

**THE RELATIONSHIP OF KNOWLEDGE ABOUT COVID-19 WITH THE HEALTH  
MAINTENANCE OF DIABETES MELLITUS PATIENTS**

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**ABSTRACT**

Indonesia is currently facing a triple burden of health problems, namely high infectious diseases, increasing non-communicable diseases and the emergence of coronavirus disease. The emergence of the global pandemic Coronavirus Disease-19 (COVID-19) in Indonesia has become a serious concern. One of the co-morbidities of Covid-19 is Diabetes Mellitus. The purpose of this study was to identify the relationship between knowledge about Covid-19 and efforts to maintain the health of patients with Diabetes Mellitus during the Covid-19 pandemic in Tasikmalaya City. This study used a cross-sectional study design, with a total sample of 195 respondents. The sampling technique was purposive sampling. The results showed that there was a relationship between demographic factors (age, (pv= 0.01) education level (pv=0.005), family history of DM (pv= 0.03) and income (pv=0.01) and knowledge (pv= 0.0005) with efforts to maintain the health of patients with type 2 Diabetes Mellitus during the Covid-19 pandemic in Tasikmalaya City. This study concludes that age, education level, income, family history of DM and knowledge are independent factors associated with self-maintenance efforts. with knowledge as the most influential factor. The recommendation from this study is the need for a quasi-experimental study to change behavior in DM patients

Keywords: Covid-19, DM, health care efforts

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**INTRODUCTION**

Indonesia is currently facing a triple burden of health problems, namely high infectious diseases, increasing non-communicable diseases and the emergence of coronavirus disease. Coronavirus Disease-19 (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus, or often called the Corona Virus. The increase in cases and deaths due to the Corona Virus is still a major problem in Indonesia. The Task Force for the Acceleration of Handling Corona stated that the comorbid factors that had a major influence on the death of corona patients in Indonesia were hypertension, diabetes, heart disease, lung disease and kidney disease <https://www.covid19.go.id/situasi-virus-corona>. This phenomenon indicates the need to control comorbid diseases, in this case PTM disease, so that the death rate from the Corona virus can be suppressed. The World Health Organization explains that PTM consists of four main groups, namely cardiovascular disease (coronary heart disease and stroke), cancer, chronic respiratory disease (asthma and chronic obstructive pulmonary disease) and diabetes.

Diabetes Mellitus is a metabolic disorder that occurs for years (chronic) caused by the inability of the pancreas to produce insulin in an amount that is in accordance with the body's needs (Risksedas Kemenkes, 2018). The World Health Organization (2017) states that insulin that is produced ineffectively causes blood sugar levels to become uncontrolled, resulting in an increase in blood sugar levels in the body. The condition of increasing blood sugar levels that exceed normal limits is called hyperglycemia (Gao, D., et al, 2013). The number of cases and prevalence of diabetes continues to increase every year in countries around the world (WHO Global Report, 2016). Meanwhile,

based on the results of the 2018 Basic Health Research, it showed that the prevalence of people with diabetes had increased from 1.6% in 2013 to 2.0 in 2018 (Ministry of Health, 2013; Ministry of Health, 2018)

Data on NCDs in Tasikmalaya City were 23,885 cases or 5.7% of the population over 19 years. Meanwhile, there were 380 cases of diabetes. This condition needs attention because the impact of diabetes causes various complications such as stroke, heart disease, kidney failure, blindness and amputation. If you watch out for people with a history of DM, they are a risk group in this Covid-19 pandemic (Mihaljcic, T., et al, 2017)

Various efforts to reduce the incidence and severity of Diabetes Mellitus, improve the quality of life of people with diabetes or diabetes, and prevent complications in diabetes, then carried out comprehensive management, namely the five pillars of Diabetes Mellitus management consisting of Education, Medical Nutrition Therapy (meal planning) , Physical Exercise, Pharmacological Therapy and Compliance in Monitoring Glucose Levels (Wattanakul, B. 2012). Diabetes management efforts can be interpreted as self-care efforts that must be carried out by a person with diabetes so that blood sugar levels are stable and avoid various complications that trigger and place people with diabetes as a vulnerable group during this Covid-19 pandemic. Kusnanto (2019) states that one of the factors that influence self-care with diabetes is knowledge, the better the knowledge, the better the handling of diabetes self-management.

The explanation above shows that knowledge about diabetes care is a factor related to diabetes health care efforts, but the relationship between knowledge of Covid-19 and efforts to treat early diabetes patients has never been studied before. This research was conducted in the City of Tasikmalaya. This study aims to describe knowledge about Covid-19 in the City of Tasikmalaya and identify the relationship between knowledge about Covid-19 and efforts to maintain diabetes health.

## METHODS

This study used a descriptive research design with a cross-sectional approach. The research data was collected in the City of Tasikmalaya by involving 195 diabetics. Sampling was done by purposive sampling method according to the inclusion criteria of the sample. This research has passed the ethical test and has received approval from KEPK with the number 066/KEPK/X/2020 and applies 3 ethical principles, namely respecting human dignity, caring for welfare and goodness, and justice. The instrument used in this study was a socio-demographic questionnaire, a knowledge questionnaire about Covid-19. Validity and reliability tests were carried out on 30 respondents and the r-value of each question item was 0.351. Based on this value, it was stated to have adequate internal consistency as a research questionnaire. Data were analyzed using statistical data analysis software. Bivariate analysis to determine the significance of the relationship between the knowledge variable and the maintenance of diabetes health was carried out using the Pearson correlation test. Multivariate analysis was performed using linear regression.

## RESULTS

The mean age of the respondents was 58.2 years, SD = 8.49, Min-max range: 27-89 years. Details of the characteristics of the respondents are described in Table 1 below

Table 1 Description of Respondents Characteristics (n=195)

Variable	n	%
<b>Sex</b>		
Male	58	29.7
Female	137	70.3
<b>Marital Status</b>		
Un married	1	0.5
Married	193	99
Divorce	1	0.5
<b>Education</b>		
Elementary Education	113	57,9
Secondary Education	60	30,8
Higher Education	22	11.2
<b>Family History of Diabetes</b>		
No history	67	34.4
With history	128	65.6

The characteristics of the respondents showed that the majority were women, married status, the proportion of low and middle education was balanced, and most of them were married and had a history of diabetes. The distribution of the average health care effort scores according to knowledge is described in Table 2 below:

Table 2  
Distribution of the average score of respondents' health care efforts according to knowledge (n=195)

Variable	Mean	SD	Min-Mak	P Value
Knowledge	6,9	1,12	4-10	0,005

Knowledge about Covid-19 has a significant effect on diabetes health care efforts with a p value of 0.005. This shows that the better the knowledge about Covid-19, the better the efforts to maintain diabetes health as a Covid-19 comorbid.

The following is the final model resulting from the final multivariate analysis after going through the candidate testing process, interactions, and confounders

Table 3  
Final Model Results of Health Maintenance Multivariate Analysis (n=195)

Variable	P Value
Age	0,014
Education	0,005
Family DM History	0,03
Pengetahuan	0,005

The variables mentioned above are included in the linear regression multivariate modeling and the final model is obtained as follows:

Health care efforts = 9.483+0.672 education +1.575 knowledge. Based on this model, it can be explained that the factor with the greatest influence is the knowledge variable.

## DISCUSSION

The results showed that most (70.3%) of the respondents were female. This is in line with Amelia et al (2018) who reported that 74% or 85 of 115 respondents with diabetes were women. This condition is in line with the results of Basic Health Research (2018) and Fitriyani (2012) which state that Type 2 Diabetes Mellitus has a higher incidence in women compared to men. This is because women have hormonal factors that can trigger diabetes. The emergence of diabetes in women generally occurs during menopause where there is a decrease in the hormone estrogen and an increase in the hormone progesterone which can cause insulin resistance and an increase in blood glucose levels (Mustarim, S. W. 2019). In line with this, Pane (2017) explained that as many as 40% of diabetes cases experienced by women were caused by a higher fat content distribution, decreased energy distribution and a greater chance of increasing BMI than men. In addition, the condition of the Covid-19 pandemic with PSBB allows the community, especially women, to be more vulnerable to staying at home, this changes their lifestyle, including diet and lack of physical activity. Based on this, hormonal and lifestyle factors should be a concern in health services during the Covid-19 pandemic, because women are not only a vulnerable group with cormobid disease but also vice versa as stated by Susilowati and Hakiem (2020) that women as mothers who should stay healthy and be a role model in a clean and healthy lifestyle (PHBS) so that they can educate and maintain the health of family members from exposure to Covid-19 by maintaining PHBS and carrying out health protocols with 3 M (washing hands, keeping distance and wearing masks) (Chrvala et al., 2016).

The results of this study also show that most of the respondents in Tasikmalaya City have junior high and high school education, namely 63.1%. Conditions are in line with Netismar (2016) which shows that people with Diabetes Mellitus in South Jakarta show that low levels of education occupy the highest proportion. Research with similar results was reported by Masi (2016) on blood glucose monitoring compliance with DM management which showed that most of the respondents were at a low level of education. Researchers assume that a person's level of education is able to affect his ability to understand the information provided. A person's level of education is related to his ability to understand information into knowledge (Boakye et al, 2018). The low level of knowledge of diabetes mellitus management possessed by people with diabetes can affect controlling blood sugar levels (Manan, 2014). The higher a person's education level, the easier it will be for that person to receive information, so they generally have a good understanding of the importance of diabetes self-care and have the skills to use diabetes information obtained through various media compared to low levels of education (Abbasi et al, 2018). Education is associated with the level of knowledge which is also related to behavior change. Knowledge plays an important role in behavior change. Someone with a low level of education will tend to find it difficult to receive information, including those with diabetes in this study (Bhurji et al, 2016).

The results of statistical tests for this study indicate that there is a significant relationship between knowledge about Covid-19 and efforts to maintain diabetes health. This is in line with research conducted by Prasetyani, Apriani & Rahayu (2018) which reported that there was a significant relationship between knowledge and self-care ability in type 2 DM patients (p value = 0.019). A low level of knowledge about self-care can worsen health conditions and cause stress due to the inability to carry out self-care efforts (Wu., F et al, 2019) In a study conducted by Wijaya (2014) in Riyambodo (2017) that someone who has low knowledge tends to find it difficult to understand and accept the information provided. This is in line with Kusnanto (2019) which states that one of the factors that influence self-care with diabetes is knowledge.

Knowledge of people with diabetes about Covid-19 is an important tool to improve diabetes self-care efforts, the better the knowledge, the better the handling of diabetes self-management. This is in accordance with Adejoh's statement (2014) that the higher the level of knowledge of people with diabetes, the higher the level of self-management of people with diabetes. Furthermore, Pender (2011); Nies and Swanson (2015) state that increased knowledge can occur because of the provision of information designed to increase knowledge and good attitudes.

## CONCLUSION

The results of statistical tests for this study indicate that there is a significant relationship between knowledge about Covid-19 and efforts to maintain diabetes health. This study concludes that age, education level, income, family history of DM and knowledge are independent factors associated with self-care efforts with knowledge as the most influential factor. The recommendation from this study is the need to conduct a quasi-experimental study on behavior change in DM patients.

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