

Original Research

PERSONAL HYGIENE, SANITATION AND FOOD SAFETY KNOWLEDGE OF FOOD WORKERS AT THE UNIVERSITY CANTEEN IN INDONESIA

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ABSTRACT

Background: Food and beverage sanitation hygiene is a prevention effort that focuses on activities or actions that are necessary to free food and drinks from hazards that can interfere with or damage health.

Objective: This study aimed to identify personal hygiene, sanitation and food safety knowledge of food workers at the canteen university.

Methods: This was a descriptive study with observational approach. Thirty-four canteens were recruited using total sampling. Data were analyzed using descriptive statistics with percentage.

Results: Findings showed that 11 canteens (32.3%) did not meet the standard for canteen sanitation, 24 canteens (70.6%) did not meet lighting standard, 29 (85.3%) did not meet ventilation standard, 18 (52.9%) did not meet the standard of clean water, 31 (91.2%) did not meet wastewater disposal standard, 23 (67.6%) did not meet the hand washing facility standard, 25 (73.5%) did not meet standard of waste disposal conditions, 28 respondents (85.3%) had good personal hygiene, 6 respondents (14.6%) had poor personal hygiene and all food workers had good knowledge on food safety (100%).

Conclusion: Personal hygiene, sanitation and food safety at the university canteen must be carried out continuously. Our findings can be used as a basis for creating healthy university canteen.

Keywords: personal hygiene, sanitation, knowledge, food workers

BACKGROUND

Food is all substances needed by the body excluding water, drugs, and other substances used in medicine ([Chandra, 2007](#)). Food is a basic need for human life, but it is also very likely to be the cause of disturbances in the body. Also, it also plays a role in the body's defense mechanism against various diseases ([Allwood, Jenkins, Paulus, Johnson, & Hedberg, 2004](#); [Nel, Lues, Buys, & Venter, 2004](#)).

Food and beverage hygiene sanitation is a prevention effort that focuses on activities / actions that need to free food and drinks from hazards that can interfere with or damage health starting from before food is produced, during the process of processing, preparation, transportation, until food is ready for consumption ([Sari, Sulistyani, & Dewanti, 2016](#)).

In 2017, the number of food poisoning incidents increased with the occurrence of foodborne diseases which reached 33 (44.17%) million cases in which 60% of these cases occurred in children aged 5-7 years ([Chaib & Lawe-Davies, 2017](#)). In 2017 there were food poisoning cases, namely 213 (43.2%) cases from all public health center and hospitals in Kendari City ([BPOM, 2017](#)). In 2017 there were 35,864 cases of diarrhea treated, which were 46.77% of the estimated cases ([Dinkes, 2017](#))

Based on a preliminary survey, there were 8 canteens showed that the application of food sanitation hygiene did not meet the health standards. This also can be seen from personal hygiene of food workers while processing food, which were not wearing full work clothes. The purpose of this study was to identify personal hygiene, sanitation and food safety knowledge of food workers at the canteen university.

METHODS

Study design

This was a descriptive study with observational approach at one of the universities in Southeast Sulawesi Indonesia. There were 34 canteens and 34 food workers recruited using total sampling. This study was conducted between October and December 2018.

Instrument

Canteen sanitation observation checklist, developed by the authors based on the regulation of the Ministry of Health of the Republic of Indonesia, Number 1096 / Menkes / PER / VI / 2011 ([Indonesia, 2011](#)). Canteen sanitation is one of the prevention efforts that focuses on activities and actions that are necessary to free food and drink from all hazards that can interfere with or damage health ([Fauziah & Kalsum, 2016](#)). In this study, canteen sanitation includes food sanitation, lighting, electricity, clean water, sewage disposal, hand washing facilities and garbage bin. The observation checklist used

“standardized” and “unstandardized” option. The total score >700 means standardized; and the total score < 700 means unstandardized.

Personal hygiene observation checklist, developed by the authors based on Gordon’s personal hygiene model ([Gordon](#)). Personal hygiene is a way of caring for humans to maintain their health. Maintenance of individual hygiene is needed for individual comfort, security, and health. Hygiene practices are the same as improving health ([Gordon](#)). Personal hygiene was measured using Guttman scale with 0 (incorrect) and 1 (correct) option ([Widhiarso, 2011](#)). The number of items was 10 items. “Good” if the respondent answers questions from the questionnaire with a question score $\geq 50\%$ and “poor” if the respondent answers the question from the questionnaire with a score of $<50\%$

Food safety knowledge of food workers observation checklist, adopted from previous study ([Aswita, 2015](#)). Knowledge is the result of knowing, and this happens after people have sensed a certain object ([Notoatmodjo, 2003](#)). Personal hygiene was measured using Guttman scale with 0 (incorrect) and 1 (correct) option ([Widhiarso, 2011](#)). The number of items was 10 items. “Good” if the respondent answers questions from the questionnaire with a question score $\geq 50\%$ and “poor” if the respondent answers the question from the questionnaire with a score of $<50\%$

Data collection

Data were collected by the researchers using observation checklists. For canteen sanitation and personal hygiene, we observed checked objectively based on the standard the Ministry of Health of the Republic of Indonesia. For food safety knowledge, we directly asked the food workers using observation checklist. The observation was done once. Prior to data collection, this study has been approved by Faculty of Public Health, University of Halu Oleo, Number 2334/UN29.15/PP/2018.

Data analysis

Data were analyzed and described using percentage.

RESULTS

Canteen Sanitation

Table 1 shows that, out of 34 canteens (100%), there were 11 canteens (32.3%) that did not meet the criteria for canteen sanitation, 24 canteens (70.6%) did not match the requirements lighting, 29 canteens (85.3%) did not meet the requirements for ventilation, 18 canteens (52.9%) did not fulfill conditions for clean water, 31 canteens (91.2%) did not meet the standard of waste water disposal, 23 canteens (67.6%) did not meet the requirements of the hand washing facility, and

25 canteens (73.5%) did not meet the standard of garbage bin. In other words, all variables of canteen sanitation were below the standard of 50% among university canteens, except food sanitation variable with 67.7% following the standard.

Table 2 shows that, of the 34 respondents (100%), as many as 28 respondents (85.3%) had good personal hygiene while six respondents (14.6%) had poor personal hygiene. And all food workers had good knowledge.

Table 1 Distribution of food sanitation, lighting, electricity, clean water, sewage disposal, hand washing facilities and garbage bin at the university canteen

Characteristic	N	%
Food sanitation		
Standardized	23	67.7
Unstandardized	11	32.3
Lighting		
Standardized	10	29.4
Unstandardized	24	70.6
Ventilation		
Standardized	5	14.7
Unstandardized	29	85.3
Clean water		
Standardized	16	47.1
Unstandardized	18	52.9
Wastewater disposal		
Standardized	3	8.8
Unstandardized	31	91.2
Hand washing facilities		
Standardized	11	32.4
Unstandardized	23	67.6
Garbage bin		
Standardized	9	26.5
Unstandardized	25	73.5

Table 2 Distribution of Personal Hygiene and food safety knowledge of food workers at the university canteen

Characteristics	N	%
Personal hygiene		
Good	28	82.4
Poor	6	14.6
Food safety knowledge		
Good	34	100
Poor	0	0

DISCUSSIONS

Knowledge is the result of knowing, and this happens after people have sensed a particular

object. Sensing occurs through the five human senses, namely the senses of vision, hearing, smell, taste, and touch. Most human knowledge is obtained through the eyes and

ears ([Noar & Zimmerman, 2005](#)). Sanitation is a health effort by maintaining and protecting the cleanliness of the environment of its subjects. For example providing clean water for washing hands, providing trash bins to accommodate garbage so that it is not thrown away carelessly ([Melosi, 2004](#)). Canteen sanitation is an effort aimed at food hygiene and safety so as not to cause harm to poison and disease in humans ([Pragle, Harding, & Mack, 2007](#))

The procedure that is important for food processing workers is hand washing, hygiene and personal health ([Baş, Ersun, & Kivanç, 2006](#)). The results showed that out of 34 canteens (100%), there were about 11 canteens did not meet the criteria for good canteen criteria. Based on the results of field observations carried out the canteen page was not clean, not neat and was less than 500 meters from the nest of flies / garbage bins, and there were some canteens that smell of foul or odor coming from sources of pollution and not in accordance with the Minister of Health Regulation Republic of Indonesia Number 1096 / Menkes / Per / VI of 2011 concerning Hygiene Hygiene Requirements for Catering Services ([Indonesia, 2011](#)).

Based on the results of the observation, the sanitation facilities in the canteen did not meet the requirements because there was a canteen that did not have a sewerage channel, some canteens did not have a place to wash equipment and ingredients that met the criteria, canteen washing facilities were not provided in one container washing and used repeatedly, foodstuffs to be processed were not stored in individual containers, there was a kitchen that had an inadequate size and there was a canteen that had a condition of buildings that were not dense by vectors such as rats and insects, and facilities vector controller did not equip all canteen locations.

Location and buildings are essential for every place of business and sanitation conditions that do not meet the requirements can also determine the quality of food served, because various diseases can occur due to sanitation

conditions that do not meet the criteria ([Ramadani & Mersatika, 2017](#)). Personal hygiene is a mirror of the success of each, which leads to personal habits and cleanliness. To maintain personal hygiene in everyday life must always try to prevent the arrival of diseases that can interfere with health ([Murray, Lopez, & Organization, 1996](#); [Prüss-Üstün, Bos, Gore, & Bartram, 2008](#)).

Personal hygiene is a procedure to maintain cleanliness in the management of safe and healthy food. Cleaning procedures are clean behaviors to prevent contamination of the food being handled. The process that is important for food processing workers is hand washing, hygiene and personal health ([Green & Selman, 2005](#); [Marriott, Schilling, & Gravani, 2018](#)).

The incidence of diseases transmitted through food in Indonesia is quite significant as seen from the still high rates of infectious diseases such as typhus, cholera, and dysentery. Therefore food handling workers must follow adequate sanitation procedures to prevent contamination of the food processed ([Powell, Jacob, & Chapman, 2011](#); [Soares, Almeida, Cerqueira, Carvalho, & Nunes, 2012](#)).

The results showed that from 34 respondents (100%) there were eight respondents (82.4%) who had good personal hygiene in processing food and six other respondents (14.6%) where this happened because there were still respondents who suffered from a natural disease contagious like flu and cough. Personal hygiene of food handlers who do not meet the requirements of (93.8%), this is because every time they want to work do not wash their hands and do not cover their mouth if they are coughing ([Asokawati, Chahaya, & Dharma](#)).

Based on observations made in the canteen, there were still respondents who did not cover the wounds when processing food, namely injuries caused by the use of knives, there were some respondents who did not maintain hand hygiene, hair, and had long nails, most respondents had dirty clothes because after

they cook, they wipe their hands on the costumes used.

The results showed, there were respondents who were frying, then we were picking up the telephone in front of the dishes they were cooking and without them realizing they had coughed one to two times while processing food and occasionally they scratched their limbs right above their dishes such as scratching their arms and scratching the head, and some respondents did not wear masks when processing food so that it was not in line with the Regulation of the Minister of Health Number 1089 about Sanitation Catering services ([Indonesia, 2011](#)).

Unhygienic merchant behavior can also be a source of food-borne diseases such as the transfer of bacteria to cause illness and when serving food traders need to behave healthily to produce clean, healthy, safe food and to maintain the quality of food provided. Pay attention well because the correct storage of food will create good quality products ([Echols, 2001](#); [Hillstrom, 2012](#)).

Personal hygiene determines the health quality of food processed such as hand washing to protect hand hygiene, washing dishes to preserve the cleanliness of dishes and removing damaged parts of the food to protect the overall integrity of the food. Food workers are one source of contaminants for disease because the handler's hygiene is needed to prevent the occurrence of these contaminants and to produce snacks that are healthy and safe to consume ([Clayton, Griffith, Price, & Peters, 2002](#); [Jacob & Organization, 1989](#); [Medeiros, Hillers, Kendall, & Mason, 2001](#)).

Knowledge is the result of knowing, and this happens after people have sensed a specific object. Sensing occurs through the five human senses, namely the senses of vision, hearing, smell, taste, and touch. Most human knowledge is obtained through the eyes and ears ([González, Moll, & Amanti, 2006](#); [Pfeffer & Sutton, 2000](#)). To ensure food quality and every officer involved in food sanitation should know their duties and responsibilities,

including diseases transmitted through food, personal hygiene, habits related to food processing and healthy food processing methods ([Powell et al., 2011](#); [Reilly, 2008](#)). Knowledge of food workers regarding hygiene is included in the excellent category (73.3%) this is influenced by the level of education, where the higher the level of education of food workers the better the knowledge ([Fatmawati, Rosidi, & Handarsari, 2013](#)).

Education is a factor behind the knowledge and then knowledge influences behavior. Training for food workers and consumers regarding hygienic ways of handling food is a very decisive element in preventing foodborne diseases ([Griffith, Livesey, & Clayton, 2010](#); [Jouve, Aagaard-Hansen, & Aidara-Kane, 2010](#); [Kouabenan & Ngueutsa, 2016](#)). Any contamination, both in the beginning and due to handling during its preparation, if not controlled at this stage will have a direct negative impact on the health of its consumers ([Miranti & Adi, 2018](#)). Knowledge can be obtained through information delivered by health professionals, parents, teachers, books, mass media and other sources. Knowledge can also be obtained through experience. A high level of education about food sanitation hygiene will affect workers to implement food sanitation hygiene when carrying out the production process ([Jevšnik, Hlebec, & Raspor, 2008](#); [Walker, Pritchard, & Forsythe, 2003](#); [Wilcock, Pun, Khanona, & Aung, 2004](#)).

Knowledge is also a component in the formation of a person's behavior, culture is influenced by education, experience, and the environment, then experience is a source of knowledge or experience one of the ways to obtain the truth of knowledge ([Alavi & Leidner, 2001](#); [Von Krogh, Ichijo, & Nonaka, 2000](#)). Knowledge of food workers does not directly affect the practices of food workers' hygiene sanitation, and besides knowledge, other factors can affect the practice of sanitation hygiene such as work experience. Knowledge of good food workers will also produce a right attitude, so it is expected that the practice of sanitation hygiene that is owned is also good ([Faour-Klingbeil, Kuri, & Todd,](#)

[2015](#); [Heinz, 2013](#); [Lues, Rasephei, Venter, & Theron, 2006](#)).

The results showed that good knowledge did not directly affect the food workers hygiene practices because of the 34 respondents (100%) there were six respondents (14.6%) who had poor personal hygiene, but the level of knowledge was in a suitable category. The high education of a person, the more knowledge or information obtained is broader, but that does not mean that someone with low training has in-depth knowledge because the increase in knowledge is not obtained from formal education ([Eraut, 2002](#)).

Another study explained that the higher the knowledge of food workers does not have a significant effect with the behavior of food handlers hygiene where formal education generally becomes a means for at least people to be able to read and will help facilitate communication and influence the giving and receiving of various information ([Rakhmawati, 2015](#))

Limitation of the study

This study may have limitations in regards to our observation that may limit the results as we just observed for one time only.

CONCLUSIONS

Food safety is needed in preventing foodborne diseases. Different health effects can occur if the food served in the canteen does not meet health requirements. Supervision of food in the canteen is the main focus in creating a healthy canteen. Personal hygiene as an integral part of food security needs to be a severe concern for the university. To prevent negative impacts, it is necessary to make a food supervision guideline in the canteen.

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