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The SEAMEO Regional Tropical Medicine and Public Health Project was established in 1967 to help improve the health and standard of living of the peoples of Southeast Asia by pooling manpower resources of the participating SEAMEO member countries in a cooperative endeavor to develop and upgrade the research and training capabilities of the existing facilities in these countries. By promoting effective regional cooperation among the participating national centers, it is hoped to minimize waste in duplication of programs and activities. In 1992 the Project was renamed the SEAMEO Regional Tropical Medicine and Public Health Network.*

**SEAMEO=Southeast Asian Ministers of Education Organization*

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A SITUATIONAL ANALYSIS OF A HEALTHY SCHOOL CANTEEN DEVELOPMENT PROGRAM: LESSONS LEARNED FROM A SELECTED GROUP OF PRIMARY SCHOOLS IN JAKARTA, INDONESIA

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Abstract. The study aimed to describe the condition of school canteens and understand the challenges in implementing a healthy school canteen development program in a group of primary schools in Jakarta, Indonesia. We used a rapid appraisal approach employing structured observation and semi-structured qualitative interviews methods in 11 public primary schools in Senen subdistrict, Central Jakarta. This study determined that none of the schools fulfilled the requirements for a healthy school canteen. They lacked commitment and human resource development. Most schools used a semi-permanent building and food handlers in all schools had never had formal training on food hygiene and sanitation. The central weakness of school commitment indicates its association with other low performing indicators of a healthy school canteen. Schools in this study require further assistance to get started with a written policy and establish a committee for a healthy school canteen.

Keywords: school canteen, food hygiene, school nutrition, Jakarta

INTRODUCTION

In an ecological model, school canteen is a key component of the food system at the school level (Scott, 2016). Its role is crucial in promoting healthy foods and creating a culture of healthy eating in

schools. Therefore, the school canteen extends beyond just the school environment as it may influence food choices within the family and community, as well as enhance the social and multicultural aspects of food and eating (Government of Victoria Australia, 2006). Schools are recommended as an optimal setting to improve children's dietary intake as they have access to almost all children during a key developmental period in their lives. Importantly, children consume a significant proportion (almost 40%) of their dietary intake while at school (Bell and Swinburn, 2004).

Currently, the school food environment is remarkably different than that

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a few decades ago. High-calorie, poor-nutrient foods are available at multiple venues throughout the school day (Story, *et al*, 2006). In Indonesia, in the majority of schools, children can purchase foods and drinks from a canteen, tuck shop, or even street vendors. With more than 60% of schools in Indonesia having canteens, they represent one of the largest and most frequently accessed food outlets for school-aged children (Nuraida *et al*, 2011).

In Indonesia, school meals are regulated by the Central Government, which establishes norms and regulations regarding food safety and administrative management of the service, including requirements of food providers and food service staff (Ministry of Health, 2003). Moreover, the National Law regulates the nutritional adequacy of school meals. Schools are required to serve meals consistent with the Indonesian Guidelines for school meals issued by the Ministry of Health (2003). Moreover, there are regulations for each school to provide a school canteen to fulfil school children's needs for a variety of foods / drinks (Ministry of Education, 2005). However, the data show that at the elementary school level, 40% of the schools did not have a canteen and 35.5% of the school canteens were below the required standard (NADFC, 2009).

More recent data show unfavorable practices with regard to hygiene and sanitation, food safety, as well as the food handlers' knowledge and behaviors at all school levels across Indonesia (Hermiati 2003; Masra *et al*, 2010; Chahaya *et al*, 2013). Food safety is particularly important in schools as children are more susceptible to foodborne illnesses. A systematic review on a foodborne outbreak in Indonesia during 2000–2015 showed that 13.7% of foodborne illness cases occurred at school, and that street food caused

18.3% of food poisoning cases (Arisanti *et al*, 2018). Another study found that typical foods sold in some selected school canteens in Jakarta are instant and processed foods such as noodle, sausages, nuggets, and sweet drinks (Ekawidyani, 2012).

The implementation of a school canteen development program is complex. Schools face various challenges in the maintenance of a canteen, let alone a healthy school canteen (Ardzejewska *et al*, 2012). Our organization as a unit under the coordination of Ministry of Education and Culture Republic of Indonesia is committed to the implementation of healthy school canteens through the provision of capacity building for a school canteen committee and food handlers, as well as a provision of technical support for local education offices. In line with this, a series of trainings and workshops have been conducted in Jakarta, in cooperation with school authorities, as well as staff from local education and health offices responsible for a healthy school canteen. As a follow-up, school representatives particularly felt the need for understanding the current situation of canteen facilities in their respective school by mapping and comparing them against the government's guide for a healthy school canteen. Therefore, we aimed to report these data on school canteen facilities and obtain additional insights regarding the implementation of the school canteen development program in a selected public primary schools in Jakarta, Indonesia.

MATERIALS AND METHODS

Study area

Our organization, in collaboration with the Indonesian National Agency of Drug and Food Control, conducted a series of trainings on healthy school canteen

and food safety for food safety facilitators; it was attended by representatives from 11 public primary schools in Senen sub-district. Training participants were expected to establish a school food safety team in each school according to their roles and responsibilities. At the conclusion of the training, a formative study to map the condition of the canteen of all participating primary schools was conducted.

The study area was limited to Senen subdistrict, located in Central Jakarta, DKI Jakarta Province. The subdistrict was divided into six administrative villages *ie*, Senen, Kwitang, Kenari, Bungur, Paseban, and Kramat. It is one of the areas with dense population and heterogenic communities, surrounded by public service (hospitals, universities, government office) buildings; it is predominantly inhabited by the low economic status population. Although there are 36 public primary schools and 18 private primary schools, only 11 public primary schools that attended previous training programs were targeted in the present study.

The study was conducted using a rapid appraisal approach by primarily employing structured observation and semi-structured qualitative interviews to obtain the required information in a timely and cost-effective manner.

Eleven public primary schools were selected by purposive sampling technique. These schools were selected because they participated in a previous training. The main unit sample in this study was the school canteen of each participating school. In addition, for a better understanding about the results of the observation of the school canteens and some additional information on the implementation of the school canteens, we conducted additional individual interviews

to gain more insight. The subjects were purposively recruited based on their roles and responsibilities related to the school canteen, as well as their time availability during the school visit. The participants included were school principals, teachers, and food handlers.

Procedures

The observation method used in this study was guided by a checklist to assess all necessary components of a healthy school canteen, as outlined in the school canteen guide published by the Ministry of Health in 2003 (Ministry of Health, 2003) and the Ministry of Education and Culture in 2011 and 2016 (Nuraida, 2011; Ministry of Education and Culture, 2016). There were 21 questions divided into 4 components, namely a) commitment and management, b) building and facilities, c) human resources, and d) food quality. The interview covered the information on the condition of school canteen, school programs in the school canteen, and challenges faced by the school in maintaining a healthy school canteen.

Data were collected from January to March 2016. The school visit was conducted based on the agreement with the schools. These plans were conveyed to representatives from the participating schools during the healthy school canteen training in May 2015. However, the actual study visit was performed at any time. Data collectors informed about their visit to the school on the visitation day.

The observation and semi-structured qualitative interviews were conducted by four trained data collectors. Each data collector covered a different school. Prior to actual data collection, all data collectors were briefed on the proper use of the observation check list and interview guide to ensure a similar understanding of the

questions used in the check list and the guide among all data collectors. The duration of the school visit varied from 1.5 to 2.5 hours. The school visit typically started with interviews with the school authority and the involved teacher, followed by the canteen observation. The additional individual interview was mostly done with the teacher who accompanied the data collector for the observation of canteen and school environment condition. Moreover, any available food seller or food handler in the canteen was interviewed during this observation visit.

Data analysis

The observation results were analyzed based on completed "yes or no" responses to the check list and displayed in a table. Narrative data from the interviews were documented in field notes and manually inputted into word processing software (MS Excel 2013) for further analysis. The thematic analysis of the interview data was driven by key concepts previously identified in the observation check list following the guide for healthy school canteen, *ie*, 1) commitment and management, 2) building and facilities, 3) human resources, and 4) food quality. Relevant quotations were used as part of data display.

Ethical considerations

The study was approved by Medical Research Advisory Committee of Faculty of Medicine Universitas Indonesia (Approval No. 47/UN2.F1/ETIK/2016).

RESULTS

Table 1 shows the observation results obtained from the check list. The 21 indicators from the check list are divided into 4 components: a) commitment and management, b) facilities, c) human resources, and d) food quality. The results

show that most schools were lacking in terms of commitment and management, human resources, and permanent buildings. Training regarding food safety and hygiene was provided to food handlers at only one school. Some promising indicators in terms of building and facilities were fulfilled by some schools, such as good flooring and wall surfaces of the canteen building, sufficient access to running water supply, hand washing facilities, and toilets. In terms of the food quality, most schools had maintained sufficient standard for preventing contamination.

To further understand such conditions, interviews with key informants from each school were conducted. Table 2 describes the characteristics of the informants involved in the interviews covering necessary attributes of the participants based on the role, sex, age, and working experience that will help provide richer insights about their experience with the school canteen.

The results of the interviews are displayed based on predetermined themes following the 4 components of a healthy school canteen.

A. Commitment and management

Although all schools had no written policies, relevant staff from most of the schools claimed in individual interviews that school authorities extremely supportive toward their school canteen in general. Most of schools tried their best to improve access to safe, healthy, and nutritious foods to students within the available resources. They admitted facing challenges in committing further on healthy school canteen. Issues related to facility constraints, such as non-permanent buildings, long-standing food sellers, and street food vendors that are beyond the schools' control, and students' preference on un-

Table 1
Observation of school canteens ($n = 11$).

No	Indicator	Yes (n)	No (n)
A.	Commitment and management		
1.	Availability of a written commitment from the school to improve food safety in school canteen.	0	11
2.	School food safety team established.	0	11
B.	Building and facilities		
3.	A permanent school canteen building.	3	8
4.	Canteen layout functioning to prevent contamination.	9	2
5.	Non-absorbent, flat, and dry floor surface.	9	2
6.	Smooth, non-absorbent, and easy-to-clean wall surface.	10	1
7.	Good ventilation to ensure air circulation for removing steam, gas, odor, and dust in the room.	9	2
8.	Good lighting to assist during food processing and room cleaning.	9	2
9.	Sufficient water supply.	11	0
10.	Wastewater flows smoothly; sewage system is a close system and work well; drain is made of waterproof material.	10	1
11.	Toilets available with sufficient clean water and soap.	7	4
12.	Closed trash bins available and the waste shall be regularly disposed.	11	0
13.	Hand washing stations provided with sufficient clean running water and soap.	11	0
14.	Washing basins for utensils provided with sufficient clean running water and soap.	11	0
15.	Cleaning kit available (broom, mop, brush, and cleaning material).	11	0
C.	Human resources		
16.	Food handlers use Personal Protective Equipment (PPE), <i>eg</i> , gloves, mask, and hair nets.	1	10
17.	Food handlers maintain a high degree of personal cleanliness (clothes and hands) and health condition (not suffering from influenza infection or cough), do not have open wounds, and do not use too much jewelry.	3	8
18.	Food handlers have received training on hygiene, sanitation, and food safety.	0	11
D.	Food quality		
19.	Preparation area protected from animals (such as flies, cockroach, rats, and cats) that can contaminate foods/drinks.	10	1
20.	Efforts for keeping foods/drinks away from pests and insects.	10	1
21.	Proper storage of foods/drinks to avoid cross contamination.	10	1

Table 2
Participant characteristics ($n = 40$).

Characteristics	<i>n</i>
Role	
Principal	5
Teacher	12
Food handler	23
Sex	
Male	12
Female	28
Age	
30-40 years	8
>40 years	32
Years of working experience	
5-10 years	5
>10 years	35

healthy foods (high-calorie poor-nutrient snacks such as sweets, instant noodles, and fritters) were expressed as the most difficult to overcome.

"Food sellers in this school is difficult to regulate because they came first in this place... especially the majority of them are our school guards who have been selling in this school for a long time" (School principal, school H).

Some efforts to improve the safety of food sold in the school canteen have been initiated by some teachers. These include the following: a breakfast day where all the students bring a breakfast meal to school and eat together (school B), monitoring to food providers in the school canteen for no longer providing ice blocks, and using large plastic bags to discard the leftovers from cooking or consumption (school C).

B. Building and facilities

The challenges regarding the semi-permanent building for the school canteen are partly related to the lack of commitment and management, particularly from the school authority. These are public schools which face funding issues in establishing a permanent building for the canteen. Priority for building spaces in these schools is still focused toward educational activities such as additional classrooms, a library, or an outdoor field. Schools with semi-permanent buildings developed their canteen in the remaining available spaces within the school premises, such as under the stairs, in the school corridors, in the back yard, near the toilets area, or even near the trash dumpster. Moreover, there is a lack of access to further assistance from the local government to help them overcome this issue. Additionally, availing additional resources from the students' parents was not considered as an alternative.

"We do not have funding and space to add to our school for having a proper permanent canteen building. We cannot ask for parents' contribution too, as it is not allowed under the regulations of the Provincial Government of DKI Jakarta. Also these people are coming from lower socio-economic class" (Teacher, school M).

Table 1 shows that four schools had toilets with poor hygienic condition. One school is located in a slum area with condition poorer than other schools included in the present study.

"Our school is considered a small school and is located in an area where there are a lot of scavengers, so it causes a shabby impression. For school maintenance cost, we have limited budget, like for toilet maintenance,

unlike private schools which are able to allocate more budget for maintenance. Usually, we ask the students to clean their own classroom. But it is still limited for toilet. We provide basic facilities, like water, toilet, water bucket, and water dipper; but not soap" (Teacher, school M).

C. Human resources

As shown in Table 1, the human resources component is one of the weakest components observed in all schools. No schools had ever provided their food handlers with basic training on food safety and hygiene.

In addition, during the interviews, we explored whether the school representatives who attended previous training programs organized by our organization were able to establish a school food safety team in each school according to their roles and responsibilities. The results revealed that none of the schools had established such a school food safety team. The schools were hesitant owing to the time-consuming teaching activities and lack of commitment to support these activities.

"We have not established the school canteen team yet. We plan to socialize this issue first to the school communities, considering our already tight activities. You know, almost every time we have to be ready for meetings with the Department of Education. The rotation of School Principal sometimes makes us difficult to make a program, especially a new program that does not have the budget allocation yet" (School Principal, school J).

"... at the time of the training I was asked to substitute the responsible teacher for school canteen because she was on leave. So I do not know

what to do with this activity" (Teacher, school F).

"It depends on the head of the school... if the school principal has a commitment, I am ready to carry out this activity" (Teacher, school K).

Another concern that emerged related to qualified food handlers was the presence of street food vendors near the school premises. Most of these schools are located just across the main roads, which attracted vendors to station around the school during school hours selling various kinds of affordable foods but of poor nutrition quality.

"It is very difficult to control and educate the street food sellers outside the schools because they are not under our authority. The foods sold more vary and are relatively cheaper" (Teacher, school J).

D. Food quality

The majority of food stall owners in these schools were school keepers. Most food stalls sold processed/instant foods such as instant noodles, sausages, nuggets, and fish cake. They also sold snacks such as candies and crackers. At one school, they even sold toys.

"I have been selling in this school for a long time. The children's favorite foods are fritters, instant noodles, candy, crackers, or other local snacks like cilok, siomay, Cireng (all are type of cheap dumplings with artificial protein flavor from MSG) which have savory flavor and are sold in low price. The School Principal has asked to sell healthier foods like fruit juice, sliced fruit but the children do not prefer to buy them. So, I do not want to sell them anymore and keep selling the children's favorite ones" (Food seller, school C).

"There was once some officers (from the local NADFC office] came to do food inspection here. I felt worried and surprised that they found some things [illegal food additives such as formalin and borax) in our foods. I do not know anything about this" (Food seller, school E).

Some schools sold heavy meals such as *soto mie* (noodle soup with some spring rolls), *ketoprak* (rice cake mixed with rice noodle and bean sprout eaten with spicy peanut sauce), and fried rice at affordable prices and portions according to primary school children in general. One school also provided fruit juices.

There were voluntary efforts to improve the quality of foods sold to the school children. One school invited food sellers from outside the school to sell in the school area. By encouraging this initiative, it would be easier for the school to control the safety and quality of food (school C). However, another school used a different approach to ensure the safety and quality of the food in the school canteen. The parents of the students were involved to become sellers in the school canteen, while school keepers and food sellers from outside the school were still allowed to sell their foods (school I).

Almost all schools demonstrated good efforts to prevent animal contamination in the food/drink preparation area. Moreover, we found that few schools had their own refrigerators owing to issues of less space and electricity expenses. Some schools used a cooler box filled with some ice blocks to store some package drinks.

DISCUSSION

Previous studies have identified key barriers that can impact the development and ability to fully implement healthy

canteen strategies. These include complex guidelines, human resources, and support to effectively implement and maintain the strategy, self-monitoring for compliance for implementing the strategy, confusion regarding requirements for implementing the strategy, the perception that schools do not have a prominent role in the provision of healthy foods, parents' perceptions and knowledge regarding school canteens, the influence of students and the school community, the ready availability of food in the local community, a focus on profits, canteen logistics and food storage, and a lack of volunteer support (Ardzejewska *et al*, 2012; Mensink *et al*, 2012). Additionally, limited time provided by the schools for the students to eat breakfast or lunch as well as limited healthier food alternatives such as vegetables, drinks with low sugar content, and foods with low fat content in the school canteens were some of the observed results in Brunei (Ahmad *et al*, 2016) as well as in Australia (Government of Victoria Australia, 2006) which potentially create an obesogenic food environment at school (Bell and Swinburn, 2004; Story *et al*, 2006).

In Indonesia, although national laws and further key documents for guiding a healthy school canteen establishment have been published by various government agencies (Ministry of Education, Ministry of Health and The National Agency Drug and Food Control of Republic Indonesia), their impact on increasing motivation of school authorities to capitalize some efforts for establishing healthy school canteen is unknown (Ministry of Health, 2003; Ministry of Education, 2005; Ministry of Education and Culture, 2016). In Brazil, 7 years of implementation of a school canteen national law has been recognized as an effective strategy to improve food provided in all the surveyed

schools. However, challenges to maintain the promotion of healthy eating among the school children go beyond the school premises, as it takes additional contribution from other stakeholders, including parents (Gabriel *et al*, 2009). Nevertheless, in Indonesia, we observed that some foundational components for healthy school canteen were lacking. Of all indicators in the four important components of a healthy school canteen set by the Government of Indonesia, the most profoundly lacking was school commitment and human resources development. The two are associated as the development of human resources, who have responsibilities dealing with the school canteen, is a part of the management function of the school commitment (Government of Victoria Australia, 2006; Ardzejewska *et al*, 2012; Ministry of Education and Culture, 2016).

The first step to establish a healthy school canteen is to set up a canteen committee. The commitment from school authorities in the setup of this committee is crucial. In many instances, the leadership of school principals facilitates the next steps, which include obtaining advice, assistance, and resources, engaging support, and raising awareness among the school communities (Government of Victoria Australia, 2006).

Increasing awareness among the school communities about the importance of healthy school canteen is considered vital to gain support from all school community members as they may act either as customers of the canteen or as a canteen food provider (Ardzejewska *et al*, 2012). The canteen food providers often complain about lower profit margins of selling healthier foods/drinks which are not popular among the customers (*ie*, school children and other school community members) (Mensink *et al*, 2012). A

successful approach is to conduct regular educational sessions regarding healthier food options for a wider school community. A school canteen may also serve as an educational center where communication materials about safe and healthier foods/drinks can be posted in strategic areas around the canteen. One study in Italy found that school canteens need to be colorful and engaging to encourage children to eat healthier food options in the canteen (Turconi, 2013). By doing so, a demand for healthier foods/drinks is created. Thus, a school canteen providing healthier foods/drinks can certainly perform this responsibility. Ensuring that the supply meets the demand is a part of a school principal's responsibilities (Nuraida *et al*, 2011). Therefore, it is said that the school authority is the catalyst for the sustainability of the healthy school canteen program (Government of Victoria Australia, 2006).

An internal coaching and control system by the school canteen team as well as an established partnership with school canteen external surveillance system, *ie*, from the local public health centers near the school, are key for the school canteen monitoring system (Nuraida *et al*, 2011). Nevertheless, schools with a lack of resources such as those which have participated in the present study seem to have no clue on how to access advice and assistance for starting an internal monitoring body. Consequently, (reflected in the interview data), teachers who were assigned to attend the training on establishing food safety team were unable to carry out such a responsibility. In Indonesia, a formal written delegation letter from the school principal to the assigned teacher(s) or staff is crucial to provide a legitimate basis for the involved parties to engage in performing the tasks and responsibilities of the healthy school canteen program

(Ministry of Health, 2011).

The role and function of the internal monitoring team is to control and provide coaching for the canteen food providers to rectify unwanted practices which are observed during the monitoring session. The Guide on Healthy School Canteen also addresses the importance of training for all parties involved in the implementation of healthy school canteen, most importantly, the food handlers who directly deal with the food (Ministry of Health, 2011). Unfortunately, the level of knowledge of the food providers and food handlers in the observed school canteens was not formally assessed in the present study. However, the low performance under the component of human resources shown in Table 1 indicates their poor knowledge on basic personal hygiene and food safety. Moreover, similar findings were observed in Malaysia (Zain and Naing, 2002) and Portugal (Santos *et al*, 2008), with both studies further elaborating on an effort to improve the knowledge, attitude, and practices of the food handlers through a series of training and coaching. However, turnover of food handlers was reported as a challenge to sustain the effect of training.

A benchmark study in 5 cities of Indonesia (Bandung, Tasikmalaya, Malang, Kupang, and Jayapura) was performed in 2015. The schools visited were model schools and were selected based on the recommendation from an authority of the Indonesian Ministry of Education. As expected, the foremost observed keys to successful implementation of healthy school canteen development program are a strong commitment of the school Principal, a functioning internal canteen committee, and a good partnership with the local public health center who provides control and monitoring measures on a regular basis. In addition, all the surveyed

schools reported that they have exposed their food handlers to some basic training on food safety and personal hygiene (SEAMEO RECFON, 2015).

As such, other indicators under the component of building and facilities as well as food quality will improve once the school canteen team and school Principal commit to working based on the agreed tasks and responsibilities, and understand how to engage other potential resources. The semi-permanent buildings of most school canteens in the present study were in good physical condition as shown in Table 1. This suggests that additional indicators along with the building issue are relevant to be addressed with the aim of improving the overall condition of the school canteen. This does not need to wait until the building becomes permanent. For instance, ensuring better flooring, ventilation, and lighting may be a matter of accessing other potential resources through the school alumni network. Similarly, keeping the toilets reasonably clean may be a matter of writing a clearer job description for the janitorial and custodial staff. Furthermore, the street food vendors outside school premises is another major challenge faced by many schools, particularly those schools with no canteens. Many schools with good commitment and leadership from the school principals have managed to gradually overcome all of the above challenges within their own capacity, creativity, and available resources.

In summary, school commitment and human resource development are components that are most lacking in these schools. A lack of permanent canteen building was determined to be the most crucial component by most interviewed participants. Nevertheless, all other indicators on facilities and food quality were in reasonably acceptable condition. This

suggests that although written policies were not present, school authorities have tried to maintain a minimum standard for a well-functioning school canteen. The next step should involve further assistance provided to the schools for establishing written policies on a healthy school canteen. In the future, studies are required to determine the motivation of school authorities if a healthy school canteen is considered a standard assessment indicator for school evaluation.

There are a few limitations of this study which warrant discussion. A relatively low number of schools participated in this study, which do not necessarily represent the greater Jakarta area. Moreover, the methodology of this study solely depended on interview and observation. This limitation is minimized by cross-checking with triangulation methods. Finally, further research is needed to better explore the implementation of a healthy school canteen program particularly in Jakarta, Indonesia and the broader area.

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