Relationship between health food purchase and exercise habits in older adults

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Abstract

Relationship between health food purchase and exercise habits in older adults

This study aimed to clarify whether the purchase amount and purchase volume of health food of older adults are proportional to the amount of exercise. In addition, this study clarified whether the purchase amount and purchase volume of health food are related to grasping the correct knowledge about health food. A questionnaire survey was conducted on 62 elderly people over the age of 65. The results showed that there was no correlation between the purchase amount and the test score, nor between the purchase amount and the IPAQ result (total physical activity) ($p > 0.05$). In addition, an examination of whether there was a difference between the test scores and the IPAQ results, depending on whether or not you purchased health food, found that there was no difference between the two ($p > 0.05$). These results suggest that there was no relationship between health food purchases and exercise habits in older adults.

高齢者の健康食品購入と運動習慣の関係性

本研究の目的は、高齢者の健康食品の購入量や購入額の多さが運動習慣（運動量）に比例しているのか、また、健康食品の購入量や購入額の多さが健康食品に関する正しい知識の把握に関連しているかを明らかにすることであった。アンケート調査を 65 歳以上の高齢者 62 人を対象として行った。アンケートは、健康食品に関するアンケートと国際標準化身体活動質問票(IPAQ)の 2 つを実施した。結果は、健康食品の購入額と健康食品に関する正しい知識のテストの得点に関する相関係数、また健康食品の購入額と IPAQ の結果(総身体活動量)に関する相関係数はどちらも統計的に有意な相関関係がなかった($p>0.05$)。さらに、健康食品の購入の有無で健康食品に関する正しい知識のテストの得点・IPAQ の結果の差が生まれるかどうかを調査したところ、どちらも差がないことが明らかになった($p>0.05$)。これらの結果から、高齢者の健康食品の購入と運動習慣の間に関係性がないことが示唆された。

Relación entre las compras de alimentos saludables de los ancianos y los hábitos de ejercicio.

Este estudio tuvo como objetivo aclarar si la cantidad de compra y el volumen de compra de alimentos saludables de los adultos mayores son proporcionales a la cantidad de ejercicio. Además, este estudio aclaró si la cantidad de compra y el volumen de compra de alimentos saludables están relacionados con la comprensión del conocimiento correcto sobre alimentos saludables. La encuesta del cuestionario se realizó a 62 personas de 65 años o más. Los resultados mostraron que no había correlación entre el monto de la compra y el puntaje de la prueba, ni entre el monto de la compra y el resultado del IPAQ (actividad física total) ($p > 0.05$). Además, un examen de si hubo una diferencia entre los puntajes de las pruebas y los resultados del IPAQ, dependiendo de si compró o no alimentos saludables, encontró que no había diferencia entre los dos ($p > 0.05$). Estos resultados sugieren que no hubo relación entre las compras de alimentos saludables y los hábitos de ejercicio en los adultos mayores.

Introduction

This study surveyed older adults in Japan. Now, Japan is a longevity country and the Japanese population has been rapidly aging. As a result, various health activities are carrying out. The media picks up health and actively trying to know about health. According to the Zaikei Shimbun, the reason for the increase in health programs is that older people watch TV for a longer time and appeal to these older age groups (Zaikei Shinbun,2013). Among these activities, this study focused on two areas, food and exercise. For older adults, exercising has the effect of reducing the risk of chronic illness and extending life expectancy (American College of Sports Medicine Position Stand, 2009). In addition, according to a survey on the health of older adults, the most common health activity was “eating nutritionally balanced meals” (Cabinet Office, 2017), indicating that they are highly interested in food. For these reasons, it considered that food and exercise are likely related to the health of older adults, and investigated the relationship between food and exercise in older adults.

In Japan, as interest in food increases one third of people feel that there is a problem with their own diet (Sumi Sugiyama, Takae Bungo, 1999). Thus, it can be said that interest in food has been increasing. This study focuses more on the “food” and look at “health food”. Health food has increased its sales from 523.4 billion yen to 642.6 billion yen from 2015 to 2017 (Fuji Keizai, 2017). In addition, according to a survey of The Asahi Shinbun, three out of four people prove that they eat health food (Satoshi Ono, 2018). From this, it can be considered that health food gradually blend into the lives of Japanese people.

Although health food does not have a legal definition, it generally refers to anything sold or used as food contributing to the maintenance and promotion of health. Among them, as a national system, there is food with

health claims system that meets the safety and effectiveness standards established by the government (Ministry of Health, Labor and Welfare). Food with health claims in Japan is categorized into three types: food with nutrient function claims, food for specified health uses, and food with function claims (Ministry of Health, Labor and Welfare). In this paper, these food with health claims are collectively referred to as health food.

The United States would be a representative for comparison with health food situations overseas. According to the CRN Consumer Survey of Dietary Supplements in the United States (2018), three-quarters of Americans eat dietary supplements (Council for Responsible Nutrition, 2018). In the United States, 70% of men and women from their 20s to 60s eat of food with function claims (Goto et al, 2009), and health food are also popular in the United States. Although health food consumed by many people both in Japan and in the United States, consumers' knowledge of health food is scarce. In the United States, "Two thirds of all respondents falsely believe that herbal products and dietary supplements pose no risk to the general population" (Jacqueline et al, 2017). Also in Japan, only 12% chose the "information on safety etc. provided by the administrative agency" as a reference in the survey of the Consumer Agency（Cabinet Office, 2012). From that, it can be considered that knowledge about health food is scarce.

According to the definition of the World Health Organization (WHO) of the United Nations, people over the age of 65 are considered older adults (Ministry of Health, Labor and Welfare, 2008). In Japan, older adults reached the highest ever in September 2018, at 28.1% of the total population (Statistics Bureau, Ministry of Internal Affairs and Communications,2018). A survey called "National Health and Nutrition Survey" (2017) by the Ministry of Health, Labor and Welfare in Japan reported that proportion of people with exercise habit was up to about 28%

for male aged 20 to 59, and that for female was about 23%. However, for people aged 60 and over, males were more than 40%, and females more than 30% (Ministry of Health, Labor and Welfare, 2017). Thus, older adults are more made a habit of exercise.

In addition, from the relationship between health food and older adults in Japan, it can assume that the average monthly spending on health food and supplements is 3,698 yen per month (Kato and Saitou, 2018). By their age group, 60s was 4,422 yen (Kato and Saitou, 2018). From that, it can be seen that older adults buy more health food than the other age groups do. In addition, from the fact that "There was a significant linear increase in dietary supplement users among the older age groups" (Ishihara et al, 2003), it can be seen that the health food purchase rate for older adults is high in Japan and other countries such as the United States.

In this study, this study aimed to clarify whether the purchase amount and purchase volume of health food of older adults are proportional to the amount of exercise. In addition, this study clarified whether the purchase amount and purchase volume of health food are related to grasping the correct knowledge about health food.

The present study hypothesized that older adults who purchase more health food and spend more have more physical activity. In addition, older adults who purchase more health food have higher scores on health food knowledge tests.

Materials and Methods

Participants

Subject of this research is roster registrants of lecture for older adults (65 years of age or older) on health

and exercise. The total number of survey respondents was sixty-two (twenty-one men and forty-one women).

Surveys

This study conducted a questionnaire survey. This questionnaire was description type and was returned by hand after mailing. There are two major categories in this questionnaire surveys.

1. International Physical Activity Questionnaire (IPAQ) short version (Murase et al, 2002) : In this study, the total physical activity during one week was investigated. To determine the total physical activity, we asked (1) walking, (2) moderate- intensity activities, and (3) vigorous-intensity activities. For different exercise intensities from (1) to (3), the number of exercises per week and how much time per day was conducted was investigated. All continuous scores are expressed in MET-minutes/week as defined below. In addition, the following values continue to be used for the analysis of IPAQ data: Walking = 3.3 METs, Moderate = 4.0 METs and Vigorous = 8.0 METs. The following is the calculation method.

   (1) Walking MET-minutes/week = 3.3 x walking minutes walking days

   (2) Moderate MET-minutes/week = 4.0 x moderate-intensity activity minutes moderate days

   (3) Vigorous MET-minutes/week = 8.0 x vigorous-intensity activity minutes vigorous-intensity days

   Total physical activity MET-minutes/week = Walking + Moderate + Vigorous MET- minutes/week scores

2. A survey on health food: This questionnaire asked the following items: gender, age, work status, working and leisure time for a week, whether health food have been purchased, presence of prescription

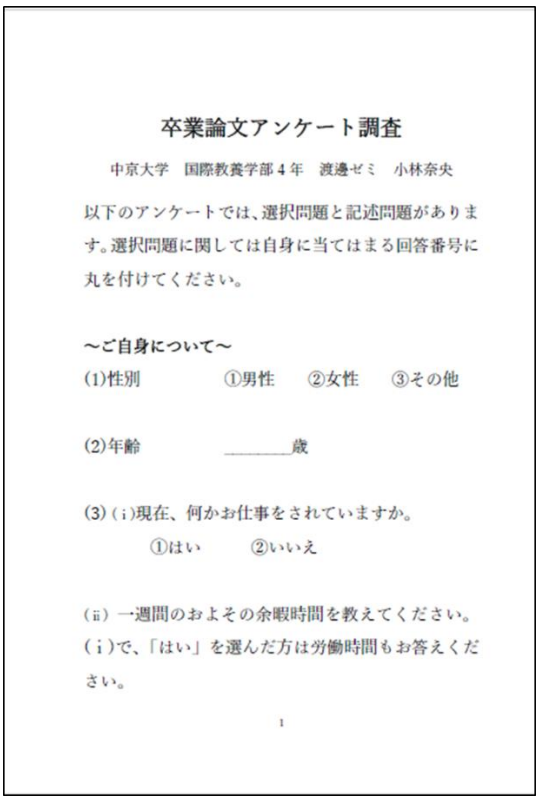
drugs, monthly purchase price, test of the right knowledge about health food, etc. Test of the right knowledge about health food was created so that it would reach a maximum score of 50 with reference to the Consumer Affairs Agency website and the display of actual products (Consumer Affairs Agency, 2018). There are four questions (1) to (4), and (1), (2), and (4) were created from the website of the Consumer Affairs Agency. For the question on the effect of health food in (3), we selected 5 items that were actually written with reference to actual products and used them as options (Gorokichi Co. ,2019). In addition, options 1-5 were all set to the correct display. The ratio of responses to this questionnaire was calculated by the number of responses per the total number of responses (Fig.1,2,3,4,5,6,7,8).

Statistics

Health food purchase amount, health food knowledge test scores and IPAQ results (total physical activity) were compared using spearman correlation coefficient. In addition, purchase of health food whether or not, health food knowledge test scores and IPAQ results (total physical activity) was compared using Mann-Whitney-test. The level of statistical significance was set at $p < 0.05$. Statistical analyses were performed using SPSS software (version 21.0; SPSS, Tokyo, Japan).

Results

A total of 62 older adults, both men and women (twenty-one men and forty-one women), answered the questionnaire. There were 19 people who work and 43 people who did not work (Table 1). Their average leisure



卒業論文アンケート調査

中京大学　国際教養学部４年　渡邊ゼミ　小林奈央

以下のアンケートでは、選択問題と記述問題があります。選択問題に関しては自身に当てはまる回答番号に丸を付けてください。

～ご自身について～

(1)性別　　①男性　②女性　③その他

(2)年齢　　_____歳

(3)（ｉ)現在、何かお仕事をされていますか。

①はい　②いいえ

（ii）一週間のおよその余暇時間を教えてください。

（ｉ)で、「はい」を選んだ方は労働時間もお答えください。

1

Figure 1.

The questionnaire for survey

(English annotation)

In the questionnaire below, there are choice questions and description questions. For choice questions, please circle the answer number that applies to you.

~About yourself~

(1) Gender

1.male　2.female　3.other

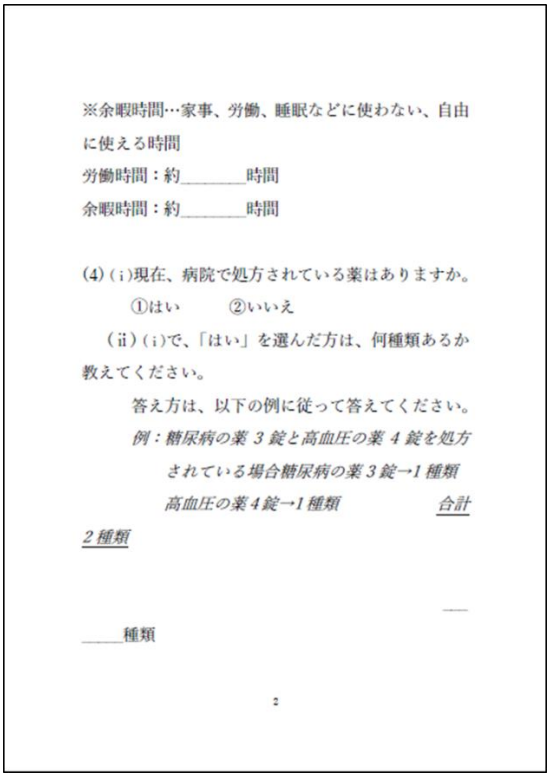
(2) Age　(　) years old

(3) (i) Are you doing any work now?

1.Yes　2.No

(ii) How many leisure hours do you have in a week?

If you selected "Yes" in (i), please write your working hours, too.



※余暇時間…家事、労働、睡眠などに使わない、自由に使える時間
労働時間：約_____時間
余暇時間：約_____時間

(4)(ⅰ)現在、病院で処方されている薬はありますか。
①はい　②いいえ
(ⅱ)(ⅰ)で、「はい」を選んだ方は、何種類あるか教えてください。
答え方は、以下の例に従って答えてください。
例：糖尿病の薬 3 錠と高血圧の薬 4 錠を処方されている場合糖尿病の薬 3 錠→1 種類
高血圧の薬 4 錠→1 種類　合計 2 種類

____種類

Figure 2.

The questionnaire for survey

(English annotation)

***Leisure time: Free time not used for housework, work, sleep, etc.**

Working time: about (　　) hours

Leisure time: about (　　) hours

(4) (i) Are there any currently prescriptions?

1.Yes　2.No

(ii)　If you selected "Yes" in (i), please tell me how many types.

Please answer according to the following example.

Ex. If you are prescribed 3 tablets of antidiabetic drug and 4 tablets of antihypertensive drug.

3 tablets of antidiabetic drug → 1 type

4 tablets of antihypertensive drug → 1 type　　total 2 types

(　　) types

Figure 3.

The questionnaire for survey

(English annotation)

~About health food~

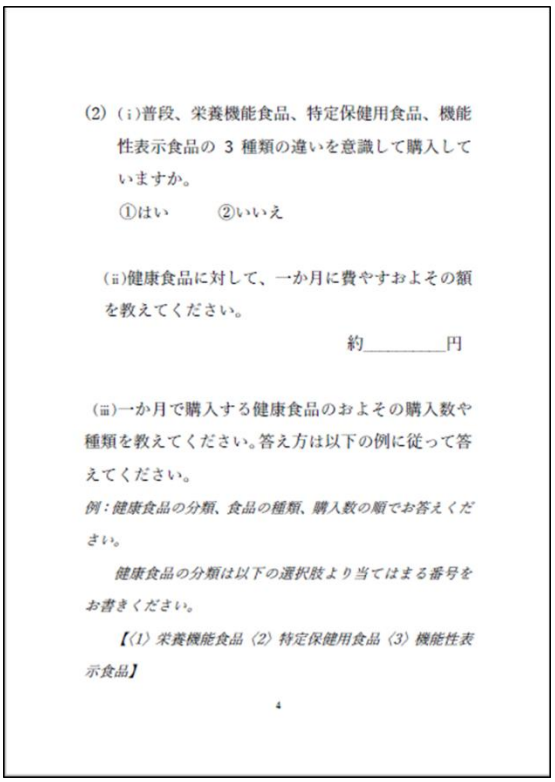
(1) Have you ever purchased health food with the following displayed?

○Food with nutrient function claims

○Food for specified health uses

○Food with function claims

1.Yes → Go to (2)　　2.No → Go to (3)



(2)（ⅰ)普段、栄養機能食品、特定保健用食品、機能性表示食品の 3 種類の違いを意識して購入していますか。

①はい　　②いいえ

（ⅱ)健康食品に対して、一か月に費やすおよその額を教えてください。

約＿＿＿＿＿円

（ⅲ)一か月で購入する健康食品のおよその購入数や種類を教えてください。答え方は以下の例に従って答えてください。

例：健康食品の分類、食品の種類、購入数の順でお答えください。

健康食品の分類は以下の選択肢より当てはまる番号をお書きください。

【〈1〉栄養機能食品〈2〉特定保健用食品〈3〉機能性表示食品】

4

Figure 4.

The questionnaire for survey

(English annotation)

(2) (i) Do you usually purchase health food with an awareness of the differences between food with nutrient function claims, food for specified health uses, and food with function claims?

1.Yes　2.No

(ii) What is approximate amount of money spent per month for health food?

About (　　)yen

(iii) What is the approximate number and type of health food purchased in a month?

Please answer according to the following example.

Ex. Answer in the order of health food classification, food type, and number of purchases.

For health food classification, write the number that applies from the following options.

【<1> Food with nutrient function claims　<2> Food for specified health uses　<3> Food with function claims】

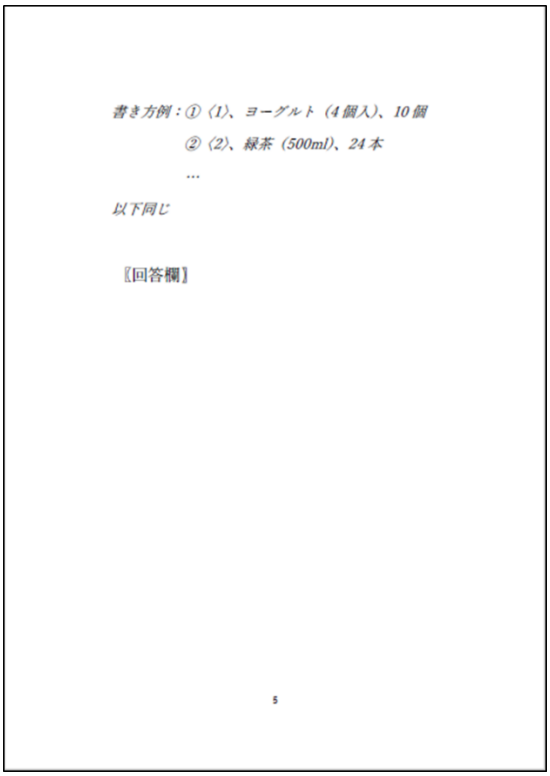


Figure 5.

The questionnaire for survey

(English annotation)

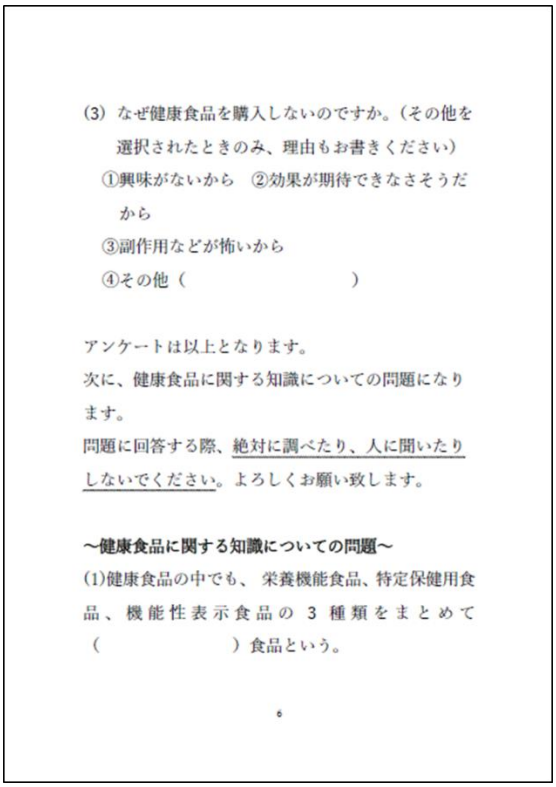
Ex(how to write): 1.<1>, Yogurt, (in 4 pieces), 10 pieces

2.<2>, Green tea (500ml), 24 bottles

…

The same applies to the following

〖 Answer column 〗



(3) なぜ健康食品を購入しないのですか。(その他を選択されたときのみ、理由もお書きください)
①興味がないから ②効果が期待できなさそうだから
③副作用などが怖いから
④その他 (　　)

アンケートは以上となります。
次に、健康食品に関する知識についての問題になります。
問題に回答する際、絶対に調べたり、人に聞いたりしないでください。よろしくお願い致します。

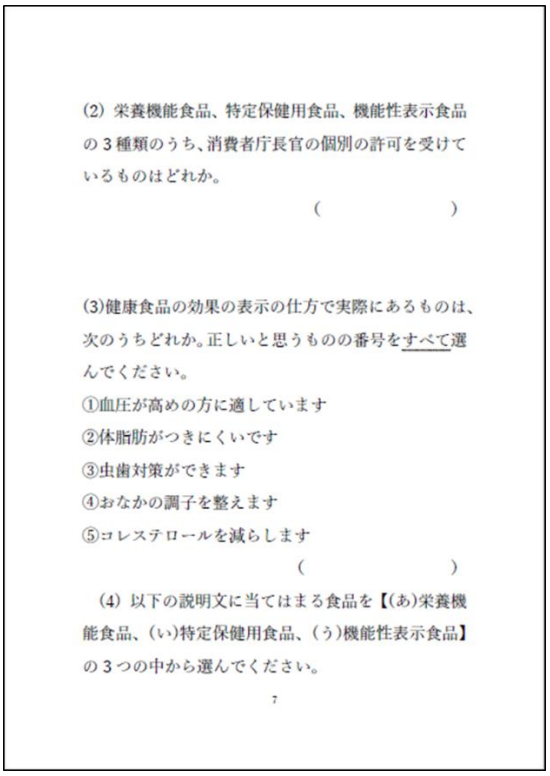
～健康食品に関する知識についての問題～
(1)健康食品の中でも、栄養機能食品、特定保健用食品、機能性表示食品の3種類をまとめて
(　　)食品という。

Figure 6.
The questionnaire for survey
(English annotation)

(3) What is the reason not to purchase health food?
(Please write the reason only when you select "Other".)
1. Because I'm not interested
2. Because the effect is not be able to be expected.
3. Because side effects are scary.
4.Other (　　)

This concludes the questionnaire.
Next is the problem of knowledge about health foods.
When answering a problem, never look into it or ask someone in advance.

~The problem of knowledge about health foods~
(1) Food with nutrient function claims, food for specified health uses, and food with function claims, are collectively referred to as (　　) foods.



(2) 栄養機能食品、特定保健用食品、機能性表示食品の３種類のうち、消費者庁長官の個別の許可を受けているものはどれか。

(　　)

(3)健康食品の効果の表示の仕方で実際にあるものは、次のうちどれか。正しいと思うものの番号をすべて選んでください。

①血圧が高めの方に適しています
②体脂肪がつきにくいです
③虫歯対策ができます
④おなかの調子を整えます
⑤コレステロールを減らします

(　　)

(4) 以下の説明文に当てはまる食品を【(あ)栄養機能食品、(い)特定保健用食品、(う)機能性表示食品】の３つの中から選んでください。

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Figure 7.

The questionnaire for survey

(English annotation)

(2) Which of food with nutrient function claims, food for specified health uses, and food with function claims are individually approved by the Commissioner of the Consumer Affairs Agency?(　　)

(3) Which of the following texts actually show the effects of health foods?

Choose all the numbers that you think are correct.

1. Suitable for people with high blood pressure.

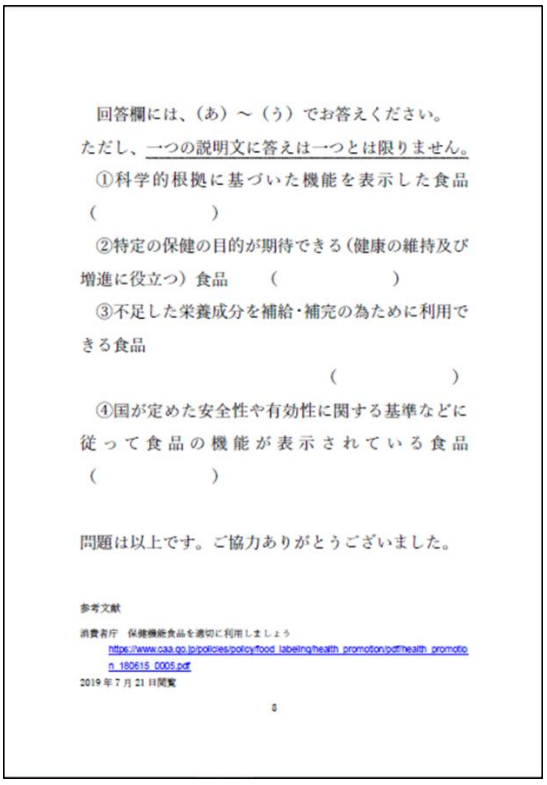
2. It becomes difficult to increase body fat.

3. You can take measures against tooth decay.

4.Relieve intestinal ailments

5. Reduce cholesterol　　(　　)

(4) Please choose the food that fits the following explanation from (あ)food with nutrient function claims, (い)food for specified health uses, and (う)food with function claims.



回答欄には、(あ) ～ (う) でお答えください。
ただし、一つの説明文に答えは一つとは限りません。
①科学的根拠に基づいた機能を表示した食品
(　　)
②特定の保健の目的が期待できる(健康の維持及び増進に役立つ) 食品　(　　)
③不足した栄養成分を補給・補完の為ために利用できる食品
(　　)
④国が定めた安全性や有効性に関する基準などに従って食品の機能が表示されている食品
(　　)

問題は以上です。ご協力ありがとうございました。

参考文献
消費者庁　保健機能食品を適切に利用しましょう
https://www.caa.go.jp/policies/policy/food_labeling/health_promotion/pdf/health_promotion_180615_0005.pdf
2019 年 7 月 21 日閲覧

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Figure 8.
The questionnaire for survey
(English annotation)

Please answer (あ), (い), (う) in the answer column.
However, there is not always one answer per explanation.
1.Foods that display functions based on scientific evidence　(　　)
2.Foods that are able to be expected purpose of specific health(Helps maintain and increase health)

(　　)

3.Foods that are able to be used to supplement missing nutrients

(　　)

4. Foods whose functions are displayed according to safety and efficacy standards provided by a nation
(　　)

time was 20.27 hours per week. The average working hours of working people was 12.42 hours per week. At present, 46 people have regular medicines, and 16 have not taken medicine (Table 1). Those who regularly use drugs take an average of 2.23 types. There were 30 older adults who had purchased health food and 32 older adults who had never purchased health food (Table 1). Of the 30 people purchased, three people answered "We purchase paying attention to the difference between the three types. (food with nutrient function claims, food for specified health uses, and food with function claims) " (Table 1). In addition, the most common reason for not purchasing health food was that they were not interested (14/31, 45%) (Table 2). The average amount per month of health food purchasers was 5049.44 yen. The person with the most purchase amount was 30,000 yen. In the health food knowledge test (Perfect 50), the overall average score was very low at 6.94 points. The highest score was 30 points. The overall average total physical activity was 2759.28 MET-minutes per week. The largest number was 14,931 MET-minutes per week and the lowest was 160 MET-minutes per week. The correlation between the purchase amount and the total physical activity was shown in Figure 9 (Fig.9). The correlation coefficient was 0.230 and the significance probability was 0.269 ($p>0.05$). The correlation between the purchase amount and the test score was shown in Figure 10 (Fig.10). The results showed that there was no correlation between the correlation between the purchase amount and the test score, or between the purchase amount and the total physical activity ($p> 0.05$). The correlation coefficient was -0.017 and the significance probability was 0.973 ($p>0.05$). The test score in purchaser and non-purchaser was shown in Figure 11 (Fig.11). There was no significant difference in test scores between purchaser and non-purchaser ($p > 0.05$). The total physical activity between purchaser and non-purchaser was shown in Figure 12 (Fig.12). There was no significant difference in total physical activity between purchaser and non-purchaser (p

> 0.05).

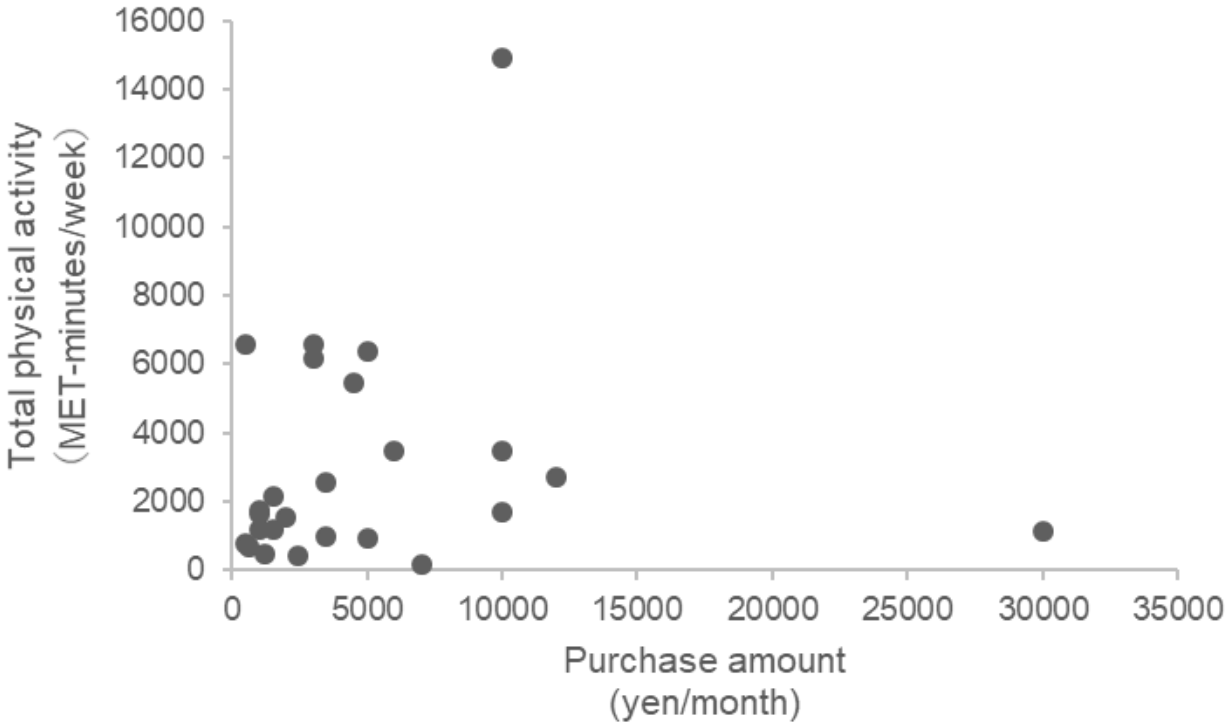

Figure 9.

Correlation between purchase amount and total physical activity

The figure showed the correlation coefficient between the purchase amount and the total physical activity.($p>0.05$)

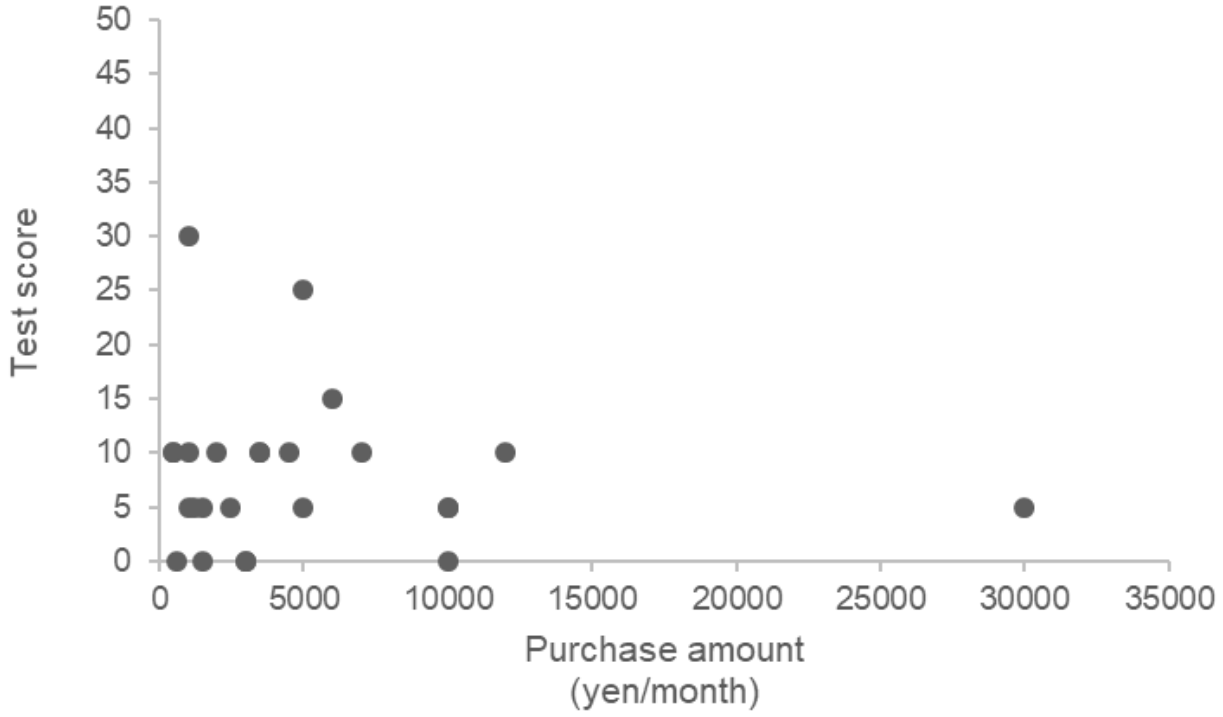

Figure 10.

Correlation between purchase amount and score of correct knowledge test on health food

The figure showed the correlation coefficient between the purchase amount and test score of correct knowledge test on health food.($p>0.05$)

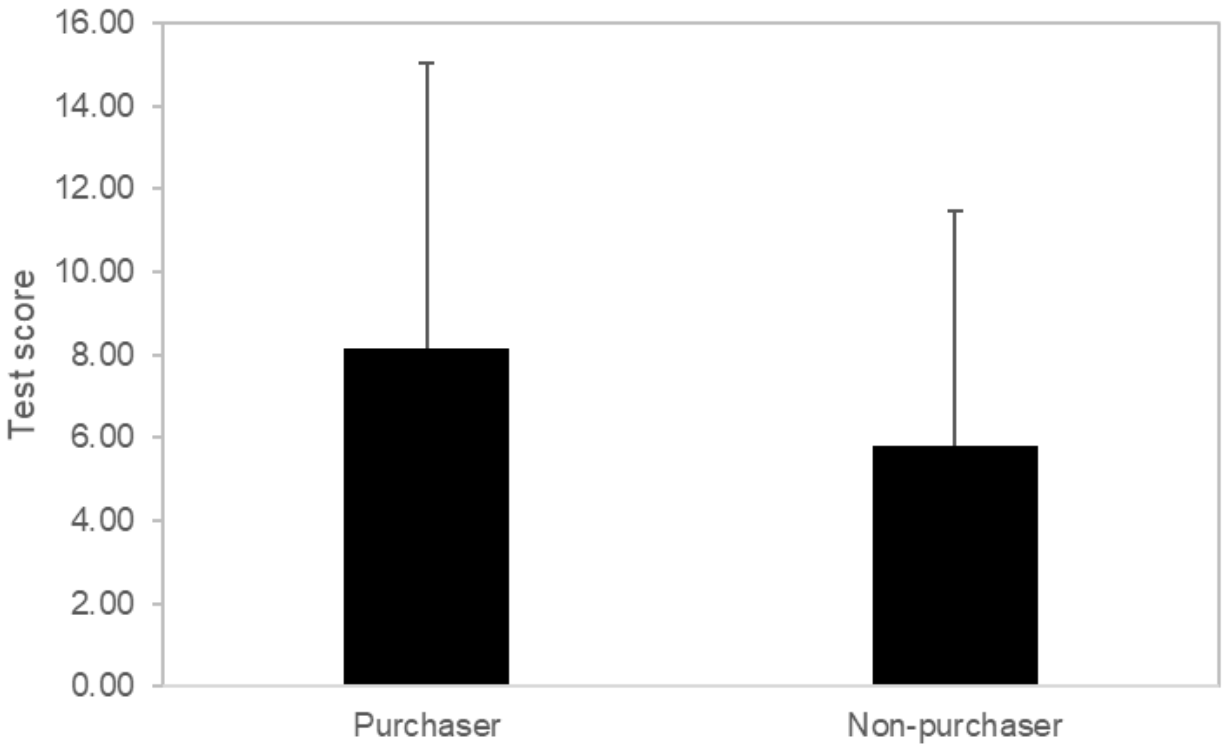

Figure 11.

Difference in score of correct knowledge test on health food between purchaser and non-purchaser

The figure showed the difference of score of correct knowledge test on health food of the purchaser and non-purchaser of health food. (p> 0.05)

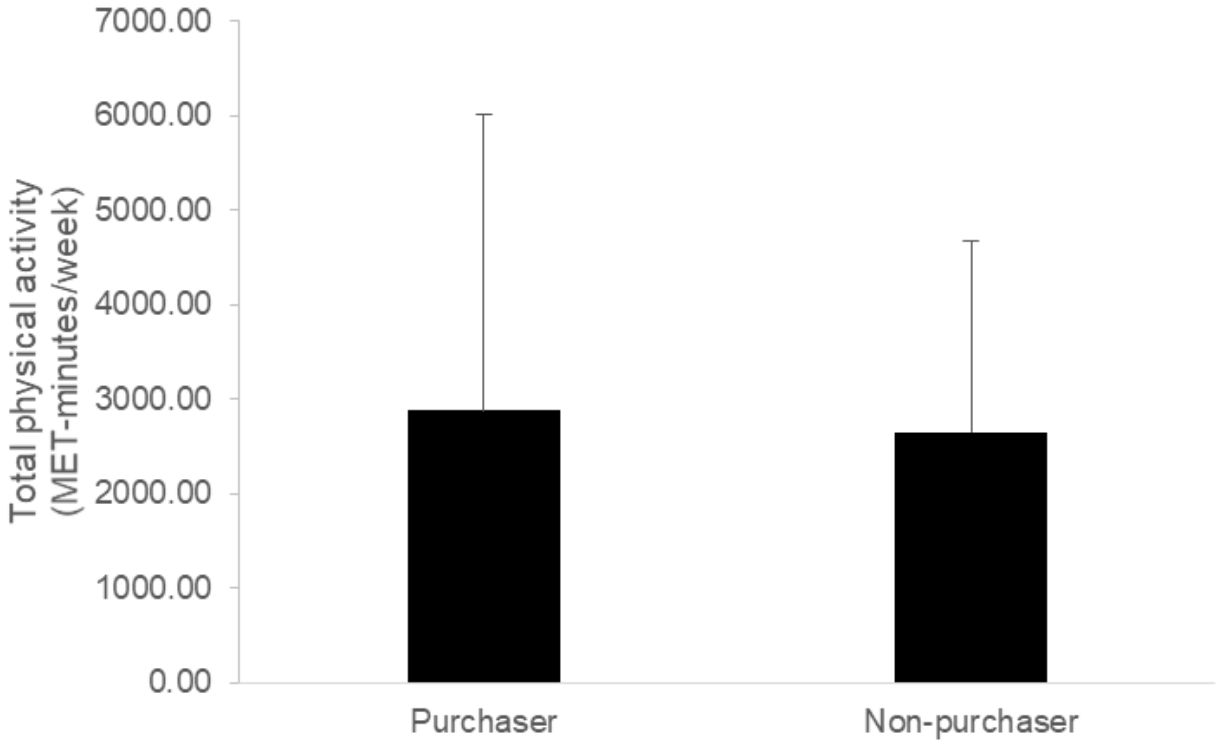

Figure 12.

Difference in total physical activity between purchaser and non-purchaser

The figure showed the difference of the total physical activity of the purchaser and non-purchaser of health food. (p> 0.05)

Table 1. Results of yes / no responses in the health food questionnaire.

	Work	Prescription	Purchase	Difference awareness
Yes	19 (31%)	46 (74%)	30 (48%)	3 (10%)
No	43 (69%)	16 (26%)	32 (52%)	27 (90%)

Work: Are you doing any work now?

Prescription: Are there any currently prescriptions?

Purchase: Have you ever purchased health food with the following displayed?

(Each 62 people: Work, Prescription, and Purchase)

Difference awareness: Do you usually purchase health food with an awareness of the differences between food with nutrient function claims, food for specified health uses, and food with function claims?

(Total 30 people: Difference awareness)

Table 2. Reasons for not purchasing health food

	Total
1	14 (45%)
2	5 (16%)
3	5 (16%)
4	7 (23%)

1. Because I'm not interested

2. Because the effect is not be able to be expected.

3. Because side effects are scary.

4.Other

(Total 31 people)

Discussion

In this study, we investigated the relationship between health food purchases and exercise habits in older adults and the relationship between health food purchases and knowledge about health food in older adults based on the results of a questionnaire survey and the International Physical Activity Questionnaire (IPAQ). Main finding of this study was that there was no relationship between health food purchases and exercise habits in older adults ($r = 0.230$, $p > 0.05$) (Fig. 9). The results of this study suggested that even if many health food were purchased, older adults were not always actively exercising, and the first hypothesis of this study was not supported. According to previous research, the most common purpose of using health food is to maintain health and promote health, as in the results of the Consumer Affairs Agency questionnaire（Cabinet Office, 2012), and 46% of people with obesity, lifestyle-related diseases (including their reserves), and allergies used prescription drugs and health food in combination (Kamohara, 2014). In addition, as modern people want to be healthy, but they have a weak attitude to actively engage in activities that lead to health promotion such as exercise (Wada, 2009). From the results of these previous studies, as a cause of not supporting the hypothesis, we consider that older adults may use health food to compensate for lack of exercise. The study also revealed that health food purchases and health food knowledge test scores were not related ($r = -0.017$, $p > 0.05$) (Fig. 10). One of the reasons for the results not supporting the hypothesis is that, regarding health food knowledge, “Most information about health food available in Japan is advertisements. Information obtained from advertisements is biased." (Onai, 2005), as stated, the current situation in Japan, where consumers are without trying to know the correct information unless they want to know from themselves, may have led to a low test score. In addition, according to previous research, older adults were high

percentage of health hazards from health food and supplements and some of the users answered that it was for the purpose of treating illnesses (Koike, 2013). From this research result, as another cause for not supporting the hypothesis, we consider that some of older adults take a lot of health food due to incorrect knowledge (ex. To treat disease etc.).

In conclusion, this study provided an opportunity for older adults to clarify whether health food were successfully incorporated into their lives and to rethink the way health food should be. In addition, a low recognition rate of correct knowledge about health food were clarified as an issue for health food for older adults from now on. In Japan, where people are aging, it is necessary to review meals and exercise habits in order to live a healthy life. In order to maintain good health, supplementing the nutrients that are lacking in daily meals, and taking health food well into daily life for further improvement of physical activity will be important. In addition, it can be said that knowing the purchasing behavior of older adults leads to further expansion of the health food market. As the market expands, the number of health food purchasers of older adults will increase and the health awareness of older adults is expected to increase.

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