

The Evaluation of Materials to Provide Health-Related Information as a Population Strategy in the Worksite: The High-Risk and Population Strategy for Occupational Health Promotion (HIPOP-OHP) Study

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Abstract

Objective: To examine the effectiveness of newly developed materials for providing health-related information to the worksite population, we compared the amount of attention that employees paid to the materials.

Methods: Study subjects were 2,361 employees in six companies participating in an intervention program between 2002 and 2003. Three kinds of media were used as tools for providing health information: [1] Point Of Purchase advertising menus (POP menus) were placed on all tables in company restaurants, [2] posters were put on walls and [3] leaflets were distributed at health-related events. One year or more after the introduction of these media, we compared the amount of attention paid to each type of medium.

Results: Amongst the three types of media, the POP menu drew the most attention, although results were not consistent in all gender and company groups. Every piece of information provided by the POP menus was “always” or “almost always” read by 41% of the men and 51% of the women surveyed. The corresponding rate for posters was 30% in men and 32% in women. For leaflets, only 16% of men and 22% of women read almost all of the leaflets. More attention was paid to the POP menu when the sample was women, older, and ate at the company restaurant at least three times a week.

Conclusion: The POP menu may provide health-related information to a broader range of people than posters and leaflets, therefore, it is an effective material for population strategy.

Key words: worksite, health and nutrition education, materials for health and nutrition education, attention paid to the medium, characteristics of the medium

Introduction

Methods for decreasing the risk for developing diseases in

the entire group include the High-risk Strategy and the Population Strategy (1). The former tries to identify a high-risk group that is more likely to develop diseases, and provides intensive health-related guidance and treatment to that group. However, because the number of high-risk individuals within the target population is generally small, using the high-risk strategy alone is not very effective in decreasing the occurrence of diseases. On the other hand, the Population Strategy assumes that all members of a group are affected by background factors that might cause disease, and modifies environmental factors regu-

Received Feb. 12 2004/Accepted May 15 2004

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lating the behavior of the group. The Population Strategy affects many people who might be excluded from the target of the High-risk Strategy, enabling more effective reduction of the risk of the entire group. Providing appropriate health information to all group members is one of the methods of the Population Strategy, but there have been few reports about the appropriate media for providing such information.

Working people spend most of their day and evening at their worksite. Therefore, providing them with health information at their worksite should be more effective than offering community-based information. Eating and dietary habits play an important role as a primary disease-prevention measure. The "People's Health Promotion Campaign for the 21st Century (Health Japan 21)" led by the Japanese Ministry of Health, Labor and Welfare, has a goal at the environmental level: to provide working people with more opportunities to learn about health and nutrition at their worksites (2). There have been few studies that objectively measured the effectiveness of the health education and health information provided to all staff at a worksite (3), and even fewer studies that have tried to determine effective tools for providing such information (4).

The objective of this study is to provide information on the primary prevention of cardiovascular diseases to all employees in six companies through several media, and to identify characteristics of each medium as a tool for offering information at a worksite.

Target and methods

Target

The High-risk and Population Strategy for Occupational Health Promotion (HIPOP-OHP) Study is a non-randomized control trial targeting working people. The study includes individual health guidance as a High-risk Strategy, as well as intervention in physical activities, nutrition, smoking, separation of designated smoking areas, and other related environmental factors as a Population Strategy. Both strategies were introduced in 1999–2000 in the intervention companies, and the control companies remained without interventions (5–7). We had 3,355 and 3,991 employees in the intervention and control groups, respectively, at the baseline survey. After the baseline survey, approximately 7,500 (3,391, 3,269 and 3,234 in the intervention group and 4,970, 4,643 and 4,570 in the control group, in the following 3 years, respectively) employees participated in this study every year. Measures to improve the environment included direct methods such as changes in the company restaurant menus and provision of exercise facilities (e.g., suggestion of a walking route), as well as indirect methods such as providing health information to all employees to urge them to change their habits. The design and procedures of this study were examined and approved by the Institutional Review Board of Shiga University of Medical Science for Ethical Issues (No. 10–16).

This study examined the methods for providing health information to the intervention group. The samples were 2,459 people in six companies (Companies A to F) of the intervention group, who participated in the baseline survey between 1999 and 2000 and responded to a self-administered questionnaire

between 2002 and 2003. Company A was the head office of a life insurance company, Company D was a factory of a chemical company, and the other four companies were factories of electrical appliance manufacturers. The numbers of employees in Companies A to F at the baseline survey were 468 (66), 960 (338), 533 (52), 570 (76), 385 (152) and 439 (156), respectively (number of women in parentheses). The mean age of each company at the baseline survey was 38.5, 37.7, 39.2, 40.6, 39.2 and 39.2, respectively.

Methods

Because this study was conducted at worksites, we chose the following three materials to convey information to working people during their break time and travel time, without disrupting their work patterns.

(1) Point of Purchase advertising menus (POP menus)

We placed menu stands on all the tables in the company restaurants and displayed 'Point of Purchase advertising menus (POP menus)' (6). The POP menus were horizontally oriented, A5 size, multicolor, and contained a title or eye-catching copy in the top 15% of the area, an explanation below this (45%), and illustrations relevant to the explanation in the remaining 40% of the area. The content of the menu was changed every week in all worksites, but the same or a similar topic was addressed for 4 to 8 weeks.

(2) Posters

Posters were displayed in several designated locations in the worksites. They were vertically oriented, A3 size, multicolor, with text over 40 to 50% of the whole area, and illustrations and figures in the remaining area. The posters were changed once every 4 to 8 weeks.

(3) Leaflets

The leaflets were vertically oriented, A5 size, and unicolor, but used a colored background to draw attention. The ratio of text, illustrations, figures and charts varied with the content. They were distributed at health-related events or exhibitions held several times a year (typically every 2 to 3 months).

The specific themes addressed by these three media were as follows: desirable nutrition and food balance, reducing salt intake, prevention and treatment of obesity, moderate drinking, physical activities and health, disease prevention and diet, and mental health. The company personnel who were coordinating the study at each worksite and researchers discussed topics to be included as necessary. Researchers in the HIPOP-OHP group worked together to create these media, and had them checked by non-specialists such as clerical staff to ensure that the media were easily understood by typical working people.

We conducted a self-administered questionnaire survey on the amount of attention paid to each medium and the level of understanding of the information provided when at least one year had passed since these media were first introduced (Supplement 1). The questionnaire asked about the amount of attention the respondents paid to each medium and their level of understanding of the information presented, as well as how frequently

they used their company restaurant. The return rate of the questionnaire was 96% (2,361 of 2,459). The chi-square test or Wilcoxon signed-rank test was used to determine the statistical significance, and the level of significance was set at 5%. The Wilcoxon signed-rank test was used after we combined the five categories into two categories: “Every time the content is changed” or “Almost every time”=1, others=0, when we compared the amount of attention between POP menus and posters.

Results

Table 1 shows the amount of attention paid to the POP menus placed on the tables in the company restaurants, summarized by worksite and by gender. As for male respondents, 41.1% answered that they read the POP menu “every time the content is changed” or “almost every time”. This rate varied from more than 50% in Companies D and F, to less than 25% in Company E. More than 45% of the male respondents in Company E answered that they “did not notice that a POP menu was on the table”. Regarding female respondents, 52.6%

answered that they read the POP menu “every time the content is changed” or “almost every time”, but the percentage in Companies E and A was low, at 16.1% and 26.7%, respectively. In other companies, the rate was between 57.1% and 75.4%, which indicated that in companies other than Companies A and E, women were more likely to read the POP menus than men.

Table 2 shows the amount of attention paid to the posters displayed in the designated spaces at the worksites, summarized by company and by gender. Of the male respondents, 30.6% answered that they read the posters “every time the content is changed” or “almost every time”, but the rate for Company E was below 25%; 46.0% “sometimes” read the posters. Of the female respondents, 32.0% read the posters “every time the content is changed” or “almost every time”, but the rate was 16% or below in Companies E and A; fewer than 30% “sometimes” read the posters in Companies E and A, but 40.5% did in the other companies. More than 55% of the female respondents in Companies E and A answered “rarely or not at all”, or “did not notice”.

Table 3 shows the amount of attention drawn by the

Table 1 Amount of attention paid to the POP menu placed on all the tables in the company restaurant

Gender	Company	1. Every time the content is changed	2. Almost every time	3. Sometimes	4. Rarely, or not at all	5. Did not notice	p value [†]
Men	A	22 (9.2)	69 (28.9)	85 (35.6)	27 (11.3)	36 (15.1)	p<0.001
	B	41 (9.0)	103 (22.6)	216 (47.5)	70 (15.4)	25 (5.5)	
	C	51 (15.9)	99 (30.8)	125 (38.9)	26 (8.1)	20 (6.2)	
	D	55 (18.0)	99 (32.5)	108 (35.4)	28 (9.2)	15 (4.9)	
	E	17 (9.0)	26 (13.8)	34 (18.1)	26 (13.8)	85 (45.2)	
	F	55 (21.8)	87 (34.5)	81 (32.1)	25 (9.9)	4 (1.6)	
	Total	241 (13.7)	483 (27.4)	649 (36.9)	202 (11.5)	185 (10.5)	
Women	A	7 (15.6)	5 (11.1)	12 (26.7)	9 (20.0)	12 (26.7)	p<0.001
	B	45 (18.8)	92 (38.3)	88 (36.7)	12 (5.0)	3 (1.3)	
	C	16 (42.1)	15 (39.5)	5 (13.2)	2 (5.3)	0 (0.0)	
	D	14 (36.8)	11 (28.6)	2 (5.3)	4 (10.5)	7 (18.4)	
	E	6 (5.1)	13 (11.0)	8 (6.8)	13 (11.0)	78 (66.1)	
	F	52 (42.6)	40 (32.8)	25 (20.5)	5 (4.1)	0 (0.0)	
	Total	140 (23.3)	176 (29.3)	140 (23.3)	45 (7.5)	100 (16.6)	

Actual number (%), [†] chi-square test

Table 2 Amount of attention paid to the posters affixed in the designated spaces in the worksite

Gender	Company	1. Every time the content is changed	2. Almost every time	3. Sometimes	4. Rarely, or not at all	5. Did not notice	p value [†]
Men	A	5 (2.1)	55 (23.1)	104 (43.7)	37 (15.5)	37 (15.5)	p<0.001
	B	33 (7.3)	123 (27.1)	226 (49.8)	64 (14.1)	8 (1.8)	
	C	19 (6.0)	72 (22.6)	177 (55.5)	34 (10.7)	17 (5.3)	
	D	13 (4.3)	81 (26.7)	120 (39.6)	66 (21.8)	23 (7.6)	
	E	12 (6.3)	32 (16.9)	68 (36.0)	42 (22.2)	35 (18.5)	
	F	14 (5.6)	78 (31.1)	112 (44.6)	39 (15.5)	8 (3.2)	
	Total	96 (5.5)	441 (25.1)	807 (46.0)	282 (16.1)	128 (7.3)	
Women	A	4 (9.1)	2 (4.5)	12 (27.3)	14 (31.8)	12 (27.3)	p<0.001
	B	17 (7.1)	68 (28.3)	116 (48.3)	30 (12.5)	9 (3.8)	
	C	4 (10.5)	15 (39.5)	18 (47.4)	1 (2.6)	0 (0.0)	
	D	3 (7.7)	12 (30.8)	15 (38.5)	5 (12.8)	4 (10.3)	
	E	0 (0.0)	19 (16.0)	34 (28.6)	15 (12.6)	51 (42.9)	
	F	11 (8.9)	38 (30.9)	49 (39.8)	22 (17.9)	3 (2.4)	
	Total	39 (6.5)	154 (25.5)	244 (40.5)	87 (14.4)	79 (13.1)	

Actual number (%), [†] chi-square test

Table 3 Amount of attention paid to the leaflets distributed at health-related events and exhibitions

Gender	Company	1. Almost all of every leaflet	2. Only when the content interests me	3. Read part of the leaflet only, e.g., the title	4. Rarely	5. Never	6. Did not know there were such events or exhibitions	p value [†]
Men	A	27 (11.3)	82 (34.5)	66 (27.7)	35 (14.7)	9 (3.8)	19 (8.0)	p<0.001
	B	69 (15.4)	231 (51.4)	92 (20.5)	49 (10.9)	8 (1.8)	—	
	C	43 (13.4)	146 (45.3)	84 (26.1)	36 (11.2)	13 (4.0)	—	
	D	51 (16.8)	128 (42.1)	69 (22.7)	41 (13.5)	15 (4.9)	—	
	E	38 (20.4)	78 (41.9)	36 (19.4)	21 (11.3)	13 (7.0)	—	
	F	43 (17.1)	116 (46.2)	63 (25.1)	26 (10.4)	3 (1.2)	—	
	Total	271 (15.5)	781 (44.6)	410 (23.4)	208 (11.9)	61 (3.5)	19 (1.1)	
Women	A	5 (11.1)	19 (42.2)	10 (22.2)	4 (8.9)	2 (4.4)	5 (11.1)	p<0.001
	B	54 (22.6)	135 (56.5)	42 (17.6)	8 (3.3)	0 (0.0)	—	
	C	5 (13.2)	25 (65.8)	6 (15.8)	2 (5.3)	0 (0.0)	—	
	D	14 (35.0)	18 (45.0)	5 (12.5)	2 (5.0)	1 (2.5)	—	
	E	27 (23.1)	59 (50.4)	16 (13.7)	12 (10.3)	3 (2.6)	—	
	F	24 (20.0)	65 (54.2)	23 (19.2)	6 (5.0)	2 (1.7)	—	
	Total	129 (21.5)	321 (53.6)	102 (17.0)	34 (5.7)	8 (1.3)	5 (0.8)	

Actual number (%), [†] chi-square test

* Only the questionnaire for Company A offered the choice of answer: “Did not know that there were such events or exhibitions.” This was not used in the statistical analysis.

Table 4 Difference in amount of attention paid by participants between POP menu and poster

Gender	Company	Medium for providing information	(1) ‘Every time the content is changed’ or ‘Almost every time’	(2) others	Total (%)	p value [†]
Men	A	POP menu	89 (46.6)	102 (53.4)	191 (100.0)	p<0.001
		Poster	60 (31.4)	131 (68.6)	191 (100.0)	
	B	POP menu	141 (33.2)	284 (66.8)	425 (100.0)	0.345
		Poster	151 (35.5)	274 (64.5)	425 (100.0)	
	C	POP menu	146 (50.3)	144 (49.7)	290 (100.0)	p<0.001
		Poster	88 (30.3)	202 (69.7)	290 (100.0)	
	D	POP menu	150 (55.4)	121 (44.6)	271 (100.0)	p<0.001
		Poster	94 (34.7)	177 (65.3)	271 (100.0)	
	E	POP menu	41 (41.4)	58 (58.6)	99 (100.0)	0.061
		Poster	32 (32.3)	67 (67.7)	99 (100.0)	
	F	POP menu	139 (57.9)	101 (42.1)	240 (100.0)	p<0.001
		Poster	92 (38.3)	148 (61.7)	240 (100.0)	
	Total	POP menu	706 (46.6)	810 (53.4)	1516 (100.0)	p<0.001
		Poster	517 (34.1)	999 (65.9)	1516 (100.0)	
Women	A	POP menu	10 (34.5)	19 (65.5)	29 (100.0)	p<0.05
		Poster	6 (20.7)	23 (79.3)	29 (100.0)	
	B	POP menu	133 (58.1)	96 (41.9)	229 (100.0)	p<0.01
		Poster	84 (36.7)	145 (63.3)	229 (100.0)	
	C	POP menu	31 (81.6)	7 (18.4)	38 (100.0)	p<0.001
		Poster	19 (50.0)	19 (50.0)	38 (100.0)	
	D	POP menu	25 (83.3)	5 (16.7)	30 (100.0)	p<0.01
		Poster	15 (50.0)	15 (50.0)	30 (100.0)	
	E	POP menu	18 (48.6)	19 (51.4)	37 (100.0)	0.346
		Poster	14 (37.8)	23 (62.2)	37 (100.0)	
	F	POP menu	89 (75.4)	29 (24.5)	118 (100.0)	p<0.001
		Poster	48 (40.7)	70 (59.3)	118 (100.0)	
	Total	POP menu	306 (63.6)	175 (36.4)	481 (100.0)	p<0.001
		Poster	186 (38.7)	295 (61.3)	481 (100.0)	

Actual number (%), [†] Wilcoxon signed-rank test

Table 5 Relationship between the age group and the amount of attention paid to the POP menu

Gender	Age group	(1) 'Every time the content is changed' or 'Almost every time'		(2) Sometimes		(3) Rarely, or not at all		Total (%)	p value [†]
Men	29 or less	151	(42.3)	156	(43.7)	50	(14.0)	357 (100.0)	<0.001
	30–39	247	(39.6)	288	(46.2)	88	(14.1)	623 (100.0)	
	40 or more	326	(54.8)	205	(34.5)	64	(10.8)	595 (100.0)	
Women	29 or less	85	(57.0)	45	(30.2)	19	(12.8)	149 (100.0)	<0.01
	30–39	103	(58.2)	59	(33.3)	15	(8.5)	177 (100.0)	
	40 or more	128	(73.1)	36	(20.6)	11	(6.3)	175 (100.0)	

Actual number (%), [†] chi-square test

Table 6 Relationship between the frequency of using the company restaurant and the amount of attention paid to POP menu

Gender	Frequency of using the company restaurant	(1) 'Every time the content is changed' or 'Almost every time'		(2) Sometimes		(3) Rarely, or not at all		Total (%)	p value [†]
Men	Almost every day	578	(52.5)	438	(39.8)	84	(7.6)	1100 (100.0)	<0.001
	3–4 times/week	96	(45.5)	99	(46.9)	16	(7.6)	211 (100.0)	
	Less than 2 times/week	48	(18.5)	111	(42.7)	101	(38.8)	260 (100.0)	
Women	Almost every day	270	(74.4)	88	(24.2)	5	(1.4)	363 (100.0)	<0.001
	3–4 times/week	29	(55.8)	21	(40.4)	2	(3.8)	52 (100.0)	
	Less than 2 times/week	16	(19.0)	30	(35.7)	38	(45.2)	84 (100.0)	

Actual number (%), [†] chi-square test

leaflets distributed at health-related events and exhibitions, summarized by company and by gender. Only 15.5% of men and 21.5% of women answered that they read “almost all of every leaflet”. About 70% of both men and women read “only when the content interests them” or “read part of the leaflet only, e.g., the title”.

There were significant differences between companies in the results of Tables 1 to 3 because of the large sample size, although the trend of the amount of attention paid to each media was similar.

Table 4 compares the difference in the amount of attention paid to the POP menus and the posters, by comparing the answers to the same questions asked for both items. We categorized the five answer choices into two groups, as shown in Table 5. The result demonstrated that the POP menus attracted more attention from both men and women than the posters, except for the men in Company B and both the men and women in Company E.

Table 5 indicates the relationship between the age group and the amount of attention paid to the POP menus. For this analysis, we categorized the respondents into three age groups: 29 years old or younger, 30 to 39 years old, and 40 years old and older. We regrouped the four answer choices into three groups by combining the No. 1 choice: “every time the content is changed” and the No. 2 choice: “almost every time”, to make one group giving considerable attention to the medium. The result indicated that the older people paid more attention to the POP menus. At least 95% of respondents in all of the age groups answered that the POP menu was “easy to understand” or “understandable for the most part” (not shown in tables).

Table 6 shows the relationship between the frequency of using the company restaurant and the amount of attention paid to the POP menus. Here, we combined answers No. 3: “1 to 2 times a week”, No. 4: “2 to 3 times a month”, and No. 5: “rarely”, to make one category of less frequent restaurant users.

The attention analysis was based on the three categories, as shown in Table 4. The result indicated that the more frequently people used their company’s restaurant, the more attention they paid to the POP menus. This was true of both men and women. More than 95% of the respondents answered, regardless of how often they used the restaurant, that the POP menus were “easy to understand” or “understandable for the most part” (not shown in the table).

Discussion

It is important for individuals to establish an appropriate lifestyle for health promotion and disease prevention and treatment (8). However, unless an “unhealthy” lifestyle continues for a long period of time, symptoms serious enough to affect quality of life are not likely to develop. In addition, much of health-related guidance and education is focused on high-risk individuals, or those who have risk factors. This leaves many low-risk individuals without any special measures taken. It is therefore important to establish an appropriate Population Strategy in Japan, and the first thing we need for this approach is an appropriate method for providing information.

All of the three media used in this study are established tools that have been used at numerous worksites (9, 10). However, the effectiveness of these tools is unclear, and they often presented information that was too difficult, or irrelevant, especially in the presentation order, or outdated. Therefore, we conducted this study to compare the effectiveness of these materials as media for providing information for the purpose of primary prevention. We had the companies introduce the materials we provided in the same manner without informing the general employees, except the members of the Safety and Health Committee, which examined the intervention plan and ethical problems.

Of the three media, the POP menus attracted the most

attention. This result may be attributed to several factors. First, a large number of POP menus were displayed, so that workers eating at the company restaurants could always see them. Second, the content of the POP menus was updated every week, which helped retain attention. Third, the POP menus carried information with a series of related themes for 4 to 8 weeks. Although the POP menus could provide only a limited amount of information, presenting related themes for a certain period of time had the effect of linking every bit of information, probably producing a synergistic effect. By contrast, the posters and leaflets did not prove as effective as we had expected. The reasons for this are as follows. Only a limited number of posters were shown due to space restrictions. To understand the content of a poster, readers had to approach the poster to clearly see what was written on it. Posters may possibly be useful in places where individuals have enough time to pay attention, such as in trains, buses, or waiting rooms of stations. As Table 6 indicates, posters might be a more effective medium for providing health-related information than POP menus, for workers who do not use or rarely use company restaurants.

Leaflets were provided only at health-related events, which were held several times a year. They might not have reached all the respondents, and some may have resented the leaflet being handed out (whether they liked it or not) during their break time, while some enthusiastic participants thought that it was very useful and read it repeatedly even after the event. We consider that such factors conspired to make the leaflets less appealing.

The findings of this study indicate that conditions drawing more attention to media for health promotion are as follows: [1] The health education materials should be viewed and easily read by targeted people without requiring their special attention. [2] The information should be placed where it can be seen by the targeted people 3 or more times a week. Placing POP menus on the tables of the company restaurants is one way of achieving the above-mentioned conditions. We can also expect media fulfilling these conditions such as the use of e-mail or wallpaper on a computer screen to prove similar by effective. At some worksites of our present study, none of the media used sufficiently attracted attention, such as at Company E (no full-time nurse or health professional existed at this company). This indicates the need to develop new media for effective presentation of information.

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The effective use of such media plays an important role in helping the targeted people to change their lifestyle, by providing promotional information (11, 12). However, apart from our preliminary study (4), few studies have examined the appropriate types of media in accordance with the characteristics of the target population (9, 10, 13). The findings of this study indicate that we must choose appropriate media depending upon the situation of each population, so that more people can actually view and read the materials.

There are some limitations in the present study. First, we examined only three kinds of media that were presented in our intervention protocol, and the results of the present study may not be generalized for other settings. It remains to be further examined whether the result of this study can be applied to other worksites or to local communities. It has been clarified that we have to choose appropriate media after evaluating the characteristics of the target population.

As Rose pointed out (1), one of the obstacles in promoting the Population Strategy is getting the target group members to understand the significance of the strategy. When the target group consists of young and healthy working people, potential causes of diseases in the distant future are unlikely to draw their attention. We have to make a considerable effort to devise an effective way to provide information in order to motivate such people to change their lifestyle.

In conclusion, the present study clarified that POP menus provide health-related information to a broader range of workers than posters and leaflets in worksites.

Acknowledgement

This study was funded by research grants from the Ministry of Health and Welfare, Japan (H10–12, No. 063, Research on Health Services, Health Sciences Research Grants, H13, No. 010 Medical Frontier Strategy Research, Health Sciences Research Grants) and from the Ministry of Health, Labor and Welfare, Japan (H14–15, No. 010 Clinical Research for Evidence-Based Medicine, Health and Labor Sciences Research Grants). The authors wish to thank Toshimi Yoshida, Toshie Kataoka, Mami Ide, Akiyo Ushio and Yoshiko Taniguchi, Department of Health Science, Shiga University of Medical Science, for their excellent clerical support in this research.

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Appendix

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(Supplement 1)

Questions in the self-administered questionnaire on the amount of attention paid to each material and the respondent’s level of understanding of the information presented

1. How often do you use your company’s restaurant? (include when you eat a lunch that you brought to the restaurant)
 1. Almost every day
 2. 3–4 times a week
 3. 1–2 times a week
 4. 2–3 times a month
 5. Rarely
2. How often do you read the POP menus placed on each table in the company restaurant?
 1. Every time the content is changed
 2. Almost every time
 3. Sometimes
 4. Rarely, or not at all
3. Is the content presented on the POP menu easy to understand?
 1. Easy to understand (Too easy)
 2. Easy to understand (Appropriate level: not too difficult, not too easy)
 3. Understandable for the most part
 4. Not really understandable (Too difficult)
4. How often do you read the posters on such topics as nutrition, exercise and smoking, which are posted in the company

restaurant, on bulletin boards, and in smoking areas?

1. Every time the content is changed
2. Almost every time
3. Sometimes
4. Rarely, or not at all
5. How often do you read the leaflets handed out at health promotion-related events and exhibitions?

1. Almost all of every leaflet

2. Only when the content interests me

3. Read part of the leaflet only, e.g., the title

4. Rarely

5. Never