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Title Page

[Title]

Measuring the ability to interpret medical information among the Japanese public and the relationship to inappropriate purchasing attitudes of health-related goods

[Running head]

Interpretation of medical information and behavior

[Authors]

Y Takahashi, MS 1

M Sakai, MPH 1, 2

T Fukui, MD, MPH 3

T Shimbo, MD 1

[Affiliations]

1 Department of Clinical Research and Informatics, International Clinical Research Center,

Research Institute, International Medical Center of Japan, Tokyo, 162-8655, Japan

2 Kyoto University School of Public Health, Kyoto, 606-8501, Japan

3 St. Luke's International Hospital, Tokyo, 104-8560, Japan

[e-mail addresses]

Y Takahashi, y-takahashi@umin.ac.jp

M Sakai, msakai@ri.imcj.go.jp

T Fukui, fkts@luke.or.jp

T Shimbo, tshimbo@ri.imcj.go.jp

[Address for correspondence]

Yoshimitsu Takahashi

Department of Clinical Research and Informatics, International Clinical Research Center, Research Institute, International Medical Center of Japan, Tokyo, Japan

1-21-1, Toyama, Shinjuku-ku, Tokyo, 162-8655, Japan.

TEL: +81-3-3202-7181; FAX: +81-3-3202-7364

1 Email: y-takahashi@umin.ac.jp

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Abstract and keywords

Abstract

In order to investigate the relationship with uncritical purchasing attitudes toward health-related goods, we devised a test for ability to interpret medical information (TAIMI) among the Japanese public, designed to measure numeracy, literacy, and also critical appraising skills. As an online survey was conducted, 6047 participants were randomly chosen from the Japanese public and 36 physicians. TAIMI score for the public was 3.9±1.7 (mean±SD); the physicians' was higher at 6.2±1.3 ($p<0.01$). The lower TAIMI scoring group was more prone to purchasing health-related goods in response to exaggerated advertising than the higher ($p<0.01$). The factor analysis indicated TAIMI included two factors related to the ability to critically appraise the validity and impact of evidence. In conclusion, TAIMI successfully measured the ability to interpret medical information, including the critical aspect of appraising validity and impact of the information. People competent in the interpretation tended to have more critical purchasing attitudes.

Keywords

EDUCATION (Public Health), Health communication, Health education, Health informatics, Psychological/Behavioural Medicine

Introduction

Health-related information is ubiquitous throughout conventional media and the Internet. Anyone can easily access medical information whenever they wish, because of advances in information technology.

Now that the public – including patients – has more opportunity to independently retrieve medical information, it is important that they are able to appropriately interpret medical information that applies to their specific situations. Adequate interpretation of medical information is fundamental to a good doctor-patient relationship, shared decision making in medical care, and appropriate consumer behavior for purchasing and using health-related goods. This ability is analogous to the skill of clinical problem solving using the 5-step evidence-based medicine (EBM) approach: asking, acquiring, appraising, applying, and assessing [1-2]. Thus, the patients' ability to interpret medical information that is found in media and online sources could be regarded as the layman's version of EBM competence.

Bass [3] defined health literacy as the "ability to read, understand, and use health information to make appropriate healthcare decisions.” Patients without adequate ‘health literacy’ have difficulty communicating with healthcare givers. Inadequate health literacy

among medical consumers contributes to inferior shared decision-making, ineffective behavior [4], and a detrimental influence on health [4, 5].

Many Japanese probably do not accurately interpret medical information. Producers of a Japanese television show admitted to falsifying a scientific program in February 2007 [6]. The show indicated that *natto* (fermented soybeans) was good for weight loss and subsequently the product sold out in supermarkets, despite the lack of supporting scientific study or evidence. This demonstrates that many people do not accurately interpret medical information and are uninformed consumers of health-related goods. Education is needed to improve the Japanese public's ability to interpret medical information.

The educational attempt to measure public's ability to interpret medical information may improve health literacy and health outcomes but also a wider range of options and opportunities for health. According to a conceptual model of health literacy as asset [7], tailored information, communication and education based on prior understanding of individual capacity will lead better health literacy, and will finally improve health outcomes, healthy choices and opportunities.

When considering education, it is necessary at the outset to evaluate the public's ability

to interpret medical information. Valid instruments that can assess this ability will help clarify the current situation and evaluate the effectiveness of education.

Some tests for health literacy have already been developed. The REALM (Rapid estimate of adult literacy in medicine) estimates literacy in medical terms [4]. The TOFHLA (Test of Functional Health Literacy in Adults) measures patients' ability to read and understand health-related materials [8], and the S-TOFHLA is the short form [9].

Schwartz et al. [10] developed a test of patients' interpretation skills for medical data and reported on the validity and reliability of the test. The test's purpose was to measure ability to compare medical statistics on disease risk and disease reduction.

However, the REALM seemed to assess the basic ability to read, and the test developed by Schwartz appeared to emphasize numerical comprehension. It is insufficient to equate the ability to perform mere basic reading and numerical tasks with literacy and application of medical information. The required instrument must be capable of evaluating ability to "critically appraise evidence for validity, impact, and applicability" which is Step 3 in EBM problem solving [11-13]; therefore, an instrument to measure the ability to interpret medical information is required.

In Japan, there is little research on the public's ability to interpret medical information. The majority of Japanese people are considered to enjoy basic literacy and numeracy; therefore a more suitable instrument for this society has to be developed. We designed a test that measures not only basic reading skills and numeracy, but also the skill for critically appraising medical information. Application of adequate measures will improve health outcomes as well as health literacy.

The purpose of the study was to design a test to measure the ability to interpret medical information (TAIMI) among the Japanese public, and to investigate the relationship with uncritical purchasing attitudes toward health-related goods.

Methods

[Developing TAIMI]

Previous studies have been conducted about interpretation skills for medical data [10]. We estimated different abilities for literacy or numeracy, and added questions to measure the ability to judge the validity of information.

The test was designed so respondents could complete it in a short time. It included a

small number of medical questions, because this type of question would be difficult for some respondents to answer. After producing the first draft, several physicians and other medical professionals were consulted to revise the questions (see Appendix A and B for revised questionnaire).

[Internet Survey]

From March 2006 – February 2007, two groups were surveyed online. One group was a sample of Japanese aged over 15; medical professionals were excluded. A random sample reflecting stratification by gender, age, and region was drawn, using a research panel maintained by Yahoo! Research (Tokyo, Japan, http://research.yahoo.co.jp) (see Appendix C).

Two questions were used to measure the respondents' medical consumer attitude and to investigate the relationship between TAIMI score and a tendency to purchase health-related goods. One question measured the tendency to purchase a weight reduction pillow. The weight reduction pillows were considered an example of ineffective health-related goods because the product was marketed through exaggerated advertising. Authorities investigated the product and the advertiser was charged for using unsubstantiated evidence [14]. The other

question related to participants' regret after purchasing health-related goods.

The questionnaire included: participant characteristics, TAIMI, and medical consumer attitudes. We hypothesized that participants with a low TAIMI score were more credulous than participants with high scores. This survey was concurrently conducted with a study investigating knowledge of EBM among the Japanese public, using a sample of more than 6000 respondents [15]. TAIMI was also administered to this sample, and all were chosen as subjects for analysis.

A second group, comprised of physicians, was surveyed in order to compare their scores with scores of the public and to validate TAIMI's questions. The physician sample was drawn from a research panel maintained by PLAMED Inc. (Tokyo, Japan, http://www.plamed.co.jp). It was hypothesized that physicians would correctly answer TAIMI questions, whereas the public's score was expected to be lower than that of the physicians. A sample size of the physician group was relatively small comparing the general public group. It was because sample sizes were determined by the assumption that there was a relatively large difference of the means of TAIMI scores between two groups, which was 2 points.

[Statistical Analysis]

To compare two categorical variables between two groups, Fisher's exact test was used. To compare continuous variables, the independent samples t test was used between two groups, and the analysis of variance (ANOVA) was used among three or more groups. In order to determine the trend relationship between the TAIMI scores and detrimental purchasing attitudes, we entered the categorized score of TAIMI (low, middle and high) as an ordinal variable into the logistic regression model. We also used the multiple logistic regression model, adjusting for participant characteristics (age, gender, urban living, and having visited a hospital in the past year). Factor analysis using the principal factor method was used to explore different aspects of ability to interpret medical information from the seven TAIMI questions. Rotated factor loadings were estimated using the Harris-Kaiser rotation (HKPOWER=0). SAS 8.2 was used for all analyses (SAS Institute Inc, Cary, NC). All comparisons were two-tailed and considered statistically significant at $P < 0.05$.

Results

[Participant Characteristics]

The public participants included 6047 individuals, aged 49.8 ± 15.0 (mean ± SD); 46.2% were male (Table 1). There were 36 physicians: aged 42.6 ± 9.1; 86.1% were male; and 63.9% had worked for more than 15 years.

[TAIMI score]

The early version of TAIMI included eight questions. One of the questions was dropped because only 11.1% of the physicians answered the item correctly and it seemed unsuitable. The revised TAIMI included seven questions (Appendix A). The interpretation score was considered to be the sum of correct answers, with a range of 0-7.

Table 1 shows TAIMI scores and the proportion of correct answers for each question for the public and physician groups. The proportion of correct answers from the physician group was greater than 70%, and consistently higher than the public group. The mean ± SD of the public scores was 3.9 ± 1.7 points, and for physicians 6.2 ± 1.3 points ($p<0.001$). The characteristics of the two groups might be different because of differences in age and gender; however, after adjusting for age and gender, the public score was significantly still 2.2 points lower than the physicians' score ($p<0.001$).

Figure 1 shows the distribution of scores for both groups. The distribution of public scores was almost symmetrical, and not concentrated because the skew and kurtosis were -0.40 and -0.37, respectively.

Table 2 and appendix D shows the relationship between participant characteristics and TAIMI score. The scores were different by age group. The higher scores were associated with males living in large cities, those visiting hospitals currently or during the past year, and those searching for information about diseases or hospitals in medical books or online in order to counsel family members or friends.

Table 3 shows the relationship between TAIMI scores and participant attitudes (Appendix B). The public was separated into three subgroups with low scores (0-2 points), average scores (3-5 points), and high scores (6-7 points). The participants in the low score group (n=1173) and high score group (n=1116) approximated a quintile. Low score was associated with a tendency toward purchasing health-related goods. In the low score group, 11.4% were prone to purchasing a weight reduction pillow, as opposed to 8.2% in the high score group even after adjusting for participant characteristics (age, gender, urban living, and having visited a hospital in the past year) (adjusted p=0.01). As far as experienced regrets

after purchasing, there were no significant differences among the three subgroups (adjusted p=0.50). However, as 35.3% of low score group and 26.6% of the high score group had resisted buying the 'health-related goods,' the differences were also examined after excluding participants having never bought. Among participants who had purchased a weight reduction pillow, the proportion of those feeling regret was 49.1% in the low score group and 42.6% in the high score group (adjusted p=0.002). Finally, the associations between TAIMI score and a tendency to purchase a weight reduction pillow or to regret purchasing one were still significant, even after adjusting for participant characteristics.

[Factor analysis]

Factor analysis of the seven TAIMI questions produced two factors from the instrument (Table 4). In Factor 1, Q1, Q2, Q3, and Q5 had high factor loadings above 0.3, with a Cronbach α of 0.36. In Factor 2, Q4, Q6, and Q7 had high factor loadings, with a Cronbach α of 0.51. The final communality estimate was 1.38.

Discussion

A test was developed to assess the ability to interpret medical information and 6047 individuals of the public and 36 physicians were surveyed for comparison. The public scores were more or less normally distributed (Figure 1). This distribution excluded the score's ceiling and flooring effects and helped to delineate subpopulations with low and high scores.

The physician group answered most of the questions correctly with an accuracy rate of 70% or above, and their scores were significantly higher than the public's scores—as hypothesized.

Furthermore, people who had low TAIMI scores compared to people with high scores had a greater tendency to uncritically purchase health-related goods like weight reduction pillows. Among people that bought 'health-related goods', people with low scores more frequently experienced regret than people with high scores. This further supports the validity of the instrument and suggests that a better ability to interpret medical information leads to critical purchasing attitudes and behavior. This implies that people who are effectively educated to interpret medical information would judge the validity of the information and this would impact their purchasing behavior towards health-related goods.

Factor analysis revealed that the instrument content was divided into two factors. Factor

1 included Q1, Q2, Q3, and Q5, “What information do you believe to be the most important
in helping you make your decision?” This factor may be related to interpretation of the
internal validity of the information. On the other hand, Factor 2 included Q4, Q6, and Q7;
questions related to numeracy and the interpretation of the size of the effect. Each factor could
correspond to “critically appraising evidence for validity”, and “critically appraising evidence
for impact”, in other words, Step 3 of clinical problem solving in EBM. The reliability of the
internal consistency for factor analysis might not be robust because all communality scores
were below 0.3 and both Cronbach α’s were less than 0.6. This implied that there might be
sub-domains in both factors (Table 4).

For effective shared decision-making, not only healthcare providers but patients must be
able to interpret medical information adequately. Woloshin et al. reported that educational
material can improve people’s understanding of risk [16, 17], although they were not able to
demonstrate that better data interpretation lead to better decision-making. Our study showed
that people with higher TAIMI scores had more critical purchasing attitudes. We did not
observe actual behavior, but better interpreting ability could lead to better decision-making.

It was conceptually proposed that health literacy included functional, interactive, and

critical health literacy [18]. However, assessing interactive and critical health literacy will require additional assessment of oral literacy and social skills such as those involved in negotiation and advocacy. The literacy assessed by TAIMI could be corresponded to critical health literacy. This study suggested public health implication that critical health literacy was related to critical and appropriate attitude and might improved health outcomes, although these will require systematic development and testing in the same way that the existing TOFHLA and REALM measures have been developed [7].

This study has a few limitations. First, there was concern that the research panel was less representative of the general population because an online survey was used. However, the objective of the study was not to generalize, but rather to design an instrument and use it to measure a selected sample. Second, because TAIMI was composed of only seven questions, the questions could not be repeatedly presented to the participants. For repeated measurement of the same sample, pools of such questions would have to be developed. Third, we acknowledged that some ambiguities still remained in the questions. For example, about 30% physicians did not answer correctly in Q2. The ambiguities will be improved in a further study. Finally, these kinds of instruments need to be associated with educational activities in society

and schools outside the medical field. The instrument has yet to be applied in the field of public education. This instrument is still under development and further study is required to produce a more reliable, valid instrument.

In conclusion, an instrument was developed for measuring the ability to interpret medical information among the Japanese public. We suggested that the specific ability to assess the internal validity of information is required to interpret medical information as opposed to the abilities needed to perform mere basic reading or numerical tasks. The study revealed that people who were competent in the interpretation of medical information tended to have more critical purchasing attitudes. We hope to eventually use our instrument to educate the public and enhance the ability to interpret medical information. This will contribute to the public welfare, and improve the relationship between patients and their healthcare providers.

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Figure legends

Figure 1 Histogram of score of TAIMI in the general public and physicians

Nothing

Tables

Table 1 Score of TAIMI for general public and physicians

	The general public (n=6047) Mean ±SD or n(%)	Physicians only (n=36) Mean ±SD or n(%)	p value	
Age	49.8 ±15.0	42.6 ±9.1	<0.001	[b]
Gender (male)	2793 (46.2%)	31 (86.1%)	<0.001	[c]
Answered correctly				
Q1	3248 (53.7%)	30 (83.3%)	<0.001	[c]
Q2	1761 (29.1%)	26 (72.2%)	<0.001	[c]
Q3	3711 (61.4%)	33 (91.7%)	<0.001	[c]
Q4	2805 (46.4%)	31 (86.1%)	<0.001	[c]
Q5	4821 (79.7%)	35 (97.2%)	0.009	[c]
Q6	4547 (75.2%)	33 (91.7%)	0.02	[c]
Q7	2938 (48.6%)	34 (94.4%)	<0.001	[c]
Score of TAIMI [a]	3.9 ±1.7	6.2 ±1.3	<0.001	[b]

[a] Test for ability to interpret medical information

[b] p value of the independent samples t test

[c] p value of Fisher's exact test

SD: standard deviation

Table 2 Characteristics of participants and the score of TAIMI (the general public)

		Proportion of the group (n=6047)	Score of TAIMI [a] Mean (95% CI) ± SD	p value	
Age	20-29	12.4%	3.80 (3.68-3.92) ± 1.68	<.0001	[c]
	30-39	15.9%	3.86 (3.76-3.97) ± 1.68		
	40-49	15.0%	4.13 (4.03-4.24) ± 1.67		
	50-59	27.3%	3.99 (3.91-4.07) ± 1.64		
	60-69	21.3%	3.88 (3.79-3.97) ± 1.70		
	70-79	7.6%	3.93 (3.78-4.09) ± 1.72		
	80-89	0.4%	4.54 (3.83-5.25) ± 1.77		
Gender	Male	46.2%	4.00 (3.94-4.07) ± 1.73	0.008	[d]
	Female	53.8%	3.89 (3.83-3.94) ± 1.63		
City [b]	Large cities	27.2%	4.01 (3.93-4.10) ± 1.68	0.039	[d]
	Others	72.8%	3.91 (3.86-3.96) ± 1.68		
Hospital visit (for last year)	Yes	74.6%	4.03 (3.99-4.08) ± 1.63	<.0001	[d]
	No	25.4%	3.67 (3.58-3.76) ± 1.80		
Hospital visit (now)	Yes	38.3%	4.02 (3.95-4.09) ± 1.64	0.003	[d]
	No	61.7%	3.89 (3.84-3.95) ± 1.70		
To inquire about diseases or hospitals					
for family or friends	Yes	42.7%	4.02 (3.96-4.08) ± 1.60	0.002	[d]
	No	57.3%	3.88 (3.83-3.94) ± 1.73		
using the Internet	Yes	56.7%	4.15 (4.10-4.20) ± 1.58	<.0001	[d]
	No	43.3%	3.67 (3.60-3.73) ± 1.77		
reading medical books	Yes	31.9%	4.15 (4.08-4.22) ± 1.59	<.0001	[d]
	No	68.1%	3.84 (3.79-3.89) ± 1.71		

[a] Test for ability to interpret medical information

[b] Large cities : over 1million people

[c] Overall p value of ANOVA

[d] p value of the independent samples t-test

95% CI: 95% confidence interval, SD: standard deviation

Table 3 The score of TAIMI and attitude of participants (the general public)

	All participants (n=6047)	Score of TAIMI [a] Low 0-2 (n=1173)	Middle 3-5 (n=3758)	High 6-7 (n=1116)	Unadjusted p value for trend [b]	Adjusted p value for trend [c]
Would you purchase a weight loss pillow?					**0.002 [d]**	**0.01 [d]**
Possibility to purchase it	**9.9%**	**11.4%**	**9.9%**	**8.2%**		
1) I would buy it	*0.7%*	*1.3%*	*0.6%*	*0.5%*		
2) I would buy it, if I could get a 20-30% discount	*2.2%*	*2.5%*	*2.3%*	*1.7%*		
3) I would buy it if family or friend recommended it	*3.2%*	*2.9%*	*3.3%*	*3.6%*		
4) I would buy it after considering other buyers' opinions	*3.7%*	*4.8%*	*3.7%*	*2.5%*		
No possibility to purchase it	**90.1%**	**88.6%**	**90.1%**	**91.8%**		
5) I would not buy it	*77.2%*	*73.1%*	*77.2%*	*81.7%*		
6) I have no interest	*10.9%*	*14.1%*	*10.7%*	*8.4%*		
7) others	*1.9%*	*1.5%*	*2.2%*	*1.6%*		
Have you ever regretted purchasing health-related goods?						
(Among all participants)					**0.82 [e]**	**0.50 [e]**
Experienced regret for purchasing	**33.9%**	**31.8%**	**35.4%**	**31.3%**		
1) once	*11.0%*	*10.6%*	*11.6%*	*9.8%*		
2) more than once	*22.9%*	*21.2%*	*23.8%*	*21.5%*		
No experienced regret for purchasing	**66.1%**	**68.2%**	**64.6%**	**68.7%**		
3) I've never regretted	*36.6%*	*32.9%*	*36.2%*	*42.1%*		
4) I've never bought	*29.4%*	*35.3%*	*28.5%*	*26.6%*		
(Among participants having bought)					**0.008 [f]**	**0.002 [f]**
Experienced regret for purchasing	**48.1%**	**49.1%**	**49.4%**	**42.6%**		
No experienced regret for purchasing	**51.9%**	**50.9%**	**50.6%**	**57.4%**		

[a] Test for ability to interpret medical information

[b] p value for trend was calculated by the logistic regression model

[c] p value for trend were adjusted by age, gender, urban living, and having visited a hospital in the past year by the multiple logistic regression model

[d] Comparing the prevalence of "Possibility to purchase it" in three subgroups.

[e] Comparing the prevalence of "Experienced regret for purchasing" in three subgroups.

[f] Comparing the prevalence of "Experienced regret for purchasing" in three subgroups," among participants having bought, excluding participants having never bought.

1 Table 4 Factor analysis of TAIMI for the general public

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		Factor loadings		communality
		Factor1	Factor2	
Factor1	α=0.36			
Q1		**0.31**	-0.08	0.07
Q2		**0.40**	-0.16	0.10
Q3		**0.37**	0.04	0.16
Q5		**0.43**	0.08	0.23
Factor2	α=0.51			
Q4		-0.06	**0.57**	0.28
Q6		0.20	**0.37**	0.27
Q7		0.01	**0.51**	0.27

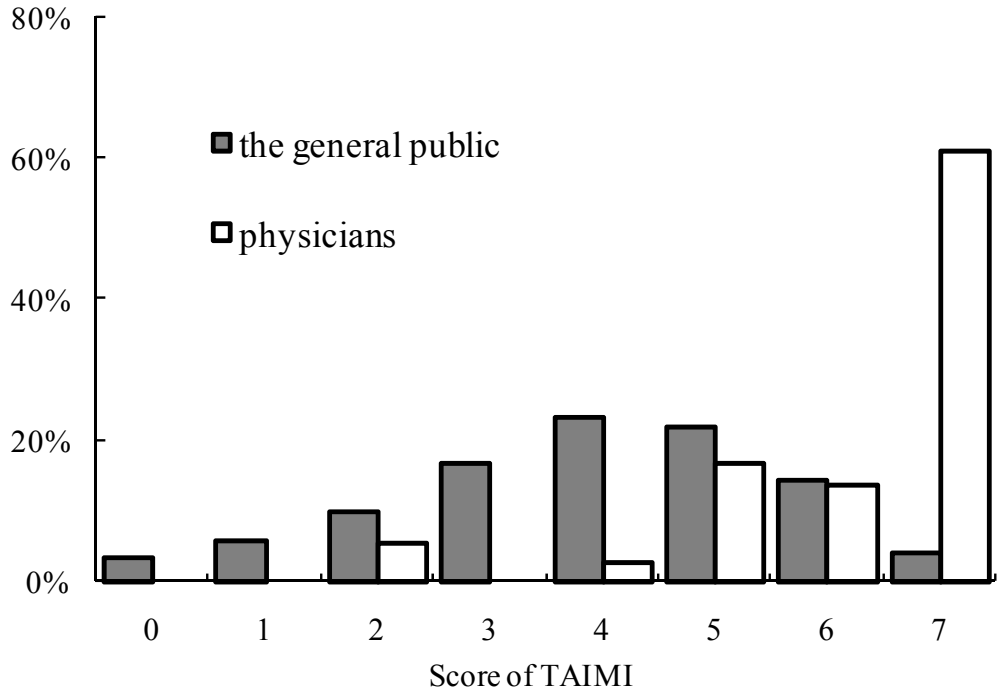
3

4

5

Figures

Figure1 Histogram of score of TAIMI in the general public and physicians



Appendix A : Questions of TAIMI

[Q1]

When you are using the Internet or books, to find out about treatments for a certain disease, what do you think is the most reliable?

1) A medical book edited by a renowned professor which you bought 20 years ago

2) A description about the effectiveness of certain goods and the purchase information

3) An individual's account of his/her personal struggles with the disease

4) A description on a homepage (Internet) of a public medical institution

5) I don't know

[Q2]

What do you think is the most important evidence of the effectiveness of medicines for hypertension?

1) Lowering blood pressure by 30 mmHg on average.

2) Reducing the onset of cardiac infarction or stroke by 30% among those who use the medications compared to those who do not use the medications

3) Preventing kidney disorder in an animal study

4) Reducing small shadows of cardiac infarction in MRI scan

5) I don't know

[Q3]

A TV show suggested that you should lower your cholesterol level by taking medicine if your cholesterol level is high. What do you think is the most important factor that would convince you of the effectiveness of the medicine?

1) Three TV personalities took the medicine for a few years, and they were fine.

2) The cholesterol level of people who took the medicine was lowered by 40 mg/dl on average.

3) A TV show's guest speaker is a doctor who said the medicine caused blood to be slicker

4) A study tracked people who had a high cholesterol level; 1000 took medicine and 1000 did not take medicine. The incidence of cardiac infarction for those taking medicine was lower.

5) I don't know

[Q4]

Mr. A is treated for diabetes and hypertension. The possibility that people of Mr. A's age have cardiac infarction in 5 years is 10%. If Mr. A gets treatment to lower cardiac infarction by 30%, what is the possibility that Mr. A will have cardiac infarction after the treatment?

1) -20% 2) 3% 3) 7% 4) 70% 5) I don't know

[Q5]

A doctor explained a treatment and he said the incidence of adverse event was 5%. What was the meaning of his explanation?

1) Quite a lot of people will experience the adverse event.

2) 5 of 100 people who had the treatment would experience an adverse event.

3) There will be an adverse event for 5 days in 100 days.

4) Nobody can predict who will experience an adverse event.

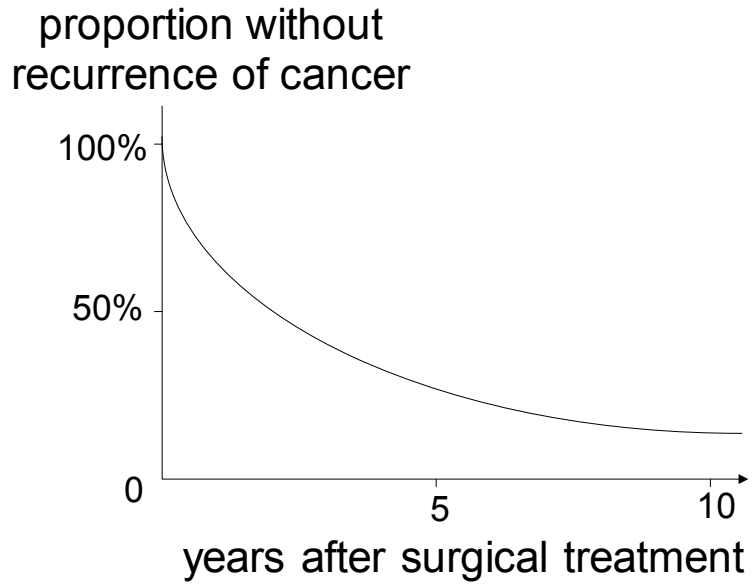
5) I don't know

[Q6]

The figure shows the proportion of the people who do not experience a recurrence of cancer after they have surgical treatment.

What is the possibility that people will not have a recurrence of cancer 5 years later?

1) about 2.5% 2) about 10% 3) about 25% 4) about 50% 5) I don't know

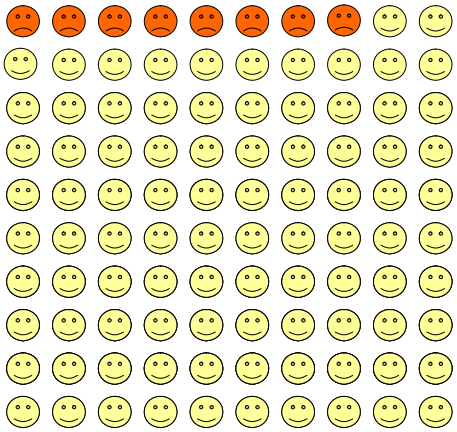


[Q7]

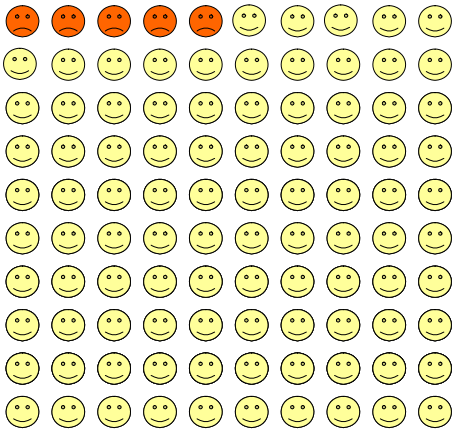
The figure shows two situations of cardiac infarction for a 5 year period; one situation is that 100 elderly people with hypertension take medicine. The other situation is that they take no medicine.

The colored circle indicates a person who had a cardiac infarction. The medication prevented cardiac infarction for how many people?

1) 3 people 2) 5 people 3) 8 people 4) 92 people 5) I don't know



with medicine



without medicine

Appendix B : Questions regarding attitudes as medical consumers

[Possibility to purchase undesirable health-related goods]

Suppose that you had a strong interest in dieting, and a company advertised “weight loss pillows”. The advertisement claimed that “just sleeping, without any effort would result in losing 20 kg” and you could “slim down, sleep well, and change your life”. It costs 7,800 yen. Would you buy it?

1) I would buy it

2) I would buy it, if I could get a 20-30% discount

3) I would buy it if my family member or my friend recommended it.

4) I would buy it after checking the feedback of the other buyers by using the Internet.

5) I would not buy it

6) I have no interest in this type of product

7) Other

[Experienced regret for purchasing]

Have you ever regretted purchasing “health-related goods”?

1) Once 2) More than once 3) I have never regretted 4) I have never bought.

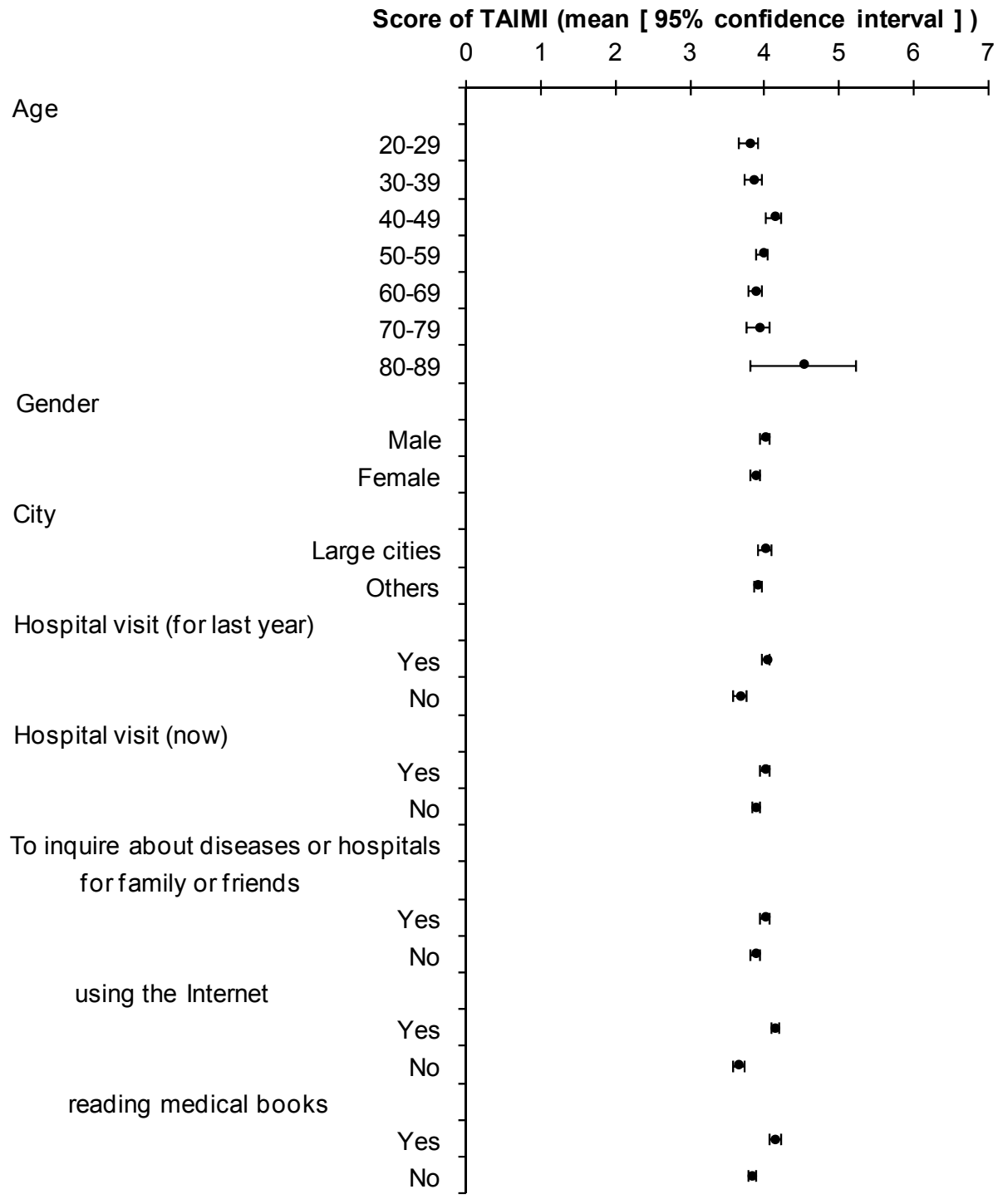
Appendix C : Characteristics of Survey Participants and the Japanese population

		Survey Participants			Japanese population [a]		
		Total	Male	Female	Total	Male	Female
n [b]		6,047	2,793	3,254	12,774	6,231	6,544
(%)		(100%)	(46.2%)	(53.8%)	(100%)	(48.8%)	(51.2%)
Total		100%	100%	100%	100%	100%	100%
Age	20-29	12.4%	13.5%	11.5%	15.4%	16.3%	14.4%
	30-39	16.0%	17.8%	14.3%	17.9%	18.8%	17.2%
	40-49	15.0%	15.4%	14.6%	15.2%	15.9%	14.7%
	50-59	27.2%	19.5%	33.9%	18.4%	19.0%	17.9%
	60-69	21.4%	20.3%	22.3%	15.2%	15.1%	15.2%
	70-	8.0%	13.5%	3.3%	17.8%	14.9%	20.5%

[a] Japanese population estimates in Feb 2006 of Statistics Bureau
(http://www.stat.go.jp/english/data/jinsui/2.htm)

[b] Unit: Survey Participants (people), Japanese population (ten thousand people)

Appendix D : Characteristics of participants and the score of TAIMI (the general public)



Takahashi Y, Sakai M, Fukui T, Shimbo T.
Measuring the Ability to Interpret Medical Information Among the Japanese Public and the Relationship With Inappropriate Purchasing Attitudes of Health-Related Goods.
Asia Pac J Public Health. 2009 Aug 31. [Epub ahead of print]

APPENDIX

あなたがある病気の治療方法について、インターネットや書籍で調べるとき、以下のうちどれが一番信頼できると思いますか？
一つ選んでください。
（回答は１つ）

1. 20 年前に購入した有名教授が監修した家庭の医学書
2. 特定の商品の効果と入手方法を具体的に示した記述
3. 個人の闘病記録
4. 公的医療機関のホームページに記載されている解説【適切な選択】
5. 分からない

高血圧の治療薬の効果の根拠として、以下のどの点が最も重要と思いますか？
一つ選んでください。
（回答は１つ）

1. 平均して血圧を 30 下げられる
2. 薬を服用しない場合に比べて心筋梗塞（しんきんこうそく）や脳卒中（のうそっちゅう）を 30%予防できる【適切な選択】
3. 動物実験で腎臓の障害が一番軽かった
4. MRI の脳の写真で脳梗塞（のうこうそく）の小さな影が少なかった
5. 分からない

あなたの知人は血液型に興味があります。そのため周囲の人に血液型を聞き、また大きな病気で入院した経験の有無を聞きました。入院したことがあると答えたのは、A 型では 10%、B 型では 20%でした。
このようなときに、A 型は B 型より健康といえるでしょうか？　以下の中から最も適切だと思う解釈を一つ選んでください。
（回答は１つ）

1. この人達については、そのようにいえる
2. この A 型と B 型の人達のその他の特徴が似ていれば、そのようにいえる
3. AB 型や O 型も調べないと分からない
4. 血液型と性格との関係についても考えた方がよい
5. 分からない【適切な選択】

テレビ番組で、コレステロールが高い場合、薬でコレステロールを下げたほうがよいと議論していました。あなたが薬の効果に納得するとすれば、以下の中でどのような点が最も重要と考えますか？
一つ選んでください。
（回答は 1 つ）

1. 司会者と出演者の三人がこの薬を数年来のんでいるが、三人とも元気だ
2. この薬をのんだ人では、コレステロールが平均して 40 低くなったと解説していた
3. ゲストの医師が、この薬で血液が「さらさら」になると話していた
4. コレステロールの高い人のうちで、薬をのむ人 1000 人、のまない人 1000 人のその後の経過をみると、のむ人で心筋梗塞の発症率が低かったという研究が紹介された【適切な選択】
5. 分からない

A さんは、糖尿病と高血圧で治療中です。A さんの年齢では 5 年間で心筋梗塞になる可能性は 10%と考えられました。ここである治療をすると心筋梗塞をおこす可能性が 30%低くなります。
この治療後に心筋梗塞になる可能性はどれぐらいでしょうか？　一つ選んでください。
（回答は 1 つ）

1. -20%
2. 3%
3. 7%【適切な選択】
4. 70%
5. 分からない

ある治療の説明を医師から受けたとき、副作用の発生率が 5%と聞きました。
これはどういう意味でしょうか？　一つ選んでください。

（回答は１つ）

1. かなり多数の人に副作用がでる
2. 同じ治療を受けた 100 人のうち、5 人にこのような副作用を生じる【適切な選択】
3. 100 日間治療しているうちの 5 日間に副作用が生じる
4. 誰に副作用がでるか、事前に予想できる
5. 分からない

上の図は、ある癌にかかって手術をうけた場合、その後再発なく元気で生活している割合を示しています。横軸が手術後の年数、縦軸が再発なく元気に生活している割合です。
5 年後に再発がなく元気で生活している可能性は何%ですか。一つ選んでください。
（回答は１つ）

1. 約 2.5%
2. 約 10%
3. 約 25%【適切な選択】
4. 約 50%
5. 分からない

上の図は、ご高齢の高血圧の方 100 人に薬を使った場合と、薬を使わなかった場合の 5 年間の心筋梗塞の発生を表したものです。 病気になった人を濃い色、元気な人を薄い色であらわしています。
薬によって心筋梗塞にならずにすむのは何人ですか？　一つ選んでください。
（回答は１つ）

1. 3 人【適切な選択】
2. 5 人
3. 8 人
4. 92 人
5. 分からない