

## Implementing “Food Traffic Light” as a guide for choosing healthy food in university canteen

Ainun Hanin Noviar<sup>1</sup>, Meirina Ulfah<sup>1</sup>, Nabila Puteri<sup>1</sup>, Satrio Bhagas Yudhanto<sup>1</sup>

### Abstract

**Purpose:** Unhealthy eating patterns affect health status, even increasing the risk of comprehensive form of health intervention, such as policies implementation to support a healthy campus. This study aimed to know the change of students' attitudes towards healthy eating patterns with food traffic light to reduce the risk of non-communicable diseases. **Methods:** This study used a quasi-experimental method with a pre and post test group designed. This study educated 42 students with banners, leaflets, x-banner and food traffic light stickers in the canteen. Data on attitudes towards eating patterns were obtained through filling out questionnaires before and after the intervention was carried out. Statistical tests used paired t-test. **Results:** Characteristics of respondents were mostly female (76%) and 20 years old (77%). P-value of the paired t-test 0.12 ( $p > 0.05$ ) showed insignificant results, with an average reduction from 55.7 to 54.7. The increase in post-test scores occurred in only 35.7% of respondents. There was no increase in attitude towards healthy eating patterns in college students. This happened, because the distance between the spread of the media and the measurement was too closed. The construction of the building caused some changes of the lecture activities and location, thereby affecting the reach of the media. **Conclusion:** There was no increase in attitude towards healthy eating patterns students after intervention. The spread of digital media through campus official accounts are expected to broaden the range of food campaigns.

**Keywords:** health promoting university; food traffic light; eating patterns attitude

---

### Submitted:

March 17th, 2020

### Published:

April 25th, 2020

<sup>1</sup>Health Behaviour, Environmental, and Social Medicine, Faculty of Medicine, Public Health, and Nursing Universitas Gadjah Mada, Yogyakarta

### \*Correspondence :

meirina.ulfah@mail.ugm.ac.id

## INTRODUCTION

University is an organization and place where most people spend their time studying, teaching, researching, working and hanging out. University is the right and effective place to promote health and improve the welfare of the academic community. Health promotion with the *Health Promoting University* approach is a form of holistic and comprehensive health intervention, starting from the policies in effect to the campus environment that entirely supports health. *Health Promoting University* aims to improve the ability of each individual at the university to increase control over his/her health optimally [1].

The selection of the main problems was obtained from the results of a survey through interviews and a Google Form questionnaire based on the guidelines from the GSHS (Global School-based Student Health Survey) and the Healthy Living Community Movement. The questionnaire was distributed to the entire academic community of the UGM Faculty of Pharmacy. The survey respondents were 94 students consisting of 80.9% female and 19.1% male. Based on the distribution of questionnaires that have been conducted, it was obtained data related to diet, namely 60.2% of students only ate 1-2 times a day, 84.8% of students consumed junk food 1-2 times a week, 64.5% of students consumed less water than 8 glasses per day and 19.1% of the types of food eaten in the canteen were fruit and 71.3% fried. Data related to physical activity, namely 37.6% answered that they never did physical activity, 47, 3% of students did physical activity 1-2 times a week and 83% of students answered that they never used sports facilities at the Faculty of Pharmacy. Based on the distribution of advanced questionnaires on mental health through Google Form from 54 people, 94.5% of students had experienced stress, including due to busy lecture activities, practicum schedules and assignments from lecturers. Based on the results of the review of health problems that have been carried out, it could be concluded that the priority of health problems at the Faculty of Pharmacy Universitas Gadjah Mada was diet-related. Priority problems were taken through the PAHO (Pan American Health Organization) method by considering magnitude, severity, vulnerability, community and political concern and affordability [2].

The implementation of Health Promoting University at the Faculty of Pharmacy UGM focused on diet, because an unhealthy diet increased the risk of degenerative diseases [3]. The application of food traffic light in the Pharmacy Faculty canteen was expected to be able to improve student attitudes towards healthy eat patterns. Food traffic light was a

food selection system based on information conveyed through green, yellow and red labels [4]. The application of food traffic light labels (green, yellow and red) on every food menu helped consumers choose healthy foods. This system made it easier for consumers to make choices, when compared to the application of nutritional content labels such as the number of calories, protein, fat or other nutritional content on each food menu [5].

The application of food traffic light began with providing education to the canteen handlers about the benefits and methods of implementing food traffic light in the pharmacy canteen. Education also aimed to garner support from canteen handlers, so that there was no rejection for fear of having an effect on decreasing the number of consumers.

*X-banner* A food traffic light was installed at the entrance to the canteen to provide information about food categories based on the color of the labels. A food traffic light sticker was installed on the canteen display showing the classification of the type of food served. Green labels indicated foods that were recommended to be consumed a lot, because they were high in fiber, vitamins, low in fat, sugar, salt and calories, such as vegetables and fruits. Yellow labels indicated foods that were recommended to reduce their intake, because they were high in calories, such as chicken noodles, meatballs, bread and so on. Red labels indicated foods that should be limited in consumption, because they were high in fat, calories, sugar and salt, such as fried foods, coconut milk, soft drinks and fast food.



Figure 1. Sticker of *Food Traffic Light*

This study aimed to see changes in student attitudes towards healthy eating patterns with food traffic lights to reduce the risk of non-communicable diseases.

## METHODS

The target of the intervention was S1 students of the Faculty of Pharmacy Universitas Gadjah Mada class 2017. Media intervention was carried out by distributing pre-test questionnaires followed by post-test distribution after the intervention. The respondents were selected based on the criteria of 2017 undergraduate students who filled out pre-test and post-test questionnaires to find out differences in dietary attitudes before and after the intervention.



Figure 2. Flow of Research Sample Determination

Figure 2 showed the flow of determining the research sample, of the total number of S1 students class 2017, namely 161 people with 124 respondents who filled in the pre test and 63 people in the post test. The respondents who could be selected to be the research sample amounted to 42 people who filled out the pre and post test.

## RESULTS

Figure 3 showed that most of the respondents were female, as many as 32 people with a percentage of 76% and male as many as 10 people with a percentage of 24%.

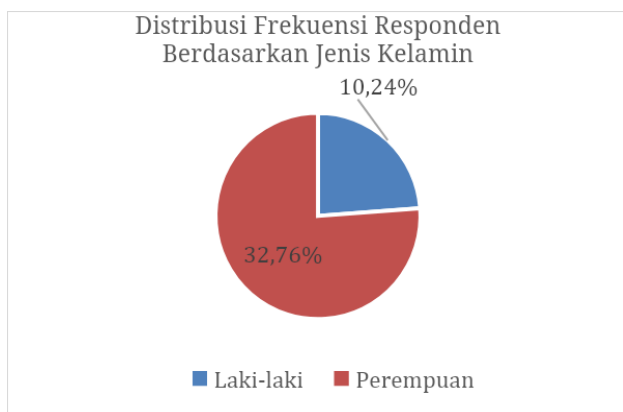


Figure 3. Characteristics of Respondents by Gender

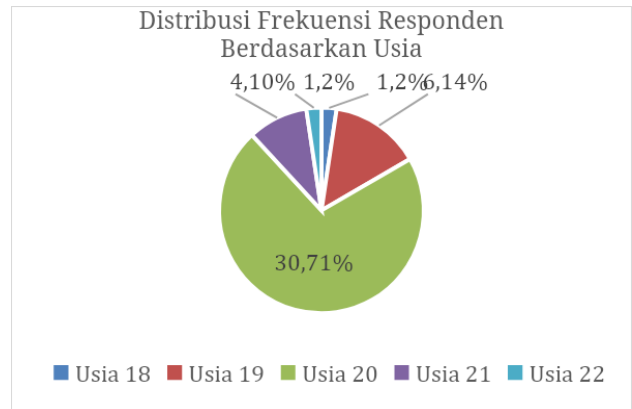


Figure 4. Characteristics of Respondents by Age

Figure 4 showed that most of the respondents were 20 years old, as many as 30 people with a percentage of 72%. Other respondents varied between 18-22 years of age.

Table 1. Analysis of Paired T Test of Diet Attitude

Variable	N	Mean	SD	SE	p value
Diet attitude before intervention	42	55,74	4,33	0,67	
Diet attitude after intervention		54,7	4,23	0,65	0,12

Significant Value (p <0.05)

Analysis of the paired t test of eating attitudes was used to see differences in dietary attitudes before and after the intervention. Table 1 showed that the average attitude of the respondent's diet before the intervention was 55.74 to 54.7 after the intervention with a p value of 0.12 (p > 0.005). This shows that there was no significant difference in dietary attitudes after the intervention.

Table 2. Distribution of affordability of intervention media usage

No.	Kind of Media	Look (%)	Not look (%)
1.	Banner	20,31	79,69
2.	X-banner	34,37	65,63
3.	Sticker	28,13	71,88
4.	Leaflet	40,63	59,38

Table 2 showed that the most affordable intervention media for respondents were leaflets with a percentage of 40.63%.

Table 3 showed that the most effective intervention media used were banners with a percentage of 60.94%, followed by sticker media with a percentage of 48.44%, x-banner media with a percentage of 46.10% and finally, leaflets with a percentage of 39, 64%.

**Table 3. Distribution of effectiveness of use of intervention media**

No.	Kind of Media	Effective (%)	Not effective (%)
1.	Banner	60,94	39,06
2.	X-banner	46,09	53,91
3.	Sticker	48,44	51,56
4.	Leaflet	43,75	56,25

## DISCUSSION

Attitude is a form of a person's tendency to act on objects in certain ways [6]. There are three components of attitude that are interconnected with one another, namely the cognitive component (belief), the affective component (feeling) and the conative component (action). The consistent consistency between these three components becomes the basis for the formation of attitudes. On the contrary, if the components of the attitude are not consistent with other components of attitude, there will be no change in attitude. Changes in attitude do not directly affect behavior, because attitude is not the only determinant that affects behavior. Attitude measurement methods can be done through behavioral observation, interviews and questionnaires [7].

The pre and post test data of students' attitudes towards healthy eat patterns showed insignificant results which meant that there was no change in student attitudes towards healthy eat patterns after the application of food traffic light in the canteen of the Faculty of Pharmacy. The post-test measurement was carried out eight days after the application of the food traffic light, so that it did not reach all the targeted students. The survey results showed that not all students saw the canteen's food traffic light media, including stickers, x-banners, and banners or leaflets. One of the things that influenced the low coverage was that part of the lectures were conducted at the old Faculty of Social and Political Sciences, because there were two buildings in the Pharmacy that were being renovated, namely Unit VI and Unit VII.

The reach or placement of the media is very important to support the effectiveness of the media. The rules that need to be adhered to in the placement of outdoor media, such as paying attention to the ethics and aesthetics of the surrounding environment, banners and x-banners do not obstruct the view of consumers when choosing a menu in the canteen, and placement of leaflets on the table must attract the attention of canteen visitors visually [8]. The ability of the media to present a distinctive color composition, words, logos and jargon by considering the overall visual design (image) so as to create a good media in

conveying messages. Media placement must also be strategic, so that it has good visibility [8].

The results showed that the reach of leaflet media was more visible than stickers, banners and x-banners, but the effectiveness was much higher on banners and x-banners. Media that is smaller in size should have a more prominent color composition so that it can increase its visibility [8]. A small proportion of canteen visitors who have seen the two media stated that there is a need to improve the design or size of the media used.

The selection of the food traffic light method as an intervention medium was based on several studies. A study conducted on undergraduate students at the National University in Taipei, Taiwan showed that there were several things that influenced student attitudes in choosing types of food, such as health problems, excessive calorie content, mood, price, the effect of body weight and nutritional content on food. Providing information related to the food to be consumed will affect motivation and attitudes towards choosing the type of food [9].

Several other studies suggested that adolescents began to make their own decisions about the menu they consumed. Healthy eating attitudes are influenced by self-control, health motives, social factors and external factors (social norms, price or visual attractiveness of food). Social factors often encourage heavy or fatty foods and have negative health impacts. However, self-motivation and the health motive also play an important war [10]. Adolescents need to be provided with information and guidance so that they can choose the type of food menu to consume. The food traffic light method provides information on alternative menu choices that are suitable for adolescents and is expected to be able to improve adolescent attitudes in healthy eating patterns.

The media is able to change not only knowledge, but also a person's attitude towards a behavior such as the cigarette campaign carried out by the government. The media are designed to influence the quantity and quality of a particular issue. The way an article or news is framed, the way information is organized, the images used, the sources that are referred to, have an influence on the way people perceive the issue at hand [11]. The implementation of food traffic light is supported by x-banners, banners and leaflets to support the provision of information to have greater influence.

PTThis study used the Stimulus-Organism-Response (SOR) theory model to describe the process of exposure to intervention media. Stimulus is a message given to individuals. Organisms are communicants or individuals who are given messages by the

communicators. Response is the effect caused by the process of sending messages from the communicator to the communicant. The effect in question is in the form of a change in attitude towards a communication process that the communicant has gone through. The stimulus in the form of food traffic light to organisms (students) was expected to produce the effect of changing positive attitudes towards healthy eating patterns [8].

Changes in attitude can vary, such as the desire to consume healthier foods. Knowing the effect or impact of media interventions can be done by analyzing its effectiveness [8]. Effectiveness is used to analyze the success rate of communication media in the form of banners and x-banners designed by the Faculty of Pharmacy HPU Team.

The application of food traffic light in the canteen of the Faculty of Pharmacy was not immediately carried out, but it was preceded by providing education to the canteen handlers regarding healthy food management, non-communicable diseases and methods of implementing food traffic light in the canteen. The sticker media used to mark the nutritional quality of food was obtained through discussion and agreement with the canteen handlers. This was done to attract attention and commitment to the application of food traffic lights without being followed by concerns that consumer interest would decline.

This activity received support from campus officials, especially the Deputy Dean for Research, Community Service and Cooperation who was also present in providing education for healthy canteens with speakers from the Nutrition Study Program lecturers at the Faculty of Medicine, Nursing and Public Health, Gadjah Universitas Gadjah Mada. Media installation was accompanied by the Head of the Academic Office and assisted by technical staff from the administrative division. The Chairperson of the Dharma Wanita Association of the Faculty of Pharmacy as the person in charge of managing the canteen from the start provided good support and a positive response to the implementation of food traffic light in the canteen and facilitated the provision of education to the canteen handlers.

A support from campus officials was expected to maintain the continuity of this program, so that students could improve their diet to be healthier.

## CONCLUSION

There was no increase in attitudes towards healthy eating patterns among students because the distance between the media distribution and the measurement was too closed. Re-measurement needed to be done to

see the effectiveness of the media again. It was expected that the dissemination of digital media through the official accounts of student organizations could expand the range of interventions provided.

## REFERENCES

1. World Health Organization. Health Promoting Universities: Concept, Experience and Framework for Action [Internet]. United Kingdom; 1998. Available from: [http://www.euro.who.int/\\_data/assets/pdf\\_file/0012/101640/E60163.pdf](http://www.euro.who.int/_data/assets/pdf_file/0012/101640/E60163.pdf).
2. Symond D. Penentuan Prioritas Masalah Kesehatan dan Prioritas Jenis Intervensi Kegiatan dalam Pelayanan Kesehatan disuatu Wilayah. *Jurnal Kesehat Masy*. 2013;7(2):94–100.
3. Handajani A, Roosihermiatie B, Maryani H. Faktor-faktor yang berhubungan dengan Pola Kematian pada Penyakit Degeneratif di Indonesia. *Bul Penelit Sist Kesehat*. 2010;13(1):42–53.
4. Roberto CA, Pomeranz JL, Fisher JO. The Need for Public Policies to Promote Healthier Food Consumption: A Comment on Wansink and Chandon (2014). *J Consum Psychol* [Internet]. 2014; Available from: <http://dx.doi.org/10.1016/j.jcps.2014.03.001>.
5. Lee D, Vermeer J, Mccargar LJ, Prowse RJL, Raine KD. Using Traffic Light Labels to Improve Food Selection in Recreation and Sport Facility Eating Environments. *Appetite* [Internet]. 2015;91:329–35. Available from: 10.1016/j.appet.2015.04.057.
6. Calhoun JF, Acocella JR. *Psychology of Adjustment and Human Relationships*. 3rd ed. San Francisco, US: McGraw Hill; 1990.
7. Azwar S. *Sikap Manusia: Teori dan Pengukurannya*. 2nd ed. Yogyakarta: Pustaka Pelajar; 1995.
8. Andra S. Efektifitas Penggunaan Media Luar Ruang Dalam Mempromosikan Pariwisata Kota Samarinda. 2017;5(2):160–71.
9. Sun YHC. Health Concern, Food Choice Motives, and Attitudes toward Healthy Eating: The Mediating Role of Food Choice Motives. *Appetite*. 2008;51(1):42–9.
10. Szabo K, Piko BF, Fitzpatrick KM. Adolescents' Attitudes towards Healthy Eating: The Role of Self-control, Motives and Self-Risk Perception. *Appetite*. 2019;143:104416.
11. Coffman J. *Lessons in Evaluation Communications Campaigns: Five Case Studies*; 2003.

