

1 **Evaluation of “being healthy, being away from chronic diseases” public service**
2 **advertisement in Chongqing, China: A cross-sectional study**

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1 ABSTRACT

2 **Background:** Chronic diseases have become a global public health issue, and mass media
3 campaigns are often used to encourage and sustain positive behavior change. Our aim was to
4 evaluate the effect of public service advertising on the awareness of Chongqing citizens.

5 **Methods:** The theme of the public service advertisement launched in Chongqing was “being
6 healthy, being away from chronic diseases.” A self-designed questionnaire was used in an
7 outdoor intercept survey to collect information about the perception of citizens toward the
8 effect of the advertisement on cognitive situations.

9 **Results:** A total of 985 valid questionnaires were received. Respondents had good
10 understanding of chronic disease (23.6 ± 4.1 , total score: 30), but only 58.4% of participants
11 thought cancer is one type of chronic disease. The awareness of cancer as a chronic disease
12 among the group who had seen this advertisement (63.6%) was higher than that of the group
13 who had not seen the advertisement (56.5%) ($p=0.046$). After watching the advertisement,
14 approximately 77.4% of participants attempted to remind their family and friends to prevent
15 chronic diseases, roughly 78.2% tried to persuade their family and friends to change their
16 unhealthy lifestyle habits, and 73.2% of participants reported that it increased the possibility of
17 their own lifestyle change. Logistic regression analysis indicates that occupation, educational
18 level, watching the advertising through TV, watching the advertising through indoor LED
19 screen, and watching the advertising through mobile TV affected the three post-viewing
20 behavior changes.

21 **Conclusion:** The public service advertisement achieved a certain knowledge propaganda effect.
22 It may help change awareness and improve health behavior of the public.

23 **Key words:** Public service advertisement, Chronic diseases, Health; Awareness, Behavior

24 INTRODUCTION

25 With the developing social economy and increasing aging population, the incidences of chronic
26 diseases (e.g., cardiovascular and cerebrovascular diseases, diabetes, and chronic obstructive
27 pulmonary disease(COPD) are dramatically increasing, which pose a serious threat to people’s

1 lives and health (*Gu & Hu, 2003*) The effects of chronic diseases on quality of life are also
2 inevitable (*Zhao et al., 2010*). Chronic diseases have become a global public health problem
3 (*Wang, Feng & Lv, 2010*). For example, according to the statistics released by China's Ministry
4 of Health, chronic diseases affect more than 260 million people in China accounts for 85% of
5 10.3 million deaths per year and 70% of the disease burdens (*Kong, 2010*). Chronic diseases in
6 China will enter a "blowout phase" in the next 30 years (*Nan, 2010; Fu, 2012*).

7 Chronic diseases have already posed a substantial economic burden. In 2005, the World
8 Health Organization (WHO) projected that Asia would experience the largest increase in death
9 rates from cardiovascular disease, cancer, respiratory disease, and diabetes over the next 10
10 years. China, India, and the Russian Federation could lose billions of dollars in national income
11 over the next 10 years. In China, the estimated accumulated losses from 2005 to 2015 amount
12 to US\$558 billion. In 2011, the World Bank estimated that without effective measures, the
13 disease burden caused by myocardial infarction, stroke, diabetes, and COPD would increase to
14 more than 50% of all disease burdens in the next two decades. In particular, the chronic disease
15 burden in China would increase by 40% because of the rapid aging population (*The world
16 Bank, 2011*).

17 Faced with the growing serious problem of chronic disease prevention and the
18 unoptimistic view of the chronic disease situation (*Ding et al., 2013; Li et al., 2003; Liu et al.,
19 2012*), taking measures to control the incidences of chronic disease in China is crucial.
20 Authorities can carry out additional measures to improve knowledge and change attitudes and
21 behaviors of the citizens toward chronic disease prevention. The unhealthy lifestyle and factors
22 are the main events influencing of chronic diseases (*Gao, Song & Ding, 2012*). The effective
23 health education and health promotion, to a certain extent, can change individuals' unhealthy
24 lifestyle and ultimately reduce the incidences of chronic diseases (*Zhang, 2011*).

25 Mass media interventions often involve campaigns by television, radio, newspapers,
26 billboards, posters, leaflets, or booklets. Public interest advertising, which acts as a high-level
27 advertising form, an independent social education power (*Chen, 2012*), and "advertising

1 conscience” (Zhang,2008), is an important approach to health education and promotion. Public
2 service advertisements are usually used to alert the public of important health issues
3 (Grilli,2000; Snyder,2000; Sowden&Arblaster,2000). Behavior change following public service
4 advertising has been observed in many health campaigns, such as those on melanoma
5 prevention programs (Theobald et al.,1991), gynecologic cancer (Crystale,
6 Cynthia&Jennifer,2014), and physical activity (Qin et al.,2014; Bauman,2009; Wakefield,
7 Loken&Hornik,2010; Leavy, Rosenberg&Bull,2014). Mostly, a conscious effort to stop
8 smoking, which is a preventable risk factor for people with chronic diseases, is observed
9 (Monyeki et al.,2013; Lin et al.,2013). These campaigns have achieved good results, and public
10 interest advertising is considered an effective means to change the public’s awareness and
11 behavior.

12 From November 16, 2012 to December 31, 2013, the public service advertisement “being
13 healthy, being away from chronic diseases” produced by the Health Education Institute in
14 Chongqing was broadcasted through Chongqing television and mobile television channels.
15 This study aimed to evaluate the effect of this public service advertising on Chongqing citizens’
16 cognitive situation, explore how the audience promote and understand information, and assess
17 the influence of publicity information on citizens’ attitudes and future behavior changes.

18 **MATERIALS AND METHODS**

19 ***Participants***

20 Participants who met the following inclusion criteria were included: 1) literate, 2) aged 24–60,
21 and 3) Chongqing local who lived there for at least half a year.

22 ***Public service advertisement***

23 The public service advertisement “being healthy, being away from chronic diseases” includes
24 three sections: 1) common types of chronic diseases, 2) the important influencing factors, and 3)
25 the healthy lifestyle that can effectively prevent chronic diseases. It is a 30 seconds long
26 animated video with audio.

27 This advertisement was broadcasted by the television station as well as a mobile bus in

1 Chongqing according to the following schedule: (1) from November 16, 2012 to July 30, 2013,
2 the advertisement was aired on “Chongqing news” at 6:30 AM every day and then replayed on
3 the news channel three times: on the same day at 10:00 PM and on the next day at 1:29 and
4 3:36 AM, which totals to 1020 times ($4 \times 30 \times 8.5 = 1020$). (2) From March 1 to June 30, 2013,
5 Chongqing mobile television channel broadcasted the advertisement twice in the morning, at
6 noon, and in the afternoon, every day, which amounts to 540 times ($6 \times 30 \times 3 = 540$). (3) From
7 June 1 to December 31, 2013, the advertisement was broadcasted 2–3 times during “Healthy
8 Hour” in the morning every day. From Monday to Friday, it was also broadcasted once before
9 “*Bu Jian Bu San*” at 7:30 PM, which equals 630 times ($3 \times 30 \times 7 = 630$). In total, the
10 advertisement was broadcasted 2190 times ($1020 + 540 + 630 = 2190$) during the entire period.

11 ***Sampling method***

12 We selected 250 people each from four communities among the main city zones of Chongqing
13 to participate in an outdoor intercept survey. To meet a diverse set of people, we chose the
14 places where two to five people often socialize within the community, such as the city square,
15 department stores, railway stations, hospitals, schools, and markets.

16 ***Instrument***

17 Our survey used a self-designed questionnaire based on a literature review of related local and
18 international studies. The final version of the questionnaire was obtained after repeated
19 discussions with experts and a pilot study. The questionnaire had acceptable face and content
20 validity.

21 It had three sections, namely, basic information on participants, chronic disease
22 knowledge, and media and its influence.

23 Basic information: age (years), gender, residence time (months), having chronic disease,
24 occupation, and education

25 Chronic disease knowledge: types of chronic disease, cause of chronic disease, healthy
26 lifestyle for chronic disease prevention, concepts of chronic disease prevention, knowledge of
27 hypertension and diabetes prevention, harm of smoking or secondhand smoking.

1 For the chronic disease knowledge section, 30 questions were included (all single-choice
2 questions). A question answered correctly scored 1 point. Incorrect, unsure, or missing
3 responses scored 0. The maximum score from the 30 knowledge questions was 30 units. The
4 total mean score of knowledge was classified into three categories on the basis of the quintile
5 scores and coded as “low,” “good,” and “excellent” for $\leq 60\%$, 61% to 80%, and $>80\%$,
6 respectively.

7 Media and its influence: exposure of public service advertising to people, personal
8 subjective assessment of the immediate and follow-up effects of the public service advertising,
9 and respondents’ daily media exposure frequency

10 ***Investigation method***

11 At each data collection point, each team needed at least two people to investigate, but each
12 interview was conducted one on one. The timing of data acquisition was arranged during
13 different times of the day (twice a day). To obtain the information from various of people, the
14 cycle of data acquisition was set at eight days. At the data collection point, two interviewers
15 occupied different positions to contact the largest number of people. For a unified format of
16 inviting people to attend the interview, the interviewer was required to say “hello” and invite
17 every fifth passerby to participate in the survey. After a self-introduction, the interviewer
18 showed the certificate of survey and explained the purpose of the survey. Finally, anonymous
19 questionnaires were used to collect information with the respondents’ informed consent.

20 Regarding the questionnaire, each was checked by the members of the team on the basis
21 of whether all answers before and after were consistent, complete and true. Then, the members
22 of the team conformed to qualifications of valid questionnaires for a uniform number.

23 ***Quality control***

24 The survey was chaired by the Chongqing Health Education Institute, which is responsible for
25 developing a unified survey program and preparing training materials for the site survey work
26 to provide technical support and advice. Investigators underwent unified training and
27 conducted pre-investigation. During the actual investigation, the Chongqing Health Education

1 Institute organized personnel to conduct fieldwork supervision and quality control. Strict
2 quality control measures were implemented to ensure that the survey data reflects the true
3 situation as objectively as possible. Quality control was conducted throughout the entire
4 investigation, including program design, training, site surveys, data management, and analysis.

5 ***Ethics committees***

6 This project was reviewed and approved by the Ethical Committee of the Chongqing Medical
7 University and Chongqing Health Education Institute. Oral consent was obtained from all
8 participants. The participants were also informed that they could withdraw from the study at
9 any stage.

10 ***Statistical analysis***

11 Data from the questionnaires were checked carefully before double entry into the database
12 using Epidata 3.02 software. After strict sorting, data cleaning and analyses were conducted
13 using statistical analysis system software (version 9.2; SAS Institute, Cary, NC). All data
14 entries were double-checked to avoid errors. Descriptive data were expressed as mean and SD
15 (standard deviation) or percentage (%). Analysis of t-test was used to ascertain the significance
16 of differences between continuous variables. Chi-square test was used to test differences of
17 categorical variables between two groups. Logistic regression was used to assess the
18 association between factors and behavior change after watching the advertisement. All
19 statistical tests were performed using a two-sided test, and a p -value that is less than or equal to
20 0.05 was considered statistically significant.

21 **RESULTS**

22 ***Demographic characteristics of participants***

23 A total of 1089 individuals were approached for this survey, but 89 did not meet the
24 requirements (42 and 29 did not meet the requirements for age and place of residence,
25 respectively. An additional 18 withdrew from the study). A total of 1000 questionnaires were
26 issued to qualified people, and 985 valid questionnaires were received.

27 The demographic characteristics of participants are provided in Table 1. All participants

1 were aged between 24 and 60 years (24–44: 57.7%, 45–60: 42.3%) and lived in Chongqing for
2 at least half a year (6–12 months: 8.8%, more than 12 months: 91.2%). All participants were
3 divided into two groups (group 1: had seen the advertisement; group 2: had not seen the
4 advertisement); only 261 (26.5%) reported that they have seen the advertisement. No
5 significant difference was noted between the demographic characteristics of the two groups.

6 ***Chronic disease knowledge***

7 Mean scores of chronic disease knowledge gained by participants who have or have not seen
8 the advertisement were all good (Table 2). No significant difference existed between the two
9 groups (24.1±4.0 vs. 23.5±4.1, $p>0.05$).

10 The participants had a high awareness accuracy on certain chronic disease knowledge, and
11 no significant difference was observed between the two groups: (1) cause of chronic disease
12 (Hyperlipidemia, hypertension, hyperglycemia: 84.9%; Overweight and obesity: 83.4%;
13 Smoking: 86.7%; Unhealthy diet: 89.6%; Lack of exercise: 87.7%; Excessive Drinking: 88.8%.
14 $p>0.05$); (2) correct concept of chronic disease prevention (89.8% of participants chose the
15 correct concept, that is, “the sooner the better, throughout his life,” $p>0.05$); (3) measures of
16 hypertension prevention (87.7%~93.7%, $p>0.05$); and (4) measures of diabetes prevention
17 (85.1%~89.9%, $p>0.05$) (data not shown).

18 The participants had high awareness accuracy on most types of chronic disease
19 (Cardiovascular disease: 71.4%; Diabetes: 80.0%; Chronic respiratory disease: 83.8%), and no
20 significant difference existed between the two groups ($p>0.05$) (Table 3). The participants’
21 awareness accuracy of cancer is low (Cancer: 58.4%), and the awareness of the group who had
22 seen the advertisement (63.6%) was higher than that of the group who had not seen the
23 advertisement (56.5%) ($p=0.046$). In addition, the participants also had high awareness
24 accuracy on the lifestyle of chronic disease prevention (Quit smoking-limited wine: 92.5%;
25 Rational nutrition: 92.2%; Regular life: 92.9%; Regular exercise: 94.0%; Keep the
26 psychological balance: 86.3%), and no significant difference was noted between the two
27 groups ($p>0.05$) (Table 4). Only 35.33% of participants thought that eating healthy products

1 was a good lifestyle choice to prevent chronic disease, and awareness about health products in
2 the group who had seen the advertisement (47.1%) was higher than that of the group who had
3 not seen the advertisement (31.1%) ($p<0.001$).

4 ***Media and its influence***

5 ***Exposure of public service advertising to people***

6 During the period of advertising, 261 participants watched the public service advertising
7 through various ways. Those who watched it through TV and mobile TV (e.g., bus, subway,
8 etc.) were 194 (74.3%) and 112 (42.9%), respectively.

9 ***Personal subjective assessment of the immediate effects of the public service advertising***

10 A total of 69.0%, 72.8%, and 74.0% of participants reported that “advertising is related to my
11 life,” “advertising makes me stop and think about my life,” and “advertising provides new
12 information to me,” respectively.

13 ***Personal subjective assessment of the follow-up effects of the public service advertising***

14 After watching the advertisement, 63.2% of participants discussed it with others, 78.2%
15 noticed the risk factors of chronic diseases, 77.4% tried to remind others to prevent chronic
16 diseases, 78.2% tried to persuade others to change their unhealthy lifestyle, and 73.2%
17 mentioned that it increased the possibility of changing their own unhealthy lifestyle.

18 ***Respondents' daily media exposure frequency***

19 According to the survey, the daily media exposure frequency of the population in a week is
20 55.8%, 42.7%, and 43.5% for Internet and social media, respectively. Regarding Internet
21 exposure, no significant difference existed between the two groups ($p>0.05$), but for television
22 and social media exposure, significant difference was present between the two groups ($p=0.036$
23 and 0.011).

24 **Logistic regression analysis of the effects of the chronic disease advertisement on** 25 **behaviors**

26 After its broadcast, the advertising caused behavior changes to participants, such as: (1)
27 Discussed with others about this advertising, (2) Tried to remind others to prevent chronic

1 diseases, and (3) Tried to persuade others to change their unhealthy style. Several factors were
2 considered in the modeling of the effects of the “being healthy, being away from chronic
3 diseases” advertising, including sex, age, residential time, suffering from chronic diseases,
4 occupation, education, and the way of viewing the advertising.

5 Table 5 indicates that the people who watched the advertising through indoor LED screen
6 were more likely to discuss about the advertising with others than the people who did not
7 watch through an indoor LED screen (OR=2.87, $p=0.01$). The people who watched the
8 advertising through TV or mobile TV were more likely to remind others to prevent chronic
9 diseases than the people who did not watch through these two means (OR=3.34, $p=0.003$;
10 OR=2.20, $p=0.014$, respectively). The people who watched the advertising through mobile TV
11 were more likely to try to persuade others to change their unhealthy lifestyle than the people
12 who did not watched through this format (OR=2.79, $p=0.003$)

13 **DISCUSSION**

14 As the first to evaluate the premier chronic disease television campaign in Chongqing, our
15 study revealed that participants have gained general knowledge on chronic disease. After
16 watching the public service advertisement, more than 60% stated that it had changed their
17 behaviors.

18 ***Chronic disease knowledge***

19 According to this survey, the participants have high awareness accuracy on the knowledge on
20 chronic disease, including the types and causes of chronic disease, the healthy lifestyle and
21 concepts of chronic disease prevention, the knowledge of hypertension and diabetes prevention,
22 and the harm of smoking or secondhand smoking. This result conforms to the finding of a
23 study carried out in the Banan District of Chongqing (*Chen, Chen F&Rao,2013*). Such
24 outcome may be related to three aspects. 1) In 2006, community health management for
25 chronic diseases was implemented in Chongqing. 2) In 2010, Chongqing began to establish the
26 demonstration plots for chronic diseases (*Qi et al.,2013*). The comprehensive control and
27 prevention of chronic diseases in the demonstration plots were effective, and the remarkable

1 improvement on the levels of health knowledge and behaviors had been achieved. 3) Our
2 survey was carried out in an urban district.

3 However, this study is not comprehensive. Only over half of the participants recognize
4 cancer as a chronic disease, one-third thought eating health products was a good lifestyle
5 choice to prevent chronic disease, and the group who had seen the advertisement was higher
6 than that of the group who had not seen it. Although the public service advertising achieved a
7 certain knowledge propaganda effect, continued health education is necessary in our city,
8 especially where citizen awareness is not high.

9 ***Media and its influence***

10 The aim of mass media campaigns is to encourage and sustain positive behavior change. Public
11 service advertising, with its specific and vivid form, contains a profound moral content as well
12 as the advantages of living close to the audience. Thus, this form of advertising can be easily
13 recognized by people and complete its role in cultural integration (*Pan,2001*).

14 In our study, television was the main medium for most people to watch the advertisement,
15 whereas the last was broadcast, which may be related to advertising broadcast channels and
16 frequency. In addition, with the development of the economy, an increasing number of people
17 were watching mobile television rather than listening to the radio. Mobile television has
18 become a good means of publicity, so we can increase the television and mobile television
19 broadcast frequency. Through media, advertising on chronic disease had immediate personal
20 effect, which caused half of the participants to think. It has also provided participants with new
21 information; hence, increasing the intensity of advertising content rendering may be
22 appropriate to draw the attention of more residents.

23 The advertisement positively influenced the participants. Most of them gave a good
24 subjective evaluation and changed their behavior to a certain extent. Some tried to persuade
25 others to change their bad lifestyle. The advertisement has also provided reference for future
26 media intervention.

27 ***Logistic regression analysis of the effects of the chronic disease advertisement on behaviors***

1 This advertisement caused behavior changes on its viewers. We chose three follow-up behavior
2 changes to analyze the influencing factors by logistic regression analysis. Occupation,
3 education, watching the advertisement through TV, watching the advertisement through indoor
4 LED screen, and watching the advertisement through mobile TV generated the three
5 advertisement effects. Television, indoor LED, and mobile TV were all effective means of
6 advertising. Thus, we can make full use of these means in future media intervention campaigns.
7 At the same time, designers of chronic disease advertising must fully consider the factors that
8 influence the advertisement effect when planning for future advertisements.

9 **CONCLUSIONS**

10 The public service advertisement “being healthy, being away from chronic diseases” has
11 achieved a certain knowledge propaganda effect. This advertisement can help participants to
12 change their awareness, improve health behaviors related to chronic diseases, and transfer that
13 knowledge to others. An increase in the application range of public service advertisement was
14 also observed. At the same time, intensifying the advertising of less-known chronic disease
15 information (e.g., cancer and health care products) can enhance the understanding of chronic
16 diseases among the public.

17 **Strengths and limitations of this study**

18 The main findings indicate that respondents have gained general knowledge on chronic disease.
19 After watching this public service advertising, more than 60% said that it changed their
20 behaviors. To our knowledge, we are the first to evaluate the premier chronic disease television
21 campaign in Chongqing.

22 Our study has a number of limitations. First, we did not assess the knowledge and attitude
23 of the respondents before the advertisement. Second, street intercept methodology was used in
24 our study. Although this sampling method has been used for other public health studies
25 (*Poomsrikaew, Ryan & Zerwic, 2010; Gase et al., 2014*), caution should be taken when
26 generalizing results to the entire population of Chongqing. Thirdly, the campaign reached only
27 approximately 27% (261) of the participants, possibly because of 1) sampling error and 2)

1 survey place. We chose four communities among the main city zones of Chongqing, and these
2 people have busy lives and are too far away to care about the advertisement.

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9 **ADDITIONAL INFORMATION AND DECLARATIONS**

10 **Competing interests**

11 The authors declare that they have no competing interests with respect to this research study.

12 **Contributions**

13 YZ designed and performed the experiments. PH analyzed the data and wrote the paper. CBW
14 and HH assisted in the experiments. ZRF and Lu helped collect the data and draft the
15 manuscript. XLX, ZMS and WTT helped analyze the data and draft the manuscript. All authors
16 read and approved the final manuscript.

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1 **Tables:**

2

1. Demographic characteristics of participants (n=985)

		Total		Had seen		Had not seen		<i>P</i>
		N (985)	%	N (261)	%	N (724)	%	
Age (year)	24–44	568	57.7	153	58.6	415	57.3	0.716
	45–60	417	42.3	108	41.4	309	42.7	
Gender	Male	513	52.1	131	50.2	382	52.8	0.476
	Female	472	47.9	130	49.8	342	47.2	
Residence time (month)	6–12	87	8.8	22	8.4	65	9.0	0.789
	More than 12	898	91.2	239	91.6	659	91.0	
Having chronic disease	Yes	114	11.6	40	15.3	74	10.2	0.076
	No	715	72.6	184	70.5	531	73.3	
	Do not know	156	15.8	37	14.2	119	16.5	
Occupation	Service (government & private)	406	41.2	119	45.6	287	39.7	0.221
	Students	45	4.6	10	3.8	35	4.8	
	Peasants	63	6.4	16	6.1	47	6.5	
	Works	168	17.0	49	18.8	119	16.4	
	Others	303	30.8	67	25.7	236	32.6	
Education	Middle school or below	355	36.1	81	31.0	274	37.9	0.213
	High school /Technical school	270	27.4	78	29.9	192	26.5	
	Junior college	144	14.6	44	16.9	100	13.8	
	College education or more	216	21.9	58	22.2	158	21.8	

3 Chi-square test was used.

4 Statistically significant ($p < 0.05$)

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2. Score of chronic disease knowledge

Score	Total N (985)		Had seen the advertisement N (261)		Had not seen the advertisement N (724)		<i>P</i>
	Mean	SD	Mean	SD	Mean	SD	
	23.6	4.1	24.1	4.0	23.5	4.1	

9 SD=standard deviation

10 Analysis of T-test was used.

11 Statistically significant ($p<0.05$)

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3. People's awareness of the types of chronic disease

Do you think it is a chronic disease?	Total		Had seen the advertisement		Had not seen the advertisement		<i>P</i>
	N (98)	%	N (261)	%	N (724)	%	
	Cardiovascular disease	703	71.4	198	75.9	505	
Cancer	575	58.4	166	63.6	409	56.5	0.046*
Diabetes	788	80.0	215	82.4	573	79.1	0.263
Chronic respiratory disease	825	83.8	212	81.2	613	84.7	0.196

16 Chi-square test was used.

17 *Statistically significant ($p<0.05$)

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4. People's awareness of the healthy lifestyle for chronic disease prevention

	Total		Had seen the advertisement		Had not seen the advertisement		<i>P</i>
	N (985)	%	N (261)	%	N (724)	%	
Is it the healthy lifestyle for chronic disease prevention							
Quit smoking-limited wine	911	92.5	246	94.3	665	91.9	0.207
Rational nutrition	908	92.2	243	93.1	665	91.9	0.518
Regular life	915	92.9	240	92.0	675	93.2	0.491
Regular exercise	926	94.0	243	93.1	683	94.3	0.472
Keep the psychological balance	850	86.3	231	88.5	619	85.5	0.226
Eating health products	348	35.3	123	47.1	225	31.1	<0.001*

Chi-square test was used.

*Statistically significant ($p < 0.05$)

1 5. Logistic regression analysis of the public service advertisement toward the three advertisement effects (n=261)

Variable	Discussed with others about this advertising		Tried to remind others to prevent chronic diseases		Tried to persuade others to change their unhealthy style	
	OR ^a (95% CI ^a)	<i>p</i>	OR (95% CI)	<i>p</i>	OR (95% CI)	<i>p</i>
Sex (1=Male; 0=Female)	0.74	0.269	1.53	0.168	1.26	0.490
Age	1.52	0.192	0.92	0.802	0.66	0.279
Residential time (1=6–12 months; 0=more than 12 months)	0.92	0.859	1.94	0.182	1.19	0.751
Suffering from chronic diseases (1=Yes; 0=No)	1.08	0.840	1.18	0.707	1.04	0.939
Occupation ^{ab}		0.095		0.118		0.011*
1	0.80	0.515	2.14	0.052	4.39 (1.86,10.34)	0.001*
2	0.14 (0.03,0.65)	0.012*	0.40	0.300	1.40	0.702
3	4.70	0.998	3.03	0.998	2.68	0.998
4	1.31	0.527	1.85	0.199	2.74	0.053
Education level ^{ac}		0.000*		0.000*		0.000*
1	3.41 (1.32,8.83)	0.012*	10.34 (3.78,28.31)	0.000*	27.67 (8.93,85.77)	0.000*
2	0.31 (0.15,0.61)	0.001*	2.08 (1.02,4.22)	0.044*	3.58 (1.65,7.74)	0.001*
3	0.63	0.250	28.31 (6.09,131.63)	0.000*	2.61	0.997
Watching the ad through TV (1=Yes; 0=No)	1.41	0.295	3.34 (1.49,7.49)	0.003*	1.79	0.162
Watching the ad through indoor LED screen (1=Yes; 0=No)	2.87 (1.29,6.39)	0.010*	0.81	0.627	1.04	0.933
Watching the ad through mobile TV (1=Yes; 0=No)	0.61	0.078	2.20 (1.17,4.42)	0.014*	2.79 (1.42,5.47)	0.003*

2 Logistic Regression Analysis was used

3 *Statistically significant (p<0.05)

- 1 a OR=odds ratio; CI=confidence interval
- 2 a Set the first group to reference
- 3 Y: 0=No; 1=Yes
- 4 b Occupation: 1=Students; 2=Peasants; 3=Works; 4=Unit staff; 5=Other
- 5 c Education level: 1=Middle school or below; 2=High school/Technical school; 3=Junior college; 4=College
- 6 education or more