

# FOOD DISTRIBUTION BEFORE AND DURING THE COVID-19 PANDEMIC AT THE NUTRITION INSTALLATION OF TUGUREJO REGIONAL GENERAL HOSPITAL SEMARANG: A DESCRIPTIVE STUDY

William Ben Gunawan<sup>1</sup>, Taqiyla Aziza Kesiananda<sup>1</sup>, Syafira Kholifatul Jannah<sup>1</sup>,  
Cholip Sutiyati<sup>2</sup>, Diana Nur Afifah<sup>1</sup>, Choirun Nissa<sup>1\*</sup>

<sup>1</sup>Nutrition Science Department, Faculty of Medicine, Diponegoro University, Semarang, 50275, Indonesia

<sup>2</sup> Nutrition Installation, Tugurejo Regional General Hospital, Semarang, 50185, Indonesia

\*Penulis Korespondensi: Choirun Nissa, Nutrition Science Department, Faculty of Medicine, Diponegoro University, Prof. Sudarto Street 13, Tembalang, Semarang, 50275, Indonesia.  
Email: choirun.nissa@live.undip.ac.id, Phone: 02476402881.

## ABSTRACT

The COVID-19 pandemic has made some of the activities carried out differently than before the pandemic. The handling and treatment of COVID-19 are inseparable from the contribution of healthcare facilities and hospitals. The physical distancing recommendation to prevent the transmission of the COVID-19 virus that supports patient care has made the food service management in hospitals – especially food distribution – undergo several modifications. The purpose of this study was to analyze the differences in the food distribution process at the Nutrition Installation of Tugurejo Regional General Hospital Semarang before and during the COVID-19 pandemic. This descriptive study used observational methods and online interviews using structured questions. Data related to the food distribution process before and during the pandemic was acquired through interviews with the Head of Research and Development of the Nutrition Installation of Tugurejo Regional General Hospital Semarang, while observation was only done during the pandemic. There were differences in the food distribution system before and after the pandemic at the Nutrition Installation of Tugurejo Regional General Hospital Semarang related to the Bed Occupancy Rate (BOR), nutritional service classes, distribution processes, food distribution time, places to eat (food serving media), hygiene and sanitation, as well as measuring food acceptance. The food service management focused on providing the best services of patient care before the pandemic; and highlighted the importance of physical distancing, sanitation, and hygiene during the pandemic. Understanding the changes needed in food distribution services at the hospital during the COVID-19 pandemic will give insights into the approach to improve patient care and prevent the transmission of the COVID-19 virus.

**Keywords:** Food Distribution, Pandemic, Patient Care, Nutrition Installation,

## Hospital

### 1. INTRODUCTION

The COVID-19 pandemic has changed various activities around the world. The COVID-19 virus itself was detected in Indonesia on March 2, 2020. The transmission of this virus occurs from human to human, this virus can be spread through droplets from coughing or sneezing. Droplets can be attached to an object or surface and then touched by a healthy person who then touches the

eyes, nose, or mouth so that the virus enters the body of the healthy person (1). As an effort to prevent the spread of the COVID-19 virus, the government has established a large-scale social restriction (PSBB) policy as well as 5M activities (washing hands, wearing masks, maintaining distance, staying away from crowds, reducing mobility) (2).

A hospital is a health service

institution that runs individual health services such as inpatient, outpatient, and emergency services (Kementerian Kesehatan Republik Indonesia, 2009). Activities carried out by hospital nutrition services (PGRS) include the implementation of food consisting of outpatient, inpatient, nutrition management, and research and development of applied nutrition (4). The COVID-19 pandemic directly affected 2 main activities of the hospital such as the management of nutritional and dietetic care and the food service management system (5). Food administration aims to ensure the availability of good quality food so that nutritional content, food costs, and food safety can be accepted by patients or consumers. Optimal nutrition services in each stage will support the patients' recovery process which can shorten their length of stay and reduce costs incurred.

Distribution is one of the processes in the implementation of food that can affect patient satisfaction (4). Hospital meal distribution consists of several aspects, such as the number of patients served, bed occupancy rate (BOR), food temperature related to taste, and patient acceptability (6), distribution system (centralization or decentralization), hygiene and sanitation in the distribution process, as well as maintenance of food distribution equipment. The implementation of food distribution depends on the number of staff and equipment, the distance between the central kitchen and the patient's room, road conditions, existing fixtures, and other factors. The distribution process is important to study since it has a high risk of food contamination (7). Adaptation to the food distribution process in hospitals can minimize the transmission of COVID-19 (8). In addition, the food distribution process is also a benchmark for the success of the minimum standards for food delivery in hospitals related to patient satisfaction (4).

Dealing with COVID-19 restrictions, Tugurejo Regional General Hospital has modified its food service management particularly related to BOR,

nutritional service classes, attribution process, food distribution time, food container (food serving media), hygiene and sanitation, and measurement of food acceptance. The modification of this distribution process is an effort to prevent the transmission of the COVID-19 virus in health service facilities. This article aims to describe and compare the differences in several aspects of food distribution in the nutrition installation of the Tugurejo Regional General Hospital (RSUD) as part of the hospital's food administration.

## 2. METHOD

The method used in this study is descriptive which exposes primary data based on the results of observations and interviews. The data sources obtained in this study include BOR, nutritional service classes, attribution processes, food distribution time, places to eat (food serving media), hygiene and sanitation, and measurement of food acceptance. Data collection techniques are carried out by using observation and interview methods.

Observations were made by researchers in the form of data collection with direct and indirect observations (photos and videos) as well as the recording of the objects being studied regarding the food distribution process. Data related to the food distribution process before and during the pandemic was acquired through online interviews with the Head of Research and Development of the Nutrition Installation of Tugurejo Regional General Hospital Semarang. The questions consisted of 7 structured questions regarding the BOR, nutritional service classes, distribution processes, food distribution time, where to eat (food serving media), hygiene and sanitation, and measurement of food acceptance. On the other hand, observation was only done during the pandemic based on the documentation in the form of photos and videos of food distribution activities at Tugurejo Hospital Semarang. The findings were then compared with several conditions and ideal flows of

food distribution obtained through literature studies.

### 3. RESULTS

The results of an interview with the head of the nutrition installation at Tugurejo Hospital showed the BOR of Tugurejo Hospital ranged from 60% during the COVID-19 pandemic. The VIP service class was eliminated by the Tugurejo Hospital's nutrition installation to standardize the nutrition service class at the start of the pandemic. Changes in the food distribution process and schedule were also observed. Using a disposable bento box as a meal vessel, the distribution technique was conducted at Tugurejo Regional Hospital during the COVID-19 epidemic. Before and after the COVID-19 pandemic, hygiene and sanitation in the distribution system at the Nutrition Installation of Tugurejo

Hospital were largely the same, although the level of supervision increased. A food trolley with an open lid and no temperature control is the sort of transportation equipment utilized in the food distribution system at the Nutrition Installation at Tugurejo Hospital. The sole way the Nutrition Installation at Tugurejo Hospital evaluated a patient's acceptability during the COVID-19 epidemic was by employing the comstock visual approach to examine the patient's leftovers. This is because there are limitations on how cops and patients can interact. In the meantime, patient satisfaction surveys were among the metrics used to gauge patient acceptance before the COVID-19 pandemic. Detailed information can be found in Table

**Table 1.** An Overview of the Differences in Food Distribution Before and During the Pandemic at the Nutrition Installation of Tugurejo Hospital Semarang

Number	Distribution Aspects	Before the Pandemic	During the Pandemic
1	Bed Occupancy Rate (BOR)	70 – 80%	60%
2	Nutrition Service Class	VIP, Class I, II, and III	Class I, II, and III
3	Food Distribution Process	The waiter delivers food directly to the patient.	The waiter delivers the food to the anteroom, which is then assisted by the nurse to be served to the patient.
4	Food Distribution Schedule	Breakfast: 06.00 – 07.00 WIB Morning Snack: 09.00 – 10.00 WIB Lunch: 12.00 – 12.30 WIB Dinner: 17.00 – 18.00 WIB Late Snack 18.30 – 19.00	Breakfast: 06.00 WIB Lunch 11.00 WIB Dinner 16.00 WIB  Snacks for class I patients are served as much as 2 times a day which are distributed at the same time as lunch and dinner time. Snacks for class II and III patients are served 1 time which is distributed at the same time as lunchtime.
5	Food Container (Food Distribution Media)	Plate	Disposable Bento Box
6	Application of Hygiene and Sanitation	The use of personal protective equipment (PPE) in the form of masks, gloves, and head coverings as well as the application of personal hygiene (hand hygiene) by food handlers and waiters.  The feeding trolley is equipped with a lid. Each trolley is cleaned with disinfectants before use, and distribution using trolleys can be carried out up to 5 times a day according to the	The use of PPE in the form of masks, gloves, and head coverings and implementing personal hygiene (hand hygiene) behaviors by food handlers and waiters with stricter supervision.  The feeding trolley is equipped with a lid. Feeding trolleys are cleaned with disinfectants every time before use, and distribution using trolleys can be carried out 3 times a day according to the food distribution schedule.

		food distribution schedule.	
7	Food Acceptance Measurement	The patient satisfaction form is filled out by the patient.	Visual comstock is performed by a ward (clinical) nutritionist.

**4. DISCUSSION**

***Nutrition Service Class and Number of Patients (BOR)***

Based on the results of an interview with the head of the nutrition installation at Tugurejo Hospital, the BOR of Tugurejo Hospital ranged from 60% during the COVID-19 pandemic, which is lower than the ideal parameter of 70-80% before the COVID-19 pandemic (Kementerian Kesehatan RI and Kesehatan, 2010). The achievement of the low BOR can show the efficiency of the occupancy rate or hospital occupancy that is not ideal, which can be caused by preventive patient behavior and intentions in visiting the hospital as well as patient satisfaction and views on the quality of health services in the hospital (10,11). There are currently 358 beds, with the average number of daily patients during the COVID-19 pandemic reaching 150 – 200 patients; much lower than the average daily patient of 303 patients before the pandemic. During the COVID-19 pandemic, there has been a decrease in the number of patients in outpatient, inpatient, and emergency departments (12). The nutrition installation of Tugurejo Hospital also limited the nutrition service class at the beginning of the pandemic by abolishing the VIP service class. This is related to Tugurejo Hospital which accepts COVID-19 patients.

***Food Distribution Process to Patients***

The increase in the spread of COVID-19 is unpredictable and has a high risk of transmission to nutrition workers, especially in the distribution and serving of food. This emphasizes the importance of modifying the distribution system that prioritizes sanitary hygiene and social distancing as prevention and control of COVID-19 virus infection. Food distribution is a risky thing for contamination. Therefore, it is necessary to pay attention to several aspects

including hygiene and sanitation, the use of personal protective equipment (PPE) such as masks, gloves, and head coverings, maintaining distance, and hand hygiene treatment before and after carrying out the distribution process. The distribution schedule is the period when food is distributed from the nutrition installation until the food is received by the patient in the inpatient room. Timeliness in meal distribution can also affect food waste. The timeliness of the distribution of a dish is associated with metabolic processes and biological cycles. Humans will feel hungry within 3-4 hours after the last meal, so after that period it is recommended to consume food either in light or heavy form. The patient's acceptability of food is related to the appropriateness of the food distribution schedule (13).

The division of work shifts between waitresses and supervising nutritionists has not changed before and during the pandemic. At the beginning of the pandemic, all employees were allowed to work from home (WFH). However, during the second batch of the pandemic, there was a recruitment of volunteers because the number of COVID-19 patients increased to reach 1.4 times at Tugurejo Regional Hospital. The number of waiters per day in pre-pandemic conditions was at least 12-16 staffs, but during the pandemic, it was only around 8-10 staffs. In fact, with a limited number, a change of work duties (rolling) can be carried out if there is a shortage of manpower due to isolation. Therefore, with a very high workload and the conditions of the COVID-19 pandemic which at that time had not shown a decrease, the incidence of burnout in staff at the nutrition installation at Tugurejo Hospital was inevitable.

Based on the results of epidemiological and virological studies, the transmission of the COVID-19 virus

mainly occurs from symptomatic people to other people who are nearby through droplets. Droplets are particles filled with water with a diameter of  $>5 - 10 \mu\text{m}$ . Transmission through droplets can occur at close range (within 1 meter) with subjects who have symptoms of respiratory distress such as coughing or sneezing, which causes droplets at risk of hitting the mucosa (mouth and nose) or conjunctiva (eyes) (14). The government emphasizes the need for social distancing to prevent the transmission of COVID-19 (15). The existence of recommendations to reduce contact with other people and maintain distance as a prevention of the spread of the COVID-19 virus has made the food distribution system at Tugurejo Hospital modified where the waiters in charge of distributing food do not directly meet directly with the patients in the treatment room. The prepared food will be taken to the anteroom. An anteroom is a room designed to provide an "air-lock" (without air mixture) between patients with infectious or infectious diseases and other rooms that are not contaminated. Furthermore, the process of distributing food to the patient's inpatient room will be assisted by the on-duty nurse. After the patient has finished eating, the food container will also be thrown away immediately as it's used as a disposable dining container during the COVID-19 pandemic.

#### ***Food Distribution Schedule to Patients***

Based on the results of interviews with the Head of Research and Development of the Nutrition Installation of Tugurejo Regional General Hospital Semarang, it is known that there is a difference in the time of food distribution between COVID-19 patients and regular patients. The meal distribution time in COVID-19 patients is one hour earlier than in regular patients, which is 06.00, 11.00, and 16.00 for breakfast, lunch, and dinner respectively. The distribution of snacks in between is also carried out in conjunction with the distribution time of

lunch and dinner. This is because the time for meal distribution to COVID-19 patients is carried out at the same time as the schedule for nurses to enter the patient's room to monitor the patient's condition. In addition to these schedules, monitoring is only carried out through CCTV (Closed Circuit Television) and intercoms to minimize interactions with patients. Restrictions on interactions with patients need to be carried out because the use of PPE (masks, gloves, and head coverings) is only one of the measures of infection prevention and control (PPI) and cannot be used as the main prevention strategy. Medical personnel in charge of treating COVID-19 patients must always apply vigilance to maintain distance from patients exposed to COVID-19 so it is necessary to limit interactions with patients (16).

Based on the Decree of the Minister of Health of the Republic of Indonesia in 2020 Number K.01.07 / MENKES / 413/2020 regarding guidelines for the prevention and control of COVID-19, it is known that every officer is required to wear PPE in the anteroom and is obliged to remove in dirty areas (17). Medical waste classified as hazardous and toxic materials (B3) is put into a yellow plastic container that reads biohazard. After the container is almost full or the B3 waste has settled for 12 hours, the container will be packed and then transported to a special landfill. Therefore, the waiter in charge of distributing food to COVID-19 patients needs to do hygiene and sanitation first after delivering food to the anteroom before distributing food to regular patients.

#### ***Food Container (Food Distribution Media)***

At Tugurejo Regional Hospital during the COVID-19 pandemic, the distribution process was carried out using a disposable dining container in the form of a bento box. The use of this bento box aims to prevent the remaining waste of containers and tableware from being returned to the preparation room to

prevent infection contamination. The trolley was also cleaned periodically using disinfectants on the outside of the trolley and soap on the inside of the trolley. Disinfection is the process of reducing the number of microorganisms to a lower level of danger in the field contaminated by microorganisms by using materials (disinfectants) that play a role in controlling, preventing, and destroying harmful microorganisms (18). A study reported that 12.6% indicated presymptomatic transmission. Even without symptoms, the virus can be transmitted due to droplets or contact with contaminated objects (14). After the meal is served, the bento box will be thrown away immediately. This certainly has an impact on the cost of procuring food containers, as well as increased hospital infectious waste. However, the advantage of using this bento box container is certainly more practical because there is no need to wash and clean the tool.

Before the COVID-19 pandemic at Tugurejo Regional Hospital, the food distribution process used containers in the form of plates. The use of plates has the advantage that the procurement price becomes cheaper because food containers can be used many times. But the drawback is that waiters or food handlers have the burden of being tasked with washing food containers. During the COVID-19 pandemic when several patients are infected with the COVID-19 virus, it can have an impact on the transmission of the virus from patients to food handlers through items such as plates used to serve food.

This change in the place of serving food certainly affects the patient's acceptance of the food consumed. Patient food waste occurs due to several factors including the quality of food, the quality of cutlery, and the use and selection of the right cutlery can affect the appearance of food when served to patients. However, based on research, it was found that there was no significant difference between the food waste of

patients who used disposable cutlery and reusable cutlery (19).

#### *Application of Hygiene and Sanitation*

A hospital nutrition installation is a public place with public services that attach great importance to hygiene and sanitation because it serves many people (20,21). One of the service activities of many people carried out by the hospital nutrition installation is the process of food distribution. The application of sanitary hygiene in the food distribution process is very important because it is a measure to control the spread of infection, especially during a pandemic that causes a decrease in the body's immunity. Control of factors of people, places, food, and equipment that can pose a risk of health problems is called hygiene and sanitation of food and beverages. There are several requirements in the form of chemical, physical, and biological requirements set for the conditions for controlling these factors (22).

Hygiene and sanitation in the distribution process need to be considered because meal distribution is the last and culminating process in the process of organizing food. The distribution process will be directly related to the patient and is a determining point for the quality of the food and drinks served. Therefore, it is necessary to strictly supervise sanitary hygiene in the distribution process because it is a critical point of the food administration system; there is no further stage of control after going through those stages.

During the COVID-19 pandemic, the way that needs to be done to break the chain of the spread of the virus is to carry out hygiene and sanitation. Hygiene and sanitation in the distribution system at the Nutrition Installation of Tugurejo Hospital before and during the COVID-19 pandemic were not much different, but the supervision carried out became stricter. Every waitress who distributes food to patients is required to use PPE,

especially masks. This is done to prevent the transmission of infection due to viruses circulating through droplets (23). Next, the waiter always does hand hygiene by washing hands before and after distributing food. This is done to prevent cross-contamination and transmission of various kinds of diseases due to pathogens that are in the hands of food handlers. If food is contaminated with the pathogen coming from food handlers, it can cause serious problems in the form of foodborne diseases (24).

The transportation equipment used in the food distribution system at the Nutrition Installation of Tugurejo Hospital is in the form of a food trolley equipped with a lid without temperature control. The use of closed food trolleys is following Peraturan Menteri Kesehatan Number 1204 / MENKES / SK / X / 2004 concerning hospital environmental health requirements. Feeding trolleys equipped with a lid aim to prevent food from being contaminated with bacteria, dust, and insects. The food trolley at the Nutrition Installation of Tugurejo Hospital does not have temperature control, but the temperature of the food when food is served to the patient is still appropriate for each type of food or drink. This is because after the process of casting food is placed on *au bain marie* with a temperature of 60°C so that the temperature of food and drinks will be maintained. In addition, in the process of food distribution, the Nutrition Installation of Tugurejo Hospital has arranged food trolleys per ward, so that the presentation of food to patients does not require a long time and the temperature of the food will be maintained.

#### **Food Acceptance Measurement**

The implementation of the food delivery system in hospitals aims to be able to provide food with good quality and quantity as needed and provide decent services for patients in need. One of the indicators of hospital service quality is the quality of nutritional services. The better the quality of

hospital nutrition services, the higher the patient's recovery rate, and the shorter the length of stay which will cause the smaller the cost of hospital treatment. The quality of hospital nutrition services is seen from the success of a nutrition service with indicators in the form of patient acceptance of the food that has been served (25). Food acceptance is a measurement of a person's ability to consume the food served. An indicator of success in the administration of food in the hospital is the acceptability of food by patients. In addition, food acceptance is also used as a benchmark in achieving and fulfilling minimum service standards in hospitals.

Based on Peraturan Menteri Kesehatan Number 129 / MENKES / SK / II / 2008 regarding the minimum service standards of hospitals for nutrition services, the indicator of food waste that is not inedible by patients must be <20%. There are two ways to measure the acceptability of patient food, namely by looking at the patient's leftovers with the visual comstock method or with the patient satisfaction form. Leftovers are an important indicator of a patient's perception of the administration of food in the hospital. Evaluation of the effectiveness of nutrition counseling programs, food administration, and service, as well as the adequacy of food consumption in groups or individuals, is carried out by looking at patient food waste (26).

During the COVID-19 pandemic, the Nutrition Installation of Tugurejo Hospital only assessed the patient's acceptability by looking at the patient's leftovers using the comstock visual method. This is due to restrictions on interactions between officers and patients. Meanwhile, before the COVID-19 pandemic, patient satisfaction forms were included in the indicators of assessing patient acceptance. The patient satisfaction form is a questionnaire regarding the level of patient satisfaction that arises after receiving services from the Nutrition Installation of Tugurejo

Hospital and compares the service with what is expected by the patient (27).

The assessment of the acceptability of non-COVID patients was carried out by the waiter using the comstock visual method, both before and during the pandemic. Observation of the food acceptance of COVID-19 patients was carried out by ward nutritionists (clinics) with monitoring through CCTV. However, the assessment that only uses the comstock visual method is considered inefficient, because the Nutrition Installation of Tugurejo Hospital does not know the cause or problem if the patient's acceptance of the food served is low. The patient satisfaction form can explore information related to the reasons for the low level of food acceptance, to make guidelines and references for improving quality when the food administration process is carried out. It is hoped that after improvements are made based on the results of the patient satisfaction form, the patient's acceptance of the food served will increase and the quality of services for the Nutrition Installation of Tugurejo Hospital will improve and can improve the quality of the hospital services.

## 5. CONCLUSION

There are 6 differences in the food distribution system before and after the pandemic at the Nutrition Installation of Tugurejo Hospital Semarang. First, there was a decrease in bed occupancy rate (BOR) from 80% to 60% with an average daily patient reaching 150 – 200 patients. Second, the food distribution process for COVID-19 patients is carried out by nurses, and waiters are only delivered to the anteroom while the distribution of food for regular patients will be carried out by the waiter. The third difference is in the schedule of food distribution to patients. The food distribution time for COVID-19 patients is one hour earlier than for regular patients because it adjusts to the schedule of the nurse on duty. The

change of the patient's dining container from a plate to a disposable serving device or bento box was carried out to minimize the transmission of COVID-19. The implementation and supervision of hygiene and sanitation have also been tightened compared to before the pandemic. The difference related to measuring patient acceptability is that the measurement only uses the comstock visual method to see food waste without a patient satisfaction survey through a questionnaire.

## 6. ACKNOWLEDGMENT

We thank Diponegoro University and Tugurejo Hospital Semarang for the support given to the author during the pre-internship of food service management in applying knowledge related to the institution's food administration system. We also thank our group colleagues: Syaharani Sidhin, Vitriasendy Ayu Kinanthi Biyantoro, Vidia Damayanti Khoirunnisa, and Syafira Khairunnisa.

## 7. REFERENCES

- Hastuti N, Djanah SN. Studi Tinjauan Pustaka: Penularan Dan Pencegahan Penyebaran Covid-19. *An-Nadaa J Kesehat Masy.* 2020;7(2):70.
- Kementerian Kesehatan Republik Indonesia. Pedoman Pelayanan Rumah Sakit Pada Masa Pandemi COVID-19. Jakarta: Kementerian Kesehatan Republik Indonesia; 2021. 1–283 p.
- Indonesia NKR. Undang-Undang Republik Indonesia Nomor 44 Tahun 2009 tentang Rumah Sakit. Indonesia; 2009.
- Menteri Kesehatan Republik Indonesia. Peraturan Menteri Kesehatan Republik Indonesia Nomor 78 Tahun 2013 tentang Pedoman Pelayanan Gizi Rumah Sakit. Indonesia; 2013.



- Permatasari T, Wibowo A. Pelayanan Gizi Rumah Sakit di Masa Pandemi COVID-19: Literature Review. *J Med Utama*. 2021;03(01):1417–25.
- Widi AL, Dewi C, Sofiyatin R, Suranadi L. Pengaruh Suhu Makanan Terhadap Daya Terima Makanan di Rumah Sakit. *J Gizi Prima*. 2020;5(2):119–24.
- Nurjanah R, Raksanagara A, Wiwaha G. Studi Kontaminasi Makanan di Instalasi Gizi dan Kantin Rumah Sakit X Kota Bandung Tahun 2015-2017. *Hig J Kesehat Lingkung*. 2018;4(1):20–5.
- Thibault R, Coëffier M, Joly F, Bohé J, Schneider SM, Déchelotte P. How the Covid-19 epidemic is challenging our practice in clinical nutrition—feedback from the field. *Eur J Clin Nutr*. 2021;75(3):407–16.
- Kementerian Kesehatan RI, Kesehatan DJBU. Kamus Indikator Kinerja Rumah Sakit dan Balai. Indonesia; 97 p.
- Meidina CI. Analisa Hubungan Kepuasan Pelayanan Kesehatan dengan Pencapaian Bed Occupancy Rate (BOR) di Rumah Sakit Bhayangkara TK-II Medan. *J Ilm Simantek*. 2018;2(2):13–23.
- Suryandartiwi W, Zaky A. Patient Behavioral Intentions To Visit the Hospital During the Covid-19 Pandemic in Pekanbaru. *J Heal*. 2021;8(2):140–50.
- Sarasnita N, Raharjo UD, Rosyad YS. Dampak Pandemi COVID-19 Terhadap Pelayanan Kesehatan Rumah Sakit di Indonesia. *J Kesehat*. 2021;12(1):307–15.
- Suryana AL, Suryadi MY. Jadwal Distribusi dan Citarasa Makanan Berhubungan dengan Sisa Makanan Pasien di Ruang Perawatan Obgyn dan Bedah RSD. dr. Soebandi Jember. *Amerta Nutr*. 2019;3(3):194.
- Apriningsih H, Prabowo NA, Myrtha R, Gautama CS, Wardani MM. Prevention of Transmission of Covid-19 in Health Workers in. *J Ilm Pengabd Kpd Masy*. 2020;4(2):556–64.
- Kandari N, Ohorella F. Penyuluhan Physical Distancing Pada Anak Di Panti Asuhan Al Fikri. *J Abdimas Kesehat Perintis*. 2020;2(1):37–41.
- WHO. Penggunaan rasional alat perlindungan diri untuk penyakit coronavirus (COVID-19) dan pertimbangan jika ketersediaan sangat terbatas. *World Heal Organ*. 2020;1–31.
- Keputusan Menteri Kesehatan Republik Indonesia. Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.01.07/MenKes/413/2020 Tentang Pedoman Pencegahan dan Pengendalian Corona Virus Disease 2019 (Covid-19). MenKes/413/2020. 2020;2019:207.
- Athena, Laelasari E, Puspita T. Pelaksanaan Disinfeksi Dalam Pencegahan Penularan COVID-19 dan Potensi Risiko Terhadap Kesehatan Di Indonesia. *J Ekol Kesehat*. 2020;19(1):1–20.
- Heryawati T, Prawirohartono EP, Sudargo T. Pengaruh Alat Penyajian Disposable Terhadap Sisa Makanan Pasien di Ruang Rawat Inap RSUP DR. Kariadi Semarang. 2004. p. 78–86.
- Syahlan VLG, Joseph WBS, Sumampouw OJ, Kesehatan F, Universitas M, Ratulangi S. Higiene Sanitasi Pengelolaan Makanan Dan Angka Kuman Peralatan Makan (Piring) Di Instalasi Gizi Rumah Sakit Umum Pancaran Kasih Gmim Kota Manado. *Kemas*. 2019;7(5).
- Menteri Kesehatan Republik Indonesia. Peraturan Menteri Kesehatan Republik Indonesia Nomor 1096 Tahun 2011 tentang Higiene Sanitasi Jasa Boga. Indonesia;

- 2011.
- Jiastuti T. Higiene sanitasi pengelolaan makanan dan keberadaan bakteri pada makanan jadi di rsud dr harjono ponorogo. *J Kesehatan Lingkungan*. 2018;10(1):13–24.
- Kementerian Kesehatan Republik Indonesia. Panduan Pelayanan Gizi dan Dietetik di Rumah Sakit Darurat dalam Penanganan Pandemi Covid-19. Jakarta; 2020.
- Mirawati M, Sitorus R, Hasyim H. Analysis of Personal Hygiene and Food Handling on Patients Food Managementt in Rsup Dr. Mohammad Hoesin Palembang. *J Ilmu Kesehatan Masy*. 2011;2(1):45–53.
- Uyami, Hendriyani H, Wijaningsih W. Menu Standar Di Rsud Sunan Kalijaga Demak the Difference of Food Acceptance , Food Waste and Food Intake of Standard and. Politek Kesehat Kemenkes Semarang. 2012;
- Sari R, Balgis P. Faktor-faktor yang berhubungan dengan daya terima makanan diet pada pasien rawat inap di RSUD Raden Mattaher Jambi. *Semin Nas Gizi 2017 Progr Stud Ilmu Gizi UMS “Strategi Optimasi Tumbuh Kembang Anak.”* 2017;203–12.
- Rachmawati AD, Anna C, Afifah N. Tingkat Kepuasan Pasien Rawat Inap terhadap Penyajian dan Pelayanan Makanan Di Rumah Sakit The Patient Satisfaction with Foodservice and Food Presentation in Hospital. *Gorontalo J Nutr Diet*. 2021;1(2):37–49.