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Use of Complementary Alternative Medicines by the Malaysians for the Treatment of Type 1 and Type 2 Diabetes Mellitus: A Cross-Sectional Study

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Abstract: ***Complementary alternative medicine is popularly used by patients in all over the world, especially in Malaysia. But there is a limited study on the use of complementary alternative medicine among patients with diabetes mellitus. The aim of this research to investigate the usage of complementary alternative medicine by the diabetic patients in Malaysia, Arabians living in Malaysia and to evaluate the therapeutic benefit and safety of CAM for the management of diabetes. This is a descriptive, cross-sectional study of 215 diabetic patients. The study was conducted by survey and taking physical interview of the diabetic patients who were using CAM for the treatment of diabetes. The study was conducted among the Malaysians diabetic patients and the Arabians living in Malaysia. Besides, we used to google form to survey both types of study subjects. Data analysis was done using SPSS 22 version. In this study, males have represented 59 % respondents who use of complementary alternative medicine by the Arabians are living in Malaysia. However, the females were 41 % respondents. Males have represented 51 % respondents who use of complementary alternative medicine by the Malaysian. However, the females were 49 % respondents. The prevalence of CAM use was high among diabetics. Islam faith is predictor for CAM use among Type 2 DM patients. Further studies on the anti-glycemic activity of the isolated compound may be needed in the future.***

Keywords: Complementary and alternative medicine (CAM), Type 2 diabetes mellitus, Type 1 diabetes mellitus, Traditional medicine

1. Introduction

Diabetes mellitus (DM) is a chronic disorder characterized by hyperglycemia with disturbances of carbohydrate, fat and protein metabolism (American Diabetes Association [1]. The World Health Organization (WHO) classification system for DM recognizes mainly two principal forms: 1) Type 1 diabetes (formerly known as insulin-dependent), in which the pancreas fails to produce insulin, occurs most frequently in children and adolescents; 2) Type 2 diabetes (formerly known as non-insulin-dependent),which results from the body's inability to react properly to the insulin produced by the pancreas, occurs most frequently in adults, and the chance of acquiring this type of diabetes increases with age. Currently, this common disease affects more than 171 million people, with 90 % to 95 % of all cases classified as Type 2 diabetes. The prevalence of DM for all age groups worldwide was estimated as 2.8 % in 2000, and is projected to reach 4.4 % in 2030 which means at least 366 million people having diabetes by 2030 [2]. Much of this increase in diabetes will occur in Asia. Global Prevalence of Diabetes mellitus in Region poorly controlled or untreated Type 2 diabetes can bring about diabetes-related symptoms such as recurrent blurred vision, pruritus, skin infection, vaginitis, fatigue, weight loss, cardiovascular symptoms, and neurological symptoms. Additionally, hyperglycemia over a prolonged period can not only cause diabetic emergencies such as hyperglycemic, hyperosmolar, and non- ketosis (HHNK) syndrome that can lead to coma, but also damage within the body and in extreme circumstances, may contribute to a wide variety of complications. Diabetes complications involve different organ systems and biochemical pathways, including kidney disease, vascular disease, retinopathy, neuropathy and cardiomyopathy. Around 3.2 million deaths every year are attributable to complications of diabetes, which equates to six deaths every minute [2]. Diabetes and its complications were recently upgraded to be the fourth leading cause of death. To achieve optimal glucose control, complex treatment plans for people with Type 2 diabetes may involve daily blood glucose testing and monitoring, appropriately prescribed medications such as oral hypoglycemic agents and/or insulin injection, nutrition therapy and regular exercise. Living with Type 2 diabetes, therefore, is a challenge that requires considerable dedication and commitment to a life-long regimen imposed by this chronic disease. Additionally, the achievement of good control can be difficult for many patients, because changing eating habits, maintaining ideal body weight, exercising regularly and self-monitoring blood sugar requires changes to behavior and lifestyle [3]. As a result of the chronic course of the disease, the debilitation of complications and threat of death, as well as the complexities of treatment plans, many people with Type 2 diabetes often work proactively to manage their condition, optimize their health and alleviate complications through the use of Complementary and Alternative Medicine (CAM).

In Malaysian patients are using CAM for the treatment of chronic disease including diabetes. But there are information's about using CAM by Malaysian people as limited research work, some people with diabetes use complementary or alternative therapies to treat diabetes [4]. Although some of these therapies may be effective, others can be ineffective or even harmful. Patients who use complementary and alternative medicine need to let their health care providers know what they are doing. There are many unknowns regarding complementary and alternative therapies for type 2 diabetes, but with the increasing

incidence of this condition, there is a growing recognition that additional treatment strategies are needed [5]. If you have type 2 diabetes and are interested in alternative medicine, keep- eating right, exercising, and taking your medication, and talk to your doctor about whether any complementary therapies may also help you.

The significance of this study rests on the generation of information crucial to use of CAM is prevalent among people with Type 2 diabetes living in Malaysia, so nurses need to be aware of the possibility that their patients are using CAM, which CAM they are most likely to use, and how patients' Relationships with healthcare professionals influence their decision-making about CAM use.

The Health Belief Model (HBM) has been adapted and modified a number of times by social psychologists. Described a range of alternative approaches to understanding the social psychological determinants of health and illness behavior within the HBM framework. According to this model, how an individual engages in any particular health behavior [6]. The model suggests that the likelihood of a person engaging in any given action related to their health or illness.

2. Materials and Methods

2.1 Research Context

1) Survey questionnaire and
2) Diabetic patients

2.2 Participants

A DM patient was defined as someone who was clinically diagnosed with diabetes or was taking diabetic medications. Patients with hypertension were those whose BP ≥ 140/90 mmHg or were on antihypertensive agents. CAM use in this study is defined as consumption in one of the five categories therapy: biological-based therapies like herbal and dietary supplement; alternative medical systems, like acupuncture or Ayurveda; energy therapies like Reiki; manipulative and body-based systems like chiropractic or massage; and mind-body interventions like tai chi or yoga [7].

2.3 Instruments of data collection

A descriptive predictive research design using cross-sectional survey methods was chosen. The purpose of descriptive studies is "to observe, describe, and document aspects of a situation as it naturally occurs and focus on understanding the causes of behaviors, condition, and situations".

2.4 Procedure of study

As previously stated this study employs a mixed methods design. Approaches to qualitative-quantitative methodological triangulation attempt to reconcile two methods that embody incompatible assumptions about the nature of the world. Quantitative methods are designed to collect numerical data and being based on a positivist philosophy are considered reductionist whereas qualitative methods are designed to collect data in the form of words and are constructivist and holistic. However, increasingly mixed methods designs are being advocated, especially when a study seeks to explore different levels of the same phenomenon, improve links between data, offset or counteract biases, improve the validity of the findings, and/or develop a better understanding within and across subjects [8]. There are four practical strategies for mixed methods designs incorporated into two models: the simultaneous model and the sequential model.

2.5 Data Collection

A face-to-face interview was conducted using a structured questionnaire. A written informed consent for participation in the study was obtained from participants. The questionnaire was designed to capture patients' socio-demographic data, co-morbidities, types of CAM used, resources consulted, and the total expenditure on CAM. The attitudes, beliefs, and perceptions towards CAM were explored. Documented most-recent results of glycosylated hemoglobin (HbA1C) and blood pressure (BP) tests from the preceding year were captured from the patients' medical records. A pilot study involving patients was done to pretest the questionnaire and estimate the likely response rate. Between May 2016 to August 2016. We recruit participants from the following ethnic groups: Chinese, Malaysian, Arabs to qualify for inclusion, participants had to meet the following criteria over the age of 18.

2.6 Data Analysis of Study

The data analysis was performed by using SPSS software [9]. Demographic and clinical data characterizing the sample were summarized through descriptive statistical procedures including frequencies, percentages, measures of central tendency (means, medians, modes) and measures of dispersion (ranges, variance, standard deviation). Comparison was made between CAM users and non-users on each variable using inferential statistics. The statistical tests used for this initial data analysis were determined by the level of measurement and whether the data sets met the assumptions for the use of parametric statistics. Additionally, a sensitivity analysis was carried out to test the degree of sensitivity between users for CAM use. The level for statistical significance for all analyses was set at a minimum of $p < .05$. Along with conceptual and operational definitions of the variables, all the variables were identified within a conceptual model.

2.7 Reliability Procedure

A successful survey instrument is a set of well-designed questions that reflect the truth as accurately as possible [10] therefore, reliability and validity need to be ensured to reduce measurement error. Reliability is a statistical measure of the reproducibility, consistency or stability of the data gathered by the survey instrument. Validity determines the extent to which the instrument reflects the abstract construct being examined [11]. The validity of items, scales, and whole survey instruments should be assessed to ensure that the instruments measure what they are supposed to measure.

2.8 Data Interpretation

Potential interviewees were contacted at the time of the survey. One interview was conducted with each participant by the researcher. At the time of the initial contact, the information sheet and the informed consent form were explained to potential participants. An interview guide was used to ensure that all relevant topics were discussed with the interviewees. To balance flexibility and consistency in the research, the sequencing of questions was not the same for each participant, as it depended on the process of the interview and the responses from the participants. Interview data were collected in three ways: 1) audio-recording of the interview; 2) note taking during the interview; and 3) note taking after the interview. The researcher asked each participant for permission before recording the interview. The purpose of data analysis is to pare down and represent major themes or categories that describe the experience being examined [12]. Later conceptually linked elements of text were grouped together for further analysis. Next, the researcher named the subcategories meaningfully and combined these to form common categories by analyzing each account separately. However, the categories appeared incomplete at first but were reviewed and refined with further data collection and analysis. Data analysis ended when no new information emerged about a category.

3. Result

Table 3.1: Table 3.10, shows the results of survey among Malaysia for type I and type II diabetic mellitus

Table 3.1: Distribution of the respondents by gender, age, religion, martial statue, position and education level

Category	Number of respondents	Percent (%)
Gender		
Male	59	59
Female	41	41
Age		
Less than 25 years	22	22
26-30 years	28	28
31-40 years	25	25
41-50 years	19	19
More than 50 years	6	6
Religion		
Muslim	100	100
Non-Muslim	0	0
Martial Statue		
Married	91	91
Single	9	9
Position		
Public Employee	2	2
Private Employee	41	41
Unemployed	57	57
Education Level		
Less than High School	29	29
High School	2	2
Bachelor	43	43
Master	26	26
PhD	0	0
Total	100	100

Table 3.2: Distribution of Respondent by Data on Diabetes and Complication

Category	Number of respondents	Percent (%)
Type of diabetes		
Type 1	51	51
Type 2	49	49
Starting of diabetes injury		
1995ago	11	11
1996-2000	14	14
2001-2005	15	15
2006-2010	20	20
2011-2016	40	40
Take for your diabetes		
Diet and Exercise	4	4
Oral medications	31	31
Oral medication and Diet control and insulin	5	5
Oral medication and Exercise	13	13
Oral medication and diet control and Exercise and insulin	1	1
Insulin and oral medication	2	2
Diet and insulin	17	17
Oral medication and insulin	6	6
Diet and exercise	6	6
Other	0	0
Blood glucose levels		
No	5	4
Yes	10	5
Fasting glucose every	4	10
week	22	22
One day every week	78	78
2 hours a day	8	8
Feasting 2 hours a week		
Total	100	100

Category	Number of respondents	Percent (%)
Blood glucose level before meal	3	3
less than 6	33	33
6.0-7.0 mmol/L	21	21
7.1-8.0 mmol/L	15	15
8.1-10.0 mmol/L	13	13
10-15.0 mmol/L	6	6
15.1-20 mmol/L	7	7
More than 25	17	17
Missing		
Glucose level after meal		
Less than 6.0	5	5
7.1-8.0 mmol/L	40	40
8.1-10 mmol/L	21	21
10.0-15.0 mmol/L	19	19
15.0-20 mmol/L	7	7
More than 20	8	8
Glycated haemoglobin		
Less than 7.0 mmol/L	38	38
7.0-10.0 mmol/L	35	35
10.1-12.0 mmol/L	18	18
More than 12.0 mmol/L	6	6
Follow the general doctor	56	56
Yes	44	44
No		
Follow the special doctor	33	33
Yes	67	67
No		
Total	100	100

Table 3.3: Distribution of Respondent by Knowledge, Attitude, and perceptions of Patients towards Complementary and Alternative Medicines

Category	Number of respondents	Percent (%)
Believe that CAM		
Yes	72	72
No	28	28
Availability of CAM		
Easily Available	36	36
Available	49	49
Difficult to get it	14	14
Costing of CAM		
Strongly expensive	6	6
Expensive	32	32
cheap	38	38
Strongly cheap	24	24
Other users of CAM		
Yes	51	51
No	18	18
I do not know	31	31
Share of beneficial effect of CAM		
Yes	74	74
No	8	8
I do not know	18	18
Total	100	100

Category	Number of respondents	Percent (%)
Believe that CAM		
Yes	72	72
No	28	28
Availability of CAM		
Easily Available	36	36
Available	49	49
Difficult to get it	14	14
Costing of CAM		
Strongly expensive	6	6
Expensive	32	32
cheap	38	38
Strongly cheap	24	24
Other users of CAM		
Yes	51	51
No	18	18
I do not know	31	31
Share of beneficial effect of CAM	74	74
Yes	8	8
No	18	18
I do not know		
Total	100	100

Table 3.4: Type of Complementary and Alternative Medicines (CAM) used for the Treatment of Diabetes

Category	Number of respondents	Percent (%)
Biological based therapy		
Herbal Medicines	4	4
Bitter guard	13	13
Eggs	19	19
Arena	18	18
Cinnamon	9	9
Garlic	13	13
Onion	12	12
Mushroom	10	10
Others		
Vitamins and Mineral		
Chrome	2	2
Vitamin E	25	25
Vitamin C	46	46
Vitamin D	5	5
Magnesium	5	5
Co-enzyme Q_{10}	9	9
Nothing	10	10
Use the type of Ayurveda medicine	41	41
Yes	59	59
No		
The reason of the medicine stopping	57	57
Yes	43	43
No		
Using of Alternative medicine for diabetes	42	42
Yes	58	58
No		
Total	100	100

Category	Number of respondents	Percent (%)
Use alternative medicine		
Yes	30	30
No	52	52
Other	18	18
Body treatment through		
Oil	36	36
Physiotherapy	27	27
Relaxation	27	27
Nothing	10	10
The relationship between pray and medicine	86	86
Yes	14	14
No		
Who is advise you to use Alternative Medicine	8	8
Doctor	32	32
Friend	48	48
Family	6	6
Internet	4	4
Physiotherapy	2	2
Processor		
T.V.		
Total	100	100

Table 3.5: Use of CAM (Past records, reason of using expenditure)

Category	Number of respondents	Percent (%)
Where did you get the Complementary Alternative Medicine (CAM)		
Pharmacist	16	16
Doctor	9	9
Feeding health Centre	75	75
The main reason of using (CAM)		
Security	20	20
Pain	10	10
Health	7	7
Others	63	63
Side-effects for using of CAM		
Yes	3	3
No	54	54
I don't know	43	43
Side –effect from CAM		
Yes	40	40
No	30	30
I don't know	30	30
Your doctor knows about using of CAM		
Yes	65	65
No	35	35
Did you discuss your General doctor CAM		
Yes	14	14
No	86	86
Did you discuss CAM your specialized doctor?		
Yes	30	30
No	70	70
Did you visit your doctor 3 months ago CAM?		
Yes	26	26
Yes, but not diabetes	19	19
No	55	55
Did you visit herbal doctor 3 months ago?		
Yes	30	30
Yes, but not diabetes	4	4
No	66	66
It helps to care diabetes in the future		
Yes	41	41
No	18	18
I do not know	41	41
Did you have other Tips		
Yes	30	30
No	70	70
Total	100	100

Table 3.6: Distribution of Respondent by Social Demographic Data

Category	Number of respondents	Percent (%)
Gender		
Male	59	51
Female	56	49
Race		
Malay	89	77
Indian	14	12
Chinese	4	3
Arabian	4	3
Bangladesh	2	2
Other	2	2
Religion		
Islam	103	90
Hindu	10	6.5
Christin	0	0
Buddhist	2	2.5
Age		
Less than 25 years	2	2.5
26-30 years	5	4
31-40 years	22	19
41-50 years	29	25
More than 50 years	57	49.5
Are you currently		
Working	74	65
Studying	5	4
Retired	9	8
Not working	27	23
Total	115	100

Table 3.7: Distribution of Respondent by Data on Diabetes and Complication

Category	Number of respondents	Percent (%)
Working statues		
Business	23	20
Service	38	33
Student	5	4
House wife	25	27
Other	5	4
Martial Statue		
Married	93	80
Unmarried	15	14
Divorced	2	2
Widow	5	4
Employer		
Government organization	33	27.6
Private organization	28	24.4
NGO	13	11
Other	2	2
Missing	39	34
Education Level		
No education	7	6
Less than High School	13	11
High School	17	14.3
Diploma	24	20.3
Bachelor	23	20
Master	23	20
PhD	8	7
Personal Income per month		
RM 2000-3000	18	15
RM 3100-4000	12	11
RM 4100-5000	14	12
More than RM 5000	10	9
Missing	61	53
Family income per month		
RM 2000-3000	2	2
RM 3100-4000	3	3
RM 4100-5000	10	8
More than RM 5000	12	10
Missing	88	77
Total	115	100

Category	Number of respondents	Percent (%)
Type of diabetes		
Type 1	60	52
Type 2	55	48
Your Height		
Less than 150	3	2.6
151-160	12	10
161-170	36	31.4
171-180	26	22.4
More than 180	20	18
Missing	18	15.6
Your Weight		
Less than 50	8	7
50-60	10	8.5
61-70	27	23.5
71-80	38	33
81-90	20	18
More than 90	5	4
Missing	7	6
Take for your diabetes		
Diet and Exercise	8	7
Oral medications	20	17
Oral medication and Diet	18	16
control and insulin	17	14.7
Oral medication and	4	3.5
Exercise		
Oral medication and diet	13	11
control and Exercise and	4	3.5
insulin	5	4.4
Insulin and oral medication	2	2
Diet and insulin	3	2.6
Exercise and insulin	9	7.8
Oral medication and insulin		
and Exercises		
Diet and exercise		
Insulin		
Blood glucose levels		
Fasting glucose every day	11	9.5
Fasting and after BG every	20	17.4
day	16	14
Fasting every week	30	26
Fasting one day every week	16	14
Fasting BG meal once 2	11	9.5
hours a day	11	9.5
Fasting and after meal BG		
once 2 week		
Other		
Total	115	100

Table 3.8: Distribution of Respondent by Knowledge, Attitude, and perceptions of Patients towards Complementary and Alternative Medicines

Category	Number of respondents	Percent (%)
Believe that CAM		
Yes	80	69.5
No	35	30.5
Availability of CAM		
Easily Available	19	16.5
Availability	69	60
Difficult to get it	27	23.5
Costing of CAM		
very expensive	18	15.6
Expensive	32	28
cheap	65	56.5
very cheap	0	0
Other users of CAM		
Yes	19	16.5
No	37	32
I do not know	59	51.5
Share of beneficial effect of CAM		
Yes	22	19
No	14	12
I do not know	79	69
Total	115	100

Category	Number of respondents	Percent (%)
Blood glucose level before meal	16	14
6.1-7.0 mmol/L	57	49.5
7.1-8.0 mmol/L	20	17.5
8.1 -10.0mmol/L	12	10.5
10.1-15.0 mmol/L	4	3.5
15.1-20.0	6	5
Other		
Glucose level after meal	40	34.7
7.0-10.0	28	24.3
10.1-15.0mmol/L	16	14.2
15.1-20.0 mmol/L	10	8
20.1-25.0 mmol/L	1	0.8
More than 25mmol/L	20	18
Other		
Glycated haemoglobin		
Less than 7.0 mmol/L	30	26
7.0-10.0 mmol/L	49	43
10.1-12.0	14	12
More than 12	5	4
Other	17	15
Follow the general doctor	37	32.5
Yes	72	62.5
No	6	5
Missing		
Follow the special doctor	94	81.7
Yes	21	8.3
No	0	0
Other		
Total	115	100

Table 3.9: Type of Complementary and Alternative Medicines (CAM) used for Treatment of Diabetes

Category	Number of respondents	Percent (%)
Biological based therapy Herbal	10	8
Medicines	20	17
Balsam pear	4	3.5
Misa Kuching	13	11
Bitter guard	12	11
Eggs	14	12
Arena	10	8.5
Cinnamon	11	9.5
Garlic	10	8.5
Onion	11	9.5
Mushroom		
Others		
Vitamins and Mineral		
I do not use any	18	15.5
vitamin	8	7
Chrome	12	10.5
Vitamin E	18	15.5
Vitamin E & Vitamin	21	18.5
C	6	5.5
Vitamin D	5	4.5
Magnesium	7	6
Co-enzyme Q10	10	8.5
Nothing		
Other		
Use the type of Ayurveda medicine	10	8.5
Yes	0	0
No		
Use Unani Medicine		
Yes	12	10
No	103	90
Total	115	100

Category	Number of respondents	Percent (%)
Mind Body Interaction as CAM		
Yoga	3	2.5
Tai chi	0	0
Meditation	6	5.5
I do not use any of them	106	92
Manipulation and body-based system	6	5.5
Reflexology	13	11
Relaxation therapy	3	2.5
Aromatherapy	12	11
Essential oils	49	42.5
Massage	0	0
Reiki	32	27.8
I don't use any of them		
Taking any treatment base on religious and belief	1	0.08
Basil leaf	1	0.08
Fenugreek	3	2.5
Ginger	1	0.08
Herb	1	0.08
Okras	5	4.5
Prayers		
List any other CAM using		
Babayan	1	0.08
Basil less	1	0.08
Cupping	1	0.08
Herbs	1	11
Ginger	13	2.5
Okras	3	
Use Homeopathic Medicine		
Yes	1	0.08
No	107	93.2
Missing	7	6
Use Chinese Medicine		
Yes	7	6
No	108	94
Total	115	100

Table 3.10: Use of CAM (Past records, reason of using Expenditure)

Category	Number of respondents	Percent (%)
Who you recommended CAM to you	13	11
Naturopath	1	0.08
Chiropractor	1	0.08
Podiatrist	7	6
Doctor	27	23.5
Friend	37	32
Family	3	2.6
Internet	2	2
Nurse	1	0.08
T.V.	23	20
Missing		
Where did you get the Complementary Alternative Medicine (CAM)	14	12.5
Pharmacist	4	3.5
Doctor	52	45
health Food sure Centre	12	10.5
Alternative Health Practitioners	33	28.5
Missing		
Spend on CAM per month	50	44
Less RM 300	35	30
300 and above	30	26
Missing		
The main reason for (CAM)	18	15.5
Security	22	19
Good	10	8.5
Pain	17	15
Health	45	39
Others		
Side-effects for using of CAM	4	3.5
Yes	30	26
No	65	56.5
I don't know	16	14
Missing		
Your doctor knows about using of CAM	23	20
Yes	17	15
No	12	11
Not applicable	43	37
Not sure	20	17
Missing		
Total	115	100

Category	Number of respondents	Percent (%)
Did you discuss your General doctor CAM	26	22.5
Yes	45	39
No	26	22.5
Not applicable	18	15.5
Missing		
Did you discuss CAM your specialized doctor	26	22.5
Yes	45	39
No	26	22.5
Not applicable		
Did you visit your doctor 3 months ago CAM	85	74
Yes	15	13
Yes, but not diabetes	15	13
No		
It helps to care diabetes in the future	49	42
Yes	1	0.08
No	53	46
Not sure	12	11
Missing		
You have any comment about CAM	69	60
Yes	46	40
No		
Total	115	100

4. Discussion

4.1 Use of Complementary Alternative Medicines by the Arabian Living in Malaysia for the Treatment of Type 2 Diabetes Mellitus Cross-Sectional Study

4.1.1 Distribution of Respondent by Social Demographic Data

Table 3.1 presents the distribution of the respondents by gender, age, religion, martial statue, position and education

level**.** In this study, males have represented 59% respondents who use of complementary alternative medicine by the Arabians are living in Malaysia. However, the females were 41% respondents. Furthermore, the age of the respondents in this research was divided into five categories. In addition, all the respondents were Muslim 100% and most of them were married with respondents 91% while the rest of them were single. From the Table 4.1, most respondents were unemployed with 57%. Finally, in this study, for educational level, most respondents had at least a Bachelor's degree. In addition, the results show 26% of the respondents had master degree qualification education.

4.1.2 Distribution of Respondent by Data on Diabetes and Complication

In this study type 1 represented 51 % respondents, while type 2 had 49 % of the sample. Furthermore, the study shows the majorty of the respondents have carried the diabetes injury from 2011 to 2016 with 40 % and 20 % respondents had between 2006 and 2010. For treatment of diabetes, oral medications had the highest percentage of 31 % (Table 3. 2). The results show the blood glucose level of the respondents in this research was divided into six categories for after meal and seven categories for before meal. As per to blood glucose level before meal 6.0-7.0 mmol/L was the highest proportion with 33 % respondents. Followed by 7.1-8.0 and 8.1-10.0 with 21 % and 15 % respectively. The lowest proportion for blood glucose level before meal was less than 6.0 and more than 25 with 3 % and 7 % respectively. Table 4.2 also presents that the category comprising of respondents for following the general and specialized doctor.

4.1.3 Distribution of Respondent by Knowledge, Attitude, and perceptions of Patients towards Complementary Alternative Medicines

In this study, most respondents believe that CAM can help to control diabetes with 72%. In this study, for costing of CAM, maximum respondents mentioned that CAM is cheap with 62% and 38% of them reported that CAM is expensive. And 74% respondents shared the beneficial effects of CAM. majority of the respondents were satisfaction level of usage CAM. A total of 100 respondents making up 81% satisfaction of usage CAM. On the other hand, 93% of the respondents used CAM for comorbidity treatment and 85% of them out of 100 respondents believe that CAM fewer side-effect (Table 3.3).

4.1.4 Type of Complementary Alternative Medicines used for the Treatment of Diabetes

In terms of herbal medicines, majority of the Arabian diabetes who are living in Malaysia had cinnamon and arena with (19 % and 18 %) respectively compared to other herbal medicines. A total of 100 respondents making up 46 % preferred vitamins C. Out of the 100 respondents of the survey, majority 52 % did not use alternative medicine while 30 % respondents used alternative medicine. In terms of the body treatment through oil, physiotherapy and relaxation, majority of the respondents were body treatment through oil with 36 %. With regards to the relationship between pray and medicine, 86 % of the respondents agreed that there is the relationship between pray and medicine (Table 3.4).

4.1.5 Use of CAM (Past records, reason of using Expenditure)

This finding can be explained by the fact that many diabetes got CAM from feeding health center making up 75 % while 25 % respondents got the CAM from Pharmacist and doctor. In terms of the main reason of using CAM, minatory of the respondents mentioned that pharmacist and doctor are main reason making up 16 % and 9 % respectively. With regards, self-effect CAM, more than 95 % of respondents indicated that there are not self-effects to use CAM. A total of 100 respondents making up 55 % respondents visit their doctor every 3 months ago. Moreover, this results can be explained by the fact that 41 % of diabetes helps to care diabetes in the future while the same number of respondents 41 % did not know helping to care diabetes in the future.

4.2 Use of Complementary Alternative Medicines by the Malaysian for the Treatment of Type2 Diabetes Mellites Cross-Sectional Study

4.2.1 Distribution of Respondent by Social Demographic Data

Table 3.6 presents the distribution of the respondents by gender, age, race, religion, working statue, employer, education level and income. In terms of distribution of respondent by social demographic data, males have represented 51 % respondents who use of complementary alternative medicine by the Malaysian. However, the females were 49 % respondents. In this study, majority of the respondents are Muslim. A total of respondents making up 90 % are Muslim while the remaining 10 % of them are non-Muslim. Furthermore, the age of the respondents in this study was divided into five categories. From the Table 4.6 many respondents are working with 65 %. In terms of educational level, most of the respondents had diploma, Bachelor and master degree making up 24 %, 23 % and 23 % respectively.

4.2.2 Distribution of Respondent by Data on Diabetes and Complication

Table 3.7 shows distribution of respondent by data on diabetes and complication. In this research. Type 1 represented 52 % respondents while, type 2 had 48 % of the sample. In terms of the height of respondents, majority of them had from 161cm to 180cm and made up 36 and 24 of the total number of respondents. With regards to respondents' weight, the results indicate that 33 % of the Malaysian diabetes patients weigh between 71 kg and 80 kg. For treatment of diabetes, oral medications had the highest percentage 17 %. The results show the blood glucose level of the respondents in this research was divided into five categories for after meal and before meal. Additionally, most respondents had glycated hemoglobin between 7.1-10 mmol/L.

4.2.3 Distribution of Respondent by Knowledge, Attitude, and perceptions of Patients towards Complementary Alternative Medicines

Table 3.8 shows the summary of distribution of respondent by knowledge, attitude, and perceptions of patients towards complementary alternative medicines. Most respondents believe that CAM can help to control diabetes with 69.5 % out of respondents. With regards to the availability of CAM,

approximately half respondents reported that CAM is available. In this study for costing of CAM, much of respondents mentioned that CAM is cheap with 56.5 % out of 115 respondents. According to other users of CAM, 32 % of them did not use CAM other users. Moreover. the results in Table 4.8 show that approximately 79 % of the respondents satisfied to use western medicine, On the other hand 47.8 % of the respondents used CAM for comorbidity treatment and 85 % of them respondents believe that CAM low side-effect.

4.2.4 Type of Complementary Alternative Medicines (CAM) used for the Treatment of Diabetes

In this study, Table 3.9 presents type of Complementary Alternative Medicines used for the Treatment of Diabetes. In terms of herbal medicines, majority of the Malaysian diabetes have Misai Kuching with (19 % and 18 %) respectively compared to other herbal medicines. This is followed by cinnamon and eggs. The respondents making up 18.5 % preferred vitamin C. Out of the respondents that responded to the survey, majority 90% did not use the type of Ayurveda medicine. In terms of the mind body interaction as CAM, majority of the respondents did not use any mind body interaction. With regards to taking any treatment base on religious and belief, prayer. Finally, in terms of the type of Ayurveda medicine, Homeopathic medicine and Chinese medicine had the highest number with approximately 107 respondents out of 115.

4.2.5 Use of CAM (Past records, reason of using Expenditure)

This section shows using of CAM (post records, reason of using expenditure). This finding can be explained by the fact that the majority of diabetes recommended CAM from family making up 32 %. In terms of where getting the CAM, majority of diabetes got CAM from feeding health center. This results can be explained by the main reason of using CAM, minatory of the respondents mentioned that security, good and health are main reasons. With regards, self-effect CAM, and regards to discuss their general doctor about CAM. Furthermore, a total of 115 respondents making up 74 % respondents visit their doctor every 3 months. Finally, there is open question about the diabetes have other tips Out of 115, 69 or 60 % of them had some comments and 40 % did not have comments.

5. Conclusion

In conclusion, interviews to explore a complex interaction of beliefs, values, cultural norms, environments and personal health experiences, contributes to advancing the conceptual understanding of CAM use among users with Type 2 diabetes in a Malaysia context. Knowing more than Diabetes mellitus is a chronic illness, leading to many co-morbidities and is leading cause of death. Since this chronic disease affects the entirety of person's being, seeking treatment through CAM approaches has become a self-management strategy for patients to improve their well-being. This study not only to understand the prevalence, patterns and predictors of CAM use among patients with Type 2 diabetes living in Malaysia, but also to raise the issue of non-disclosure of CAM use to healthcare professionals and the resultant potential risks. people with Type 2 diabetes in Malaysia tended to use therapies consistent with their cultural background such as Chinese herbal medicine, Chinese diet modification, and manipulative-based therapies such as Tui-an more often than other people with diabetes worldwide, highlighting a different preference for CAM therapies. This study also provides the profile of CAM users and the subgroup of patients that are most likely to use specific CAM therapies. This information should be helpful to know the benefits and potential harm of CAM therapies for diabetes. The results of this research indicate that over half of those with type 2 diabetes, living Malaysia, use CAM to assist with the self-management of their condition and to optimize health.

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