



## Providing Online Education to Improve Health and Nutrition Knowledge in Security Units during the Pandemic (Covid-19)

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### ABSTRACT

Security Unit (SATPAM) is a profession that demands good endurance. During a pandemic, online education is one way that can be done to provide information about health and nutrition that can improve work performance and body resistance of security guards. This study aims to determine the effectiveness of providing online education to increase knowledge of health and nutrition in a security unit during a pandemic. This research is a quantitative study with a pretest-posttest design which was carried out on 68 security guards at the Diponegoro University campus. Online educational media used via Whatsapp. This research was in the form of providing a nutritional knowledge pretest, nutritional education and nutritional knowledge posttest to see the level of knowledge of the security unit. The pretest and posttest knowledge data analysis used paired t-test if the data distribution was normal and if the data distribution was not normal will use Wilcoxon. The results of statistical analysis showed that there was a significant difference in pretest and posttest nutritional knowledge ( $p = 0.002$ ), with the median and average value of the Undip security guards' nutritional knowledge from a median of 72.5 (45-85) to 80 (50-95) with the average of 70.96 before education and after education increased to 75.88. There is an effect of providing online nutrition education on increasing security knowledge of health and nutrition.

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## Pemberian Edukasi *Online* untuk Meningkatkan Pengetahuan Kesehatan dan Gizi pada Satuan Pengamanan (Satpam) di Masa Pandemi (Covid-19)

### ABSTRAK

Satuan Pengaman (SATPAM) adalah salah satu profesi yang menuntut daya tahan tubuh yang baik. Di masa pandemi, edukasi online merupakan salah satu cara yang dapat dilakukan untuk memberikan informasi mengenai kesehatan dan gizi yang dapat meningkatkan performa kerja dan daya tahan tubuh satpam. Penelitian ini bertujuan untuk mengetahui efektivitas pemberian edukasi online untuk meningkatkan pengetahuan kesehatan dan gizi pada satuan pengamanan (satpam) di masa pandemi. Penelitian ini merupakan penelitian kuantitatif dengan rancangan pretest posttest design yang dilakukan pada 68 satpam kampus Universitas Diponegoro. Media edukasi online yang digunakan melalui Whatsapp. Penelitian ini berupa pemberian pretest pengetahuan gizi, edukasi gizi dan posttest pengetahuan gizi untuk melihat tingkat pengetahuan satpam. Analisis data pengetahuan pre dan posttest menggunakan paired t-test apabila distribusi data normal dan wilcoxon apabila distribusi data tidak normal. Hasil analisis statistik menunjukkan bahwa terdapat perbedaan signifikan pengetahuan gizi pre dan posttest ( $p=0,002$ ), dengan nilai median dan rata-rata terdapat

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peningkatan pengetahuan gizi satpam Undip dari median 72,5 (45-85) menjadi 80 (50-95) dengan rata-rata 70,96 sebelum edukasi dan setelah edukasi naik menjadi 75,88. Terdapat pengaruh pemberian edukasi gizi online terhadap peningkatan pengetahuan kesehatan dan gizi satpam.

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## Introduction

The World Health Organization (WHO) declared the disease outbreak due to the Covid-19 as a global disease. This virus occurred in Wuhan, China in December 2019 and has spread to almost all countries including Indonesia. The COVID-19 disease is caused by the Severe Acute Respiratory Syndrome virus Corona Virus 2 abbreviated as SARS-CoV-2 is generally called the coronavirus. This virus is part of the coronavirus family that causes disease for both animals and humans. In general, the coronavirus causes diseases of the respiratory tract in humans in the form of mild respiratory infections such as coughs, colds and even worse Middle East Respiratory Syndrome (MERS) or Severe Acute Respiratory Syndrome (SARS). The very rapid spread of this virus among humans, coupled with high human mobility also makes this virus more dangerous. (World Health Organization (WHO), 2020; Worldometers, 2020) The existence of this virus is related to the body's immune response. In most cases, the pulmonary and systemic inflammatory responses associated with coronavirus are triggered by the innate immune system when it recognizes the virus.

Security unit is a profession that has an irregular work rhythm. In general, the security guard work system applies a shift work system, day and night. In general, humans use the night to rest, while in the morning and during the day it is time to work. According to the concept of the circadian rhythm of the human body, bodily functions increase in the morning, weaken in the afternoon and decrease at night. Circadian rhythm is the body's biological clock in regulating sleep, digestion, metabolism, hormonal secretion, body temperature, cardiovascular work and various body functions. In individuals who work with a shift work system, their body's circadian rhythm patterns can be disrupted due to changing working hours and sleeping hours. Working with the shift system is a major factor that influences health, including endurance and works safety because it is related to changes in circadian rhythms that regulate bodily functions. The work system is also inseparable from eating behaviour and the accompanying lifestyle which can affect the immune system (Fitria Saftarina, Risal Wintoko, & Handayani, 2014)

The security did not know much about this, especially related to nutrition. Nutritional knowledge is something that is known about food in relation to optimal health. Nutritional knowledge includes knowledge about proper selection and daily consumption and provides all the nutrients needed for normal body function (Almatsier, 2004) One effort that can be made to increase nutritional knowledge is to provide nutrition education. Nutrition education is a continuous process to increase knowledge about nutrition, form attitudes and behaviours for healthy living by paying attention to the daily diet and other factors that affect food, as well as increasing a persons' health and nutritional status. Nutrition education can be provided through counselling, giving posters, leaflets or booklets. Nutrition education is expected to increase knowledge so that it can change better

behaviour towards nutrition and health (Machfoedz & Suryani, 2007; Suhardjo, 2003)

During the Covid-19 pandemic, everything is required to maintain a distance, even all types of education must be done remotely, including nutrition education carried out in this study. Nutrition education during the Covid-19 pandemic is very much needed, one of which is about how to increase endurance, especially for security unit who have shift work and being vulnerable with low immunity.

Based on the description above, it is necessary to provide nutrition education to security personnel with the aim of increasing knowledge about nutrition so, it can improve the work performance of security unit officers during a pandemic.

## Method

### *Research Participant*

This research is a quantitative study with a pretest-posttest design. The research was conducted on the security unit at Diponegoro University as many as 68, which was conducted in May-June 2020 through online (online) as an alternative media during the pandemic.

### *Research Procedural*

This research was conducted by giving a questionnaire in the form of questions about nutritional knowledge (pre test) by filling in a google form. Then the subjects were given nutritional education in stages. Nutrition education is carried out in five stages. The first stage describes 10 guidelines for balanced nutrition, the second stage is about metabolic syndrome, the third stage is about limiting oil consumption, the fourth stage explains nutrition and diet and the last stage is about the consumption of protein sources, consumption of vegetables and fruit, consumption of purine and caffeine sources. Education is given through the Whatsapp group by distributing posters about the material. At the end of the study, the subject was given a questionnaire with questions (posttest) on nutritional knowledge to see the increase in nutritional knowledge after being given an education.

### *Instrument*

The instruments used in this study were a questionnaire on nutritional knowledge and posters as educational media. The knowledge questionnaire consists of 20 questions. The questionnaire and posters were prepared by the research team and adjusted to the security unit officers who refer to the balanced nutrition guidelines issued by the Indonesian Ministry of Health. The questionnaire is made based on the habits that may occur in the security guard. So, the researchers have to choose and sort out the questions according to the conditions of the security guard. The

following are the question points used for the nutritional knowledge questionnaire

**Table 1.**  
**Component of nutritional knowledge questionnaire**

No	Question Component
1	Nutritional requirements (micro and macronutrients)
2	Vegetables and fruit consumption
3	Liquid consumption
4	Oil consumption
5	Caffeine consumption
6	Source of purines consumption
7	Dietary habit
8	Sleep pattern
9	Physical activity
10	Smoking habit
11	Non-communicable disease

*Data Analysis*

The pretest and posttest knowledge data analysis was performed using pair t-test if the data were normally distributed, and using Wilcoxon if the data were not normally distributed. Education is said to have an effect on the level of knowledge if the *p-value* is <0.05 and it is said that there is no influence on the level of knowledge if the *p-value* is > 0.05.

**Results and Discussion**

Based on the research results, it is known that the characteristics of the research subject are as follows.

**Table 2.**  
**Subject Characteristics (N=68)**

Subject Characteristic	Mean ± SD
Age (years)	29,35 ± 8,18
Weight (kg)	71,27 ± 13,57
Height (cm)	167,63 ± 5,43
BMI(kg/m <sup>2</sup> )	25,32 ± 4,34
Gender	
Male (n, %)	66 (97,1%)
Female(n, %)	2 (2,9%)
Nutritional Status	
Underweight (n,%)	1 (1,5%)
Normal (n, %)	26 (38,2%)
Overweight (n, %)	7 (10,3%)
Obesity (n, %)	34 (50%)

Based on the characteristics of the subject, it was known that the average BMI of the subjects was classified as obese, namely 25.32 kg / m<sup>2</sup>. (Ministry of Health, 2003) Judging from the nutritional status, most of the subjects were also obese. Obesity is an abnormal condition or excess fat in adipose tissue. (Andriani & Wirjatmadi, 2012) Obesity is a serious health problem and is the fifth cause of death at the global level (Al-Hazzaa, Abahussain, Al-Sobayel, Qahwaji, & Musaiger, 2012) Obesity can increase the risk of degenerative diseases and death. Obesity is influenced by several factors including genetics, demographics and lifestyle. Genetics and demographics such as age, ethnicity, and gender are irreversible risk factors for obesity, while lifestyle is a factor that can be changed. A lifestyle that affects obesity, among others, such as eating habits, lifestyle

while physical activity and environment play a role in obesity. (Leech, McNaughton, & Timperio, 2014) Sleep duration also affects the incidence of obesity. Based on research conducted in Canada obese adults have a shorter duration than adults who are not obese. Lack of sleep will lead to a positive energy balance because it increases the chance to eat because you have more time to eat, especially snacks. Increased hunger and increased opportunity to eat will increase energy intake while thermoregulation changes. In addition, the short duration of sleep will cause fatigue during the day which allows a decrease in physical activity. Increased fatigue decreases energy expenditure. An increase in energy intake that is not balanced with energy expenditure can lead to obesity. (Chaput, Brunet, & Tremblay, 2006; Patel & Hu, 2008) Research conducted by Ramadhaniah et al shows that the effect of short sleep duration with less physical activity on obesity is more height 2.9 times compared to the duration of adequate sleep with less physical activity (Ramadhaniah, Julia, & Huriyati, 2014) This is consistent with research in America and Spain which states that short sleep duration and less physical activity have a greater risk towards obesity. (Laurson, Lee, Gentile, Walsh, & Eisenmann, 2014; Vioque, Torres, & Quiles, 2000) This can happen to security guards who have night shifts. A person who is sleep-deprived will experience changes in body metabolism and hormones. When sleeping, metabolism is 5% lower than when you wake up. People who sleep less than 7 hours a day, the levels of the hormones leptin and melatonin will decrease. This hormone plays a role in regulating body fat regulation and hunger. The more leptin hormone produced, the greater the amount of fat-burning that occurs and hunger will decrease due to obstacles that occur in the hypothalamus. During sleep, the levels of the hormone melatonin increase, this hormone which can make leptin levels increase. (Arendt, 2000; Farooqi et al., 1999)

Based on the results of education and the tests level of knowledge before and after being given education, the following results were obtained.

**Table 3.**  
**Knowledge level before and after nutrition education**

Knowledge Level		
Before Education	After Education	p
Median (min-max)	Median (min-max)	
72,5 (45-85)	80 (50-95)	0,002*

\*significant (Uji Wilcoxon)

The analysis showed that there was a significant increase in security knowledge (p = 0.002). The median value before education is 72.5 and after education, it increases to 80. The factors that can affect the increase in knowledge in the extension process are the methods, media and time of the extension applied. (Tuzzahroh, 2015) Types of educational media are generally divided into 3 such as visual, audio and audiovisual. (Dermawan & Setiawati, 2008) Educational media is made by adhering to the principle that knowledge can be accepted and captured by someone through the senses. The more the senses are used to receive and capture existing information, the more information will be obtained. (Kapti, 2010) The delivery of nutrition education using visual messages such as images is more easily embedded than using words, so it is more effective if you use a lot of media which show an image. (Siregar & Sondang, 2014), (Seki & Fayasari, 2019)

Nutritional knowledge itself has an important role in forming a person's habits, especially related to food,

both in the selection of types and amounts of food. A person who has good nutrition knowledge will pay attention to the nutritional state of the food he is eating. With good nutritional knowledge, it will be able to affect one's food consumption. So, it has an impact on nutritional status. (Azwar, 2003) Especially during the Covid-19 pandemic, knowledge related to nutrition is needed to help increase endurance. Eating a balanced nutritious diet is very important to increase immunity to protect it from viral infections, wash vegetables and fruit before consumption or processing, prepare side dishes carefully, avoid excessive consumption of sugar, salt and oil. Consumption of foods that contain lots of vitamins and minerals is also a way to increase endurance. If don't eat enough vitamins and minerals from food, someone can take supplements to complete vitamin and mineral needs. Several vitamins and minerals act as antioxidants which greatly affect the quality of human life such as vitamin A, vitamin E, vitamin C, selenium, iron and zinc. These nutrients are needed in the body's defence system because of their role as antioxidant nutrients (Siswanto & Ernawati, 2014)

An exercise that is done regularly can also increase body immunity. Physical activity can be done regularly 3-5 times / per week at least 30 minutes of activity/exercise. (Ministry of Health, 2020). By doing routine exercise can increase endurance and maintain it so that it is not susceptible to disease. Resistance to disease depends on the quality of the immune system if it is in optimal condition it will avoid disease whereas if it decreases it will be susceptible to disease. (Yuliarto, 2008) In addition to stopping smoking and consuming alcohol and improving sleep quality are ways that can increase body endurance. Quitting smoking can reduce the risk of respiratory infections because it can reduce the risk of the protective function of the airway epithelium, alveolar macrophages, dendritic cells, NK cells, and the adaptive immune system and can increase microbial virulence and bacterial resistance, (Feldman & Anderson, 2013) while alcohol can increase the risk of pneumonia (Samokhvalov, Irving, & Rehm, 2010) and reduce the function of neutrophils, lymphocytes, airway cilia, and alveolar macrophages (Simet & Sisson, 2015) Lack of sleep can also reduce endurance. Sleep disturbances are associated with increased susceptibility to infection characterized by impaired mitogenic lymphocyte proliferation, decreased HLA-DR expression, CD14 + upregulation, and variations in CD4 + and CD8 + T lymphocytes. (Roth, Richard, & Black, 2010).

## Conclusions and Recommendations

There is an effect of providing online nutrition education on increasing security knowledge.

Even during a pandemic, it is necessary to make health education efforts to security unit as an effort to maintain health and improve work performance. The use of attractive online educational media/platforms is expected to increase the effectiveness of the education provided.

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