

# **CORRELATION HYGIENE AND SANITATION BEHAVIOR WITH ESCHERICHIA COLI BACTERIAL CONTAMINATION ON STREET VENDORS**

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## **ABSTRACT**

Food is important for human health. Hygiene and sanitation behavior is important in determining the quality of food where the bacteria Escherichia Coli as an indicator of pollution and contamination of food that can cause (food borne diseases) congenital diseases Food. From the inspection of food samples on the surveillance program of food processing in the street vendors are done in the find of food samples contaminated with bacteria Escherichia Coli. The purpose of this research is to know the correlation of hygiene and sanitation behavior with bacterial contamination Escherichia Coli on street vendors in the working area of Puskesmas Bogor Utara.

This type of research utilizes methods of analytic with Cross Sectional design. The sample in this study amounted to 20 respondents using the Total Sampling technique. Data collection instruments Use a kuisoner sheet of hygiene and sanitation behavior. The analysis used is univariate and sufficient using Chi Square collation test.

The results of the study were get for the hygiene behavior variables of 20 respondents that had a negative behaviour of 11 people (100%) and negative sanitation variables as much as 10 people (90.0%). Result in Get hygiene behavior correlation with bacterial contamination Escherichia Coli  $\rho$  value = 0.450 which means  $\rho$  value ( $> 0.05$ ) so that there is no connection, while the sanitary correlation with bacterial contamination Escherichia Coli  $\rho$  value = 1 which means  $\rho$  Value ( $> 0.05$ ) so there is correlation. From the results of the study can be concluded between the theory and the results of the research that the variable hygiene behavior and the sanitary variables do not have a significant correlation with bacterial contamination Escherichia Coli.

The research that is expected can be used as input material to improve the work evaluation for BPOM (Food and Drug Control agency) in order to improve food safety and the health department to improve the work evaluation with The Puskesmas in order to improve the quality of hygiene and sanitation behaviour of street vendors, especially in the city of Bogor.

Keywords : Hygiene behaviour, Sanitation, Escherichia Coli

## **PRELIMINARY**

Hygiene and sanitation have the same goal and are closely related to one another, namely protecting, maintaining and enhancing the degree of human health (individuals and communities). But in its application, the terms hygiene and sanitation have differences, namely hygiene is more directed towards human activity (individuals and communities), while sanitation is more focused on human environmental factors. Food Sanitation Hygiene is an effort to control food factors, people, places and equipment that can or may cause illness or health problems.<sup>1</sup>

Street food itself has become an inseparable part of human life. Consumption of food snacks in the community is no doubt always increasing from time to time given the

increasing mobility of the community so they do not have time to process their own food.<sup>2</sup> Seeing businesses in the food sector every year tends to increase, ranging from hawker foods to restaurants / restaurants. Food snacks as one of the community services in the field of food, whose existence is often still far from meeting the requirements required for health so that the impact of health problems in the form of disease to the community. Increasing community needs for food provided outside the home, the products provided by companies - companies and individuals engaged in the business of providing food for public use (food snacks).

To ensure that these primary needs are met, one aspect that must be considered is food safety. Food safety is very much needed in preventing biological, chemical and other contamination which can disturb, harm and endanger human health. To control the risk factors for food contamination, both from food ingredients, people, places, and equipment so that the food is safe for consumption, the government implements the Food Sanitation Hygiene program.<sup>3</sup>

Foodborne disease is one of the most and most burdening public health problems that have ever been encountered in modern times. The disease causes many casualties in human life and causes a great amount of suffering, especially among infants, children, the elderly and those whose immune systems are impaired.<sup>4</sup> Street Vendors (PKL) is an informal sector business in the form of a business which is sometimes also a producer. Some settled in certain locations, others moved from one place to another (using bunkers, pushcarts) selling food, drinks and other consumer goods at retail. (PKL) Generally, the small capital is sometimes only a tool for capital owners to get just a commission in return or effort.<sup>3</sup>

Lack of knowledge and ignorance of food handlers for safe handling of food has resulted in cases of foodborne illness. To prevent contamination of contamination into food, education and training on food safety are important and effective choices. Education for food handlers and consumers regarding ways of handling hygienic food is a crucial element in preventing the contamination of pathogenic agents into food / drinks.<sup>4</sup>

Several factors that become one of the causes of the presence of Escherichia coli bacteria are hygiene behavior, food sanitation, environmental sanitation, temperature, and humidity. The main factors that cause food contamination that cause food borne disease are foodborne diseases such as diarrhea or food poisoning, accompanied by cross-contamination due to bad personal hygiene of street vendors in processing food and storing it in bad temperatures due to street vendors only modest capital can have the opportunity to occur growth of pathogenic bacteria.

One of the bacteria often used as indicators of food pollution is Escherichia coli or better known as Escherichia Coli. bacteria that are common and live in the human intestine. Escherichia Coli bacteria can cause health problems such as diarrhea if it enters the digestive tract, both through drinks and food.

Rules regarding the presence of Escherichia Coli bacteria in food and drinks. According to Law No. 715 / Menkes / Sk / V / 2003 Concerning Sanitary Hygiene Requirements for Food Service Escherichia Coli bacteria number on food must be 0 / gram of food sample and on beverage Escherichia Coli number must be 0/100 ml sample drink.<sup>6</sup>

Bogor City Health Office in 2018 recorded a suspected poisoning case originating from Tutut (rice conch) which was eaten during breaking the fast that occurred in Kampung Sawah, Tanah Baru Village, North Bogor District, Bogor City. In this case, 85 residents in three neighboring neighborhoods namely RT 01, 02 and 05 in Rw 07. The rice field village is not the location of the tutut producer, one of the traders who caused 85 poisoning residents to have been selling for six years, but this time it was only the food causing problems for citizens. This tutut trader gets from a supplier and then resells the tutut for Rp.2,000, - per plastic bag, in addition to the kiosk he owns, the tutut supplier also entrusts his merchandise at several other kiosks located in Kampung Sawah, North Bogor.<sup>7</sup>

The Bogor City Health Office has conducted laboratory tests on tutut preparations which caused dozens of residents in Kampung Sawah, Bogor Utara District, to be poisoned. Laboratory results show, in the processed tutut that is ripe it contains three types of bacteria namely Escherichia Coli, salmonella and shigella.<sup>7</sup>

In a preliminary study the researchers conducted in July while carrying out an internship by conducting field observations from 5 traders 3 of whom their personal hygiene was far from eligible due to the cleanliness of their long and dirty nails. Food handlers hygiene practices related to hand washing behavior with soap every time they touch food are also found to be lacking because they do not wash hands before and after processing food in terms of processing they also do not use clean equipment such as (forks, spoons, food tongs and appropriate gloves) because they only sell on modest carts with minimal facilities and equipment. Therefore, researchers are interested to know "The Relationship between Hygiene Behavior and Sanitation with Escherichia Coli Bacterial Contamination in Street Vendors in the Work Area of North Bogor Health Center in 2019."

Based on the background stated above, the formulation of the problem in this research is "Is there a relationship between hygiene and sanitation behavior with contamination of Escherichia Coli bacteria in street vendors in the North Bogor Public Health Center".

## **RESEARCH METHODOLOGY**

This type of research is Analytical Research with a quantitative approach that uses Cross Sectional design.<sup>8</sup> This study aims to obtain a picture by studying the dynamics of the correlation between risk factors and effects, using a method of approach, observation or data collection at one time (point time approach). That is, each research subject was only observed once and measured the character's status or subject variables at the time of examination. This does not mean that all research objects are observed at the same time.

In this study, the independent variable data is hygiene behavior and merchant sanitation, while the dependent variable is the contamination of Escherichia Coli bacteria in street vendors in the North Bogor Public Health Center.

The sampling technique is Non Probability Sampling using the Total Sampling method. The number of samples in this study were all street vendors who were fostered by the North Bogor Puskesmas in the working area of the North Bogor Puskesmas which were 20 traders. In this study primary data were obtained from questionnaires or distributing questionnaires to respondents, namely street vendors who were fostered in the working area

of North Bogor Health Center, while secondary data were obtained from North Bogor Health Center, which were the results of UPTD Regional Health Laboratory Laboratory (LAKBKESDA) food samples from traders who are fostered in the working area of the North Bogor Public Health Center by taking food or beverage samples.

## **RESEARCH RESULT**

### **a. Univariate Results**

The Frequency Distribution of Street Pedestrian Hygiene Behavior in the Work Area of the North Bogor Health Center shows that of the 20 respondents there were 11 respondents having negative behavior (55.0%).

The Frequency Distribution of Street Vendor Sanitation in the Bogor Puskesmas Work Area shows that of the 20 respondents there were 11 respondents who had negative sanitation (55.0%). Frequency Distribution of Escherichia Coli bacteria in Street Food Traders Samples in the Work Area of North Bogor Health Center was found that the highest was positively contaminated with Escherichia Coli bacteria as many as 19 snacks (95.0%).

### **b. Bivariate Results**

Based on table 4.13 the frequency distribution of the relationship between hygiene behavior with Escherichia Coli bacterial contamination in street vendors in the North Bogor Public Health Center in 2019 shows that with statistical tests of 20 respondents who have negative behavior with positive Escherichia Coli bacterial contamination, there are 11 respondents (100 %). Chi Square test results obtained  $\rho$  value = 0.450, which means P value ( $> 0.05$ ) so that there is no relationship between hygiene behavior of street vendors with contamination of Escherichia Coli bacteria in street vendors in the North Bogor Public Health Center.

Based on table 4.14 the distribution of the frequency of sanitation relations with Escherichia Coli bacterial contamination in street vendors in the working area of North Bogor Health Center in 2019 shows that the statistical test of 20 respondents who have Negative sanitation with positive Escherichia Coli bacterial contamination is 10 respondents (90, 0%). Chi Square Test results obtained  $\rho$  value = 1, which means P value ( $> 0.05$ ) so that there is no relationship between sanitation and Escherichia Coli bacterial contamination in foot traders in the working area of North Bogor Health Center.

## **DISCUSSION**

### **A. Univariate Results**

#### **1. Hygiene behavior of street vendors in the working area of North Bogor Puskesmas**

Hygiene behavior of food processing staff is an activity of the food processing power itself or the activity of food processing power can be seen directly to anything related to the health of people or those who do everything about food in a food operation.<sup>9</sup>

Based on the results of the assumptions of this study, it can be concluded that the hygiene behavior of street vendors in the working area of the North Bogor Health Center in 2019 showed that of the 20 respondents there were 11 respondents who had negative behaviors (55.0%) and the results were in line with the research conducted by Arief

Rakhman Judges who point out that some of the street vendor's behavior has negative behavior. The behavior of the street vendors touch food directly without the help of equipment such as spoons, forks and tongs, scratching or touching members of the body when preparing food and smoking and chewing food when processing food.

## 2. Street Vendor Sanitation in the Work Area of Bogor Utara Health Center.

Sanitation is a public health effort that focuses on supervision of various environmental factors that affect the degree of human health, while the factors that affect sanitation are rubbish bins, sanitation, clean water supply and density of flies or disease vectors.<sup>10</sup>

Based on the results of the assumptions of this study, it can be concluded that the sanitation of street vendors in the working area of the North Bogor Health Center in 2019 showed that of the 20 respondents there were 11 respondents who had negative sanitation (55.0%) and the results of this study were in line with Wahyu Dwi Atmiati that Sanitation street vendors in the existence of trash bins in some of their selling areas are not yet sufficiently available, because they themselves only provide unprotected and closed trash bins so that it is easy as a pollutant media, thus their dirty situation also invites the existence of flies as vectors of disease.

## B. Bivariate Results

### 1. Relationship between Hygiene Behavior with Escherichia Coli Bacterial Contamination in Street Vendors in the Work Area of North Bogor Health Center.

Based on the assumptions of this study, it can be concluded that there is no relationship between hygiene behavior of street vendors with Escherichia Coli bacterial contamination in street vendors in the area of North Bogor Health Center in 2019 and the results of this study are in line with Dewi Fadilah Firdaus's research that other factors cause the presence of bacteria Escherichia Coli in food is not only a hygiene behavior of traders but also comes from the factor of the bacteria are already naturally in the food itself, foodstuffs that will carry their own microflora for life and these microflora will be in food products, foodstuffs stored in a humid room will easily absorb water so that water activity increases, increased water activity will cause microbes to grow easily and cause damage to the food itself, temperature is also an environmental factor that affects microbial growth.

Escherichia Coli bacteria will grow and develop at 37°C, whereas Escherichia Coli bacteria can die by cooking food at 70°C, it can be assumed as a factor there is no relationship between behavior with Escherichia Coli bacterial contamination in terms of naturally occurring on food, the environment and when the food is cooked by traders or when the sword treats food poorly.

### 2. Relationship between Street Vendor Sanitation and Contamination of Escherichia Coli bacteria in Street Vendors in the Work Area of Bogor Utara Health Center

Based on the results of the assumptions of this study, it can be concluded that there is no relationship between sanitation of street vendors with contamination of Escherichia Coli bacteria in street vendors in the area of North Bogor Health Center

in 2019 and the results of this study are consistent with Azzahra Pradina that other factors cause the presence of Escherichia Coli bacteria the food is not only a factor that affects sanitation from the trash, sanitation of clean water and density of flies or disease vectors originating from traders but also from sanitation factors where sales are a situation where the location of the place of sale is protected from pollution caused by dust or smoke. The cleanliness of the place of sale also determines the quality and safety of food produced.

Conversely, microorganisms grow well in humid and warm environments, containing good nutrients such as food and dirty environments. Therefore, food is very easy to be attacked by microorganisms, especially fruits and vegetables if they are in a dirty environment. sanitation, a selling place for traders, on the side of the road by only selling on a makeshift cart.

## CONCLUSION

1. It is known that the frequency distribution of the hygiene behavior of street vendors in the working area of the North Bogor Health Center shows that of the 20 respondents there were 11 (55.0%) street vendors who had negative behaviors.
2. It is known that the frequency distribution of street vendor sanitation in the working area of the North Bogor Health Center shows that of the 20 respondents there were 11 (55.0%) street vendors who had negative sanitation.
3. It is known that the frequency distribution of Escherichia Coli bacteria in 20 food samples of the traders the highest results were positively contaminated by Escherichia Coli bacteria in 19 (95.0%) food samples.
4. There is no relationship between hygiene behavior with Escherichia Coli bacterial contamination in street vendors in the working area of North Bogor Health Center with Statistical Tests of 20 respondents who have negative behavior with the highest proportion having positive Escherichia Coli bacterial contamination as many as 11 people (100 %). Statistical test results obtained  $p$  value = 0.450, which means  $P$  value ( $> 0.05$ ) so that there is no relationship between hygiene behavior of street vendors with Escherichia Coli bacterial contamination in street vendors in the North Bogor Public Health Center
5. There is no relationship of sanitation with contamination of Escherichia Coli bacteria in street vendors in the working area of the North Bogor Health Center in 2019 of 20 respondents who have Negative Sanitation with the highest proportion having positive Escherichia Coli bacterial contamination of 10 people (90.0% ). Statistical test results obtained  $p$  value = 1, which means  $P$  value ( $> 0.05$ ) so that there is no relationship between sanitation and Escherichia Coli bacterial contamination in foot traders in the working area of Bogor Utara Health Center.

## SUGGESTED RESEARCH

### 1. For Theoretical

It is expected to be useful as literature material to be used as a source of information about hygiene and sanitation as a source of material development for students and to be made into knowledge about environmental health

### 2. For Practitioners

#### a. For STIKes Wijaya Husada Bogor Institute

It is expected to provide more knowledge and learning material input than is currently available. Further research needs to do further research with the same type of research but with different methods and make deeper observations, so that it can provide more accurate research specifically about the hygiene relationship of Escherichia Coli contamination in food or drink.

#### b. For North Bogor Puskesmas

It is expected for the North Bogor Health Center, to be able to work together with parties in the new Tanah Kelurahan, Cimapar and Cibuluh, to be able to oversee food or beverage traders who sell in the environment around the North Bogor Puskesmas working area by conducting continuous visits to make it more monitored movement of food traders centers in the neighborhood around the working area of the North Bogor Puskesmas.

#### c. For street vendors in the North Bogor Public Health Center

It is expected that street vendors can follow every counseling or training related to food / beverage sanitation hygiene, understand and apply hygiene and sanitation, as well as maintain environmental cleanliness and clean behavior to prevent contamination of food.

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