

Research Article

Food allergy: Knowledge, Attitude and Practices (KAP) among food handlers in school canteen

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Abstract

This study investigated knowledge, attitude, and practice towards food allergy among food handlers in schools. Through self-reported experiences on food handlers' knowledge, attitude and practice towards food allergy, the food handlers in the school canteen around Dungun area were surveyed. The data obtained from 146 respondents were captured using 36 items of questionnaire in four sections. Results revealed that the food handlers have moderate knowledge on food allergy. Additionally, some of them assumed that food allergy and food poisoning were on the same path. Half of them understood that food allergy was one of the serious health illnesses but were unsure either it is fatal or not. On the other hand, findings indicated that most of the respondents had positive attitude towards food allergy. In addition, some of them were not aware on their responsibility in preparing food at the premise as they assumed people will not get affected. Additionally, the mean of practice reported that food handlers had a good practice towards food allergy as there was fewer cases occurred in their premises before. Thus, efforts to improve coordination between government agencies, private companies, academicians and experts responsible for providing knowledge can be planned meticulously.

Keywords:

Food allergy, food handler, knowledge, attitude, practice

1 Introduction

Food allergy (FA) is one of the public health problems in foodservice industry that can affect both adults and children. According to American College of Allergy, Asthma and Immunology (ACAAI, 2014), FA occurs when the body's natural defences overreact particularly when exposed to a substance in a food. It is classified as dangerous and triggers a protective response. The individuals suffering FA can be anyone and it can occur at any stage of ages. It is estimated to affect 4 to 6 percent of children and 4 percent of adults. In addition, child can be identified with food allergy through ingestion, which they get positive result of the test to a food without previous experience (Gupta et al, 2009). According to Shafie and Azman (2015), FA has no single cure as it can cause severe and even fatal symptoms. FA is a reaction that life-altering and potentially life-threatening disease, suffered by 15 million Americans. It has been suffered by 4% of the adult population and 6% to 8% of children in the United States (Gupta et al, 2009). According to Molaison and Nettles (2010), the numbers of children with food allergy keep on increasing and they should be accommodated with special requirement in School Nutrition Programs (SNPs).

The symptoms of this disease varied from mild reaction such as an itchy mouth to the most serious form of allergic (anaphylaxis) which can cause fatalities (Shafie *et al*, 2015). It was reported that, 1 out of 3 Malaysians are currently suffering from the FA and if this current trend continues, half of the populations are expected to suffer allergic by 2020. Many factors could be the risk of FA and one of the factors that have been determined is the trend of eating away from home. The foods prepared outside home are using food allergen as the main ingredients and this could cause the allergic reaction to happen.

Over the past two years, ninety percent of schools reported that there is more than one child with food allergy in the United States (Gupta et al, 2009). It is believed that most food handlers in school are not aware on food allergy while handling food to be consumed by the school children (Lee, 2012). The lack of knowledge on food allergy and also poor attitude and practices among food handlers can be among the causes too. Choi and Rajagopal (2013) highlight that there was general agreement from several authors on good levels of knowledge of food allergy among food handlers and appropriate attitude and practices of such knowledge in food handling were imperative in ensuring the safe production of food in any catering operations. Thus, all foodservice employees need to bear the responsibility of ensuring that the food served to their customers are safe, particularly, foods prepared and served to patrons with food allergy (Choi, 2012). For this reason, the purpose of this study is to examine knowledge, attitude, and practice towards food allergy among food handlers in school dining settings. Hence, the findings will be beneficial in developing food allergy training specific to school dining settings and development of policies and procedures to protect patrons with food allergy. Providing training can help educate foodservice workers with regards

to appropriate procedures for allergen handling and serving customers with food allergy.

2 Literature Review

2.1 Food allergy in school canteen

Food handlers in school hold the responsibility to prepare allergen-free food for children since kids basically spend a significant amount of time in school and they will consume at least one meal at school during the school day (Ji, 2012). The incidents of food allergy in school has been rising over the past few years and it was found that food allergic reaction suffered by six million children under the age of 18 in the United States (Gupta et. al, 2009). It is indeed difficult for children to distinguish allergen-free food from those hidden ingredients and hard to avoid it in the school area (Ji, 2012). The fears of suffering food allergies can give a negative impact especially in social and psychological effect on the daily lives as the children will feel isolated as they need to reduce their meal choices because of the food allergy diagnosis (Gupta et. al, 2011).

2.2 Food allergy knowledge

Food allergies are the reaction caused after consuming food or ingredients that were affected with allergen. The effects can kick in immediately or after a few hours depending on the immune system of the individual (Ajala et al., 2010). Most people are had very little knowledge on food allergy because they believe that it is not a serious health problem. Some food handlers, for example, might have zero encounter with any cases of food allergies in their establishments. They have the alternative to avoid the potential cases of food allergy among their customers by identifying those with food allergies through formal process with the help from the school administration.

2.3 Food handler attitude

Attitude can be defined as a positive or negative evaluation of people, objects, events, activities or anything in the environment (Yee, 2012). In this case, changes in employees' attitude are necessary specially to serve free-allergen foods to customers (Sharma, 2011). The one's belief in ability to effectively execute behaviour to produce the expected outcome is self-efficacy. However, most of the establishments have primary obstacles that prevent foodservice staff from learning and get training to handle food allergy properly. According to Gupta et. al (2009), the staffs who interact with kids at food service facilities are responsible to the health and well-being of children with allergies especially when their families are not around.

2.4 Food handler practice

It is effective to have an appropriate practice in the workplace related to the production and service of food to prevent any incidents of food allergic reactions (Choi, 2012). Avoiding the risk factors of food allergy when preparing, making, cooking, storing

and transporting the food products especially for raw material food is crucial to ensure that the food is not contaminated with food allergen. Most of the cases of severe food allergy reactions were associated with the people who are eating away from home (Shafie et al., 2015). In addition, the food provider must prepare the warning note about the ingredient of the food at the printed menu materials or inform their customers about the food that they serve may cause food allergy such as peanut, shellfish and egg (Choi, 2012). Besides that, practices and handling methods during the preparation of food can also reduce the potential of food allergy. There are higher usages of gloves among food handlers during food preparations especially among those who had been trained with food allergy risk and knowledge as compared to those without training (Sharma, 2011).

3 Methodology

3.1 Research design

This study was done using quantitative data collection and convenience sampling. The self-administrated questionnaires were distributed to food handlers at the school canteen of 27 primary schools located in Dungun, Terengganu (Dungun Municipal Council Official, 2015). The questionnaire assessed three dimensions (knowledge, attitude and practice) of food allergy among food handlers in primary school. Each dimension was rated in terms of importance using a five-point Likert scale where five (5) represented totally agree to one (1) represented totally disagree. All 146 questionnaires were returned and being analysed. The descriptive statistics that include frequency means, standard deviations and correlations to gain an understanding the nature of responses were applied.

4 Findings

4.1 Food allergy knowledge

Table 4.1 depict the descriptive analysis on the knowledge of food handlers toward food allergy

Table 4.1: Knowledge of Food Handlers toward food allergy

| Items | Valid | Mean | 1 | 2 | 3 | 4 | 5 |
|--|-------|------|---|---|----|----|----|
| B1-A food allergy is an abnormal response of the immune system to an ordinary harmless food or ingredient in a food. | 146 | 3.90 | 1 | 5 | 25 | 91 | 24 |
| B2-Food allergy is not common but can be serious. | 146 | 4.16 | 5 | 0 | 11 | 80 | 50 |

| | | | | | | | |
|---|-----|------|----|----|----|----|----|
| B3-A food allergy is an exaggerated immune response triggered by eggs, peanuts, milk, or some other specific food. | 146 | 3.75 | 1 | 9 | 44 | 64 | 28 |
| B4-People with allergy come from families in which allergy are common. | 146 | 3.05 | 11 | 25 | 60 | 46 | 4 |
| B5-A food allergy can initially be experienced as an itching in the mouth and difficulty swallowing and breathing. | 146 | 3.52 | 5 | 15 | 42 | 67 | 17 |
| B6-Food allergens are usually proteins. | 146 | 3.31 | 3 | 21 | 59 | 54 | 9 |
| B7-A food allergy reaction can cause death. | 146 | 3.39 | 4 | 13 | 73 | 34 | 22 |
| B8-Hidden food allergens are one of the most common causes of food allergy occurrences. | 146 | 3.53 | 2 | 7 | 60 | 66 | 11 |
| B9-Cross-contact is when raw foods, such as uncooked meat and poultry, touch cooked foods. | 146 | 3.44 | 1 | 12 | 77 | 34 | 22 |
| B10-Individuals with food allergy can safely consume the foods that cause the allergy if only a small amount is consumed. | 146 | 3.18 | 7 | 33 | 44 | 51 | 11 |

Most of the respondents agreed with the statement *“A food allergy is an abnormal response of the immune system to an ordinary harmless food or ingredient in a food”* and *“Food allergy is not common but can be serious”* that clearly showed that the food handlers have some basic knowledge food allergy. The question, *“A food allergy is an exaggerated immune response triggered by eggs, peanuts, milk, or some other specific food”*, attained a positive result where most of the respondents agreed with the statement. The result depicts that they were aware that protein food such as seafood and eggs are the food allergen that contributes to food allergy cases. Previous research showed that it was estimated that 1.5% of children were allergic to eggs and 2.5% of children who aged below three were allergic to milk (Lee, 2012). Nevertheless, nearly half of the respondents were unsure to the statements *“Cross-contact is when raw foods, such as uncooked meat and poultry, touch cooked foods”* and *“A food allergy reaction can cause death”*. Most of the food handlers knew that food allergy is a serious health issues however, due to their lack of knowledge they did not understand the term ‘cross-contact’ and also were not aware that food allergy reaction can cause fatalities. According to Shafie et al. (2015), most of food handlers are unaware with the allergy reaction that can lead to fatalities and cross-contamination from the other food particles from protein sources could be unsafe to people with food allergy. This is very important to be highlighted as contact surface of equipment may lead to cross-contamination.

4.2 Food handler attitude

Table 4.2 explains the attitude of the food handlers towards food allergy.

Table 4.2: Attitude of food handlers towards food allergy

| Items | Valid | Mean | 1 | 2 | 3 | 4 | 5 |
|---|-------|------|----|----|----|----|----|
| C1-You treat food allergy seriously. | 146 | 3.85 | 2 | 16 | 24 | 64 | 40 |
| C2-You concerned about the food allergy among your customers. | 146 | 3.77 | 7 | 21 | 15 | 59 | 44 |
| C3-You ever thought of any method to prevent food allergic reaction among your customers. | 146 | 3.80 | 22 | 0 | 28 | 53 | 43 |
| C4-You think that you have the responsibility to inform your customers of the presence of food allergens in their food. | 146 | 3.81 | 5 | 7 | 39 | 55 | 40 |
| C5-You specially prepare food that is safe for customers with food allergy when it is requested. | 146 | 4.10 | 1 | 16 | 10 | 59 | 60 |
| C6-Food handlers should provide special tables where customers with food allergy can eat safely. | 146 | 3.40 | 5 | 32 | 36 | 46 | 27 |
| C7-I would expect my customers with food allergy to question me on the ingredients in my foods before ordering. | 146 | 3.83 | 3 | 13 | 24 | 72 | 34 |
| C8-I do not think that it is my responsibility if people with food allergy have allergy reactions at my premise. | 146 | 2.86 | 25 | 35 | 34 | 39 | 13 |
| C9-I play an important role in ensuring the health and safety of people with food allergy. | 146 | 3.77 | 2 | 14 | 33 | 63 | 34 |
| C10-I have the responsibility of updating myself on the information regarding food allergy. | 146 | 4.04 | 2 | 6 | 23 | 68 | 47 |

The findings revealed that majority of the food handlers did not think that it is their responsibilities if people have allergy reactions at their premise. They are of the opinion that they should be informed by the customers if their children have allergic towards any food allergens. Texas Department of State Health Science (2014) stresses that the family is responsible to inform or notify the school or responsible people about their child's allergy by providing written medical documentations, instructions and medication. Therefore, if food allergy cases happen, the food handlers are not liable because the students or their family did not inform them on the matters.

4.3 Food handler practice

From Table 4.3 below, there were about 68% of the respondents reported that there were no cases of food allergy in their school canteens in the last few months.

Table 4.3: Practices of food handlers towards food allergy

| Items | Valid | Mean | 1 | 2 | 3 | 4 | 5 |
|---|-------|------|----|----|----|----|----|
| D1-There any case of food allergy at your premise in the last few months. | 146 | 2.04 | 48 | 51 | 42 | 3 | 2 |
| D2-You have any plan to produce only non-allergenic food. | 146 | 3.59 | 5 | 20 | 36 | 54 | 31 |
| D3-There is any training for staff about food allergy. | 146 | 3.31 | 2 | 33 | 50 | 40 | 21 |
| D4-In your menu, you highlight the allergenic ingredients or insert a cautionary note to warn the presence of specific allergens on the menu, such as "contains peanuts". | 146 | 3.12 | 2 | 48 | 41 | 40 | 15 |
| D5-You used to ask your customers if they have food allergy. | 146 | 3.30 | 2 | 46 | 25 | 52 | 21 |
| D6-You used to check the label of food products to find out whether they contain any ingredient that may cause food allergy. | 146 | 3.53 | 4 | 24 | 31 | 64 | 23 |
| D7-You talk to the customer in person to address food allergy needs and suggest non-risky choices. | 146 | 3.64 | 6 | 16 | 32 | 62 | 30 |
| D8-You verify with the cook whether or not a food can be made without the allergenic ingredients. | 146 | 3.50 | 4 | 27 | 25 | 72 | 18 |
| D9-Once the meal is ready, you double check to make sure no allergens had been inadvertently added. | 146 | 3.54 | 5 | 16 | 39 | 67 | 19 |
| D10-After the meal is ready, you verify directly with the food allergic guest whether or not expectations have been met. | 146 | 3.91 | 9 | 0 | 32 | 68 | 37 |

From the above data, there were about 68% of the respondents reported that there were no cases of food allergy in their school canteens in the last few months. This proved that food allergy can still be controlled and extra precaution should be taken to avoid any cases to occur in the future. Previous studies showed that one out of three Malaysian was suffering from food allergy and half of the population was expected to be allergic towards a food allergen in 2020 (Shafie *et al*, 2015). This is due to the trends of eating out among people nowadays and most of the students were eating at school

canteen. Moreover, most of the respondents were unsure when asked about any training provided for staff about for allergy. The food handlers might have some confusion with the food safety training and hygiene courses that they had attended with food allergen course.

According to Choi (2012), most of the employee in foodservice establishment agreed on attitudinal statements that the food handlers must prevent the food allergy cases in their premises by providing accurate information to the customers with food allergy. The respondents were critical on this issue as they will double check and verify directly with the food allergic customer whether or not expectations have been met after the meals is ready. For the statements, “*You used to ask your customers if they have a food allergy*”, most of the respondents showed some level of disagreement. The answer might be different due to the different educational background of the respondents. Most of the elderly who aged from 56 to 65 years old had no formal education and apparently, they had the least understanding of the food allergy issues. Some of the young adults meanwhile had a good understanding about food allergy. According to Shafie and Azman (2015), the materials used to develop the understanding towards food allergy should be interactive and simple to understand because most of the food handlers do not have high level of education.

Table 5: Pearson correlations between knowledge, attitude and practices

| Pearson correlations | Knowledge | Attitude | Practice |
|----------------------|-----------|----------|----------|
| Knowledge | - | .507** | .490** |
| Attitude | .507** | - | .784** |
| Practice | .490** | .784** | - |

Note: **95% confidence interval

Table 5 indicates that, knowledge, attitude and practice of food handlers towards food allergy have significant relationship to each other. It demonstrates a significant value of 0.00(0.01 level 2 tailed). The relationship between knowledge and attitude is moderate ($r = 0.507$), while the relationship between attitude and practices is strong ($r = 0.784$). Lastly, the relationship between knowledge and practices is moderate ($r = 0.490$).

5 Conclusion

To conclude, food handlers have the knowledge about food allergy, but half of them did not really understand about the cross contamination. Apart from that, they believed that hidden foods information is one of the common causes of most food allergy cases. However, effort can be seen by food handlers in improving their skills to prepare food for customers based on their experiences. In fact, they have positive attitudes towards food allergy. Nevertheless, most of them did not think that it is their responsibility to have a precaution when dealing with people who have food allergy in their premises.

They believed that the students or the parents should notify them first about the allergy before consuming any foods in the school canteen. From the results, it highlights that parents should inform their children's food allergy problems in school records to help the food handlers in designing the menu for them. These findings perhaps offer some insight into the society, school, and government about the food allergy towards consumers especially for children. Thus, efforts to improve coordination between government agencies, private companies, academicians and experts responsible for providing knowledge can be planned meticulously.

6 About the authors

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7 References

- Ajala, A. R., Cruz, A. G., Faria, J. A., Walter, E.H.M., Granato, D., Ana, A. S.S. (2010). Food allergen: Knowledge and practices of food handlers in restaurants. *Food Control*, 21(10), 1318-1321.
- American College of Allergy, Asthma & Immunology (2014). Types of allergy. Retrieved November 8, 2015 from <http://acaai.org/allergy/types/food-allergy>
- Choi, J., H (2012). *University foodservice employees' food allergy knowledge, attitudes, practices, training and training needs*. Published thesis, Iowa State University.
- Choi, J. H., & Rajagopal, L., (2013). Food allergy knowledge, attitudes, practices, and training of foodservice workers at a university foodservice operation in the Midwestern United States. *Food Journal*. 31(2).
- Dungun Municipal Council Official (2015). Primary School. Retrieved on March 21, 2016 from http://mpd.terengganu.gov.my/sekolah-rendah_pelancongan?p_p_id=56_INSTANCE_q3Vq&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view&p_p_col_id=column-3&p_p_col_count=1&page=2
- Gupta, R.S., Kim, J.S., Springston EE, Smith B, Pongracic JA, Wang X, Holl (2009). *Food allergy knowledge, attitudes, and beliefs in the United States*. *Ann Allergy Asthma Immunol*. 2009 Jul;103(1):43-50. doi: 10.1016/S1081-1206(10)60142-1. Retrieved November 12, 2015 from <http://www.ncbi.nlm.nih.gov/pubmed/19663126>
- Ji, H. C. (2012). *University foodservice employees' food allergy knowledge, attitudes, practices, training and training needs*. Retrieved November 10, 2015 from <http://search.proquest.com.ezaccess.library.uitm.edu.my/docview/1095401898/87F95423771248DPQ/2?accountid=42518>
- Lee, Y. M (2012). *Investigation of food allergy training and child nutrition professional's knowledge and attitudes about food allergies*. Retrieved March 22, 2016 from <https://krex.k-state.edu/dspace/handle/2097/13668>
- Molaison, E. F., & Nettles, M. F. (2010). Special food and nutrition needs in school nutrition programs. *Journal of Child Nutrition and Management*, 34(1)
- Shafie A. A, Azman A.W. *Assessment of knowledge, attitude and practice of food*

- allergy among food handlers in the state of Penang, Malaysia*. Public Health 2015; 129: 1278-84. Retrieved November 10, 2015 from <http://www.sciencedirect.com/science/article/pii/S003335061500133X>
- Sharma, K. M (2011). *A study of food allergy awareness and knowledge among Owners and managers of Wellington City Eating-house*. Retrieved on November 10, 2015 from http://mro.massey.ac.nz/bitstream/handle/10179/3229/02_whole.pdf?sequence=1
- Yee, M. L. (2012). *Investigation of food allergy training and child nutrition professional's knowledge and attitudes about food allergy*. Retrieved March 22, 2016 from <https://krex.k-state.edu/dspace/handle/2097/13668>
- Texas Department of State Health Science (2012), *Food Allergy*. Retrieved March 22, <https://www.dshs.texas.gov/chs/HealthStatusTexas2014.pdf>