



THE EFFECT OF FOOD SANITATION ON PUBLIC NUTRITIONAL HEALTH

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Abstract

Motivation/Background: Food is a fundamental necessity for human life. If the meaning consumed is not good or expired, it will cause food poisoning. Cases of food poisoning and foodborne infectious diseases are common. One of the causes is not paying attention to the sanitation of the food. Therefore, good or bad food sanitation will greatly affect the health of the community. This study aims to analyze how much influence food sanitation has and also the impact of food sanitation on public nutrition health Method: The method used is a literature study by reviewing several journals related to the effect of food sanitation on public nutritional health. Article search using one database, namely Google Scholar. Results: Based on search results through Google Scholar and journals that have been identified, there are 10 full-text journals and according to eligibility. The 10 journals are in accordance with inclusion criteria that focus on discussing the effect of food sanitation on public nutritional health. Conclusions: the better food sanitation efforts are carried out, the better the nutritional health of the community.

Keywords: Food Sanitation, Public Nutritional Health

INTRODUCTION

Food is a fundamental necessity for human life. Cases of food poisoning and foodborne infectious diseases are common. One of the causes is not paying attention to personal hygiene and the environment in the food processing process. Some bacteria that often cause disease include: Salmonella, Staphylococcus, E. coli, Vibrio, Clostridium, Shigella and Pseudomonas Cocovenenous and According to WHO, what is meant by food is: "Food include all substances, whether in a natural state or in a manufactured or preparedform, wich are part of human diet." These dietary restrictions do not include water, drugs and substances necessary for medicinal purposes.(1)

Food poisoning can occur when a person consumes food contaminated with viruses, parasites, or bacteria. Food poisoning can be experienced by everyone, but children and infants are more susceptible to the harmful effects of this condition. Therefore, it is important for us to know what are the symptoms of food poisoning. Among them are the body feels weak, lack of appetite, nausea and vomiting, diarrhea, fever and headache.(2) There are several factors that influence the occurrence of food poisoning, including poor personal hygiene, unhealthy food handling methods and unclean food processing equipment. One of the causes is the lack of knowledge in paying attention to personal health and the environment in the process of good and healthy food processing. The principle of food sanitation hygiene is the control of four factors, namely places or buildings, equipment, people and foodstuffs. These four factors are controlled through 6 (six) principles of food sanitation hygiene.(3)

The effect of food sanitation will affect both and bad health of public nutrition where public nutrition health refers to the branch of Public Health that



focuses on populations that monitors diet, nutritional status and health, food and nutrition programs, and provides a leadership role in applying Public Health principles to activities that lead to health promotion and disease prevention through environmental development and change.(4)

MATERIALS AND METHODS

This study uses literature review research methods by collecting several existing studies. The information comes from various references and sources from Google Scholar. When looking for references to this study, the author used the keywords Food Sanitation, Nutritional Health, Society. This is to make it easier for the author to find sources that match the purpose of the study. The data collected corresponds to the vulnerable year, which is 5 years (2019 – 2023). This study uses PRISMA (*Preferred Reporting Items for Systematic Review and Meta-Analysis*) diagrams to visualize the process flow of selecting references to be used.

Study Search and Selection Strategy

The method used to write imi articles is literature review by searching for keywords: (1) Nutritional Health (2) Society (3) Food Sanitation on *Google Scholar*.

Study Inclusion Criteria

The inclusion criteria of this study are considered appropriate to conduct a systematic review are: (1) Target group: Community, (2) Results: The effect of food sanitation on public nutritional health, (3) Research Method: Literature Review, (4) Study discussed in Indonesian because the case occurred in Indonesia.

Study Exclusion Criteria

The author filters out research titles and abstracts that are not full text and irrelevant. The author has populations, sampling, and methods, if the document does not discuss the Effect of Food Sanitation on Public Nutritional Health, the document is excluded. The authors reviewed research written in English and Indonesian. Restrictions in the year are also carried out in 2019 – 2023.

Data Extraction

The search for data on references and sources will begin in December 2023. Filtering is done based on relevant titles and abstracts from the *full paper*.

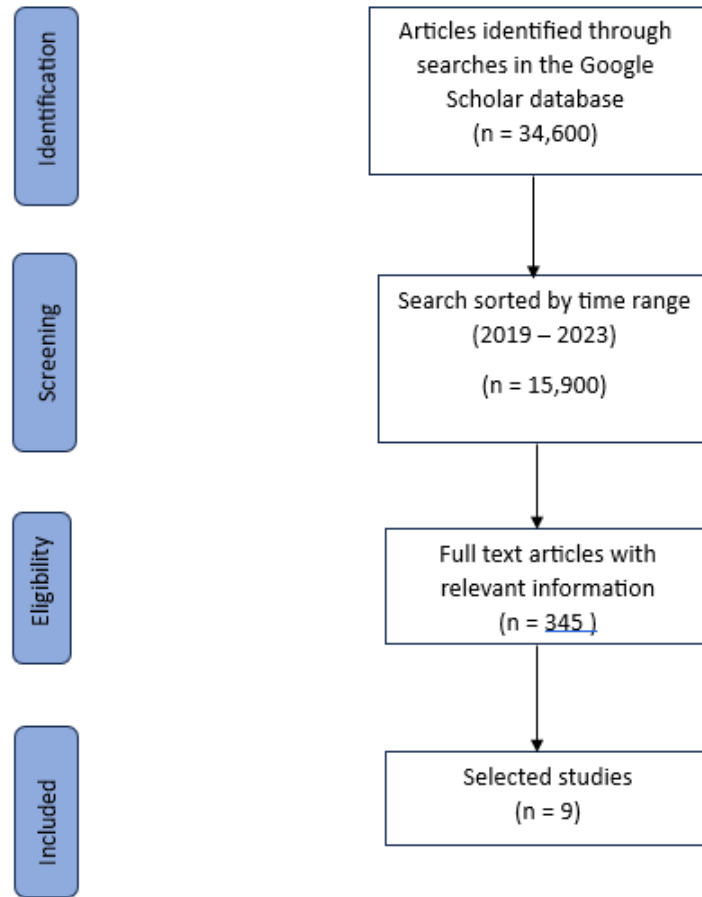


Figure 1. Search results selection flowchart

RESULTS AND DISCUSSIONS

Based on search results via Google Scholar, 10 full text articles have been identified that have been assessed as suitable for eligibility. The 10 articles comply with the inclusion criteria which focus on discussing food sanitation on public nutritional health.

. No	Title	Author	Year Of Publish	Method and Data Collection	Result
1.	Analysis of the effect of handler hygiene and food sanitation on E. coli contamination in school snacks	Ratna Dwi Rahmayani, Meithyra Melviana Simatupang (5)	2 Oktober 2019	This research is an analytical study with a cross-sectional study design. This research was conducted on street vendors (PKL) selling snacks in elementary school environments. The population in this study was food and beverage vendors selling around 2 elementary schools in Bintara Jaya Village, Bekasi City during learning activities (07.00-12.00 WIB), with a total of 30 snacks.	The results of laboratory tests found that 6 snacks contaminated with E. coli (20%) and 24 uncontaminated snacks (80%). Based on bivariate tests, it was found that handler hygiene variables had a significant influence on contamination of food/beverage snacks. Food sanitation variables associated with E. coli contamination in snacks are food storage, food processing, and food serving. Based on observations, it was found that the hygiene behavior of food handlers was still not good during the food/beverage management process. Statistical tests show a significant relationship between handler hygiene and E. coli contamination in hawker food.



					<p>The same results were shown by the study of Romanda et al. Personal hygiene of food handlers in this study was categorized as poor because food handlers did not use head coverings while managing food and did not cut their nails so that it could cause contamination.</p> <p>To ensure the quality of the food produced, all ingredients processed into snack food must be in good quality, fresh and not rotten. If using processed materials in packaging to be processed into snack food, the processed ingredients must be registered, not expired, not defective and not damaged.</p> <p>Storage of Foodstuffs/Beverages</p> <p>The results of bivariate analysis showed the effect of food raw material storage on E. coli contamination in snacks. The interview found that food vendors do not store food or beverages because the ingredients provided are only suitable for one day's needs. However, for some types of snacks that are processed at the</p>
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					selling location, raw materials are stored in carts or temporarily placed in raw material storage around the location with the condition of a place to sell not far from road access. In hawker places, there are also no refrigerators that can be used to maintain the freshness of raw materials before processing
2.	ANALYSIS OF FOOD HYGIENE AND SANITATION TO SUPPORT THE QUALITY OF NUTRITION UNIT SERVICES AT MUHAMMADIYAH BANDUNG HOSPITAL	Nurul Dwi Ariyani, Etik Kartika(6)	2020	From the type of data using qualitative research methods, namely "data in the form of words, schemes and images" (Sugiyono, 2013). In this case, researchers conduct research with qualitative research methods descriptive approach.	Food Hygiene and Sanitation Includes food selection, food storage, processing, food handlers, food processing sites, food processing equipment Food Hygiene and Sanitation Problems to Support the Quality of Nutrition Unit Services a. Garbage can: trash can is available, but not separated between dry and wet garbage. b. The equipment is partially made of stainless steel, safe and easy to clean. c. There are some who do not carry out or obey the regulations, namely Officers do not use complete personal protective equipment
3.	Food sanitation and diet at Sunan Drajad	Marselli Widya Lestari dan	2, Juni 2022	This community service uses direct counseling	Based on the interview results of all informants who answered the



	Lamongan Islamic Boarding School	Wiwik Winarningsih (7)		<p>methods with persuasion communication techniques. Because the target of counseling is teenagers, the material is made as interesting as possible, namely with audiovisuals, charts and videos. Participants received enrichment of teaching materials in the form of slides of counseling materials for further interactive material presentation. The activity continued with observation in the public kitchen and canteen of the Islamic boarding school as well as providing materials and sanitation checklists to kitchen officers and administrators.</p> <p>interview questions, it was found that the selection of food ingredients at the RSI Ibnu Sina Padang Panjang Nutrition Installation had met the requirements where the food ingredients used were of high quality and registered with the Ministry of Health. This is evidenced by the observation that raw food ingredients such as meat, milk, eggs, fish, fruits, and vegetables are clean, fresh, and not wilted. Flour-type foodstuffs do not change color and are free from lice. Food additives used have an expiration date and are registered with the health department.</p> <p>Based on the results of the above research, it was found that the storage of foodstuffs at the Nutrition Installation of Ibnu Sina Islamic Hospital Padang Panjang was not in accordance with health requirements because the temperature of the food storage room was not in accordance with health standards.</p> <p>Based on the interview results,</p>
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					all informants who answered the interview questions stated that the treatment room was cleaned before and after the activity, had a chimney, clean water provision was good, and facilities were complete. This is supported by the observation of strong floors and cleaned with antiseptics, trash cans that have lids, walls and ceilings are in good condition and clean, lighting in the kitchen is sufficient, and hand washing stations are available. Based on the results of the above research, it was found that the food processing site at the RSI Ibnu Sina Padang Panjang Nutrition Installation had met the health requirements.
4.	Overview of Working Time, Knowledge and Behavior of Sanitary Hygiene of Food Handlers at dr. Soediran Mangun Sumarso Wonogiri Regional General Hospital	Sri Purwaningsih, Endang Nur Widiyaningsih.(8)	2019	The design used in this study is descriptive observative with survey method using Cross Sectional approach. The research was conducted at the Nutrition Installation of dr. Soediran Mangun Sumarso Wonogiri Regional General Hospital. This research was conducted in	Overview of the length of work of food handlers, most of the food handlers at the Nutrition Installation of RSUD dr. Soediran Mangun Sumarso Wonogiri have a long working period of 64.3%. Food handlers' knowledge about sanitary hygiene is included in the good category (78.6%). The sanitary hygiene behavior of

				August 2017 – June 2018.	food handlers at the Nutrition Installation of RSUD dr. Soediran Mangun Sumarso Wonogiri is mostly included in the category of poor behavior, which is 57.1%.
5.	The Relationship between Handler Hygiene and Food Sanitation with Escherichia Coli Bacterial Contamination in Snack Food Next to SMP N 2 Sukoharjo	Amyta Zahro Diana, Triyanta, Wartini.(9)	2019	The type of research used is analytical observational research with a Cross-sectional approach. This research was conducted around SMP N 2 Sukoharjo in October 2019. The population is all hawker food traders around SMP N 2 Sukoharjo and the research sample is 30 hawker food vendors, with total sampling technique, because the population is equal to the number of samples.	The hygiene of handlers around SMP N 2 Sukoharjo is mostly unqualified, which is 17 (56.7%). Food sanitation around SMP N 2 Sukoharjo is mostly unqualified, which is as much as 15 (50%). Escherichia coli contamination in hawker food around SMP N 2 Sukoharjo mostly did not meet the requirements, namely as many as 13 (43.3%). The relationship between handler hygiene and Escherichia coli contamination around SMP N 2 Sukoharjo ($p = 0.007$ with the level of closeness of the relationship is quite strong ($r = 0.442$)). The relationship between food sanitation and Escherichia coli contamination around SMP N 2 Sukoharjo ($p = 0.001$) with the level of closeness of the relationship is quite strong ($r =$

					0.518).
6.	Hygiene and Sanitation at Food Vendors Hawker for Elementary School Students in Pekanbaru City, Riau	Hetty Ismainar, Yessi Harnani, Nila Puspita Sari, Kamali Zaman, Hayana, Hasmaini.(10)	2022	Type of observational study, cross sectional design. The population is all hawker food vendors in Pekanbaru City. The sample selection amounted to 35 food traders in eleven elementary schools in Pekanbaru using purposive sampling techniques.	It was found that 18 people (51.4%) who did not meet the quality standards of food hygiene and sanitation and had low knowledge. It was found that 51.4% of snack sanitation hygiene was still in the low category. It was found that the process of washing the equipment used was still in the poor category as much as 51.67%.
7.	The relationship between maternal behavior in maintaining food sanitation with the incidence of diarrhea in toddlers in Panemon Village, Sugihwaras District, Bojonegoro Regency	Endang Sulmiati, Asri Kusyani, Umi Azizah Kusuma Ningrum.(11)	2019	The research design used in this study is correlational analytics, where researchers can search, explain a relationship, estimate and test based on existing theories. This study uses a Case Control approach, which is looking back at an event related to the pain event under study.	Mothers' behavior in maintaining food sanitation in Oesa Panemon, Sugihwaras District, Bojonegoro Regency was mostly negative as many as 22 respondents (61%). The incidence of diarrhea in toddlers in Panemon Village, Sugihwaras District, Bojonegoro Regency mostly occurred diarrhea as many as 22 respondents (61%). There is a relationship between maternal behavior in maintaining food sanitation with the incidence of diarrhea in toddlers in Panemon Village,

					Sugihwaras District, Bojonegoro Regency, with a correlation coefficient value of 1,000 and p value = 0.000 < a (0.05)
8.	Food Sanitation Hygiene at Street Vendors in Darmaji Hamlet, Darmaji Village, Kopang District, Central Lombok Regency in 2019	Lalu Darmapala (12)	2019	This type of research is descriptive with the aim of obtaining an overview of food processing sanitation at street vendors in Darmaji Village, Kopang District in 2019.	Based on the results of research and discussion, it can be concluded as follows: 1. Cleanliness of food handlers with good category 100%. 2. Equipment sanitation with 100% good category. 3. Sanitation of Food Processing Sites with a good category of 90% and a category of less than 10%.
9.	Microbiological contamination of food, food handlery cutlery at the nutrition installation unit of Hospital X in Banjarmasin	Siti Fatimah, Nurul Hekmah, Desya Medinasari Fathullah, Norhasanah(13)	2022	This research uses qualitative methods with descriptive research types. This qualitative research describes the results of microbiological contamination in each sample. This research was conducted at the Nutrition Installation Unit of Hospital X in Banjarmasin. The variables in this study consist of several namely microbiological contamination in food, microbiological	The results of the examination of animal and vegetable side dish food samples since the last 6 months (sampling is carried out every month) show negative results (-) containing pathogenic bacteria Escherichia coli and Salmonella sp, which is as many as 24 samples (100%). Most laboratory results are categorized as qualified, namely 6 water samples (85.6%) consisting of 3 drinking water samples, 3 samples (42.9%) and 3 tap water samples, 3 samples (42.9%), and some are



				contamination in cutlery, microbiological contamination in water and microbiological contamination in the health of food handlers.	categorized as unqualified, namely as many as 1 tap water sample (14.2%). The maximum limit of water contaminated with coiform bacteria is MPN 0/100 mL.
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Food is a material that is needed by living things, which is useful for their survival. Food is important for growth and maintaining life. Food provides the energy and materials necessary to build and replace tissues, to work and to maintain the body's defenses against disease (4)

Food can make people healthy and sick. Healthy food makes the body healthy; however, food that has been contaminated can cause disease. Therefore, food and beverages consumed must be guaranteed both in terms of quality and quantity. Food poisoning can occur when a person consumes food contaminated with viruses, parasites, or bacteria. Food poisoning can be experienced by everyone, but children and infants are more susceptible to the harmful effects of this condition. Therefore, it is important for us to know what are the symptoms of food poisoning. Among them are the body feels weak, lack of appetite, nausea and vomiting, diarrhea, fever and headache.(2,14) There are several factors that influence the occurrence of food poisoning, including poor personal hygiene, unhealthy food handling methods and unclean food processing equipment. One of the causes is the lack of knowledge in paying attention to personal health and the environment in the process of good and healthy food processing. The principle of food sanitation hygiene is the control of four factors, namely places or buildings, equipment, people and foodstuffs. These four factors are controlled through 6 (six) principles of food sanitation hygiene (3)

Food hygiene is necessary to ensure food safety from production to Consumed. Food can be contaminated at any point during raw material preparation, processing, storage, distribution, transportation, and serving. Inadequate food hygiene can cause health problems and even death.

According to Azrul Azwar, sanitation is an action or effort to improve hygiene and health through early maintenance of each individual and environmental factors that influence it, so that individuals avoid the threat of germs that cause disease.(15) Important steps in realizing food hygiene and sanitation are: 1. Achieve and maintain production yields that match the temperature of the dish (hot or cold). 2. Proper serving, handling of food that is prepared early. 3. Cooking on time and temperature. 4. Carried out by workers and healthy food handlers from reception to distribution. 5. Monitor the temperature of food every time before sharing. 6. Regular inspection of raw foodstuffs and seasonings before cooking. 7. Reheat the food temperature according to the right temperature (74 oC). 8. Avoid cross-contamination between raw foodstuffs, cooked food through people (hands), cutlery, and kitchen utensils. 9. Clean all surfaces of tools/containers after use for food. 10. Pay attention to all the results of food that must be purchased from a special system. (3)

Food sanitation aims to ensure the state and purity of food, prevent consumers from disease, prevent the sale of food that will harm buyers, reduce food damage/wastage. The objectives of Food and Beverage are, 1. The availability of good quality food and safe for consumer health. 2. Decreased incidence of risk of disease transmission or health problems through food. 3. The realization of healthy and correct work behavior in food handling in institutions. Sanitation efforts are efforts to control factors of food, people, places and equipment that can or may cause disease or health problems. Food sanitation is an effort to control factors of food, places, people and equipment that can cause disease or health problems. Reviewed from environmental health science.

Sanitation has the aim of protecting, maintaining and enhancing the degree of human health (individuals and communities). In its application, sanitation focuses more on human environmental factors.(4,15)

The better a food does not escape the performance of food handlers. A food handler is a workforce who touches food starting from preparing, processing, storing, transporting and serving food. The knowledge, attitudes and behavior of an handler affect the quality of the food produced. Handlers can also act as disease spreaders, this can occur through contact between food handlers suffering from infectious diseases and healthy consumers, contamination of food by handlers who carry germs.(16)

Nutritional consumption greatly affects the nutritional status of one's health which is the main capital for individual health, wrong or inappropriate nutritional intake will cause health problems. The term Malnutrition or (wrong nutrition) can be interpreted as a state of wrong nutritional intake in the form of excess or reduced intake, causing an imbalance between needs and intake. Health problems in Indonesia that arise as insufficient nutritional intake include vitamin A deficiency, disorders due to iodine deficiency, anemia, lack of protein energy. In addition to the problem of undernutrition, lately there has also been found the impact of excessive consumption not only on adults but also on children and adolescents. The problem that often arises is obesity which will be followed by the onset of diseases such as coronary heart disease, diabetes mellitus, stroke. In addition, nutrition is also very influential on brain development and behavior, ability to work and productivity and resistance to infectious diseases. (14)

Nutritional problems that arise in sick people will have an impact on many things, namely nervous disorders, surgery, cancer, psychiatric and gastrosensory disorders. Nutritional deficiencies have an impact on several important changes in the body's metabolic system, including a decrease in glomerular filtration levels that often occur in the kidneys, disturbances in intestinal defenses in the stomach, and also the gastrointestinal tract in general, there are changes in pharmacokinetics and also changes in the working function of the heart. Meeting nutritional needs will have an impact on health conditions and can also apply the other way around, namely health status will have an impact on a person's nutritional status. Infectious diseases suffered will cause loss of appetite so that food intake becomes reduced. While the body needs more intake due to the process of tissue destruction and increasing body temperature. One disease that is often directly linked, namely tuberculosis is a problem with nutritional status is tuberculosis (TB). The problem of malnutrition in patients is an important problem because in addition to having a risk of disease can also affect the work productivity of sufferers. As an infectious disease, TB also affects the nutritional status of patients because the process of the course of the disease will affect the body's resistance. In addition to tuberculosis, diarrhea is a disease that has a great influence on nutritional status, especially infants and also.(1)

CONCLUSIONS & RECOMMENDATIONS

The better and hygienic food sanitation carried out, the more it will ensure the good nutritional health of the community. Conversely, if food sanitation efforts are carried out poorly or unhygienically, it will cause poor public nutrition which will later cause various diseases

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