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Research Article

Quality of Life and Adherence of Diabetic Patients in Different Treatment Regimens

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Abstract

The diabetic patient's quality of life and adherence should be a concerned by health care providers. This study aimed to explore the diabetic patient's quality of life and medication adherence into account. We recruited 88 subjects in a cross-sectional design. The research subjects were out-patients with type 2 diabetes mellitus in a private hospitals in Yogyakarta City who had taken single or combination of oral anti diabetic and insulin at least six months prior to quality of life measurement. Patients were classified into three groups (monotherapy, oral combination therapy, and oral-insulin combination group). The domains of physical function, energy, satisfaction treatment, and treatment effect were significantly different among the three groups. There were significant associations between treatment satisfaction domain and adherence in monotherapy and oral-insulin combination groups, the health pressure domain and adherence in oral-insulin combination group, the treatment satisfaction domain with adherence in first two groups, and health pressure domain with adherence in oral-insulin combination group. In conclusion, the quality of life of the diabetic patients was good and their medication adherence was at a moderate level.

Key words: Adherence, diabetes, Indonesia, quality of life

Kualitas Hidup dan Kepatuhan Pasien Diabetes Melitus dengan Pengobatan yang Berbeda

Abstrak

Kualitas hidup dan kepatuhan pasien diabetes melitus (DM) sebaiknya mendapat perhatian dari pemberi layanan kesehatan. Penelitian ini bertujuan untuk mengetahui kualitas hidup pasien DM dan hubungannya dengan kepatuhan pasien. Penelitian ini dilakukan dengan menggunakan rancangan potong lintang. Subjek penelitian ini adalah 88 orang pasien DM tipe 2 di suatu rumah sakit swasta di Yogyakarta yang memperoleh pengobatan baik tunggal maupun kombinasi antara antidiabetes oral dan insulin minimal enam bulan sebelum pengambilan data kualitas hidup. Pasien dikategorikan menjadi tiga kelompok, yaitu kelompok monoterapi, kombinasi oral antidiabetes, dan kombinasi oral-insulin. Terdapat perbedaan yang signifikan antara ketiga kelompok ini pada domain fungsi fisik, energi, kepuasan terhadap terapi, dan efek pengobatan. Terdapat hubungan signifikan antara domain kepuasan pasien dengan kepatuhan pada kelompok monoterapi dan terapi kombinasi oral, domain tekanan kesehatan dengan kepatuhan pada kelompok terapi kombinasi oral-insulin, serta domain kepuasan pasien dan tekanan kesehatan dengan kepatuhan pasien pada ketiga kelompok terapi. Kualitas hidup pasien DM pada penelitian ini cukup bagus dengan kepatuhan pada tingkat moderat.

Kata kunci: Diabetes, kepatuhan, kualitas hidup, Indonesia

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Introduction

Indonesia's economic growth has increased over the last decades which resulted a significant impact in the lifestyle of the Indonesian population. One of the lifestyle diseases is diabetes which is experienced by around 7.0 million people in Indonesia.[1,2] According to the WHO, Indonesia is in the fourth rank of the diabetes prevalence in the world.[3,4] Furthermore, diabetes is a major burden in Indonesia, given the 4.8% prevalence in 2012.[4]

Diabetes mellitus is one of the major health problems in Indonesia because of its major impact in the patients' quality of life. Quality of life is one of the health outcomes which confirmed the patients' condition from psychology, social, and emotional perspectives.[5] Diabetic patients should aware on the disease and its treatment, for instance, diabetic patients who are treated sulfonylurea and insulin, will have experience with some problems related to hypoglycemia and hyperglycemia. Specifically, diabetes mellitus could make some complications because it is a lifelong chronic condition. Therefore, the disease and the treatment can decrease patients' quality of life.[6,7]

Some were mentioned as independent factors of patients' quality of life such as factors like gender, economic status, diabetic treatment and complications.[6] Some other factors (e.g., age, HbA1C, and diabetic ketoacidosis) also became strong predictors of the low patient's quality of life in type 1 of diabetes mellitus patients.[7] A previous study which focused on the association between non-adherence and patient's quality of life in type 2 diabetes mellitus showed that patients with lower adherence also had lower quality of life.[8] However, several factors could improve patient's quality of life such as health care providers' contributions, including pharmacy intervention, in developing educational/self-management programs.[9,10]

In the chronic disease treatment, patient's adherence plays key role in therapeutic success and also as the major determinant of it. Fear of the treatment-related side effect, patient's awareness on the importance of medication and education to patient during the treatment would influence the quality of life as one of the treatment outcomes in chronic disease management.[11] The role of pharmacist in the treatment of diabetes mellitus (e.g; monitoring patient' adherence, counseling of life style modification and self medication) could improve patient's quality of life.[12] Additionally, pharmacist could give counseling to the diabetic patients by giving diabetic management booklet and also using special medicine containers to improve patient's adherence in consuming the medicine.[13] This study aimed to explore diabetic patient's quality of life and to take medication adherence into account.

Methods

This study was conducted by a cross-sectional design. Subjects' data were collected prospectively during October–December 2013. The research subjects were out-patients with diabetes mellitus type 2 in one of the private hospitals in Yogyakarta who had taken single or combination of oral anti diabetic and insulin for at least 6 months prior to quality of life measurement.

The subjects who met inclusion criteria were 88 diabetes mellitus patients type 2. They were classified into three groups namely: (i) monotherapy group, (ii) oral combination therapy, and (iii) oral-insulin combination group. Quality of life and adherence were measured by using Indonesian version of Diabetes Quality of Life Clinical Trial Question (DQLCTQ). The domains which included the DQLCTQ were domains of physic, energy, health pressure, mental

health, satisfaction, treatment satisfaction, treatment effect and symptoms frequency, and Medication Adherence Rating Scale (MARS), respectively.[1] The score of quality of life domains were grouped into: 100, 80–99, 56–79, 1–55 which were representing perfect health, good, moderate, and poor quality of life, respectively. The scores of adherence were grouped into 25, 6–24 and <6 which were representing good, moderate and low adherence, respectively. Data was analyzed descriptively to describe patient's characteristics. The ANOVA test was used to analyze the differences of QoL domains' differences among the three groups and linear regression analysis was conducted to analyze the association between patient's adherence and quality of life. This study has been approved by the local committee ethic in the University of Muhammadiyah Yogyakarta and written informed consent was obtained from all subjects.

Result

In general, some of quality of life domains were significantly different in all therapy groups and not all of the quality of life domains were associated with the score of subjects' adherence. Table 1 lists the subjects' characteristics. We recruited 88 subjects with most of them were female (61.4%) who had permanent occupation (73.9%) and the education level up to senior high school (75%). In average, the treatment duration of diabetes mellitus was approximately 5 years. The total score of quality of life and adherence were moderate (81.36 and 23.37, respectively).

Table 2 shows the patient's quality of life among the three groups, based on the quality of life domains. Health pressure, treatment satisfaction, and symptoms domains were not significantly different among in all therapy groups. After doing adjustment with the treatment duration and age, the treatment effect and energy were significantly different in the three groups.

Table 3 shows the results of linear regression analysis which took the patient's adherence and quality of life into account. In the monotherapy and oral-oral combination groups, patient's adherence was associated with treatment satisfaction. While, in the mean time, insulin-oral combination group, health pressure domain was associated with patient's adherence. The additional analysis was shown that the score of patient's

Table 1 Subject's Characteristics (N=88)

Characteristics		N	%
Gender	Male	34	38.6
	Female	54	61.4
Occupation	Jobless	23	26.1
	Occupied	65	73.9
Last Education	Up to Senior high School	66	75.0
	Undergraduate	22	25.0
Treatment Duration in years (Mean±SD)	4.92±4.08		
Age (Mean±SD)	55.53±5.64		
MARS score (Mean±SD)	23.27±2.05		
QoL Score (Mean±SD)	81.36±5.97		
Treatment	Monotherapy	24	27.3
	Sulfonilurea and metformin combination	32	36.4
	Oral and insulin combination	32	36.4

Table 2 QoL Domains Differences between Treatment Groups (Mean±SD)

Domains	Therapy			P value a)	P value b)	P value C)
	Monotherapy	Sulfonilurea and Metformin Combination	Oral and Insulin Combination			
Physical function	76.45±25.47	87.81±11.56	74.37±21.69	0.02*	0.66	0.27
Energy	80.75±16.53	77.46±9.66	85.63±12.88	0.04*	0.67	0.019*
Health pressure	95.00±7.38	93.53±7.69	96.25±7.25	0.34	0.39	0.41
Mental health	76.91±9.17	79.93±9.92	78.56±8.61	0.50	0.69	0.79
Satisfaction	82.33±8.75	75.31±4.28	77.71±6.33	0.00***	0.08	0.59
Treatment satisfaction	94.04±11.03	88.00±9.78	92.10±9.90	0.64	0.30	0.49
Treatment effect	65.95±18.42	59.50±10.52	73.12±14.15	0.001*	0.05*	0.89
Symptoms frequency	81.33±13.46	78.96±11.51	83.85±9.94	0.25	0.18	0.80
Average QoL	81.33±6.90	79.71±5.47	82.70±5.38	0.13	0.64	0.76

* p< .05; ** p< .01; *** p< .001
P value a): p value of ANOVA, P value b): p value of ANCOVA controlling by treatment duration, P value C): p value of ANCOVA controlling by age

adherence was associated with age. In this study, the older patient's had higher score of adherence (p=0.016; y=18.07x+0.094. Furthermore, there was no significant association between patient's quality of life and score of adherence in all therapy groups (analysis results were not shown).

Discussion

Our study indicated that the diabetic patients in one of the private hospitals in Yogyakarta were in the situation of good quality of care. Overall, patient's quality of life in the all therapy groups were good, even though the score of the treatment effect domain were under 75. The high score of the domain shows that the diabetic patients had good well-being in all over of the measured domains. From our perspective, this situation could be caused by the well-formed education given by the health professionals in the hospital which could support the patients to adjust their life as diabetic patients. The health professionals and the patient's family could help patients to customize their daily activities with the

Table 3 P-value of Liniar Regression Analysis Results between QoL Domains and MARS Score in the Treatment Groups

Domains	P-value		
	Monotherapy	Sulfonilurea and Metformin Combination	Oral and Insulin Combination
Physical function	0.786	0.813	0.761
Energy	0.405	0.735	0.437
Health pressure	0.716	0.609	0.019**
Mental health	0.350	0.432	0.125
Satisfaction	0.077	0.775	0.224
Treatment satisfaction	0.045*	0.041*	0.553
Treatment effect	0.737	0.730	0.961
Symptoms frequency	0.070	0.958	0.196
Average of QoL	0.514	0.609	0.153

* p< .05; ** p< .01

disease, treatment, and lifestyle which were appropriate with their condition.

During the interview with the diabetic patients after they finished to fill in the questionnaire, we found that some patients have experienced treatment-related adverse effect. The patients also feared about the long duration of treatment. The medication adherence score of this study was in the moderate level, which could be caused by information and education services given by pharmacist. This responsibility is not easy since we know most of the patients had education level up to senior high school, had permanent occupation and in the age of 55's. The previous study showed that older, high educated and higher income patients had a good adherence.[14]

Therefore, in our study, level education, age, and occupation are being the challenges for the pharmacist in giving the pharmaceutical care service. Some previous studies showed that the complexity of treatment, number of drugs and treatment or disease duration could become the predictor of medication adherence.[15,16] Some demographic factors, socio-economic, and cultural factors may also influence the type 2 diabetes patients' adherence in different population.[17] In the other Indonesian diabetic population study, some of patients's characteristics could affect patients' quality of life, like gender, age, disease duration, education, marriage status, and occupation.[1]

Regarding to the association between patient's quality of life and adherence, our current study result was not in line with the previous studies. The previous study showed that the nonadherence patients had lower quality of life.[8] This difference could be caused by the sample size of the study, the different quality of life instrument and the quality care provided by the health care providers. The previous study used EQ-5D as quality of life instrument, which is more easy and simple to be applied.[8] Patient's condition and situation during they filled in the questionnaire could affect the psychological perspective of the patients. They may feel tired to read many and long questions in the instruments. There was suggestion from the previous study to use the short and simple instruments, especially for measuring older patients' quality of life.[18] The future study is needed to be done in Indonesia using EQ-5D to measure the patients' quality of life.

In general, this study showed that the patients quality of life was good with the moderate value of medication adherence. In the therapy groups, the pattern of quality of life domains was similar. The previous study showed some pharmaceutical interventions such as medication review, education and information about self-monitoring blood glucose, pill box utilization, and monthly telephone could increase diabetes mellitus patient's adherence. These pharmaceutical care interventions could be implemented by starting the good relationship among pharmacist, physicians, nurses, and patients. The good relationship should be built from the good communication among them.[19] Therefore, the implementation of pharmaceutical care interventions to the diabetic patients could support the increase of quality care in the hospital.

The highest score of quality of life was shown in the health pressure domain and the lowest score was shown in treatment effect. According to the questions in the health pressure domain, it reflected that all of the subjects could adjust their life with disease and treatment. They also could adjust their lifestyle diabetes mellitus disease. This result was also supported by previous study in other diabetic patients populations.[1]

Due to the differences of quality of life domains in the therapy groups, only health pressure, treatment satisfaction, and symptom frequency which were not

significantly different. These results could be caused by some reasons such as each of the treatment combination gave similar treatment satisfaction, all of the patients could accept their conditions as diabetic patients and the treatment could decrease disease's symptoms frequency. However, treatment combinations showed different impact in the domains of physical, energy, and overall satisfaction. After we adjusted the analysis with the treatment duration, only treatment effect which had significantly different result in the therapy groups. This result was associated with adverse event experienced by patients who have been treated with the medicines in longer duration. Furthermore, after we adjusted the analysis with age, only energy which had significantly different result. This result might be caused by the limited physical activities since they suffered from diabetes mellitus.

We recognize our study limitation that we did not analyze the association between patient's quality of life and clinical outcomes or patient's adherence and clinical outcomes. Therefore, we did not confirm that the patient's quality of life and adherence could show the better clinical outcomes. Furthermore, we cannot generalize our study results in all of the diabetic patients in public or other private hospitals, since we conducted our study only in one of the private hospitals in Yogyakarta. Well-designed studies should be conducted regarding to these limitations.

Conclusion

Diabetic patients' quality of life in private hospital of Yogyakarta was good with the medication adherence was in moderate level. Although the significant association between patients' quality of life and adherence were only seen in the domain on treatment satisfaction in the monotherapy and oral combination therapy groups and also in the domain of health pressure in oral-insulin combination group, the different impact of quality of life domains due to the different treatment were reasonable and supported by the previous study in other Indonesian diabetes patient population.

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