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Diabetes Mellitus: Prevalence and Control Measures among Diabetic Respondents in Mukim SG Pelek, Sepang, Selangor, Malaysia

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ABSTRACT

Diabetes mellitus is a major lifestyle disorder and the prevalence of which is increasing globally. Therefore, this study was conducted to determine the prevalence of diabetes mellitus and the control measures among the diabetic respondents in SG Pelek, Sepang.

A cross-sectional study was conducted among respondents who were selected through a simple random sampling. Respondents were interviewed using a set of questionnaire and data was analyzed using Statistical Package Social Sciences (SPSS) version 20.

Majority of the respondents were non-diabetic and they have regular diabetic screening. The diabetic respondents were compliance to medication and were physically active.

An awareness program on dietary practice should be strengthening, so that the community can practice a healthy diet as one of the prevention for diabetes mellitus.

Keywords: diabetes mellitus, prevalence, control, lifestyle, villagers

INTRODUCTION

Diabetes is now a disease of major concern both globally and regionally and is a leading cause of death in most countries. [1] In 2013, the International Diabetes Federation (IDF) estimated that 382 million people had diabetes worldwide, and by 2035, this was predicted to rise to 592 million. [2] The global prevalence of diabetes among adults over 18 years of age has risen from 4.7% in 1980 to 8.5% in 2014. [3] Whereas, the National Health Morbidity Survey 2015 [4] in Malaysia reports that the overall prevalence of diabetes mellitus (known and undiagnosed) among adults of 18 years and above is 17.5%.

Diabetes mellitus which accounts for 5.2% deaths worldwide and the fifth leading cause of deaths is one of the main risk factors for developing myocardial infarction, peripheral vascular disease, stroke and renal complications. [5] Healthy diet, regular physical activity, maintaining a normal body weight and avoiding tobacco use are ways to prevent or delay the onset of type 2 diabetes. [3] Along with diet, exercise not only makes the person active but also helps in consuming the calories taken with meals. [6]

Thus, this study was designed to determine the prevalence of diabetes mellitus status and the activities in controlling diabetes among diabetic respondents in Mukim SG Pelek villagers, Sepang, Selangor.

MATERIALS AND METHODS

A cross-sectional study was conducted in a village area in Mukim SG Pelek, Sepang, Selangor, which has 2000 residents with 450 houses. Majority of the residents were Chinese population.

Simple random sampling has been used to select the houses and to choose the respondents in the house. Only Malaysian women aged 18 years old and above, had been the residents for at least three months were used as samples. Residents with mental disable, deaf and mute were excluded in this survey and those who refused to participate in the survey or were not there during the survey after three visits, will be considered as non-respondents.

Data were collected through face to face interview session using a questionnaire from National Health Morbidity Survey 2015. [4] A diabetic patient is a person who has previously been diagnosed with diabetes type 1 or 2 by health professional. Adequate dietary practice means intake of at least 5 servings of fruits and vegetables per day and at least 6 glasses of plain water per day.

The data has been analyzed using descriptive statistics to get the frequency and relative frequency (percentage) for diabetes mellitus and diet practice status, and also sociodemographic variables. The association between diabetes mellitus status and dietary practice was determined by Fisher test. The level of significance was set at $p < 0.05$ and confidence level at 95%.

RESULT

A total of 238 participants participated in this study, giving an overall response rate of 91%.

Only 19.3% of the respondents are diabetic (Table 1).

Table 1: Prevalence of Diabetes Mellitus among respondents

Diabetes mellitus status	n	%
Yes	46	19.3
No	192	80.7
Total	238	100.0

Table 2: Diabetes Mellitus status by socio-demographic (N=238)

Socio-demography	Diabetes Mellitus status		
	Yes n (%)	No n (%)	Totaln (%)
Age			
< 20	0 (0.0)	6 (100.0)	6 (100.0)
20 - 29	0 (0.0)	25 (100.0)	25 (100.0)
30 - 39	2 (7.4)	25 (92.6)	27 (100.0)
40 - 49	3 (8.1)	34 (91.9)	37 (100.0)
50 - 59	10 (19.6)	41 (80.4)	51 (100.0)
> 59	32 (33.7)	61 (66.3)	93 (100.0)
Gender			
Male	18 (18.4)	80 (81.4)	98 (100.0)
Female	28 (20.0)	112 (80.0)	140 (100.0)
Education			
No formal	12 (33.3)	24 (66.7)	36 (100.0)
Primary	20 (29.4)	48 (70.6)	68 (100.0)
Secondary	13 (14.0)	80 (86.0)	93 (100.0)
Tertiary	1 (2.4)	40 (97.6)	41 (100.0)
Occupation			
Unemployed	0 (0.0)	2 (100.0)	2 (100.0)
Government	0 (0.0)	10 (100.0)	10 (100.0)
Private	3 (7.3)	38 (92.7)	41 (100.0)
Pensioner	8 (38.1)	13 (61.9)	21 (100.0)
Housewife	9 (20.1)	34 (70.9)	43 (100.0)
Self employed	5 (50.0)	5 (50.0)	10 (100.0)
Marital status			
Never married	4 (8.9)	41 (91.1)	45 (100.0)
Married	36 (20.7)	138 (79.3)	174 (100.0)
Divorcee / widower	6 (31.6)	13 (68.4)	19 (100.0)

Majority of the diabetic patients are female, 60-year-old and above, had no formal education, self-employed and divorcee / widow.

Table 3: Diabetic screening among respondents

Diabetic screening	n	%
Yes	151	63.4
No	87	36.6
Total	238	100.0

Diabetic screening has been done by majority (63.4%) of the respondents (Table 3).

Table 4: Health premise for diabetic management among diabetic respondents

Health premise	n	%
Government clinic	44	95.6
Private clinic	1	2.2
Government hospital	1	2.2
Total	46	100.0

Majority (95.6%) of the diabetic respondents seek their diabetic management from government clinics (Table 4).

Table 5: Activities taken for controlling diabetes among diabetic respondents

Activities	n	%
Medication	20	43.5
Diet control	16	34.7
Exercise	5	10.9
None	5	10.9
Total	46	100.0

Most of the diabetic respondents (43.5%) took medication as advised by health professional (Table 5). Whereas, 34.7% and 10.9% control their diabetes with diet and exercise, respectively.

Table 6a: Association between diabetes status and dietary practice

Diabetes status	Dietary practice		Total n (%)	P value
	Adequate n (%)	*Inadequate n (%)*		
Yes	2 (4.3)	44 (95.7)	46 (100)	0.380
No	18 (9.4)	174 (90.6)	192 (100)	

Table 6b: Association between diabetes status and physical activity

Diabetes status	Physical activity		Total n (%)	P value
	Yes n (%)	*No n (%)*		
Yes	33 (71.7)	13 (28.3)	46 (100)	0.400
No	149 (77.6)	43 (22.4)	192 (100)	

Table 6 shows the association between diabetes status with dietary practice and physical activity.

Among the diabetic respondents, 95.7% have inadequate diet practice (Table 6a) and only 28.3% do not physically active. However, statically, there are no significant association between diabetes mellitus with dietary practice and physical activity ($p>0.05$).

DISCUSSION

The overall prevalence of Diabetes among the community was slightly higher compared to the national prevalence (17.5%). [4] This might be due to the different location of the study done nationally which the prevalence is slightly higher in rural areas (17.7%) compared to urban (16.7%). Another study conducted in urban area, also shows a lower prevalence of diabetes mellitus (10.8%) among the community. [7] This can be concluded that communities with a good educational level and a good socioeconomic status in urban area had low prevalence of diabetes mellitus. [8]

Our national study conducted in 2015 reports that the prevalence of diabetes increases with age and is at peak among the elderly (60 years old and above). [4] A study conducted among US adults also reports that the prevalence of diabetes is the highest among the elderly (10%). [9] This is consistent with our findings where there was a higher prevalence of diabetes among elderly respondents (33.7%) and retirees (38.1%) as it may be due to the majority of the community were elderly (39%).

The diabetes mellitus most often appears in middle-aged adults, and the majority of individuals diagnosed with diabetes are of working age. [10] Employees with diabetes had significantly increased risks of transition from employment to disability (HR 1.7 [95% CI 1.0–2.9]), retirement (HR 1.6 [1.5–1.8]), and death (HR 7.3 [3.6–14.6]) compared with employees without diabetes. [11] Other than this may contribute to the higher prevalence among our retiree respondents, this may also explain the higher prevalence among unemployed respondents.

In previous studies conducted by Bener and NHMS, the prevalence of diabetes mellitus is higher among female (18.1% and 16.7%, respectively). [12, 4] These findings are similar with ours, which shows a higher prevalence of diabetes among female (18.3%) as well as housewives (20%). This might be due to the housewives in Malaysia have a higher risk of Metabolic Syndrome (OR=2.92). [13]

A study based on the frequency of food consumption and self-reported diabetes among adult men and women in India shows that people with diabetes are lower among men who consume vegetarian food products than non-vegetarian food daily. [14] There is evidence of an increased risk of type 2 diabetes mellitus by comparing the highest and lowest adherence to unhealthy dietary patterns (RR = 1.44). [15]

In a study conducted by Rampal (2010), the prevalence of Diabetes is higher among Indians (27.3%) compared to Chinese (11.7%) [16] which is similar as our finding. This might be due to Chinese had significantly better diet control compared to Indian ((M = 9.27) M = 7.59, respectively). [17] However, diabetes mellitus was not statistically associated with dietary practice among our diabetic respondents, although majority (95.7%) of them did not practice healthy diet.

Thirty-seven percent of our respondents did not have diabetic screening, which might be contributing to the higher prevalence of diabetes. As the majority of our diabetic respondents were among elderly, retirees and unemployed, this may explain the higher percentage of them visiting the government clinic (95.7%) and only 2.2% in private clinic. With respect to the mode of payment for medical services, most services provided to the diabetic patients in Saudi Arabia are mainly governmental (92.2%) whilst the personal payment contributed to only 7.7% and insurance 2.3% only. [18]

As majority of our diabetic respondents visited clinic, so the main method of controlling their diabetes was by

taking medication (43.5%) followed by diet control (34.8%) and exercise (10%). This was supported by a study done in Southern India region which shows diabetic respondents towards drug adherence or medication are highest (79.8%) followed by dietary behavior (29%). [19]

Moderate to high volumes of aerobic activity are associated with overall mortality risks in both type 1 and type 2 diabetes. [20] Regular exercise may prevent or delay type 2 diabetes development by reduces insulin resistance and improves blood glucose control, which contributes to weight loss, and improves well-being. [21-24]

Although majority or our diabetic respondents have regular physical activity, however, statistically, there was no significant association between diabetes mellitus and physical activity in our study.

CONCLUSION

Majority of the respondents were non-diabetic and they have regular diabetic screening. The diabetic respondents were compliance to medication and were physically active

In the future, more studies specifically on dietary should be conducted so that more awareness or intervention program can be done.

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