Implementation of the Food Traffic Light System to Improve Health Literacy Among Food Handlers in the Canteen of Politeknik Kesehatan Megarezky

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Abstract

The low literacy and health knowledge of food handlers have a significant impact on the health quality in canteens, both for consumers and the canteen environment itself. This study aims to improve the health knowledge and literacy of food handlers in canteens through the implementation of the Food Traffic Light System (FTLS). FTLS is a guide for selecting healthy food by adopting a traffic light system. This research is a quantitative study with a pre-experimental design using a one-group pre-test and post-test approach to assess the impact of training on health literacy and knowledge of the food traffic light system among food handlers at the canteen of Politeknik Kesehatan Megarezky. Pre-experimental research aims to test the effect of an intervention on characteristics of interest to the researcher. This study was conducted from September to December 2024 using validated questionnaires.The respondents in this study were 13 individuals working as food handlers. The data were analyzed descriptively using Microsoft Excel and SPSS 21. The paired t-test results for the literacy variable showed a Sig value of 0.000 (≤0.05), indicating an improvement in health literacy regarding the Food Traffic Light System before and after the training. Regarding knowledge, the paired t-test results also showed a Sig value of 0.000 (≤0.05), indicating a significant difference in knowledge before and after the training. This study emphasizes the importance of improving literacy and knowledge for food handlers to create a healthy canteen. Additionally, the study recommends conducting research with a larger sample and using complex method for future studies.

Keyword: Food Traffic Light System, Healthy Canteen, Health Literacy, Health Promoting University

INTRODUCTION

Health is defined as a state of well-being that encompasses physical, mental, and social dimensions, enabling individuals to live productively both socially and economically (Gautam et al., 2024; WHO, 2018). Every individual is expected to maintain good health within their environment, such as in a University setting. Universities are educational institutions that play a role in local development, influence the future, and are expected to create a conducive learning environment while fostering an organizational culture that supports health, well-being, and encourages the campus community to live healthy and prosperous lives (Abo-Khalil, 2024; Stanford Social Innovation Review, 2024). Therefore, many universities are now adopting the

concept of a Health Promoting University (HPU), which aims to enhance the well-being of the university community in terms of health.

The application of Health Promoting University (HPU) in Asian countries has been implemented in six universities in the Beijing region, China (Ji & Ko, 2022), as well as in several other universities in Asia, such as in Thailand and Indonesia. For example, at Mahidol University in Thailand, some HPU initiatives to improve the health of the campus community include policies for all campus canteens to eliminate flavor enhancers and sauces, serving only healthy food, thereby raising campus awareness of healthier food choices (Sunarya & Yudhastuti, 2019).

Canteens are a critical area in the implementation of HPU. Canteens can be a source of disease transmission through food, so it is important to prevent risk factors arising from food contamination, whether from food handlers, equipment, or food preparation areas (Agustin et al., 2023; Yoong et al., 2019). According to a study, the lack of literacy and knowledge among food handlers in canteens leads to food contamination by bacteria, viruses, or harmful chemicals, increasing the risk of food poisoning for consumers (Aspian et al., 2024; Jing, n.d.).

In addition, ignorance about food nutritional content may lead food handlers to serve unbalanced meals, such as those with excessive fats, sugars, or salt, thus increasing the risk of health issues such as obesity or hypertension among consumers (Anuli et al., 2022). Ultimately, continuously serving unhealthy food can lead to long-term health issues in consumers, such as diabetes, heart disease, and malnutrition, especially if the canteen serves as the primary source of daily meals, as in schools or universities (Agustin et al., 2023; Arinda et al., 2024).

One method that can be used to improve health literacy and knowledge for food handlers in canteens is the implementation of the Food Traffic Light System (FTLS). FTLS is a nutritional labeling system that uses traffic light colors (red, yellow, and green) to indicate the levels of specific nutrients in food, such as fats, saturated fats, sugars, and salt. This system aims to make it easier for consumers to understand nutritional information and make healthier food choices (Budiningsari et al., 2023). A study conducted by Harnianti & Yazlim, (2023) shows that the implementation of FTLS can enhance students' literacy and knowledge about healthy food. Moreover, FTLS has proven effective in helping consumers select healthier foods. Researchers hope that the implementation of FTLS for food handlers will have the same positive impact.

Based on these observations, the researcher is interested in conducting a study to assess the effectiveness of implementing the Food Traffic Light System for food handlers at the canteen of Politeknik Kesehatan Megarezky in improving health literacy and knowledge.

METHODS

This study is a quantitative research with a pre-experimental design using a one-group pre-test and post-test approach, aimed at determining the impact of training on health literacy and knowledge about the food traffic light system among food handlers at the canteen of Politeknik Kesehatan Megarezky. The pre-experimental method is used to evaluate the initial effects or influence of a specific intervention, treatment, or program on research subjects without using strict controls or comparisons (Miller et al., 2019). This method is chosen to test the feasibility of the intervention, identify potential effects, and develop initial hypotheses in research before moving to more complex designs.

This study was conducted from September to December 2024. The research location was the canteen of Politeknik Kesehatan Megarezky, while the training sessions took place in the micro-teaching laboratory. The respondents in this study were 13 food handlers. Data collection was done using a questionnaire adapted and modified from Haringi et al. (2019) and Harnianti & Yazlim (2023).

The study began with the collection of primary data using a pre-test questionnaire to measure the respondents' initial health literacy and knowledge levels. Next, the researcher provided training as an intervention to improve the respondents' literacy and knowledge. The training was conducted three times with three different topics: the Food Traffic Light System, Food Hygiene and Sanitation, and Food Processing Methods. Each training session lasted 120 minutes. The training methods used were brainstorming and small group discussions. Food handlers were grouped based on the types of food and beverages they sold. After the training, each respondent was asked to fill out a post-test questionnaire. Data were analyzed descriptively using Microsoft Excel and SPSS version 21. Paired T-test analysis was used to compare the food handlers' literacy and knowledge before and after the training.

The inclusion and exclusion criteria for this study are as follows:

- **Inclusion criteria:**
    - Food handlers who completed the questionnaire and participated in the training.
- **Exclusion criteria:**
    - Food handlers who did not fill out the questionnaire during data collection.

Food handlers who did not participate in the training activities.

RESULTS

Table 1. Characteristic Responden

Characteristic	F	%
Age		
Young (25-44 Years)	7	53.8
Middle Age (45-60 Years)	5	38.5
Old (61-75 Years)	1	7.7
Gender		
Male	4	30.8
Female	9	69.2
Educational Background		
Elementary School	1	7.7
Junior High School	1	7.7
High School	4	30.8
D3	2	15.4
Bachelor's degree	5	38.5
Total	**13**	**100**

Source : Primary Data, 2024

Based on Table 1, it was found that 7 individuals (53.8%) were in the young age category, 5 individuals (38.5%) were middle-aged, and 1 individual (7.7%) was elderly. There were 9 females (69.2%) and 4 males (30.8%). In terms of educational background, the majority of respondents held a Bachelor's degree (S1), totaling 5 people (38.5%), while the least represented were those with only elementary and middle school education, with 1 person each (7.7%).

Table 2. Distribution of Respondents' Health Literacy Before and After Training

Variable	Before		After	
	n	%		%
Health Literacy				
Good	13	100	13	100
Less	0	0	0	0
Total	**13**	**100**	**13**	**100**

Source : Primary Data, 2024

According to Table 2, it was shown that the health literacy level of all respondents (100%) was in the good category both before and after the training.

Table 3. Distribution of Respondents' Knowledge Before and After Training

Variable	Before		After	
	n	%	n	%

Knowledge				
Good	5	38.5	12	92.3
Less	8	61.5	1	7.7
Total	**13**	**100**	**13**	**100**

Source : Primary Data, 2024

Table 3 shows that prior to the training, 8 respondents (61.5%) had a low level of knowledge, while 5 respondents (38.5%) had a good level of knowledge. After the training, there was only 1 person (7.7%) with a low level of knowledge, and 12 people (92.3%) had a good level of knowledge.

Paired t-Test Results (Pre and Post Test)

Table 4. Paired t-Test Results of Health Literacy

Measurement	N	Mean	Difference	Std. Deviation	Std. Error Mean	P-Value
Before Training	13	73.20	6.98	3.174	0.880	0.000
After Training	13	80.18		4.722	1.310	

Source : Primary Data, 2024

The results of the paired t-test showed a significance value (Sig) of 0.000 (≤0.05), indicating that H0 is rejected and H1 is accepted, which means that there was an improvement in health literacy regarding the Food Traffic Light System before and after the training. The specific improvement in health literacy can be seen in the graph below:

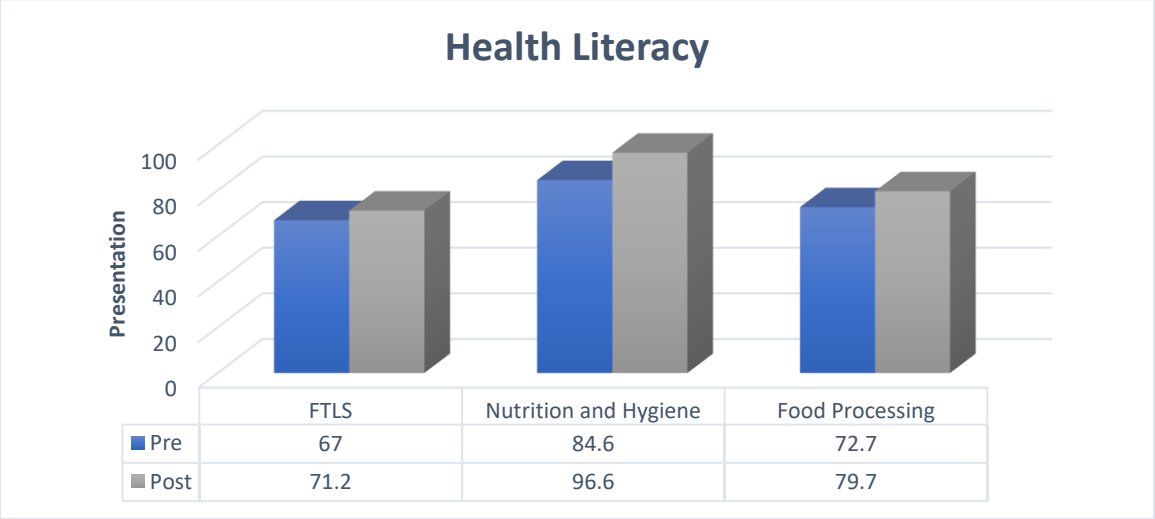

Figure 1. Health Literacy Graph

Based on Figure 1, there was an increase in health literacy in the Food Traffic Light System aspect from 67% (before training) to 71.2% (after training), in the Nutrition and Hygiene aspect from 84.6% (before training) to 96.6% (after training), and in the Food Processing aspect from 72.7% (before training) to 79.7% (after training).

Table 5. Results of Paired t-Test of Knowledge

Measurement	N	Mean	Difference	Std. Deviation	Std. Error Mean	P-Value

Before Training	13	1.38	0.54	0.506	0.140	0.000
After Training	13	1.92		0.277	0.077	

Source: Primary Data, 2024

The paired t-test results showed a significance value (Sig) of 0.000 (≤0.05), indicating that H0 is rejected and H1 is accepted, which means there was a significant difference in knowledge about the Food Traffic Light System before and after the training. The specific improvement in knowledge can be seen in the graph below:

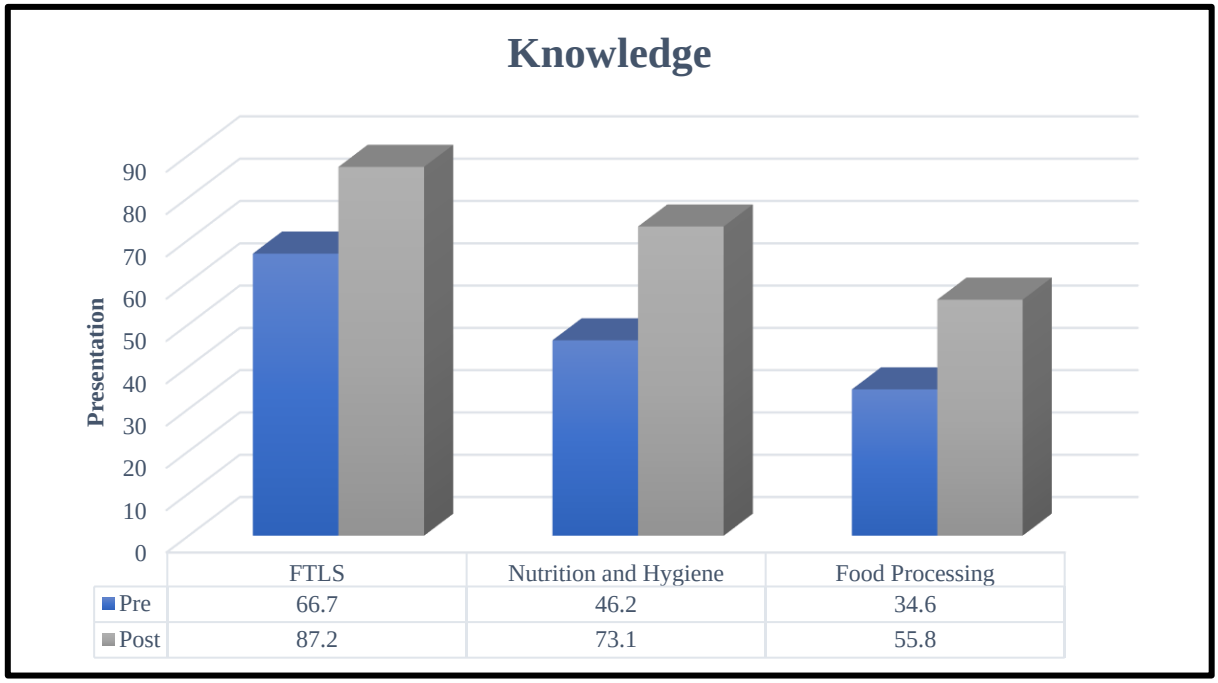

Figure 2. Respondent Knowledge Graph

Based on Figure 2, it can be observed that there was an increase in respondents' knowledge in the Food Traffic Light System aspect from 66.7% (before training) to 87.2% (after training), in the Nutrition and Hygiene aspect from 46.2% (before training) to 73.1% (after training), and in the Food Processing aspect from 34.6% (before training) to 55.8% (after training).

DISCUSSION

Improving literacy and knowledge is crucial because both play key roles in enhancing individual quality of life and community well-being. Good literacy provides individuals with the ability to understand information deeply and apply it in daily life, especially in the context of health, economy, and society. For example, high health literacy allows a person to make better health decisions, such as undergoing routine check-ups or avoiding harmful habits (Coughlin et al., 2020; Kinoshita et al., 2024).

The study results show that the intervention in the form of training for food handlers can improve health literacy. This improvement is due to several factors, such as involving food handlers in each stage of the training, using discussion and lecture methods, and supporting additional media such as training materials to reinforce health literacy. Training has also proven to be an effective intervention to improve food handlers' health literacy (Young et al., 2019).

This finding aligns with a study by harnianti & Yazlim (2023), which focused on efforts to increase consumer literacy and knowledge in canteens through the implementation of FTLS. Food labeling through FTLS also affects increased consumer awareness about food choices and consumption patterns that support healthy diets for canteen customers (Sadeghi et al., 2024; Shangguan et al., 2018). To create a healthy canteen environment, both consumers and food handlers must have a high level of health literacy (Calabro et al., 2024).

Increasing health literacy and knowledge is very important, and training is one of the effective ways to achieve this. Health literacy training programs provide individuals with the opportunity to understand, evaluate, and use health information more effectively, which ultimately enhances their ability to make healthier and more informed decisions (Shoghli et al., 2023). In fact, a study showed that training related to the introduction of the food traffic light system can increase knowledge, attitudes, and actions of housewives in choosing healthier foods to serve at home (Ramezankhani et al., n.d., 2024).

Through training, food handlers can gain skills to access reliable health information and communicate clearly and effectively with health experts. This not only benefits the food handlers in making better health decisions but also impacts canteen visitors by encouraging collective health behavior changes (Budiningsari et al., 2023). Several studies show that training programs for food handlers can enhance their understanding of nutrition components such as calorie, fat, sugar, and salt content in food. With a better understanding of food nutrition, canteen operators can prepare and serve healthier food choices while providing consumers with information about more nutritious food options (HHK, 2023).

Training programs like this can introduce and integrate food labeling systems, such as the Food Traffic Light System (FTLS), into daily practices. This system allows food in the canteen to be labeled with colors (green, yellow, red) based on its nutritional content, making it easier for students and visitors to select healthier food options (Hill et al., 2023; Rubai et al., 2023). Through training, food handlers not only improve the quality of food served but also help create a culture of healthy eating on campus.

Moreover, improving health literacy among food handlers supports the creation of a healthy campus, as they serve as facilitators in educating the campus community about healthy

eating habits, helping reduce the prevalence of diet-related diseases such as obesity and heart disease among students and staff (Kühn et al., 2022). In the long term, this supports the creation of a healthier environment and the overall well-being of the campus community and paves the way for health-conscious canteen services.

The researcher acknowledges that the small sample size may introduce potential bias. Additionally, the researcher faced challenges in determining the timing of the training due to respondents (food handlers) only being available outside working hours, which limited the training schedule to the afternoon and early evening. This situation likely impacted respondents' focus during the training. It is recommended that future studies use a larger sample and more complex methods. This study was only able to assess the immediate effects of the training on increasing knowledge and health literacy but could not evaluate the long-term impact of the training, particularly in terms of implementation.

CONCLUSIONS

The results significantly show an increase in health literacy and knowledge among food handlers before and after the intervention. The improvement in food handlers' literacy and knowledge can play an important role in creating a healthy canteen, especially in supporting nutritious eating habits and educating the campus community, particularly canteen visitors, to make healthier food choices. When food handlers in canteens are trained to understand food labeling systems such as the Food Traffic Light System (FTLS), they not only learn to serve healthier food but also become change agents who can educate consumers about the importance of balanced nutrition and prevent disease transmission.

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