



Cooking up a Storm! Rising above Challenges in Regulated Food Standards

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ABSTRACT

This study explores the state of performance of regulated food standards in six government institutions in West Malaysia. Data were obtained from two groups: 154 food handlers' opinion of food performance in a questionnaire survey, and seven food purveyors' attitudes towards regulated food standards from an interview. Strategically chosen food promotes and maintains physical and mental health while insufficient food can impair one's health. The Ministry of Health enforces regulated food standards to help institutions serve food, according to the best dietary plans. This attempt at rationalizing food standards has however been the bane of food operators and consumers alike. Consumers complained about its lack of taste and variety, a negative perception often shared by those who repeatedly consume the same food menu over a period of time. The initial outcomes of the questionnaire were encouraging, but persistent "rumblings" from the respondents interviewed indicated otherwise. A regular review of the Ministry's dietary plans is proposed but with input from all parties; experts from the Ministry, experienced food handlers, purveyors, and consumers alike.

Keywords: food menu, food performance, healthy food, Malaysia, regulated food

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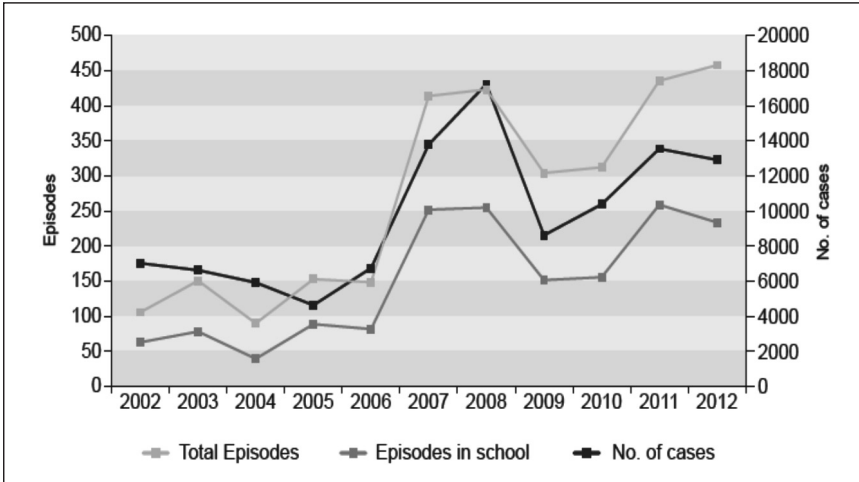
INTRODUCTION

Food is an important aspect of a person's well-being. It plays a significant role in promoting and maintaining physical and mental health and is at the same time a symbol of wisdom and civilization (Flammang, 2009). Consumers spent 30-35% of their expenses on food products (Fuad and Rosita, 2013). As such, eating healthily and striving for better health has become the norm in most developed societies. Healthy eating also helps maintain energy levels and enables individuals to function productively. Many studies (Siefert *et al.*, 2004, Akinwande *et al.*, 2008) have shown that insufficient food can have negative effects on physical (especially the immune system) and mental health. "Food insufficiency" according to Wu and Schimmele (2005) and Yong Liu *et al.* (2014) refers to restricted household food supplies or not enough food to eat. Malnourished children could succumb to what is usually a trivial illness in a well-fed child, a condition that often worsens as they grow older (Pinstrup-Andersen and Schiler, 2001).

Food is one of the factors that contribute to diseases. As such, communities have identified healthy and unhealthy foods and their relationship to a number of significant health issues (Waxman, 2005). Among the food-related health problems frequently addressed are obesity, cancer, gout, diarrhea, and acne. According to the United States Food and Drugs Administration (FDA) (2009), foodborne illnesses cause personal distress, deaths, and economic burden. Apart from poor food quality contributing to these foodborne illnesses, improper food handling practices have also been found to stimulate many of these (Hislop and Shaw, 2009). These illnesses are due to the presence of pathogens found in food (Newell *et al.*, 2010). Food and food production practices have been considered to be a vehicle for instant *Salmonella* spp. and *Escherichia coli* to evolve (Mazni *et al.*, 2013a). Safe food consumption is crucial because health-related costs from foodborne illnesses overwhelm the costs of microbiological contamination; which will in turn have a great impact on private and social health care costs (Kinsey, 2005).

The increasing association between food and health has resulted in consumers' preference for healthier foods as a non-communicable disease (NCD) prevention (Hathorn *et al.*, 2008). World Health Organization (WHO) (2014) describes NCDs as heart disease, cancer, diabetes, chronic respiratory diseases, and stroke that are invisible epidemic diseases afflicting communities in many countries. NCDs remain a concern in Malaysia (Safurah *et al.*, 2013, Mazni *et al.*, 2013a) as food poisoning was constantly reported to be in the lead position (The Ministry of Health, 2012, The Ministry of Health, 2014). However, there seems to be a decline in the number of food poisoning cases reported for regulated food served in the National Service and Training Programmes, as well as in the schools (The Ministry of Health, 2014). The report reveals a 51% reduction of food poisoning incidence at school

from 454 in 2011 to 232 cases in 2012. Despite the decreasing trend reported in the Ministry of Health’s Annual Report, Mazni *et al.* (2013a) argued otherwise as the food poisoning trendline was in fact on the rise for 12 consecutive years. On a closer investigation of Figure 1, we could see that although food poisoning cases have been fluctuating each year, the overall result reveals that the total number has not gone down since 2005.



Source: Disease Control Division, Ministry of Health (The Ministry of Health, 2014, p. 60).

Figure 1 Food poisoning episodes in Malaysia, 2000-2012

Nevertheless, the Malaysian government is socially obligated towards ensuring public health through its regulated food standards guidelines to address problems associated with food. The government introduced the regulated food programme to ensure public health is protected through knowledge of quality nutritious food. Hence, the regulated food programme has been enforced at significant places. The places include government hospitals, the national service training programmes, the National Sports Council of Malaysia, rehabilitation centres, detention centres, and fully residential schools. However, consumers criticized the rationale for these food safety initiatives because very often food that came out of these lacked taste and were negatively perceived not only on the menu but also in its delivery. To some extent, consumers who have had a short experience consuming such food may regard it as “healthy food” compared to those who have had to consume it over a longer time, which is the case with the people who work in these organizations. The consumers are the dissatisfied ‘victims’ who “grumbled” that not only did the

menu not meet their nutritional requirements but that the pre-portioning of food was often inadequate. As consumers are dependent on the food served for their nutritional needs, the opinion of food purveyors or caterers in these government institutions is deemed valuable in improving the menu as well as the quality of food. Therefore, this study aims to gauge the performance of foods served in the government institutions, which are subjected to regulated food standards.

REVIEW OF LITERATURE

Dietary Practices

Religion and culture are indeed two sides of the same coin. In the context of this study, each of them plays a role in the selection of foods forbidding the use of some and encouraging the utilization of some other element to maintain health and purity. Islam and Judaism are two religions that classify the dietary practices of religion. In Islam, *Halal* (permitted, allowed, lawful or licit) and *Haram* (opposite to “*Halal*” - unlawful, prohibited) are the two terms in its dietary laws (Koçturk, 2002). In Biblical Hebrew, “*kosher*” means “fit” or “acceptable to eat,” and “*treif*” means unclean (Eliasi and Dwyer, 2002). The Quran, *Surah Abasa* verse 24 recorded the impact of eating good food: “Then let man reflect on the food he eats, (and how We provide it).”

Dietary practices of these religions are a form of submission to the will of God, and this means refraining oneself from eating the forbidden and eating only pure and nutritious food. A food product labeled “*Halal*” or “*kosher*” must conform to state-defined food preparation and handling requirements (Farouk *et al.*, 2014). At the same time, medical sciences suggest foods that are clean and hygienic thus reducing chances of an outbreak of illnesses caused by foodborne pathogens. This hygienic attitude necessitates proper behaviour on the part of food preparation and serving employees, which could reduce chances of foodborne illnesses, particularly in food establishments.

Regulated Food

Regulated food in this study is operationalized as food dietary designed for the particular purpose of meeting certain nutritional requirements as well as improving them in some circumstances. Specifically, the regulated food standards refer to a wholesome, appropriate portion of food, which is balanced and appealing menu in terms of quality, nutrition and choice for the consumers provided by the food operators. These criteria are according to specific food guidelines of the government institutions. Other than variety and choice, good-tasting meals are

crucial as it stimulates appetite, especially for sick people suffering from dementia (Sheppard, 2010). However, the quality of regulated food-healthier food, such as that offered in hospital foodservice or even in fast food restaurants, often has a poor reputation among food consumers. In a study of food quality in South African fast-food outlets, 400 students' opinions on food quality were elicited in a survey (Cant *et al.* 2014). Twenty-nine percent of the respondents did not purchase fast-food's healthier food options because it neither looked appealing nor tasty. These results show that customers' preference seems to be focused on what pleases them (e.g. taste and looks) even though the food is from the healthier food option. Thus, the study indicates that customer perception of what constitutes a healthy, wholesome and appetizing food is an important aspect of food performance and in enhancing business.

Nevertheless, one must not compromise the need to regulate food standards, especially in developed and developing countries where there is a continual upward trend of diet-related chronic diseases (The Ministry of Health Malaysia, 2010). The Malaysian Dietary Guidelines have proposed 14-key recommendations established by experts in nutrition and public health with the involvement of the community. As suggested in the first message of key recommendation, the foods need to be chosen strategically in the right proportions from the essential food groups in the healthy food pyramid. The food pyramid recommends diversity for the required nutrients and the correct amount of calories for maintaining an appropriate weight level. A serving of food is a measured quantity formulated by the Ministry of Health. For many years, healthy meal plans have been developed to achieve appropriate body weight levels. As such, nutrition experts suggest a combination of food from all parts of the pyramid with decreasing amounts as it moves from the bottom to the top of the pyramid. There is greater emphasis on eating whole grains, veggies and fruits and some amount of lean meats. Eating healthy food in the recommended amounts also promotes mental stimulus for thinking.

Food Menu and Sensory Evaluation

The food menu is “the single most influential plan in a foodservice operation” (Payne-Palacio and Theis, 2012). In the food service business, the food menu determines the dining concept and its success reflects desired results. Payne-Palacio and Theis (2012) stated that the preparation and services of the foods need to meet standards of quality every time a meal is served due to a highly influential social trend in health. Also, an efficient and effective food business operation has to begin with “thoughtful reflection on the purpose of the menu planning process” (p. 133). The purpose of the food menu is to please the clientele. It must satisfy the

customers' specific population, sociocultural influences, nutritional requirements, dietary reference intakes, food consumption, trends, habits, and preferences.

As with the consumers' acceptance, fulfilling their needs and wants is the principal aim of the food industry although they are the last link in the food chain (Guerrero *et al.*, 2014). Hence, their opinion, particularly on food sensory, is essential. Food sensory according to Oliveira (2011) refers to *chemoreception*, our sense of taste and smell, *photoreception* or sight, *mechanoreceptor* or touch, and *thermoception* or temperature difference. Sensory evaluation is a means of measuring human responses to foods and minimizing the potential bias effects of brand identity and other information on consumer perception. Two other studies (Lawless and Heymann, 1998, Ouyang *et al.*, 2014) also confirmed the evaluation of food quality using sensory perception and preferences. The food sensory are based on sight, smell, touch, taste, and hearing. Furthermore, human studies (Sorensen *et al.*, 2003) demonstrated how senses determine our perception of food. The sensory perception then affects not only our appetite but also the amount of food we take. Therefore, people's impression of food sensory would undoubtedly determine food selection and the amount of the food they eat.

Formerly, researchers measured the quality of food from the customer's satisfaction of the food menu. Stanga *et al.* (2003), in a two-Swiss hospital food survey revealed that a majority (86%) of the patients who were on an oral diet were either satisfied or very satisfied with the hospital food. However, half of them stated that their appetite decreased during their time in the hospital. It was found that satisfaction towards the food provided was negative and correlated significantly with the duration of their hospital stay. Similarly, the research conducted correlating between appetite loss and food intake among 885 cancer therapy patients by Solheim *et al.* (2014) shows that the quality of food and acceptability of the food menu were important points of satisfaction. Likewise, nutritious and healthy food is also considered as one of the most important factors in dining satisfaction. According to Namkung and Jang (2007), customer-perceived evaluation of a restaurant experience is significantly affected by healthy food. In fact, Ha and Jang (2010) found that the quality of food served takes centre stage when the atmosphere of the restaurant is at the unsatisfactory level.

This present study can conclude that although food regulators attempt to address the issue of good food intake for health, it has ironically led to some controversial feedback from the consumers. Consumers need to know that the food they eat has been cooked well; using only the highest quality ingredients and the best up-to-date cooking method. But at the end of it, the judge of food well-cooked is in its taste. All too often a great cook is one who cooks from the heart – putting much effort and care into preparing and presenting food that not only looks and tastes good

but will satisfy consumers' expectations. It is therefore imperative that desired food safety practices and the objective of serving tasty, healthy food could only be achieved through the 'balancing act' of virtuous and caring food purveyors (Mazni *et al.*, 2013b).

RESEARCH METHODOLOGY

Study Population and Design

This current study determines the performance level of food in six government institutions in the Northern and Central states of Peninsular Malaysia. Data were obtained from two groups of respondents: 154 food handlers' opinion of food performance from a questionnaire survey, and seven food purveyors' attitudes towards regulated food standards from an interview. Food handlers refer to the cooks and other workers involved in food preparation and serving, and food purveyors are dining hall supervisors and head chefs. This study, however, does not attempt to propose any food menu plan.

The questionnaire survey evaluated food performance via five-items (refer Table 1) along the six-point *Likert*-type scale of 1=Strongly Disagree to 6=Strongly Agree. Items for the food performance were adopted and adapted from the work of Kleynhans (2003). Concurrently, interviews with the food purveyors sought their opinions on the food menu regulated by the Ministry of Health. Two common questions were asked during the data collection were:

- (i) Are you aware of any related Food Acts, regulations or code of practices related to food service?
- (ii) Based on the food served in this institution, please give your comments regarding the food-safety issues.

Table 1 Means and standard deviation of food performance

	Means	Std. deviation
1. The appearance of the food we serve is impressive	5.12	.714
2. Our food is delicious	5.27	.657
3. Food temperature is maintained warm	5.05	.897
4. Menu items we serve according to the Ministry of Health's guideline are varied	5.51	.707
5. Food quality is good	5.44	.583
Food performance	5.28	.52

Note. Six-point *Likert*-type scale: 1=Strongly Disagree and 6=Strongly Agree

RESULTS AND DISCUSSIONS

This section provides results and discussions of the data analysis on food performance level. Specifically, the findings from the questionnaire survey highlight food performance from the perception of food handlers. Meanwhile, the findings from the interview with the food purveyors focus on the two semi-structured questions.

Findings from the Questionnaire Survey

The questionnaire survey elicited responses from 154 out of 258 food handlers (a response rate of 60%). Overall, female respondents (88 persons) dominated the study. The majority of the respondents (38%) were aged between 18 and 30, and sixty-four percent (64%) had a secondary school education. Most of them (43%) had been working for one to five years in the food industry. The results show that most of the respondents were relatively young and although the food handlers have a relatively average education background they have adequate experience in the foodservice field.

Food Performance Level

The descriptive analysis of food performance came from the perspective of food handlers. Table 1 presents the means and standard deviations of food performance. The magnitude of the mean scores ranges from 5.05 to 5.51; corresponding to the agreement level of the scale measuring overall food performance. The achieved means score for food performance was 5.28 (SD = .52). Based on Table 1, the respondents agreed that food performance in the institution is impressive, delicious, good and warm, as well as meeting the Ministry's guidelines. This means that the regulated food served in the government institutions under study pleased consumers' perception and preference, a positive outcome which contradicts other regulated food studies done by Ha and Jang (2010), Solheim *et al.* (2014), and Stanga *et al.* (2003).

The results obtained from the five questions on food performance are positive. The current findings revealed that many agreed that food presentation is attractive (58%), but less than 40% agreed that the food temperature is maintained warm. The result also demonstrated that almost half of the food handlers (49%) strongly agreed that the quality of food is good, thus confirming the food handlers' positive agreement of the food served in their institutions. The result is consistent with the guideline suggested by Sheppard (2010), in which balanced and appealing menus stimulate the appetite of consumers. Interestingly, Figure 2 shows 54% of the

food handlers agreeing that the food is delicious and that the taste of the food is more than satisfactory.

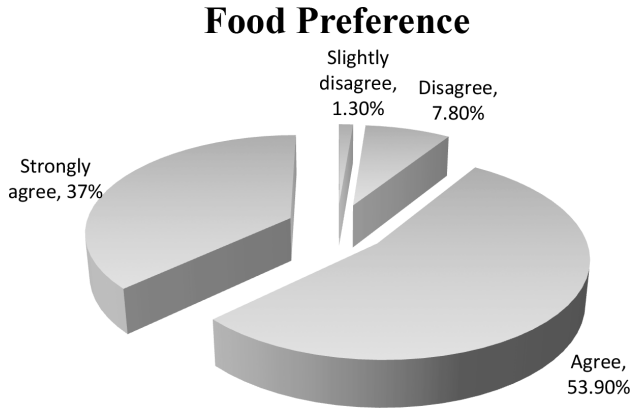


Figure 2 Food preference

Also, the majority (61%) strongly agreed that the regulated food menu is varied, as demonstrated in Figure 3. The result clearly shows that the majority of the food handlers (93%) agreed that the Ministry of Health has indeed regulated the food menu items in the institutions. Based on the respondents' feedback, the present investigation found that regulated food seems to have met the intent of the Malaysian Ministry of Health Dietary Guidelines (2010) which emphasize a combination of food based on the food pyramid.

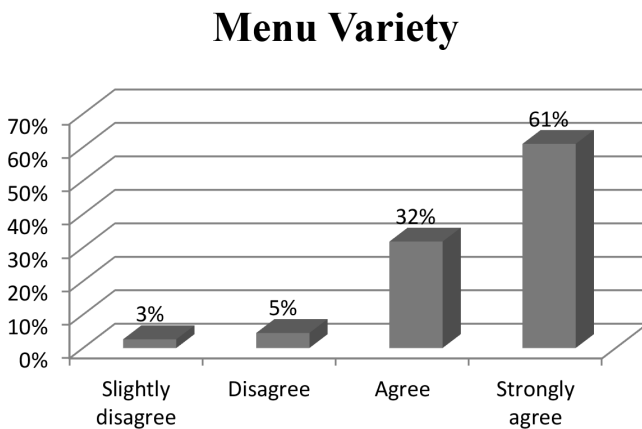


Figure 3 Variety of menu

Findings from the Interview

Respondents' Profile

The food purveyors in this study were the outsourced supplier of foods in the institutions. They included dining hall supervisors and chefs. There were six males and a female; aged between 36 and 64 years old, serving between five to nine years in government institutions. Almost all of them had been working at the same place since the institutions were first established.

Question 1: "Are you aware of any Food Acts, regulations or code of practices related to food service?"

Four of them did not quite understand the contents of the Food Acts and Regulations. They relied mostly on the food handling courses they attended. On the whole, food purveyors were found to have strictly adhered to the guidelines provided by the Ministry of Health when preparing the food. Hence, Table 2 demonstrates responses to Question 1.

Table 2 Responses to Question 1: Are you aware of any Food Acts, regulations or code of practices related to food service?

Operator 1	<i>The book (food menu given by the Ministry of Health) acts as a guide that we need to follow. If we want to change to some other menu, we may do so, but it must be based on the Ministry's guidelines. We can't just change whatever we like, we still have to follow the guidelines.</i>
Operator 2	<i>Yes, I am familiar with it, but only about food and nutrition.</i>
Operator 3	<i>No, I'm not sure (of the Food Act and the Regulations), but I did attend the training courses. I just didn't buy the book and don't intend to buy them.</i>
Operator 4	<i>Are there any revisions to the Acts? I can't remember well.</i>
Operator 5	<i>No, not very familiar. To me, the Food Act and hygiene regulation don't have much difference. They are all about food handling; they are of the same thing. The important thing is its availability.</i>
Operator 6	<i>Yes, a little. Err... it keeps changing, right? (My translation)</i>

Food Purveyors' Dissatisfaction

Although the initial results of the questionnaire survey indicated a satisfactory level of food performance in the government institutions, the qualitative findings reveal something contradictory. The following section summarizes the feedback from the respondents. Information obtained for Question 2 can be categorized into three themes: food menu and menu patterns, dietary intakes, and facilities and equipment.

Question 2: "Based on the food served in this institution, please give your comments on the food menu and menu patterns, dietary intakes, facilities, and equipment."

Food Menu and Menu Patterns

Different feedbacks were obtained from the interview. However, the main focus seems to be the food menu. Operator 3 (a female) complained that the food menu has never changed since the start of the food service business. In referring to "has never changed," the male counterparts, who are Operators 3 and 5, expressed their dissatisfaction and boredom in having to eat the same food repeatedly:

Yes, the menu has always been the same; it has not been changed for quite some time – some four or five years. Even the new trainees are sick of it, not to mention people like us, - we eat the food every single day! (My translation)

Operator 3

We are sick and tired of the fish ball soup menu here. We have been served soup dishes all the time, and many have started questioning whether we actually cook this dish every single day. Our menu does not deviate from the Ministry's menu guidelines, and the book is worn out as the new series are almost complete. (My translation)

Operator 5

The food purveyors are very concerned with the food menu from the Ministry of Health. When asked if any alteration to the menu is possible, Operator 1 replied:

Often, our menu is prepared based on the menu developed by the Ministry of Health. Even when we want to make changes, it is very unlikely as we do need to follow the health menu given by the Ministry. (My translation)

Initially food operators complied strictly with the dietary book provided by the Ministry, but alterations had to be made upon persistent complaints from the trainees. Informal changes were then made on the Ministry's set menu after the issue was discussed in several meetings held between the trainees and food operators. Operator 1 continued:

However, we did change it a little bit as the feedback from trainees indicated that if we were to follow exactly the given menu, the dishes would be tasteless. If we were to comply in full, there are bound to be complaints. The trainees who had only been here a week had started complaining endlessly. So when we had some free time, we met up with them. Of course, we had to explain to the trainees that we needed to comply with the book (the dietary plan) first before we could do any alteration. (My translation)

Just like Operator 1, Operator 2 also slightly modified the taste of the food by adding flavour to it. Both of the operators felt that their customers were fair in saying that the food had very little flavour and that they lost their appetite as soon as they started eating. Operator 2 explained that:

Well, they (the trainees) usually complained that the food was tasteless, not spicy enough, not sweet, and not salty. If we'd followed the Ministry's menu strictly, the food would be even more tasteless. Once we change something in the preparation, many other things must follow, for example, the sweetness, saltiness, and even the calories! Well, I can certainly prepare the food as instructed by the Ministry of Health, but I would have to bear

with the complaints from the trainees. They just have to eat healthy and nutritious meal i.e. not too sweet, not too salty and not too spicy. Then again, we are just so used to having a tasty meal. (My translation)

Operator 2 added that he has knowledge of what is a balanced diet because he has been trained as a chef from young. According to him, the Ministry of Health needs to take comments from the food operators and review the food menu periodically. He also said that the menu seems to have focused on calories and ignored other important factors such as food presentation and taste. When asked if they had highlighted the weaknesses of the food menu to a higher authority, Operator 2 commented:

No, we did not manage to request for the menu to be reviewed. (It is the duty of) The higher authority should discuss it with the Ministry of Health where they will review it in terms of the right amount of calories, nutrition and so forth prior to issuing the menu. In fact, our menu here was prepared by their chefs. When I looked at it, the menu was good in terms of the calorie's level, but it was not right for the taste and colour. If it is 'sambal' (food cooked in chilly) dishes, then it will only be that. If we were to prepare it, we would use colour schemes to make the platters especially appealing to guests. On the other hand, we cannot do anything much except following guidelines. Regardless, I'm not bothered if the trainees got angry or wanted to complain about the food, or it's not up to their expectations. Even when they drink, they always want it sweeter. It is not healthy when the dishes are too flavoursome. (My translation)

Analysis of the interview findings is viewed with caution due to the suggestion that the foodservice crew could have deviated from the guidelines provided by the Ministry of Health when preparing food. The altered food groups may have mismatches in terms of the right proportion, nutrient, and the correct amount of calorie when compared to the 14-key Malaysian Dietary Guidelines of the Ministry of Health (2010).

Dietary Intakes

The government institutions in this study offer six-meals a day. The meal plan comprises breakfast, brunch, lunch, tea, dinner, and supper. The meals are catered for trainees aged between 16 and 35. Looking at the age of the trainees, Operator 2 felt that the food portion set by the ministry was not appropriate. He complained about the volume or size of the food portion.

No, that is not possible as it has a standard weight that complies with the dietary plan. Similarly with this orange (while pointing at the orange in his palm), it has to weigh 165 gram. It wouldn't be a problem if we could find oranges of the same weight. However, they (the Ministry of Health) will make noise if the oranges are below the desired weight, in which case we would need two to make up for one. Sometimes, it's tough attending to everybody's requirements. Similarly with the cakes, they will measure them and complain if they are not of equal weight. They want the cakes to contain the desirable level of calories and weight. The trainees only consume 200 grams of rice, and that is somewhat equivalent to only one cup. The trainees tend to eat more in the afternoon. In fact, serving only 200 grams of rice for lunch can be considered insufficient - it's just too small for people of their age. (My translation)

Apart from the unsatisfactory rice and fruit portions, eating six meals a day is also considered a bad idea. In this instant, the focus was on the serving size as well as the number of cakes per person. According to the food purveyors, frequent eating should go with 'kueh' (Malay pastries) or cakes of a smaller size.

We will serve a variety of cakes every single day during breakfast, tea time, and dinner. On other days, we will serve two pieces of curry puffs for each trainee, but the snack size is so big that they can't finish the food which will just go to waste. (My translation)

Operator 5

In summary, the report on dietary intakes suggests that food purveyors need a finer understanding of the appropriate food portion. According to Pinstrup-Andersen and Schiler (2001), the proper portion size of regulated food can provide consumers the required energy and nutrition. As such food businesses can, therefore, improve their food servings according to the needs of the consumer.

Food Equipment

Any planned menu needs to consider how the food is going to be prepared. Appropriate workspace and adequate equipment ensures that food handlers are comfortable while working and that cross-contamination of food does not happen. This study recorded voices of dissatisfaction over the unavailability of food warmers in the kitchen. According to Operator 6, the Ministry of Health must enforce the compulsory use of food warmers in each government institution, especially when considering the increasing rate of food poisoning cases.

I am not satisfied with the food counter system here. We would like to suggest that this institution be equipped with food warmers to ensure that the food is kept warm at all times. Only then can the temperature be maintained, right? (This is because) The duration of food preparation and serving time is approximately four hours. Anything more would mean that cold food according to quality standards would not be recommended (for consumption). (My translation)

Operator 6

Food warmers ensure that food stays hot until it is ready to be eaten, and so every food establishment needs to have them ready for this purpose. The consumers' main concern is that food is kept at the right temperature before consumption (Mazni *et al.* (2013b). Also, cooked food is safe only after it has been heated to a high enough temperature as low temperatures allow bacteria to thrive when the food cools down after cooking. The danger zone for pathogen growth in food is normally from 5 °C to 63 °C (Amjadi and Hussain, 2005). Therefore heating the cooked food would destroy any harmful bacteria found when the food cools down.

The comment made by respondents regarding the availability of food warmers is fair and consistent with the lowest mean scores obtained from the questionnaire survey (Table 2). It has been found that of the five attributes of food performance considered in this study; food appearance, taste, temperature, variety, and quality, food handlers have not kept to the practice of keeping food warm at the right temperature. As Farouk *et al.* (2014) have stated, maintaining food temperature is important in preventing food borne pathogens. The inability to conform to the right food temperature is associated with the presence of microbial growth in food where bacteria multiply quickly in low temperature and can trigger illnesses. Spoiled food is illicit or unlawful to eat, and is clearly forbidden in the Al-Quran and Biblical Hebrew.

CONCLUSIONS AND IMPLICATIONS

This study presents several conclusions pertaining to the performance level of food prepared according to the Ministry of Health's regulated food standards offered in six government institutions. Variables analysed included food appearance, taste, temperature, variety, and quality. Conclusions are also made on the food menu and menu patterns, dietary intake, as well as the availability of onsite facilities and equipment that facilitated the preparation of food in these organizations.

The initial analysis of the food handlers' positive responses to the survey questions contradicted the analysis of the purveyors' negative interview responses. Overall, the food handlers seemed satisfied with the quality of food prepared; that it is hygienic, delicious and has variety. The food purveyors thought otherwise. They expressed boredom not only with the repetitive menu but also the food that is often cold, tasteless and unappetising. Further analysis explained the contradiction. Alterations made to the flavour of the food due to the trainees' persistent requests contributed to the food handlers' positive opinion of the food. This study concludes that even though the Ministry of Health's diet plan promotes good governance for healthy food, the actual conduct of practices in food preparation and the delivery leaves much to be desired. The food menu today is regarded as "little more than a guideline" for the chef to prepare the food.

Therefore, this study proposes a review of the dietary plans offered by the Ministry of Health for all the institutions in Malaysia. An unregulated dietary plan may encourage further changes to be made to the plan thus making it difficult to monitor standards of food quality. It is believed that the more unhappy the person, the easier it is to deviate from the norms of professionalism at the workplace. It is also recommended that a review be carried out on a regular basis involving experts from the Ministry, experienced food handlers, purveyors, and stakeholders alike.

The compilation of feedback and comments from coaches, food handlers, chefs, and dining supervisors can provide opportunities for the authority in these institutions to interact and work together with the Ministry of Health. The planning of food menus needs to be monitored to ensure that choices reflect the food preferences and demands of the clientele.

The knowledge attained from the findings also demonstrates that further research about regulated food is necessary for government institutions. Although the Ministry of Health has enforced healthy food guidelines through the Food Act of 1983 and Food Hygiene Regulations of 2009, stakeholders are still waiting for several facilities and equipment to be in place.

The findings of this present study have both theoretical as well as practical implications. A notable strength of the current study is from the combined data from two different sources (i.e. the workers and their immediate supervisors). It may thus be important to reconsider whether the food menu and choices fit the role and purpose of the regulated food standards for healthy eating habits against the available alternatives. In addition, the government needs to address growing concerns about balancing correct food handling and the availability of equipment. This was emphasized by the food purveyors as a way of addressing weaknesses in regulated food standards in Malaysia. After all, as this study has indicated, perceptions of food handlers and purveyors have a great influence on the quality of food prepared in food establishments. It is, therefore, imperative that government institutions implement the improvements suggested by the food operators (i.e. food handlers and purveyors) to ensure continuous patronage and to discourage consumers from preferring other food choices.

Limitations and Future Research

This study adopts an exploratory design. Hence, the generalization of results is mainly at the theoretical level. In other words, the findings represent only a sample of the population that is government institutions in Peninsular Malaysia. As such, the results are not comparable to other government institutions unless another study is conducted on the same issue in the other states of Malaysia, especially to represent government institutions in East Malaysia. The results could then be compared with a better understanding of the dissatisfaction among the food operators in East and West Malaysia.

Generalizations are also possible if the research study and avenue could be within the same context of the food menu in the private sectors. The study can enrich the understanding of how different types of institutions are responding to the menu specified by the authority. The knowledge may provide additional insights into

the interaction of 'food fit' between the designated authority and food purveyors. For this reason and with the recommendation made by the Malaysian Dietary Guidelines (2010); consumers need to consume fewer calories, be more active, and make wiser food choices. Food menus should be reviewed from time to time so that the consumers can eat a variety of foods within the recommended intake.

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