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## The Correlation Between Knowledge and Attitude on Food Colorant Uses of PKK Mothers in Penggaron Lor Village

Suparmi<sup>1\*</sup>, Ophi Indria Desanti<sup>1</sup>, Budhy Cahyono<sup>2</sup>

<sup>1</sup> Medical Faculty Sultan Agung Islamic University

<sup>2</sup> Economic Faculty Sultan Agung Islamic University  
Jl. Raya Kaligawe Km. 4. PO BOX 1054/SM, 50112 Semarang

### ABSTRACT

The problem in Penggaron Lor Village are the lack of knowledge and skills, especially mothers about healthy snacks and food colorant, so it requires to observed the the correlation between knowledge and attitude on food colorant uses. This study was an observational analytic study with cross sectional design. Among PKK (a community organization whose members mothers household), 57.9 % and 50 % (n=38) had a good level of food colorant knowledge and attitude, respectively. The improper food colorant uses are not always a result of a low level of knowledge on food colorant. It is very necessary to carry out training on food colorant uses among PKK mothers to increase the practices of food cooking.

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### INTRODUCTION

Snacks are important for small children and perhaps a few adults with very high calorie needs, who don't eat enough food at meals to grow, heal or perform [1]. Safety and healthy snacks are snacks that are free of physical hazards, chemical contamination and biological hazards. Quality snacks are generally determined based on flavor, colour, texture, and nutritional value. Colour is an important factor influencing consumers' acceptability of food products. This is due to the fact that consumers always associate food colour with other qualities such as freshness, ripeness, and food safety [2]. Thus, many food colorants added to food products to stimulate a natural colour and make the products more desirable.

The demand of natural food colorant has become increasingly important. It has led to legislative restrictions on the use of synthetic colorants in foods due to their associated toxicology [3]. The health problems which may arise due

\* Corresponding author.

E-mail address: [suparmi@unissula.ac.id](mailto:suparmi@unissula.ac.id)

to prolonged use of synthetic colorant, such as anaemia, tumour, cancer, pathological lesion in the brain, kidney, and liver [4].

Recently there are many misuses of synthetic colorant in Indonesia. The National Agency of Drug and Food Control (NADFC) reported that during 2013 there are 48 outbreaks of food poisoning that comes from 34 province with 6,926 people exposed. Food poisoning cases resulted in an estimated of 1,690 illness and 12 deaths. The frequency of outbreaks of food poisoning in Semarang Indonesia is the highest after Denpasar as many 17 cases (35.42%). Food poisoning cases usually reported in household kitchen and elementary school. The contributing factors in these outbreaks of food poisoning are improper dose of food additives, the use of hazardous chemicals that are prohibited such as borax, formalin, and colorant textiles, poisoning after consuming food, and poor personal hygiene. Data show that most outbreaks of food poisoning caused by household cooking (47.92%) [5]. Three factors are playing major role in the occurrence of food poisoning with regard to food handlers: knowledge, attitude and practice according to discipline and sex [6].

Penggaron Lor is one of the villages in the district of Genuk, Semarang, Central Java Indonesia. The population of the Penggaron Lor Village is 4,097 people. Toddlers and children took second place and the third most populous age group after adults (20-49 years). The population is spread across 25 4 RT and RW, where each block has a group of mothers in households that are members of the Development of Family Welfare (PKK) [7]. The PKK is a community organization whose members Mothers household. As partners (direct) government in empowering and improving the welfare of society through the family, the PKK claimed to be active in various areas of life covered by the 10 main programs, one of which is food (three programs).

The problem in Penggaron Lor Village, Genuk Semarang are the lack of knowledge and skills, especially mothers about healthy snacks and food colorant, so it requires to observed the the correlation between knowledge and attitude on food colorant uses. Training programs are important for improving the knowledge of mothers as food handlers; however, more knowledge of food safety practices does not always lead to positive changes in food handling behaviors [8]. These study reinforce the importance of conducting a preliminary assessment of training needs and evaluating the effectiveness of training and indicate that the continuous education is needed to assure constantly a food colorant uses for mothers.

## **MATERIALS AND METHODS**

This research used a descriptive, cross-sectional study of 38 mother Development of Family Welfare (PKK) in Penggaron Lor, Genuk, Semarang, Central Java Indonesia. Informed consent, previously approved by the Ethics Committee of the Medical Faculty Sultan Agung Islamic University, was provided by each participant.

### **Interviews**

The knowledge and attitudes have been assessed to mothers on food colorant using a structured questionnaire. The questionnaire was read and completed by an interviewer in individual interviews. The data collection period occurred between January and February 2014. The questionnaire was organized into the following three distinct parts: part 1: demographic information (such as age, level of education, and employment); part 2: knowledge about food colorant; part 3: attitudes on food colorant. The knowledge section (part 2) included 15 close-ended questions with two possible answers, “true”, and “false”. These questions focused on the natural and syntetic food colorant, issues regarding the effect of syntetic food colorant. For evaluation, we used a scale ranging between 0 and 100% of true answers. Mothers that had a scores less than 80% true answers were regarded to have “Bad” knowledge and those that had scores equal to or more than 80% were considered to have “good” knowledge. The attitudes section of the questionnaire (part 3) aimed to determine the understanding of the mother about food colorant and contained 10

questions that required 2 levels of answers, “Yes”, and “No”. The term attitudes was focused on mothers attitudes in food colorants uses in their food processing. Mothers that answered fewer 70% questions correctly were considered to have “bad” attitudes, where as the mothers that 70% or more correct answers (n = 10 points) were regarded as “good” attitudes.

#### Data analysis

The data obtained from the questionnaires were tabulated and analyzed statistically using SPSS software for Windows, version 13. We used two tests of association, Pearson’s chi-square ( $\chi^2$ ). Results with a  $p$  value < 0.05 were considered statistically significant. For analysis of association between knowledge and attitudes of PKK mothers on food colorants.

### RESULTS AND DISCUSSION

Of the 38 PKK mothers who participated in this study, 73.7% were housewife. The mean age of participants was 36.16 (Standard Deviation = 7.07), and ages ranged between 26 and 56 years. Approximately all (81.6%) of the PKK mothers did not have a high school education (less than Senior High School) (Table 1).

The survey of the PKK mothers’ knowledge demonstrated the average of correct answers is 78.07 (SD±10.50). These results indicated that 57.9% of the PKK mothers have good knowledge on food colorant (Table 2). These results indicated that 78.9% of the PKK mothers did not know that synthetic food colorant is dangerous for health (question number 3, Table 2). On the other hand, 84.2% of the PKK mothers recognized that it is necessary to take leave from food processing because can caused skin irritation (question number 12, Table 3), but only 28.9% knew that synthetic colorant was prohibited can be consumed continuously (question number 13, Table 2).

In the attitude evaluation, the average correct answers was 65.78 (SD ±13.68), which corresponded to 40% the lowest correct answers, and 90% the highest 40% correct answers. Mothers in the Penggaron Lor Village have good knowledge about food colorant (57.9%) with a description of the correct answer to each of the questions presented in Table 2. This resulted in an attitude in the use of food coloring to everyday dishes consumed his family, especially children child. Most moms (50%) still use synthetic dyes (not class food grade food coloring) in making daily food, good snacks and main meals. Results of previous studies showed that 62.5% of snacks consumed by children using synthetic food dyes, and 37.5% were using natural dyes Suparmi *et al.* [9]. These results are in line with research Utami and Suhendi [10] on the snacks market in six markets in Surakarta Municipality of the District Laweyan by thin layer chromatography showed of 41 samples tested 15 samples obtained containing Rhodamine B.

Analyzing the association between knowledge and attitude of PKK mothers on food colorant using Chi Square test, the results showed there was no significant differences ( $p > 0.05$ ) between knowledge about food colorant and attitude about food colorant of PKK mothers in Penggaron Lor Village (Table 4). Despite the relatively good level of knowledge, but the percentage of mothers are good attitude similar to that relatively low. Almost all the mother in Penggaron Lor brought supplies for their children because healthier and snacks are eaten check their children when in school (Table 3). This can be explained by research Maryani and Nuraeni [11] which states that the respondents were familiar with natural dyes in the Situ Udik Village reached 85.7% and 62.5% in Cimanggu I Rural therefore existing in the area of home food processing industry using natural dyes. Because of frequent exposure to the home industry, the public perception of the natural dyes is impractical and expensive it changed. This may indicate that the public do not understand and implement food safety practices, so that the food safety promotion and education to the public (consumers) and producers become important.

This investigation provides valuable information about the level of knowledge and attitudes, in food colorant on mother as of food handlers in household. An important result from this study was that almost all respondents claimed

that they knew the disadvantages using synthetic colorant for health and answered correctly that prolonged the synthetic colorant can caused cancer and skin irritation. These important behaviour measures practiced by almost all the mothers are very encouraging. The attitude was mediated between knowledge and behavior [12]. Norazmir *et al.* [13] reported that correlation between food safety knowledge and practices on food safety indicated, there was a small positive correlation with  $[r = 0.148, n = 221, p < 0.05]$  for Sekolah Tinggi Arab Maahad and  $[r = 0.053, n = 178, p < 0.5]$  for Sekolah Menengah Kebangsaan Gelang Patah. The knowledge on food safety was good for both school and their also practiced on food safety by 79.1% included in good practice range. A high level of food safety knowledge and practices was possessed by both groups, male and female students in quite similar value of means. Soares *et al.* [14] also reported that there was no associations between the knowledge attitudes and practices of food handlers and the presence of the pathogen on their hands. Their results indicated that most of the handlers had been trained (92.2%), but the level of knowledge was insufficient; the average proficiency score was  $< 70\%$  accuracy. Attitude received the highest scores, and no handler had a score below 50.0%.

Finally, the findings about knowledge level demonstrated that improper mother attitude are not always a result of a low level of knowledge; improper attitude may simply be reflective of a dominant practice, and certain unsafe practices might not necessarily occur if the circumstances under which the practice has taken root are addressed. Thus, we agree with many researchers and specialists that argue that a chain of personal, social and work place factors influences the practices of the food handler, and these factors need to be investigated in order for a change in behavior to take place [15]. It seems that more specific training should be planned for PKK mothers. The training should include an evaluation process to ensure the effectiveness. It is therefore necessary to evaluate the impact of the knowledge acquired in food safety training especially on food colorant to develop methodologies to properly train PKK mothers.

Table 1. Demographic characteristics of PKK mothers in the Penggaron Lor Village, Genuk, Semarang, Central Java, Indonesia

Characteristics	n	(%)	Mean $\pm$ SD
<b>Age (years)</b>			
➤ 21-30	12	31.6	
➤ 31-40	16	42.1	
➤ 41-50	9	23.7	
➤ 51-60	1	2.6	36.16 $\pm$ 7.07
<b>Employment</b>			
➤ Unemployment (Housewife)	28	73.7	
➤ Employment (Teacher, Servant, Entrepreneurs)	10	26.3	
<b>Education</b>			
➤ Low (elementary School-Junior High School)	31	81.6	
➤ High (Senior High School - College)	7	18.4	

Table 2. Assessment of food colorant knowledge of PKK mothers in the Penggaron Lor Village, Genuk, Semarang, Central Java, Indonesia

Statements	Responses % (n)	
	Right	Wrong
1. There is 2 type of food colorant as synthetic and natural food colorant	38 (100)	0 (0)
2. The purpose of adding food colorant is to appear more interesting color	92.1 (35)	8.9 (3)
3. All types of synthetic food colorant are harmful	78.9 (30)	21.1 (8)
4. The food given natural colorant appear brighter than textiles colorant	26.30 (10)	73.7 (28)
5. To make natural colorant require more raw materials	78.9 (30)	21.1 (8)
6. Natural colorant is quickly unraveled so fast color change	78.9 (30)	21.1 (8)
7. Type harmful synthetic colorant such as textile colorant	92.1 (35)	8.9 (3)
8. One example of the textile colorant that should not be used is Rhodamine B	86.8 (33)	13.2 (5)
9. One example of a synthetic colorant that should not be used is Tartrazine	78.9 (30)	21.1 (8)
10. Natural colorant are used more often because it is cheaper	84.2 (32)	15.8 (6)
11. Harmful colorant can cause liver cancer	92.1(35)	8.9 (3)
12. Harmful colorant can cause skin irritation	76.3 (29)	23.7(9)
13. Synthetic colorant are prohibited other than be consumed continuously	28.9 (11)	71.1 (27)
14. Additional colorant name must be written on any product packaging	81.6 (31)	18.4 (7)
15. Supervision over food additives carried by The National Agency of Drug and Food Control	94.7 (36)	5.3 (2)

Table 3. Assessment of food colorant attitude of PKK mothers in the Penggaron Lor Village, Genuk, Semarang, Central Java, Indonesia

Statements	Responses % (n)	
	Yes	No
1. I will use natural colorant because healthier	97.4 (37)	2.6(1)
2. I will use synthetic colorant because it is cheaper	5.3 (2)	94.7 (36)
3. It seems impossible to make natural colorant each will cook	52.6 (20)	47.4 (18)
4. I think that is synthetic colorant which declared safe can use when cook	39.6 (15)	60.4 (13)
5. I will read the food colorant on every label package	97.4 (37)	2.6 (10)
6. When I found the brightly colored foods, I will avoid it	86.8 (33)	13.2 (5)
7. I will not give my family food with synthetic colorant	78.9 (30)	21.1(8)
8. It seems expensive to make natural food colorant	42.1 (16)	57.9 (22)
9. I think the trouble to look for the raw materials of natural colorant	65.8 (25)	34.2(13)
10. I will try to always use natural ingredients	92.1 (35)	7.9 (3)

Table 4. Bivaried analysis between data from knowledge and attitudes of PKK mothers in the Penggaron Lor Village, Genuk, Semarang, Central Java, Indonesia on food colorant

		Attitude on food colorant			p-value of Pearson Chi-Square
		Insufficient (<70% right answers) %(n)	Good (≥70% right answers) %(n)	Total % (n)	
Knowledge on food colorant	Insufficient (<80% right answers)	43.8 (7)	56.2 (9)	100 (16)	0.511
	Good (>80% right answers)	54.5 (12)	45.5 (10)	100 (22)	
	Total % (n)	50 (19)	50 (19)	100 (38)	

## CONCLUSION

The improper food colorant uses are not always a result of a low level of knowledge on food colorant. It is very necessary to carry out training on food colorant uses among PKK mothers to increase the practices of food cooking.

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