Diabetes awareness in Kampong Kapok, Brunei Maura district, Brunei Darussalam

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INTRODUCTION

Diabetes Mellitus (DM) is the third leading cause of deaths in Brunei Darussalam after cardiovascular disease and cancer. [1] Approximately 12.5% of the Bruneian population have DM (95% type 2) and 27.2% of them are obese. [2] DM is a precursor to other serious health complications. [3] DM can lead to functional limitations, disability and productivity which consequently results in economical strains. [4] Notably, the number of children diagnosed with DM is escalating in Brunei. [5] According the International Diabetes Foundation, approximately half of DM patients were unaware of their disease. [3] The Ministry of Health, Brunei Darussalam has devoted some efforts in addressing early identification of DM such as 'Program Mukim Sihat' and public health promotional awareness talks. A community outreach project with the theme "Diabetes Awareness" was aimed to educate the community on diabetes prevention and management through healthy lifestyle approaches. During this programme, a survey was conducted to assess the awareness of DM at the grass root level.

MATERIALS AND METHODS

Study Design, Population and Sample. The study was conducted in Kg. Kapok, one of the villages in Mukim Serasa, Brunei Muara district. Villagers were invited and those aged 18 years old and above participated in the health screening, discussion and presentation sessions.

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Data Collection. Participants were screened for their body mass index (BMI), blood pressure (BP) and random blood glucose and completed a questionnaire that addressed their knowledge and attitudes on DM. They were then divided for small groups discussion, followed by an interactive talk which addressed the risk factors, detections, signs and symptoms, long-term complications and prevention of DM. Participant completed the same questionnaires to assess any changes in knowledge and attitude after the intervention.

Research Instruments. BMI categories were determined using the Centers for Disease Control and Prevention (CDC) guidelines. [6] BP categories were classified according to the National High Blood Pressure Education Programme. [7] The knowledge questionnaire was adapted from "Diabetes Knowledge Questionnaire". [8] The attitude questionnaire was adapted from an attitude survey by The Montana-Wyoming Tribal Leaders Council. [9]

Statistical Analysis. Data was computed using Microsoft Excel for Windows for simple mathematical calculations.

Ethical Considerations. This project was approved by Department of Health Services, Ministry of Health and PAPRSB Institute of Health Sciences, UBD in September 2014.

RESULTS

In total 60 of more than 150 attendants were recruited. 33.9% (*n*=20) screened were overweight and 32.2% (*n*=19) were obese. 49.0% (*n*=27) had hypertension (HT). 93% (*n*=56) had normal random blood sugar readings, and one participant had a random blood glucose of 13.2 mmol/L, who was referred to the diabetic nurse educator. 11.7% (*n*=7) were on medications for diabetes. However, despite the treatment, two of them were found to have borderline high random blood glucose levels (10.7 and 10.9 mmol/L). Participants' demographic is shown in Table 1.

Table 1: Demographics of subjects.

	n (%)		
	Male	Female	Total
Body Mass Index categories			
Underweight (<18.0)	0 (0.0)	0 (0.0)	0 (0.0)
Healthy (18.0-25.0)	9 (33.3)	11 (34.4)	20 (33.9)
Overweight (25.1-29.9)	12 (44.4)	8 (25.0)	20 (33.9)
Obese (≥ 30.0)	6 (22.2)	13 (40.6)	19 (32.2)
	27 (100.0)	32 (100.0)	59 (100.0)
Blood pressure categories			
Normal (<120/<80)	7 (28.0)	11 (36.7)	18 (32.7)
Pre-HT (120-139/80-89)	0 (0.0)	10 (33.3)	10 (18.2)
HT Stage 1 (140-159/90-99)	12 (48.0)	7 (23.3)	19 (34.5)
HT Stage 2 (≥160/≥100)	6 (24.0)	2 (6.7)	8 (14.5)
	25 (100.0)	30 (100.0)	55 (100.0)

During small groups' discussion, participants were able to identify the risk factors of DM and were aware that diabetes could be inherited. There several misconceptions; consequences; frequent pyrexia, and dyspnoea (which could possibly resulted in asthma), males are more prone, stress could induce and sleeping less can prevent DM.

There was a significant increase in knowledge and positive attitude towards the management of diabetes (Tables 2 and 3). After the intervention, awareness of the importance of healthy diet and lifestyle, in addition to the importance of medications, importance of weight loss especially if overweight, eating too much sugar and sweet food may cause DM. There was a slight decrease in knowledge with regards to dizziness as a sign of both low and high blood sugar respectively.

After the intervention, there were also improvement in the attitudes; awareness of long-term complications, recognised that blood sugar had to be kept as close to normal to prevent the complications and importance of self-initiative and self-care. In contrast, majority (77.8%, *n*=42) still thought that Type 2 DM is more serious and dangerous compared to Type 1 DM. A majority (94.4%, *n*=51) thought that insulin injections were given to more serious cases.

Table 2: Pre- and post-questionnaire questions on knowledge about diabetes.

	Pre-Questionnaire (*n*=39)			**Post-Questionnaire (*n*=54)**		
	Agree *n* (%)	Neutral *n* (%)	Disagree *n* (%)	Agree *n* (%)	Neutral *n* (%)	Disagree *n* (%)
1: Eating too much sugar and sweet foods may cause diabetes	34 (87.2)	2 (5.1)	3 (7.7)	52 (96.3)	1 (1.9)	1 (1.9)
2: The usual cause of diabetes is lack of insulin in the body	27 (69.2)	10 (25.6)	2 (5.1)	46 (85.2)	1 (1.9)	7 (12.9)
3: If I am diabetic, my children have a higher chance of being diabetic	26 (66.7)	9 (23.1)	4 (10.3)	40 (74.1)	6 (11.1)	8 (14.8)
4: There are 2 main types of diabetes: Type 1 & Type 2	29 (74.4)	8 (20.5)	2 (5.1)	51 (96.2)[a]	1 (1.9)[a]	1 (1.9)[a]
5: Diabetes can't be managed just by looking after a healthy diet & healthier lifestyle	25 (64.1)	6 (15.4)	8 (20.5)	14 (25.9)	3 (5.6)	37 (68.5)
6: Medication is more important than diet and exercise to control diabetes	25 (64.1)	5 (12.8)	9 (23.1)	20 (37.0)	6 (11.1)	28 (51.9)
7: Weight loss is not important in treating obese diabetic patient	22 (56.4)	3 (7.7)	14 (35.9)	9 (16.7)	1 (1.9)	44 (81.5)
8: Diabetes can cause loss of feeling in my hands, fingers and feet	31 (79.5)	4 (10.3)	4 (10.3)	51 (94.4)	1 (1.9)	2 (3.7)
9: Dizziness is a sign of low blood sugar	31 (79.5)	4 (10.3)	4 (10.3)	38 (70.4)	9 (16.7)	7 (12.9)
10: Dizziness is a sign of high blood sugar	27 (69.2)	5 (12.8)	7 (17.9)	35 (64.8)	7 (12.9)	12 (22.2)

Table 3: Respondents' knowledge level, attitudes and perceptions towards hyperlipidaemia and its management.

	Pre-Questionnaire (*n*=39)			Post-Questionnaire (*n*=54)		
	Agree *n* (%)	Neutral *n* (%)	Disagree *n* (%)	Agree *n* (%)	Neutral *n* (%)	Disagree *n* (%)
1. People who need to take insulin to treat their diabetes have a more serious disease	29 (74.4)	9 (23.1)	1 (2.6)	51 (94.4)	3 (5.6)	0 (0.0)
2. There is not much use in trying to have good blood sugar control because the complications of diabetes will happen anyway	24 (61.5)	7 (17.9)	8 (20.5)	24 (44.4)	8 (14.8)	22 (40.7)
3. People whose diabetes is treated by just a diet do not have to worry about getting many long-term complications	28 (71.8)	8 (20.5)	3 (7.7)	31 (57.4)	6 (11.1)	17 (31.5)
4. Keeping the blood sugar close to normal can help to prevent the complications of diabetes	29 (74.4)	8 (20.5)	2 (5.1)	50 (92.6)	2 (3.7)	2 (3.7)
5. Type 2 diabetes is a more serious disease than Type 1	30 (76.9)	8 (20.5)	1 (2.6)	42 (77.8)	6 (11.1)	6 (11.1)
6. Looking after diabetes on your own not as important than be looked after by health professionals	22 (56.4)	5 (12.8)	12 (30.8)	19 (35.2)	3 (5.6)	32 (59.3)
7. Support from family & friends are important in dealing with diabetes	34 (87.2)	4 (10.3)	1 (2.6)	50 (92.6)	3 (5.6)	1 (1.9)

DISCUSSION

It was alarming to note that more than half of the participants (66.1%) were not in the healthy BMI range and almost half had HT (49.0%). This was an upsetting phenomenon as both overweight and HT are risk factors for Type 2 DM. Some participants thought that males are more susceptible to DM, which corresponded to an exploratory study done among Hmong population in the United States.[10] Another common misconception included excessive sugar intake can cause DM.[11, 12]This belief was also present in our community, as demonstrated in our knowledge question 1, where 96.3% (*n*=52) of the participants chose "Eating too much sweet and sugary foods may cause diabetes". Another reason for it is probably due to the ambiguity of the question. For instance, Type 1 DM is caused by genetics and other factors that might trigger the disease. Lifestyle changes were found to increase the risk for developing Type 2 DM but genetic factors also play a major role in Type 2 DM. Hence, participants may be confused as they thought eating sweet foods may cause diabetes. In addition, "stress could cause diabetes" was also a common belief in a study done in Saudi Arabia (n=514/1,030).[11] These misconceptions were immediately corrected by the diabetes nurse educator who was present for the event.

We noted that participants were unable to distinguish dizziness as a sign for both high and low blood sugar levels. Furthermore, a large number of participants (77.8%, *n*=42) thought that Type 1 DM is more serious than Type 2 DM, possibly because we did not emphasise and elaborate much on these topics during the session.

In addition, there were several aspects that could be improved on. We screened only half of the targeted participants due to limited time and manpower. Hence, we would recommend a longer time for the implementation of activities. Furthermore, with interactive sessions, overrun and delays with subsequent sessions contributed to failure to obtain more samples. Having a larger venue is recommended where more participants can benefit from the discussions and provide more time for questions where further misconceptions can be addressed, depending on availability of manpower.

In conclusion, this successful campaign helped raise the community awareness on health, principally on DM. The intervention provided insightful information and created opportunities to clarify any uncertainties regarding DM and enabled the community to acquire a better understanding on diabetes prevention and management even when already diagnosed with the condition. It was our intention that the participants would impart their newfound, refined knowledge on DM to their friends as well as relatives and trigger the community to be more concerned and proactive about their health.

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