

Evaluation Of Adherence To The Use Of Anti-Diabetic Medicine In Type 2 Diabetes Mellitus Patient At Primary Health Care Gombong 1

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ABSTRACT

Diabetes is a chronic metabolic nuisance disease that is signed by a high level of blood sugar more than a normal level. For diabetes mellitus type 2 patients, medication adherence is a very important thing to control the level of blood sugar in order to stay stable and reduce the risk of complications. Research purpose, To know patient characteristic correlation including gender, age, education level, occupation, income, suffering duration, the amount of medicine that is used, complication, by adherence level of the use of anti-diabetic medicine. Research method, Quantitative analysis used a cross-sectional design. The sampling technique used total sampling. the sample used is 62 respondents. The adherence level was measured by the MMAS-8 questionnaire. Data analysis used the Chi-Square test and Ordinal Logistic Regression test. Research results, The adherence level of the use of anti-diabetic medicine in the non-adherence category are 30 respondents (48.4), quite adherence are 21 respondents (33.9), and adherence category are 11 respondents (17.7). Based on Chi-Square test results, there is a significant correlation between age group and adherence level ($p=0.034$) and there is no significant correlation between gender ($p=0.733$), education level ($p=0.891$), occupation ($p=0.059$), income ($p=0.830$), suffering duration ($p=0.610$), complication disease ($p=0.759$), and the amount of medicine that is used ($p=0.373$) with the adherence level. The result of multivariate analysis shows that the age group 45-60 years old is a dominant factor that has an influence on the level of non-adherence use of medicine with a value of $p=0.034$ ($OR=0.292$, $95CI=0.091-0.939$). conclusion, Patients are classified as non-adherence to the use of anti-diabetic medicine (48,4). There is a significant correlation between the age group and the adherence level. The age group 40-60 years old is a dominant factor that influences the non-adherence to the use of anti-diabetic medicine. Suggestion, Further research is needed to use a bigger sample, research the family support factor with the adherence level of the use of anti-diabetic medicine, and analyze the long-suffering factor with the level of adherence using more varied choices.

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1. INTRODUCTION

Diabetes is a chronic metabolic disease characterized by high blood sugar levels above normal or hyperglycemia. Diabetes is caused by the pancreas not being able to produce enough insulin or insulin resistance. As many as 90-95 cases of diabetes in the world are diabetes mellitus type 2 [28].

Based on data from the International Diabetes Federation or IDF there are 463 million people aged 20-79 years in the world suffer from diabetes. Indonesia is the only country from Southeast Asia which is included in the 10 countries contributing to diabetes cases in the world, namely 10.7 million cases [9]. In addition, diabetes mellitus in Indonesia is the third disease as a cause of increased death [16]. Based on data from the Central Java Health Office, diabetes mellitus contributed to 16 of 3,531,367 new cases of Non-Communicable Diseases (PTM) in Central Java. The number of diabetics in Kebumen Regency is 13,044 sufferers [13].

The success of controlling blood sugar levels for people with diabetes mellitus can be determined by adherence to taking medication. Routine treatment is needed for people with diabetes mellitus to prevent complications and keep blood sugar levels stable [17,23]. Diabetes mellitus is a lifelong disease that cannot be cured permanently, so patients must undergo treatment for a very long time. This tends to cause many patients to become bored or bored in taking medication, causing uncontrolled blood sugar levels [8]. As for the challenges in patient compliance, namely the length of illness, the complexity of drug regimens, the lack of good communication between patients and health workers, lack of information, medical costs, and psychological factors [4,22].

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Based on research conducted at the Pucang Sewu Health Center in Surabaya, out of 75 patients, 78.6% of them were obedient, 14.6% moderately obedient, and the remaining 6.6% less obedient. The duration of suffering ($p=0.039$) and medication reminders ($p=0.015$) had a significant relationship with adherence to taking anti-diabetic medication [15]. Another study was conducted by Andarmoyo et al., (2019) with 180 research subjects, 55 adherent patients (30.6%), and 125 noncompliant patients (69.4%) Age factor ($p = 0.000$), gender ($p=0.000$), education ($p=0.000$), occupation (0.000), income (0.000), and duration of illness (0.000) have a significant relationship with adherence to the use of anti-diabetic drugs [1].

The Gombong 1 Health Center is a health service facility that provides diabetes mellitus treatment services. Based on the results of a preliminary survey study that has been conducted, the number of people with diabetes mellitus in 2020 is 527 people. In the period May-August 2021 there were 155 sufferers. Compliance with taking medication is very important in controlling blood sugar levels in people with diabetes mellitus.

Based on the results of the above studies, most used bivariate analysis to see the relationship between adherence and patient characteristics. Therefore researchers will conduct research related to evaluating adherence to the use of anti-diabetic drugs using bivariate analysis followed by multivariate analysis to see the dominant factors that influence adherence in type 2 DM patients at the Gombong 1 Health Center.

2. METHODS

This type of research is non-experimental research with observational analysis. The research method used is in the form of quantitative analysis using a cross-sectional design by surveying the relationship between the independent variables and the dependent variable. The independent variables in this study were the characteristics of the respondents related to the level of adherence including gender, age, education level, occupation, income, length of illness, complications, and number of drugs used. The dependent variable in this study was the level of adherence to the use of anti-diabetic drugs in type 2 DM patients at the Gombong 1 Health Center.

The population in this study were all adult patients aged ≥ 18 years who were diagnosed with Type 2 DM and taking anti-diabetic drugs who were treated at the Gombong 1 Health Center. The sampling technique in this study used the total sampling technique.g. Data collection in this study was by distributing the MMAS-8 questionnaire to patients who met the inclusion criteria. The inclusion criteria used were all patients diagnosed with type 2 DM at the Gombong 1 Health Center, type 2 DM patients aged ≥ 18 years old recorded in the Gombong Health Center registration book, type 2 DM patients with or without disease complications, type 2 DM patients receiving anti-diabetic drugs, patients who are willing to be respondents and fill out the questionnaire completely. Krierhe was excluded in this study, namely patients who met the inclusion criteria but were not willing to be respondents, incomplete questionnaires, patients who had just been diagnosed with type 2 DM.

Data analysis used was univariate analysis to see an overview of the frequency distribution of each variable studied, bivariate analysis in the form of chi-square to determine the relationship between the independent variable and the dependent variable, and multivariate analysis using ordinal logistic regression to see the dominant factors that influence the patient compliance.

3. RESULTS AND DISCUSSION

The number of respondents involved in this study were 62 type 2 DM patients who were treated at the Gombong 1 Health Center during the period February-April 2022. The results obtained described patient characteristics including: gender, age, education level, occupation, income, length of illness, complications, and number of drugs used.

A Univariate analysis

The results of the univariate analysis included data on the characteristics of type 2 DM patients at the Gombong 1 Health Center, including gender, age, education, occupation, income, length of illness, complications, and the total number of drugs used.

Table 1. Univariate analysis of the characteristic frequency distribution of type 2 DM patients at the Gombong 1 Health Center

Characteristics	Amount (N)	Percentage (%)
Gender		
Man	17	27,4
Woman	45	72,6
Age		
18-25 years	0	0
26-35 years	1	1,6
36-45 years	3	4,8
46-60 years	29	46,8
>61 years	29	46,8
Education		
No school	9	14,5
SD	17	27,4
JUNIOR HIGH SCHOOL	6	9,7
SMA/SMK	22	35,5
D3/D4	4	6,5
S1/S2/S3	4	6,5
Work		
Doesn't work	32	51,6
Farmer	5	8,1
Laborer	5	8,1
Private sector employee	0	0
civil servant	3	4,8
Self-employed	8	12,9
Retired civil servants	9	14,5
Income		
0-1.5 million	46	74,2
1.6-3.5 million	11	17,7
3.6-6.5 million	5	8,1
>6.5 million	0	0
Long suffered		
<3 years	30	48,4
≥3 years	32	51,6
Complication Disease		
There is	24	38,7
There isn't any	38	61,3
Amount of drug used		
≤2 drugs	21	33,9
>2 drugs	41	66,1

Based on the gender characteristics in Table 1, the majority of type 2 DM patients at the Gombong 1 Health Center were experienced by female patients totaling 45 people (72.6%) while male sufferers amounted to 17 people (27.4%). These results are in line with research conducted by Isnaini & Ratnasari, (2018) that women are at a higher risk of suffering from diabetes mellitus compared to men due to hormonal factors. Hormonal factors in women cause menstrual cycles and menopause which contribute to the accumulation of fat in the body so that women are at a higher risk of suffering from type 2 DM [10].

Based on the age characteristics in Table 1, the majority of type 2 DM patients at the Gombong 1 Health Center were experienced by patients aged 46-60 years and ≥61 years, 29 people (46.8%) respectively, 3 patients aged 36-45 years (4.8%), and sufferers aged 26-35 years only 1 person (1.6%). This is in line with the results of Riskesdas in 2018 which stated that the majority of type 2 DM sufferers

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were aged 56-74 years. In general, adults over 40 years of age have a high risk of developing type 2 DM, this is because with age, glucose intolerance will also increase so that it can increase the risk of developing type 2 DM [23].

Based on the educational characteristics in Table 1, it shows that type 2 DM patients at the Gombong 1 Health Center show that type 2 DM sufferers are mostly experienced by 22 high school/vocational school educated patients (35.5%), 17 elementary school educated patients (27.4%) , 6 patients with junior high school education (9.7%), 4 patients with D3/D4 education (6.5%), 4 patients with S1/S2/S3 education (6.5%), and the rest 9 people (14.5%) did not attend school.

Based on the occupational characteristics in Table 1, the majority of type 2 DM patients at the Gombong 1 Health Center were experienced by patients who did not work (housewives) as many as 32 people (51.6%), Farmers as many as 5 people (8.1%), Laborers as many as 5 people (8.1%), 3 civil servants (4.8%), 8 entrepreneurs (12.9%), and 9 people (14.5%) in the retired civil servant category. According to research conducted by Mokolomban et al., (2018) states that housewives are included in jobs that have relatively light physical activity. After completing their work, housewives have more free time to allow for a lack of physical activity, as a result there is no movement of the limbs which can make it easier to suffer from type 2 DM [20].

Based on the income characteristics in Table 1, it shows that in type 2 DM patients at the Gombong 1 Health Center, the majority of type 2 DM sufferers have an income category of 0-1.5 million as many as 46 (74.2%), an income category of 1.6-3.5 million 11 people (17.7%), and the remaining 5 people (8.1%) earn in the 3.6-6.5 million category.

Based on the long-suffering characteristics in Table 1 it shows that in patients with type 2 DM at the Gombong 1 Health Center, the majority of patients suffer from type 2 DM for > 3 years as many as 32 people (51.6%), while patients who suffer for ≤3 years are 30 people (48.4%). Similar to the research conducted by Mulyani, (2021) showed that the majority of patients suffering from type 2 DM were experienced by patients suffering >3 years as many as 28 patients, while patients suffering from ≤3 years were 12 patients [21]. Another study conducted by Sannulita et al., (2020) showed that there were 56 patients who suffered from type 2 DM within > 1 year, while 20 patients who suffered from type 2 DM within 3-6 months [26].

Based on the characteristics of complications in Table 1, it shows that in patients with type 2 DM at the Gombong 1 Health Center, the majority of patients did not have complications other than type 2 DM, as many as 38 people (61.3%), while patients with type 2 DM with complications were 24 people (38.7%).

Based on the characteristics of the number of drugs used in Table 1, it shows that type 2 DM patients at the Gombong 1 Health Center, type 2 DM sufferers mostly used > 2 drugs as many as 41 people (66.1%), and the rest of the patients used ≤ 2 drugs together 21 people (33.9%).

B. Bivariate Analysis

Bivariate analysis was carried out aiming to see the relationship between the characteristics of type 2 DM patients at the Gombong 1 Health Center and the level of adherence.

Table 2. Bivariate Chi Square Analysis of the Relationship between the Characteristics of Type 2 DM Patients and the Compliance Level at the Gombong 1 Health Center

Characteristics of Respondents	Compliance Level						(N)	%	P-values
	Less Compliant	%	Obedient Enough	%	obey	%			
Gender									
Man	7	11,3	7	11,3	3	4,8	17	27,4	0.733
Woman	23	37,1	14	22,6	8	12,9	45	72,6	
Age									
18-25 years	0	0	0	0	0	0	0	0	0.034*
26-35 years	1	1,6	0	0	0	0	1	1,6	
36-45 years	2	3,2	1	1,6	0	0	3	4,8	
46-60 years	20	32,3	6	9,7	3	4,8	29	46,8	

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Characteristics of Respondents	Compliance Level						(N)	%	p-values
	Less Compliant	%	Obedient Enough	%	obey	%			
>61 years	7	11,3	14	22,6	8	12,9	29	46,8	
Education									
No school	5	8,1	4	6,5	0	0	9	14,5	0.891
SD	8	12,9	5	8,1	4	6,5	17	27,4	
JUNIOR HIGH SCHOOL	2	3,2	3	4,8	1	1,6	6	9,7	
SMA/SMK	11	17,7	6	9,7	5	8,1	22	35,5	
D3/D4	2	3,2	1	1,6	1	1,6	4	6,5	
S1/S2/S3	2	3,2	2	3,2	0	0	4	6,5	
Work									
Doesn't work	16	25,8	9	14,5	7	11,3	32	51,6	0.059
Farmer	1	1,6	3	4,8	1	1,6	5	8,1	
Laborer	2	3,2	3	4,8	0	0	5	8,1	
Private sector employee	0	0	0	0	0	0	0	0	
civil servant	3	4,8	0	0	0	0	3	4,8	
Self-employed	7	11,3	1	1,6	0	0	8	12,9	
Retired civil servants	1	1,6	5	8,1	3	4,8	9	14,5	
Income									
0-1.5 million	21	33,9	16	25,8	9	14,5	46	74,2	0.830
1.6-3.5 million	6	9,7	3	4,8	2	3,2	11	17,7	
3.6-6.5 million	3	4,8	2	3,2	0	0	5	8,1	
>6.5 million	0	0	0	0	0	0	0	0	
Long suffered									
<3 years	13	21	12	19,4	5	8,1	30	48,4	0.610
≥3 years	17	27,4	9	14,5	6	9,7	32	51,6	
Complication									
Disease									
There is	13	21	7	11,3	4	6,5	24	38,7	0.759
There isn't any	17	27,4	14	22,6	7	11,3	38	61,3	
Amount of drug used									
≤2 drugs	10	16,1	9	14,5	2	3,2	21	33,9	0.373
>2 drugs	20	32,3	12	19,4	9	14,5	41	66,1	

Information: (*) p-value significance (<0.05), chi square analysis

Based on the results of the chi square test in Table 2. for gender with the level of adherence to the use of anti-diabetic drugs, a p-value of $0.733 > 0.05$ was obtained so that it can be concluded that there was no significant relationship between gender and the level of adherence to drug use in type 2 DM patients at the Gombong 1 Health Center. This is in line with the results of a study conducted by Fajriyah et al., (2019) at the Wonopringgo Health Center, Pekalongan Regency, that there was no significant relationship between gender and the level of adherence to anti-diabetic medication use with a p-value of $0.213 > 0.05$ [6]. Another study which showed no significant relationship between gender and the level of adherence to the use of anti-diabetic drugs was also carried out by Malfirani et al., (2018) at the Bangka Pontianak Southeast Village Health Center with a p-value of $0.744 > 0.05$ [18]. These results are different from a study conducted by Andarmoyo et al., (2019) at the Ponorogo District Health Center which showed that there was a significant relationship between gender and the level of compliance with the use of anti-diabetic drugs with a p-value of $0.000 < 0.05$ [1]. This is due to differences in behavior in maintaining health between men and women in society, women tend to take

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better care of their health than men. 05[1]. This is due to differences in behavior in maintaining health between men and women in society, women tend to take better care of their health than men. 05[1]. This is due to differences in behavior in maintaining health between men and women in society, women tend to take better care of their health than men.

Based on the results of the chi square test in Table 2, the p-value of $0.034 < 0.05$ was obtained for age and adherence to the level of adherence to use of anti-diabetic drugs, so it can be concluded that there is a significant relationship between age and adherence to medication use in type 2 DM patients at the Puskesmas. Gombong 1. These results contradict research conducted by Mulyani, (2021) at the Kuwarasan Health Center which stated that there was no significant relationship between age and the level of compliance with the use of anti-diabetic drugs with a significance value of $p\text{-value } 0.320 > 0.05$ [21]. In contrast to research conducted by Andarmoyo et al., (2019) at the Ponorogo District Health Center, it showed that there was a significant relationship between age and the level of compliance with the use of anti-diabetic drugs with a p-value of $0.000 < 0.05$ [1]. According to the theory put forward by WHO, (2003) the older the patient, the higher the chance of non-adherence due to decreased organ function and memory [27]. However, the results of this study indicate that elderly patients aged >61 years are more obedient in taking drugs. These results are in line with research conducted by Sannulia et al., (2020) which showed elderly patients aged >65 years were more compliant in taking medication. This is likely to be influenced by increasing age, so it can affect motivation regarding the importance of maintaining health so that patients adhere to taking drug therapy in the hope of recovering from their illness [26]. (2003) the older the patient, the higher the chance of non-adherence due to organ function and decreased memory [27]. However, the results of this study indicate that elderly patients aged >61 years are more obedient in taking drugs. These results are in line with research conducted by Sannulia et al., (2020) which showed elderly patients aged >65 years were more compliant in taking medication. This is likely to be influenced by increasing age, so it can affect motivation regarding the importance of maintaining health so that patients adhere to taking drug therapy in the hope of recovering from their illness [26]. (2003) the older the patient, the higher the chance of non-adherence due to organ function and decreased memory [27]. However, the results of this study indicate that elderly patients aged >61 years are more obedient in taking medication. These results are in line with research conducted by Sannulia et al., (2020) which showed elderly patients aged >65 years were more compliant in taking medication. This is likely to be influenced by increasing age, so it can affect motivation regarding the importance of maintaining health so that patients adhere to taking drug therapy in the hope of recovering from their illness [26]. These results are in line with research conducted by Sannulia et al., (2020) which showed elderly patients aged >65 years were more compliant in taking medication. This is likely to be influenced by increasing age, so it can affect motivation regarding the importance of maintaining health so that patients adhere to taking drug therapy in the hope of recovering from their illness [26]. These results are in line with research conducted by Sannulia et al., (2020) which showed elderly patients aged >65 years were more compliant in taking medication. This is likely to be influenced by increasing age, so it can affect motivation regarding the importance of maintaining health so that patients adhere to taking drug therapy in the hope of recovering from their illness [26].

Based on the results of the chi square test in Table 2, the p-value of $0.891 < 0.05$ was obtained for education with the level of adherence to use of anti-diabetic drugs, so it can be concluded that there is no significant relationship between education and adherence to medication use in type 2 DM patients in Gombong 1 Health Center. These results are in line with research conducted by Mulyani, (2021) at the Kuwarasan Health Center which stated that there was no significant relationship between education and the level of compliance with the use of anti-diabetic drugs with a significance value of $0.903 > 0.05$ [21]. Similar to research conducted by Fajriyah et al., (2019) at the Wonopringgo Community Health Center, Pekalongan Regency, it showed a p-value of $0.213 > 0.05$, which means there is no relationship between education and compliance levels [6].

Based on the results of the chi square test in Table 2, for occupations with adherence to the use of anti-diabetic drugs, a p-value of $0.059 < 0.05$ was obtained, so it can be concluded that there is no significant relationship between work and adherence to medication use in type 2 DM patients in Gombong 1 Health Center. These results are in line with research conducted by Mulyani, (2021) at the Kuwarasan Health Center which stated that there was no significant relationship between work and the

level of compliance with the use of anti-diabetic drugs with a significance value of $p\text{-value } 0.962 > 0.05$ [21]. Contrary to research conducted by Julaiha, (2019) showed that there was a significant relationship between work and the level of adherence to using anti-diabetic drugs with a $p\text{-value of } 0.011 < 0.05$ [14].

Based on the results of the chi square test in Table 2, the $p\text{-value of } 0.830 > 0.05$ was obtained for income with the level of adherence to use of anti-diabetic drugs, so it can be concluded that there is no significant relationship between income and adherence to medication use in type 2 DM patients in Gombong 1 Health Center. These results are in line with research conducted by Mulyani, (2021) at the Kuwarasan Health Center which stated that there was no significant relationship between income and the level of compliance with the use of anti-diabetic drugs with a significance value of $0.913 > 0.05$. [21]. Unlike the research conducted by Andarmoyo et al.,

Based on the results of the chi square test in Table 2, the $p\text{-value of } 0.0610 > 0.05$ was obtained for the length of suffering and the level of adherence to the use of anti-diabetic drugs in patients with type DM. 2 at the Gombong 1 Health Center. These results are in line with research conducted by Mulyani, (2021) at the Kuwarasan Health Center which stated that there was no significant relationship between the length of suffering and the level of compliance with the use of anti-diabetic drugs with a significance value of $0.291 > 0.05$ [21]. Contrary to research conducted by Jasmine, et al., (2019) at the Pancoran Mas Health Center showed that there was a significant relationship between the length of suffering and the level of adherence to using anti-diabetic drugs with a $p\text{-value of } 0.042 < 0.05$ [11]. According to research conducted by Anggraini et al., (2019) states that the longer patients suffer from type 2 DM causes patients to become bored in undergoing treatment so that it has a negative impact on the level of patient compliance [2].

Based on the results of the chi square test in Table 2, for complications with the level of adherence to the use of anti-diabetic drugs, a $p\text{-value of } 0.759 > 0.05$ is obtained so that it can be concluded that there is no significant relationship between complications and the level of adherence to drug use in patients with diabetes mellitus type 2 at the Gombong 1 Health Center. These results are in line with research conducted by Rasdianah et al., (2016) at the Yogyakarta Special Region Health Center which stated that there was no significant relationship between comorbid diseases and the level of adherence to anti-diabetic drug use with a significance value of $p\text{-value } 0.790 > 0.05$ [24]. Contrary to research conducted by Meidikayanti & Wahyuni, (2017) at the Pandamewu Health Center showed that there was a significant relationship between complications and the level of adherence to using anti-diabetic drugs with a $p\text{-value of } 0.011 < 0.05$ [19]. Rasdianah et al., (2016) in their research stated that type 2 DM patients with complicated diseases will indirectly affect the number of drugs used so that the treatment becomes more complex and will ultimately affect adherence in undergoing treatment [24].

Based on the results of the chi square test in Table 2, the total number of drugs used and the level of adherence to the use of anti-diabetic drugs obtained a $p\text{-value of } 0.373 > 0.05$ so it can be concluded that there is no significant relationship between the number of drugs used and the level of adherence to use. drugs in type 2 DM patients at the Gombong 1 Health Center. These results are in line with research conducted by Mulyani, (2021) at the Kuwarasan Health Center which stated that there was no significant relationship between the number of drugs used and the level of adherence to anti-diabetic drug use with a significance value $p\text{-value } 0.417 > 0.05$ [21]. Contrary to research conducted by Jasmine et al., (2020) showed that there was a significant relationship between the number of drugs and the level of adherence to using anti-diabetic drugs with a $p\text{-value of } 0.002 < 0.05$ [12]. In general, the more complex the treatment regimen used, the less the patient will comply with the treatment. An indicator of the complexity of a treatment regimen is for example the frequency of taking medication in a day. Patients tend to be more compliant when taking the drug once a day compared to more frequent doses, for example taking the drug three times a day [4].

C. Multivariate Analysis

In this study using multivariate analysis using ordinal logistic regression test to see which patient characteristics have the most influence on the level of adherence to the use of anti-diabetic drugs.

Table 3. Multivariate Analysis of Dominant Factors Associated with Compliance in Type 2 DM Patients at the Gombong 1 Health Center

Characteristics	B	p-values	Odds Ratio (OR)	95% CI for EXP (B)
Age				
18-25 years	-	-	-	-
26-35 years	-18,036	-	0.000	(0.000-0.000)
36-45 years	-0.717	-0.661	0.488	(0.020-11,965)
46-60 years	-1,229	0.039*	0.292	(0.091-0.939)
>61 years	0	-	-	-
Work				
Doesn't work	-0.760	0.314	0.468	(0.107-2.050)
Farmer	-0.434	0.679	0.648	(0.083-5.063)
Laborer	-0.701	0.551	0.496	(0.049-4.978)
Private sector employee	-	-	-	-
civil servant	-19,383	0.998	0.000	(0.000-0.000)
Self-employed	-2.2576	0.068	0.076	(0.005-1.208)
Retired civil servants	0	-	-	-

Information: (*) p-value significance (<0.05), ordinal logistic regression analysis

Based on the results of ordinal logistic regression analysis, it was found that the age factor of the 45-60 year category was the dominant factor influencing non-adherence to anti-diabetic treatment with a significance value of $p\text{-value} = 0.034$ ($OR = 0.292$, $95\% CI = 0.091-0.939$). This is in line with a study conducted by Hannan, (2013) that type 2 DM patients aged >40 years are less compliant in undergoing treatment than patients aged <40 years [7]. This research is also in line with research conducted by Jasmine, (2019) that type 2 DM sufferers aged 45-60 years are less compliant with using anti-diabetic drugs. daily life, such as having a busy job that causes patients in this productive age group to be unable to take medication or have no free time to visit the clinic [12]. In contrast to the age > 61 years where in this study this age category was more compliant in undergoing treatment. These results are in line with research conducted by Sammulia et al., (2020) which showed patients aged >65 years were more compliant in taking medication [26]. Many elderly patients are more obedient in using drugs because at that age they are in the unproductive age category so many patients are no longer working. This is in line with the results of research by Mokoloman et al.,

4. CONCLUSION

The level of adherence to the use of anti-diabetic drugs in patients who were less compliant was 30 respondents (48.4%), 21 respondents (33.9%) sufficiently compliant, and 11 respondents (17.7%) adherent. There is a significant relationship between age characteristics and the level of compliance with the use of anti-diabetic drugs with score ($p=0.034<0.05$) and there is no significant relationship between gender ($p=0.733>0.05$), education ($p=0.891> 0.05$), occupation ($p=0.059>0.05$), income ($p=0.830>0.05$), length of suffering ($p=0.610>0.05$), complications of disease ($p=0.759>0.05$), and the total number of drugs used ($p=0.373>0.05$) with the level of adherence to the use of anti-diabetic drugs.. Age 45-60 years was the dominant factor that most influenced the non-compliance with the use of anti-diabetic drugs in patients with type 2 DM at the Gombong 1 Health Center with a significance of $p=0.034$ ($OR=0.292$, $95\% CI=0.091-0.939$).

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