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# Diabetic Patients Joining Prolanis in Puskesmas Purwokerto Timur Central Java Had Better Outcome Compared to Non-Prolanis Patients

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*Introduction:* Prevalence of Diabetes Mellitus (DM) in Indonesia kept increasing, BPJS Kesehatan that managed Indonesian National Health Insurance introduced "Prolanis" program to manage chronic diseases, including Type 2 DM in 2015. This study aimed to assess differences in blood sugar control, level of knowledge on DM and satisfaction with health service between diabetic patients joining and those not joining "Prolanis" in Puskesmas I Purwokerto Timur, Central Java, Indonesia from February 2016 to February 2017. *Methods:* This study was a descriptive analytic cross-sectional research consisting of 73 diabetic patients aged 41–82 years: 33 "Prolanis" and 40 Non "Prolanis" patients. Blood sugar data were obtained from Puskesmas I Purwokerto Timur. The knowledge level of DM was assessed using a questionnaire and the level of satisfaction with health service using PSQ-18. The collected data was analyzed using independent sample t test and the level of significance was  $p < 0,05$ . *Results:* There was no significant difference in age and sex between Prolanis and Non Prolanis groups. The post prandial blood glucose level was higher in Non Prolanis patients compared to Prolanis ones. There were significant differences between Prolanis and Non Prolanis patients in diabetes knowledge ( $p = 0,001$ ) and level of satisfaction ( $p < 0,001$ ). *Conclusion:* It could be concluded that Type 2 diabetic patients joining "Prolanis" had better blood sugar control and monitoring, higher knowledge on DM and higher satisfaction with the health service compared to the Non "Prolanis" patients.

**Keywords:** Prolanis, Diabetes Mellitus, Level of Knowledge, Level of Satisfaction, Indonesia.

## 1. INTRODUCTION

There are 382 million Diabetes Mellitus (DM) patients worldwide in 2015 while another 415 million people with impaired glucose tolerance are at high risk of developing DM. It is estimated that DM patients would reach 642 million by 2040. Riskesdas data indicate that the prevalence of diabetes mellitus in Indonesia has increased from 1.1% in 2007 to 2.1% in 2013.<sup>2</sup>

Indonesia has a management program for chronic diseases (Prolanis) run by BPJS Kesehatan within the scheme of National Health Insurance (JKN). Chronic diseases in the coming discussion are limited on those of type 2 diabetes and hypertension. The aim of this Prolanis activity is to encourage chronic illness suffering participants to achieve optimum quality of life which is indicated by a minimum of 75% success story among the registered participants to prevent complications of the disease, i.e., those having good results on a specific examination of type-2 DM according to the relevant clinical guidelines.<sup>3</sup>

## 2. MATERIALS AND METHODS

This study, conducted in Puskesmas I Purwokerto Timur in February 2017, was a descriptive analytic cross-sectional research. The samples used in this study consisted of 73 diabetic patients aged 41-82 years the 33 of which were "Prolanis" and the other 40 were Non "Prolanis" patients.

The DM status was measured by secondary data, the level of knowledge by using DM Knowledge Level Questionnaire<sup>4</sup> and the level of satisfaction by using short form of Patient Satisfaction Questionnaire (PSQ 18).<sup>5</sup> The data collected was analyzed using t-test on its independent samples and the level of significance was found to be  $p < 0,05$ .

## 3. RESULTS

There Data obtained from the characteristic respondents were summarized in Table I. They indicate that prolanis male patients were 19 (26%), and female patients 14 (19%); while non prolanis male patients were 15% and female patients 25%. The average age of Prolanis patients was 64 years with as many as 21 (29%) people contained in its highest range of 60–69 years; meanwhile,

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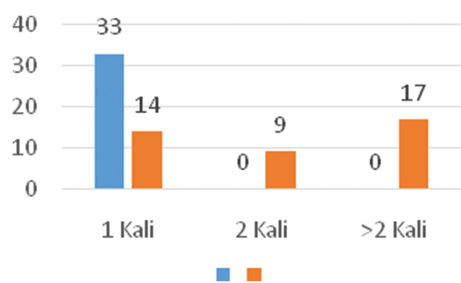


Fig. 1. Profile of respondent.

the mean age of non prolanis patients was 60 years with as many as 19 (26%) people contained in the same range. The highest education of prolanis patients was Senior High School graduates of 10 (14%) people, non prolanis patients Junior High School graduates of 15 (20%) people. The mean and standard deviation of DM patient survival rates were  $6.68 \pm 5.74$  years for prolanis patients, compared to  $6.02 \pm 3.36$  years for non prolanis patients.

### 3.1. Diabetes Status

#### 3.1.1. Visit to Respondents

The visit program to the respondents covered as many as 33 (45%) prolanis patients and 14 (19%) non prolanis patients with once-a-month visits. Among the non prolanis 9 (12%) were visited twice a month and 17 (23%) more than twice a month.

#### 3.1.2. Complications

Non Prolanis patients tend to experience more complications with a total of 30 (41%) compared to those of Prolanis patients with 20 people (27%).

However, the results of using an independent t-test indicated a value of  $p = 0.198$  which was greater than the  $\alpha$  value which meant no significant difference between the complications of Prolanis patients and Non Prolanis patients.

Table I. Characteristics of respondents.

Characteristics	Prolanis		Non prolanis	
	N	(%)	N	(%)
<b>Ages</b>				
40–49 years	3	4%	7	10%
50–59 years	2	3%	7	10%
60–69 years	21	29%	19	26%
70–79 years	6	8%	5	7%
>80 years	1	1%	2	3%
<b>Education</b>				
Uneducated	3	4%	2	3%
Primary school	8	11%	13	18%
Jr. high school	7	9%	15	20%
Sr. high school	10	14%	8	11%
Undergraduate	5	7%	2	3%
Duration DM (mean $\pm$ SD)	$6,68 \pm 5,74$		$6,02 \pm 3,36$	

Table II. Independent t-test on complications.

Patients	n	Mean $\pm$ SD	Mean diff (CI95%)	$p$
Prolanis	33	$1,60 \pm 0,43$	$0,14 (-0,77-0,36)$	0.198
Non prolanis	40	$1,75 \pm 0,49$		

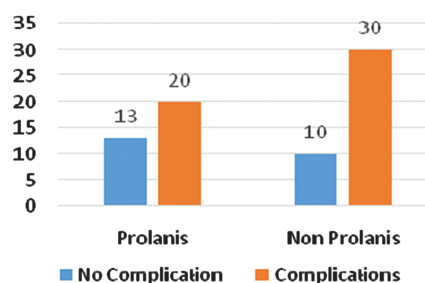


Fig. 2. Number of complications.

#### 3.1.3. Blood Glucose

The mean and the standard deviation of the Post Prandial Glucose for Non Prolanis patients was found higher than that of prolanis patients with a value of (285 mg%) mean and (84.968%) standard deviation compared to (227 mg%) mean and (54.588 mg%) standard deviation.

#### 3.1.4. Diabetes Knowledge

Based on the collected data, the average and standard deviation of the Prolanis patients was higher than that of the non prolanis patients with a value of  $19.93 \pm 3.50$  compared to  $16.95 \pm 3.99$ .

The independent t-test indicated a value of  $p = 0.001$  which was smaller than  $\alpha$  meaning that there was difference in their diabetes knowledge between Prolanis and Non Prolanis patients. The level of diabetes knowledge of the Prolanis patients was significantly higher than that of the Non Prolanis patients.

#### 3.1.5. Satisfaction of Health Service

Towards satisfaction of health service, the collected data indicated mean and standard deviation of  $71.45 \pm 5.16$  for Prolanis patients and  $60.22 \pm 7.79$  for Non Prolanis.

The independent t-test showed a value of  $p < 0.001$  which is smaller than  $\alpha$  meaning a significantly higher difference in satisfaction of health service between Prolanis patients with Non Prolanis.

Table III. Post prandial glucose.

	Prolanis		Non prolanis	
	Mean	SD	Mean	SD
G2PP	227	54,588	285	84,968

Table IV. Independent t-test on diabetes knowledge.

Patients	n	Mean $\pm$ SD	Mean diff (CI95%)	$p$
Prolanis	33	$19,93 \pm 3,50$	$-2,98 (-4,76-1,21)$	0.001
Non prolanis	40	$16,95 \pm 3,99$		

Table V. Independent t-test of health service.

Patients	n	Mean $\pm$ SD	Mean diff (CI95%)	$p$
Prolanis	33	$71,45 \pm 5,16$	$-11,22 (-14,27-8,18)$	<0.001
Non prolanis	40	$60,22 \pm 7,79$		

## 4. DISCUSSION

### 4.1. Diabetes Status Visits of the Respondents

Prolanis patients regularly visited Puskesmas once a month to have their diabetes disease examined. Non Prolanis patients visited Puskesmas more than once a month with a number of purposes, i.e., to have their diabetes check as well as their recent health problems. Compliance control in diabetic patients was indicated by the level of their adherence to the visit schedule as well as to the advice given by health workers.<sup>6</sup> Prolanis patients who regularly receive counseling and education have significant improvement in their knowledge and attitude compared to their counterparts, Non Prolanis patients, who rarely receive counseling or education on diabetes. This was to show that diabetes counseling was found to be very effective in improving knowledge and attitude that will in turn shape the behavior of patients in improving compliance.<sup>7</sup>

### 4.2. Complications

The number of Non Prolanis patients with complications was found higher than that of Prolanis patients. This phenomenon can be explained by the fact that the Prolanis patients had more regular blood sugar check, education/counseling and consumed regular medications. As a matter of fact, patients who received counseling about diabetes had lower level of complications and had a better control of their blood sugar levels.<sup>8</sup> In terms of the resulting complications due to the average duration of diabetes, there was no difference between the two grouped patients with over six year durations. Patients with disease duration of less than 6 years had a tendency of suffering acute complications and chronic diseases like hypoglycemia, heart disease, blood vessel disease, kidney failure, eye damage, impotence, leg ulcers, and gangrene.<sup>9</sup>

### 4.3. Blood Glucose

The blood glucose of Prolanis patients (Fasting Glucose and G2PP) were documented because Prolanis activities were regularly held every first Tuesday of the month at Puskesmas I Purwokerto Timur. Non Prolanis patients, on the other hand, did not regularly have blood sugar checks every month at Puskesmas I Purwokerto Timur; some of them visited other health facilities such as Private Clinic, Klinik Pratama and Hospital. The average G2PP of both Prolanis and Non Prolanis patients showed instability with their higher-than-normal range (<200 mg%). The G2PP standard deviation of Prolanis patients was lower than that of Non Prolanis patients. That was to suggest that fluctuation of Prolanis patient's blood sugar was lower than that of Non-Prolanis patients. The lower compliance of Non-Prolanis patient in joining Prolanis activities had apparently made their blood sugar levels unstable,<sup>10</sup> this is true as physical activity is one of the many factors to stabilize blood sugar.<sup>11</sup> Unstable blood sugar is in fact influenced by diet.<sup>12</sup> Most Elderly with diabetes, however, still practice poor health behaviors related to physical activities and consumption of vegetables and fruits.<sup>13</sup>

### 4.4. Diabetes Knowledge

Level of diabetes knowledge among Prolanis patients was found to be higher than that of Non Prolanis patients. Age, however, is believed to be potential for developing cognitive impairment in thought processes.<sup>14</sup> Cognitive function should decrease in those with less than nine year education.<sup>15</sup> Education affects the

level of one's knowledge. The education level of Prolanis patients (with highest percentage of high school graduates) was higher than that of the Non Prolanis patients (with highest percentage of elementary and junior high school graduates); this is to create higher level of knowledge of one group compared to the other as the. Prolanis patients are naturally more exposed to information and they regularly received monthly education. The diabetes knowledge are also influenced by the ability of each individual in absorbing various levels of exposure to the media information.<sup>16</sup> Patients with type 2 diabetes problems who were given a two year integrated counselling showed an increase in their scores of knowledge and of blood sugar level improvements compared to their scores before counselling.<sup>17</sup> Most Prolanis patients suffered diabetes longer than the Non Prolanis patients. One of the factors that influence diabetes knowledge is the duration since the diagnosis.<sup>18</sup> The knowledge level was significantly higher in patients with a family history of diabetes mellitus than patients who do not have a family history of diabetes.<sup>19</sup> Diabetes related knowledge is useful for patients for their self-care. One can learn from what they do everyday.<sup>20</sup>

### 4.5. Satisfaction of Health Service

Prolanis patient's satisfaction of health service is higher than that of Non Prolanis patients. As their activities were already funded by BPJS Kesehatan, Prolanis patients do not pay additional costs. In the theory of customer satisfaction, a person who pays for a product tends to demand more or higher quality compared to someone who gets the product for free or pays less. In health care, a person who pays the service tends to be more demanding with the services (not easily satisfied) than someone who does not pay or pay less.<sup>21</sup> Another factor that affects the high satisfaction of Prolanis patients is the ease of getting diabetes medication. The medication is normally collected for one month and Prolanis patients have their own queue separated from other patients; thus speeding up their waiting time for the examination. The waiting time is identical with boredom, anxiety and longer waiting times may lower patient satisfaction on service quality.<sup>22</sup> Patients will be satisfied if they receive easy access to health services without unnecessary complication.<sup>23</sup> The gap between the expectations of patients and the health care performance may be reduced by good communication between health care providers and patients.<sup>24</sup>

## 5. CONCLUSION

Based the mean blood glucose level of Prolanis patients was found lower than that of Non Prolanis patients. The observed blood sugar levels of Prolanis patients were more consistent because they were regularly measured every month; to the contrary, the blood sugar levels of Non Prolanis patients were not well monitored because the patients did not regularly visit the same health facility.

Prolanis patients were found to have a higher level of diabetes knowledge than Non Prolanis patients.

Satisfaction level of health service of Prolanis patients were also found to be higher than that of Non Prolanis patients.

## ABBREVIATIONS

Prolanis: Program Pengelolaan Penyakit Kronis; BPJS: Badan Pengelola Jaminan Sosial; Puskesmas: Pusat Kesehatan Masyarakat; G2PP: Glucose 2 Hour Post Prandial.

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