



## A STUDY OF HAZARD FACED BY MALAYSIAN STUDENTS AT THE SCHOOL CANTEEN

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### Abstrak

Artikel ini memberi tumpuan untuk menilai bahaya di kantin sekolah-sekolah Kelantan, Malaysia. Kajian ini dijalankan untuk menilai kantin sekolah di 111 buah sekolah yang terpilih di negeri Kelantan, yang terletak di Pantai Timur Malaysia. Data dikumpulkan berdasarkan garis panduan HIRARC 2008 seperti yang telah disediakan oleh Jabatan Keselamatan dan Kesihatan Pekerjaan Malaysia. Data kajian menunjukkan beberapa bahaya yang wujud di kantin iaitu hazard fizikal, kelemahan pengemasan dan hazard biologi. Bahaya ini boleh menyumbang kepada keadaan yang tidak selamat dan makanan tidak sihat. Oleh itu, penemuan keseluruhan menunjukkan bahawa hasil peratusan sekolah yang terdedah kepada kelemahan pengemasan adalah yang tertinggi. Tetapi, penilaian risiko untuk kelemahan pengemasan dan bahaya fizikal tergolong sebagai risiko sederhana. Sementara itu, bahaya biologi menunjukkan tahap risiko yang lebih tinggi yang terdedahkan oleh pelajar dan penghuni kantin. Kesan hazard biologi boleh menyebabkan risiko kesihatan seperti keracunan makanan dan cirit-birit. Sebagai kesimpulan, Keselamatan dan kesihatan boleh dilindungi jika kantin dan pengurusan sekolah sentiasa memantau dan memenuhi piawaian. Oleh itu, pengurusan perlu meningkatkan dan meningkatkan kesedaran keselamatan kantin untuk memastikan keselamatan dan kesihatan semua penghuni.

**Kata kunci:** hazard, kantin, sekolah, pelajar, keselamatan, kesihatan

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## Abstract

*This article is attentional to highlight the outcome of the hazards assessment at Malaysian schools canteen in Kelantan. This study was conducted to evaluate school canteen for 111 schools namely in Kelantan state which located at East Coast of Malaysia. The data were collected based on the HIRARC guideline 2008 as provided by Department of Occupational Safety and Health Malaysia. As the result, hazards found in canteen namely as physical hazards, poor housekeeping and biological hazards. These hazards may contribute to the unsafe condition and unhealthy food. Thus, the overall finding shows that the result the percentage of school exposed to poor housekeeping was the highest. But, the risk evaluation for the poor housekeeping and physical hazards labelled as medium risk. Meanwhile, biological hazards indicate the higher level of risk that exposed by the student. It may lead to health risks such as food poisoning and diarrhoea. As a conclusion, safety and health should be protected by canteen operators and school management to ensure it is meet the standards. Therefore, school management needs to improve and increase canteens safety awareness to ensure the safety and health of all residents.*

**Keywords:** hazard, canteen, school, students, safety, health

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## 1.0 Introduction

The Malaysian education structure categorized into pre-tertiary and tertiary levels. Previously, there were two governing authorities in education: the pre-tertiary education sector (from pre-school to secondary education and teacher education) was placed under the Ministry of Education (MOE), while the higher education sector came under the purview of the Ministry of Higher Education. In May 2013, the two ministries were merged as one entity, placed under the Ministry of Education. The Malaysian education system has been shaped to reflect the needs and identity of a multicultural society. There are at least eight broad categories of educational institutions to meet the needs of the people as well as international community (Arshad, Hussin, & Malaya, 2006).

Recently, researchers describe an accident can be defined as an unexpected turn of event culminating in injuries or critical outcome including trauma, fracture, poisoning and burn that require immediate attention (Saleh & Pendley, 2012). On 17 May 2017, The Sundaily reported that 35 students from SK Taman Selasih, Kulim, Kedah suffered food poisoning after taking rice and fried chicken sold by canteen operator during recess (The Sundaily, 2017). Meanwhile, 48 students suffered food poisoning after the meal in Malaysian school hostel canteen reported by local news on 7 October 2016 (Times, 2017). Laterally, almost every year, local newspapers report about food poisoning involving school children. So, the probability of risk and hazard at school is relatively high and may negatively affect the health and behaviours of students. Sambasivam (2017), investigated that to prevent dangerous situations in schools, the school safety aspects must be considered, and they include the school physical environment as well as its surrounding social environment.

A school is deemed as one of the most significant categories of workplace where children, young people, teachers and the staff spend a lot of time partaking in various activities. The risks and hazards which are present include both physical and social that may negatively affect school occupants' health and wellbeing (WorkSafe Victoria, 2008). Besides, the school area is not just for teachers, management, and staff; as parents must also be protected when sending or accompanying their children to school. According to Japan Sports Council about the most significant set of school injury data in Japan, approximately one million injuries take place in elementary, junior high and high schools each year and the number remains relatively stable year by year. Unfortunately, Schep (1987) mentioned school accidents leading to injuries had not been as widely investigated as those occurring in residential or other areas such the highway (Zwetsloot, Scheppingen, Bos, Dijkman, & Starren, 2013). Several attempts have been made due to the general belief that children are relatively safe and protected in school because of the safe environment and supervision from adults.





The previous study also stated that well-designed schools could positively affect learning by focusing on issues such as location, building materials, size of classrooms, furniture, lighting, temperature, ventilation, noise level, sanitation, and the inclusion of auxiliary facilities (WHO et al., 2003). Additionally, children spend a major part of their day at school, so the food in canteens makes a significant contribution to their growth and development. The Nation News (2014) also mentioned the most school canteens offer fried food and fast food such as burgers, chips, soft drinks and candies and sweets, containing saturated fat and added sugar. Students who eat from these canteens regular purchase these greasy ingredients and sugary drinks and gain weight and become obese. Daily intake of wrong types of snacks also leads to poor dental health in formative years. Most of these tuck shops fail to abide by basic rules of hygiene (Tabançali & Bektaş, 2009).

Nadarajan (2017) indicates food poisoning is a result of the intake of food contaminated with dangerous bacteria (germs) or their toxins. Dangerous bacteria are also known as pathogens. Food poisoning can be classified as mild and serious. Mild food poisoning results in few episodes of vomiting and diarrhoea which will later subside. Meanwhile, serious food poisoning results in continuous vomiting, diarrhoea or bloody diarrhoea, fever leading to severe dehydration. E.coli O157: H7 leads to bloody diarrhoea, and occasionally to kidney failure and sometimes death. Nadarajan (2008) also summarised, there are few types of pathogens which cause food poisoning or contaminate food with their toxins. These are Salmonella, E-coli and Listeria. Most of these bacteria are present in animal-based products or produce like meat, fish, egg and milk. The high protein content makes these types of food easily contaminated and results in food poisoning if not appropriately cooked and consumed. They may also cross-contaminate other food which already prepared if the same utensils used for both without washing them properly (Nadarajan, 2008).

Based on Hearts Newspaper (2017), cross-contamination is a danger in a restaurant kitchen which leads to foodborne illness. For example, using the same prep surfaces for raw meats and salad ingredients, without disinfecting, may result to contaminate the salad and cause customers to become ill (Lazou, Georgiadis, Pentieva, McKevitt, & Iossifidou, 2012). This information can be used to develop targeted interventions aimed at frozen food that defrosted in a sink or cooked food that was held at temperatures lower than 140 degrees Fahrenheit allows dangerous bacteria growth (Maesom, 2017). Unfortunately, the Department of Standards Malaysia develops Malaysian Standards (MS) for all kinds of practices, products, processes, guidelines, performances etc. The use of the MS1500:2001 helps consumers to compare facilities, quality and safety of food prepared by restaurants, canteens and cafeterias. MS 1500:2001 can also be used as a tool by the Ministry of Health, local governments, parties giving out canteen operation tenders, the schools, state and district education departments to monitor and maintain safe food preparation at school canteens (Department of Standards Malaysia, 2001).





In a school canteen should puts around vendee machine, water fountain, sinks or slippery floor as warn to pupils or staff of the risk of slips. The signs were the same colour as the floor so not immediately visible and were always left out so frequently ignored. Some cases mentioned, there were recurrent spills around both machines, and the water supply at the rear of the hot drinks dispenser was leaking out. The critical problem with this case meant liquid was getting onto the smooth floor making it slippery (Health Safety Executive, 2018). Besides, oil, water and fat can end up on floor surfaces in a restaurant kitchen, which poses a slipping hazard to employees. In the dish-washing area, water can drip from dishes and slosh from sinks. Another hazard involving floors is uneven surfaces. Floors that are uneven pose a tripping hazard, but redesigning them may be impractical. Install a small ramp over the rough part of the floor to make a smooth transition or paint the uneven part of the flow with brightly coloured paint to alert workers to the danger of tripping. Also, tripping and falling can occur in a canteen that is cluttered or crowded (Maesom, 2011).

## 2.0 Methods

This study uses quantitative approaches. The population of this study involves 111 schools in the state of Kelantan. The schools selected are schools around the city and towns that are listed by the State Education Office. The HIRARC Form was used as the instrument with the guidance of HIRARC 2008 that provided by the Department of Occupational Safety and Health Malaysia. Each hazard risk encountered will be assessed by frequency and severity measured on a scale from 1 to 5. Then, the risk level will be determined based on the table of the Risk Matrix stated in HIRARC 2008 guidelines. This study focuses only on the canteen area of the school.

**Table 1:** Likelihood of an occurrence

LIKELIHOOD (L)	EXAMPLE	RATING
Most likely	The most likely result of the hazard / event being realized	5
Possible	Has a good chance of occurring and is not unusual	4
Conceivable	Might be occur at sometime in future	3
Remote	Has not been known to occur after many years	2
Inconceivable	Is practically impossible and has never occurred	1

**Table 2:** Severity of hazard

SEVERITY (S)	EXAMPLE	RATING
Catastrophic	Numerous fatalities, irrecoverable property damage and productivity	5
Fatal	Approximately one single fatality major property damage if hazard is realized	4
Serious	Non-fatal injury, permanent disability	3
Minor	Disabling but not permanent injury	2
Negligible	Minor abrasions, bruises, cuts, first aid type injury	1





The risk level of each hazard was measured using the formula 'risk=likelihood (**Figure 2**) x severity (**Figure 3**)'. By referring to the Guidelines of HIRARC 2008, Table C, page 12, the risk levels obtained by multiplying the severity and likelihood. The likelihood and severity outcome categorized as shown in Figure 4; which is High, Medium and Low. The relative value can be used to prioritize necessary actions needed to improve the effectiveness of managing road hazards in the school area. The possible hazards discussed further.

**Table 3: Risk Matrix**

RISK	DESCRIPTION	ACTION
15 - 25	HIGH	A HIGH risk requires <b>immediate</b> action to control the hazard as detailed in the hierarchy of control. Actions taken must be documented on the risk assessment form including date for completion.
5 - 12	MEDIUM	A MEDIUM risk requires a planned approach to controlling the hazard and applies temporary measure if required. Actions taken must be documented on the risk assessment form including date for completion.
1 - 4	LOW	A risk identified as LOW may be considered as acceptable and further reduction may not be necessary. However, if the risk can be resolved quickly and efficiently, control measures should be implemented and recorded.

### 3.0 Result and discussion

School canteen is the first place children learn to buy food on their own without the supervision of their parents. Therefore, school canteens are the primary source of teachers and students for food during school hours. Based on the Canteen Guidelines, school canteens are an important place in realizing a variety of experiences whether directly or indirectly. Table 4 indicates the percentage of school exposed to the highlighted hazard. Biological hazard was the highest percentage that exposed by students at the school canteen. While there 80 schools out of 111 schools exposed to the physical hazard at the canteen with percentage 72.07%. Besides, 54.05% of schools exposed to biological hazards.

Table 4: Percentage of school exposed to the same hazard

No.	Type of hazard	No of school	Percentage of school exposed to the same hazard
1.	Physical hazard	80	72.07%
2.	Housekeeping	95	85.59%
3.	Biological hazard	60	54.05%





The result is summarised as shown in Table 5, several hazards found in school canteen that exposed by students. Most hazards found at school canteens are physical hazards, poor housekeeping and biological hazards. During the observation was conducted; there was two type of chairs that used in school canteens which is plastic chairs and long wooden chairs or known as benches. However, there some school canteens having a problem with broken seats and poor maintenance on benches or chairs. Figure 1 (s) shows the types of damage encountered in the canteen. The level of risk shows this situation as medium risk.



(a)



(b)



(c)



(d)



(e)

**Figure 1:** (a) The lost chair liner wood. (b) The benches were bending in the middle of the seats. (c) The broken bench leg. (d) Broken seat support. (e) Broken of wooden seat benches.





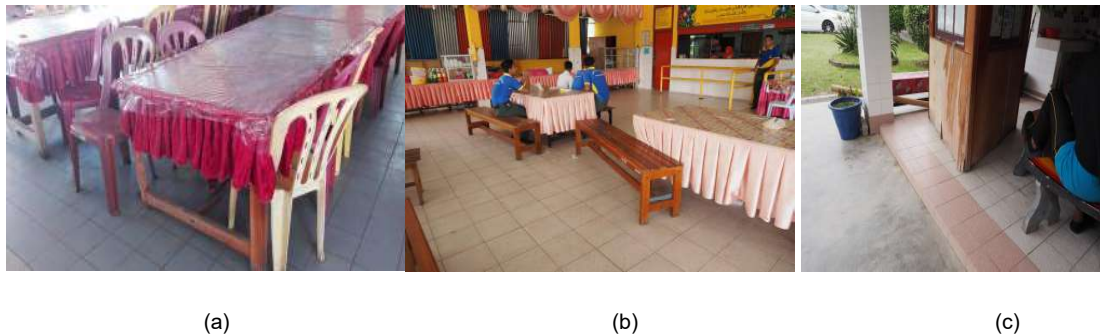
**Table 5:** Hazard assessment at the school canteen

1. Hazard identification		2. Risk analysis			3. Risk control				
No.	Work activity/ place	Hazard	Effect	Existing control	L	S	R	Recommended	PIC
1.	Canteen	Physical hazard; - Loss chair liner - The benches were bending in the middle of the seats - The broken bench leg - Broken seat support - Wooden seat benches were broken	Sharp Not comfortable Fewer seats	No control	5	1	5	Remove from canteen area Repair the chair or benches Put safety tape to warn student not to use the chair or benches	Contractor
2.		Housekeeping; - Slippery floor - Plastic chair is not neatly arranged. - The wooden benches obstruct the way. - The unused cabinet was located at the canteen.	Obstruct the way Slip, trips and falls	No control	5	1	5	Remove unused cabinet to avoid accidents Put signage 'slippery floor.' Arrange and put the plastic chair at the corner of the canteen.	Canteen operator
3.		Biological hazard; - The selling food not well covered	Falls into flies Diarrhoea	Food handler guideline	5	3	15	Awareness	Canteen operator





In the office, housekeeping hazard was strongly emphasized to avoid occurrences like falling, slipping, or colliding. However, once in a canteen or anywhere, housekeeping always needs to be kept to prevent students, teachers and staff from hazards and risk. When monitoring was conducted, the seats at school canteens were well organized in the morning and maintained. However, after recess, unmanaged seats, spilt drinks, abandoned trash and spilt food are left out. Figure 2 below shows the findings of the condition in the canteen. It shows that attitude of students should be aware. Students did not keep the benches in place after use. The benches obstruct the ways which obstruct other people to use the way. In the previous study, the obstacle in the pathway may tend people to slip and trip. Slip and trip was the high possibility to happen (HSE, 2017).



**Figure 2:** (a) Plastic chairs are not neatly arranged. (b) The wooden benches block the way. (c) The broken cabinets are left in the canteen.

Furthermore, the finding also found that food at the canteen did not properly cover even before the student's recess time. Figure 3 (a)-(d) shows the canteen operator prepare their food before recess time. Based on Bhatiasevi (2017), food poisoning is any form of disease acquired as a result of food or drink intake that has been contaminated by infectious organisms, such as bacteria, viruses or parasites. Parasites like fungi that grow on idle and unclothed foods also become the cause. Additionally, foods left at room temperature exceeding 4 hours will also cause the food to be infected with bacteria (U.S. Department of Health and Human Services, 2001).





(a)



(b)



(c)



(d)

**Figure 3:** (a)-(d) The food at the school canteen was not covered properly.

The most recent case involves 16 secondary school student dormitory students, Datuk Syed Ahmad, Kuala Nerang, Kedah Darul Aman. All the school children suffer from stomachache, diarrhoea and vomiting before being sent to Kuala Nerang Hospital. The cause of this food poisoning is suspected to be caused by the fast-food and egg-eating nasi lemak that they eat after buying it outside the school area. The nasi lemak samples were taken for investigation (Mansor, 2016). From the cases, all school canteen operators recommended providing hundred percent commitments to ensuring that the food preparing and sold was clean and good for health. While handling food, the operator should not think about profit alone; health was more important to handle first. In these cases, all parties; teachers, school management, canteen operator should be responsible for maintaining the hygiene of these foods, including food producers, entrepreneurs and traders who involving in selling the food. Food hygiene will be of great benefit not only to the family and the local community but also to the country (Administrator 3, 2016).





#### 4.0 Conclusion

As a conclusion, the hazards found in school canteens were the physical hazard, poor housekeeping and biological hazard. The overall result, the biological hazard was the dangerous hazards that led to health risks. This effect may cause food poisoning and diarrhoea among students. Meanwhile, physical hazards and poor housekeeping shows the same level of risk. Unintentionally, the hazards not seriously harmful but students exposed to them every day. Therefore, to prevent simple injuries or any accidents, school management and canteens operator plays an important role to monitor and manage canteen as well as standard provided. A School is considered as 'a place of work', in Occupational Safety and Health Act (ACT 514), section 15. The act stipulates that each employer must furnish a workplace that is free from recognized hazards which can cause death or serious physical harm. Lastly, the school administration should also provide canteen safety program to the supported staff, teachers, students, and parents in an attempt to increase their safety and health awareness in the canteen or any food place.

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