes the highest percentage was shown for those taking one or two types of supplements given as 82.5% for males and 77.5% for females.

Table 2 shows the purpose of supplement use depending on gender and age. For both sexes the most frequently given reasons were for preventing illness and for nutritional replenishment, however for females under 39 years old the percentage for supplementation for beauty treatment was high.

TABLE 2 Reasons of taking supplements by sex, by age

	male							female						
	Number	supply of nutritions	beauty	prevention of disease	medical treatment	anti ageng	others	Number	supply of nutritions	beauty	prevention of disease	medical treatment	anti ageng	others
less than 39 years	5	4	0	0	0	0	1	18	11	8	4	0	0	0
40–49 years	6	2	0	3	2	1	0	10	5	1	2	1	0	0
50–59 years	5	1	0	3	1	1	0	18	9	3	10	0	4	0
60–69 years	9	5	0	7	0	1	0	15	5	1	7	0	4	1
70 years and over	15	6	0	9	2	3	1	28	5	0	19	4	7	1
total	40	18	0	22	5	6	2	89	35	13	42	5	15	2

Table 3 shows where people purchase their supplements, for both gender and age groups; for both males and females (within supplement users) the highest response was from a pharmacy, male 51.3% and female 40.9% and the second highest response was mail order with males 28.2% and females 27.3%.

2 The relationship between the usage of supplements and people's diet habits; To compare and study whether there is any difference in diet habits between those using supplements and those not, we separated users and non users and divided them into male and female groups. We then examined the relationship between each groups' diet habits. Table 4 shows the results.

TABLE 3 Methods of getting supplements by sex, by age

	male								female							
	Number	doctors	drugstore	health food store	mail order	door-to-door selling	volume retailer	others	Number	doctors	drugstore	health food store	mail order	door-to-door selling	volume retailer	others
less than 39 years	5	0	3	0	1	0	2	3	18	0	9	2	6	1	3	0
40-49 years	6	0	2	0	3	0	2	0	10	1	6	2	1	0	0	0
50-59 years	5	0	2	1	1	1	0	0	18	0	7	1	8	1	0	4
60-69 years	9	1	2	2	3	1	0	2	15	1	6	4	3	1	1	1
70 years and over	15	3	11	2	3	0	1	1	28	6	8	6	6	1	1	3
total	40	4	20	5	11	2	5	6	89	8	36	15	24	4	5	8

We asked the following questions;

(1) Do you look forward to your meal? (2) Are you satisfied with your meal? (3) Do you ever miss a meal? (4) Do you like cooking? (5) Did you cook your breakfast yesterday? (6) Did you cook your lunch yesterday? (7) Did you cook your dinner yesterday? (8) Do you often eat fruit? and (9) Do you often eat between meals? The items were answered with a yes and no response and the supplement usage percentage calculated according to both male and female groups in accordance with the given χ^2 factor value. No special relationship could be found for the male group. For the female group, for those missing meals and having not cooked lunch at home we observed the number of supplement users as inevitably high.

Discussion

According to The National Health and Nutrition Survey in Japan, 2001. For people taking one or two types of the following, tablets, capsules, powders, drink types of vitamin and minerals; 17% of males and 23.6% of females answered in the affirmative and half of these respondents have been taking these supplements for more than two years.

This survey shows male users as 36.7% and female users as 50.3% and compared to 2001, both male and female users are higher in number. For those using more than two years the number is also at its highest, and this shows how far supplements have been established. According to the growth rate of the supplement market, from now on, we suggest the percentage of users will increase. Above all, we expect young females using supplements with the aim of beauty treatment to increase. As shown in Table 2, the main reasons for use for females were nutritional replenishment and preventing illness with the additional reasons of age prevention and beauty treatment.

There is some research referring to whether there is some relationship to dietary habits between users and non-users. Kayama et al ⁷⁾ researched the relationship between the usage of supplements and dietary behavior

TABLE 4 Use and non-use of supplements and the relationship to diet

ITEM	male				female					
	Category	Use of supplements		Category	Use of supplements		NO	p		
		YES	NO		YES	NO				
Do you look forward to meals?	Yes	84 (100) ¹⁾	31 (36.9)	53 (63.2)	$\chi^2=0.007$	Yes	121 (100)	61 (50.4)	60 (49.6)	$\chi^2=0.003$
	No	25 (100)	9 (36.0)	16 (64.0)	p=0.934	No	56 (100)	28 (50.0)	28 (50.0)	p=0.959
Meal satisfaction	Satisfied	90 (100)	33 (36.7)	57 (63.3)	$\chi^2=0.000$	Satisfied	132 (100)	66 (50.0)	66 (50.0)	$\chi^2=0.017$
	Not satisfied	19 (100)	7 (36.8)	12 (63.2)	p=0.988	Not satisfied	45 (100)	23 (51.1)	22 (48.9)	p=0.898
Do you have a tendency to miss a meal?	Yes	18 (100)	8 (44.4)	10 (55.6)	$\chi^2=0.557$	Yes	27 (100)	19 (70.4)	8 (29.6)	$\chi^2=5.143$
	No	91 (100)	32 (35.2)	59 (64.8)	p=0.455	Not satisfied	150 (100)	70 (46.7)	80 (53.3)	p=0.023
Do you like cooking?	Like	16 (100)	3 (18.8)	13 (81.2)	$\chi^2=2.600$	Like	64 (100)	28 (43.8)	36 (56.2)	$\chi^2=1.711$
	Dislike	93 (100)	37 (39.8)	56 (60.2)	p=0.107	Dislike	113 (100)	61 (54.0)	52 (46.0)	p=0.191
Previous day's breakfast	Home cooked	96 (100)	37 (38.5)	59 (61.5)	$\chi^2=1.179$	Home cooked	162 (100)	80 (49.4)	82 (50.6)	$\chi^2=0.619$
	Prepared outside	13 (100)	3 (23.1)	10 (76.9)	p=0.278	Prepared outside	15 (100)	9 (60.0)	6 (40.0)	p=0.431
Previous day's lunch	Home cooked	73 (100)	28 (38.4)	45 (61.6)	$\chi^2=0.262$	Home cooked	140 (100)	64 (45.7)	76 (54.3)	$\chi^2=5.591$
	Prepared outside	36 (100)	12 (33.3)	24 (66.7)	p=0.609	Prepared outside	37 (100)	25 (67.6)	12 (32.4)	p=0.018
Previous day's dinner	Home cooked	105 (100)	39 (37.1)	66 (62.9)	$\chi^2=0.245$	Home cooked	163 (100)	80 (49.1)	83 (50.9)	$\chi^2=1.192$
	Prepared outside	4 (100)	1 (25.0)	3 (75.0)	p=0.621	Prepared outside	14 (100)	9 (64.3)	5 (35.7)	p=0.275
Do you eat fruit often?	Yes	100 (100)	36 (36.0)	64 (64.0)	$\chi^2=0.253$	Yes	170 (100)	86 (50.6)	84 (49.4)	$\chi^2=0.161$
	No	9 (100)	4 (44.4)	5 (55.6)	p=0.615	No	7 (100)	3 (42.9)	4 (57.1)	p=0.688
Do you often eat between meals?	Yes	72 (100)	27 (37.5)	45 (62.5)	$\chi^2=0.059$	Yes	147 (100)	74 (50.3)	73 (49.7)	$\chi^2=0.001$
	No	37 (100)	13 (35.1)	24 (64.9)	p=0.808	No	30 (100)	15 (50.0)	15 (50.0)	p=0.973

1) Number of people (%)

and attitude of university students. For males participating in sports club activities, the number of supplement users saying they ate instant food was less than those not using supplements and there were a high number of those using supplements who were concerned with nutritional balance. This research shows there are many supplement users who have an understanding of both dietary behavior and attitude. On the other hand, Sugiyama et al.⁵⁾ reported that for female university students, within the supplement user groups, the frequency of using retort packed and instant food was high. Relating the health condition, there is a higher demand for supplements with those people who have a more acute subjective view to their health condition.⁹⁾

In this survey, results show that within the female group, those responding with the habit of missing meals and not cooking lunch the previous day is undoubtedly high.

Supplement users may believe that supplements compensate for the lack of nutritional content of the missed meals. This, we need to further investigate hereafter. Similarly by not cooking their lunch at home, that is eating out, supplement users may believe they can substitute the nutritional content by using supplements.

Concerning where people purchase their supplements, the pharmacy was the highest response, however mail order was also high, from now on and the numbers of cases where people buy supplements from seeing indifferent advertisements will increase. The use of supplements should be based on a healthy diet as opposed to consumption according to such advertising. It is hoped we can train advisers who are accessible to consult with on the appropriate usage of supplements and healthy diet; and from now on it is necessary to research and analyze in various groups the relationship between those using supplements and their diet habits and how people may use supplements more appropriately.

We wish to acknowledge and express our deepest gratitude to Kana Sakakibara a graduate student and also to the residents of Showa-ward, Nagoya City, for their cooperation and understanding of this research.

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和文抄録

地域住民におけるサプリメント使用状況

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サプリメントの需要が著しく増加するなか、適切な使用がなされているかどうかは、一定の評価がなされておらず、中には少なからず健康被害が生ずる例もある。そこで、適切なサプリメントの使用のために何が必要かを知るために、サプリメント使用の実態とサプリメントの使用の有無と食生活習慣との関連を調査し分析した。

調査対象は、名古屋市内の T 地区の住民286名（男性109名、女性177名）である。サプリメント使用者は男性36.7%、女性50.3%であり、使用者は2年以上ほぼ毎日使用している者が最も多かった。目的は栄養補給、病気の予防に加え、女性で美容、老化防止が多かった。食生活習慣との関連では、女性群でサプリメント使用者に欠食習慣のあるものが有意に多かった。サプリメントと欠食習慣の関連については、さらに詳細な検討を深める必要がある。

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