

THE INFLUENCE OF HEALTH EDUCATION ON DIABETES MELLITUS ON KNOWLEDGE IMPROVEMENT OF DIABETES MELLITUS CADRES IN THE WORKING AREA OF MEDOKAN AYU HEALTH CENTER, SURABAYA, INDONESIA

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ABSTRACT

This study aimed to analyze the influence of health education on improving health cadres' knowledge about Diabetes Mellitus (DM) at Ayu Medokan Health Center, Surabaya, Indonesia. The type and design of this study was non-randomized pretest-posttest design, with samples of DM cadres in the working area of Medokan Ayu Health Center, Surabaya, Indonesia. Sample size was 24 persons. The treatment variable was health education, while the dependent variable was the increase of the cadres' knowledge about DM. Normality test was performed with Kolmogorov Smirnov ($\alpha=0.05$) and data analysis with Paired t-test ($\alpha=0.05$). This study found that DM cadres were mostly female (23 people), with the youngest age 24 years, and the oldest 61 years. The highest age group (45.80%) was 40-49 years with a mean age of 44.37 ± 9.27 years. Most of DM cadres' education (62.5%) was senior high school, then junior high school (25%). Most (58.3%) of the DM cadres did not work or as housewives. Besides being a DM cadre, most of them also posyandu and bumantik cadres, 2) There was a significant difference ($p<0,0001$) between the level of knowledge before and after health education. In conclusion, cadres' knowledge about DM can be improved, among others, by providing health education.

Keywords: DM cadres; training; improved knowledge

ABSTRAK

Penelitian ini bertujuan menganalisis adanya pengaruh pendidikan kesehatan terhadap peningkatan pengetahuan kader tentang Diabetes Mellitus (DM) di Puskesmas Medokan Ayu Surabaya. Jenis dan rancangan penelitian ini adalah The Non Randomized pretest-posttest design, dengan sample penelitian Kader DM di wilayah kerja Puskesmas Medokan Ayu Surabaya. Besar sampel 24 orang. Variabel perlakuan adalah pendidikan kesehatan, sedangkan variabel tergantung peningkatan pengetahuan kader DM tentang DM. Uji normalitas dengan Kolmogorov Smirnov ($\alpha=0,05$) dan analisis data dengan Paired t-test ($\alpha=0,05$). Penelitian ini menemukan bahwa 1) Kader DM mayoritas berjenis kelamin perempuan (23 orang), dengan umur termuda 24 tahun, dan tertua.61 tahun. Kelompok umur terbanyak (45,80%) adalah 40-49 tahun dengan rerata umur $44,37 \pm 9,277$ tahun. Pendidikan kader DM terbanyak (62,5%) adalah tamat SMA diikuti tamat SMP (25%). Sebagian besar (58,3%) kader DM tidak bekerja atau sebagai ibu rumah tangga. Selain sebagai kader DM, sebagian besar mereka juga sebagai kader posyandu, dan bumantik, 2) Ada perbedaan bermakna ($p<0,0001$) antara tingkat pengetahuan sebelum pendidikan kesehatan dan sesudah pendidikan kesehatan. Simpulan dari penelitian ini adalah pengetahuan kader tentang DM antara lain dapat ditingkatkan dengan pemberian pendidikan kesehatan.

Kata kunci: Kader DM; pelatihan; peningkatan pengetahuan

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INTRODUCTION

Diabetes mellitus (DM) is a global public health problem. The prevalence of type 2 DM is increasing every year. It is estimated that the number of cases of DM in 2010 amounted to 285 million people in the world and is predicted to increase to 438 million in

2030. Increasing number DM cases between 2010 and 2030 69% occurred in developing countries, and 20% in developed countries (Shaw et al., 2010). Of the 285 million people, 90% had type 2 DM (Chen et al., 2012), which is a complex multifactorial metabolic disease that is influenced by lifestyle factors and is associated with obesity. About 80% of those with type 2 diabetes were

obese, because obesity is associated with insulin resistance.

The problem of DM in Indonesia is quite serious and is one of the major health problems. Indonesia ranks seventh in the world with Diabetes Mellitus (DM) patients of 7.6 million in 2010 (Soewondo et al., 2013). Based on Basic Health Research (Riskesdas) in 2007, the proportion of DM as the cause of death in age group 45-54 years in urban areas was 14.7%, holding the second rank, and in rural areas was 5.8%, holding the 6th rank (Indonesian Ministry of Health, 2012).

In East Java in 2011 Diabetes Mellitus (DM) ranked 7th out of 10 most common diseases. Every year the number continues to increase. At present the number of people with diabetes under the age of 15 is increasing by 1.2 percent. In addition, the 20% of prediabetic patients were in productive age, and this proportion continues to increase. Regions with high DM patients are Surabaya, which is ranked first with 14,377 cases per year, followed by Bangkalan 5,388 cases, Malang 7,534 cases, and Lamongan 4,138 cases. The increasing number of people with diabetes mellitus is caused mostly by unhealthy lifestyles and diets. Whereas, the number of DM due to genetic factors is not more than 25%.

The number of new DM patients at Medokan Ayu Health Center was quite high. The number of new patients in 2015 amounted to 186 people with an average of 15 new patients per month, with a ratio of male : female 85 : 111. Most DM patients (90.86%) were over 45 years old, most (43%) of the age group between 45-55 years. Medokan Ayu Health Center had tried to control DM, but the results were not satisfactory. Therefore, in order to control DM to reduce DM prevalence it was necessary provide community empowerment through the formation and education on health to DM cadres.

MATERIALS AND METHODS

The design used in this study was non-randomized pretest-posttest design. In treatment group, measurements were performed before intervention (O1) (pretest) and after intervention (O2) (posttest). The intervention (X) was conducted by providing health education in the form of lectures and question and answer about diabetes mellitus to DM cadres.

The samples were DM cadres from Posbindu cadres and local PKK mothers. The sample size was 24 persons

recruited with a non-random sampling sampling technique. The treatment variable was health education about DM, while the dependent variable was the improved knowledge from DM cadres. The instruments in this study were 1 Kit (containing 1 copy of lecture material on DM, notes and ballpoint), a structured questionnaire about Diabetes Mellitus (pretest-posttest), laptops with power point presentation, LCD, sound system and wireless microphone.

The study site was at Medokan Ayu Health Center, Surabaya, Indonesia. Data collection was held on May 18, 2016. Data collected were primary and secondary data. Primary data were data collected by the researchers which included cadres' knowledge about DM before intervention (pretest) and after intervention (posttest). The cadres were asked to fill out a questionnaire about diabetes mellitus. The secondary data were obtained from recording reports at Medokan Ayu Health Center, Surabaya.

Knowledge data from the results of interviews (pretest and posttest) that had been collected were subjected to data processing with stages of editing, coding, data entry, and cleaning. Data analysis was carried out descriptively and inferentially. Data on respondents' characteristics are presented descriptively in the form of frequency distribution using tables or graphs. Inferential analysis to prove the influence of the provision of health education on the improvement of DM cadres' knowledge about DM. Data of the dependent variable were in the form of proportion, so the normality test was carried out by Kolmogorov Smirnov test ($\alpha=0.05$). Data distribution was normal if $p>0.05$. Statistical analysis with paired t-test ($\alpha=0.05$) was done if the data distribution were normal, and Wilcoxon test ($\alpha=0.05$) if the data distribution were not normal. The test results were significantly different if $p<0.05$.

RESULTS

Characteristics of DM cadres

The majority of DM cadres were female (23 persons), with the youngest 24 years old, and the oldest 6.1 years. The highest age group (45.80%) was 40-49 years with a mean age of $44.37 + 9.27$ years. Most DM cadres' education (62.5%) was senior high school followed by those from junior high school (25%). Most (58.3%) of DM cadres do not work or as housewives. Besides being DM cadres, most of them are also posyandu (integrated service post) and bumantik (larvae monitoring officers) cadres (Table 1).

Table 1. Characteristics of DM cadres by age group, gender, education and occupation

Characteristics		n	%
		24	100,0
Age group	< 40 years	8	33.3
	40 - 49 years	11	45.8
	≥ 50 years	5	20.8
Gender	Male	1	4.2
	Female	23	95.8
Education	Junior HS	6	25.0
	Senior HS	15	62.5
	Diploma degree	2	8.3
	Bachelor degree	1	4.2
Occupation	None	15	62.5
	Seller	2	8.3
	Others	7	29.2
	Total	24	100
Village	Medokan Ayu	8	33.3
	Wonorejo	8	33.3
	Penjaringan Sari	8	33.3
	Total	24	100
Other task	Posyandu cadres	18	37.5
	Posyandu Lansia cadres	9	18.8
	Environment cadres	6	12.5
	Bumantik	13	27.1
	TB cadars	1	2.1
	Others	1	2.1

Table 2. Cadres' average knowledge about DM before and after health education

	n	Mean ± SD	Mean ± SD	P
Pre test	24	102.2579 ± 36.58447	54.08333 ± 23.79166	0.000
Posttest	24	163.3413 ± 36.01859		

Table 3. Correlation between training provision and knowledge improvement of DM cadres by their level of education

Education Levels	Knowledge	n	Mean ± SD	Mean ± SD	p
Junior High	Pre	6	98.65 ± 44.643	53.28 ± 21.492	0.002
	Post	6	151.93 ± 49.182		
Senior High	Pre	15	108.78 ± 33.274	57.02 ± 24.168	0.000
	Post	15	165.81 ± 33.942		
Higher Ed.	Pre	3	132.83 ± 38.555	40.99 ± 30.698	0.147
	Post	3	173.83 ± 14.390		

DM cadres' knowledge

Knowledge of DM cadres about DM was obtained from the total score of cadre answers to structured questionnaires, before and after intervention. The average knowledge of cadres can be seen in Table 2. Descriptively, DM cadre's knowledge on DM increased

from before intervention compared to after intervention, which was from mean 102.2579 + 36.58447 to 163.3413 + 36.01859 (Table 2)

Normality test with Kolmogorov Smirnov test ($\alpha=0.05$) revealed normal data distribution ($p=0.661$), so we followed-up with comparative tests with paired-t-test

($\alpha=0.05$) to find out whether there were significant differences between cadres' knowledge before and after intervention.

The Paired-t-test ($\alpha=0.05$) revealed significant difference ($p<0,0001$) between DM cadres' knowledge before and after providing health education. We found the influence of providing health education to DM cadres on the improvement of their knowledge (Table 2).

Table 3 shows significant differences ($p=0.002$) in cadres' knowledge before and after receiving health education about DM in groups of cadres with junior high school level of education, significant differences ($p<0,0001$) in cadres' knowledge before and after health education about DM in group of cadres with senior high school level of education, and no significant difference ($p=0.147$) in cadres' knowledge before and after receiving health education about DM in groups with high education level.

DISCUSSION

Most DM cadres (79.2%) were less than 50 years old, which was an encouraging finding as they will be more aggressive in their activities. Cadres' education level, which were mostly senior high school, will be very helpful in providing counseling because their self-esteem must be higher than those graduated from junior high school. Among the DM cadres, 14 did not have formal job, a condition very helpful for carrying out their activities. DM cadres who are also Posyandu cadres or as bumantik, will be very helpful in their duties because they were used to meeting residents and already had experience in providing counseling.

Descriptively, DM cadres' knowledge about DM showed improvement from before receiving health education compared to after health education, averagely from $102.2579 + 36.58447$ to $163.3413 + 36.01859$ (Table 2). This was confirmed by the results of paired t-test which revealed significant differences in knowledge between before and after receiving health education. So, providing health education can improve cadres' knowledge about DM.

In cadres with junior high school education, the improvement in knowledge after health education was quite high (53). This was probably because they felt their pretest results were not good, so they listened seriously to their health instructors. In group of cadres with senior high school education, the improvement in knowledge after health education was higher than in group with junior high school education (57). In group

with high education level, there was no significant difference in their knowledge before and after receiving health education, because their level of knowledge had been quite high in the first place (132) and the variation was wide (38) because there were only three persons who graduated from high education (Table 3). The higher the level of education, the more information one may have, the higher the level of knowledge. Someone with a higher level of education will be better informed than those with lower level of education.

CONCLUSION

Knowledge of DM cadres can be improved, among others, by providing health education. Knowledge of cadres before and after health education is directly proportional to the level of education, which means that the higher the education the better the level of knowledge.

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